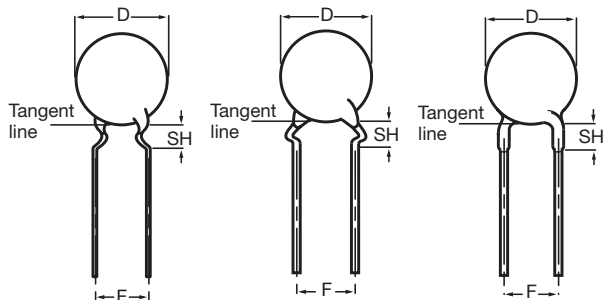


## Ceramic Disc Capacitors Class 1 and 2, 1 kV<sub>DC</sub>, 2 kV<sub>DC</sub>, 3 kV<sub>DC</sub> and 6 kV<sub>DC</sub>, General Purpose



Capacitors with 5 mm (0.20\"), 7.5 mm (0.30\") and  
10 mm (0.40\") lead spacing

### QUICK REFERENCE DATA

| DESCRIPTION                | CLASS 1<br>(SL0, S3N)  | CLASS 2<br>(Y5P, X7R, Z5U, Y5V, X5F) |
|----------------------------|------------------------|--------------------------------------|
| Voltage (V <sub>DC</sub> ) | 1000, 2000, 3000, 6000 |                                      |
| Min. Capacitance (pF)      | 10                     | 100                                  |
| Max. Capacitance (pF)      | 220                    | 33 000                               |
| Mounting                   | Through hole           |                                      |

### MARKING

Straight and kinked leaded versions are gold coloured  
Marking indicates capacitance value and tolerance in  
accordance with “EIA 198” and voltage:

### OPERATING TEMPERATURE RANGE

Class 1 SL0, S3N, - 55 °C to + 125 °C

Class 2, X7R - 55 °C to + 125 °C

Class 2, Y5P, Z5U, Y5V, - 30 °C to + 85 °C

Class 2, X5F - 55 °C to + 85 °C

### TEMPERATURE COEFFICIENTS

Class 1 SL0, S3N

Class 2 X7R, Y5P, Z5U, Y5V, X5F

### SECTIONAL SPECIFICATIONS

Class 1, IEC 60 384-8,

Class 2, IEC 60 384-9,

EIA 198

### CLIMATIC CATEGORY

Class 1, SL0, 55/125/21

Class 2, X7R, 55/125/21

Class 2, Y5P, Z5U, Y5V, 30/85/21

Class 2, X5F, 55/85/21

### FEATURES

- Low losses
- High stability
- High capacitance in small size
- Kinked (preferred) or straight leads
- Compliant to RoHS directive 2002/95/EC

### APPLICATIONS

- DC high voltage
- Pulse high voltage
- SMPS
- HV power supply
- HF ballast

### DESIGN

The capacitors consist of a ceramic disc both sides of which are silver-plated. Connection leads are made of tinned copper having a diameter of 0.6 mm or 0.8 mm up to 3 kV and 0.8 mm for 6 kV.

The capacitors may be supplied with kinked or straight leads with a lead spacing of 5 mm (0.20\"), 7.5 mm (0.30\") or 10 mm (0.40\") and a lead length from 4 mm to 30 mm. The standard tolerance on capacitance is 5 % or 10 % for class 1 capacitors and ± 10 % or ± 20 % for class 2 capacitors. Encapsulation is made of gold-colored epoxy-resin, flammable resistant in accordance with “UL 94 V-0”

### CAPACITANCE RANGE

Class 1, at 1 MHz, 1.2 V<sub>RMS</sub> ; 10 pF to 220 pF

1 kHz, 1 V<sub>RMS</sub> ± 0.2 V<sub>RMS</sub> for capacitance values higher than 1000 pF

Class 2, at 1 kHz, 1 V<sub>RMS</sub> ± 0.2 V<sub>RMS</sub> ; 100 pF to 33 000 pF

### RATED DC VOLTAGE

1 kV; 2 kV; 3 kV; 6 kV

### DIELECTRIC STRENGTH

200 % of rated voltage

### INSULATION RESISTANCE AT 500 V<sub>DC</sub>

≥ 10 000 MΩ

### TOLERANCE ON CAPACITANCE

± 5 %; ± 10 %; ± 20 %; + 80/- 20 %

Other tolerances available on request

### DISSIPATION FACTOR

Class 1, C ≤ 30 pF; ≤ 20 x (10/C + 0.7) x 10<sup>-4</sup> max.

