

# Mini Half-Watt SMD 3.5mm (120° Viewing Angle)



## OVS5MxBCR4 Series

### Features:

- Compact Package Outline of 3.5 x 3.5 x 1.2 mm
- Robust energy-efficient design with long operating life
- Low thermal resistance
- Exceptional spatial uniformity
- Compatible to IR reflow soldering
- High Lumens output



### Description:

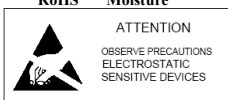
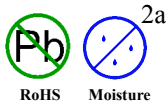
The mini-half watt is an energy-efficient packaged LED source that offers high luminance, and a long operating lifespan. This device offers a 120° viewing angle and an ultra-low profile (1.2 mm) making it highly suitable for conventional lighting and specialized applications.

### Applications:

- Automotive exterior and interior lighting
- Architectural indoor and outdoor lighting
- General lighting
- Display Backlighting
- Electronic signs and signals

| Part Number | Viewing Angle | Emitted Color | Typ. Luminous Flux (lm) | Forward Voltage $V_F$ | Power Dissipation @ 150 mA | Lens Color |
|-------------|---------------|---------------|-------------------------|-----------------------|----------------------------|------------|
| OVS5MWBCR4  | 120           | White         | 50                      | 3.4                   | 0.51 W                     | Clear      |
| OVS5MWWBCR4 |               | Warm White    | 30                      | 3.6                   | 0.54 W                     |            |
| OVS5MBBCR4  |               | Blue          | 8.2                     | 3.4                   | 0.51 W                     |            |
| OVS5MGBCR4  |               | Green         | 22                      | 3.4                   | 0.51 W                     |            |

| Part Number | Viewing Angle | Emitted Color | Typ. Luminous Intensity (mcd) | Forward Voltage $V_F$ | Power Dissipation @ 150 mA | Lens Color |
|-------------|---------------|---------------|-------------------------------|-----------------------|----------------------------|------------|
| OVS5MRBCR4  | 120           | Red           | 7150                          | 2.2                   | 0.33 W                     | Clear      |
| OVS5MABCR4  |               | Amber         | 7150                          | 2.2                   | 0.33 W                     |            |
| OVS5MYBCR4  |               | Yellow        | 7150                          | 2.2                   | 0.33 W                     |            |



**DO NOT LOOK DIRECTLY AT LED WITH UNSHIELDED EYES OR DAMAGE TO RETINA MAY**

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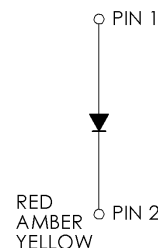
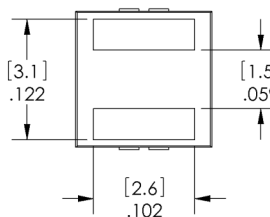
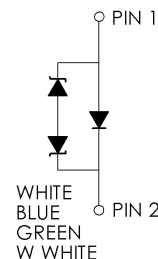
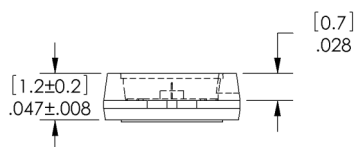
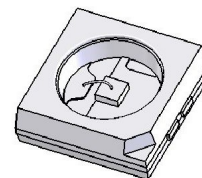
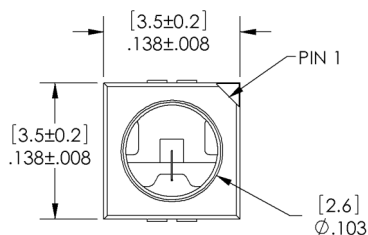
## OVS5MxBCR4 Series

