

## 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



**RoHS**  
COMPLIANT

### 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 %

| 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 |
| <b>CLASS 1 SLO</b>                                 |             |                           |                      |                           |  |
| 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         |                           | S121J33SL0N6.J5.     |                           |  |
|  | ± 10        |                           | S121K33SL0N6.J5.     |                           |  |
| 150  | ± 10        |                           | 8.5                  | S151K33SL0N6.J5.          |  |
| 220  |             |                           |                      | S221K39SL0N6.J5.          |  |
| <b>CLASS 2 X7R</b>                                 |             |                           |                      |                           |  |
| 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                        | S332K47X7RN6.J7.     |                           |  |
| 4 700  |             | 15                        | 7.5                  | 4.8                       | S472K59X7RN6.J7.   |
| <b>CLASS 2 Y5P</b>                                 |             |                           |                      |                           |  |
| 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.     |                           |  |



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Vishay BCcomponents

| <b>ORDERING INFORMATION 1 kV<sub>DC</sub>, STRAIGHT</b> |             |                           |                      |                           |  |
|---|-------------|---------------------------|----------------------|---------------------------|--|
| 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 |
| <b>CLASS 2 Y5P</b>                                      |             |                           |                      |                           |  |
| 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   |
| <b>CLASS 2 Z5U</b>                                      |             |                           |                      |                           |  |
| 1000  | ± 20        | 6.5                       | 5.0                  | 4.0                       | S102M25Z5UN6.J5.   |
| 1500  |             |                           |                      |                           | S152M29Z5UN6.J5.   |
| 2200  |             |                           |                      |                           | S222M29Z5UN6.J5.   |
| 3300  |             |                           |                      |                           | S332M33Z5UN6.J5.   |
| 4700  |             | 8.5                       | S472M39Z5UN6.J5.     |                           |  |
| 6800  |             | 10                        | S682M43Z5UN6.J5.     |                           |  |
| 10 000  |             | 11                        | 7.5                  | 4.8                       | S103M47Z5UN63J7.   |
| 15 000  |             | 12                        |                      |                           | S153M59Z5UN63J7.   |
| 22 000  |             | 15                        |                      |                           | S223M75Z5UN83J0.   |
| 33 000  |             | 19                        | 10                   |                           |  |
| <b>CLASS 2 Y5V</b>                                      |             |                           |                      |                           |  |
| 1000  | + 80/- 20   | 6.5                       | 5.0                  | 4.0                       | S102Z25Y5VN6.J5.   |
| 1500  |             |                           |                      |                           | S152Z25Y5VN6.J5.   |
| 2200  |             |                           |                      |                           | S222Z29Y5VN6.J5.   |
| 3300  |             |                           |                      |                           | S332Z29Y5VN6.J5.   |
| 4700  |             | 7.5                       | S472Z33Y5VN6.J5.     |                           |  |
| 6800  |             | 8.5                       | S682Z39Y5VN6.J5.     |                           |  |
| 10 000  |             | 10                        | S103Z43Y5VN6.J5.     |                           |  |
| 15 000  |             | 11                        | 7.5                  | 4.8                       | S153Z53Y5VN6.J7.   |
| 22 000  |             | 13.5                      |                      |                           | S223Z59Y5VN6.J7.   |
| 33 000  |             | 15                        |                      |                           | S333Z75Y5VN8.J0.   |
|   |             | 19                        | 10                   |                           |  |

| <b>ORDERING INFORMATION 1 kV<sub>DC</sub>, KINKED</b> |             |                           |                      |                           |  |
|---|-------------|---------------------------|----------------------|---------------------------|--|
| 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 |
| <b>CLASS 2 X5F</b>                                    |             |                           |                      |                           |  |
| 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   |             |                           |                      |                           | S681K29X5FN6.J5R   |
| 820   |             | 7.5                       | S821K29X5FN6.J5R     |                           |  |
| 1000  |             | 11                        | S102K29X5FN6.J5R     |                           |  |
| 2200  |             | 13.5                      | S222K43X5FN6.J5R     |                           |  |
| 3300  |             | 16                        | 7.5                  | 4.8                       | S332K53X5FN6.J7R   |
| 4700  |             |                           |                      |                           | S472K63X5FN63J7R   |