Class 1, C > 30 pF; ≤ 0.2 %

Class 2, ≤ 3.0 %



**RoHS**  
COMPLIANT

| ORDERING INFORMATION 1 kV <sub>DC</sub> , STRAIGHT |             |                           |                      |                           |                                                                                                          |                  |  |  |
|----------------------------------------------------|-------------|---------------------------|----------------------|---------------------------|----------------------------------------------------------------------------------------------------------|------------------|--|--|
| C<br>(pF)                                          | TOL.<br>(%) | D <sub>MAX.</sub><br>(mm) | LEAD SPACING<br>(mm) | SH <sup>(1)</sup><br>(mm) | CLEAR TEXT CODE                                                                                          |                  |  |  |
|                                                    |             |                           |                      |                           | 13 <sup>TH</sup> DIGIT:<br>T = REEL; U = AMMO; 3 = BULK<br>16 <sup>TH</sup> DIGIT:<br>R = RoHS COMPLIANT |                  |  |  |
| CLASS 1 SL0                                        |             |                           |                      |                           |                                                                                                          |                  |  |  |
| 10                                                 | ± 5         | 6.5                       | 5.0                  | 4.0                       | S100J25SL0N6.J5.                                                                                         |                  |  |  |
|                                                    | ± 10        |                           |                      |                           | S100K25SL0N6.J5.                                                                                         |                  |  |  |
| 12                                                 | ± 5         |                           |                      |                           | S120J25SL0N6.J5.                                                                                         |                  |  |  |
|                                                    | ± 10        |                           |                      |                           | S120K25SL0N6.J5.                                                                                         |                  |  |  |
| 15                                                 | ± 5         |                           |                      |                           | S150J25SL0N6.J5.                                                                                         |                  |  |  |
|                                                    | ± 10        |                           |                      |                           | S150K25SL0N6.J5.                                                                                         |                  |  |  |
| 18                                                 | ± 5         |                           |                      |                           | S180J25SL0N6.J5.                                                                                         |                  |  |  |
|                                                    | ± 10        |                           |                      |                           | S180K25SL0N6.J5.                                                                                         |                  |  |  |
| 22                                                 | ± 5         |                           |                      |                           | S220J25SL0N6.J5.                                                                                         |                  |  |  |
|                                                    | ± 10        |                           |                      |                           | S220K25SL0N6.J5.                                                                                         |                  |  |  |
| 27                                                 | ± 5         |                           |                      |                           | S270J25SL0N6.J5.                                                                                         |                  |  |  |
|                                                    | ± 10        |                           |                      |                           | S270K25SL0N6.J5.                                                                                         |                  |  |  |
| 33                                                 | ± 5         |                           |                      |                           | S330J25SL0N6.J5.                                                                                         |                  |  |  |
|                                                    | ± 10        |                           |                      |                           | S330K25SL0N6.J5.                                                                                         |                  |  |  |
| 39                                                 | ± 5         |                           |                      |                           | S390J25SL0N6.J5.                                                                                         |                  |  |  |
|                                                    | ± 10        |                           |                      |                           | S390K25SL0N6.J5.                                                                                         |                  |  |  |
| 47                                                 | ± 5         | S470J25SL0N6.J5.          |                      |                           |                                                                                                          |                  |  |  |
|                                                    | ± 10        | S470K25SL0N6.J5.          |                      |                           |                                                                                                          |                  |  |  |
| 56                                                 | ± 5         | 7.5                       |                      |                           | S560J29SL0N6.J5.                                                                                         |                  |  |  |
|                                                    | ± 10        |                           |                      |                           | S560K29SL0N6.J5.                                                                                         |                  |  |  |
| 68                                                 | ± 5         |                           |                      |                           | S680J29SL0N6.J5.                                                                                         |                  |  |  |
|                                                    | ± 10        |                           |                      |                           | S680K29SL0N6.J5.                                                                                         |                  |  |  |
| 82                                                 | ± 5         |                           |                      |                           | S820J29SL0N6.J5.                                                                                         |                  |  |  |
|                                                    | ± 10        |                           |                      |                           | S820K29SL0N6.J5.                                                                                         |                  |  |  |
| 100                                                | ± 5         |                           | S101J29SL0N6.J5.     |                           |                                                                                                          |                  |  |  |
|                                                    | ± 10        |                           | S101K29SL0N6.J5.     |                           |                                                                                                          |                  |  |  |
| 120                                                | ± 5         |                           | 8.5                  | S121J33SL0N6.J5.          |                                                                                                          |                  |  |  |
| 150                                                | ± 10        |                           | 10                   | S121K33SL0N6.J5.          |                                                                                                          |                  |  |  |
| 220                                                |             |                           |                      | S151K33SL0N6.J5.          |                                                                                                          |                  |  |  |
| CLASS 2 X7R                                        |             |                           |                      |                           |                                                                                                          |                  |  |  |
| 100                                                | ± 10        | 6.5                       | 5.0                  | 4.0                       | S101K25X7RN6.J5.                                                                                         |                  |  |  |
| 150                                                |             |                           |                      |                           | S151K25X7RN6.J5.                                                                                         |                  |  |  |
| 220                                                |             |                           |                      |                           | S221K25X7RN6.J5.                                                                                         |                  |  |  |
| 330                                                |             |                           |                      |                           | S331K25X7RN6.J5.                                                                                         |                  |  |  |
| 470                                                |             |                           |                      |                           | S471K29X7RN6.J5.                                                                                         |                  |  |  |
| 680                                                |             |                           |                      |                           | S681K29X7RN6.J5.                                                                                         |                  |  |  |
| 1000                                               |             | 8.5                       |                      |                           | S102K33X7RN6.J5.                                                                                         |                  |  |  |
| 1500                                               |             | 10                        |                      |                           | S152K39X7RN6.J5.                                                                                         |                  |  |  |
| 2200                                               |             | 11                        |                      |                           | S222K43X7RN6.J5.                                                                                         |                  |  |  |
| 3 300                                              |             | 12                        |                      |                           | 7.5                                                                                                      | S332K47X7RN6.J7. |  |  |
| 4 700                                              |             | 15                        |                      |                           | 4.8                                                                                                      | S472K59X7RN6.J7. |  |  |
| CLASS 2 Y5P                                        |             |                           |                      |                           |                                                                                                          |                  |  |  |
| 100                                                | ± 10        | 6.5                       | 5.0                  | 4.0                       | S101K25Y5PN6.J5.                                                                                         |                  |  |  |
| 150                                                |             |                           |                      |                           | S151K25Y5PN6.J5.                                                                                         |                  |  |  |
| 220                                                |             |                           |                      |                           | S221K25Y5PN6.J5.                                                                                         |                  |  |  |
| 330                                                |             |                           |                      |                           | S331K25Y5PN6.J5.                                                                                         |                  |  |  |
| 470                                                |             |                           |                      |                           | S471K25Y5PN6.J5.                                                                                         |                  |  |  |
| 680                                                |             |                           |                      |                           | S681K29Y5PN6.J5.                                                                                         |                  |  |  |
| 1000                                               |             | 7.5                       |                      |                           | S102K29Y5PN6.J5.                                                                                         |                  |  |  |
| 1500                                               |             | 8.5                       |                      |                           | S152K33Y5PN6.J5.                                                                                         |                  |  |  |
|                                                    |             |                           |                      |                           |                                                                                                          |                  |  |  |
|                                                    |             |                           |                      |                           |                                                                                                          |                  |  |  |