### Electrical Specifications

| Absolute Maximum Ratings (T <sub>A</sub> = 25° C unless otherwise noted) |                    |                               |                               |                               |
|--|--------------------|-------------------------------|-------------------------------|-------------------------------|
|  | Red, Amber, Yellow | Green, Blue                   | White                         | Warm White                    |
| DC Forward Current   | 200 mA<br>a        | 180 mA                        | 180 mA                        | 180 mA                        |
| Peak Pulsed Forward Current <sup>1</sup>                                 | 1000 mA            | 350 mA                        | 350 mA                        | 350 mA                        |
| Reverse Voltage  | 12V @ 10 uA        | Not designed for reverse bias | Not designed for reverse bias | Not designed for reverse bias |
| Junction Temperature <sup>2</sup>  | 125°C              | 125°C                         | 125°C                         | 125°C                         |
| Power Dissipation  | 750mW              | 750mW                         | 750mW                         | 750mW                         |
| Storage and Operating Temperature  | -40° ~ +100 ° C    | -40° ~ +100 ° C               | -40° ~ +100 ° C               | -40° ~ +100 ° C               |
| ESD (JEDEC-JESD22-A114F)   | Class 2            | Class 2                       | Class 2                       | Class 2                       |
| MSL (IPC / JEDEC J-STD-020C)   | 2a / 672 Hrs       | 2a / 672 Hrs                  | 2a / 672 Hrs                  | 2a / 672 Hrs                  |

**Notes:**

1. Pulse width  $t_p \leq 10\mu s$ , Duty cycle = 0.1
2. Thermal Resistance = 5 C/W



|       |         |
|-------|---------|
| PIN 1 | ANODE   |
| PIN 2 | CATHODE |

DIMENSIONS ARE IN INCHES [MM].

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# Mini Half-Watt SMD 3.5mm (120° Viewing Angle)



## OVS5MxBCR4 Series

### Optical and Electrical Characteristics - Red, Amber, Yellow ( $I_F = 140 \text{ mA}$ , $T_A = 25^\circ \text{ C}$ )

| SYMBOL                  | PARAMETER              | MIN    | TYP  | MAX  | UNITS         |     |
|-------------------------|------------------------|--------|------|------|---------------|-----|
| $V_F$                   | Forward Voltage        | 1.9    | 2.2  | 2.65 | V             |     |
| $\Phi$                  | Luminous Intensity     | Red    | 4500 | 7150 | 9000          | mcd |
|                         |                        | Amber  |      |      |               |     |
|                         |                        | Yellow |      |      |               |     |
| $\lambda_D$             | Dominant Wavelength    | Red    | 620  | 625  | 630           | nm  |
|                         |                        | Amber  | 610  | 615  | 621           |     |
|                         |                        | Yellow | 585  | 590  | 594           |     |
| $I_R$                   | Reverse Current @ 12 V | ----   | 10   | ---- | $\mu\text{A}$ |     |
| $2\theta_{\frac{1}{2}}$ | 50% Power Angle        | ----   | 120  | ---- | deg           |     |

### Optical and Electrical Characteristics - Blue, Green ( $I_F = 150 \text{ mA}$ , $T_A = 25^\circ \text{ C}$ )

| SYMBOL                  | PARAMETER           | MIN   | TYP  | MAX  | UNITS |    |
|-------------------------|---------------------|-------|------|------|-------|----|
| $V_F$                   | Forward Voltage     | 3.0   | 3.4  | 3.9  | V     |    |
| $\Phi$                  | Luminous Flux       | Blue  | 6.3  | 8.2  | 10.7  | lm |
|                         |                     | Green | 18.1 | 22.0 | 30.6  |    |
| $\lambda_D$             | Dominant Wavelength | Blue  | 460  | 465  | 470   | nm |
|                         |                     | Green | 520  | 525  | 535   |    |
| $2\theta_{\frac{1}{2}}$ | 50% Power Angle     | ----  | 120  | ---- | deg   |    |

