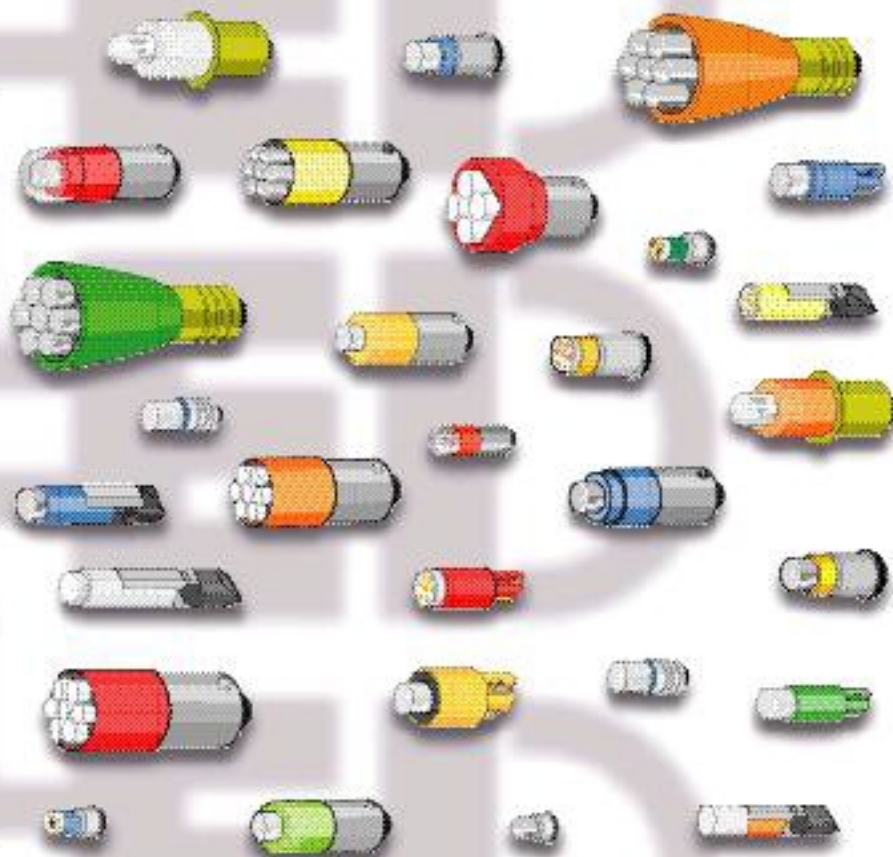


# miniature based

*Miniature Based LED Lamps*



**LED**  
**LEDTRONICS, INC.**  
**THE FUTURE OF LIGHT**

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Once limited to simple status indicators, Light Emitting Diodes (LEDs) now play prominent roles in back lighting, panel indication, decorative illumination, emergency lighting, animated signage, etc.... The emergence of LEDs as a viable alternative to incandescent lighting can be attributed to new manufacturing technologies, packaging innovations and an increasing number of colors. These factors along with the growing awareness of the advantages of LEDs (e.g., a life span measured in years not hours, vivid sunlight-visible colors and low power requirements) have engineers, product designers, purchasing agents and component vendors viewing LEDs in a whole new light.

For many applications LED lamps are superior to incandescent lighting. So why is it that in tens of millions of switches, indicators, control panels, signs, annunciators, displays, decor lights and dozens of other applications, design engineers still specify incandescent technology? It might be that they're just a few years behind what's really happening in LED illumination.

Although advances made in LED technology in the past few years have dramatically broadened the applications for these rugged little light sources, it wasn't that long ago that red was the only "daylight-visible" colored LED. And that wasn't the only thing limiting their use!

Unlike incandescent bulbs that give off the full spectrum of light in a spherical pattern, LEDs emit a focused beam of a single wavelength (color) in only one direction, in a variety of angles. For many applications, such as indicators or switch illuminators, this is not a problem, but it took the development of multi-chip arrays and high-flux LED chips to begin to achieve the effect of an incandescent filament.

Major advancements in LED technology have taken place in recent years such as development of new "doping" technologies that increase LED light output by as much as 20 times over earlier generations, and allow the production of daylight-visible LEDs in virtually any color of the spectrum. In addition to red, yellow, and amber/orange, LEDs are now available in many colors from leaf green to ultra blue. Even white light, long thought to be an impossibility, is now available in three different shades as a light-emitting diode.

The efficiency of LEDs is most apparent in applications requiring color. Light from a typical incandescent bulb must be filtered so that only light from a particular part of the spectrum (e.g., red, amber or green, etc...) for example—is visible. While LEDs deliver 100 percent of their energy as colored light, incandescent bulbs waste 90 percent or more of their energy in light blocked by the colored lens or filter. Incandescent bulbs also waste 80 percent to 90 percent of their energy on heat generation to reach the temperature for which (Kelvin scale) they are designed.

The point is that what was once a fairly marginal light source isn't marginal any more. In many applications, LEDs exceed the energy available from incandescent bulbs and offer significant additional benefits making LED clusters and lamps as friendly to the environment as they are to the operating budget.

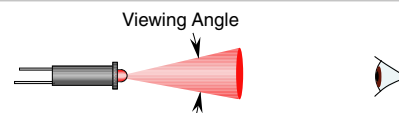
## Table of Contents

| Description                                         | Page  |
|-----------------------------------------------------|-------|
| Application Notes. . . . .                          | 4     |
| Questionnaire. . . . .                              | 5     |
| T1 (3mm) Sub-Midget Based LEDs. . . . .             | 6     |
| T1 (3mm) Sub-Midget Bi-Pin Based LEDs. . . . .      | 7     |
| T1-1/2 (4.5mm) Midget Wedge Based LEDs. . . . .     | 8     |
| T1-3/4 (5mm) Midget Wedge Based LEDs. . . . .       | 9     |
| T1-3/4 (5mm) Midget Flange Based LEDs. . . . .      | 10    |
| T1-3/4 (5mm) Midget Groove Based LEDs. . . . .      | 11    |
| T1-3/4 (5mm) Midget Screw Based LEDs. . . . .       | 12    |
| T1-3/4 (5mm) Midget Bi-Pin Based LEDs. . . . .      | 13    |
| T3-1/4 (9mm) Miniature Based LED Lamps. . . . .     | 14–17 |
| T3-1/4 (9mm) Miniature Wedge Based LEDs. . . . .    | 18–19 |
| T3-1/4 (9mm) Miniature Scw Based LEDs. . . . .      | 20    |
| S6 Candelabra Screw Based LEDs. . . . .             | 21–22 |
| T5.5K European Telephone Slide Based LEDs. . . . .  | 23    |
| T6.8 European Telephone Slide Based LEDs. . . . .   | 24    |
| T2 ANSI #5 Telephone Slide Based LEDs. . . . .      | 25    |
| T2 ANSI #2 & #3 Telephone Slide Based LEDs. . . . . | 26    |
| T2 #1 Telephone Slide Based LEDs. . . . .           | 27    |
| LED Color Chart. . . . .                            | 28    |

## Series Number – Page Number

| Series    | Page        | Series  | Page | Series | Page  |
|-----------|-------------|---------|------|--------|-------|
| 1SB200    | 27          | BP121   | 7    | S200   | 12    |
| 1SBF200   | 27          | BP122   | 7    | S206   | 12    |
| 2SB200    | 26          | BP124   | 7    | S321   | 20    |
| 2SB206    | 26          | BP200   | 13   | SF200  | 12    |
| 2SBF200   | 26          | BP203   | 13   | SF321  | 20    |
| 5SB200    | 25          | BPF120  | 7    | SF464  | 21,22 |
| 5SB206    | 25          | BPF200  | 13   | SL424  | 22    |
| 5SBF200   | 25          | BSD1174 | 27   | SL464  | 22    |
| 55KSB200  | 23          | F120    | 6    | SL467  | 22    |
| 55KSB206  | 23          | F121    | 6    | SLF461 | 21,22 |
| 55KSBF200 | 23          | F122    | 6    | SLF464 | 21,22 |
| 68SB200   | 24          | F124    | 6    | SLF467 | 21,22 |
| 68SB206   | 24          | F200    | 10   | WF150  | 8     |
| 68SBF200  | 24          | F206    | 10   | WF200  | 9     |
| B3127     | 17          | FF120   | 6    | WF3126 | 18,19 |
| B3206     | 17          | FF200   | 10   | WF3127 | 18,19 |
| B321      | 17          | FFL200  | 10   | WF321  | 18,19 |
| BF304     | 14,15,16,17 | FL206   | 10   |        |       |
| BF3126    | 14,15,16,17 | G200    | 11   |        |       |
| BF3127    | 14,15,16,17 | G206    | 11   |        |       |
| BF321     | 14,15,16,17 | GF200   | 11   |        |       |
| BM326     | 17          | HL230   | 6    |        |       |
| BN306     | 17          | HLC2020 | 6    |        |       |
| BN307     | 17          | HLC310  | 6    |        |       |
| BN309     | 17          | HLD310  | 6    |        |       |
| BP120     | 7           | RFI EMI | 6    |        |       |

|                                                         |                                                                                                                                                                               |
|---------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Will the Panel LED replace another manufacturers parts? | Dialight, Data Display Products, Industrial Devices Inc., etc...<br>If so, what is the part number?                                                                           |
| Mounting Type?                                          | Snap-in, Snap-in with mount clip, Bolt-on, Relampable, etc...                                                                                                                 |
| Mounting Diameter & Panel Thickness?                    | What is the hole diameter into which the lamp assembly must fit? How thick is the wall of the panel?                                                                          |
| Operating Voltage and Polarity?                         | Actual open line voltage? AC or DC? Does it fluctuate?<br>Indicate the Minimum/Maximum values?                                                                                |
| Terminal Type?                                          | Are solid wire (0.02 sq.), pigtail flexible wire lead (24AWG), quick disconnect (3/16 rectangular), solder lug, turret, or screw-on type terminals preferred?                 |
| Viewing Distance?                                       | How far is the operator / technician when the indicator must be visible? 5 to 10 feet, 20 to 50 feet, 100 to 200 feet, 500 to 1000 feet?                                      |
| Viewing Angle?                                          | 0 to 12 degrees – Narrow Beam<br>30 to 60 degrees – Medium Beam<br>100 to 160 degrees – Wide Beam                                                                             |
| LED Color?                                              | Ultra Red, Hi-Efficiency Red, Standard Red, Orange, Yellow, Cool white, Ultra Green, Aqua Green, Blue                                                                         |
| Lens Type?                                              | Diffused lenses are used in applications where direct viewing or indication is needed. Clear lenses are used in application where illumination is needed. Is the lens fluted? |
| Ambient Lighting?                                       | Standard office lighting. High ceiling factory lighting.<br>Indirect sunlight. Direct sunlight                                                                                |
| Potential Quality and Target Price?                     | How many pieces are required within a given time frame?<br>How much budgetary funding is allowed for this item or project?                                                    |





## Based LED Questionnaire

Date\_\_\_\_\_

### About you

The following information assists LEDtronics in determining the most appropriate FREE LED product SAMPLE. Fax to (310) 534-1424 for fast response.

Name: \_\_\_\_\_ Phone: (\_\_\_\_) \_\_\_\_\_  
 Company: \_\_\_\_\_ Fax: (\_\_\_\_) \_\_\_\_\_  
 Address: \_\_\_\_\_ M/S: \_\_\_\_\_  
 City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_  
 E-Mail: \_\_\_\_\_

### About your company

What does your company manufacture \_\_\_\_\_  
 Is your company ☐ Govt/Military ☐ Govt Contractor ☐ OEM ☐ Distributor ☐ Utility ☐ MRO  
 Requirement is for ☐ R&D ☐ Replacement ☐ New Application ☐ Other \_\_\_\_\_  
 Total annual quantity \_\_\_\_\_  
 Target price \_\_\_\_\_ Time frame ☐ Immediate ☐ 3 months ☐ 6 months

For internal use only

SIC code: \_\_\_\_\_  
 Originator: \_\_\_\_\_  
 Rep: \_\_\_\_\_  
 Current Customer ☐ Yes ☐ No

### About your application



Incandescent/LED No. \_\_\_\_\_ mAmps \_\_\_\_\_ Design Volts \_\_\_\_\_ MSCD \_\_\_\_\_

Base size ☐ T1 ☐ T2 ☐ T1<sup>3/4</sup> ☐ T3<sup>3/4</sup> ☐ S6 ☐ 15mm ☐ Other \_\_\_\_\_



Base type ☐ Flange ☐ Bayonet ☐ Wedge ☐ Bi-pin ☐ Screw ☐ Groove ☐ Other \_\_\_\_\_

Operating voltage (max) ☐ 5V ☐ 12V ☐ 24V ☐ 28V ☐ 120VAC ☐ Other \_\_\_\_\_



Voltage (type) ☐ AC ☐ DC ☐ Bipolar Polarity of center contact ☐ + ☐ -



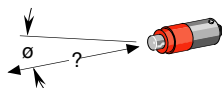
Lens color ☐ Red ☐ Orange ☐ Amber ☐ Yellow ☐ White ☐ Green ☐ Blue ☐ Other \_\_\_\_\_



Lens type ☐ Clear ☐ Diffused Lens size ☐ 16mm ☐ 22mm ☐ 30mm ☐ Other \_\_\_\_\_

Lens shape ☐ Circular ☐ Square ☐ Rectangular

☐ Jelly-jar ☐ Other \_\_\_\_\_



Ambient lighting conditions ☐ Indirect sunlight ☐ Direct sun ☐ Office ☐ Lowlight ☐ Darkroom

Maximum viewing distance desired ☐ 1 ft ☐ 5 ft ☐ 10 ft ☐ 20 ft ☐ 50 ft ☐ Other \_\_\_\_\_

Maximum viewing angle desired ☐ Straight on ☐ 30° ☐ 60° ☐ 90° ☐ Other \_\_\_\_\_

Distance between top of lamp and lens/filter ☐ 1/8" ☐ 1/4" ☐ 1/2" ☐ Other \_\_\_\_\_



Is an external resistor in series with the lamp ☐ Yes ☐ No If yes, Ohms \_\_\_\_\_ Watts \_\_\_\_\_



What is the source voltage if higher than the operating voltage of the lamp \_\_\_\_\_

Would like updated literature ☐ Yes ☐ No More info on: ☐ Based ☐ Panel ☐ PCB ☐ Discrete ☐ Other \_\_\_\_\_

Applicable statutory and regulatory requirements ☐ Yes ☐ No Doc. No. \_\_\_\_\_

### Additional Notes/Sketches

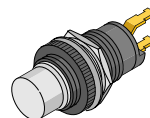
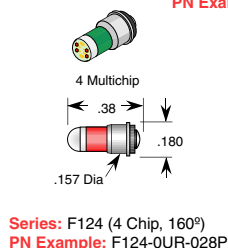
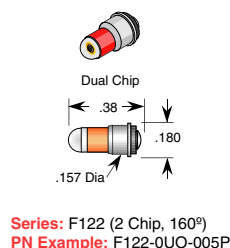
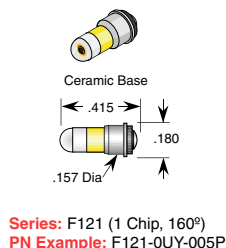
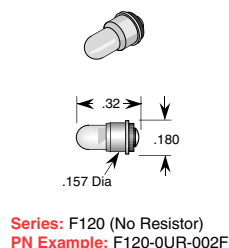


# T1(3mm) Sub-Midget Based LEDs

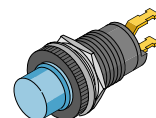
| Subminiature Packages                                                   | Replaces Incandescent | Part Number    | Electrical-Optical Characteristics (Ta = 25°C) |                |               | Angle of Illumination | Special Features                                                                                                                           |
|-------------------------------------------------------------------------|-----------------------|----------------|------------------------------------------------|----------------|---------------|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                         |                       |                | Voltage V typ                                  | Current mA typ | Intensity mcd |                       |                                                                                                                                            |
| <b>660nm Ultra Red GaAlAs/GaAlAs</b><br><br>F121 Ceramic Base FF120<br> | 682,685,714,718       | FF120-0UR-005P | 5V                                             | 20             | 100           | 120°                  | Center Contact Polarity<br>P = Positive<br>N = Negative<br><br>Replace FF120 With F120 Standard (65°) Beam Intensity 180 mcd/30 Ft.Cd      |
|                                                                         | 7241                  | FF120-0UR-018P | 18V                                            | 15             | 50            |                       |                                                                                                                                            |
|                                                                         | 6839                  | FF120-0UR-024P | 24V                                            | 12             | 33            |                       |                                                                                                                                            |
|                                                                         | 6839                  | FF120-0UR-028P | 28V                                            | 12             | 33            |                       |                                                                                                                                            |
| <b>612nm Super Orange InGaAlP</b><br><br>F121 Ceramic Base FF120<br>    | 682,685,714,718       | FF120-0UO-005P | 5V                                             | 20             | 85            | 120°                  | Center Contact Polarity<br>P = Positive<br>N = Negative<br><br>Replace FF120 With F120 Medium (50°) Beam Intensity 350 mcd                 |
|                                                                         | 7241                  | FF120-0UO-018P | 18V                                            | 15             | 64            |                       |                                                                                                                                            |
|                                                                         | 6839                  | FF120-0UO-024P | 24V                                            | 12             | 51            |                       |                                                                                                                                            |
|                                                                         | 6839                  | FF120-0UO-028P | 28V                                            | 12             | 51            |                       |                                                                                                                                            |
| <b>595nm Super Yellow InGaAlP</b><br><br>F121 Ceramic Base FF120<br>    | 682,685,714,718       | FF120-0UY-005P | 5V                                             | 20             | 32            | 120°                  | Center Contact Polarity<br>P = Positive<br>N = Negative<br><br>Replace FF120 With F120 Medium (50°) Beam Intensity 1K mcd                  |
|                                                                         | 7241                  | FF120-0UY-018P | 18V                                            | 15             | 21            |                       |                                                                                                                                            |
|                                                                         | 6839                  | FF120-0UY-024P | 24V                                            | 12             | 15            |                       |                                                                                                                                            |
|                                                                         | 6839                  | FF120-0UY-028P | 28V                                            | 12             | 15            |                       |                                                                                                                                            |
| <b>8000K Cool White SiC/GaN</b><br><br>F121 Ceramic Base FF120<br>      | 682,685,714,718       | FF120-0CW-005P | 5V                                             | 15             | 150           | 120°                  | Center Contact Polarity<br>P = Positive<br>N = Negative<br><br>Replace FF120 With F120 Std. (50°) Beam Intensity 650 mcd/75 Ft. cd         |
|                                                                         | 7241                  | FF120-0CW-018P | 18V                                            | 15             | 150           |                       |                                                                                                                                            |
|                                                                         | 6839                  | FF120-0CW-024P | 24V                                            | 10             | 100           |                       |                                                                                                                                            |
|                                                                         | 6839                  | FF120-0CW-028P | 28V                                            | 10             | 100           |                       |                                                                                                                                            |
| <b>570nm Lime Green InGaAlP</b><br><br>F121 Ceramic Base FF120<br>      | 682,685,714,718       | FF120-0UG-005P | 5V                                             | 20             | 36            | 120°                  | Center Contact Polarity<br>P = Positive<br>N = Negative<br><br>Replace FF120 With F120 Medium (50°) Beam Intensity 165 mcd @ 20 mA         |
|                                                                         | 7241                  | FF120-0UG-018P | 18V                                            | 15             | 27            |                       |                                                                                                                                            |
|                                                                         | 6839                  | FF120-0UG-024P | 24V                                            | 12             | 22            |                       |                                                                                                                                            |
|                                                                         | 6839                  | FF120-0UG-028P | 28V                                            | 12             | 22            |                       |                                                                                                                                            |
| <b>525nm Aqua Green SiC/GaN</b><br><br>F121 Ceramic Base FF120<br>      | 682,685,714,718       | FF120-0AG-005P | 5V                                             | 15             | 200           | 120°                  | Center Contact Polarity<br>P = Positive<br>N = Negative<br><br>Replace FF120 With F120 Narrow (15°) Beam Intensity 5K mcd/145 Ft.Cd        |
|                                                                         | 7241                  | FF120-0AG-018P | 18V                                            | 15             | 200           |                       |                                                                                                                                            |
|                                                                         | 6839                  | FF120-0AG-024P | 24V                                            | 10             | 150           |                       |                                                                                                                                            |
|                                                                         | 6839                  | FF120-0AG-028P | 28V                                            | 10             | 150           |                       |                                                                                                                                            |
| <b>470nm Super Blue SiC/GaN</b><br><br>F121 Ceramic Base FF120<br>      | 682,685,714,718       | FF120-0PB-005P | 5V                                             | 15             | 60            | 120°                  | Center Contact Polarity<br>P = Positive<br>N = Negative<br><br>Replace FF120 With F120 Std. (15°) Beam Intensity 1.5K mcd/32 Ft.Cd @ 15 mA |
|                                                                         | 7241                  | FF120-0PB-018P | 18V                                            | 15             | 60            |                       |                                                                                                                                            |
|                                                                         | 6839                  | FF120-0PB-024P | 24V                                            | 10             | 45            |                       |                                                                                                                                            |
|                                                                         | 6839                  | FF120-0PB-028P | 28V                                            | 10             | 45            |                       |                                                                                                                                            |

All dimensions in inches. For millimeters multiply by 25.4

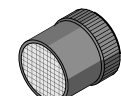
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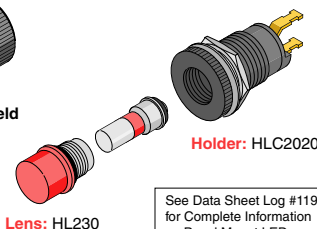
Series: HLD310 (Rear Mount)  
PN Example: HLD310CW900-5V-P



Series: HLC310 (Front Mount)  
PN Example: HLC310CB1K-5V-P



RFI EMI Shield



Holder: HLC2020

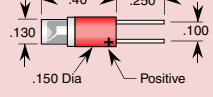
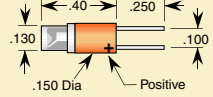
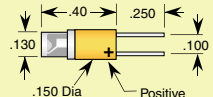
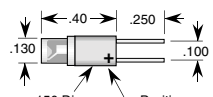
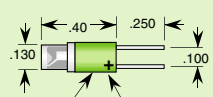
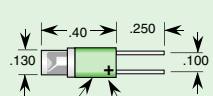
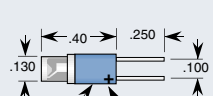
Lens: HL230

See Data Sheet Log #119 for Complete Information on Panel Mount LEDs

Log # 122A Rev 09-2000

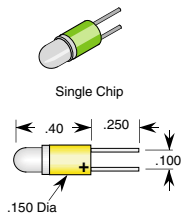


# T1(3mm) Sub-Midget Bi-Pin Based LEDs

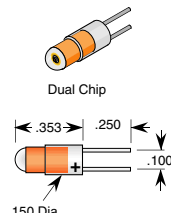
| Subminiature Packages                                                                                                                                                                                                                                                                                                                 | Replaces Incandescent | Part Number     | Electrical-Optical Characteristics (Ta = 25°C) |                |               | Angle of Illumination | Special Features                                                                 |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|-----------------|------------------------------------------------|----------------|---------------|-----------------------|----------------------------------------------------------------------------------|
|                                                                                                                                                                                                                                                                                                                                       |                       |                 | Voltage V typ                                  | Current mA typ | Intensity mcd |                       |                                                                                  |
| <b>660nm Ultra Red GaAlAs/GaAlAs</b><br><br><b>BP121</b><br><br><b>BPF120</b><br>  | 7265,7680,7714        | BPF120-0UR-005V | 5V                                             | 20             | 100           | 120°                  | Contact Polarity<br>V = DC only                                                  |
|                                                                                                                                                                                                                                                                                                                                       |                       | BPF120-0UR-014V | 12/14V                                         | 15             | 50            |                       | Replace BPF120 With BP120 Standard (65°) Beam Intensity 180 mcd/30 Ft.Cd @ 20 mA |
|                                                                                                                                                                                                                                                                                                                                       | 7839                  | BPF120-0UR-024V | 24V                                            | 12             | 33            |                       |                                                                                  |
|                                                                                                                                                                                                                                                                                                                                       | 7839                  | BPF120-0UR-028V | 28V                                            | 12             | 33            |                       |                                                                                  |
| <b>612nm Super Orange InGaAlP</b><br><br><b>BP121</b><br><br><b>BPF120</b><br>     | 7265,7680,7714        | BPF120-0UO-005V | 5V                                             | 20             | 85            | 120°                  | Contact Polarity<br>V = DC only                                                  |
|                                                                                                                                                                                                                                                                                                                                       |                       | BPF120-0UO-014V | 12/14V                                         | 15             | 64            |                       | Replace BPF120 With BP120 Medium (50°) Beam Intensity 350 mcd @ 20 mA            |
|                                                                                                                                                                                                                                                                                                                                       | 7839                  | BPF120-0UO-024V | 24V                                            | 12             | 51            |                       |                                                                                  |
|                                                                                                                                                                                                                                                                                                                                       | 7839                  | BPF120-0UO-028V | 28V                                            | 12             | 51            |                       |                                                                                  |
| <b>595nm Super Yellow InGaAlP</b><br><br><b>BP121</b><br><br><b>BPF120</b><br>     | 7265,7680,7714        | BPF120-0UY-005V | 5V                                             | 20             | 32            | 120°                  | Contact Polarity<br>V = DC only                                                  |
|                                                                                                                                                                                                                                                                                                                                       |                       | BPF120-0UY-014V | 12/14V                                         | 15             | 21            |                       | Replace BPF120 With BP120 Medium (50°) Beam Intensity 1K mcd @ 20 mA             |
|                                                                                                                                                                                                                                                                                                                                       | 7839                  | BPF120-0UY-024V | 24V                                            | 12             | 15            |                       |                                                                                  |
|                                                                                                                                                                                                                                                                                                                                       | 7839                  | BPF120-0UY-028V | 28V                                            | 12             | 15            |                       |                                                                                  |
| <b>8000K Cool White SiC/GaN</b><br><br><b>BP121</b><br><br><b>BPF120</b><br>       | 7265,7680,7714        | BPF120-0CW-005V | 5V                                             | 15             | 150           | 120°                  | Contact Polarity<br>V = DC only                                                  |
|                                                                                                                                                                                                                                                                                                                                       |                       | BPF120-0CW-014V | 12/14V                                         | 15             | 150           |                       | Replace BPF120 With BP120 Std (50°) Beam Intensity 650 mcd/75 Ft. cd @ 15 mA     |
|                                                                                                                                                                                                                                                                                                                                       | 7839                  | BPF120-0CW-024V | 24V                                            | 10             | 100           |                       |                                                                                  |
|                                                                                                                                                                                                                                                                                                                                       | 7839                  | BPF120-0CW-028V | 28V                                            | 10             | 100           |                       |                                                                                  |
| <b>570nm Lime Green InGaAlP</b><br><br><b>BP121</b><br><br><b>BPF120</b><br>    | 7265,7680,7714        | BPF120-0UG-005V | 5V                                             | 20             | 36            | 120°                  | Contact Polarity<br>V = DC only                                                  |
|                                                                                                                                                                                                                                                                                                                                       |                       | BPF120-0UG-014V | 12/14V                                         | 15             | 27            |                       | Replace BPF120 With BP120 Medium (50°) Beam Intensity 165 mcd @ 20 mA            |
|                                                                                                                                                                                                                                                                                                                                       | 7839                  | BPF120-0UG-024V | 24V                                            | 12             | 22            |                       |                                                                                  |
|                                                                                                                                                                                                                                                                                                                                       | 7839                  | BPF120-0UG-028V | 28V                                            | 12             | 22            |                       |                                                                                  |
| <b>525nm Aqua Green SiC/GaN</b><br><br><b>BP121</b><br><br><b>BPF120</b><br> | 7265,7680,7714        | BPF120-0AG-005V | 5V                                             | 15             | 200           | 120°                  | Contact Polarity<br>V = DC only                                                  |
|                                                                                                                                                                                                                                                                                                                                       |                       | BPF120-0AG-014V | 12/14V                                         | 15             | 200           |                       | Replace BPF120 With BP120 Narrow (15°) Beam Intensity 5K mcd/145 Ft.Cd @ 15 mA   |
|                                                                                                                                                                                                                                                                                                                                       | 7839                  | BPF120-0AG-024V | 24V                                            | 10             | 150           |                       |                                                                                  |
|                                                                                                                                                                                                                                                                                                                                       | 7839                  | BPF120-0AG-028V | 28V                                            | 10             | 150           |                       |                                                                                  |
| <b>470nm Super Blue SiC/GaN</b><br><br><b>BP121</b><br><br><b>BPF120</b><br> | 7265,7680,7714        | BPF120-0PB-005V | 5V                                             | 15             | 60            | 120°                  | Contact Polarity<br>V = DC only                                                  |
|                                                                                                                                                                                                                                                                                                                                       |                       | BPF120-0PB-014V | 12/14V                                         | 15             | 60            |                       | Replace BPF120 With BP120 Std (15°) Beam Intensity 1.5K mcd/32 Ft.Cd @ 15 mA     |
|                                                                                                                                                                                                                                                                                                                                       | 7839                  | BPF120-0PB-024V | 24V                                            | 10             | 45            |                       |                                                                                  |
|                                                                                                                                                                                                                                                                                                                                       | 7839                  | BPF120-0PB-028V | 28V                                            | 10             | 45            |                       |                                                                                  |