Ceramic Disc Capacitors Class 1 and 2,  
1 kV<sub>DC</sub>, 2 kV<sub>DC</sub>, 3 kV<sub>DC</sub> and 6 kV<sub>DC</sub>, General Purpose

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| ORDERING INFORMATION 1 kV <sub>DC</sub> , STRAIGHT |             |                           |                      |                           |                                                                                                          |  |
|----------------------------------------------------|-------------|---------------------------|----------------------|---------------------------|----------------------------------------------------------------------------------------------------------|--|
| C<br>(pF)                                          | TOL.<br>(%) | D <sub>MAX.</sub><br>(mm) | LEAD SPACING<br>(mm) | SH <sup>(1)</sup><br>(mm) | CLEAR TEXT CODE                                                                                          |  |
|                                                    |             |                           |                      |                           | 13 <sup>TH</sup> DIGIT:<br>T = REEL; U = AMMO; 3 = BULK<br>16 <sup>TH</sup> DIGIT:<br>R = RoHS COMPLIANT |  |
| CLASS 2 Y5P                                        |             |                           |                      |                           |                                                                                                          |  |
| 2200                                               | ± 10        | 10                        | 5.0                  | 4.0                       | S222K39Y5PN6.J5.                                                                                         |  |
| 3300                                               |             | 11                        |                      |                           | S332K43Y5PN6.J5.                                                                                         |  |
| 4700                                               |             | 13.5                      | 7.5                  | 4.8                       | S472K53Y5PN63J7.                                                                                         |  |
| 6800                                               |             | 15                        |                      |                           | S682K59Y5PN63J7.                                                                                         |  |
| 10 000                                             |             | 19                        | 10                   |                           | S103K75Y5PN83J0.                                                                                         |  |
| CLASS 2 Z5U                                        |             |                           |                      |                           |                                                                                                          |  |
| 1000                                               | ± 20        | 6.5                       | 5.0                  | 4.0                       | S102M25Z5UN6.J5.                                                                                         |  |
| 1500                                               |             |                           |                      |                           | S152M29Z5UN6.J5.                                                                                         |  |
| 2200                                               |             |                           |                      |                           | S222M29Z5UN6.J5.                                                                                         |  |
| 3300                                               |             |                           |                      |                           | S332M33Z5UN6.J5.                                                                                         |  |
| 4700                                               |             | 8.5                       | 7.5                  | 4.8                       | S472M39Z5UN6.J5.                                                                                         |  |
| 6800                                               |             | 10                        |                      |                           | S682M43Z5UN6.J5.                                                                                         |  |
| 10 000                                             |             | 11                        |                      |                           | S103M47Z5UN63J7.                                                                                         |  |
| 15 000                                             |             | 12                        |                      |                           | S153M59Z5UN63J7.                                                                                         |  |
| 22 000                                             |             | 15                        | 10                   |                           | S223M75Z5UN83J0.                                                                                         |  |
|                                                    |             | 19                        |                      |                           |                                                                                                          |  |
| CLASS 2 Y5V                                        |             |                           |                      |                           |                                                                                                          |  |
| 1000                                               | + 80/- 20   | 6.5                       | 5.0                  | 4.0                       | S102Z25Y5VN6.J5.                                                                                         |  |
| 1500                                               |             |                           |                      |                           | S152Z25Y5VN6.J5.                                                                                         |  |
| 2200                                               |             |                           |                      |                           | S222Z29Y5VN6.J5.                                                                                         |  |
| 3300                                               |             |                           |                      |                           | S332Z29Y5VN6.J5.                                                                                         |  |
| 4700                                               |             | 7.5                       | 7.5                  | 4.8                       | S472Z33Y5VN6.J5.                                                                                         |  |
| 6800                                               |             | 8.5                       |                      |                           | S682Z39Y5VN6.J5.                                                                                         |  |
| 10 000                                             |             | 10                        |                      |                           | S103Z43Y5VN6.J5.                                                                                         |  |
| 15 000                                             |             | 11                        |                      |                           | S153Z53Y5VN6.J7.                                                                                         |  |
| 22 000                                             |             | 13.5                      | 10                   |                           | S223Z59Y5VN6.J7.                                                                                         |  |
| 33 000                                             |             | 15                        |                      |                           | S333Z75Y5VN8.J0.                                                                                         |  |

| ORDERING INFORMATION 1 kV <sub>DC</sub> , KINKED |             |                           |                      |                           |                                                                                                          |
|--------------------------------------------------|-------------|---------------------------|----------------------|---------------------------|----------------------------------------------------------------------------------------------------------|
| C<br>(pF)                                        | TOL.<br>(%) | D <sub>MAX.</sub><br>(mm) | LEAD SPACING<br>(mm) | SH <sup>(2)</sup><br>(mm) | CLEAR TEXT CODE                                                                                          |
|                                                  |             |                           |                      |                           | 13 <sup>TH</sup> DIGIT:<br>T = REEL; U = AMMO; 3 = BULK<br>16 <sup>TH</sup> DIGIT:<br>R = RoHS COMPLIANT |
| CLASS 2 X5F                                      |             |                           |                      |                           |                                                                                                          |
| 100                                              | ± 10        | 6.5                       | 5.0                  | 4.0                       | S101K25X5FN6.J5R                                                                                         |
| 220                                              |             |                           |                      |                           | S221K25X5FN6.J5R                                                                                         |
| 270                                              |             |                           |                      |                           | S271K25X5FN6.J5R                                                                                         |
| 330                                              |             |                           |                      |                           | S331K25X5FN6.J5R                                                                                         |
| 390                                              |             |                           |                      |                           | S391K25X5FN6.J5R                                                                                         |
| 470                                              |             |                           |                      |                           | S471K25X5FN6.J5R                                                                                         |
| 680                                              |             | 7.5                       | 7.5                  | 4.8                       | S681K29X5FN6.J5R                                                                                         |
| 820                                              |             |                           |                      |                           | S821K29X5FN6.J5R                                                                                         |
| 1000                                             |             |                           |                      |                           | S102K29X5FN6.J5R                                                                                         |
| 2200                                             |             |                           |                      |                           | S222K43X5FN6.J5R                                                                                         |
| 3300                                             |             | 11                        | 7.5                  | 4.8                       | S332K53X5FN6.J7R                                                                                         |
| 4700                                             |             | 13.5                      |                      |                           | S472K63X5FN63J7R                                                                                         |
|                                                  |             | 16                        |                      |                           |                                                                                                          |