### Optical and Electrical Characteristics - White, Warm White ( $I_F = 150 \text{ mA}$ , $T_A = 25^\circ \text{ C}$ )

| SYMBOL                  | PARAMETER       | MIN        | TYP  | MAX  | UNITS |    |
|-------------------------|-----------------|------------|------|------|-------|----|
| $V_F$                   | Forward Voltage | White      | 3.0  | 3.4  | 4.1   | V  |
|                         |                 | Warm White |      | 3.6  |       |    |
| $\Phi$                  | Luminous Flux   | White      | 30.6 | 50   | 67.2  | lm |
|                         |                 | Warm White | 23.5 | 30   | 39.8  |    |
| $2\theta_{\frac{1}{2}}$ | 50% Power Angle | ----       | 120  | ---- | deg   |    |

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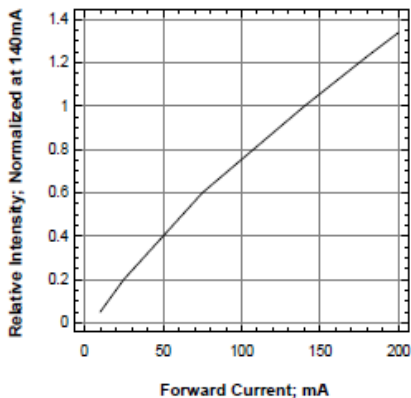
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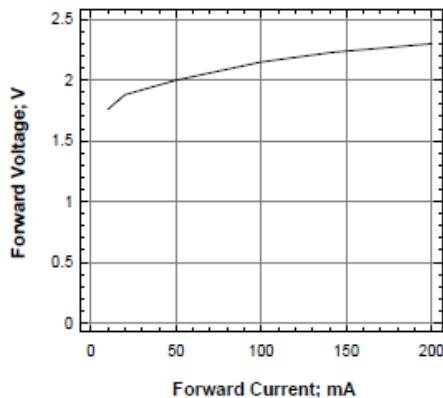
## OVS5MxBCR4 Series

OVS5MABCR4 (Amber), OVS5MRBCR4 (Red) and OVS5MYBCR4 (Yellow)

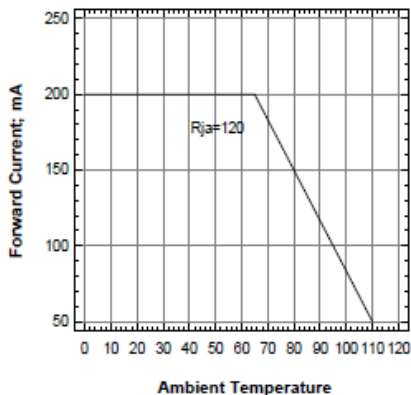
Relative Intensity Vs Forward Current



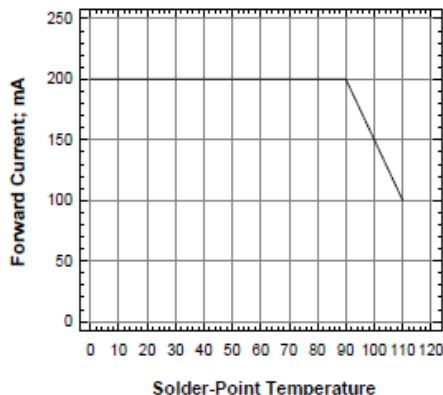
Forward Voltage Vs Forward Current



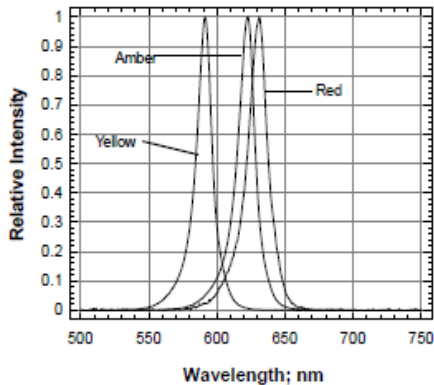
Maximum Current Vs Ambient Temperature



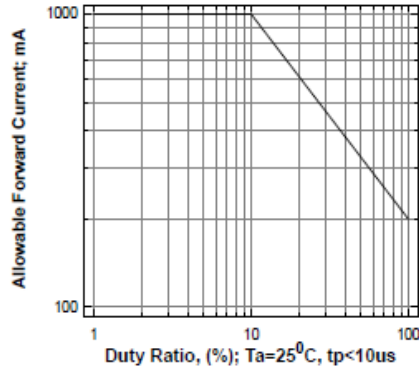
Maximum Current vs Solder-Point Temperature