All dimensions in inches. For millimeters multiply by 25.4

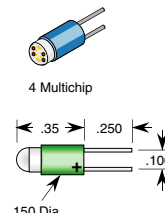
## Options



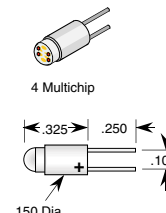
Series: BP120 (No Resistor)  
PN Example: BP120-0UY-005B



Series: BP122 (2Chip 160°)  
PN Example: BP122-0CO-005B



Series: BP124 (4 Chip 160°)  
PN Example: BP124-0UG-005B

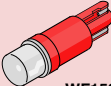
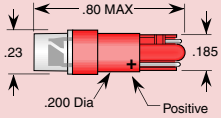
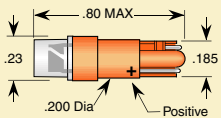
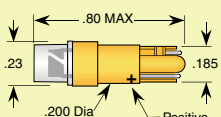
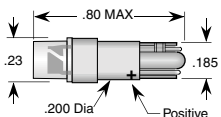
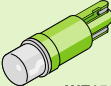
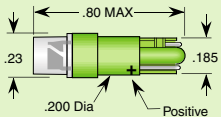
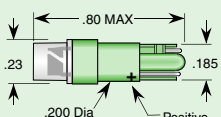
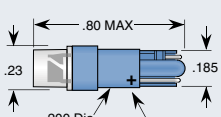


Series: BP124 (4 Chip 160°)  
PN Example: BP124-0CW-005B

Log # 122B Rev 09-2000

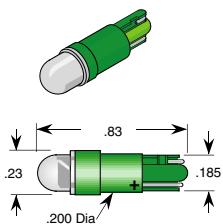


# T1-1/2 (4.5mm) Midget Wedge Based LEDs

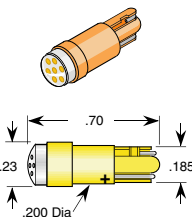
| Subminiature Packages                                                                                                              | Replaces Incandescent                                                               | Part Number                | Electrical-Optical Characteristics (Ta = 25°C) |                |               | Angle of Illumination | Special Features                                                                                                 |
|------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------|------------------------------------------------|----------------|---------------|-----------------------|------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                    |                                                                                     |                            | Voltage V typ                                  | Current mA typ | Intensity mcd |                       |                                                                                                                  |
| <b>660nm Ultra Red GaAlAs/GaAlAs</b><br><br>WF150 |    | 56,79,84,86 WF150-0UR-005V | 5V                                             | 20             | 115           | 120°                  | Contact Polarity V = DC only<br>Replace WF150 With W150 Narrow Beam (15°)<br>Intensity 1.6K mcd/52 Ft.Cd @ 20 mA |
|                                                                                                                                    |                                                                                     | 18,37,73,74 WF150-0UR-014V | 12/14V                                         | 20             | 115           |                       |                                                                                                                  |
|                                                                                                                                    |                                                                                     | 17, 85 WF150-0UR-024V      | 24V                                            | 15             | 85            |                       |                                                                                                                  |
|                                                                                                                                    |                                                                                     | 17, 85 WF150-0UR-028V      | 28V                                            | 15             | 85            |                       |                                                                                                                  |
| <b>612nm Super Orange InGaAlP</b><br><br>WF150    |    | 56,79,84,86 WF150-0UO-005V | 5V                                             | 20             | 130           | 120°                  | Contact Polarity V = DC only<br>Replace WF150 With W150 Narrow Beam (15°)<br>Intensity 3.5K mcd @ 20 mA          |
|                                                                                                                                    |                                                                                     | 18,37,73,74 WF150-0UO-014V | 12/14V                                         | 20             | 130           |                       |                                                                                                                  |
|                                                                                                                                    |                                                                                     | 17, 85 WF150-0UO-024V      | 24V                                            | 15             | 98            |                       |                                                                                                                  |
|                                                                                                                                    |                                                                                     | 17, 85 WF150-0UO-028V      | 28V                                            | 15             | 98            |                       |                                                                                                                  |
| <b>595nm Super Yellow InGaAlP</b><br><br>WF150    |    | 56,79,84,86 WF150-0UY-005V | 5V                                             | 20             | 116           | 120°                  | Contact Polarity V = DC only<br>Replace WF150 With W150 Narrow Beam (15°)<br>Intensity 3.2K mcd @ 20 mA          |
|                                                                                                                                    |                                                                                     | 18,37,73,74 WF150-0UY-014V | 12/14V                                         | 20             | 116           |                       |                                                                                                                  |
|                                                                                                                                    |                                                                                     | 17, 85 WF150-0UY-024V      | 24V                                            | 15             | 75            |                       |                                                                                                                  |
|                                                                                                                                    |                                                                                     | 17, 85 WF150-0UY-028V      | 28V                                            | 15             | 75            |                       |                                                                                                                  |
| <b>8000K Cool White SiC/GaN</b><br><br>WF150      |    | 56,79,84,86 WF150-0CW-005V | 5V                                             | 15             | 160           | 120°                  | Contact Polarity V = DC only<br>Replace WF150 With W150 Std. Beam (50°) Intensity 750 mcd/75 Ft. cd @ 15 mA      |
|                                                                                                                                    |                                                                                     | 18,37,73,74 WF150-0CW-014V | 12/14V                                         | 15             | 160           |                       |                                                                                                                  |
|                                                                                                                                    |                                                                                     | 17, 85 WF150-0CW-024V      | 24V                                            | 15             | 160           |                       |                                                                                                                  |
|                                                                                                                                    |                                                                                     | 17, 85 WF150-0CW-028V      | 28V                                            | 15             | 160           |                       |                                                                                                                  |
| <b>570nm Lime Green InGaAlP</b><br><br>WF150     |   | 56,79,84,86 WF150-0UG-005V | 5V                                             | 20             | 58            | 120°                  | Contact Polarity V = DC only<br>Replace WF150 With W150 Narrow Beam (12-15°)<br>Intensity 1K mcd @ 20 mA         |
|                                                                                                                                    |                                                                                     | 18,37,73,74 WF150-0UG-014V | 12/14V                                         | 20             | 58            |                       |                                                                                                                  |
|                                                                                                                                    |                                                                                     | 17, 85 WF150-0UG-024V      | 24V                                            | 15             | 44            |                       |                                                                                                                  |
|                                                                                                                                    |                                                                                     | 17, 85 WF150-0UG-028V      | 28V                                            | 15             | 44            |                       |                                                                                                                  |
| <b>525nm Aqua Green SiC/GaN</b><br><br>WF150    |  | 56,79,84,86 WF150-0AG-005V | 5V                                             | 15             | 400           | 120°                  | Contact Polarity V = DC only<br>Replace WF150 With W150 Narrow Beam (15°)<br>Intensity 7K mcd/250 Ft.Cd @ 15 mA  |
|                                                                                                                                    |                                                                                     | 18,37,73,74 WF150-0AG-014V | 12/14V                                         | 15             | 400           |                       |                                                                                                                  |
|                                                                                                                                    |                                                                                     | 17, 85 WF150-0AG-024V      | 24V                                            | 15             | 400           |                       |                                                                                                                  |
|                                                                                                                                    |                                                                                     | 17, 85 WF150-0AG-028V      | 28V                                            | 15             | 400           |                       |                                                                                                                  |
| <b>470nm Super Blue SiC/GaN</b><br><br>WF150    |  | 56,79,84,86 WF150-0PB-005V | 5V                                             | 15             | 125           | 120°                  | Contact Polarity V = DC only<br>Replace WF150 With W150 Std. Beam (15°) Intensity 2K mcd/60 Ft.Cd @ 15 mA        |
|                                                                                                                                    |                                                                                     | 18,37,73,74 WF150-0PB-014V | 12/14V                                         | 15             | 125           |                       |                                                                                                                  |
|                                                                                                                                    |                                                                                     | 17, 85 WF150-0PB-024V      | 24V                                            | 15             | 125           |                       |                                                                                                                  |
|                                                                                                                                    |                                                                                     | 17, 85 WF150-0PB-028V      | 28V                                            | 15             | 125           |                       |                                                                                                                  |

All dimensions in inches. For millimeters multiply by 25.4

## Options



Series: W150  
PN Example: W150-0AG-005B

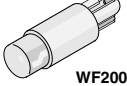


Series: W156  
PN Example: W156-0UO-005B

Log # 122C Rev 09-2000

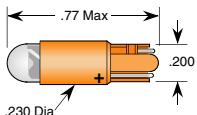


# T1-3/4 (5mm) Midget Wedge Based LEDs

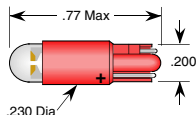
| Subminiature Packages                                                                                                              | Replaces Incandescent | Part Number    | Electrical-Optical Characteristics (Ta = 25°C) |                |               | Angle of Illumination | Special Features                                                                                                    |
|------------------------------------------------------------------------------------------------------------------------------------|-----------------------|----------------|------------------------------------------------|----------------|---------------|-----------------------|---------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                    |                       |                | Voltage V typ                                  | Current mA typ | Intensity mcd |                       |                                                                                                                     |
| <b>660nm Ultra Red GaAlAs/GaAlAs</b><br><br>WF200 | 56,79,84,86           | WF200-0UR-005V | 5V                                             | 20             | 115           | 120°                  | Contact Polarity<br>V = DC only<br>Replace WF200 With W200 Narrow Beam (15°)<br>Intensity 1.6K mcd/52 Ft.Cd @ 20 mA |
|                                                                                                                                    | 18,37,73,74           | WF200-0UR-014V | 12/14V                                         | 20             | 115           |                       |                                                                                                                     |
|                                                                                                                                    | 17, 85                | WF200-0UR-024V | 24V                                            | 15             | 85            |                       |                                                                                                                     |
|                                                                                                                                    | 17, 85                | WF200-0UR-028V | 28V                                            | 15             | 85            |                       |                                                                                                                     |
| <b>612nm Super Orange InGaAlP</b><br><br>WF200    | 56,79,84,86           | WF200-0UO-005V | 5V                                             | 20             | 130           | 120°                  | Contact Polarity<br>V = DC only<br>Replace WF200 With W200 Narrow Beam (15°)<br>Intensity 3.5K mcd @ 20 mA          |
|                                                                                                                                    | 18,37,73,74           | WF200-0UO-014V | 12/14V                                         | 20             | 130           |                       |                                                                                                                     |
|                                                                                                                                    | 17, 85                | WF200-0UO-024V | 24V                                            | 15             | 98            |                       |                                                                                                                     |
|                                                                                                                                    | 17, 85                | WF200-0UO-028V | 28V                                            | 15             | 98            |                       |                                                                                                                     |
| <b>595nm Super Yellow InGaAlP</b><br><br>WF200    | 56,79,84,86           | WF200-0UY-005V | 5V                                             | 20             | 116           | 120°                  | Contact Polarity<br>V = DC only<br>Replace WF200 With W200 Narrow Beam (15°)<br>Intensity 3.2K mcd @ 20 mA          |
|                                                                                                                                    | 18,37,73,74           | WF200-0UY-014V | 12/14V                                         | 20             | 116           |                       |                                                                                                                     |
|                                                                                                                                    | 17, 85                | WF200-0UY-024V | 24V                                            | 15             | 75            |                       |                                                                                                                     |
|                                                                                                                                    | 17, 85                | WF200-0UY-028V | 28V                                            | 15             | 75            |                       |                                                                                                                     |
| <b>8000K Cool White SiC/GaN</b><br><br>WF200      | 56,79,84,86           | WF200-0CW-005V | 5V                                             | 15             | 160           | 120°                  | Contact Polarity<br>V = DC only<br>Replace WF200 With W200 Std. Beam (50°) Intensity 750 mcd/75 Ft. cd @ 15 mA      |
|                                                                                                                                    | 18,37,73,74           | WF200-0CW-014V | 12/14V                                         | 15             | 160           |                       |                                                                                                                     |
|                                                                                                                                    | 17, 85                | WF200-0CW-024V | 24V                                            | 15             | 160           |                       |                                                                                                                     |
|                                                                                                                                    | 17, 85                | WF200-0CW-028V | 28V                                            | 15             | 160           |                       |                                                                                                                     |
| <b>570nm Lime Green InGaAlP</b><br><br>WF200    | 56,79,84,86           | WF200-0UG-005V | 5V                                             | 20             | 58            | 120°                  | Contact Polarity<br>V = DC only<br>Replace WF200 With W200 Narrow Beam (12-15°)<br>Intensity 1K mcd @ 20 mA         |
|                                                                                                                                    | 18,37,73,74           | WF200-0UG-014V | 12/14V                                         | 20             | 58            |                       |                                                                                                                     |
|                                                                                                                                    | 17, 85                | WF200-0UG-024V | 24V                                            | 15             | 44            |                       |                                                                                                                     |
|                                                                                                                                    | 17, 85                | WF200-0UG-028V | 28V                                            | 15             | 44            |                       |                                                                                                                     |
| <b>525nm Aqua Green SiC/GaN</b><br><br>WF200    | 56,79,84,86           | WF200-0AG-005V | 5V                                             | 15             | 400           | 120°                  | Contact Polarity<br>V = DC only<br>Replace WF200 With W200 Narrow Beam (15°)<br>Intensity 7K mcd/250 Ft.Cd @ 15 mA  |
|                                                                                                                                    | 18,37,73,74           | WF200-0AG-014V | 12/14V                                         | 15             | 400           |                       |                                                                                                                     |
|                                                                                                                                    | 17, 85                | WF200-0AG-024V | 24V                                            | 15             | 400           |                       |                                                                                                                     |
|                                                                                                                                    | 17, 85                | WF200-0AG-028V | 28V                                            | 15             | 400           |                       |                                                                                                                     |
| <b>470nm Super Blue SiC/GaN</b><br><br>WF200    | 56,79,84,86           | WF200-0PB-005V | 5V                                             | 15             | 125           | 120°                  | Contact Polarity<br>V = DC only<br>Replace WF200 With W200 Std. Beam (15°) Intensity 2K mcd/60 Ft.Cd @ 15 mA        |
|                                                                                                                                    | 18,37,73,74           | WF200-0PB-014V | 12/14V                                         | 15             | 125           |                       |                                                                                                                     |
|                                                                                                                                    | 17, 85                | WF200-0PB-024V | 24V                                            | 15             | 125           |                       |                                                                                                                     |
|                                                                                                                                    | 17, 85                | WF200-0PB-028V | 28V                                            | 15             | 125           |                       |                                                                                                                     |

All dimensions in inches. For millimeters multiply by 25.4

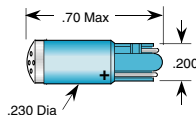
## Options



Series: W200  
PN Example: W200-0UO-005B



Series: W202  
PN Example: W202-0UR-005B

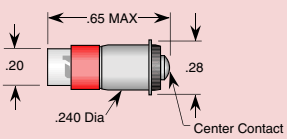
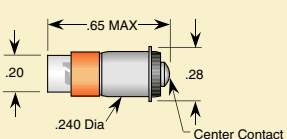
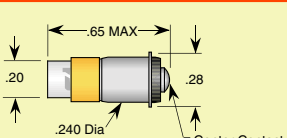
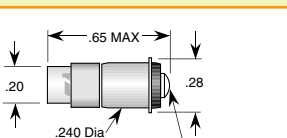
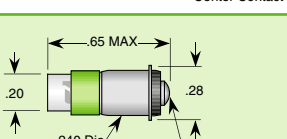
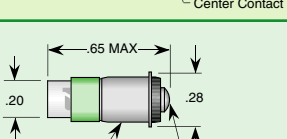
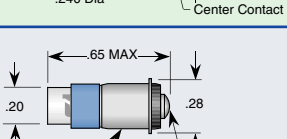


Series: W206  
PN Example: W206-0PB-005B

Log # 122D Rev 08-2000

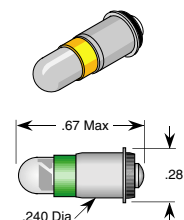


# T1-3/4 (5mm) Midget Flange Based LEDs

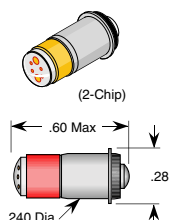
| Subminiature Packages                                                                                                                                                                                                   | Replaces Incandescent | Part Number    | Electrical-Optical Characteristics (Ta = 25°C) |                |               | Angle of Illumination | Special Features                                                                      |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|----------------|------------------------------------------------|----------------|---------------|-----------------------|---------------------------------------------------------------------------------------|
|                                                                                                                                                                                                                         |                       |                | Voltage V typ                                  | Current mA typ | Intensity mcd |                       |                                                                                       |
| <b>660nm Ultra Red GaAlAs/GaAlAs</b><br><br>FF200<br> | 328,345,350           | FF200-0UR-006B | 5/6V                                           | 20             | 115           | 120°                  | Center Contact Polarity<br>B = BiPolar AC/DC                                          |
|                                                                                                                                                                                                                         | 330,382,394           | FF200-0UR-014B | 12/14V                                         | 20             | 115           |                       | Replace FF200 With F200<br>Narrow Beam (15°)<br>Intensity 1.6K mcd/52<br>Ft.Cd @20 mA |
|                                                                                                                                                                                                                         | 327,376,387           | FF200-0UR-024B | 24V                                            | 15             | 85            |                       |                                                                                       |
|                                                                                                                                                                                                                         | 327,376,387           | FF200-0UR-028B | 28V                                            | 15             | 85            |                       |                                                                                       |
| <b>612nm Super Orange InGaAlP</b><br><br>FF200<br>    | 328,345,350           | FF200-0UO-006B | 5/6V                                           | 20             | 130           | 120°                  | Center Contact Polarity<br>B = BiPolar AC/DC                                          |
|                                                                                                                                                                                                                         | 330,382,394           | FF200-0UO-014B | 12/14V                                         | 20             | 130           |                       | Replace FF200 With F200<br>Narrow (15°) Beam<br>Intensity 3.5K mcd@20 mA              |
|                                                                                                                                                                                                                         | 327,376,387           | FF200-0UO-024B | 24V                                            | 15             | 98            |                       |                                                                                       |
|                                                                                                                                                                                                                         | 327,376,387           | FF200-0UO-028B | 28V                                            | 15             | 98            |                       |                                                                                       |
| <b>595nm Super Yellow InGaAlP</b><br><br>FF200<br>    | 328,345,350           | FF200-0UY-006B | 5/6V                                           | 20             | 116           | 120°                  | Center Contact Polarity<br>B = BiPolar AC/DC                                          |
|                                                                                                                                                                                                                         | 330,382,394           | FF200-0UY-014B | 12/14V                                         | 20             | 116           |                       | Replace FF200 With F200<br>Narrow (15°) Beam<br>Intensity 3.2K mcd@20 mA              |
|                                                                                                                                                                                                                         | 327,376,387           | FF200-0UY-024B | 24V                                            | 15             | 75            |                       |                                                                                       |
|                                                                                                                                                                                                                         | 327,376,387           | FF200-0UY-028B | 28V                                            | 15             | 75            |                       |                                                                                       |
| <b>8000K Cool White SiC/GaN</b><br><br>FF200<br>      | 328,345,350           | FF200-0CW-006B | 5V                                             | 15             | 160           | 120°                  | Center Contact Polarity<br>B = BiPolar AC/DC                                          |
|                                                                                                                                                                                                                         | 330,382,394           | FF200-0CW-014B | 12/14V                                         | 15             | 160           |                       | Replace FF200 With F200<br>Std. (50°) Beam Intensity<br>750 mcd/75 Ft. cd             |
|                                                                                                                                                                                                                         | 327,376,387           | FF200-0CW-024B | 24V                                            | 15             | 160           |                       |                                                                                       |
|                                                                                                                                                                                                                         | 327,376,387           | FF200-0CW-028B | 28V                                            | 15             | 160           |                       |                                                                                       |
| <b>570nm Lime Green InGaAlP</b><br><br>FF200<br>    | 328,345,350           | FF200-0UG-006B | 5/6V                                           | 20             | 58            | 120°                  | Center Contact Polarity<br>B = BiPolar AC/DC                                          |
|                                                                                                                                                                                                                         | 330,382,394           | FF200-0UG-014B | 12/14V                                         | 20             | 58            |                       | Replace FF200 With F200<br>Narrow (12-15°) Beam<br>Intensity 1K mcd@ 20 mA            |
|                                                                                                                                                                                                                         | 327,376,387           | FF200-0UG-024B | 24V                                            | 15             | 44            |                       |                                                                                       |
|                                                                                                                                                                                                                         | 327,376,387           | FF200-0UG-028B | 28V                                            | 15             | 44            |                       |                                                                                       |
| <b>525nm Aqua Green SiC/GaN</b><br><br>FF200<br>  | 328,345,350           | FF200-0AG-006B | 5/6V                                           | 15             | 400           | 120°                  | Center Contact Polarity<br>B = BiPolar AC/DC                                          |
|                                                                                                                                                                                                                         | 330,382,394           | FF200-0AG-014B | 12/14V                                         | 15             | 400           |                       | Replace FF200 With F200<br>Narrow (15°) Beam<br>Intensity 7K mcd/250 Ft.Cd            |
|                                                                                                                                                                                                                         | 327,376,387           | FF200-0AG-024B | 24V                                            | 15             | 400           |                       |                                                                                       |
|                                                                                                                                                                                                                         | 327,376,387           | FF200-0AG-028B | 28V                                            | 15             | 400           |                       |                                                                                       |
| <b>470nm Super Blue SiC/GaN</b><br><br>FF200<br>  | 328,345,350           | FF200-0PB-006B | 5/6V                                           | 15             | 125           | 120°                  | Center Contact Polarity<br>B = BiPolar AC/DC                                          |
|                                                                                                                                                                                                                         | 330,382,394           | FF200-0PB-014B | 12/14V                                         | 15             | 125           |                       | Replace FF200 With F200<br>Std. (15°) Beam Intensity<br>2K mcd/60 Ft.Cd               |
|                                                                                                                                                                                                                         | 327,376,387           | FF200-0PB-024B | 24V                                            | 15             | 125           |                       |                                                                                       |
|                                                                                                                                                                                                                         | 327,376,387           | FF200-0PB-028B | 28V                                            | 15             | 125           |                       |                                                                                       |

All dimensions in inches. For millimeters multiply by 25.4

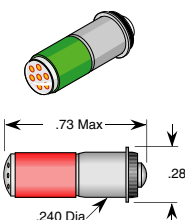
## Options



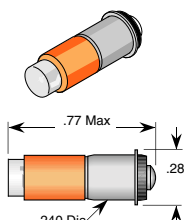
Series: F200  
PN Example: F200-0AG-006B



Series: F206  
PN Example: F206-0UR-006B



Series: FL206  
PN Example: FL206-0UR-006B



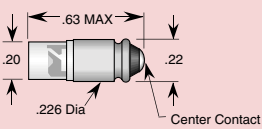
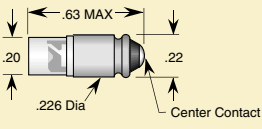
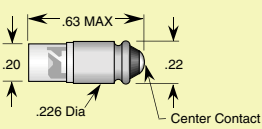
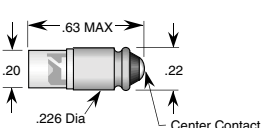
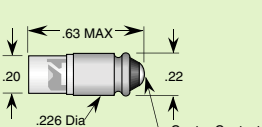
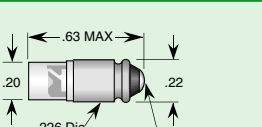
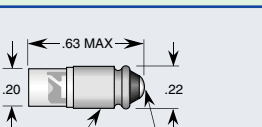
Series: FFL200  
PN Example: FFL200-0UO-006B



Log # 122Dd Rev 09-2000

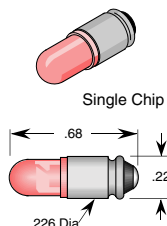


# T1-3/4 (5mm) Midget Groove Based LEDs

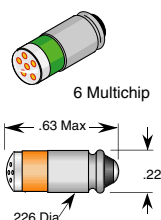
| Subminiature Packages                                                                                                                                                                                                   | Replaces Incandescent | Part Number    | Electrical-Optical Characteristics (Ta = 25°C) |                |               | Angle of Illumination | Special Features                                                                       |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|----------------|------------------------------------------------|----------------|---------------|-----------------------|----------------------------------------------------------------------------------------|
|                                                                                                                                                                                                                         |                       |                | Voltage V typ                                  | Current mA typ | Intensity mcd |                       |                                                                                        |
| <b>660nm Ultra Red GaAlAs/GaAlAs</b><br><br>GF200<br> | 337,379,398           | GF200-0UR-006B | 5/6V                                           | 20             | 115           | 120°                  | Center Contact Polarity<br>B = BiPolar AC/DC                                           |
|                                                                                                                                                                                                                         | 386                   | GF200-0UR-014B | 12/14V                                         | 20             | 115           |                       | Replace GF200 With G200<br>Narrow (15°) Beam<br>Intensity 1.6K mcd/52 Ft.Cd<br>@ 20 mA |
|                                                                                                                                                                                                                         | 334,388               | GF200-0UR-024B | 24V                                            | 15             | 85            |                       |                                                                                        |
|                                                                                                                                                                                                                         | 334,388               | GF200-0UR-028B | 28V                                            | 15             | 85            |                       |                                                                                        |
| <b>612nm Super Orange InGaAlP</b><br><br>GF200<br>    | 337,379,398           | GF200-0UO-006B | 5/6V                                           | 20             | 130           | 120°                  | Center Contact Polarity<br>B = BiPolar AC/DC                                           |
|                                                                                                                                                                                                                         | 386                   | GF200-0UO-014B | 12/14V                                         | 20             | 130           |                       | Replace GF200 With G200<br>Narrow (15°) Beam<br>Intensity 3.5K mcd@ 20 mA              |
|                                                                                                                                                                                                                         | 334,388               | GF200-0UO-024B | 24V                                            | 15             | 98            |                       |                                                                                        |
|                                                                                                                                                                                                                         | 334,388               | GF200-0UO-028B | 28V                                            | 15             | 98            |                       |                                                                                        |
| <b>595nm Super Yellow InGaAlP</b><br><br>GF200<br>    | 337,379,398           | GF200-0UY-006B | 5/6V                                           | 20             | 116           | 120°                  | Center Contact Polarity<br>B = BiPolar AC/DC                                           |
|                                                                                                                                                                                                                         | 386                   | GF200-0UY-014B | 12/14V                                         | 20             | 116           |                       | Replace GF200 With G200<br>Narrow (15°) Beam<br>Intensity 3.2K mcd@ 20 mA              |
|                                                                                                                                                                                                                         | 334,388               | GF200-0UY-024B | 24V                                            | 15             | 75            |                       |                                                                                        |
|                                                                                                                                                                                                                         | 334,388               | GF200-0UY-028B | 28V                                            | 15             | 75            |                       |                                                                                        |
| <b>8000K Cool White SiC/GaN</b><br><br>GF200<br>      | 337,379,398           | GF200-0CW-006B | 5/6V                                           | 15             | 160           | 120°                  | Center Contact Polarity<br>B = BiPolar AC/DC                                           |
|                                                                                                                                                                                                                         | 386                   | GF200-0CW-014B | 12/14V                                         | 15             | 160           |                       | Replace GF200 With G200<br>Std. (50°) Beam Intensity<br>750 mcd/75 Ft. cd              |
|                                                                                                                                                                                                                         | 334,388               | GF200-0CW-024B | 24V                                            | 15             | 160           |                       |                                                                                        |
|                                                                                                                                                                                                                         | 334,388               | GF200-0CW-028B | 28V                                            | 15             | 160           |                       |                                                                                        |
| <b>570nm Lime Green InGaAlP</b><br><br>GF200<br>   | 337,379,398           | GF200-0UG-006B | 5/6V                                           | 20             | 58            | 120°                  | Center Contact Polarity<br>B = BiPolar AC/DC                                           |
|                                                                                                                                                                                                                         | 386                   | GF200-0UG-014B | 12/14V                                         | 20             | 58            |                       | Replace GF200 With G200<br>Narrow (12-15°) Beam<br>Intensity 1K mcd@ 20 mA             |
|                                                                                                                                                                                                                         | 334,388               | GF200-0UG-024B | 24V                                            | 15             | 44            |                       |                                                                                        |
|                                                                                                                                                                                                                         | 334,388               | GF200-0UG-028B | 28V                                            | 15             | 44            |                       |                                                                                        |
| <b>525nm Aqua Green SiC/GaN</b><br><br>GF200<br>  | 337,379,398           | GF200-0AG-006B | 5/6V                                           | 15             | 400           | 120°                  | Center Contact Polarity<br>B = BiPolar AC/DC                                           |
|                                                                                                                                                                                                                         | 386                   | GF200-0AG-014B | 12/14V                                         | 15             | 400           |                       | Replace GF200 With G200<br>Narrow (15°) Beam<br>Intensity 7K mcd/250 Ft.Cd             |
|                                                                                                                                                                                                                         | 334,388               | GF200-0AG-024B | 24V                                            | 15             | 400           |                       |                                                                                        |
|                                                                                                                                                                                                                         | 334,388               | GF200-0AG-028B | 28V                                            | 15             | 400           |                       |                                                                                        |
| <b>470nm Super Blue SiC/GaN</b><br><br>GF200<br>  | 337,379,398           | GF200-0PB-006B | 5/6V                                           | 15             | 125           | 120°                  | Center Contact Polarity<br>B = BiPolar AC/DC                                           |
|                                                                                                                                                                                                                         | 386                   | GF200-0PB-014B | 12/14V                                         | 15             | 125           |                       | Replace GF200 With G200<br>Std. (15°) Beam Intensity<br>2K mcd/60 Ft.Cd                |
|                                                                                                                                                                                                                         | 334,388               | GF200-0PB-024B | 24V                                            | 15             | 125           |                       |                                                                                        |
|                                                                                                                                                                                                                         | 334,388               | GF200-0PB-028B | 28V                                            | 15             | 125           |                       |                                                                                        |