## Notes

<sup>(1)</sup> SH = seated height

- Maximum thickness 4.0 mm
- Lead style codes refer to inward kinked leads. Other styles available on request

| ORDERING INFORMATION 2 kV <sub>DC</sub> , KINKED |             |                           |                      |                           |                                                         |                  |                 |
|--------------------------------------------------|-------------|---------------------------|----------------------|---------------------------|---------------------------------------------------------|------------------|-----------------|
| C<br>(pF)                                        | TOL.<br>(%) | D <sub>MAX.</sub><br>(mm) | LEAD SPACING<br>(mm) | SH <sup>(1)</sup><br>(mm) | CLEAR TEXT CODE                                         |                  |                 |
|                                                  |             |                           |                      |                           | 13 <sup>TH</sup> DIGIT:<br>T = REEL; U = AMMO; 3 = BULK |                  |                 |
|                                                  |             |                           |                      |                           | 16 <sup>TH</sup> DIGIT:<br>R = RoHS COMPLIANT           |                  |                 |
| CLASS 1 SL0                                      |             |                           |                      |                           |                                                         |                  |                 |
| 10                                               | ± 5         | 6.5                       | 5.0                  | 4.0                       | S100J25SL0P6.K5.                                        |                  |                 |
|                                                  | ± 10        |                           |                      |                           | S100K25SL0P6.K5.                                        |                  |                 |
| 12                                               | ± 5         |                           |                      |                           | S120J25SL0P6.K5.                                        |                  |                 |
|                                                  | ± 10        |                           |                      |                           | S120K25SL0P6.K5.                                        |                  |                 |
| 15                                               | ± 5         |                           |                      |                           | S150J25SL0P6.K5.                                        |                  |                 |
|                                                  | ± 10        |                           |                      |                           | S150K25SL0P6.K5.                                        |                  |                 |
| 18                                               | ± 5         |                           |                      |                           | S180J25SL0P6.K5.                                        |                  |                 |
|                                                  | ± 10        |                           |                      |                           | S180K25SL0P6.K5.                                        |                  |                 |
| 22                                               | ± 5         |                           |                      |                           | S220J25SL0P6.K5.                                        |                  |                 |
|                                                  | ± 10        |                           |                      |                           | S220K25SL0P6.K5.                                        |                  |                 |
| 27                                               | ± 5         |                           |                      |                           | S270J25SL0P6.K5.                                        |                  |                 |
|                                                  | ± 10        |                           |                      |                           | S270K25SL0P6.K5.                                        |                  |                 |
| 33                                               | ± 5         | 7.5                       |                      |                           | S330J29SL0P6.K5.                                        |                  |                 |
|                                                  | ± 10        |                           |                      |                           | S330K29SL0P6.K5.                                        |                  |                 |
| 39                                               | ± 5         |                           |                      |                           | S390J29SL0P6.K5.                                        |                  |                 |
|                                                  | ± 10        |                           |                      |                           | S390K29SL0P6.K5.                                        |                  |                 |
| 47                                               | ± 5         |                           |                      |                           | S470J29SL0P6.K5.                                        |                  |                 |
|                                                  | ± 10        |                           |                      |                           | S470K29SL0P6.K5.                                        |                  |                 |
| 56                                               | ± 5         |                           |                      |                           | S560J29SL0P6.K5.                                        |                  |                 |
|                                                  | ± 10        |                           |                      |                           | S560K29SL0P6.K5.                                        |                  |                 |
| 68                                               | ± 5         |                           |                      |                           | 8.5                                                     | S680J33SL0P6.K5. |                 |
|                                                  | ± 10        |                           |                      |                           |                                                         | S680K33SL0P6.K5. |                 |
| 82                                               | ± 5         |                           |                      |                           |                                                         | S820J33SL0P6.K5. |                 |
|                                                  | ± 10        |                           |                      |                           |                                                         | S820K33SL0P6.K5. |                 |
| 100                                              | ± 5         | 10                        |                      |                           | S101J39SL0P6.K5.                                        |                  |                 |
|                                                  | ± 10        |                           |                      |                           | S101K39SL0P6.K5.                                        |                  |                 |
| 120                                              | ± 5         |                           |                      |                           | S121J39SL0P6.K5.                                        |                  |                 |
|                                                  | ± 10        |                           |                      |                           | S121K39SL0P6.K5.                                        |                  |                 |
| 150                                              | ± 10        | 11                        |                      |                           | S151K43SL0P6.K5.                                        |                  |                 |
| CLASS 2 X7R                                      |             |                           |                      |                           |                                                         |                  |                 |
| 100                                              | ± 10        | 6.5                       | 5.0                  | 4.0                       | S101K25X7RP6.K5.                                        |                  |                 |
| 150                                              |             |                           |                      |                           | S151K25X7RP6.K5.                                        |                  |                 |
| 220                                              |             |                           |                      |                           | S221K25X7RP6.K5.                                        |                  |                 |
| 330                                              |             |                           |                      |                           | S331K25X7RP6.K5.                                        |                  |                 |
| 470                                              |             |                           |                      |                           | S471K29X7RP6.K5.                                        |                  |                 |
| 680                                              |             |                           |                      |                           | S681K33X7RP6.K5.                                        |                  |                 |
| 1000                                             |             | 7.5                       |                      |                           | S102K39X7RP6.K5.                                        |                  |                 |
| 1500                                             |             | 8.5                       |                      |                           | S152K43X7RP6.K5.                                        |                  |                 |
| 2200                                             |             | 10                        |                      |                           | S222K53X7RP6.K7.                                        |                  |                 |
| 3300                                             |             | 11                        |                      |                           | S332K59X7RP6.K7.                                        |                  |                 |
| 3300                                             |             | 13.5                      |                      |                           | 7.5                                                     | 4.8              |                 |
| 3300                                             |             | 15                        |                      |                           |                                                         |                  |                 |
| CLASS 2 Y5P                                      |             |                           |                      |                           |                                                         |                  |                 |
| 100                                              | ± 10        | 6.5                       | 5.0                  | 4.0                       | S101K25Y5PP6.K5.                                        |                  |                 |
| 150                                              |             |                           |                      |                           | S151K25Y5PP6.K5.                                        |                  |                 |
| 220                                              |             |                           |                      |                           | S221K25Y5PP6.K5.                                        |                  |                 |
| 330                                              |             |                           |                      |                           | S331K25Y5PP6.K5.                                        |                  |                 |
| 470                                              |             |                           |                      |                           | 7.5                                                     | S471K29Y5PP6.K5. |                 |
| 680                                              |             |                           |                      |                           | S681K29Y5PP6.K5.                                        |                  |                 |
| 1000                                             |             | 8.5                       |                      |                           | S102K33Y5PP6.K5.                                        |                  |                 |
| 1500                                             |             | 10                        |                      |                           | S152K39Y5PP6.K5.                                        |                  |                 |
| 2200                                             |             | 11                        |                      |                           | S222K43Y5PP6.K5.                                        |                  |                 |
| 3300                                             |             | 13.5                      |                      |                           | 7.5                                                     | 4.8              | S332K53Y5PP6K7. |
| 4700                                             |             | 17.5                      |                      |                           |                                                         |                  | S472K69Y5PP6K7. |



