

## Ceramic Disc Capacitors

### Class 1 and 2, 500 V (DC) General Purpose

#### FEATURES

- Low losses
- High stability
- High capacitance in small size
- Kinked (preferred) or straight leads.

#### APPLICATIONS

- Bypassing
- Coupling
- Resonant circuit.

#### 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.

The capacitors have inward kinked leads with a spacing of 5 mm (0.200") or 7.5 mm (0.300") and a lead length from 4 to 30 mm.

#### CAPACITANCE RANGE:

Class 1, at 1 MHz, 1.2 V (RMS); 10 to 82 pF  
1 kHz,  $1 \pm 0.2$  V (RMS) for capacitance values higher than 1000 pF.

Class 2, at 1 kHz,  $1 \pm 0.2$  V (RMS); 100 to 22000 pF

#### RATED DC VOLTAGE:

500 V

#### DIELECTRIC STRENGTH:

250 % of rated voltage

#### INSULATION RESISTANCE AT 500V (DC):

$\geq 10000 \text{ M}\Omega$

#### TOLERANCE ON CAPACITANCE:

$\pm 5 \%$ ;  $\pm 10 \%$ ;  $\pm 20 \%$ ;  $+ 80 \%$  /  $- 20 \%$

#### DISSIPATION FACTOR:

Class 1,  $C \leq 30 \text{ pF}$ ;  $\leq 20 \times (10/C + 0.7) \times 10^{-4}$  maximum

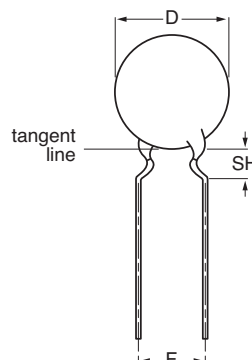
Class 1,  $C > 30 \text{ pF}$ ;  $\leq 20 \times 10^{-4}$

Class 2,  $\leq 3.0 \%$

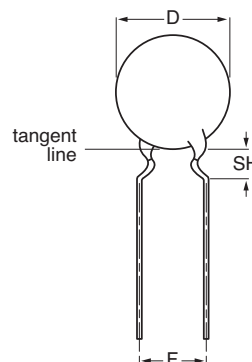
#### TEMPERATURE COEFFICIENTS:

Class 1 C0G (NP0); SL0

Class 2 Y5P; Z5U; Y5V



Capacitors with 5 mm (0.20") lead spacing.



Capacitors with 7.5 mm (0.30") lead spacing.

#### SECTIONAL SPECIFICATIONS:

Class 1 IEC 60 384-8,

Class 2 IEC 60 384-9,

EIA 198

#### CLIMATIC CATEGORY:

Class 1 55/125/21

Class 2 10/85/21 and 30/85/21

#### OPERATING TEMPERATURE RANGE:

Class1 - 55 to +125 °C

Class 2 - 30 to + 85 °C

#### MARKING

Marking indicates capacitance value and tolerance in accordance with "EIA 198".

The capacitors meet the essential requirements of "EIA 198". Unless stated otherwise all electrical values apply at an ambient temperature of  $25 \pm 3$  °C, at normal atmospheric conditions