All dimensions in inches. For millimeters multiply by 25.4

## Options



Series: G200  
PN Example: G200-0UR-028B



Series: G206  
PN Example: G206-0UO-028B

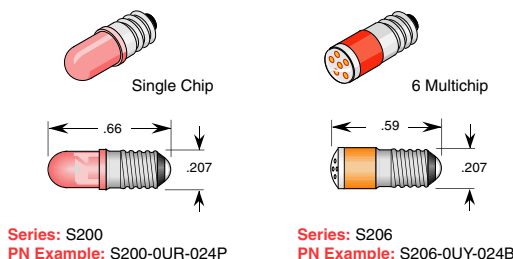


# T1-3/4 (5mm) Midget Screw Based LEDs

| Subminiature Packages                                                                                                                     | Replaces Incandescent | Part Number    | Electrical-Optical Characteristics (Ta = 25°C) |                |               | Angle of Illumination | Special Features                                                                                                                             |
|-------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|----------------|------------------------------------------------|----------------|---------------|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                           |                       |                | Voltage V typ                                  | Current mA typ | Intensity mcd |                       |                                                                                                                                              |
| <b>660nm Ultra Red GaAlAs/GaAlAs</b><br><br><b>SF200</b> | 378,1768,1775         | SF200-0UR-005P | 5V                                             | 20             | 115           | 120°                  | Center Contact Polarity<br>P = Positive N = Negative<br><br>Replace SF200 With S200 Narrow (15°) Beam<br>Intensity 1.6K mcd/52 Ft.Cd @ 20 mA |
|                                                                                                                                           | 336,383               | SF200-0UR-014P | 12/14V                                         | 20             | 115           |                       |                                                                                                                                              |
|                                                                                                                                           | 342                   | SF200-0UR-024P | 24V                                            | 15             | 85            |                       |                                                                                                                                              |
|                                                                                                                                           | 335,342,369,399       | SF200-0UR-028P | 28V                                            | 15             | 85            |                       |                                                                                                                                              |
| <b>612nm Super Orange InGaIP</b><br><br><b>SF200</b>     | 378,1768,1775         | SF200-0UO-005P | 5V                                             | 20             | 130           | 120°                  | Center Contact Polarity<br>P = Positive N = Negative<br><br>Replace SF200 With S200 Narrow (15°) Beam<br>Intensity 3.5K mcd@20 mA            |
|                                                                                                                                           | 336,383               | SF200-0UO-014P | 12/14V                                         | 20             | 130           |                       |                                                                                                                                              |
|                                                                                                                                           | 342                   | SF200-0UO-024P | 24V                                            | 15             | 98            |                       |                                                                                                                                              |
|                                                                                                                                           | 335,342,369,399       | SF200-0UO-028P | 28V                                            | 15             | 98            |                       |                                                                                                                                              |
| <b>595nm Super Yellow InGaIP</b><br><br><b>SF200</b>     | 378,1768,1775         | SF200-0UY-005P | 5V                                             | 20             | 116           | 120°                  | Center Contact Polarity<br>P = Positive N = Negative<br><br>Replace SF200 With S200 Narrow (15°) Beam<br>Intensity 3.2K mcd@20 mA            |
|                                                                                                                                           | 336,383               | SF200-0UY-014P | 12/14V                                         | 20             | 116           |                       |                                                                                                                                              |
|                                                                                                                                           | 342                   | SF200-0UY-024P | 24V                                            | 15             | 75            |                       |                                                                                                                                              |
|                                                                                                                                           | 335,342,369,399       | SF200-0UY-028P | 28V                                            | 15             | 75            |                       |                                                                                                                                              |
| <b>8000K Cool White SiC/GaN</b><br><br><b>SF200</b>      | 378,1768,1775         | SF200-0CW-005P | 5/6V                                           | 15             | 160           | 120°                  | Center Contact Polarity<br>P = Positive N = Negative<br><br>Replace SF200 With S200 Std. (50°) Beam Intensity 750 mcd/75 Ft. cd              |
|                                                                                                                                           | 336,383               | SF200-0CW-014P | 12/14V                                         | 15             | 160           |                       |                                                                                                                                              |
|                                                                                                                                           | 342                   | SF200-0CW-024P | 24V                                            | 15             | 160           |                       |                                                                                                                                              |
|                                                                                                                                           | 335,342,369,399       | SF200-0CW-028P | 28V                                            | 15             | 160           |                       |                                                                                                                                              |
| <b>570nm Lime Green InGaIP</b><br><br><b>SF200</b>      | 378,1768,1775         | SF200-0UG-005P | 5V                                             | 20             | 58            | 120°                  | Center Contact Polarity<br>P = Positive N = Negative<br><br>Replace SF200 With S200 Narrow (12-15°) Beam<br>Intensity 1K mcd@ 20 mA          |
|                                                                                                                                           | 336,383               | SF200-0UG-014P | 12/14V                                         | 20             | 58            |                       |                                                                                                                                              |
|                                                                                                                                           | 342                   | SF200-0UG-024P | 24V                                            | 15             | 44            |                       |                                                                                                                                              |
|                                                                                                                                           | 335,342,369,399       | SF200-0UG-028P | 28V                                            | 15             | 44            |                       |                                                                                                                                              |
| <b>525nm Aqua Green SiC/GaN</b><br><br><b>SF200</b>    | 378,1768,1775         | SF200-0AG-005P | 5V                                             | 15             | 400           | 120°                  | Center Contact Polarity<br>P = Positive N = Negative<br><br>Replace SF200 With S200 Narrow (15°) Beam<br>Intensity 7K mcd/250 Ft.Cd          |
|                                                                                                                                           | 336,383               | SF200-0AG-014P | 12/14V                                         | 15             | 400           |                       |                                                                                                                                              |
|                                                                                                                                           | 342                   | SF200-0AG-024P | 24V                                            | 15             | 400           |                       |                                                                                                                                              |
|                                                                                                                                           | 335,342,369,399       | SF200-0AG-028P | 28V                                            | 15             | 400           |                       |                                                                                                                                              |
| <b>470nm Super Blue SiC/GaN</b><br><br><b>SF200</b>    | 378,1768,1775         | SF200-0PB-005P | 5V                                             | 15             | 125           | 120°                  | Center Contact Polarity<br>P = Positive N = Negative<br><br>Replace SF200 With S200 Std. (15°) Beam Intensity 2K mcd/60 Ft.Cd                |
|                                                                                                                                           | 336,383               | SF200-0PB-014P | 12/14V                                         | 15             | 125           |                       |                                                                                                                                              |
|                                                                                                                                           | 342                   | SF200-0PB-024P | 24V                                            | 15             | 125           |                       |                                                                                                                                              |
|                                                                                                                                           | 335,342,369,399       | SF200-0PB-028P | 28V                                            | 15             | 125           |                       |                                                                                                                                              |

All dimensions in inches. For millimeters multiply by 25.4

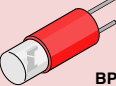
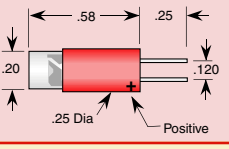
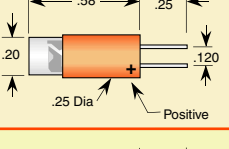
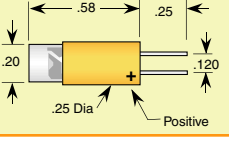
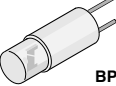
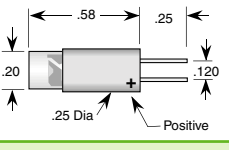
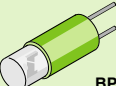
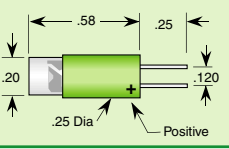
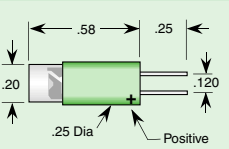
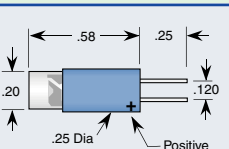
## Options



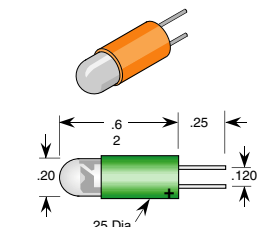
Log # 122F Rev 09-2000



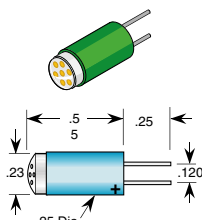
## T1-3/4 (5mm) Midget Bi-Pin Based LEDs

| Subminiature Packages                                                                                                               | Replaces Incandescent                                                               | Part Number | Electrical-Optical Characteristics (Ta = 25°C) |                |               | Angle of Illumination | Special Features                                                                                                           |
|-------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------|------------------------------------------------|----------------|---------------|-----------------------|----------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                     |                                                                                     |             | Voltage V typ                                  | Current mA typ | Intensity mcd |                       |                                                                                                                            |
| <b>660nm Ultra Red GaAlAs/GaAlAs</b><br><br>BPF200 |    | 7328        | BPF200-0UR-005V                                | 5V             | 20            | 115                   | 120°<br>Contact Polarity<br>V = DC only<br>Replace BPF200 With BP200 Narrow (15°) Beam Intensity 1.6K mcd/52 Ft.Cd @ 20 mA |
|                                                                                                                                     |                                                                                     | 7371        | BPF200-0UR-012V                                | 12V            | 20            | 115                   |                                                                                                                            |
|                                                                                                                                     |                                                                                     | 7330,7382   | BPF200-0UR-014V                                | 12/14V         | 20            | 115                   |                                                                                                                            |
|                                                                                                                                     |                                                                                     | 7327,7387   | BPF200-0UR-024V                                | 24V            | 15            | 85                    |                                                                                                                            |
|                                                                                                                                     |                                                                                     | 7327,7387   | BPF200-0UR-028V                                | 28V            | 15            | 85                    |                                                                                                                            |
| <b>612nm Super Orange InGaAlP</b><br><br>BPF200    |    | 7328        | BPF200-0UO-005V                                | 5V             | 20            | 130                   | 120°<br>Contact Polarity<br>V = DC only<br>Replace BPF200 With BP200 Narrow (15°) Beam Intensity 3.5K mcd @ 20 mA          |
|                                                                                                                                     |                                                                                     | 7371        | BPF200-0UO-012V                                | 12V            | 20            | 130                   |                                                                                                                            |
|                                                                                                                                     |                                                                                     | 7330,7382   | BPF200-0UO-014V                                | 12/14V         | 20            | 130                   |                                                                                                                            |
|                                                                                                                                     |                                                                                     | 7327,7387   | BPF200-0UO-024V                                | 24V            | 15            | 98                    |                                                                                                                            |
|                                                                                                                                     |                                                                                     | 7327,7387   | BPF200-0UO-028V                                | 28V            | 15            | 98                    |                                                                                                                            |
| <b>595nm Super Yellow InGaAlP</b><br><br>BPF200    |    | 7328        | BPF200-0UY-005V                                | 5V             | 20            | 116                   | 120°<br>Contact Polarity<br>V = DC only<br>Replace BPF200 With BP200 Narrow (15°) Beam Intensity 3.2K mcd @ 20 mA          |
|                                                                                                                                     |                                                                                     | 7371        | BPF200-0UY-012V                                | 12V            | 20            | 116                   |                                                                                                                            |
|                                                                                                                                     |                                                                                     | 7330,7382   | BPF200-0UY-014V                                | 12/14V         | 20            | 116                   |                                                                                                                            |
|                                                                                                                                     |                                                                                     | 7327,7387   | BPF200-0UY-024V                                | 24V            | 15            | 75                    |                                                                                                                            |
|                                                                                                                                     |                                                                                     | 7327,7387   | BPF200-0UY-028V                                | 28V            | 15            | 75                    |                                                                                                                            |
| <b>8000K Cool White SiC/GaN</b><br><br>BPF200      |    | 7328        | BPF200-0CW-005V                                | 5V             | 15            | 160                   | 120°<br>Contact Polarity<br>V = DC only<br>Replace BPF200 With BP200 Std. (50°) Beam Intensity 750 mcd/75 Ft. cd           |
|                                                                                                                                     |                                                                                     | 7371        | BPF200-0CW-012V                                | 12V            | 15            | 160                   |                                                                                                                            |
|                                                                                                                                     |                                                                                     | 7330,7382   | BPF200-0CW-014V                                | 12/14V         | 15            | 160                   |                                                                                                                            |
|                                                                                                                                     |                                                                                     | 7327,7387   | BPF200-0CW-024V                                | 24V            | 15            | 160                   |                                                                                                                            |
|                                                                                                                                     |                                                                                     | 7327,7387   | BPF200-0CW-028V                                | 28V            | 15            | 160                   |                                                                                                                            |
| <b>570nm Lime Green InGaAlP</b><br><br>BPF200    |   | 7328        | BPF200-0UG-005V                                | 5V             | 20            | 58                    | 120°<br>Contact Polarity<br>V = DC only<br>Replace BPF200 With BP200 Narrow (12-15°) Beam Intensity 1K mcd @ 20 mA         |
|                                                                                                                                     |                                                                                     | 7371        | BPF200-0UG-012V                                | 12V            | 20            | 58                    |                                                                                                                            |
|                                                                                                                                     |                                                                                     | 7330,7382   | BPF200-0UG-014V                                | 12/14V         | 20            | 58                    |                                                                                                                            |
|                                                                                                                                     |                                                                                     | 7327,7387   | BPF200-0UG-024V                                | 24V            | 15            | 44                    |                                                                                                                            |
|                                                                                                                                     |                                                                                     | 7327,7387   | BPF200-0UG-028V                                | 28V            | 15            | 44                    |                                                                                                                            |
| <b>525nm Aqua Green SiC/GaN</b><br><br>BPF200    |  | 7328        | BPF200-0AG-005V                                | 5V             | 15            | 400                   | 120°<br>Contact Polarity<br>V = DC only<br>Replace BPF200 With BP200 Narrow (15°) Beam Intensity 7K mcd/250 Ft.Cd          |
|                                                                                                                                     |                                                                                     | 7371        | BPF200-0AG-012V                                | 12V            | 15            | 400                   |                                                                                                                            |
|                                                                                                                                     |                                                                                     | 7330,7382   | BPF200-0AG-014V                                | 12/14V         | 15            | 400                   |                                                                                                                            |
|                                                                                                                                     |                                                                                     | 7327,7387   | BPF200-0AG-024V                                | 24V            | 15            | 400                   |                                                                                                                            |
|                                                                                                                                     |                                                                                     | 7327,7387   | BPF200-0AG-028V                                | 28V            | 15            | 400                   |                                                                                                                            |
| <b>470nm Super Blue SiC/GaN</b><br><br>BPF200    |  | 7328        | BPF200-0PB-005V                                | 5V             | 15            | 125                   | 120°<br>Contact Polarity<br>V = DC only<br>Replace BPF200 With BP200 Std. (15°) Beam Intensity 2K mcd/60 Ft.Cd             |
|                                                                                                                                     |                                                                                     | 7371        | BPF200-0PB-012V                                | 12V            | 15            | 125                   |                                                                                                                            |
|                                                                                                                                     |                                                                                     | 7330,7382   | BPF200-0PB-014V                                | 12/14V         | 15            | 125                   |                                                                                                                            |
|                                                                                                                                     |                                                                                     | 7327,7387   | BPF200-0PB-024V                                | 24V            | 15            | 125                   |                                                                                                                            |
|                                                                                                                                     |                                                                                     | 7327,7387   | BPF200-0PB-028V                                | 28V            | 15            | 125                   |                                                                                                                            |

All dimensions in inches. For millimeters multiply by 25.4



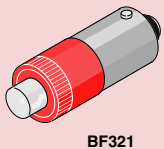
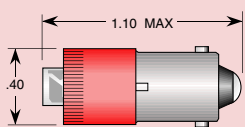
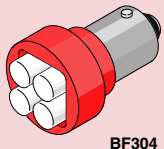
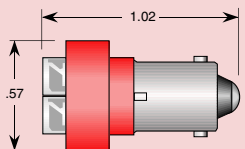
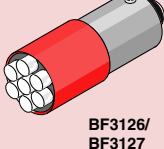
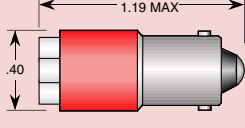
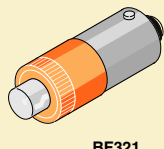
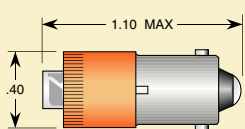
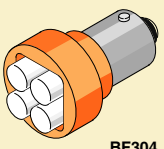
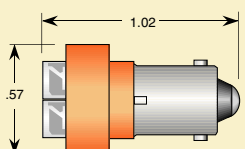
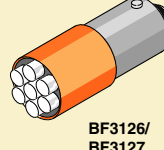
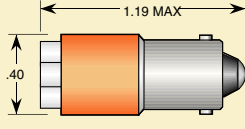
Series: BP200  
PN Example: BP200-0AG-014V



Series: BP203  
PN Example: BP203-1UB-014V



# T3-1/4 (9mm) Miniature Based LED Lamps

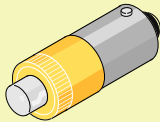
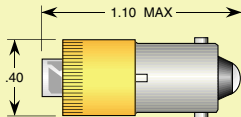
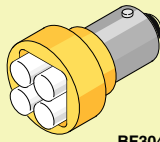
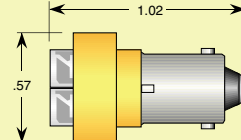
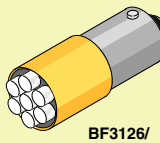
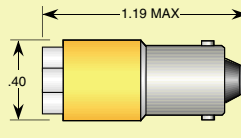
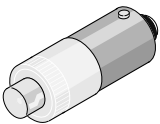
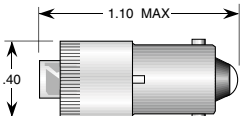
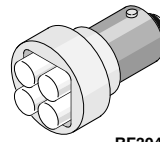
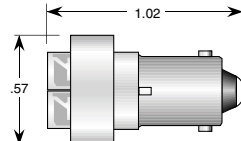
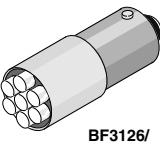
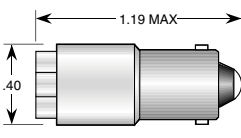
| Miniature Packages                                                                                                                               |                                                                                                                                          | Replaces Incandescent | Part Number     | Electrical-Optical Characteristics (Ta = 25°C) |                |               | Angle of Illumination | Special Features                                                                                                                                       |
|--------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|-----------------|------------------------------------------------|----------------|---------------|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                  |                                                                                                                                          |                       |                 | Voltage V typ                                  | Current mA typ | Intensity mcd |                       |                                                                                                                                                        |
| <b>660nm Ultra Red GaAlAs/GaAs</b><br><br><b>BF321</b>          | <b>T3-1/4 (9mm) Miniature Bayonet</b><br>               | 6MB, 44, 47, 755      | BF321-0UR-006B  | 5/6V                                           | 20             | 115           | 120°                  | Center Contact Polarity<br>B = Bipolar AC/DC<br>A = AC only<br><br>Replace BF321 With B321 for Narrow Beam (15°) 1.6K mcd/52 Ft.Cd @ 20mA              |
|                                                                                                                                                  |                                                                                                                                          | 12MB, 756             | BF321-0UR-014B  | 12/14V                                         | 20             | 115           |                       |                                                                                                                                                        |
|                                                                                                                                                  |                                                                                                                                          | 24MB,                 | BF321-0UR-024B  | 24V                                            | 20             | 115           |                       |                                                                                                                                                        |
|                                                                                                                                                  |                                                                                                                                          | 313,757,1819,1829     | BF321-0UR-028B  | 28V                                            | 20             | 115           |                       |                                                                                                                                                        |
|                                                                                                                                                  |                                                                                                                                          | 48MB                  | BF321-0UR-048B  | 48V                                            | 12             | 65            |                       |                                                                                                                                                        |
|                                                                                                                                                  |                                                                                                                                          | 60MB,1835             | BF321-0UR-060B  | 60V                                            | 12             | 65            |                       |                                                                                                                                                        |
|                                                                                                                                                  |                                                                                                                                          | 120MB, NE51H          | BF321-0UR-120A  | 120VAC                                         | 10             | 50            |                       |                                                                                                                                                        |
| <b>660nm Ultra Red GaAlAs/GaAs</b><br><br><b>BF304</b>           | <b>T3-1/4 (9mm) Miniature Bayonet LED Cluster</b><br>   | 6MB, 44, 47, 755      | BF304-0UR-006B  | 5/6V                                           | 80             | 460           | 120°                  | Center Contact Polarity<br>B = Bipolar AC/DC<br>A = AC only<br><br>Replace BF304 With B304 for Narrow Beam (15°) 6.4K mcd/208 Ft.Cd @ 20mA             |
|                                                                                                                                                  |                                                                                                                                          | 12MB, 756             | BF304-0UR-014B  | 12/14V                                         | 40             | 460           |                       |                                                                                                                                                        |
|                                                                                                                                                  |                                                                                                                                          | 24MB,                 | BF304-0UR-024B  | 24V                                            | 20             | 460           |                       |                                                                                                                                                        |
|                                                                                                                                                  |                                                                                                                                          | 313,757,1819,1829     | BF304-0UR-028B  | 28V                                            | 20             | 460           |                       |                                                                                                                                                        |
|                                                                                                                                                  |                                                                                                                                          | 48MB                  | BF304-0UR-048B  | 48V                                            | 12             | 260           |                       |                                                                                                                                                        |
|                                                                                                                                                  |                                                                                                                                          | 60MB,1835             | BF304-0UR-060B  | 60V                                            | 12             | 260           |                       |                                                                                                                                                        |
|                                                                                                                                                  |                                                                                                                                          | 120MB, NE51H          | BF304-0UR-120A  | 120VAC                                         | 10             | 200           |                       |                                                                                                                                                        |
| <b>660nm Ultra Red GaAlAs/GaAs</b><br><br><b>BF3126/ BF3127</b> | <b>T3-1/4 (9mm) Miniature Bayonet LED Cluster</b><br>  | 6MB, 44, 47, 755      | BF3126-0UR-006B | 5/6V                                           | 120            | 600           | 120°                  | Center Contact Polarity<br>B = Bipolar AC/DC<br>A = AC only<br><br>Replace BF3126/3127 With B3126/3127 for Narrow Beam (65°) 1.3K mcd/210 Ft.Cd @ 20mA |
|                                                                                                                                                  |                                                                                                                                          | 12MB, 756             | BF3126-0UR-014B | 12/14V                                         | 40             | 600           |                       |                                                                                                                                                        |
|                                                                                                                                                  |                                                                                                                                          | 24MB,                 | BF3127-0UR-024B | 24V                                            | 20             | 700           |                       |                                                                                                                                                        |
|                                                                                                                                                  |                                                                                                                                          | 313,757,1819,1829     | BF3127-0UR-028B | 28V                                            | 20             | 700           |                       |                                                                                                                                                        |
|                                                                                                                                                  |                                                                                                                                          | 48MB                  | BF3127-0UR-048B | 48V                                            | 12             | 230           |                       |                                                                                                                                                        |
|                                                                                                                                                  |                                                                                                                                          | 60MB,1835             | BF3127-0UR-060B | 60V                                            | 12             | 230           |                       |                                                                                                                                                        |
|                                                                                                                                                  |                                                                                                                                          | 120MB, NE51H          | BF3127-0UR-120A | 120VAC                                         | 10             | 160           |                       |                                                                                                                                                        |
| <b>612nm Super Orange InGaAlP</b><br><br><b>BF321</b>          | <b>T3-1/4 (9mm) Miniature Bayonet</b><br>             | 6MB, 44, 47, 755      | BF321-0UO-006B  | 5/6V                                           | 20             | 130           | 120°                  | Center Contact Polarity<br>B = Bipolar AC/DC<br>A = AC only<br><br>Replace BF321 With B321 for Narrow Beam (15°) 3.5 K mcd @ 20mA                      |
|                                                                                                                                                  |                                                                                                                                          | 12MB, 756             | BF321-0UO-014B  | 12/14V                                         | 20             | 130           |                       |                                                                                                                                                        |
|                                                                                                                                                  |                                                                                                                                          | 24MB,                 | BF321-0UO-024B  | 24V                                            | 20             | 130           |                       |                                                                                                                                                        |
|                                                                                                                                                  |                                                                                                                                          | 313,757,1819,1829     | BF321-0UO-028B  | 28V                                            | 20             | 130           |                       |                                                                                                                                                        |
|                                                                                                                                                  |                                                                                                                                          | 48MB                  | BF321-0UO-048B  | 48V                                            | 12             | 78            |                       |                                                                                                                                                        |
|                                                                                                                                                  |                                                                                                                                          | 60MB,1835             | BF321-0UO-060B  | 60V                                            | 12             | 78            |                       |                                                                                                                                                        |
|                                                                                                                                                  |                                                                                                                                          | 120MB, NE51H          | BF321-0UO-120A  | 120VAC                                         | 10             | 65            |                       |                                                                                                                                                        |
| <b>612nm Super Orange InGaAlP</b><br><br><b>BF304</b>          | <b>T3-1/4 (9mm) Miniature Bayonet LED Cluster</b><br> | 6MB, 44, 47, 755      | BF304-0UO-006B  | 5/6V                                           | 80             | 520           | 120°                  | Center Contact Polarity<br>B = Bipolar AC/DC<br>A = AC only<br><br>Replace BF304 With B304 for Narrow Beam (15°) 14 K mcd @ 20mA                       |
|                                                                                                                                                  |                                                                                                                                          | 12MB, 756             | BF304-0UO-014B  | 12/14V                                         | 40             | 520           |                       |                                                                                                                                                        |
|                                                                                                                                                  |                                                                                                                                          | 24MB,                 | BF304-0UO-024B  | 24V                                            | 20             | 520           |                       |                                                                                                                                                        |
|                                                                                                                                                  |                                                                                                                                          | 313,757,1819,1829     | BF304-0UO-028B  | 28V                                            | 20             | 520           |                       |                                                                                                                                                        |
|                                                                                                                                                  |                                                                                                                                          | 48MB                  | BF304-0UO-048B  | 48V                                            | 12             | 312           |                       |                                                                                                                                                        |
|                                                                                                                                                  |                                                                                                                                          | 60MB,1835             | BF304-0UO-060B  | 60V                                            | 12             | 312           |                       |                                                                                                                                                        |
|                                                                                                                                                  |                                                                                                                                          | 120MB, NE51H          | BF304-0UO-120A  | 120VAC                                         | 10             | 260           |                       |                                                                                                                                                        |
| <b>612nm Super Orange InGaAlP</b><br><br><b>BF3126/ BF3127</b> | <b>T3-1/4 (9mm) Miniature Bayonet LED Cluster</b><br> | 6MB, 44, 47, 755      | BF3126-0UO-006B | 5/6V                                           | 120            | 510           | 120°                  | Center Contact Polarity<br>B = Bipolar AC/DC<br>A = AC only<br><br>Replace BF3126/3127 With B3126/3127 for Medium Beam (50°) 2.45 K mcd @ 20mA         |
|                                                                                                                                                  |                                                                                                                                          | 12MB, 756             | BF3126-0UO-014B | 12/14V                                         | 40             | 510           |                       |                                                                                                                                                        |
|                                                                                                                                                  |                                                                                                                                          | 24MB,                 | BF3127-0UO-024B | 24V                                            | 20             | 595           |                       |                                                                                                                                                        |
|                                                                                                                                                  |                                                                                                                                          | 313,757,1819,1829     | BF3127-0UO-028B | 28V                                            | 20             | 595           |                       |                                                                                                                                                        |
|                                                                                                                                                  |                                                                                                                                          | 48MB                  | BF3127-0UO-048B | 48V                                            | 12             | 357           |                       |                                                                                                                                                        |
|                                                                                                                                                  |                                                                                                                                          | 60MB,1835             | BF3127-0UO-060B | 60V                                            | 12             | 357           |                       |                                                                                                                                                        |
|                                                                                                                                                  |                                                                                                                                          | 120MB, NE51H          | BF3127-0UO-120A | 120VAC                                         | 10             | 298           |                       |                                                                                                                                                        |
|                                                                                                                                                  |                                                                                                                                          |                       | BF3127-0UO-130B | 130V                                           | 8              | 238           |                       |                                                                                                                                                        |