Relative Intensity Vs Wavelength



Allowable Forward Current Vs Duty Ratio



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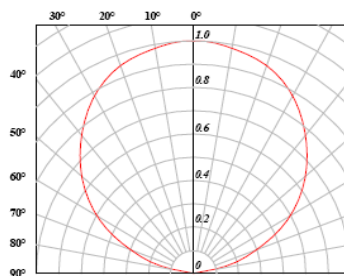
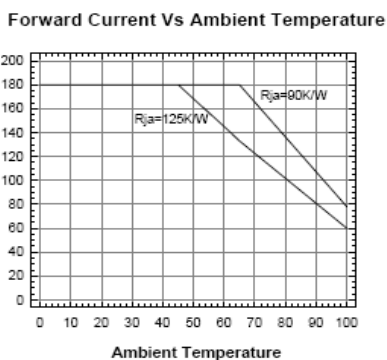
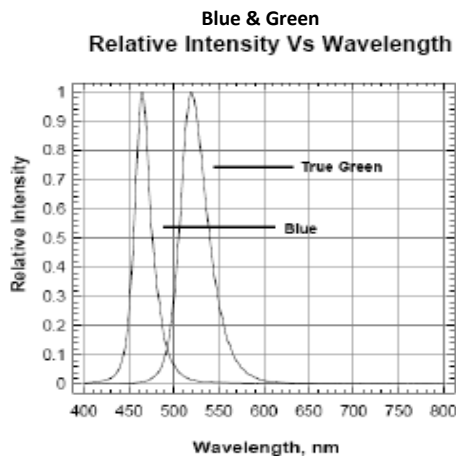
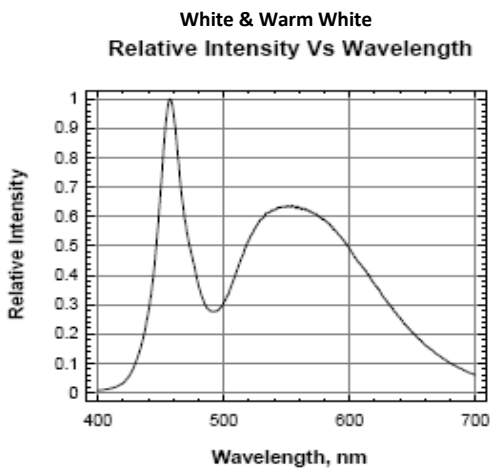
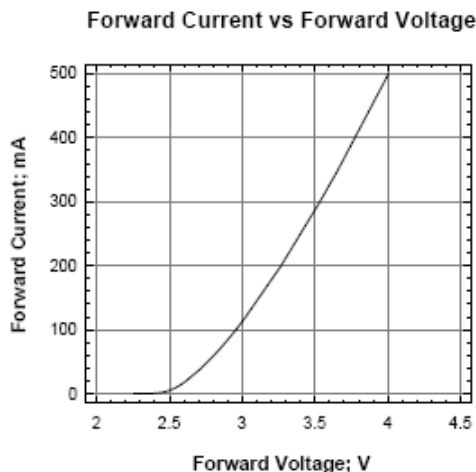
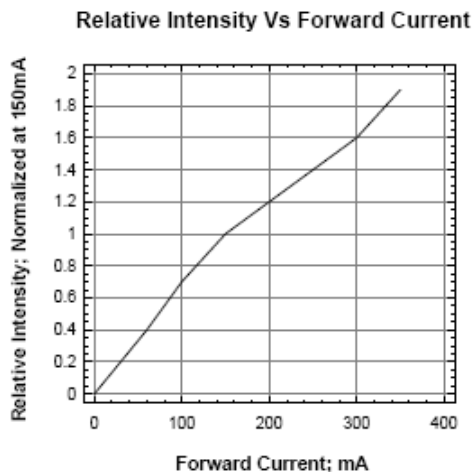
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## OVS5MxBCR4 Series