Ceramic Disc Capacitors Class 1 and 2,  
1 kV<sub>DC</sub>, 2 kV<sub>DC</sub>, 3 kV<sub>DC</sub> and 6 kV<sub>DC</sub>, General Purpose

Vishay BCcomponents

| ORDERING INFORMATION 2 kV <sub>DC</sub> , KINKED |             |                           |                      |                           |                                                                                                          |                  |
|--------------------------------------------------|-------------|---------------------------|----------------------|---------------------------|----------------------------------------------------------------------------------------------------------|------------------|
| C<br>(pF)                                        | TOL.<br>(%) | D <sub>MAX.</sub><br>(mm) | LEAD SPACING<br>(mm) | SH <sup>(1)</sup><br>(mm) | CLEAR TEXT CODE                                                                                          |                  |
|                                                  |             |                           |                      |                           | 13 <sup>TH</sup> DIGIT:<br>T = REEL; U = AMMO; 3 = BULK<br>16 <sup>TH</sup> DIGIT:<br>R = RoHS COMPLIANT |                  |
| CLASS 2 Z5U                                      |             |                           |                      |                           |                                                                                                          |                  |
| 1000                                             | ± 20        | 7.5                       | 5.0                  | 4.0                       | S102M29Z5UP6.K5.                                                                                         |                  |
| 1500                                             |             |                           |                      |                           | S152M29Z5UP6.K5.                                                                                         |                  |
| 2200                                             |             |                           |                      |                           | S222M33Z5UP6.K5.                                                                                         |                  |
| 3300                                             |             |                           |                      |                           | S332M43Z5UP6.K5.                                                                                         |                  |
| 4700                                             |             | 12                        | 7.5                  | 4.8                       | S472M47Z5UP63K7.                                                                                         |                  |
| 6800                                             |             | 13.5                      |                      |                           | S682M53Z5UP63K7.                                                                                         |                  |
| 10 000                                           |             | 17.5                      |                      |                           | S103M69Z5UP63K7.                                                                                         |                  |
| CLASS 2 Y5V                                      |             |                           |                      |                           |                                                                                                          |                  |
| 1000                                             | + 80/- 20   | 7.5                       | 5.0                  | 4.0                       | S102Z29Y5VP6.K5.                                                                                         |                  |
| 1500                                             |             |                           |                      |                           | S152Z29Y5VP6.K5.                                                                                         |                  |
| 2200                                             |             |                           |                      |                           | 8.5                                                                                                      | S222Z33Y5VP6.K5. |
| 3300                                             |             |                           |                      |                           | 10.5                                                                                                     | S322Z39Y5VP6.K5. |
| 4700                                             |             | 11                        | 7.5                  | 4.8                       | S472Z43Y5VP6.K5.                                                                                         |                  |
| 6800                                             |             | 12                        |                      |                           | S682Z47Y5VP6.K7.                                                                                         |                  |
| 10 000                                           |             | 15                        |                      |                           | S103Z59Y5VP6.K7.                                                                                         |                  |
| CLASS 2 X5F                                      |             |                           |                      |                           |                                                                                                          |                  |
| 1 00                                             | ± 10        | 6.5                       | 5.0                  | 4.0                       | S101K25X5FP6.K5R                                                                                         |                  |
| 220                                              |             |                           |                      |                           | S221K25X5FP6.K5R                                                                                         |                  |
| 330                                              |             |                           |                      |                           | 7.5                                                                                                      | S331K29X5FP6.K5R |
| 470                                              |             |                           |                      |                           | 8                                                                                                        | S471K31X5FP6.K5R |
| 680                                              |             | 10                        | 7.5                  | 4.8                       | S681K39X5FP6.K5R                                                                                         |                  |
| 1000                                             |             | 11                        |                      |                           | S102K43X5FP6.K5R                                                                                         |                  |
| 2200                                             |             | 15                        |                      |                           | S222K59X5FP6.K7R                                                                                         |                  |
| 3300                                             |             | 16.5                      |                      |                           | S332K65X5FP63K7R                                                                                         |                  |