All dimensions in inches. For millimeters multiply by 25.4

Log # 122H Rev 10-2000



# T3-1/4 (9mm) Miniature Based LED Lamps

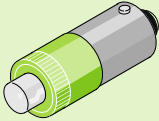
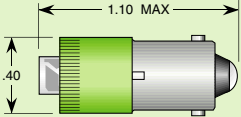
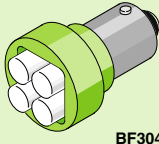
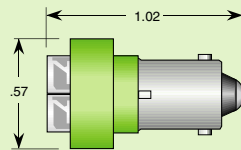
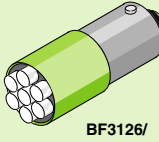
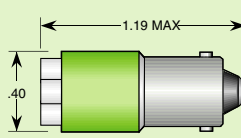
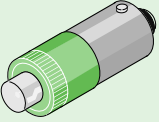
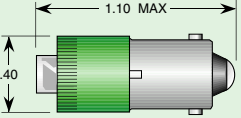
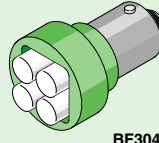
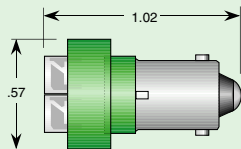
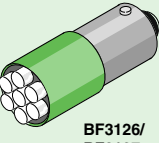
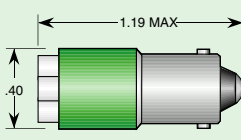
| Miniature Packages                                                                                                                                  |                                                                                                                                              | Replaces Incandescent | Part Number     | Electrical-Optical Characteristics (Ta = 25°C) |                |               | Angle of Illumination | Special Features                                                                                                                           |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|-----------------|------------------------------------------------|----------------|---------------|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                     |                                                                                                                                              |                       |                 | Voltage V typ                                  | Current mA typ | Intensity mcd |                       |                                                                                                                                            |
| <b>595nm Super Yellow InGaAlP</b><br><br><br><b>BF321</b>          | <b>T3-1/4 (9mm) Miniature Bayonet</b><br><br>               | 6MB, 44, 47, 755      | BF321-0UY-006B  | 5/6V                                           | 20             | 116           | 120°                  | Center Contact Polarity<br>B = Bipolar AC/DC<br>A = AC only<br><br>Replace BF321 With B321 for Narrow Beam (15°) 3.2K mcd@ 20mA            |
|                                                                                                                                                     |                                                                                                                                              | 12MB, 756             | BF321-0UY-014B  | 12/14V                                         | 20             | 116           |                       |                                                                                                                                            |
|                                                                                                                                                     |                                                                                                                                              | 24MB,                 | BF321-0UY-024B  | 24V                                            | 20             | 116           |                       |                                                                                                                                            |
|                                                                                                                                                     |                                                                                                                                              | 313,757,1819,1829     | BF321-0UY-028B  | 28V                                            | 20             | 116           |                       |                                                                                                                                            |
|                                                                                                                                                     |                                                                                                                                              | 48MB                  | BF321-0UY-048B  | 48V                                            | 12             | 54            |                       |                                                                                                                                            |
|                                                                                                                                                     |                                                                                                                                              | 60MB,1835             | BF321-0UY-060B  | 60V                                            | 12             | 54            |                       |                                                                                                                                            |
|                                                                                                                                                     |                                                                                                                                              | 120MB, NE51H          | BF321-0UY-120A  | 120VAC                                         | 10             | 39            |                       |                                                                                                                                            |
|                                                                                                                                                     |                                                                                                                                              |                       | BF321-0UY-130B  | 130V                                           | 8              | 24            |                       |                                                                                                                                            |
| <b>595nm Super Yellow InGaAlP</b><br><br><br><b>BF304</b>           | <b>T3-1/4 (9mm) Miniature Bayonet LED Cluster</b><br><br>   | 6MB, 44, 47, 755      | BF304-0UY-006B  | 5/6V                                           | 80             | 464           | 120°                  | Center Contact Polarity<br>B = Bipolar AC/DC<br>A = AC only<br><br>Replace BF304 With B304 for Narrow Beam (15°) 12.8K mcd@ 20mA           |
|                                                                                                                                                     |                                                                                                                                              | 12MB, 756             | BF304-0UY-014B  | 12/14V                                         | 40             | 464           |                       |                                                                                                                                            |
|                                                                                                                                                     |                                                                                                                                              | 24MB,                 | BF304-0UY-024B  | 24V                                            | 20             | 464           |                       |                                                                                                                                            |
|                                                                                                                                                     |                                                                                                                                              | 313,757,1819,1829     | BF304-0UY-028B  | 28V                                            | 20             | 464           |                       |                                                                                                                                            |
|                                                                                                                                                     |                                                                                                                                              | 48MB                  | BF304-0UY-048B  | 48V                                            | 12             | 216           |                       |                                                                                                                                            |
|                                                                                                                                                     |                                                                                                                                              | 60MB,1835             | BF304-0UY-060B  | 60V                                            | 12             | 216           |                       |                                                                                                                                            |
|                                                                                                                                                     |                                                                                                                                              | 120MB, NE51H          | BF304-0UY-120A  | 120VAC                                         | 10             | 156           |                       |                                                                                                                                            |
|                                                                                                                                                     |                                                                                                                                              |                       | BF304-0UY-130B  | 130V                                           | 8              | 96            |                       |                                                                                                                                            |
| <b>595nm Super Yellow InGaAlP</b><br><br><br><b>BF3126/ BF3127</b> | <b>T3-1/4 (9mm) Miniature Bayonet LED Cluster</b><br><br>  | 6MB, 44, 47, 755      | BF3126-0UY-006B | 5/6V                                           | 120            | 192           | 120°                  | Center Contact Polarity<br>B = Bipolar AC/DC<br>A = AC only<br><br>Replace BF3126/3127 With B3126/3127 for Medium Beam (50°) 7K mcd @ 20mA |
|                                                                                                                                                     |                                                                                                                                              | 12MB, 756             | BF3126-0UY-014B | 12/14V                                         | 40             | 192           |                       |                                                                                                                                            |
|                                                                                                                                                     |                                                                                                                                              | 24MB,                 | BF3127-0UY-024B | 24V                                            | 20             | 224           |                       |                                                                                                                                            |
|                                                                                                                                                     |                                                                                                                                              | 313,757,1819,1829     | BF3127-0UY-028B | 28V                                            | 20             | 224           |                       |                                                                                                                                            |
|                                                                                                                                                     |                                                                                                                                              | 48MB                  | BF3127-0UY-048B | 48V                                            | 12             | 105           |                       |                                                                                                                                            |
|                                                                                                                                                     |                                                                                                                                              | 60MB,1835             | BF3127-0UY-060B | 60V                                            | 12             | 105           |                       |                                                                                                                                            |
|                                                                                                                                                     |                                                                                                                                              | 120MB, NE51H          | BF3127-0UY-120A | 120VAC                                         | 10             | 87            |                       |                                                                                                                                            |
|                                                                                                                                                     |                                                                                                                                              |                       | BF3127-0UY-130B | 130V                                           | 8              | 70            |                       |                                                                                                                                            |
| <b>8000K Cool White SiC/GaN</b><br><br><br><b>BF321</b>          | <b>T3-1/4 (9mm) Miniature Bayonet</b><br><br>             | 6MB, 44, 47, 755      | BF321-0CW-006B  | 5/6V                                           | 15             | 160           | 120°                  | Center Contact Polarity<br>B = Bipolar AC/DC<br>A = AC only<br><br>Replace BF321 With B321 for Std. Beam (50°)                             |
|                                                                                                                                                     |                                                                                                                                              | 12MB, 756             | BF321-0CW-014B  | 12/14V                                         | 15             | 160           |                       |                                                                                                                                            |
|                                                                                                                                                     |                                                                                                                                              | 24MB,                 | BF321-0CW-024B  | 24V                                            | 15             | 160           |                       |                                                                                                                                            |
|                                                                                                                                                     |                                                                                                                                              | 313,757,1819,1829     | BF321-0CW-028B  | 28V                                            | 15             | 160           |                       |                                                                                                                                            |
|                                                                                                                                                     |                                                                                                                                              | 48MB                  | BF321-0CW-048B  | 48V                                            | 12             | 128           |                       |                                                                                                                                            |
|                                                                                                                                                     |                                                                                                                                              | 60MB,1835             | BF321-0CW-060B  | 60V                                            | 12             | 128           |                       |                                                                                                                                            |
|                                                                                                                                                     |                                                                                                                                              | 120MB, NE51H          | BF321-0CW-120A  | 120VAC                                         | 10             | 106           |                       |                                                                                                                                            |
|                                                                                                                                                     |                                                                                                                                              |                       | BF321-0CW-130B  | 130V                                           | 8              | 85            |                       |                                                                                                                                            |
| <b>8000K Cool White SiC/GaN</b><br><br><br><b>BF304</b>           | <b>T3-1/4 (9mm) Miniature Bayonet LED Cluster</b><br><br> | 6MB, 44, 47, 755      | BF304-0CW-006B  | 5/6V                                           | 60             | 640           | 120°                  | Center Contact Polarity<br>B = Bipolar AC/DC<br>A = AC only<br><br>Replace BF304 With B304 for Std. Beam (50°)                             |
|                                                                                                                                                     |                                                                                                                                              | 12MB, 756             | BF304-0CW-014B  | 12/14V                                         | 30             | 640           |                       |                                                                                                                                            |
|                                                                                                                                                     |                                                                                                                                              | 24MB,                 | BF304-0CW-024B  | 24V                                            | 15             | 640           |                       |                                                                                                                                            |
|                                                                                                                                                     |                                                                                                                                              | 313,757,1819,1829     | BF304-0CW-028B  | 28V                                            | 15             | 640           |                       |                                                                                                                                            |
|                                                                                                                                                     |                                                                                                                                              | 48MB                  | BF304-0CW-48B   | 48V                                            | 12             | 512           |                       |                                                                                                                                            |
|                                                                                                                                                     |                                                                                                                                              | 60MB,1835             | BF304-0CW-60B   | 60V                                            | 12             | 512           |                       |                                                                                                                                            |
|                                                                                                                                                     |                                                                                                                                              | 120MB, NE51H          | BF304-0CW-120A  | 120VAC                                         | 10             | 424           |                       |                                                                                                                                            |
|                                                                                                                                                     |                                                                                                                                              |                       | BF304-0CW-130B  | 130V                                           | 8              | 340           |                       |                                                                                                                                            |
| <b>8000K Cool White SiC/GaN</b><br><br><br><b>BF3126/ BF3127</b>  | <b>T3-1/4 (9mm) Miniature Bayonet LED Cluster</b><br><br> | 6MB, 44, 47, 755      | BF3126-0CW-006B | 5/6V                                           | 90             | 900           | 120°                  | Center Contact Polarity<br>B = Bipolar AC/DC<br>A = AC only<br><br>Replace BF3126/3127 With B3126/3127 for Std. Beam (50°)                 |
|                                                                                                                                                     |                                                                                                                                              | 12MB, 756             | BF3126-0CW-014B | 12/14V                                         | 30             | 900           |                       |                                                                                                                                            |
|                                                                                                                                                     |                                                                                                                                              | 24MB,                 | BF3126-0CW-024B | 24V                                            | 15             | 900           |                       |                                                                                                                                            |
|                                                                                                                                                     |                                                                                                                                              | 313,757,1819,1829     | BF3127-0CW-028B | 28V                                            | 15             | 1050          |                       |                                                                                                                                            |
|                                                                                                                                                     |                                                                                                                                              | 48MB                  | BF3127-0CW-048B | 48V                                            | 12             | 840           |                       |                                                                                                                                            |
|                                                                                                                                                     |                                                                                                                                              | 60MB,1835             | BF3127-0CW-060B | 60V                                            | 12             | 840           |                       |                                                                                                                                            |
|                                                                                                                                                     |                                                                                                                                              | 120MB, NE51H          | BF3127-0CW-120A | 120VAC                                         | 10             | 700           |                       |                                                                                                                                            |
|                                                                                                                                                     |                                                                                                                                              |                       | BF3127-0CW-130B | 130V                                           | 8              | 560           |                       |                                                                                                                                            |

All dimensions in inches. For millimeters multiply by 25.4

Log # 122J Rev 10-2000



## T3-1/4 (9mm) Miniature Based LED Lamps

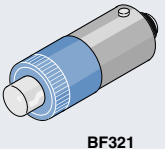
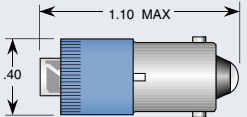
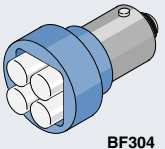
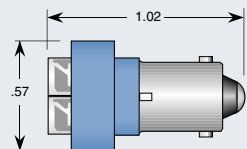
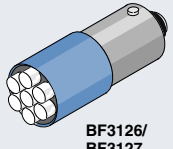
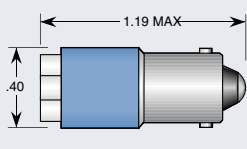
| Miniature Packages                                                                                                                             |                                                                                                                                          | Replaces Incandescent | Part Number     | Electrical-Optical Characteristics (Ta = 25°C) |                |               | Angle of Illumination | Special Features                                                                                                                                      |
|------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|-----------------|------------------------------------------------|----------------|---------------|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                |                                                                                                                                          |                       |                 | Voltage V typ                                  | Current mA typ | Intensity mcd |                       |                                                                                                                                                       |
| <b>570nm Lime Green InGaAlP</b><br><br><b>BF321</b>           | <b>T3-1/4 (9mm) Miniature Bayonet</b><br>               | 6MB, 44, 47, 755      | BF321-0UG-006B  | 5/6V                                           | 20             | 58            | 120°                  | Center Contact Polarity<br>B = Bipolar AC/DC<br>A = AC only<br><br>Replace BF321 With B321 for Narrow Beam (12-15°) 1K mcd @ 20mA                     |
|                                                                                                                                                |                                                                                                                                          | 12MB, 756             | BF321-0UG-014B  | 12/14V                                         | 20             | 58            |                       |                                                                                                                                                       |
|                                                                                                                                                |                                                                                                                                          | 24MB,                 | BF321-0UG-024B  | 24V                                            | 20             | 58            |                       |                                                                                                                                                       |
|                                                                                                                                                |                                                                                                                                          | 313,757,1819,1829     | BF321-0UG-028B  | 28V                                            | 20             | 58            |                       |                                                                                                                                                       |
|                                                                                                                                                |                                                                                                                                          | 48MB                  | BF321-0UG-048B  | 48V                                            | 12             | 35            |                       |                                                                                                                                                       |
|                                                                                                                                                |                                                                                                                                          | 60MB,1835             | BF321-0UG-060B  | 60V                                            | 12             | 35            |                       |                                                                                                                                                       |
|                                                                                                                                                |                                                                                                                                          | 120MB, NE51H          | BF321-0UG-120A  | 120VAC                                         | 10             | 29            |                       |                                                                                                                                                       |
| <b>570nm Lime Green InGaAlP</b><br><br><b>BF304</b>            | <b>T3-1/4 (9mm) Miniature Bayonet LED Cluster</b><br>   | 6MB, 44, 47, 755      | BF304-0UG-006B  | 5/6V                                           | 80             | 232           | 120°                  | Center Contact Polarity<br>B = Bipolar AC/DC<br>A = AC only<br><br>Replace BF304 With B304 for Narrow Beam (12-15°) 4K mcd @ 20mA                     |
|                                                                                                                                                |                                                                                                                                          | 12MB, 756             | BF304-0UG-014B  | 12/14V                                         | 40             | 232           |                       |                                                                                                                                                       |
|                                                                                                                                                |                                                                                                                                          | 24MB,                 | BF304-0UG-024B  | 24V                                            | 20             | 232           |                       |                                                                                                                                                       |
|                                                                                                                                                |                                                                                                                                          | 313,757,1819,1829     | BF304-0UG-028B  | 28V                                            | 20             | 232           |                       |                                                                                                                                                       |
|                                                                                                                                                |                                                                                                                                          | 48MB                  | BF304-0UG-048B  | 48V                                            | 12             | 140           |                       |                                                                                                                                                       |
|                                                                                                                                                |                                                                                                                                          | 60MB,1835             | BF304-0UG-060B  | 60V                                            | 12             | 140           |                       |                                                                                                                                                       |
|                                                                                                                                                |                                                                                                                                          | 120MB, NE51H          | BF304-0UG-120A  | 120VAC                                         | 10             | 116           |                       |                                                                                                                                                       |
| <b>570nm Lime Green InGaAlP</b><br><br><b>BF3126/ BF3127</b>  | <b>T3-1/4 (9mm) Miniature Bayonet LED Cluster</b><br>  | 6MB, 44, 47, 755      | BF3126-0UG-006B | 5/6V                                           | 120            | 216           | 120°                  | Center Contact Polarity<br>B = Bipolar AC/DC<br>A = AC only<br><br>Replace BF3126/3127 With B3126/3127 for Medium Beam (50°) 1.2K mcd @ 20mA          |
|                                                                                                                                                |                                                                                                                                          | 12MB, 756             | BF3126-0UG-014B | 12/14V                                         | 40             | 216           |                       |                                                                                                                                                       |
|                                                                                                                                                |                                                                                                                                          | 24MB,                 | BF3127-0UG-024B | 24V                                            | 20             | 252           |                       |                                                                                                                                                       |
|                                                                                                                                                |                                                                                                                                          | 313,757,1819,1829     | BF3127-0UG-028B | 28V                                            | 20             | 252           |                       |                                                                                                                                                       |
|                                                                                                                                                |                                                                                                                                          | 48MB                  | BF3127-0UG-048B | 48V                                            | 12             | 154           |                       |                                                                                                                                                       |
|                                                                                                                                                |                                                                                                                                          | 60MB,1835             | BF3127-0UG-060B | 60V                                            | 12             | 154           |                       |                                                                                                                                                       |
|                                                                                                                                                |                                                                                                                                          | 120MB, NE51H          | BF3127-0UG-120A | 120VAC                                         | 10             | 126           |                       |                                                                                                                                                       |
| <b>525nm Aqua Green SiC/GaN</b><br><br><b>BF321</b>         | <b>T3-1/4 (9mm) Miniature Bayonet</b><br>             | 6MB, 44, 47, 755      | BF321-0AG-006B  | 5/6V                                           | 15             | 400           | 120°                  | Center Contact Polarity<br>B = Bipolar AC/DC<br>A = AC only<br><br>Replace BF321 With B321 for Narrow Beam (15°) 7K mcd/250 Ft.Cd @ 15mA              |
|                                                                                                                                                |                                                                                                                                          | 12MB, 756             | BF321-0AG-014B  | 12/14V                                         | 15             | 400           |                       |                                                                                                                                                       |
|                                                                                                                                                |                                                                                                                                          | 24MB,                 | BF321-0AG-024B  | 24V                                            | 15             | 400           |                       |                                                                                                                                                       |
|                                                                                                                                                |                                                                                                                                          | 313,757,1819,1829     | BF321-0AG-028B  | 28V                                            | 15             | 400           |                       |                                                                                                                                                       |
|                                                                                                                                                |                                                                                                                                          | 48MB                  | BF321-0AG-048B  | 48V                                            | 12             | 320           |                       |                                                                                                                                                       |
|                                                                                                                                                |                                                                                                                                          | 60MB,1835             | BF321-0AG-060B  | 60V                                            | 12             | 320           |                       |                                                                                                                                                       |
|                                                                                                                                                |                                                                                                                                          | 120MB, NE51H          | BF321-0AG-120A  | 120VAC                                         | 10             | 275           |                       |                                                                                                                                                       |
| <b>525nm Aqua Green SiC/GaN</b><br><br><b>BF304</b>          | <b>T3-1/4 (9mm) Miniature Bayonet LED Cluster</b><br> | 6MB, 44, 47, 755      | BF304-0AG-006B  | 5/6V                                           | 60             | 1600          | 120°                  | Center Contact Polarity<br>B = Bipolar AC/DC<br>A = AC only<br><br>Replace BF304 With B304 for Narrow Beam (15°) 28K mcd/1000 Ft.Cd @ 15mA            |
|                                                                                                                                                |                                                                                                                                          | 12MB, 756             | BF304-0AG-014B  | 12/14V                                         | 30             | 1600          |                       |                                                                                                                                                       |
|                                                                                                                                                |                                                                                                                                          | 24MB,                 | BF304-0AG-024B  | 24V                                            | 15             | 1600          |                       |                                                                                                                                                       |
|                                                                                                                                                |                                                                                                                                          | 313,757,1819,1829     | BF304-0AG-028B  | 28V                                            | 15             | 1600          |                       |                                                                                                                                                       |
|                                                                                                                                                |                                                                                                                                          | 48MB                  | BF304-0AG-048B  | 48V                                            | 12             | 1280          |                       |                                                                                                                                                       |
|                                                                                                                                                |                                                                                                                                          | 60MB,1835             | BF304-0AG-060B  | 60V                                            | 12             | 1280          |                       |                                                                                                                                                       |
|                                                                                                                                                |                                                                                                                                          | 120MB, NE51H          | BF304-0AG-120A  | 120VAC                                         | 10             | 1100          |                       |                                                                                                                                                       |
| <b>525nm Aqua Green SiC/GaN</b><br><br><b>BF3126/ BF3127</b> | <b>T3-1/4 (9mm) Miniature Bayonet LED Cluster</b><br> | 6MB, 44, 47, 755      | BF3126-0AG-006B | 5/6V                                           | 90             | 1200          | 120°                  | Center Contact Polarity<br>B = Bipolar AC/DC<br>A = AC only<br><br>Replace BF3126/3127 With B3126/3127 for Narrow Beam (15°) 30K mcd/800 Ft.Cd @ 15mA |
|                                                                                                                                                |                                                                                                                                          | 12MB, 756             | BF3126-0AG-014B | 12/14V                                         | 30             | 1200          |                       |                                                                                                                                                       |
|                                                                                                                                                |                                                                                                                                          | 24MB,                 | BF3126-0AG-024B | 24V                                            | 15             | 1200          |                       |                                                                                                                                                       |
|                                                                                                                                                |                                                                                                                                          | 313,757,1819,1829     | BF3127-0AG-028B | 28V                                            | 15             | 1400          |                       |                                                                                                                                                       |
|                                                                                                                                                |                                                                                                                                          | 48MB                  | BF3127-0AG-048B | 48V                                            | 12             | 1190          |                       |                                                                                                                                                       |
|                                                                                                                                                |                                                                                                                                          | 60MB,1835             | BF3127-0AG-060B | 60V                                            | 12             | 1190          |                       |                                                                                                                                                       |
|                                                                                                                                                |                                                                                                                                          | 120MB, NE51H          | BF3127-0AG-120A | 120VAC                                         | 10             | 1050          |                       |                                                                                                                                                       |

All dimensions in inches. For millimeters multiply by 25.4

Log # 122K Rev 10-2000

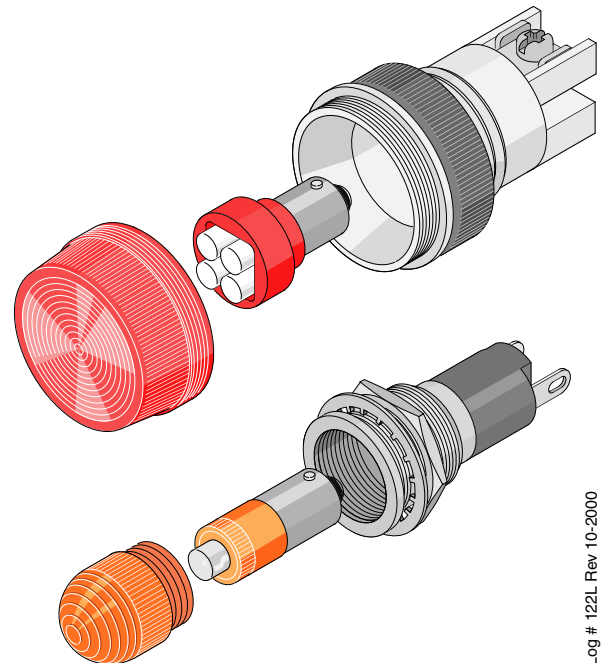
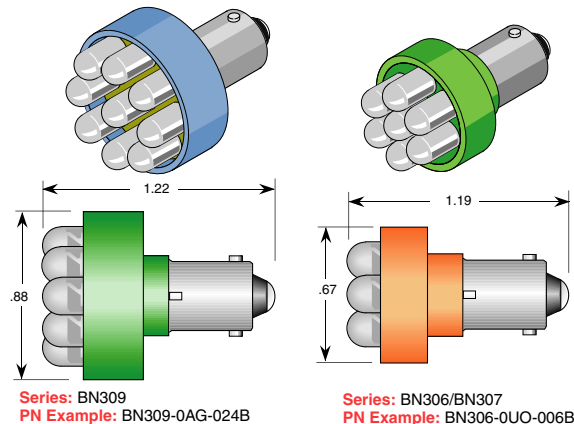
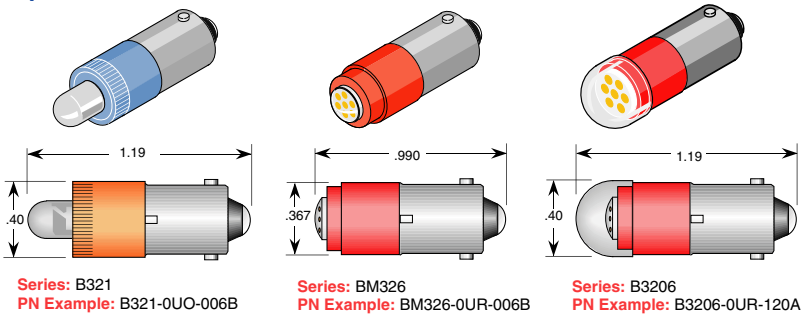