**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<br>16 <sup>TH</sup> DIGIT:<br>R = RoHS COMPLIANT |     |     |                  |
| <b>CLASS 1 SLO</b>                               |                  |                           |                      |                           |  |     |     |                  |
| 10   | ± 5              | 6.5                       | 5.0                  | 4.0                       | S100J25SLOP6.K5.   |     |     |                  |
|  | ± 10             |                           |                      |                           | S100K25SLOP6.K5.   |     |     |                  |
| 12   | ± 5              |                           |                      |                           | S120J25SLOP6.K5.   |     |     |                  |
|  | ± 10             |                           |                      |                           | S120K25SLOP6.K5.   |     |     |                  |
| 15   | ± 5              |                           |                      |                           | S150J25SLOP6.K5.   |     |     |                  |
|  | ± 10             |                           |                      |                           | S150K25SLOP6.K5.   |     |     |                  |
| 18   | ± 5              |                           |                      |                           | S180J25SLOP6.K5.   |     |     |                  |
|  | ± 10             |                           |                      |                           | S180K25SLOP6.K5.   |     |     |                  |
| 22   | ± 5              |                           |                      |                           | S220J25SLOP6.K5.   |     |     |                  |
|  | ± 10             |                           |                      |                           | S220K25SLOP6.K5.   |     |     |                  |
| 27   | ± 5              |                           |                      |                           | S270J25SLOP6.K5.   |     |     |                  |
|  | ± 10             |                           |                      |                           | S270K25SLOP6.K5.   |     |     |                  |
| 33   | ± 5              | 7.5                       | 5.0                  | 4.0                       | S330J29SLOP6.K5.   |     |     |                  |
|  | ± 10             |                           |                      |                           | S330K29SLOP6.K5.   |     |     |                  |
| 39   | ± 5              |                           |                      |                           | S390J29SLOP6.K5.   |     |     |                  |
|  | ± 10             |                           |                      |                           | S390K29SLOP6.K5.   |     |     |                  |
| 47   | ± 5              |                           |                      |                           | S470J29SLOP6.K5.   |     |     |                  |
|  | ± 10             |                           |                      |                           | S470K29SLOP6.K5.   |     |     |                  |
| 56   | ± 5              |                           |                      |                           | S560J29SLOP6.K5.   |     |     |                  |
|  | ± 10             |                           |                      |                           | S560K29SLOP6.K5.   |     |     |                  |
| 68   | ± 5              |                           |                      |                           | 8.5  | 5.0 | 4.0 | S680J33SLOP6.K5. |
|  | ± 10             |                           |                      |                           |  |     |     | S680K33SLOP6.K5. |
| 82   | ± 5              |                           |                      |                           |  |     |     | S820J33SLOP6.K5. |
|  | ± 10             |                           |                      |                           |  |     |     | S820K33SLOP6.K5. |
| 100  | ± 5              | 10                        | 5.0                  | 4.0                       |  |     |     | S101J39SLOP6.K5. |
|  | ± 10             |                           |                      |                           |  |     |     | S101K39SLOP6.K5. |
| 120  | ± 5              |                           |                      |                           | S121J39SLOP6.K5.   |     |     |                  |
|  | ± 10             |                           |                      |                           | S121K39SLOP6.K5.   |     |     |                  |
| 150  | ± 5              |                           |                      |                           | 11   | 5.0 | 4.0 | S151K43SLOP6.K5. |
|  | ± 10             |                           |                      |                           |  |     |     |                  |
| <b>CLASS 2 X7R</b>                               |                  |                           |                      |                           |  |     |     |                  |
| 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   |                  | 10                        | 7.5                  | 4.8                       | S102K39X7RP6.K5.   |     |     |                  |
| 1500   |                  | 11                        |                      |                           | S152K43X7RP6.K5.   |     |     |                  |
| 2200   |                  | 13.5                      |                      |                           | S222K53X7RP6.K7.   |     |     |                  |
| 3300   |                  | 15                        |                      |                           | S332K59X7RP6.K7.   |     |     |                  |
| <b>CLASS 2 Y5P</b>                               |                  |                           |                      |                           |  |     |     |                  |
| 100  |                  | ± 10                      |                      |                           | 6.5  | 5.0 | 4.0 | S101K25Y5PP6.K5. |
| 150  | S151K25Y5PP6.K5. |                           |                      |                           |  |     |     |                  |
| 220  | S221K25Y5PP6.K5. |                           |                      |                           |  |     |     |                  |
| 330  | S331K25Y5PP6.K5. |                           |                      |                           |  |     |     |                  |
| 470  | S471K29Y5PP6.K5. |                           |                      |                           |  |     |     |                  |
| 680  | S681K29Y5PP6.K5. |                           |                      |                           |  |     |     |                  |
| 1000   | 8.5              |                           | 7.5                  | 4.8                       | S102K33Y5PP6.K5.   |     |     |                  |
| 1500   | 10               |                           |                      |                           | S152K39Y5PP6.K5.   |     |     |                  |
| 2200   | 11               |                           |                      |                           | S222K43Y5PP6.K5.   |     |     |                  |
| 3300   | 13.5             |                           |                      |                           | S332K53Y5PP63K7.   |     |     |                  |
| 4700   | 17.5             |                           |                      |                           | S472K69Y5PP63K7.   |     |     |                  |