**Notes**

<sup>(1)</sup> SH = seated height

- Maximum thickness 4.0 mm
- Lead style codes refer to inward kinked leads. Other styles available on request

| ORDERING INFORMATION CLASS 3 kV <sub>DC</sub> , KINKED |             |                            |                      |                           |                                                                                                          |
|--------------------------------------------------------|-------------|----------------------------|----------------------|---------------------------|----------------------------------------------------------------------------------------------------------|
| C<br>(pF)                                              | TOL.<br>(%) | D <sub>MAX</sub> .<br>(mm) | LEAD SPACING<br>(mm) | SH <sup>(1)</sup><br>(mm) | CLEAR TEXT CODE                                                                                          |
|                                                        |             |                            |                      |                           | 13 <sup>TH</sup> DIGIT:<br>T = REEL; U = AMMO; 3 = BULK<br>16 <sup>TH</sup> DIGIT:<br>R = RoHS COMPLIANT |
| CLASS 1 SL                                             |             |                            |                      |                           |                                                                                                          |
| 10                                                     | ± 10        | 8.5                        | 7.5                  | 4.0                       | S100K33SL0R63K7.                                                                                         |
| 15                                                     |             |                            |                      |                           | S150K33SL0R63K7.                                                                                         |
| 22                                                     |             |                            |                      |                           | S220K33SL0R63K7.                                                                                         |
| 33                                                     |             |                            |                      |                           | S330K33SL0R63K7.                                                                                         |
| 47                                                     |             |                            |                      |                           | S470K33SL0R63K7.                                                                                         |
| 68                                                     |             | 10                         |                      |                           | S680K39SL0R63K7.                                                                                         |
| CLASS 2 X7R                                            |             |                            |                      |                           |                                                                                                          |
| 100                                                    | ± 10        | 8.5                        | 7.5                  | 4.0                       | S101K33X7RR63K7.                                                                                         |
| 150                                                    |             |                            |                      |                           | S151K33X7RR63K7.                                                                                         |
| 220                                                    |             |                            |                      |                           | S221K33X7RR63K7.                                                                                         |
| 330                                                    |             |                            |                      |                           | S331K33X7RR63K7.                                                                                         |
| 470                                                    |             |                            |                      |                           | S471K33X7RR63K7.                                                                                         |
| 680                                                    |             |                            |                      |                           | S681K39X7RR63K7.                                                                                         |
| 1000                                                   |             | 10                         | 4.8                  |                           | S102K43X7RR63K7.                                                                                         |
| 1500                                                   |             | 11                         |                      |                           | S152K53X7RR63K7.                                                                                         |
|                                                        |             | 13.5                       |                      |                           | S222K59X7RR83K7.                                                                                         |
| 2200                                                   |             | 17.5                       |                      |                           |                                                                                                          |

| ORDERING INFORMATION CLASS 3 kV <sub>DC</sub> , KINKED |             |                           |                      |                           |                                                                                                          |
|--------------------------------------------------------|-------------|---------------------------|----------------------|---------------------------|----------------------------------------------------------------------------------------------------------|
| C<br>(pF)                                              | TOL.<br>(%) | D <sub>MAX.</sub><br>(mm) | LEAD SPACING<br>(mm) | SH <sup>(1)</sup><br>(mm) | CLEAR TEXT CODE                                                                                          |
|                                                        |             |                           |                      |                           | 13 <sup>TH</sup> DIGIT:<br>T = REEL; U = AMMO; 3 = BULK<br>16 <sup>TH</sup> DIGIT:<br>R = RoHS COMPLIANT |
| CLASS 2 Y5P                                            |             |                           |                      |                           |                                                                                                          |
| 100                                                    | ± 10        | 8.5                       | 7.5                  | 4.0                       | S101K33Y5PR63K7.                                                                                         |
| 150                                                    |             |                           |                      |                           | S151K33Y5PR63K7.                                                                                         |
| 220                                                    |             |                           |                      |                           | S221K33Y5PR63K7.                                                                                         |
| 330                                                    |             |                           |                      |                           | S331K33Y5PR63K7.                                                                                         |
| 470                                                    |             |                           |                      |                           | S471K33Y5PR63K7.                                                                                         |
| 680                                                    |             | 10                        | S681K39Y5PR63K7.     |                           |                                                                                                          |
| 1000                                                   |             | 11                        | S102K43Y5PR63K7.     |                           |                                                                                                          |
| 1500                                                   |             | 12                        | 4.8                  | S152K47Y5PR63K7.          |                                                                                                          |
| 2200                                                   |             | 15                        |                      | S222K59Y5PR63K7.          |                                                                                                          |
| 3 300                                                  |             | 19                        |                      | 10                        | S332K75Y5PR83K0.                                                                                         |
| CLASS 2 Z5U                                            |             |                           |                      |                           |                                                                                                          |
| 470                                                    | ± 20        | 8.5                       | 7.5                  | 4.0                       | S471M33Z5UR63K7.                                                                                         |
| 680                                                    |             |                           |                      |                           | S681M33Z5UR63K7.                                                                                         |
| 1000                                                   |             |                           |                      |                           | S102M33Z5UR63K7.                                                                                         |
| 1500                                                   |             | 10                        |                      |                           | S152M39Z5UR63K7.                                                                                         |
| 2200                                                   |             | 11                        |                      |                           | S222M43Z5UR63K7.                                                                                         |
| 3300                                                   |             | 13.5                      | 4.8                  | S332M53Z5UR63K7.          |                                                                                                          |
| 4700                                                   |             | 17.5                      |                      | S472M69Z5UR83K7.          |                                                                                                          |
| CLASS 2 Y5V                                            |             |                           |                      |                           |                                                                                                          |
| 1000                                                   | + 80/- 20   | 8.5                       | 7.5                  | 4.0                       | S102Z33Y5VR63K7.                                                                                         |
| 1500                                                   |             |                           |                      |                           | S152Z33Y5VR63K7.                                                                                         |
| 2200                                                   |             | 10                        |                      |                           | S222Z39Y5VR63K7.                                                                                         |
| 3300                                                   |             | 11                        |                      | S322Z43Y5VR63K7.          |                                                                                                          |
| 4700                                                   |             | 12                        |                      | 4.8                       | S472Z47Y5VR63K7.                                                                                         |
| 6800                                                   |             | 15                        |                      |                           | S682Z59Y5VR63K7.                                                                                         |