# T3-1/4 (9mm) Miniature Based LED Lamps

| Miniature Packages                                                                                                                             |                                                                                                                                         | Replaces Incandescent | Part Number     | Electrical-Optical Characteristics (Ta = 25°C) |                |               | Angle of Illumination | Special Features                                                                                                           |
|------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|-----------------------|-----------------|------------------------------------------------|----------------|---------------|-----------------------|----------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                |                                                                                                                                         |                       |                 | Voltage V typ                                  | Current mA typ | Intensity mcd |                       |                                                                                                                            |
| <b>470nm Super Blue SiC/GaN</b><br><br><b>BF321</b>           | <b>T3-1/4 (9mm) Miniature Bayonet</b><br>              | 6MB, 44, 47, 755      | BF321-0PB-006B  | 5/6V                                           | 15             | 116           | 120°                  | Center Contact Polarity<br>B = Bipolar AC/DC<br>A = AC only<br><br>Replace BF321 With B321 for Std. Beam (15°)             |
|                                                                                                                                                |                                                                                                                                         | 12MB, 756             | BF321-0PB-014B  | 12/14V                                         | 15             | 116           |                       |                                                                                                                            |
|                                                                                                                                                |                                                                                                                                         | 24MB,                 | BF321-0PB-024B  | 24V                                            | 15             | 116           |                       |                                                                                                                            |
|                                                                                                                                                |                                                                                                                                         | 313,757,1819,1829     | BF321-0PB-028B  | 28V                                            | 15             | 116           |                       |                                                                                                                            |
|                                                                                                                                                |                                                                                                                                         | 48MB                  | BF321-0PB-048B  | 48V                                            | 12             | 84            |                       |                                                                                                                            |
|                                                                                                                                                |                                                                                                                                         | 60MB,1835             | BF321-0PB-060B  | 60V                                            | 12             | 84            |                       |                                                                                                                            |
|                                                                                                                                                |                                                                                                                                         | 120MB, NE51H          | BF321-0PB-120A  | 120VAC                                         | 10             | 74            |                       |                                                                                                                            |
| <b>470nm Super Blue SiC/GaN</b><br><br><b>BF304</b>           | <b>T3-1/4 (9mm) Miniature Bayonet LED Cluster</b><br>  | 6MB, 44, 47, 755      | BF304-0PB-006B  | 5/6V                                           | 60             | 464           | 120°                  | Center Contact Polarity<br>B = Bipolar AC/DC<br>A = AC only<br><br>Replace BF304 With B304 for Std. Beam (15°)             |
|                                                                                                                                                |                                                                                                                                         | 12MB, 756             | BF304-0PB-014B  | 12/14V                                         | 30             | 464           |                       |                                                                                                                            |
|                                                                                                                                                |                                                                                                                                         | 24MB,                 | BF304-0PB-024B  | 24V                                            | 15             | 464           |                       |                                                                                                                            |
|                                                                                                                                                |                                                                                                                                         | 313,757,1819,1829     | BF304-0PB-028B  | 28V                                            | 15             | 464           |                       |                                                                                                                            |
|                                                                                                                                                |                                                                                                                                         | 48MB                  | BF304-0PB-048B  | 48V                                            | 12             | 336           |                       |                                                                                                                            |
|                                                                                                                                                |                                                                                                                                         | 60MB,1835             | BF304-0PB-060B  | 60V                                            | 12             | 336           |                       |                                                                                                                            |
|                                                                                                                                                |                                                                                                                                         | 120MB, NE51H          | BF304-0PB-120A  | 120VAC                                         | 10             | 296           |                       |                                                                                                                            |
| <b>470nm Super Blue SiC/GaN</b><br><br><b>BF3126/ BF3127</b> | <b>T3-1/4 (9mm) Miniature Bayonet LED Cluster</b><br> | 6MB, 44, 47, 755      | BF3126-0PB-006B | 5/6V                                           | 90             | 360           | 120°                  | Center Contact Polarity<br>B = Bipolar AC/DC<br>A = AC only<br><br>Replace BF3126/3127 With B3126/3127 for Std. Beam (15°) |
|                                                                                                                                                |                                                                                                                                         | 12MB, 756             | BF3126-0PB-014B | 12/14V                                         | 30             | 360           |                       |                                                                                                                            |
|                                                                                                                                                |                                                                                                                                         | 24MB,                 | BF3127-0PB-024B | 24V                                            | 15             | 420           |                       |                                                                                                                            |
|                                                                                                                                                |                                                                                                                                         | 313,757,1819,1829     | BF3127-0PB-028B | 28V                                            | 15             | 420           |                       |                                                                                                                            |
|                                                                                                                                                |                                                                                                                                         | 48MB                  | BF3127-0PB-048B | 48V                                            | 12             | 336           |                       |                                                                                                                            |
|                                                                                                                                                |                                                                                                                                         | 60MB,1835             | BF3127-0PB-060B | 60V                                            | 12             | 336           |                       |                                                                                                                            |
|                                                                                                                                                |                                                                                                                                         | 120MB, NE51H          | BF3127-0PB-120A | 120VAC                                         | 10             | 315           |                       |                                                                                                                            |
|                                                                                                                                                |                                                                                                                                         |                       | BF3127-0PB-130B | 130V                                           | 8              | 252           |                       |                                                                                                                            |

## Options

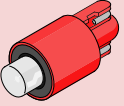
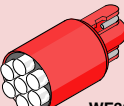
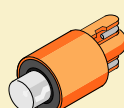
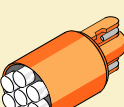
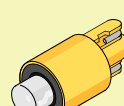
All dimensions in inches. For millimeters multiply by 25.4



Log # 122L Rev 10-2000



# T3-1/4 (9mm) Miniature Wedge Based LEDs

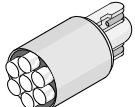
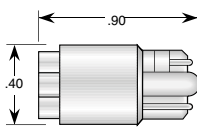
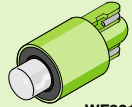
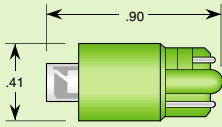
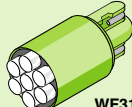
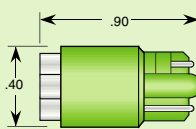
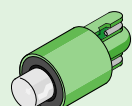
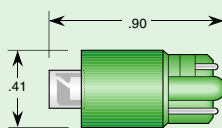
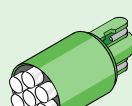
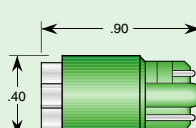
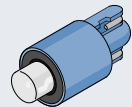
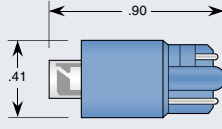
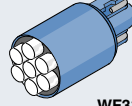
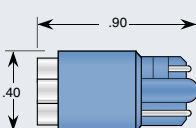
| Miniature Packages                                                                                                                               | Replaces Incandescent | Part Number     | Electrical-Optical Characteristics (Ta = 25°C) |                |               | Angle of Illumination | Special Features                                                                                                                                 |
|--------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|-----------------|------------------------------------------------|----------------|---------------|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                  |                       |                 | Voltage V typ                                  | Current mA typ | Intensity mcd |                       |                                                                                                                                                  |
| <b>660nm Ultra Red GaAlAs/GaAs</b><br><br><b>WF321</b>          | 159,259,555,1995-7    | WF321-OUR-006B  | 5/6V                                           | 20             | 115           | 120°                  | Contact Polarity<br>B = Bipolar AC/DC<br>A = AC only<br>V = DC only<br><br>Replace WF321 With W321 for Narrow Beam (15°) 1.6K mcd/52Ft.Cd @ 20mA |
|                                                                                                                                                  | 124,658,2080,936      | WF321-OUR-014B  | 12/14V                                         | 20             | 115           |                       |                                                                                                                                                  |
|                                                                                                                                                  | 656,657,400,464,655   | WF321-OUR-024B  | 24V                                            | 20             | 115           |                       |                                                                                                                                                  |
|                                                                                                                                                  | 656,657,400,464,655   | WF321-OUR-028B  | 28V                                            | 20             | 115           |                       |                                                                                                                                                  |
|                                                                                                                                                  |                       | WF321-OUR-048B  | 48V                                            | 12             | 65            |                       |                                                                                                                                                  |
|                                                                                                                                                  |                       | WF321-OUR-120A  | 120VAC                                         | 10             | 50            |                       |                                                                                                                                                  |
| <b>660nm Ultra Red GaAlAs/GaAs</b><br><br><b>WF3126/ WF3127</b> | 159,259,555,1995-7    | WF3126-OUR-006B | 5/6V                                           | 120            | 600           | 120°                  | Contact Polarity<br>B = Bipolar AC/DC<br>A = AC only<br>V = DC only                                                                              |
|                                                                                                                                                  | 124,658,2080,936      | WF3126-OUR-014B | 12/14V                                         | 40             | 600           |                       |                                                                                                                                                  |
|                                                                                                                                                  | 656,657,400,464,655   | WF3127-OUR-024B | 24V                                            | 20             | 700           |                       |                                                                                                                                                  |
|                                                                                                                                                  | 656,657,400,464,655   | WF3127-OUR-028B | 28V                                            | 20             | 700           |                       |                                                                                                                                                  |
|                                                                                                                                                  |                       | WF3127-OUR-048B | 48V                                            | 12             | 230           |                       |                                                                                                                                                  |
|                                                                                                                                                  |                       | WF3127-OUR-120A | 120VAC                                         | 10             | 160           |                       |                                                                                                                                                  |
| <b>612nm Orange InGaAlP</b><br><br><b>WF321</b>                 | 159,259,555,1995-7    | WF321-UOU-006B  | 5/6V                                           | 20             | 130           | 120°                  | Contact Polarity<br>B = Bipolar AC/DC<br>A = AC only<br>V = DC only<br><br>Replace WF321 With W321 for Narrow Beam (15°) 3.5 K mcd @ 20mA        |
|                                                                                                                                                  | 124,658,2080,936      | WF321-UOU-014B  | 12/14V                                         | 20             | 130           |                       |                                                                                                                                                  |
|                                                                                                                                                  | 656,657,400,464,655   | WF321-UOU-024B  | 24V                                            | 20             | 130           |                       |                                                                                                                                                  |
|                                                                                                                                                  | 656,657,400,464,655   | WF321-UOU-028B  | 28V                                            | 20             | 130           |                       |                                                                                                                                                  |
|                                                                                                                                                  |                       | WF321-UOU-048B  | 48V                                            | 12             | 78            |                       |                                                                                                                                                  |
|                                                                                                                                                  |                       | WF321-UOU-120A  | 120VAC                                         | 10             | 65            |                       |                                                                                                                                                  |
| <b>612nm Orange InGaAlP</b><br><br><b>WF3126/ WF3127</b>      | 159,259,555,1995-7    | WF3126-UOU-006B | 5/6V                                           | 120            | 510           | 120°                  | Contact Polarity<br>B = Bipolar AC/DC<br>A = AC only<br>V = DC only                                                                              |
|                                                                                                                                                  | 124,658,2080,936      | WF3126-UOU-014B | 12/14V                                         | 40             | 510           |                       |                                                                                                                                                  |
|                                                                                                                                                  | 656,657,400,464,655   | WF3127-UOU-024B | 24V                                            | 20             | 595           |                       |                                                                                                                                                  |
|                                                                                                                                                  | 656,657,400,464,655   | WF3127-UOU-028B | 28V                                            | 20             | 595           |                       |                                                                                                                                                  |
|                                                                                                                                                  |                       | WF3127-UOU-048B | 48V                                            | 12             | 357           |                       |                                                                                                                                                  |
|                                                                                                                                                  |                       | WF3127-UOU-120A | 120VAC                                         | 10             | 298           |                       |                                                                                                                                                  |
| <b>595nm Yellow InGaN</b><br><br><b>WF321</b>                 | 159,259,555,1995-7    | WF321-UUY-006B  | 5/6V                                           | 20             | 116           | 120°                  | Contact Polarity<br>B = Bipolar AC/DC<br>A = AC only<br>V = DC only<br><br>Replace WF321 With W321 for Narrow Beam (15°) 3.2K mcd @ 20mA         |
|                                                                                                                                                  | 124,658,2080,936      | WF321-UUY-014B  | 12/14V                                         | 20             | 116           |                       |                                                                                                                                                  |
|                                                                                                                                                  | 656,657,400,464,655   | WF321-UUY-024B  | 24V                                            | 20             | 116           |                       |                                                                                                                                                  |
|                                                                                                                                                  | 656,657,400,464,655   | WF321-UUY-028B  | 28V                                            | 20             | 116           |                       |                                                                                                                                                  |
|                                                                                                                                                  |                       | WF321-UUY-048B  | 48V                                            | 12             | 54            |                       |                                                                                                                                                  |
|                                                                                                                                                  |                       | WF321-UUY-120A  | 120VAC                                         | 10             | 39            |                       |                                                                                                                                                  |
| <b>595nm Yellow InGaN</b><br><br><b>WF3126/ WF3127</b>        | 159,259,555,1995-7    | WF3126-UUY-006B | 5/6V                                           | 120            | 192           | 120°                  | Contact Polarity<br>B = Bipolar AC/DC<br>A = AC only<br>V = DC only                                                                              |
|                                                                                                                                                  | 124,658,2080,936      | WF3126-UUY-014B | 12/14V                                         | 40             | 192           |                       |                                                                                                                                                  |
|                                                                                                                                                  | 656,657,400,464,655   | WF3127-UUY-024B | 24V                                            | 20             | 224           |                       |                                                                                                                                                  |
|                                                                                                                                                  | 656,657,400,464,655   | WF3127-UUY-028B | 28V                                            | 20             | 224           |                       |                                                                                                                                                  |
|                                                                                                                                                  |                       | WF3127-UUY-048B | 48V                                            | 12             | 105           |                       |                                                                                                                                                  |
|                                                                                                                                                  |                       | WF3127-UUY-120A | 120VAC                                         | 10             | 87            |                       |                                                                                                                                                  |
| <b>8000K Cool White InGaN</b><br><br><b>WF321</b>             | 159,259,555,1995-7    | WF321-OCW-006B  | 5/6V                                           | 15             | 160           | 120°                  | Contact Polarity<br>B = Bipolar AC/DC<br>A = AC only<br>V = DC only<br><br>Replace WF321 With W321 for Std. Beam (50°)                           |
|                                                                                                                                                  | 124,658,2080,936      | WF321-OCW-014B  | 12/14V                                         | 15             | 160           |                       |                                                                                                                                                  |
|                                                                                                                                                  | 656,657,400,464,655   | WF321-OCW-024B  | 24V                                            | 15             | 160           |                       |                                                                                                                                                  |
|                                                                                                                                                  | 656,657,400,464,655   | WF321-OCW-028B  | 28V                                            | 15             | 160           |                       |                                                                                                                                                  |
|                                                                                                                                                  |                       | WF321-OCW-048B  | 48V                                            | 12             | 128           |                       |                                                                                                                                                  |
|                                                                                                                                                  |                       | WF321-OCW-120A  | 120VAC                                         | 10             | 106           |                       |                                                                                                                                                  |
|                                                                                                                                                  |                       | WF321-OCW-130V  | 130V                                           | 8              | 85            |                       |                                                                                                                                                  |

All dimensions in inches. For millimeters multiply by 25.4

Log # 122LL Rev 10-2000



## T3-1/4 (9mm) Miniature Wedge Based LEDs

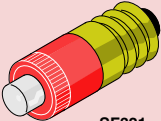
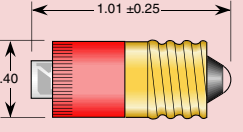
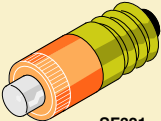
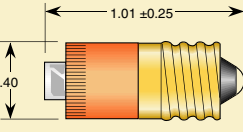
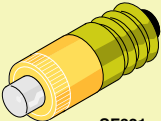
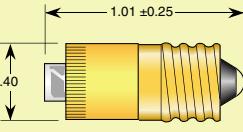
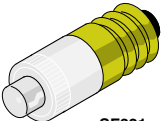
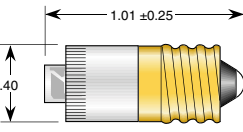
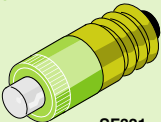
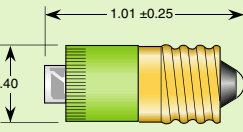
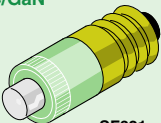
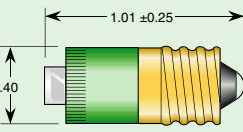
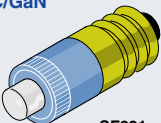
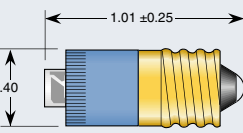
| Miniature Packages                                                                                                                                                                                                               | Replaces Incandescent | Part Number     | Electrical-Optical Characteristics (Ta = 25°C) |                |               | Angle of Illumination | Special Features                                                                                                                             |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|-----------------|------------------------------------------------|----------------|---------------|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                                                                                                  |                       |                 | Voltage V typ                                  | Current mA typ | Intensity mcd |                       |                                                                                                                                              |
| <b>8000K Cool White InGaN</b><br><br>WF3126/<br>WF3127<br>      | 159,259,555,1995-7    | WF3126-0CW-006B | 5/6V                                           | 90             | 900           | 120°                  | Contact Polarity<br>B = Bipolar AC/DC<br>A = AC only<br>V = DC only                                                                          |
|                                                                                                                                                                                                                                  | 124,658,2080,936      | WF3126-0CW-014B | 12/14V                                         | 30             | 900           |                       |                                                                                                                                              |
|                                                                                                                                                                                                                                  | 656,657,400,464,655   | WF3126-0CW-024B | 24V                                            | 15             | 900           |                       |                                                                                                                                              |
|                                                                                                                                                                                                                                  | 656,657,400,464,655   | WF3127-0CW-028B | 28V                                            | 15             | 1050          |                       |                                                                                                                                              |
|                                                                                                                                                                                                                                  |                       | WF3127-0CW-048B | 48V                                            | 12             | 840           |                       |                                                                                                                                              |
|                                                                                                                                                                                                                                  |                       | WF3127-0CW-120A | 120VAC                                         | 10             | 700           |                       |                                                                                                                                              |
| <b>570nm Lime Green InGaAlP</b><br><br>WF321<br>               | 159,259,555,1995-7    | WF321-0UG-006B  | 5/6V                                           | 20             | 58            | 120°                  | Contact Polarity<br>B = Bipolar AC/DC<br>A = AC only<br>V = DC only<br>Replace WF321 With W321 for Narrow Beam (12-15°) 1K mcd@ 20mA         |
|                                                                                                                                                                                                                                  | 124,658,2080,936      | WF321-0UG-014B  | 12/14V                                         | 20             | 58            |                       |                                                                                                                                              |
|                                                                                                                                                                                                                                  | 656,657,400,464,655   | WF321-0UG-024B  | 24V                                            | 20             | 58            |                       |                                                                                                                                              |
|                                                                                                                                                                                                                                  | 656,657,400,464,655   | WF321-0UG-028B  | 28V                                            | 20             | 58            |                       |                                                                                                                                              |
|                                                                                                                                                                                                                                  |                       | WF321-0UG-048B  | 48V                                            | 12             | 35            |                       |                                                                                                                                              |
|                                                                                                                                                                                                                                  |                       | WF321-0UG-120A  | 120VAC                                         | 10             | 29            |                       |                                                                                                                                              |
| <b>570nm Lime Green InGaAlP</b><br><br>WF3126/<br>WF3127<br>    | 159,259,555,1995-7    | WF3126-0UG-006B | 5/6V                                           | 120            | 216           | 120°                  | Contact Polarity<br>B = Bipolar AC/DC<br>A = AC only<br>V = DC only                                                                          |
|                                                                                                                                                                                                                                  | 124,658,2080,936      | WF3126-0UG-104B | 12/14V                                         | 40             | 216           |                       |                                                                                                                                              |
|                                                                                                                                                                                                                                  | 656,657,400,464,655   | WF3127-0UG-024B | 24V                                            | 20             | 252           |                       |                                                                                                                                              |
|                                                                                                                                                                                                                                  | 656,657,400,464,655   | WF3127-0UG-28B  | 28V                                            | 20             | 252           |                       |                                                                                                                                              |
|                                                                                                                                                                                                                                  |                       | WF3127-0UG-48B  | 48V                                            | 12             | 154           |                       |                                                                                                                                              |
|                                                                                                                                                                                                                                  |                       | WF3127-0UG-120A | 120VAC                                         | 10             | 126           |                       |                                                                                                                                              |
| <b>525nm Super Green InGaN</b><br><br>WF321<br>            | 159,259,555,1995-7    | WF321-0AG-006B  | 5/6V                                           | 15             | 400           | 120°                  | Contact Polarity<br>B = Bipolar AC/DC<br>A = AC only<br>V = DC only<br>Replace WF321 With W321 for Narrow Beam (15°) 7K mcd/250 Ft.Cd @ 15mA |
|                                                                                                                                                                                                                                  | 124,658,2080,936      | WF321-0AG-014B  | 12/14V                                         | 15             | 400           |                       |                                                                                                                                              |
|                                                                                                                                                                                                                                  | 656,657,400,464,655   | WF321-0AG-024B  | 24V                                            | 15             | 400           |                       |                                                                                                                                              |
|                                                                                                                                                                                                                                  | 656,657,400,464,655   | WF321-0AG-028B  | 28V                                            | 15             | 400           |                       |                                                                                                                                              |
|                                                                                                                                                                                                                                  |                       | WF321-0AG-048B  | 48V                                            | 12             | 320           |                       |                                                                                                                                              |
|                                                                                                                                                                                                                                  |                       | WF321-0AG-120A  | 120VAC                                         | 10             | 275           |                       |                                                                                                                                              |
| <b>525nm Super Green InGaN</b><br><br>WF3126/<br>WF3127<br> | 159,259,555,1995-7    | WF3126-0AG-006B | 5/6V                                           | 90             | 1200          | 120°                  | Contact Polarity<br>B = Bipolar AC/DC<br>A = AC only<br>V = DC only                                                                          |
|                                                                                                                                                                                                                                  | 124,658,2080,936      | WF3126-0AG-014B | 12/14V                                         | 30             | 1200          |                       |                                                                                                                                              |
|                                                                                                                                                                                                                                  | 656,657,400,464,655   | WF3126-0AG-024B | 24V                                            | 15             | 1200          |                       |                                                                                                                                              |
|                                                                                                                                                                                                                                  | 656,657,400,464,655   | WF3127-0AG-028B | 28V                                            | 15             | 1400          |                       |                                                                                                                                              |
|                                                                                                                                                                                                                                  |                       | WF3127-0AG-048B | 48V                                            | 12             | 1190          |                       |                                                                                                                                              |
|                                                                                                                                                                                                                                  |                       | WF3127-0AG-120A | 120VAC                                         | 10             | 1050          |                       |                                                                                                                                              |
| <b>470nm Super Blue InGaN</b><br><br>WF321<br>             | 159,259,555,1995-7    | WF321-0PB-006B  | 5/6V                                           | 15             | 116           | 120°                  | Contact Polarity<br>B = Bipolar AC/DC<br>A = AC only<br>V = DC only<br>Replace WF321 With W321 for Std. Beam (15°)                           |
|                                                                                                                                                                                                                                  | 124,658,2080,936      | WF321-0PB-014B  | 12/14V                                         | 15             | 116           |                       |                                                                                                                                              |
|                                                                                                                                                                                                                                  | 656,657,400,464,655   | WF321-0PB-024B  | 24V                                            | 15             | 116           |                       |                                                                                                                                              |
|                                                                                                                                                                                                                                  | 656,657,400,464,655   | WF321-0PB-028B  | 28V                                            | 15             | 116           |                       |                                                                                                                                              |
|                                                                                                                                                                                                                                  |                       | WF321-0PB-048B  | 48V                                            | 12             | 84            |                       |                                                                                                                                              |
|                                                                                                                                                                                                                                  |                       | WF321-0PB-120A  | 120VAC                                         | 10             | 106           |                       |                                                                                                                                              |
| <b>470nm Super Blue InGaN</b><br><br>WF3126/<br>WF3127<br>  | 159,259,555,1995-7    | WF3126-0PB-006B | 5/6V                                           | 90             | 360           | 120°                  | Contact Polarity<br>B = Bipolar AC/DC<br>A = AC only<br>V = DC only                                                                          |
|                                                                                                                                                                                                                                  | 124,658,2080,936      | WF3126-0PB-014B | 12/14V                                         | 30             | 360           |                       |                                                                                                                                              |
|                                                                                                                                                                                                                                  | 656,657,400,464,655   | WF3127-0PB-024B | 24V                                            | 15             | 420           |                       |                                                                                                                                              |
|                                                                                                                                                                                                                                  | 656,657,400,464,655   | WF3127-0PB-028B | 28V                                            | 15             | 420           |                       |                                                                                                                                              |
|                                                                                                                                                                                                                                  |                       | WF3127-0PB-048B | 48V                                            | 12             | 336           |                       |                                                                                                                                              |
|                                                                                                                                                                                                                                  |                       | WF3127-0PB-120A | 120VAC                                         | 10             | 315           |                       |                                                                                                                                              |
|                                                                                                                                                                                                                                  |                       | WF3127-0PB-130V | 130V                                           | 8              | 252           |                       |                                                                                                                                              |