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Vishay BCcomponents

| <b>ORDERING INFORMATION 2 kV<sub>DC</sub>, KINKED</b> |           |                        |                   |                        |  |
|---|-----------|------------------------|-------------------|------------------------|--|
| C (pF)  | TOL. (%)  | D <sub>MAX.</sub> (mm) | LEAD SPACING (mm) | SH <sup>(1)</sup> (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 |
| <b>CLASS 2 Z5U</b>                                    |           |                        |                   |                        |  |
| 1000  | ± 20      | 7.5                    | 5.0               | 4.0                    | S102M29Z5UP6.K5.   |
| 1500  |           |                        |                   |                        | S152M29Z5UP6.K5.   |
| 2200  |           |                        |                   |                        | S222M33Z5UP6.K5.   |
| 3300  |           | 11                     | 7.5               | 4.8                    | S332M43Z5UP6.K5.   |
| 4700  |           | 12                     |                   |                        | S472M47Z5UP63K7.   |
| 6800  |           | 13.5                   |                   |                        | S682M53Z5UP63K7.   |
| 10 000  |           | 17.5                   |                   |                        | S103M69Z5UP63K7.   |
| <b>CLASS 2 Y5V</b>                                    |           |                        |                   |                        |  |
| 1000  | + 80/- 20 | 7.5                    | 5.0               | 4.0                    | S102Z29Y5VP6.K5.   |
| 1500  |           |                        |                   |                        | S152Z29Y5VP6.K5.   |
| 2200  |           |                        |                   |                        | S222Z33Y5VP6.K5.   |
| 3300  |           | 10.5                   | 7.5               | 4.8                    | S322Z39Y5VP6.K5.   |
| 4700  |           | 11                     |                   |                        | S472Z43Y5VP6.K5.   |
| 6800  |           | 12                     |                   |                        | S682Z47Y5VP6.K7.   |
| 10 000  |           | 15                     |                   |                        | S103Z59Y5VP6.K7.   |
| <b>CLASS 2 X5F</b>                                    |           |                        |                   |                        |  |
| 1 00  | ± 10      | 6.5                    | 5.0               | 4.0                    | S101K25X5FP6.K5R   |
| 220   |           |                        |                   |                        | S221K25X5FP6.K5R   |
| 330   |           |                        |                   |                        | 7.5  |
| 470   |           | 8                      | 7.5               | 4.8                    | S471K31X5FP6.K5R   |
| 680   |           | 10                     |                   |                        | 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