## Notes

- <sup>(1)</sup> SH = seated height
- Maximum thickness 4.0 mm
  - Lead style codes refer to inward kinked leads. Other styles available on request

| ORDERING INFORMATION CLASS 6 kV <sub>DC</sub> , KINKED |             |                           |                      |                           |                                                                                                          |
|--------------------------------------------------------|-------------|---------------------------|----------------------|---------------------------|----------------------------------------------------------------------------------------------------------|
| C<br>(pF)                                              | TOL.<br>(%) | D <sub>MAX.</sub><br>(mm) | LEAD SPACING<br>(mm) | SH <sup>(1)</sup><br>(mm) | CLEAR TEXT CODE                                                                                          |
|                                                        |             |                           |                      |                           | 13 <sup>TH</sup> DIGIT:<br>T = REEL; U = AMMO; 3 = BULK<br>16 <sup>TH</sup> DIGIT:<br>R = RoHS COMPLIANT |
| CLASS 1 SL                                             |             |                           |                      |                           |                                                                                                          |
| 10                                                     | ± 20        | 10                        | 10                   | 3.0                       | S100M39SL0U83L0.                                                                                         |
| 15                                                     |             |                           |                      |                           | S150M43SL0U83L0.                                                                                         |
| 22                                                     |             | 13.5                      |                      |                           | S220M43SL0U83L0.                                                                                         |
| 33                                                     |             |                           |                      |                           | S330M53SL0U83L0.                                                                                         |
| CLASS 1 S3N                                            |             |                           |                      |                           |                                                                                                          |
| 47                                                     | ± 20        | 11                        | 10                   | 3.0                       | S470M43S3NU83L0.                                                                                         |
| 68                                                     |             | 13.5                      |                      |                           | S680M53S3NU83L0.                                                                                         |
| 100                                                    |             | 15                        |                      |                           | S101M59S3NU83L0.                                                                                         |
| 150                                                    |             | 15                        |                      |                           | S151M59S3NU83L0.                                                                                         |
| CLASS 2 Z5U                                            |             |                           |                      |                           |                                                                                                          |
| 220                                                    | ± 20        | 10                        | 10                   | 3.0                       | S221M39Z5UU83L0.                                                                                         |
| 330                                                    |             | 11                        |                      |                           | S331M43Z5UU83L0.                                                                                         |
| 470                                                    |             | 12                        |                      |                           | S471M47Z5UU83L0.                                                                                         |

Ceramic Disc Capacitors Class 1 and 2,  
1 kV<sub>DC</sub>, 2 kV<sub>DC</sub>, 3 kV<sub>DC</sub> and 6 kV<sub>DC</sub>, General Purpose

Vishay BCcomponents

## ORDERING INFORMATION CLASS 6 kV<sub>DC</sub>, KINKED

| C<br>(pF)   | TOL.<br>(%) | D <sub>MAX.</sub><br>(mm) | LEAD SPACING<br>(mm) | SH <sup>(1)</sup><br>(mm) | CLEAR TEXT CODE                                                                                          |
|-------------|-------------|---------------------------|----------------------|---------------------------|----------------------------------------------------------------------------------------------------------|
|             |             |                           |                      |                           | 13 <sup>TH</sup> DIGIT:<br>T = REEL; U = AMMO; 3 = BULK<br>16 <sup>TH</sup> DIGIT:<br>R = RoHS COMPLIANT |
| CLASS 2 Z5U |             |                           |                      |                           |                                                                                                          |
| 680         | ± 20        | 13.5                      | 10                   | 3.0                       | S681M53Z5UU83L0.                                                                                         |
| 1000        |             | 15                        |                      |                           | S102M59Z5UU83L0.                                                                                         |
| 1500        |             | 17.5                      |                      |                           | S152M69Z5UU83L0.                                                                                         |
| 2200        |             | 19                        |                      |                           | S222M75Z5UU83L0.                                                                                         |

### Notes

<sup>(1)</sup> SH = seated height

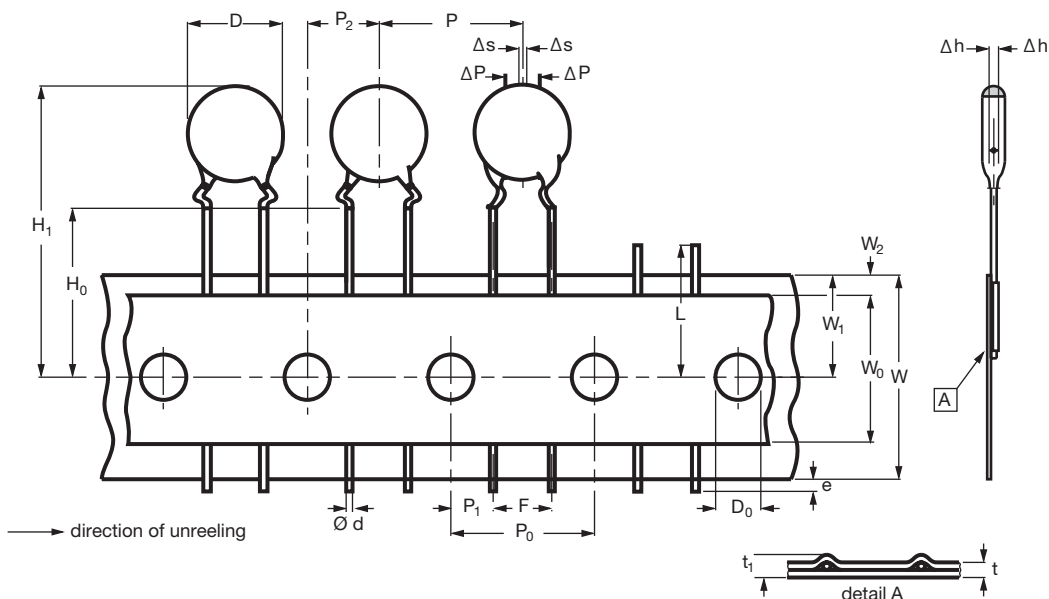
- Maximum thickness 4.0 mm
- Lead style codes refer to inward kinked leads. Other styles available on request