All dimensions in inches. For millimeters multiply by 25.4

Log # 122LLL Rev 08-2000

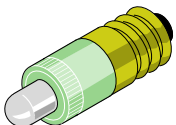


## T3-1/4 (9mm) Miniature Screw Based LEDs

| Miniature Packages                                                                                                                                                                                                      | Replaces Incandescent | Part Number    | Electrical-Optical Characteristics (Ta = 25°C) |                |               | Angle of Illumination | Special Features                                                                                                                                 |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|----------------|------------------------------------------------|----------------|---------------|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                                                                                         |                       |                | Voltage V typ                                  | Current mA typ | Intensity mcd |                       |                                                                                                                                                  |
| <b>660nm Ultra Red GaAlAs/GaAlAs</b><br><br>SF321<br> | 407,502,3708          | SF321-OUR-006B | 5/6V                                           | 20             | 115           | 120°                  | Center Contact Polarity<br>B = BiPolar AC/DC<br>A = AC only<br><br>Replace SF321 With S321 Narrow Beam (15°) Intensity 1.6K mcd/52 Ft.Cd @ 20 mA |
|                                                                                                                                                                                                                         | 3724,1446             | SF321-OUR-014B | 12/14V                                         | 20             | 115           |                       |                                                                                                                                                  |
|                                                                                                                                                                                                                         | 1449,52               | SF321-OUR-024B | 24V                                            | 15             | 85            |                       |                                                                                                                                                  |
|                                                                                                                                                                                                                         |                       | SF321-OUR-028B | 28V                                            | 15             | 85            |                       |                                                                                                                                                  |
|                                                                                                                                                                                                                         |                       | SF321-OUR-120A | 120VAC                                         | 10             | 50            |                       |                                                                                                                                                  |
| <b>612nm Super Orange InGaAlP</b><br><br>SF321<br>    | 407,502,3708          | SF321-UOU-006B | 5/6V                                           | 20             | 130           | 120°                  | Center Contact Polarity<br>B = BiPolar AC/DC<br>A = AC only<br><br>Replace SF321 With S321 Narrow (15°) Beam Intensity 3.5K mcd@20 mA            |
|                                                                                                                                                                                                                         | 3724,1446             | SF321-UOU-014B | 12/14V                                         | 20             | 130           |                       |                                                                                                                                                  |
|                                                                                                                                                                                                                         | 1449,52               | SF321-UOU-024B | 24V                                            | 15             | 98            |                       |                                                                                                                                                  |
|                                                                                                                                                                                                                         |                       | SF321-UOU-028B | 28V                                            | 15             | 98            |                       |                                                                                                                                                  |
|                                                                                                                                                                                                                         |                       | SF321-UOU-120A | 120VAC                                         | 10             | 65            |                       |                                                                                                                                                  |
| <b>595nm Super Yellow InGaAlP</b><br><br>SF321<br>    | 407,502,3708          | SF321-UYU-006B | 5/6V                                           | 20             | 116           | 120°                  | Center Contact Polarity<br>B = BiPolar AC/DC<br>A = AC only<br><br>Replace SF321 With S321 Narrow (15°) Beam Intensity 3.2K mcd@20 mA            |
|                                                                                                                                                                                                                         | 3724,1446             | SF321-UYU-014B | 12/14V                                         | 20             | 116           |                       |                                                                                                                                                  |
|                                                                                                                                                                                                                         | 1449,52               | SF321-UYU-024B | 24V                                            | 15             | 75            |                       |                                                                                                                                                  |
|                                                                                                                                                                                                                         |                       | SF321-UYU-028B | 28V                                            | 15             | 75            |                       |                                                                                                                                                  |
|                                                                                                                                                                                                                         |                       | SF321-UYU-120A | 120VAC                                         | 10             | 39            |                       |                                                                                                                                                  |
| <b>8000K Cool White SiC/GaN</b><br><br>SF321<br>    | 407,502,3708          | SF321-OCW-006B | 5V                                             | 15             | 160           | 120°                  | Center Contact Polarity<br>B = BiPolar AC/DC<br>A = AC only<br><br>Replace SF321 With S321 Std. (50°) Beam Intensity 750 mcd/75 Ft. cd           |
|                                                                                                                                                                                                                         | 3724,1446             | SF321-OCW-014B | 12/14V                                         | 15             | 160           |                       |                                                                                                                                                  |
|                                                                                                                                                                                                                         | 1449,52               | SF321-OCW-024B | 24V                                            | 15             | 160           |                       |                                                                                                                                                  |
|                                                                                                                                                                                                                         |                       | SF321-OCW-028B | 28V                                            | 15             | 160           |                       |                                                                                                                                                  |
|                                                                                                                                                                                                                         |                       | SF321-OCW-120A | 120VAC                                         | 10             | 106           |                       |                                                                                                                                                  |
| <b>570nm Lime Green InGaAlP</b><br><br>SF321<br>  | 407,502,3708          | SF321-UGU-006B | 5/6V                                           | 20             | 58            | 120°                  | Center Contact Polarity<br>B = BiPolar AC/DC<br>A = AC only<br><br>Replace SF321 With S321 Narrow (12-15°) Beam Intensity 1K mcd @ 20 mA         |
|                                                                                                                                                                                                                         | 3724,1446             | SF321-UGU-014B | 12/14V                                         | 20             | 58            |                       |                                                                                                                                                  |
|                                                                                                                                                                                                                         | 1449,52               | SF321-UGU-024B | 24V                                            | 15             | 44            |                       |                                                                                                                                                  |
|                                                                                                                                                                                                                         |                       | SF321-UGU-028B | 28V                                            | 15             | 44            |                       |                                                                                                                                                  |
|                                                                                                                                                                                                                         |                       | SF321-UGU-120A | 120VAC                                         | 10             | 29            |                       |                                                                                                                                                  |
| <b>525nm Aqua Green SiC/GaN</b><br><br>SF321<br>  | 407,502,3708          | SF321-OAG-006B | 5/6V                                           | 15             | 400           | 120°                  | Center Contact Polarity<br>B = BiPolar AC/DC<br>A = AC only<br><br>Replace SF321 With S321 Narrow (15°) Beam Intensity 7K mcd/250 Ft.Cd          |
|                                                                                                                                                                                                                         | 3724,1446             | SF321-OAG-014B | 12/14V                                         | 15             | 400           |                       |                                                                                                                                                  |
|                                                                                                                                                                                                                         | 1449,52               | SF321-OAG-024B | 24V                                            | 15             | 400           |                       |                                                                                                                                                  |
|                                                                                                                                                                                                                         |                       | SF321-OAG-028B | 28V                                            | 15             | 400           |                       |                                                                                                                                                  |
|                                                                                                                                                                                                                         |                       | SF321-OAG-120A | 120VAC                                         | 10             | 275           |                       |                                                                                                                                                  |
| <b>470nm Super Blue SiC/GaN</b><br><br>SF321<br>  | 407,502,3708          | SF321-OPB-006B | 5/6V                                           | 15             | 125           | 120°                  | Center Contact Polarity<br>B = BiPolar AC/DC<br>A = AC only<br><br>Replace SF321 With S321 Std. (15°) Beam Intensity 2K mcd/60 Ft.Cd             |
|                                                                                                                                                                                                                         | 3724,1446             | SF321-OPB-014B | 12/14V                                         | 15             | 125           |                       |                                                                                                                                                  |
|                                                                                                                                                                                                                         | 1449,52               | SF321-OPB-024B | 24V                                            | 15             | 125           |                       |                                                                                                                                                  |
|                                                                                                                                                                                                                         |                       | SF321-OPB-028B | 28V                                            | 15             | 125           |                       |                                                                                                                                                  |
|                                                                                                                                                                                                                         |                       | SF321-OPB-120A | 120VAC                                         | 10             | 74            |                       |                                                                                                                                                  |

### Options

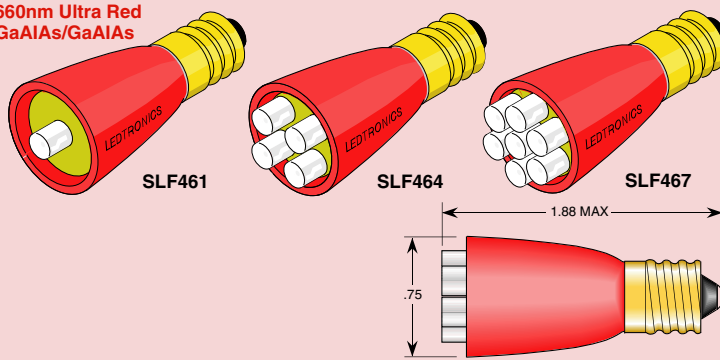
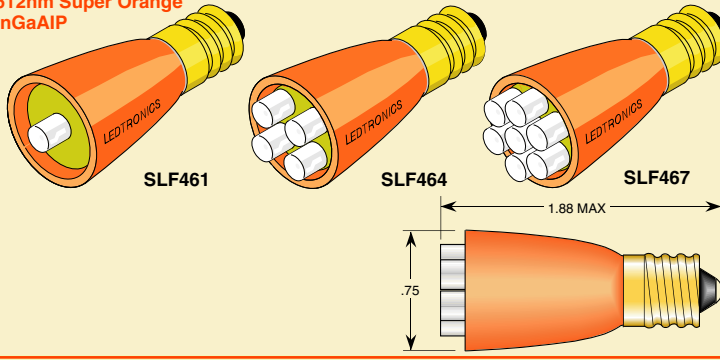
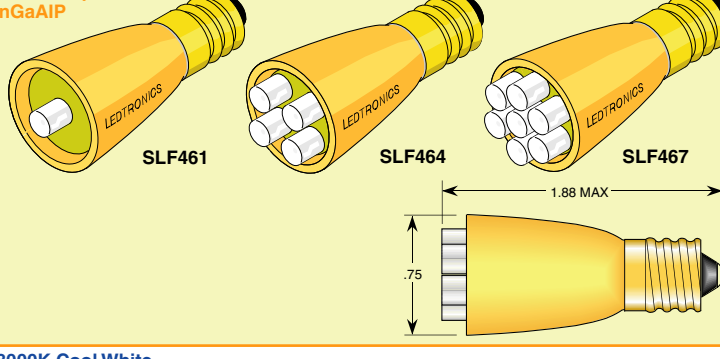
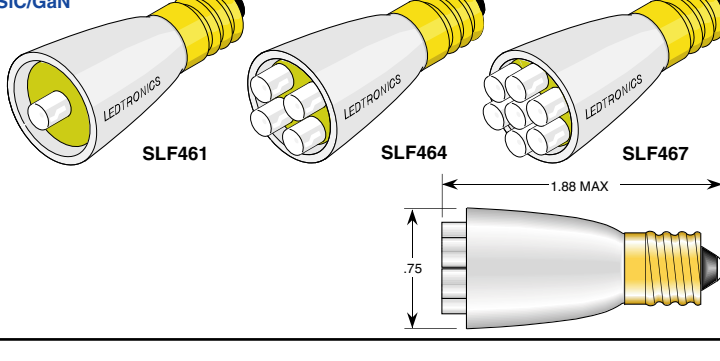
All dimensions in inches. For millimeters multiply by 25.4



Series: S321CB1K (15° Illumination)  
PN Example: S321-OPB-024B



## S6 Candelabra Screw Based LEDs

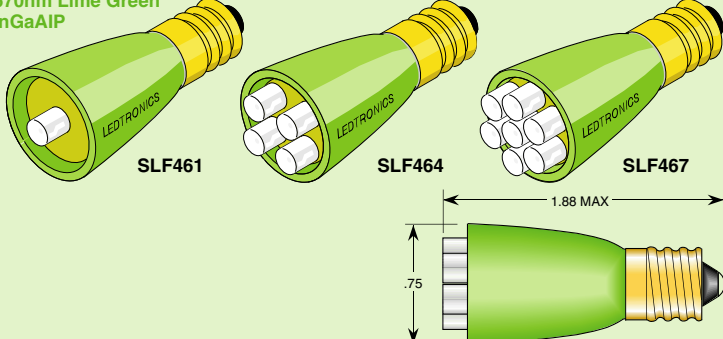
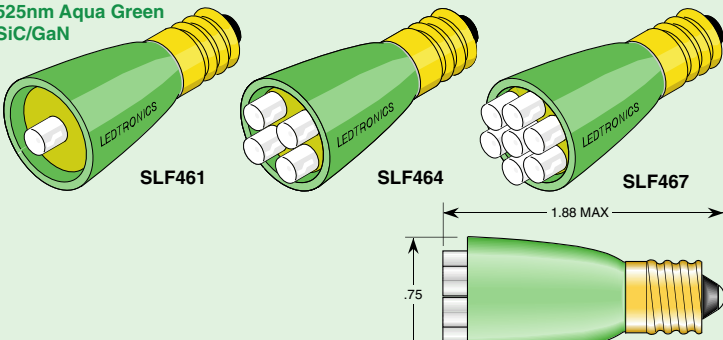
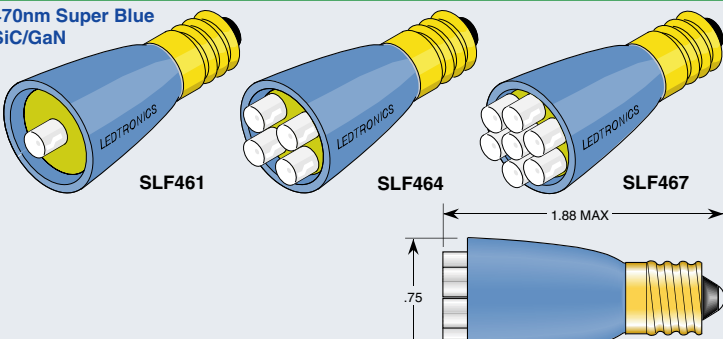
| Miniature Packages                                                                                                                                                  | Part Number     | Electrical-Optical Characteristics (Ta = 25°C) |                |               | Angle of Illumination | Special Features                                                                                                                                    |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|------------------------------------------------|----------------|---------------|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                                     |                 | Voltage V typ                                  | Current mA typ | Intensity mcd |                       |                                                                                                                                                     |
| <b>660nm Ultra Red GaAlAs/GaAlAs</b><br><br>SLF461 SLF464 SLF467<br>1.88 MAX<br>.75 | SLF461-0UR-024B | 24V                                            | 20             | 115           | 120°                  | Center Contact Polarity<br>B = Bipolar AC/DC<br>A = AC only<br><br>Replace SLF461 With<br>SL461 for Narrow Beam<br>(15°) 1.6K mcd/52Ft.Cd<br>@ 20mA |
|                                                                                                                                                                     | SLF461-0UR-120A | 120VAC                                         | 10             | 50            |                       |                                                                                                                                                     |
|                                                                                                                                                                     | SLF461-0UR-130B | 130V                                           | 8              | 40            |                       |                                                                                                                                                     |
|                                                                                                                                                                     | SLF461-0UR-220A | 220VAC                                         | 4              | 15            |                       |                                                                                                                                                     |
|                                                                                                                                                                     | SLF464-0UR-024B | 24V                                            | 20             | 460           |                       |                                                                                                                                                     |
|                                                                                                                                                                     | SLF464-0UR-120A | 120VAC                                         | 10             | 200           |                       |                                                                                                                                                     |
|                                                                                                                                                                     | SLF464-0UR-130B | 130V                                           | 8              | 160           |                       |                                                                                                                                                     |
|                                                                                                                                                                     | SLF464-0UR-220A | 220VAC                                         | 4              | 60            |                       |                                                                                                                                                     |
|                                                                                                                                                                     | SLF467-0UR-024B | 24V                                            | 20             | 800           |                       |                                                                                                                                                     |
|                                                                                                                                                                     | SLF467-0UR-120A | 120VAC                                         | 10             | 350           |                       |                                                                                                                                                     |
|                                                                                                                                                                     | SLF467-0UR-130B | 130V                                           | 8              | 280           |                       |                                                                                                                                                     |
|                                                                                                                                                                     | SLF467-0UR-220A | 220VAC                                         | 4              | 105           |                       |                                                                                                                                                     |
| <b>612nm Super Orange InGaAlP</b><br><br>SLF461 SLF464 SLF467<br>1.88 MAX<br>.75   | SLF461-0UO-024B | 24V                                            | 20             | 130           | 120°                  | Center Contact Polarity<br>B = Bipolar AC/DC<br>A = AC only<br><br>Replace SLF461 With<br>SL461 for Narrow Beam<br>(15°) 3.5 K mcd@<br>20mA         |
|                                                                                                                                                                     | SLF461-0UO-120A | 120VAC                                         | 10             | 65            |                       |                                                                                                                                                     |
|                                                                                                                                                                     | SLF461-0UO-130B | 130V                                           | 8              | 52            |                       |                                                                                                                                                     |
|                                                                                                                                                                     | SLF461-0UO-220A | 220VAC                                         | 4              | 26            |                       |                                                                                                                                                     |
|                                                                                                                                                                     | SLF464-0UO-024B | 24V                                            | 20             | 520           |                       |                                                                                                                                                     |
|                                                                                                                                                                     | SLF464-0UO-120A | 120VAC                                         | 10             | 260           |                       |                                                                                                                                                     |
|                                                                                                                                                                     | SLF464-0UO-130B | 130V                                           | 8              | 208           |                       |                                                                                                                                                     |
|                                                                                                                                                                     | SLF464-0UO-220A | 220VAC                                         | 4              | 104           |                       |                                                                                                                                                     |
|                                                                                                                                                                     | SLF467-0UO-024B | 24V                                            | 20             | 910           |                       |                                                                                                                                                     |
|                                                                                                                                                                     | SLF467-0UO-120A | 120VAC                                         | 10             | 455           |                       |                                                                                                                                                     |
|                                                                                                                                                                     | SLF467-0UO-130B | 130V                                           | 8              | 364           |                       |                                                                                                                                                     |
|                                                                                                                                                                     | SLF467-0UO-220A | 220VAC                                         | 4              | 182           |                       |                                                                                                                                                     |
| <b>595nm Super Yellow InGaAlP</b><br><br>SLF461 SLF464 SLF467<br>1.88 MAX<br>.75  | SLF461-0UY-024B | 24V                                            | 20             | 116           | 120°                  | Center Contact Polarity<br>B = Bipolar AC/DC<br>A = AC only<br><br>Replace SLF461 With<br>SL461 for Narrow Beam<br>(15°) 3.2K mcd@ 20mA             |
|                                                                                                                                                                     | SLF461-0UY-120A | 120VAC                                         | 10             | 39            |                       |                                                                                                                                                     |
|                                                                                                                                                                     | SLF461-0UY-130B | 130V                                           | 8              | 24            |                       |                                                                                                                                                     |
|                                                                                                                                                                     | SLF461-0UY-220A | 220VAC                                         | 4              | 4             |                       |                                                                                                                                                     |
|                                                                                                                                                                     | SLF464-0UY-024B | 24V                                            | 20             | 464           |                       |                                                                                                                                                     |
|                                                                                                                                                                     | SLF464-0UY-120A | 120VAC                                         | 10             | 156           |                       |                                                                                                                                                     |
|                                                                                                                                                                     | SLF464-0UY-130B | 130V                                           | 8              | 96            |                       |                                                                                                                                                     |
|                                                                                                                                                                     | SLF464-0UY-220A | 220VAC                                         | 4              | 16            |                       |                                                                                                                                                     |
|                                                                                                                                                                     | SLF467-0UY-024B | 24V                                            | 20             | 812           |                       |                                                                                                                                                     |
|                                                                                                                                                                     | SLF467-0UY-120A | 120VAC                                         | 10             | 273           |                       |                                                                                                                                                     |
|                                                                                                                                                                     | SLF467-0UY-130B | 130V                                           | 8              | 168           |                       |                                                                                                                                                     |
|                                                                                                                                                                     | SLF467-0UY-220A | 220VAC                                         | 4              | 28            |                       |                                                                                                                                                     |
| <b>8000K Cool White SiC/GaN</b><br><br>SLF461 SLF464 SLF467<br>1.88 MAX<br>.75    | SLF461-0CW-024B | 24V                                            | 15             | 160           | 120°                  | Center Contact Polarity<br>B = Bipolar AC/DC<br>A = AC only<br><br>Replace BF321 With<br>B321 for Std. Beam<br>(50°)                                |
|                                                                                                                                                                     | SLF461-0CW-120A | 120VAC                                         | 10             | 106           |                       |                                                                                                                                                     |
|                                                                                                                                                                     | SLF461-0CW-130B | 130V                                           | 8              | 85            |                       |                                                                                                                                                     |
|                                                                                                                                                                     | SLF461-0CW-220A | 220VAC                                         | 4              | 42            |                       |                                                                                                                                                     |
|                                                                                                                                                                     | SLF464-0CW-024B | 24V                                            | 15             | 640           |                       |                                                                                                                                                     |
|                                                                                                                                                                     | SLF464-0CW-120A | 120VAC                                         | 10             | 424           |                       |                                                                                                                                                     |
|                                                                                                                                                                     | SLF464-0CW-130B | 130V                                           | 8              | 340           |                       |                                                                                                                                                     |
|                                                                                                                                                                     | SLF464-0CW-220A | 220VAC                                         | 4              | 168           |                       |                                                                                                                                                     |
|                                                                                                                                                                     | SLF466-0CW-024B | 24V                                            | 15             | 960           |                       |                                                                                                                                                     |
|                                                                                                                                                                     | SLF467-0CW-120A | 120VAC                                         | 10             | 742           |                       |                                                                                                                                                     |
|                                                                                                                                                                     | SLF467-0CW-130B | 130V                                           | 8              | 595           |                       |                                                                                                                                                     |
|                                                                                                                                                                     | SLF467-0CW-220A | 220VAC                                         | 4              | 294           |                       |                                                                                                                                                     |

All dimensions in inches. For millimeters multiply by 25.4

Log # 122N Rev 09-2000

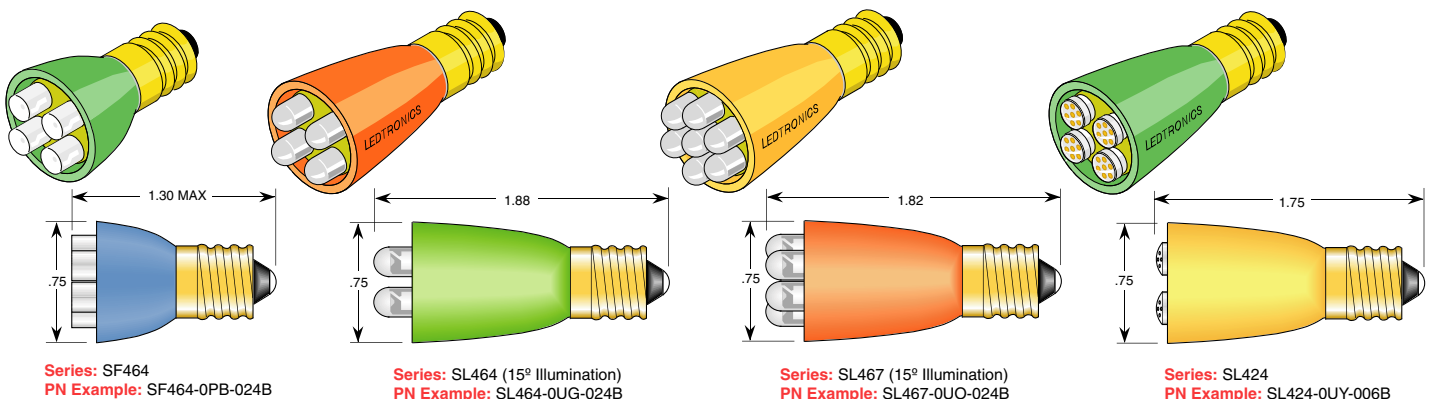


## S6 Candelabra Screw Based LEDs

| Miniature Packages                                                                                                                                                | Part Number     | Electrical-Optical Characteristics (Ta = 25°C) |                |               | Angle of Illumination | Special Features                                                                                                                                    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|------------------------------------------------|----------------|---------------|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                                   |                 | Voltage V typ                                  | Current mA typ | Intensity mcd |                       |                                                                                                                                                     |
| <b>570nm Lime Green InGaAlP</b><br><br>SLF461 SLF464 SLF467<br>1.88 MAX<br>.75   | SLF461-0UG-024B | 24V                                            | 20             | 58            | 120°                  | Center Contact Polarity<br>B = Bipolar AC/DC<br>A = AC only<br><br>Replace SLF461 With<br>SL461 for Narrow Beam<br>(12-15°) 1K mcd @<br>20mA        |
|                                                                                                                                                                   | SLF461-0UG-120A | 120VAC                                         | 10             | 29            |                       |                                                                                                                                                     |
|                                                                                                                                                                   | SLF461-0UG-130B | 130V                                           | 8              | 23            |                       |                                                                                                                                                     |
|                                                                                                                                                                   | SLF461-0UG-220A | 220VAC                                         | 4              | 12            |                       |                                                                                                                                                     |
|                                                                                                                                                                   | SLF464-0UG-024B | 24V                                            | 20             | 232           |                       |                                                                                                                                                     |
|                                                                                                                                                                   | SLF464-0UG-120A | 120VAC                                         | 10             | 116           |                       |                                                                                                                                                     |
|                                                                                                                                                                   | SLF464-0UG-130B | 130V                                           | 8              | 92            |                       |                                                                                                                                                     |
|                                                                                                                                                                   | SLF464-0UG-220A | 220VAC                                         | 4              | 48            |                       |                                                                                                                                                     |
|                                                                                                                                                                   | SLF467-0UG-024B | 24V                                            | 20             | 406           |                       |                                                                                                                                                     |
|                                                                                                                                                                   | SLF467-0UG-120A | 120VAC                                         | 10             | 203           |                       |                                                                                                                                                     |
|                                                                                                                                                                   | SLF467-0UG-130B | 130V                                           | 8              | 161           |                       |                                                                                                                                                     |
|                                                                                                                                                                   | SLF467-0UG-220A | 220VAC                                         | 4              | 84            |                       |                                                                                                                                                     |
| <b>525nm Aqua Green SiC/GaN</b><br><br>SLF461 SLF464 SLF467<br>1.88 MAX<br>.75  | SLF461-0AG-024B | 24V                                            | 15             | 400           | 120°                  | Center Contact Polarity<br>B = Bipolar AC/DC<br>A = AC only<br><br>Replace SLF461 With<br>SL461 for Narrow Beam<br>(15°) 7K mcd/250 Ft.Cd<br>@ 15mA |
|                                                                                                                                                                   | SLF461-0AG-120A | 120VAC                                         | 10             | 275           |                       |                                                                                                                                                     |
|                                                                                                                                                                   | SLF461-0AG-130B | 130V                                           | 8              | 230           |                       |                                                                                                                                                     |
|                                                                                                                                                                   | SLF461-0AG-220A | 220VAC                                         | 4              | 140           |                       |                                                                                                                                                     |
|                                                                                                                                                                   | SLF464-0AG-024B | 24V                                            | 15             | 1600          |                       |                                                                                                                                                     |
|                                                                                                                                                                   | SLF464-0AG-120A | 120VAC                                         | 10             | 1100          |                       |                                                                                                                                                     |
|                                                                                                                                                                   | SLF464-0AG-130B | 130V                                           | 8              | 920           |                       |                                                                                                                                                     |
|                                                                                                                                                                   | SLF464-0AG-220A | 220VAC                                         | 4              | 560           |                       |                                                                                                                                                     |
|                                                                                                                                                                   | SLF466-0AG-024B | 24V                                            | 15             | 2400          |                       |                                                                                                                                                     |
|                                                                                                                                                                   | SLF467-0AG-120A | 120VAC                                         | 10             | 1900          |                       |                                                                                                                                                     |
|                                                                                                                                                                   | SLF467-0AG-130B | 130V                                           | 8              | 1600          |                       |                                                                                                                                                     |
|                                                                                                                                                                   | SLF467-0AG-220A | 220VAC                                         | 4              | 980           |                       |                                                                                                                                                     |
| <b>470nm Super Blue SiC/GaN</b><br><br>SLF461 SLF464 SLF467<br>1.88 MAX<br>.75 | SLF461-0PB-024B | 24V                                            | 15             | 116           | 120°                  | Center Contact Polarity<br>B = Bipolar AC/DC<br>A = AC only<br><br>Replace BF321 With<br>B321 for Std. Beam<br>(15°)                                |
|                                                                                                                                                                   | SLF461-0PB-120A | 120VAC                                         | 10             | 74            |                       |                                                                                                                                                     |
|                                                                                                                                                                   | SLF461-0PB-130B | 130V                                           | 8              | 53            |                       |                                                                                                                                                     |
|                                                                                                                                                                   | SLF461-0PB-220A | 220VAC                                         | 4              | 7             |                       |                                                                                                                                                     |
|                                                                                                                                                                   | SLF464-0PB-024B | 24V                                            | 15             | 464           |                       |                                                                                                                                                     |
|                                                                                                                                                                   | SLF464-0PB-120A | 120VAC                                         | 10             | 296           |                       |                                                                                                                                                     |
|                                                                                                                                                                   | SLF464-0PB-130B | 130V                                           | 8              | 212           |                       |                                                                                                                                                     |
|                                                                                                                                                                   | SLF464-0PB-220A | 220VAC                                         | 4              | 28            |                       |                                                                                                                                                     |
|                                                                                                                                                                   | SLF467-0PB-024B | 24V                                            | 15             | 812           |                       |                                                                                                                                                     |
|                                                                                                                                                                   | SLF467-0PB-120A | 120VAC                                         | 10             | 518           |                       |                                                                                                                                                     |
|                                                                                                                                                                   | SLF467-0PB-130B | 130V                                           | 8              | 370           |                       |                                                                                                                                                     |
|                                                                                                                                                                   | SLF467-0PB-220A | 220VAC                                         | 4              | 49            |                       |                                                                                                                                                     |

### Options

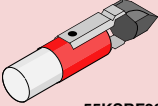
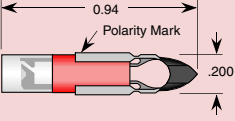
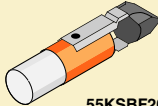
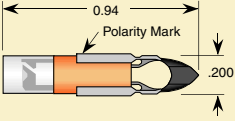
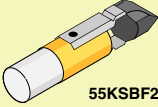
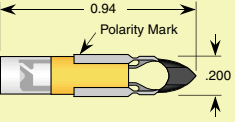
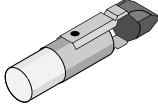
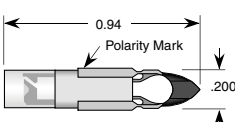
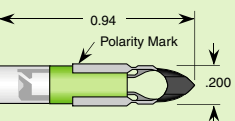
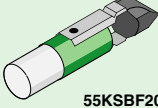
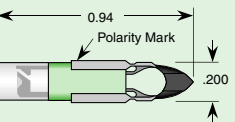
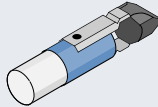
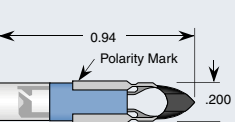
All dimensions in inches. For millimeters multiply by 25.4