OVS5MBCR4 (Blue), OVS5MGBCR4 (Green), OVS5MWBCR4 (White) and OVS5MWWBCR4 (Warm White)



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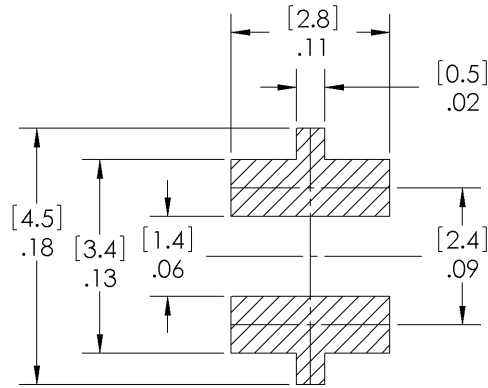
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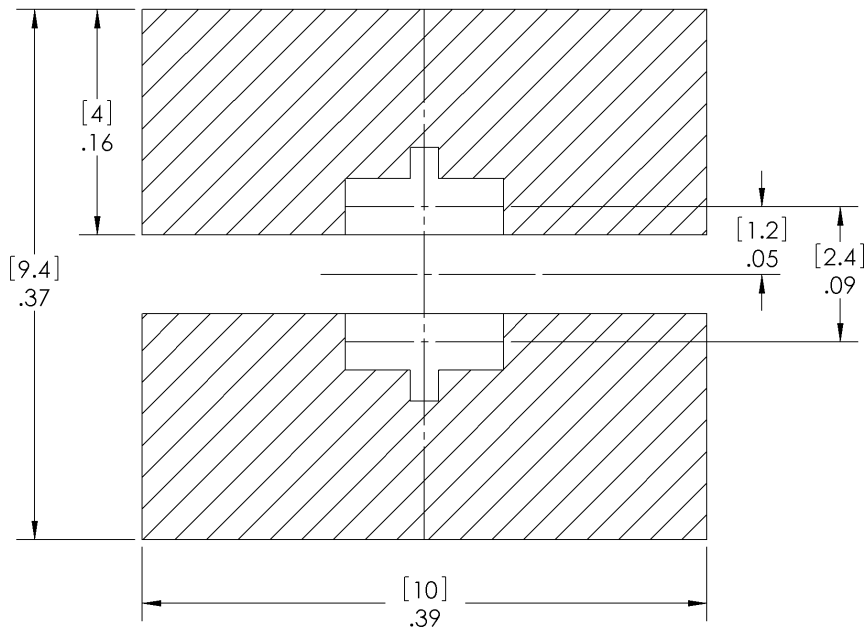
## OVS5MxBCR4 Series

### Solder Pad Design

Note: Metal core circuit board (MCPCB) is highly recommended for high density applications. FR-4 board is recommended for other applications