## PACKAGING

| PACKAGING TYPE                  | SIZE CODE | LEAD SPACE (mm) | VOLTAGE (V <sub>DC</sub> ) | SPQ  | BOX DIMENSIONS L x W x H (mm) |
|---------------------------------|-----------|-----------------|----------------------------|------|-------------------------------|
| Bulk<br>(long lead L ≥ 25.4 mm) | 20 to 47  | all             | all                        | 1000 | 245 x 120 x 65                |
|                                 |           |                 |                            | 1000 |                               |
|                                 | 53 to 75  |                 |                            | 1000 |                               |
|                                 | 84 to 96  |                 |                            | 500  |                               |
| Tape and reel                   | ≤ 47      | ≤ 6.40          | < 500                      | 2500 | 370 x 370 x 60                |
|                                 |           |                 | 500 ≤ WV ≤ 2000            | 2000 |                               |
|                                 |           | ≥ 7.5           | 3000                       | 1000 |                               |
|                                 |           |                 | all                        | 1000 |                               |
| Ammopack                        | ≤ 47      | ≤ 6.40          | < 500                      | 2000 | 335 x 240 x 50                |
|                                 |           |                 | 500 ≤ WV < 2000            | 1500 | 335 x 290 x 50                |
|                                 |           | ≥ 7.5           | 2000 and 3000              | 1500 | 360 x 330 x 55                |
|                                 |           |                 | all                        | 1500 | 360 x 330 x 55                |

### Note

- The capacitors are supplied in bulk packaging (cardboard boxes), in tape on reel or in ammopack



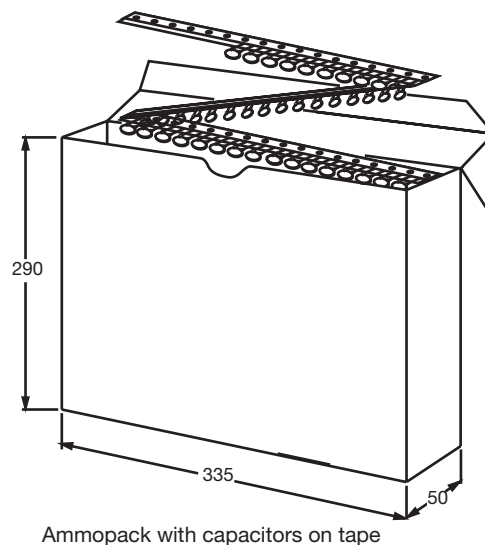
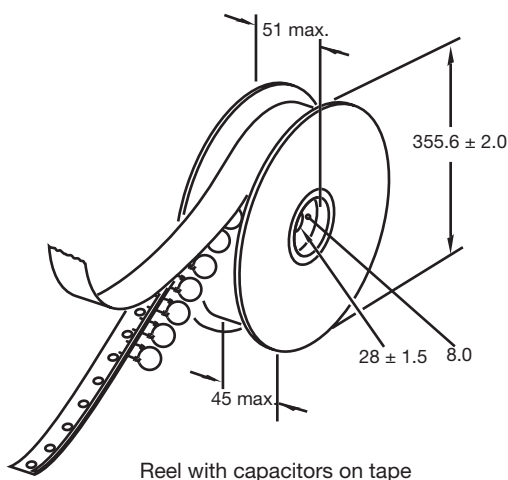
| DIMENSIONS OF TAPE            |                                      |                 |               |
|-------------------------------|--------------------------------------|-----------------|---------------|
| SYMBOL                        | PARAMETER                            | DIMENSIONS (mm) |               |
|                               |                                      | NOMINAL         | TOLERANCE     |
| D                             | Body diameter                        | 11.0 maximum    | -             |
| d                             | Lead diameter                        | 0.6             | ± 0.05        |
| P                             | Pitch between capacitors             | 12.7            | ± 1.0         |
| P <sub>0</sub> <sup>(1)</sup> | Feed-hole pitch                      | 12.7            | ± 0.3         |
| ΔP                            | Plane deviation                      | 1.0 maximum     | -             |
| P <sub>1</sub> <sup>(2)</sup> | Feed-hole center to lead center      | 3.85            | ± 0.7         |
| P <sub>2</sub> <sup>(2)</sup> | Feed-hole center to component center | 6.35            | ± 1.3         |
| F                             | Lead spacing                         | 5.0             | 0.6<br>- 0.4  |
| Δh                            | Component alignment                  | 0               | ± 1.0         |
| W                             | Tape width                           | 18.0            | 1.0<br>- 0.5  |
| W <sub>0</sub>                | Hold-down tape width                 | 5.0 minimum     | -             |
| W <sub>1</sub>                | Hole position                        | 9.0             | 0.75<br>- 0.5 |
| W <sub>2</sub>                | Hold-down tape margin                | 3.0 maximum     | -             |
| H <sub>0</sub>                | Height to seating plane              | 16.0            | ± 0.5         |
| H <sub>1</sub>                | Maximum component height             | 32.0            | -             |
| e                             | Lead end protrusion                  | 1.0 maximum     | -             |
| L                             | Maximum length of snapped lead       | 11.0            | -             |
| D <sub>0</sub>                | Feed-hole diameter                   | 4.0             | ± 0.2         |
| t                             | Total tape thickness                 | 0.9 maximum     | -             |
| t <sub>1</sub>                | Maximum thickness of tape and wires  | 1.5 maximum     | -             |

## Notes

(1) Cumulative pitch error:  $\pm \leq 1$  mm/20 pitches

(2) Obliquity maximum 3°

## REEL AND TAPE DATA in millimeters





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**Please note that some Vishay documentation may still make reference to RoHS Directive 2002/95/EC. We confirm that all the products identified as being compliant to Directive 2002/95/EC conform to Directive 2011/65/EU.**

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