Log # 122P Rev 10-2000

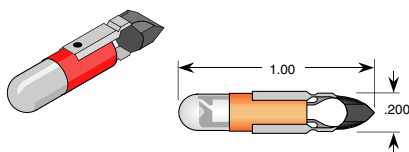


# T5.5K European Telephone Slide Based LEDs

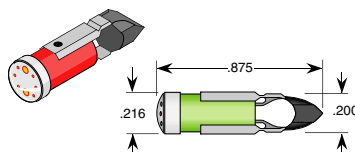
| Subminiature Packages                                                                                                                                                                                                       | Replaces Incandescent | Part Number        | Electrical-Optical Characteristics (Ta = 25°C) |                |               | Angle of Illumination | Special Features                                                                                                                                  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|--------------------|------------------------------------------------|----------------|---------------|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                                                                                             |                       |                    | Voltage V typ                                  | Current mA typ | Intensity mcd |                       |                                                                                                                                                   |
| <b>660nm Ultra Red GaAlAs/GaAlAs</b><br><br>55KSBF200<br> |                       | 55KSBF200-0UR-006V | 5/6V                                           | 20             | 115           | 120°                  | Contact Polarity<br>V = DC only<br>A = AC only<br><br>Replace 55KSBF200 With 55KSB200<br>Narrow Beam (15°)<br>Intensity 1.6K mcd/52 Ft.Cd @ 20 mA |
|                                                                                                                                                                                                                             |                       | 55KSBF200-0UR-014V | 12/14V                                         | 20             | 115           |                       |                                                                                                                                                   |
|                                                                                                                                                                                                                             |                       | 55KSBF200-0UR-024V | 24V                                            | 15             | 85            |                       |                                                                                                                                                   |
|                                                                                                                                                                                                                             |                       | 55KSBF200-0UR-028V | 28V                                            | 15             | 85            |                       |                                                                                                                                                   |
|                                                                                                                                                                                                                             |                       | 55KSBF200-0UR-048V | 48V                                            | 12             | 65            |                       |                                                                                                                                                   |
|                                                                                                                                                                                                                             |                       | 55KSBF200-0UR-120A | 120VAC                                         | 10             | 50            |                       |                                                                                                                                                   |
| <b>612nm Super Orange InGaAlP</b><br><br>55KSBF200<br>    |                       | 55KSBF200-0UO-006V | 5/6V                                           | 20             | 130           | 120°                  | Contact Polarity<br>V = DC only<br>A = AC only<br><br>Replace 55KSBF200 With 55KSB200<br>Narrow (15°) Beam<br>Intensity 3.5K mcd@20 mA            |
|                                                                                                                                                                                                                             |                       | 55KSBF200-0UO-014V | 12/14V                                         | 20             | 130           |                       |                                                                                                                                                   |
|                                                                                                                                                                                                                             |                       | 55KSBF200-0UO-024V | 24V                                            | 15             | 98            |                       |                                                                                                                                                   |
|                                                                                                                                                                                                                             |                       | 55KSBF200-0UO-028V | 28V                                            | 15             | 98            |                       |                                                                                                                                                   |
|                                                                                                                                                                                                                             |                       | 55KSBF200-0UO-048V | 48V                                            | 12             | 78            |                       |                                                                                                                                                   |
|                                                                                                                                                                                                                             |                       | 55KSBF200-0UO-120A | 120VAC                                         | 10             | 65            |                       |                                                                                                                                                   |
| <b>595nm Super Yellow InGaAlP</b><br><br>55KSBF200<br>    |                       | 55KSBF200-0UY-006V | 5/6V                                           | 20             | 116           | 120°                  | Contact Polarity<br>V = DC only<br>A = AC only<br><br>Replace 55KSBF200 With 55KSB200<br>Narrow (15°) Beam<br>Intensity 3.2K mcd@20 mA            |
|                                                                                                                                                                                                                             |                       | 55KSBF200-0UY-014V | 12/14V                                         | 20             | 116           |                       |                                                                                                                                                   |
|                                                                                                                                                                                                                             |                       | 55KSBF200-0UY-024V | 24V                                            | 15             | 75            |                       |                                                                                                                                                   |
|                                                                                                                                                                                                                             |                       | 55KSBF200-0UY-028V | 28V                                            | 15             | 75            |                       |                                                                                                                                                   |
|                                                                                                                                                                                                                             |                       | 55KSBF200-0UY-048V | 48V                                            | 12             | 54            |                       |                                                                                                                                                   |
|                                                                                                                                                                                                                             |                       | 55KSBF200-0UY-120A | 120VAC                                         | 10             | 39            |                       |                                                                                                                                                   |
| <b>8000K Cool White SiC/GaN</b><br><br>55KSBF200<br>    |                       | 55KSBF200-0CW-006V | 5V                                             | 15             | 160           | 120°                  | Contact Polarity<br>V = DC only<br>A = AC only<br><br>Replace 55KSBF200 With 55KSB200<br>Std. (50°) Beam Intensity 750 mcd/75 Ft. cd              |
|                                                                                                                                                                                                                             |                       | 55KSBF200-0CW-014V | 12/14V                                         | 15             | 160           |                       |                                                                                                                                                   |
|                                                                                                                                                                                                                             |                       | 55KSBF200-0CW-024V | 24V                                            | 15             | 160           |                       |                                                                                                                                                   |
|                                                                                                                                                                                                                             |                       | 55KSBF200-0CW-028V | 28V                                            | 15             | 160           |                       |                                                                                                                                                   |
|                                                                                                                                                                                                                             |                       | 55KSBF200-0CW-048V | 48V                                            | 12             | 128           |                       |                                                                                                                                                   |
|                                                                                                                                                                                                                             |                       | 55KSBF200-0CW-120A | 120VAC                                         | 10             | 106           |                       |                                                                                                                                                   |
| <b>570nm Lime Green InGaAlP</b><br><br>55KSBF200<br>  |                       | 55KSBF200-0UG-006V | 5/6V                                           | 20             | 58            | 120°                  | Contact Polarity<br>V = DC only<br>A = AC only<br><br>Replace 55KSBF200 With 55KSB200<br>Narrow (12-15°) Beam<br>Intensity 1K mcd@ 20 mA          |
|                                                                                                                                                                                                                             |                       | 55KSBF200-0UG-014V | 12/14V                                         | 20             | 58            |                       |                                                                                                                                                   |
|                                                                                                                                                                                                                             |                       | 55KSBF200-0UG-024V | 24V                                            | 15             | 44            |                       |                                                                                                                                                   |
|                                                                                                                                                                                                                             |                       | 55KSBF200-0UG-028V | 28V                                            | 15             | 44            |                       |                                                                                                                                                   |
|                                                                                                                                                                                                                             |                       | 55KSBF200-0UG-048V | 48V                                            | 12             | 35            |                       |                                                                                                                                                   |
|                                                                                                                                                                                                                             |                       | 55KSBF200-0UG-120A | 120VAC                                         | 10             | 29            |                       |                                                                                                                                                   |
| <b>525nm Aqua Green SiC/GaN</b><br><br>55KSBF200<br>  |                       | 55KSBF200-0AG-006V | 5/6V                                           | 15             | 400           | 120°                  | Contact Polarity<br>V = DC only<br>A = AC only<br><br>Replace 55KSBF200 With 55KSB200<br>Narrow (15°) Beam<br>Intensity 7K mcd/250 Ft.Cd          |
|                                                                                                                                                                                                                             |                       | 55KSBF200-0AG-014V | 12/14V                                         | 15             | 400           |                       |                                                                                                                                                   |
|                                                                                                                                                                                                                             |                       | 55KSBF200-0AG-024V | 24V                                            | 15             | 400           |                       |                                                                                                                                                   |
|                                                                                                                                                                                                                             |                       | 55KSBF200-0AG-028V | 28V                                            | 15             | 400           |                       |                                                                                                                                                   |
|                                                                                                                                                                                                                             |                       | 55KSBF200-0AG-048V | 48V                                            | 12             | 320           |                       |                                                                                                                                                   |
|                                                                                                                                                                                                                             |                       | 55KSBF200-0AG-120A | 120VAC                                         | 10             | 275           |                       |                                                                                                                                                   |
| <b>470nm Super Blue SiC/GaN</b><br><br>55KSBF200<br>  |                       | 55KSBF200-0PB-006V | 5/6V                                           | 15             | 125           | 120°                  | Contact Polarity<br>V = DC only<br>A = AC only<br><br>Replace 55KSBF200 With 55KSB200<br>Std. (15°) Beam Intensity 2K mcd/60 Ft.Cd                |
|                                                                                                                                                                                                                             |                       | 55KSBF200-0PB-014V | 12/14V                                         | 15             | 125           |                       |                                                                                                                                                   |
|                                                                                                                                                                                                                             |                       | 55KSBF200-0PB-024V | 24V                                            | 15             | 125           |                       |                                                                                                                                                   |
|                                                                                                                                                                                                                             |                       | 55KSBF200-0PB-028V | 28V                                            | 15             | 125           |                       |                                                                                                                                                   |
|                                                                                                                                                                                                                             |                       | 55KSBF200-0PB-048V | 48V                                            | 12             | 84            |                       |                                                                                                                                                   |
|                                                                                                                                                                                                                             |                       | 55KSBF200-0PB-120A | 120VAC                                         | 10             | 74            |                       |                                                                                                                                                   |

## Options

All dimensions in inches. For millimeters multiply by 25.4



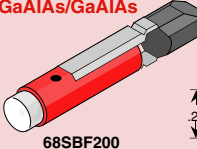
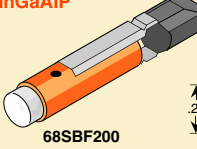
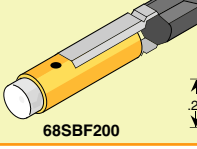
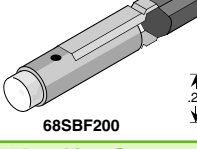
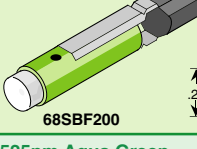
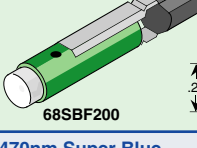
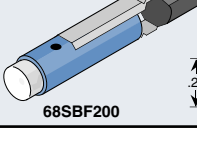
Series: 55KSB200 (15° Illumination)  
PN Example: 55KSB200-0UO-024V



Series: 55KSB206 (160° Illumination)  
PN Example: 55KSB206-0AG-024V

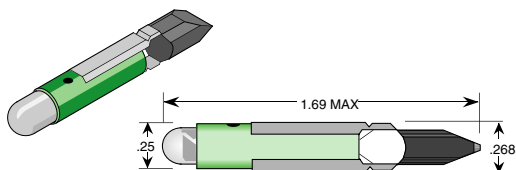


## T6.8 European Telephone Slide Based LEDs

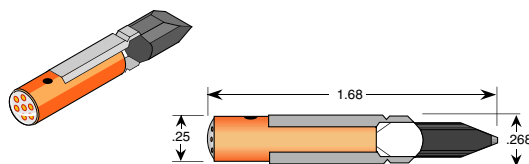
| Subminiature Packages                                                                                                                | Replaces Incandescent | Part Number       | Electrical-Optical Characteristics (Ta = 25°C) |                |               | Angle of Illumination | Special Features                                                                                                                                     |
|--------------------------------------------------------------------------------------------------------------------------------------|-----------------------|-------------------|------------------------------------------------|----------------|---------------|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                      |                       |                   | Voltage V typ                                  | Current mA typ | Intensity mcd |                       |                                                                                                                                                      |
| <b>660nm Ultra Red GaAlAs/GaAlAs</b><br><br>68SBF200 |                       | 68SBF200-0UR-006B | 5/6V                                           | 20             | 115           | 120°                  | Contact Polarity<br>B = BiPolar AC/DC<br>A = AC only<br><br>Replace 68SBF200 With 68SB200<br>Narrow Beam (15°)<br>Intensity 1.6K mcd/52 Ft.Cd @20 mA |
|                                                                                                                                      |                       | 68SBF200-0UR-014B | 12/14V                                         | 20             | 115           |                       |                                                                                                                                                      |
|                                                                                                                                      |                       | 68SBF200-0UR-024B | 24V                                            | 15             | 85            |                       |                                                                                                                                                      |
|                                                                                                                                      |                       | 68SBF200-0UR-028B | 28V                                            | 15             | 85            |                       |                                                                                                                                                      |
|                                                                                                                                      |                       | 68SBF200-0UR-048B | 48V                                            | 12             | 65            |                       |                                                                                                                                                      |
|                                                                                                                                      |                       | 68SBF200-0UR-120A | 120VAC                                         | 10             | 50            |                       |                                                                                                                                                      |
| <b>612nm Super Orange InGaAlP</b><br><br>68SBF200    |                       | 68SBF200-0UO-006B | 5/6V                                           | 20             | 130           | 120°                  | Contact Polarity<br>B = BiPolar AC/DC<br>A = AC only<br><br>Replace 68SBF200 With 68SB200<br>Narrow (15°) Beam<br>Intensity 3.5K mcd@20 mA           |
|                                                                                                                                      |                       | 68SBF200-0UO-014B | 12/14V                                         | 20             | 130           |                       |                                                                                                                                                      |
|                                                                                                                                      |                       | 68SBF200-0UO-024B | 24V                                            | 15             | 98            |                       |                                                                                                                                                      |
|                                                                                                                                      |                       | 68SBF200-0UO-028B | 28V                                            | 15             | 98            |                       |                                                                                                                                                      |
|                                                                                                                                      |                       | 68SBF200-0UO-048B | 48V                                            | 12             | 78            |                       |                                                                                                                                                      |
|                                                                                                                                      |                       | 68SBF200-0UO-120A | 120VAC                                         | 10             | 65            |                       |                                                                                                                                                      |
| <b>595nm Super Yellow InGaAlP</b><br><br>68SBF200    |                       | 68SBF200-0UY-006B | 5/6V                                           | 20             | 116           | 120°                  | Contact Polarity<br>B = BiPolar AC/DC<br>A = AC only<br><br>Replace 68SBF200 With 68SB200<br>Narrow (15°) Beam<br>Intensity 3.2K mcd@20 mA           |
|                                                                                                                                      |                       | 68SBF200-0UY-014B | 12/14V                                         | 20             | 116           |                       |                                                                                                                                                      |
|                                                                                                                                      |                       | 68SBF200-0UY-024B | 24V                                            | 15             | 75            |                       |                                                                                                                                                      |
|                                                                                                                                      |                       | 68SBF200-0UY-028B | 28V                                            | 15             | 75            |                       |                                                                                                                                                      |
|                                                                                                                                      |                       | 68SBF200-0UY-048B | 48V                                            | 12             | 54            |                       |                                                                                                                                                      |
|                                                                                                                                      |                       | 68SBF200-0UY-120A | 120VAC                                         | 10             | 39            |                       |                                                                                                                                                      |
| <b>8000K Cool White SiC/GaN</b><br><br>68SBF200     |                       | 68SBF200-0CW-006B | 5V                                             | 15             | 160           | 120°                  | Contact Polarity<br>B = BiPolar AC/DC<br>A = AC only<br><br>Replace 68SBF200 With 68SB200<br>Std. (50°) Beam Intensity<br>750 mcd/75 Ft. cd          |
|                                                                                                                                      |                       | 68SBF200-0CW-014B | 12/14V                                         | 15             | 160           |                       |                                                                                                                                                      |
|                                                                                                                                      |                       | 68SBF200-0CW-024B | 24V                                            | 15             | 160           |                       |                                                                                                                                                      |
|                                                                                                                                      |                       | 68SBF200-0CW-028B | 28V                                            | 15             | 160           |                       |                                                                                                                                                      |
|                                                                                                                                      |                       | 68SBF200-0CW-048B | 48V                                            | 12             | 128           |                       |                                                                                                                                                      |
|                                                                                                                                      |                       | 68SBF200-0CW-120A | 120VAC                                         | 10             | 106           |                       |                                                                                                                                                      |
| <b>570nm Lime Green InGaAlP</b><br><br>68SBF200    |                       | 68SBF200-0UG-006B | 5/6V                                           | 20             | 58            | 120°                  | Contact Polarity<br>B = BiPolar AC/DC<br>A = AC only<br><br>Replace 68SBF200 With 68SB200<br>Narrow (12-15°) Beam<br>Intensity 1K mcd@ 20 mA         |
|                                                                                                                                      |                       | 68SBF200-0UG-014B | 12/14V                                         | 20             | 58            |                       |                                                                                                                                                      |
|                                                                                                                                      |                       | 68SBF200-0UG-024B | 24V                                            | 15             | 44            |                       |                                                                                                                                                      |
|                                                                                                                                      |                       | 68SBF200-0UG-028B | 28V                                            | 15             | 44            |                       |                                                                                                                                                      |
|                                                                                                                                      |                       | 68SBF200-0UG-048B | 48V                                            | 12             | 35            |                       |                                                                                                                                                      |
|                                                                                                                                      |                       | 68SBF200-0UG-120A | 120VAC                                         | 10             | 29            |                       |                                                                                                                                                      |
| <b>525nm Aqua Green SiC/GaN</b><br><br>68SBF200    |                       | 68SBF200-0AG-006B | 5/6V                                           | 15             | 400           | 120°                  | Contact Polarity<br>B = BiPolar AC/DC<br>A = AC only<br><br>Replace 68SBF200 With 68SB200<br>Narrow (15°) Beam<br>Intensity 7K mcd/250 Ft.Cd         |
|                                                                                                                                      |                       | 68SBF200-0AG-014B | 12/14V                                         | 15             | 400           |                       |                                                                                                                                                      |
|                                                                                                                                      |                       | 68SBF200-0AG-024B | 24V                                            | 15             | 400           |                       |                                                                                                                                                      |
|                                                                                                                                      |                       | 68SBF200-0AG-028B | 28V                                            | 15             | 400           |                       |                                                                                                                                                      |
|                                                                                                                                      |                       | 68SBF200-0AG-048B | 48V                                            | 12             | 320           |                       |                                                                                                                                                      |
|                                                                                                                                      |                       | 68SBF200-0AG-120A | 120VAC                                         | 10             | 275           |                       |                                                                                                                                                      |
| <b>470nm Super Blue SiC/GaN</b><br><br>68SBF200    |                       | 68SBF200-0PB-006B | 5/6V                                           | 15             | 125           | 120°                  | Contact Polarity<br>B = BiPolar AC/DC<br>A = AC only<br><br>Replace 68SBF200 With 68SB200<br>Std. (15°) Beam Intensity<br>2K mcd/60 Ft.Cd            |
|                                                                                                                                      |                       | 68SBF200-0PB-014B | 12/14V                                         | 15             | 125           |                       |                                                                                                                                                      |
|                                                                                                                                      |                       | 68SBF200-0PB-024B | 24V                                            | 15             | 125           |                       |                                                                                                                                                      |
|                                                                                                                                      |                       | 68SBF200-0PB-028B | 28V                                            | 15             | 125           |                       |                                                                                                                                                      |
|                                                                                                                                      |                       | 68SBF200-0PB-048B | 48V                                            | 12             | 84            |                       |                                                                                                                                                      |
|                                                                                                                                      |                       | 68SBF200-0PB-120A | 120VAC                                         | 10             | 74            |                       |                                                                                                                                                      |

### Options

All dimensions in inches. For millimeters multiply by 25.4



Series: 68SB200 (15° Illumination)  
PN Example: 68SB200-0AG-024B

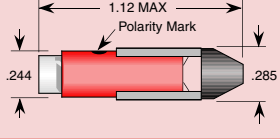
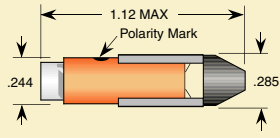
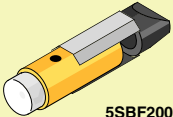
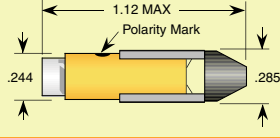
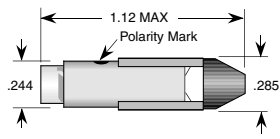
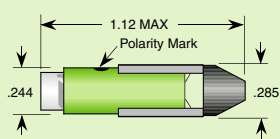
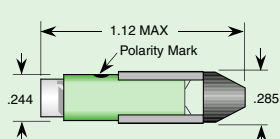
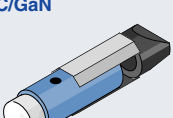
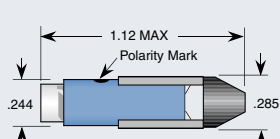
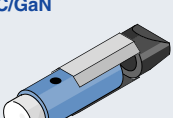
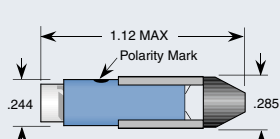


Series: 68SB206 (6 Chip 160° Illumination)  
PN Example: 68SB206-0UO-120A

Log # 122T Rev 09-2000

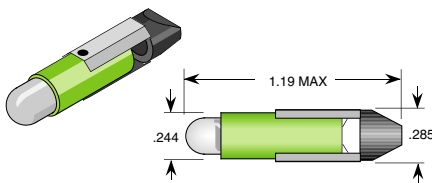


## T2 ANSI #5 Telephone Slide Based LEDs

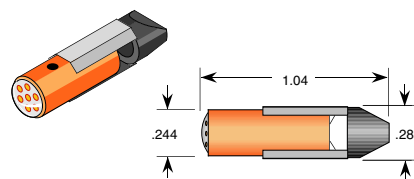
| Subminiature Packages                                                                                                                                                                                                     | Replaces Incandescent | Part Number      | Electrical-Optical Characteristics (Ta = 25°C) |                |               | Angle of Illumination | Special Features                                                                                                                                |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|------------------|------------------------------------------------|----------------|---------------|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                                                                                           |                       |                  | Voltage V typ                                  | Current mA typ | Intensity mcd |                       |                                                                                                                                                 |
| <b>660nm Ultra Red GaAlAs/GaAlAs</b><br><br>5SBF200<br> | 6 PSB                 | 5SBF200-0UR-006B | 5/6V                                           | 20             | 115           | 120°                  | Contact Polarity<br>B = BiPolar AC/DC<br>A = AC only<br>Replace 5SBF200 With 5SB200<br>Narrow Beam (15°)<br>Intensity 1.6K mcd/52 Ft.Cd @ 20 mA |
|                                                                                                                                                                                                                           | 12 PSB                | 5SBF200-0UR-014B | 12/14V                                         | 20             | 115           |                       |                                                                                                                                                 |
|                                                                                                                                                                                                                           | 24 PSB                | 5SBF200-0UR-024B | 24V                                            | 15             | 85            |                       |                                                                                                                                                 |
|                                                                                                                                                                                                                           | 28 PSB                | 5SBF200-0UR-028B | 28V                                            | 15             | 85            |                       |                                                                                                                                                 |
|                                                                                                                                                                                                                           |                       | 5SBF200-0UR-048B | 48V                                            | 12             | 65            |                       |                                                                                                                                                 |
| <b>612nm Super Orange InGaAlP</b><br><br>5SBF200<br>    | 120 PSB               | 5SBF200-0UR-120A | 120VAC                                         | 10             | 50            |                       |                                                                                                                                                 |
|                                                                                                                                                                                                                           | 6 PSB                 | 5SBF200-0UO-006B | 5/6V                                           | 20             | 130           | 120°                  | Contact Polarity<br>B = BiPolar AC/DC<br>A = AC only<br>Replace 5SBF200 With 5SB200<br>Narrow (15°) Beam<br>Intensity 3.5K mcd @ 20 mA          |
|                                                                                                                                                                                                                           | 12 PSB                | 5SBF200-0UO-014B | 12/14V                                         | 20             | 130           |                       |                                                                                                                                                 |
|                                                                                                                                                                                                                           | 24 PSB                | 5SBF200-0UO-024B | 24V                                            | 15             | 98            |                       |                                                                                                                                                 |
|                                                                                                                                                                                                                           | 28 PSB                | 5SBF200-0UO-028B | 28V                                            | 15             | 98            |                       |                                                                                                                                                 |
|                                                                                                                                                                                                                           |                       | 5SBF200-0UO-048B | 48V                                            | 12             | 78            |                       |                                                                                                                                                 |
| <b>595nm Super Yellow InGaAlP</b><br><br>5SBF200<br>    | 120 PSB               | 5SBF200-0UO-120A | 120VAC                                         | 10             | 65            |                       |                                                                                                                                                 |
|                                                                                                                                                                                                                           | 6 PSB                 | 5SBF200-0UY-006B | 5/6V                                           | 20             | 116           | 120°                  | Contact Polarity<br>B = BiPolar AC/DC<br>A = AC only<br>Replace 5SBF200 With 5SB200<br>Narrow (15°) Beam<br>Intensity 3.2K mcd @ 20 mA          |
|                                                                                                                                                                                                                           | 12 PSB                | 5SBF200-0UY-014B | 12/14V                                         | 20             | 116           |                       |                                                                                                                                                 |
|                                                                                                                                                                                                                           | 24 PSB                | 5SBF200-0UY-024B | 24V                                            | 15             | 75            |                       |                                                                                                                                                 |
|                                                                                                                                                                                                                           | 28 PSB                | 5SBF200-0UY-028B | 28V                                            | 15             | 75            |                       |                                                                                                                                                 |
|                                                                                                                                                                                                                           |                       | 5SBF200-0UY-048B | 48V                                            | 12             | 54            |                       |                                                                                                                                                 |
| <b>8000K Cool White SiC/GaN</b><br><br>5SBF200<br>    | 120 PSB               | 5SBF200-0UY-120A | 120VAC                                         | 10             | 39            |                       |                                                                                                                                                 |
|                                                                                                                                                                                                                           | 6 PSB                 | 5SBF200-0CW-006B | 5V                                             | 15             | 160           | 120°                  | Contact Polarity<br>B = BiPolar AC/DC<br>A = AC only<br>Replace 5SBF200 With 5SB200<br>Std. (50°) Beam Intensity 750 mcd/75 Ft. cd              |
|                                                                                                                                                                                                                           | 12 PSB                | 5SBF200-0CW-014B | 12/14V                                         | 15             | 160           |                       |                                                                                                                                                 |
|                                                                                                                                                                                                                           | 24 PSB                | 5SBF200-0CW-024B | 24V                                            | 15             | 160           |                       |                                                                                                                                                 |
|                                                                                                                                                                                                                           | 28 PSB                | 5SBF200-0CW-028B | 28V                                            | 15             | 160           |                       |                                                                                                                                                 |
|                                                                                                                                                                                                                           |                       | 5SBF200-0CW-048B | 48V                                            | 12             | 128           |                       |                                                                                                                                                 |
| <b>570nm Lime Green InGaAlP</b><br><br>5SBF200<br>  | 120 PSB               | 5SBF200-0CW-120A | 120VAC                                         | 10             | 106           |                       |                                                                                                                                                 |
|                                                                                                                                                                                                                           | 6 PSB                 | 5SBF200-0UG-006B | 5/6V                                           | 20             | 58            | 120°                  | Contact Polarity<br>B = BiPolar AC/DC<br>A = AC only<br>Replace 5SBF200 With 5SB200<br>Narrow (12-15°) Beam<br>Intensity 1K mcd @ 20 mA         |
|                                                                                                                                                                                                                           | 12 PSB                | 5SBF200-0UG-014B | 12/14V                                         | 20             | 58            |                       |                                                                                                                                                 |
|                                                                                                                                                                                                                           | 24 PSB                | 5SBF200-0UG-024B | 24V                                            | 15             | 44            |                       |                                                                                                                                                 |
|                                                                                                                                                                                                                           | 28 PSB                | 5SBF200-0UG-028B | 28V                                            | 15             | 44            |                       |                                                                                                                                                 |
|                                                                                                                                                                                                                           |                       | 5SBF200-0UG-048B | 48V                                            | 12             | 35            |                       |                                                                                                                                                 |
| <b>525nm Aqua Green SiC/GaN</b><br><br>5SBF200<br>  | 120 PSB               | 5SBF200-0UG-120A | 120VAC                                         | 10             | 29            |                       |                                                                                                                                                 |
|                                                                                                                                                                                                                           | 6 PSB                 | 5SBF200-0AG-006B | 5/6V                                           | 15             | 400           | 120°                  | Contact Polarity<br>B = BiPolar AC/DC<br>A = AC only<br>Replace 5SBF200 With 5SB200<br>Narrow (15°) Beam<br>Intensity 7K mcd/250 Ft.Cd          |
|                                                                                                                                                                                                                           | 12 PSB                | 5SBF200-0AG-014B | 12/14V                                         | 15             | 400           |                       |                                                                                                                                                 |
|                                                                                                                                                                                                                           | 24 PSB                | 5SBF200-0AG-024B | 24V                                            | 15             | 400           |                       |                                                                                                                                                 |
|                                                                                                                                                                                                                           | 28 PSB                | 5SBF200-0AG-028B | 28V                                            | 15             | 400           |                       |                                                                                                                                                 |
|                                                                                                                                                                                                                           |                       | 5SBF200-0AG-048B | 48V                                            | 12             | 320           |                       |                                                                                                                                                 |
| <b>470nm Super Blue SiC/GaN</b><br><br>5SBF200<br>  | 120 PSB               | 5SBF200-0AG-120A | 120VAC                                         | 10             | 275           |                       |                                                                                                                                                 |
|                                                                                                                                                                                                                           | 6 PSB                 | 5SBF200-0PB-006B | 5/6V                                           | 15             | 125           | 120°                  | Contact Polarity<br>B = BiPolar AC/DC<br>A = AC only<br>Replace 5SBF200 With 5SB200<br>Std. (15°) Beam Intensity 2K mcd/60 Ft.Cd                |
|                                                                                                                                                                                                                           | 12 PSB                | 5SBF200-0PB-014B | 12/14V                                         | 15             | 125           |                       |                                                                                                                                                 |
|                                                                                                                                                                                                                           | 24 PSB                | 5SBF200-0PB-024B | 24V                                            | 15             | 125           |                       |                                                                                                                                                 |
|                                                                                                                                                                                                                           | 28 PSB                | 5SBF200-0PB-028B | 28V                                            | 15             | 125           |                       |                                                                                                                                                 |
|                                                                                                                                                                                                                           |                       | 5SBF200-0PB-048B | 48V                                            | 12             | 84            |                       |                                                                                                                                                 |
| <b>470nm Super Blue SiC/GaN</b><br><br>5SBF200<br>  | 120 PSB               | 5SBF200-0PB-120A | 120VAC                                         | 10             | 74            |                       |                                                                                                                                                 |