Solder Paste Pattern



Copper Pattern

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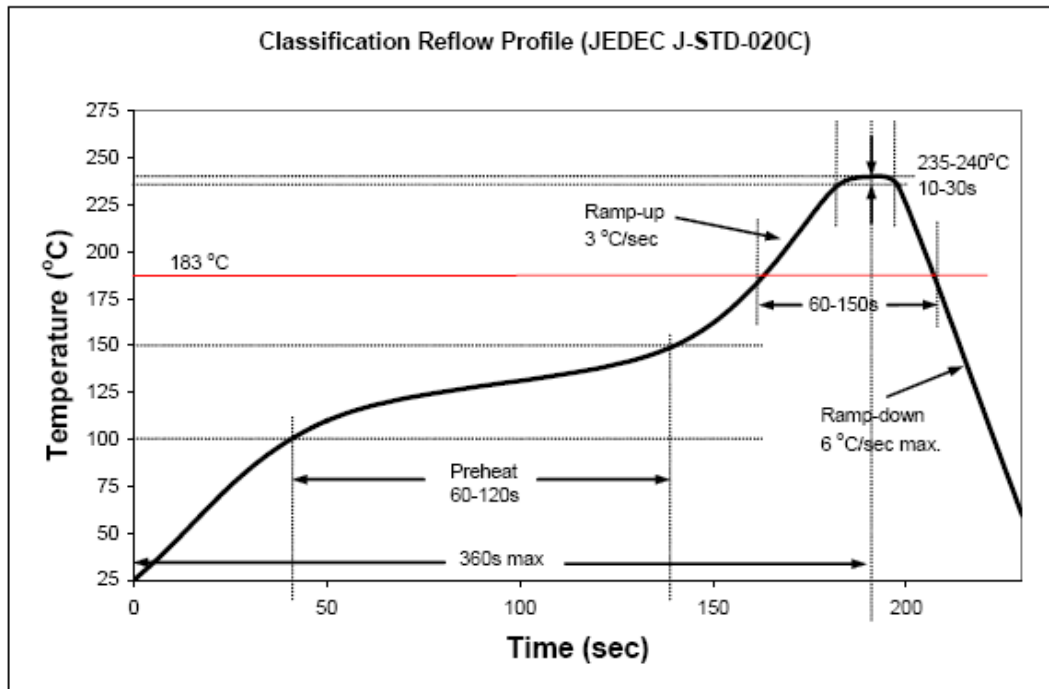
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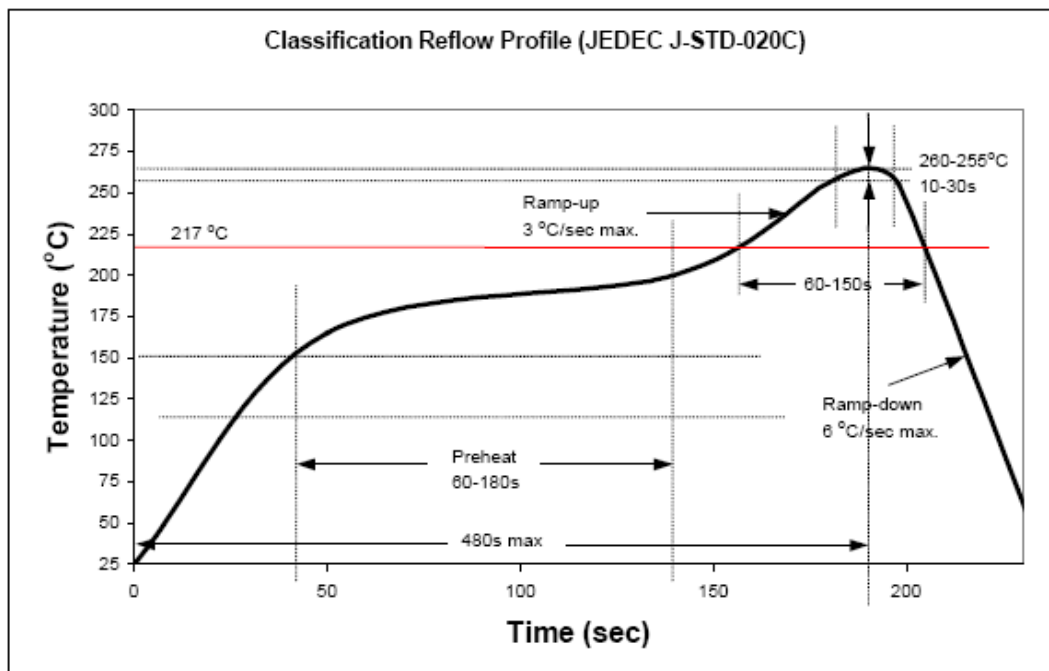