| <b>ORDERING INFORMATION CLASS 3 kV<sub>DC</sub>, KINKED</b> |          |                        |                   |                        |  |
|---|----------|------------------------|-------------------|------------------------|--|
| C (pF)  | TOL. (%) | D <sub>MAX.</sub> (mm) | LEAD SPACING (mm) | SH <sup>(1)</sup> (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 |
| <b>CLASS 1 SL</b>   |          |                        |                   |                        |  |
| 10  | ± 10     | 8.5                    | 7.5               | 4.0                    | S100K33SL0R63K7.   |
| 15  |          |                        |                   |                        | S150K33SL0R63K7.   |
| 22  |          |                        |                   |                        | S220K33SL0R63K7.   |
| 33  |          |                        |                   |                        | S330K33SL0R63K7.   |
| 47  |          |                        |                   |                        | S470K33SL0R63K7.   |
| 68  | 10       | S680K39SL0R63K7.       |                   |                        |  |
| <b>CLASS 2 X7R</b>  |          |                        |                   |                        |  |
| 100   | ± 10     | 8.5                    | 7.5               | 4.0                    | S101K33X7RR63K7.   |
| 150   |          |                        |                   |                        | S151K33X7RR63K7.   |
| 220   |          |                        |                   |                        | S221K33X7RR63K7.   |
| 330   |          |                        |                   |                        | S331K33X7RR63K7.   |
| 470   |          |                        |                   |                        | S471K33X7RR63K7.   |
| 680   |          | 10                     | 4.8               | S681K39X7RR63K7.       |  |
| 1000  |          | 11                     |                   | S102K43X7RR63K7.       |  |
| 1500  | 13.5     | S152K53X7RR63K7.       |                   |                        |  |
| 2200  | 17.5     | S222K59X7RR83K7.       |                   |                        |  |

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

**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 (pF)   | TOL. (%) | D <sub>MAX.</sub> (mm) | LEAD SPACING (mm) | SH <sup>(1)</sup> (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 |
| <b>CLASS 1 SL</b>                                      |          |                        |                   |                        |  |
| 10   | ± 20     | 10                     | 10                | 3.0                    | S100M39SL0U83L0.   |
| 15   |          |                        |                   |                        | S150M43SL0U83L0.   |
| 22   |          | S220M43SL0U83L0.       |                   |                        |  |
| 33   |          | 13.5                   |                   |                        | S330M53SL0U83L0.   |
| <b>CLASS 1 S3N</b>                                     |          |                        |                   |                        |  |
| 47   | ± 20     | 11                     | 10                | 3.0                    | S470M43S3NU83L0.   |
| 68   |          | 13.5                   |                   |                        | S680M53S3NU83L0.   |
| 100  |          | 15                     |                   |                        | S101M59S3NU83L0.   |
| 150  |          | 15                     |                   |                        | S151M59S3NU83L0.   |
| <b>CLASS 2 Z5U</b>                                     |          |                        |                   |                        |  |
| 220  | ± 20     | 10                     | 10                | 3.0                    | S221M39Z5UU83L0.   |
| 330  |          | 11                     |                   |                        | S331M43Z5UU83L0.   |
| 470  |          | 12                     |                   |                        | S471M47Z5UU83L0.   |

| ORDERING INFORMATION CLASS 6 kV <sub>DC</sub> , KINKED |          |                        |                   |                        |   |
|--|----------|------------------------|-------------------|------------------------|---|
| C (pF)   | TOL. (%) | D <sub>MAX.</sub> (mm) | LEAD SPACING (mm) | SH <sup>(1)</sup> (mm) | CLEAR TEXT CODE<br>13 <sup>TH</sup> DIGIT:<br>T = REEL; U = AMMO; 3 = BULK<br>16 <sup>TH</sup> DIGIT:<br>R = RoHS COMPLIANT |
| <b>CLASS 2 Z5U</b>                                     |          |                        |                   |                        |   |
| 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  |                 |                            | 500  |                               |
|                                 | 84 to 96  |                 |                            | 250  |                               |
| 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 |                               |

**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:  $\pm \leq 1 \text{ mm}/20 \text{ pitches}$

(2) Obliquity maximum 3°

**REEL AND TAPE DATA** in millimeters







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