### Options

All dimensions in inches. For millimeters multiply by 25.4



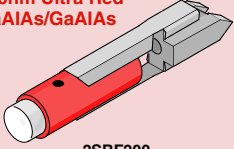
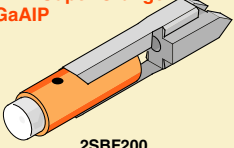
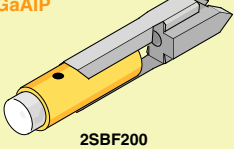
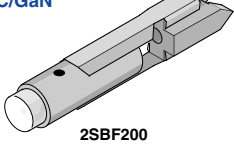
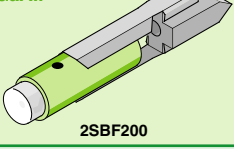
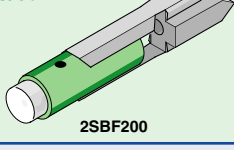
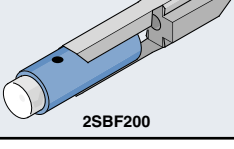
Series: 5SB200 (15° Illumination)  
PN Example: 5SB200-0UG-024B



Series: 5SB206 (160° Illumination)  
PN Example: 5SB206-0UO-028B

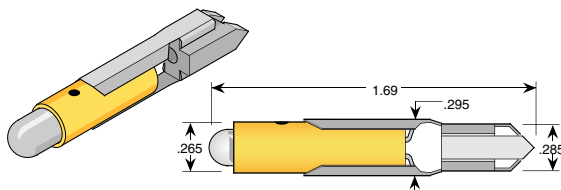


## T2 ANSI #2 & #3 Telephone Slide Based LEDs

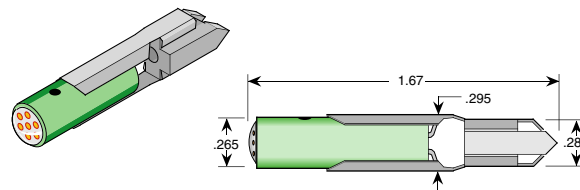
| Miniature Packages                                                                                                                   | Replaces Incandescent | Part Number      | Electrical-Optical Characteristics (Ta = 25°C) |                |               | Angle of Illumination | Special Features                                                                                                                               |
|--------------------------------------------------------------------------------------------------------------------------------------|-----------------------|------------------|------------------------------------------------|----------------|---------------|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                      |                       |                  | Voltage V typ                                  | Current mA typ | Intensity mcd |                       |                                                                                                                                                |
| <b>660nm Ultra Red GaAlAs/GaAlAs</b><br><br>2SBF200 |                       | 2SBF200-0UR-006B | 5/6V                                           | 20             | 115           | 120°                  | Contact Polarity<br>B = BiPolar AC/DC<br>A = AC only<br>Replace 2SBF200 With 2SB200<br>Narrow Beam (15°)<br>Intensity 1.6K mcd/52 Ft.Cd @20 mA |
|                                                                                                                                      |                       | 2SBF200-0UR-014B | 12/14V                                         | 20             | 115           |                       |                                                                                                                                                |
|                                                                                                                                      | 24E,24X               | 2SBF200-0UR-024B | 24V                                            | 15             | 85            |                       |                                                                                                                                                |
|                                                                                                                                      |                       | 2SBF200-0UR-028B | 28V                                            | 15             | 85            |                       |                                                                                                                                                |
|                                                                                                                                      | 48A,D,C               | 2SBF200-0UR-048B | 48V                                            | 12             | 65            |                       |                                                                                                                                                |
| <b>612nm Super Orange InGaAlP</b><br><br>2SBF200    |                       | 2SBF200-0UO-006B | 5/6V                                           | 20             | 130           | 120°                  | Contact Polarity<br>B = BiPolar AC/DC<br>A = AC only<br>Replace 2SBF200 With 2SB200<br>Narrow (15°) Beam<br>Intensity 3.5K mcd@20 mA           |
|                                                                                                                                      |                       | 2SBF200-0UO-014B | 12/14V                                         | 20             | 130           |                       |                                                                                                                                                |
|                                                                                                                                      | 24E,24X               | 2SBF200-0UO-024B | 24V                                            | 15             | 98            |                       |                                                                                                                                                |
|                                                                                                                                      |                       | 2SBF200-0UO-028B | 28V                                            | 15             | 98            |                       |                                                                                                                                                |
|                                                                                                                                      | 48A,D,C               | 2SBF200-0UO-048B | 48V                                            | 12             | 78            |                       |                                                                                                                                                |
| <b>595nm Super Yellow InGaAlP</b><br><br>2SBF200    |                       | 2SBF200-0UY-006B | 5/6V                                           | 20             | 116           | 120°                  | Contact Polarity<br>B = BiPolar AC/DC<br>A = AC only<br>Replace 2SBF200 With 2SB200<br>Narrow (15°) Beam<br>Intensity 3.2K mcd@20 mA           |
|                                                                                                                                      |                       | 2SBF200-0UY-014B | 12/14V                                         | 20             | 116           |                       |                                                                                                                                                |
|                                                                                                                                      | 24E,24X               | 2SBF200-0UY-024B | 24V                                            | 15             | 75            |                       |                                                                                                                                                |
|                                                                                                                                      |                       | 2SBF200-0UY-028B | 28V                                            | 15             | 75            |                       |                                                                                                                                                |
|                                                                                                                                      | 48A,D,C               | 2SBF200-0UY-048B | 48V                                            | 12             | 54            |                       |                                                                                                                                                |
| <b>8000K Cool White SiC/GaN</b><br><br>2SBF200     |                       | 2SBF200-0CW-006B | 5V                                             | 15             | 160           | 120°                  | Contact Polarity<br>B = BiPolar AC/DC<br>A = AC only<br>Replace 2SBF200 With 2SB200<br>Std. (50°) Beam<br>Intensity 750 mcd/75 Ft. cd          |
|                                                                                                                                      |                       | 2SBF200-0CW-014B | 12/14V                                         | 15             | 160           |                       |                                                                                                                                                |
|                                                                                                                                      | 24E,24X               | 2SBF200-0CW-024B | 24V                                            | 15             | 160           |                       |                                                                                                                                                |
|                                                                                                                                      |                       | 2SBF200-0CW-028B | 28V                                            | 15             | 160           |                       |                                                                                                                                                |
|                                                                                                                                      | 48A,D,C               | 2SBF200-0CW-048B | 48V                                            | 12             | 128           |                       |                                                                                                                                                |
| <b>570nm Lime Green InGaAlP</b><br><br>2SBF200    |                       | 2SBF200-0UG-006B | 5/6V                                           | 20             | 58            | 120°                  | Contact Polarity<br>B = BiPolar AC/DC<br>A = AC only<br>Replace 2SBF200 With 2SB200<br>Narrow (12-15°) Beam<br>Intensity 1K mcd @ 20 mA        |
|                                                                                                                                      |                       | 2SBF200-0UG-014B | 12/14V                                         | 20             | 58            |                       |                                                                                                                                                |
|                                                                                                                                      | 24E,24X               | 2SBF200-0UG-024B | 24V                                            | 15             | 44            |                       |                                                                                                                                                |
|                                                                                                                                      |                       | 2SBF200-0UG-028B | 28V                                            | 15             | 44            |                       |                                                                                                                                                |
|                                                                                                                                      | 48A,D,C               | 2SBF200-0UG-048B | 48V                                            | 12             | 35            |                       |                                                                                                                                                |
| <b>525nm Aqua Green SiC/GaN</b><br><br>2SBF200    |                       | 2SBF200-0AG-006B | 5/6V                                           | 15             | 400           | 120°                  | Contact Polarity<br>B = BiPolar AC/DC<br>A = AC only<br>Replace 2SBF200 With 2SB200<br>Narrow (15°) Beam<br>Intensity 7K mcd/250 Ft.Cd         |
|                                                                                                                                      |                       | 2SBF200-0AG-014B | 12/14V                                         | 15             | 400           |                       |                                                                                                                                                |
|                                                                                                                                      | 24E,24X               | 2SBF200-0AG-024B | 24V                                            | 15             | 400           |                       |                                                                                                                                                |
|                                                                                                                                      |                       | 2SBF200-0AG-028B | 28V                                            | 15             | 400           |                       |                                                                                                                                                |
|                                                                                                                                      | 48A,D,C               | 2SBF200-0AG-048B | 48V                                            | 12             | 320           |                       |                                                                                                                                                |
| <b>470nm Super Blue SiC/GaN</b><br><br>2SBF200    |                       | 2SBF200-0PB-006B | 5/6V                                           | 15             | 125           | 120°                  | Contact Polarity<br>B = BiPolar AC/DC<br>A = AC only<br>Replace 2SBF200 With 2SB200<br>Std. (15°) Beam<br>Intensity 2K mcd/60 Ft.Cd            |
|                                                                                                                                      |                       | 2SBF200-0PB-014B | 12/14V                                         | 15             | 125           |                       |                                                                                                                                                |
|                                                                                                                                      | 24E,24X               | 2SBF200-0PB-024B | 24V                                            | 15             | 125           |                       |                                                                                                                                                |
|                                                                                                                                      |                       | 2SBF200-0PB-028B | 28V                                            | 15             | 125           |                       |                                                                                                                                                |
|                                                                                                                                      | 48A,D,C               | 2SBF200-0PB-048B | 48V                                            | 12             | 84            |                       |                                                                                                                                                |
|                                                                                                                                      |                       | 2SBF200-0PB-120A | 120VAC                                         | 10             | 74            |                       |                                                                                                                                                |

### Options

All dimensions in inches. For millimeters multiply by 25.4



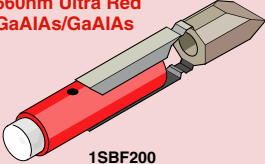
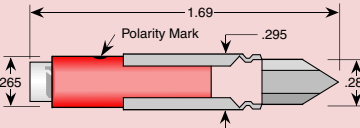
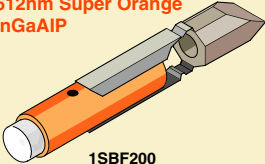
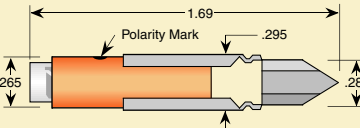
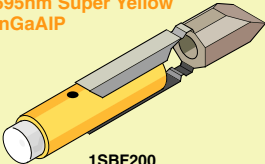
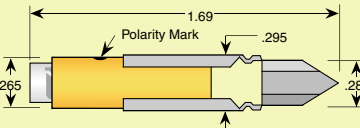
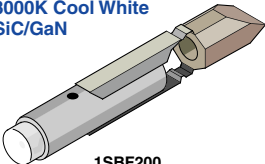
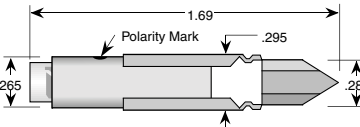
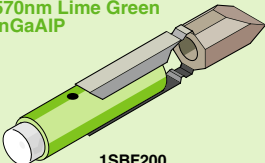
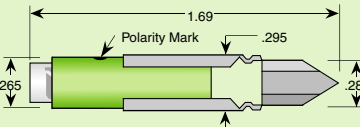
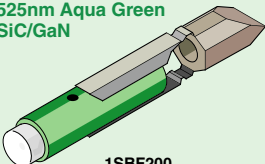
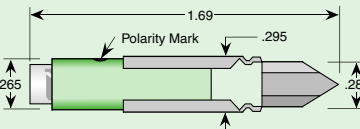
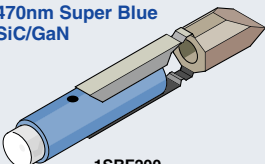
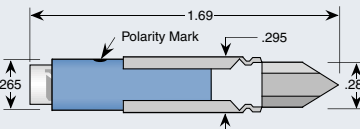
Series: 2SB200 (15° Illumination)  
PN Example: 2SB200-0UY-024B



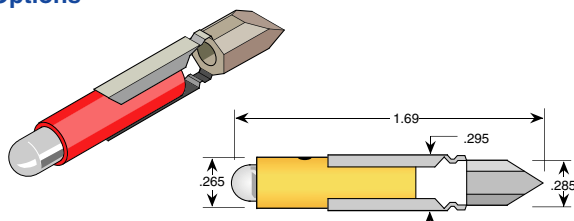
Series: 2SB206 (160° Illumination)  
PN Example: 2SB206-0AG-028B



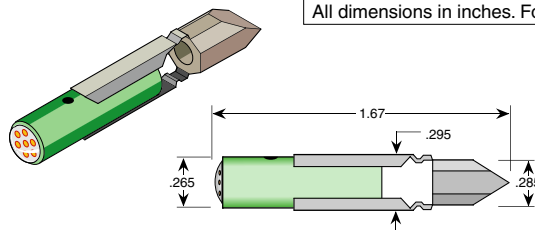
## T2 #1 Telephone Slide Based LEDs

| Miniature Packages                                                                                                                                                                                                       | Replaces Incandescent | Part Number      | Electrical-Optical Characteristics (Ta = 25°C) |                |               | Angle of Illumination | Special Features                                                                        |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|------------------|------------------------------------------------|----------------|---------------|-----------------------|-----------------------------------------------------------------------------------------|
|                                                                                                                                                                                                                          |                       |                  | Voltage V typ                                  | Current mA typ | Intensity mcd |                       |                                                                                         |
| <b>660nm Ultra Red GaAlAs/GaAlAs</b><br><br>1SBF200<br> |                       | 1SBF200-0UR-006B | 5/6V                                           | 20             | 115           | 120°                  | Contact Polarity<br>B = BiPolar AC/DC<br>A = AC only                                    |
|                                                                                                                                                                                                                          |                       | 1SBF200-0UR-014B | 12/14V                                         | 20             | 115           |                       |                                                                                         |
|                                                                                                                                                                                                                          |                       | 1SBF200-0UR-024B | 24V                                            | 15             | 85            |                       |                                                                                         |
|                                                                                                                                                                                                                          |                       | 1SBF200-0UR-028B | 28V                                            | 15             | 85            |                       |                                                                                         |
|                                                                                                                                                                                                                          |                       | 1SBF200-0UR-048B | 48V                                            | 12             | 65            |                       |                                                                                         |
|                                                                                                                                                                                                                          |                       | 1SBF200-0UR-120A | 120VAC                                         | 10             | 50            |                       | Replace 2SBF200 With 2SB200<br>Narrow Beam (15°)<br>Intensity 1.6K mcd/52 Ft.Cd @ 20 mA |
| <b>612nm Super Orange InGaAlP</b><br><br>1SBF200<br>    |                       | 1SBF200-0UO-006B | 5/6V                                           | 20             | 130           | 120°                  | Contact Polarity<br>B = BiPolar AC/DC<br>A = AC only                                    |
|                                                                                                                                                                                                                          |                       | 1SBF200-0UO-014B | 12/14V                                         | 20             | 130           |                       |                                                                                         |
|                                                                                                                                                                                                                          |                       | 1SBF200-0UO-024B | 24V                                            | 15             | 98            |                       |                                                                                         |
|                                                                                                                                                                                                                          |                       | 1SBF200-0UO-028B | 28V                                            | 15             | 98            |                       |                                                                                         |
|                                                                                                                                                                                                                          |                       | 1SBF200-0UO-048B | 48V                                            | 12             | 78            |                       |                                                                                         |
|                                                                                                                                                                                                                          |                       | 1SBF200-0UO-120A | 120VAC                                         | 10             | 65            |                       | Replace 2SBF200 With 2SB200<br>Narrow (15°) Beam<br>Intensity 3.5K mcd@ 20 mA           |
| <b>595nm Super Yellow InGaAlP</b><br><br>1SBF200<br>    |                       | 1SBF200-0UY-006B | 5/6V                                           | 20             | 116           | 120°                  | Contact Polarity<br>B = BiPolar AC/DC<br>A = AC only                                    |
|                                                                                                                                                                                                                          |                       | 1SBF200-0UY-014B | 12/14V                                         | 20             | 116           |                       |                                                                                         |
|                                                                                                                                                                                                                          |                       | 1SBF200-0UY-024B | 24V                                            | 15             | 75            |                       |                                                                                         |
|                                                                                                                                                                                                                          |                       | 1SBF200-0UY-028B | 28V                                            | 15             | 75            |                       |                                                                                         |
|                                                                                                                                                                                                                          |                       | 1SBF200-0UY-048B | 48V                                            | 12             | 54            |                       |                                                                                         |
|                                                                                                                                                                                                                          |                       | 1SBF200-0UY-120A | 120VAC                                         | 10             | 39            |                       | Replace 2SBF200 With 2SB200<br>Narrow (15°) Beam<br>Intensity 3.2K mcd@ 20 mA           |
| <b>8000K Cool White SiC/GaN</b><br><br>1SBF200<br>    |                       | 1SBF200-0CW-006B | 5V                                             | 15             | 160           | 120°                  | Contact Polarity<br>B = BiPolar AC/DC<br>A = AC only                                    |
|                                                                                                                                                                                                                          |                       | 1SBF200-0CW-014B | 12/14V                                         | 15             | 160           |                       |                                                                                         |
|                                                                                                                                                                                                                          |                       | 1SBF200-0CW-024B | 24V                                            | 15             | 160           |                       |                                                                                         |
|                                                                                                                                                                                                                          |                       | 1SBF200-0CW-028B | 28V                                            | 15             | 160           |                       |                                                                                         |
|                                                                                                                                                                                                                          |                       | 1SBF200-0CW-048B | 48V                                            | 12             | 128           |                       |                                                                                         |
|                                                                                                                                                                                                                          |                       | 1SBF200-0CW-120A | 120VAC                                         | 10             | 106           |                       | Replace 2SBF200 With 2SB200<br>Std. (50°) Beam<br>Intensity 750 mcd/75 Ft. cd           |
| <b>570nm Lime Green InGaAlP</b><br><br>1SBF200<br>  |                       | 1SBF200-0UG-006B | 5/6V                                           | 20             | 58            | 120°                  | Contact Polarity<br>B = BiPolar AC/DC<br>A = AC only                                    |
|                                                                                                                                                                                                                          |                       | 1SBF200-0UG-014B | 12/14V                                         | 20             | 58            |                       |                                                                                         |
|                                                                                                                                                                                                                          |                       | 1SBF200-0UG-024B | 24V                                            | 15             | 44            |                       |                                                                                         |
|                                                                                                                                                                                                                          |                       | 1SBF200-0UG-028B | 28V                                            | 15             | 44            |                       |                                                                                         |
|                                                                                                                                                                                                                          |                       | 1SBF200-0UG-048B | 48V                                            | 12             | 35            |                       |                                                                                         |
|                                                                                                                                                                                                                          |                       | 1SBF200-0UG-120A | 120VAC                                         | 10             | 29            |                       | Replace 2SBF200 With 2SB200<br>Narrow (12-15°) Beam<br>Intensity 1K mcd@ 20 mA          |
| <b>525nm Aqua Green SiC/GaN</b><br><br>1SBF200<br>  |                       | 1SBF200-0AG-006B | 5/6V                                           | 15             | 400           | 120°                  | Contact Polarity<br>B = BiPolar AC/DC<br>A = AC only                                    |
|                                                                                                                                                                                                                          |                       | 1SBF200-0AG-014B | 12/14V                                         | 15             | 400           |                       |                                                                                         |
|                                                                                                                                                                                                                          |                       | 1SBF200-0AG-024B | 24V                                            | 15             | 400           |                       |                                                                                         |
|                                                                                                                                                                                                                          |                       | 1SBF200-0AG-028B | 28V                                            | 15             | 400           |                       |                                                                                         |
|                                                                                                                                                                                                                          |                       | 1SBF200-0AG-048B | 48V                                            | 12             | 320           |                       |                                                                                         |
|                                                                                                                                                                                                                          |                       | 1SBF200-0AG-120A | 120VAC                                         | 10             | 275           |                       | Replace 2SBF200 With 2SB200<br>Narrow (15°) Beam<br>Intensity 7K mcd/250 Ft.Cd          |
| <b>470nm Super Blue SiC/GaN</b><br><br>1SBF200<br>  |                       | 1SBF200-0PB-006B | 5/6V                                           | 15             | 125           | 120°                  | Contact Polarity<br>B = BiPolar AC/DC<br>A = AC only                                    |
|                                                                                                                                                                                                                          |                       | 1SBF200-0PB-014B | 12/14V                                         | 15             | 125           |                       |                                                                                         |
|                                                                                                                                                                                                                          |                       | 1SBF200-0PB-024B | 24V                                            | 15             | 125           |                       |                                                                                         |
|                                                                                                                                                                                                                          |                       | 1SBF200-0PB-028B | 28V                                            | 15             | 125           |                       |                                                                                         |
|                                                                                                                                                                                                                          |                       | 1SBF200-0PB-048B | 48V                                            | 12             | 84            |                       |                                                                                         |
|                                                                                                                                                                                                                          |                       | 1SBF200-0PB-120A | 120VAC                                         | 10             | 74            |                       | Replace 2SBF200 With 2SB200<br>Std. (15°) Beam<br>Intensity 2K mcd/60 Ft.Cd             |

### Options



Series: 1SB200 (15° Illumination)  
PN Example: 1SB200-0UY-024B



Series: BSD-1174 (160° Illumination)  
PN Example: BSD-1174-0AG-028B

All dimensions in inches. For millimeters multiply by 25.4



## LED Color Chart

| LEDtronics Code | LED Chip Code | Wavelength nm                                                                             | Color Name        | Fwd Voltage Vf @ 20mA | Intensity 5mm LEDs | Viewing Angle | LED Dye Material                                                        |
|-----------------|---------------|-------------------------------------------------------------------------------------------|-------------------|-----------------------|--------------------|---------------|-------------------------------------------------------------------------|
| 941             | IR941         |  940     | Infrared          | 1.5                   | 16mW @ 50mA        | 15°           | GaAlAs/GaAs - Gallium Aluminum Arsenide/<br>Gallium Arsenide            |
| 881             | IR881         |  880     | Infrared          | 1.7                   | 18mW @ 50mA        | 15°           | GaAlAs/GaAs - Gallium Aluminum Arsenide/<br>Gallium Arsenide            |
| 851             | IR851         |  850     | Infrared          | 1.7                   | 26mW @ 50mA        | 15°           | GaAlAs/GaAlAs - Gallium Aluminum Arsenide/<br>Gallium Aluminum Arsenide |
| 0UR             | R3KF          |  660     | Ultra Red         | 1.8                   | 2000mcd @ 20mA     | 15°           | GaAlAs/GaAlAs - Gallium Aluminum Arsenide/<br>Gallium Aluminum Arsenide |
| 00R             | R3/R4/R5      |  635     | High Eff. Red     | 2.0                   | 200mcd @ 20mA      | 15°           | GaAsP/GaP - Gallium Arsenic Phosphide<br>/Gallium Phosphide             |
| 0ER             | E3K           |  633     | Super Red         | 2.2                   | 3500mcd @ 20mA     | 15°           | InGaAlP - Indium Gallium Aluminum Phosphide                             |
| 0UO             | O3K/O6K       |  620     | Super Orange      | 2.2                   | 4500mcd @ 20mA     | 15°           | InGaAlP - Indium Gallium Aluminum Phosphide                             |
| 0UO             | O3KF          |  612     | Super Orange      | 2.2                   | 6500mcd @ 20mA     | 15°           | InGaAlP - Indium Gallium Aluminum Phosphide                             |
| 00O             | O4/O5         |  605     | Orange            | 2.1                   | 160mcd @ 20mA      | 15°           | GaAsP/GaP - Gallium Arsenic Phosphide<br>/Gallium Phosphide             |
| 0UY             | Y3KF          |  595     | Super Yellow      | 2.2                   | 5500mcd @ 20mA     | 15°           | InGaAlP - Indium Gallium Aluminum Phosphide                             |
| 0PY             | Y3KH          |  592     | Super Pure Yellow | 2.1                   | 7000mcd @ 20mA     | 15°           | InGaAlP - Indium Gallium Aluminum Phosphide                             |
| 00Y             | Y3/Y4/Y5      |  585    | Yellow            | 2.1                   | 100mcd @ 20mA      | 15°           | GaAsP/GaP - Gallium Arsenic Phosphide<br>/Gallium Phosphide             |
| 0IW             | IW2K          |  4500K | Incand White      | 3.6                   | 2000mcd @ 20mA     | 20°           | SiC/GaN - Silicon Carbide/Gallium Nitride                               |
| 0PW             | PW4K          |  6500K | Pale White        | 3.6                   | 4000mcd @ 20mA     | 20°           | SiC/GaN - Silicon Carbide/Gallium Nitride                               |
| 0CW             | CW6K          |  8000K | Cool White        | 3.6                   | 6000mcd @ 20mA     | 20°           | SiC/GaN - Silicon Carbide/Gallium Nitride                               |
| 0LY             | LY1K          |  574   | Super Lime Yellow | 2.4                   | 1000mcd @ 20mA     | 15°           | InGaAlP - Indium Gallium Aluminum Phosphide                             |
| 0UG             | G1K           |  570   | Super Lime Green  | 2.0                   | 1000mcd @ 20mA     | 15°           | InGaAlP - Indium Gallium Aluminum Phosphide                             |
| 00G             | G3/G4/G5      |  565   | High Eff. Green   | 2.1                   | 200mcd @ 20mA      | 15°           | GaP/GaP - Gallium Phosphide/Gallium Phosphide                           |
| UPG             | PG350         |  560   | Super Pure Green  | 2.1                   | 350mcd @ 20mA      | 15°           | InGaAlP - Indium Gallium Aluminum Phosphide                             |
| 0PG             | PG5           |  555   | Pure Green        | 2.1                   | 80mcd @ 20mA       | 15°           | GaP/GaP - Gallium Phosphide/Gallium Phosphide                           |
| 0AG             | AG10K         |  525   | Aqua Green        | 3.5                   | 10,000mcd @ 20mA   | 15°           | SiC/GaN - Silicon Carbide/Gallium Nitride                               |
| 0BG             | BG2K          |  505   | Blue Green        | 3.5                   | 2000mcd @ 20mA     | 45°           | SiC/GaN - Silicon Carbide/Gallium Nitride                               |
| 0PB             | PB3K          |  470   | Super Blue        | 3.6                   | 3000mcd @ 20mA     | 15°           | SiC/GaN - Silicon Carbide/Gallium Nitride                               |
| 00B             | UB500         |  430   | Ultra Blue        | 3.8                   | 100mcd @ 20mA      | 15°           | SiC/GaN - Silicon Carbide/Gallium Nitride                               |

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С конца 2013 года компания активно расширяет линейку поставок компонентов по направлению коаксиальный кабель, кварцевые генераторы и конденсаторы (керамические, пленочные, электролитические), за счёт заключения дистрибьюторских договоров

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- Специальные условия для постоянных клиентов.
- Подбор аналогов.
- Поставку компонентов в любых объемах, удовлетворяющих вашим потребностям.
- Приемлемые сроки поставки, возможна ускоренная поставка.
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- Комплексную поставку.
- Работу по проектам и поставку образцов.
- Формирование склада под заказчика.
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- Защиту от снятия компонента с производства.
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