## OVS5MxBCR4 Series

### Recommended Sn-Pb IR-Reflow Soldering Profile.



### Recommended Pb Free IR-Reflow Soldering Profile.



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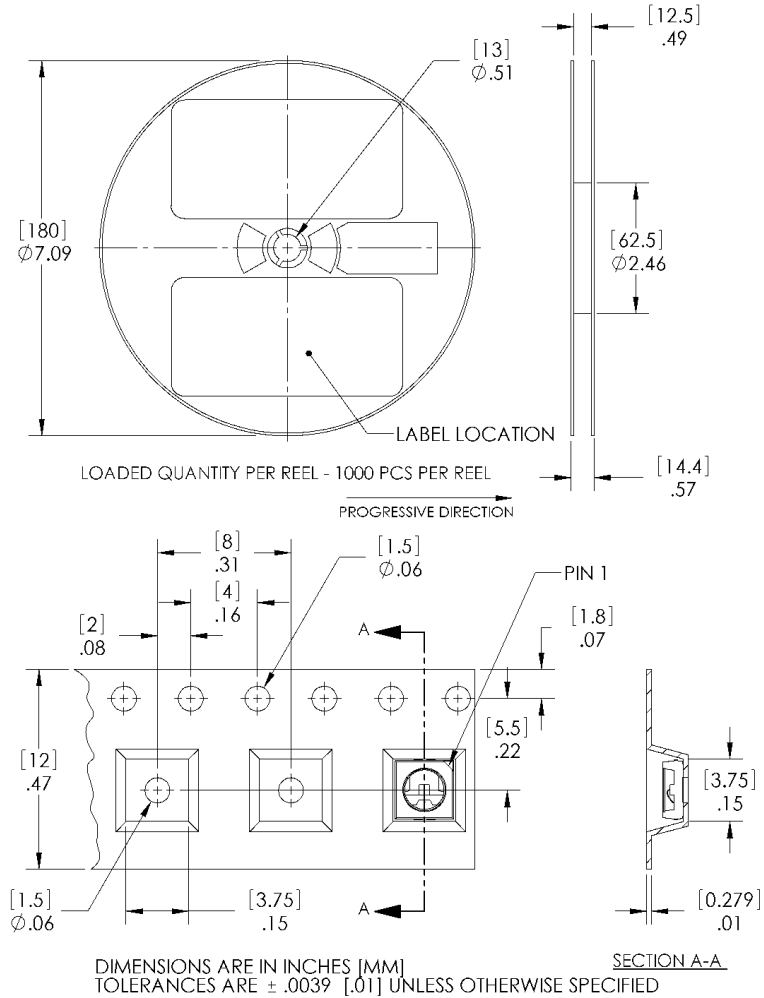
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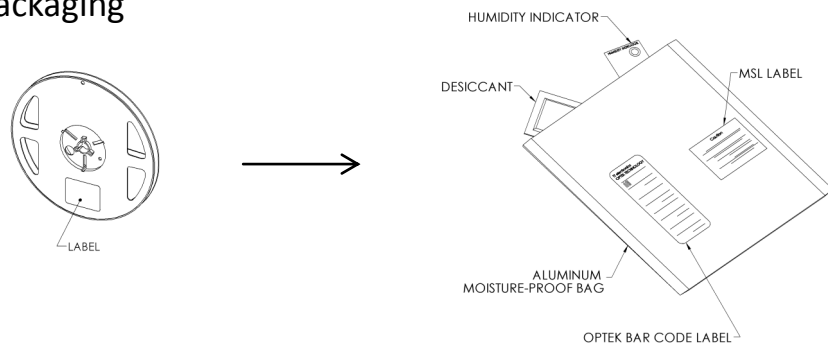
## OVS5MxBCR4 Series

### Reel Dimensions: 7-inch reel



### Carrier Tape Dimensions: Loaded quantity 1000 pieces per reel

### Moisture Resistant Packaging



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