**ORDERING INFORMATION (PREFERRED TYPES), CLASS 1, 500 V (DC), KINKED**

| C<br>(pF)   | TOL.<br>(%) | D <sub>max</sub><br>(mm) | LEAD<br>SPACING<br>F<br>(mm) | SH <sup>(2)</sup><br>(mm) | CLEAR TEXT CODE                                            | PACKAGING CODE<br>8 <sup>th</sup> AND 9 <sup>th</sup> DIGIT <sup>(3)</sup> |      |      | CATALOG<br>NUMBER <sup>(4)</sup> |
|-------------|-------------|--------------------------|------------------------------|---------------------------|------------------------------------------------------------|----------------------------------------------------------------------------|------|------|----------------------------------|
|             |             |                          |                              |                           | 13 <sup>th</sup> DIGIT:<br>T = REEL; U = AMMO;<br>3 = BULK | REEL                                                                       | AMMO | BULK |                                  |
| CLASS 1 NP0 |             |                          |                              |                           |                                                            |                                                                            |      |      |                                  |
| 10          | ± 5         | 5.0                      | 5.0                          | 4.0                       | D100J20C0GL6.J5                                            | 06                                                                         | 08   | 10   | 2252 508 ..005                   |
| 12          |             |                          |                              |                           | D120J20C0GL6.J5                                            |                                                                            |      |      | 2252 508 ..055                   |
| 15          |             |                          |                              |                           | D150J20C0GL6.J5                                            |                                                                            |      |      | 2252 508 ..105                   |
| 18          |             |                          |                              |                           | D180J20C0GL6.J5                                            |                                                                            |      |      | 2252 508 ..155                   |
| 22          |             | 6.5                      |                              |                           | D220J25C0GL6.J5                                            |                                                                            |      |      | 2252 508 ..205                   |
| 27          |             |                          |                              |                           | D270J25C0GL6.J5                                            |                                                                            |      |      | 2252 508 ..255                   |
| CLASS 1 SL0 |             |                          |                              |                           |                                                            |                                                                            |      |      |                                  |
| 33          | ± 5         | 5.0                      | 5.0                          | 4.0                       | D330J20SL0L6.J5                                            | 06                                                                         | 08   | 10   | 2252 568 ..305                   |
| 39          |             |                          |                              |                           | D390J20SL0L6.J5                                            |                                                                            |      |      | 2252 568 ..355                   |
| 47          |             |                          |                              |                           | D470J20SL0L6.J5                                            |                                                                            |      |      | 2252 568 ..405                   |
| 56          |             |                          |                              |                           | D560J20SL0L6.J5                                            |                                                                            |      |      | 2252 568 ..505                   |
| 68          |             | 6.5                      |                              |                           | D680J25SL0L6.J5                                            |                                                                            |      |      | 2252 568 ..605                   |
| 82          |             |                          |                              |                           | D820J25SL0L6.J5                                            |                                                                            |      |      | 2252 568 ..805                   |

**Notes**

- Maximum thickness 4.0 mm.
- SH = seated height.
- Packaging codes refer to inward kinked leads. Other styles available on request.
- 8<sup>th</sup> and 9<sup>th</sup> digit of the catalog number to be completed with the packaging code.

**ORDERING INFORMATION (PREFERRED TYPES), CLASS 2, 500 V (DC), KINKED**

| C<br>(pF)   | TOL.<br>(%) | D <sub>max</sub><br>(mm) | LEAD<br>SPACING<br>F<br>(mm) | SH <sup>(2)</sup><br>(mm) | CLEAR TEXT CODE                                            | PACKAGING CODE<br>8 <sup>th</sup> AND 9 <sup>th</sup> DIGIT <sup>(3)</sup> |      |      | CATALOG<br>NUMBER <sup>(4)</sup> |
|-------------|-------------|--------------------------|------------------------------|---------------------------|------------------------------------------------------------|----------------------------------------------------------------------------|------|------|----------------------------------|
|             |             |                          |                              |                           | 13 <sup>th</sup> DIGIT:<br>T = REEL; U = AMMO;<br>3 = BULK | REEL                                                                       | AMMO | BULK |                                  |
| CLASS 2 Y5P |             |                          |                              |                           |                                                            |                                                                            |      |      |                                  |
| 100         | ± 10        | 5.0                      | 5.0                          | 4.0                       | D101K20Y5PL6.J5                                            | 06                                                                         | 08   | 10   | 2252 618 ..011                   |
| 150         |             |                          |                              |                           | D151K20Y5PL6.J5                                            |                                                                            |      |      | 2252 618 ..111                   |
| 220         |             |                          |                              |                           | D221K20Y5PL6.J5                                            |                                                                            |      |      | 2252 618 ..211                   |
| 330         |             |                          |                              |                           | D331K20Y5PL6.J5                                            |                                                                            |      |      | 2252 618 ..311                   |
| 470         |             |                          |                              |                           | D471K20Y5PL6.J5                                            |                                                                            |      |      | 2252 618 ..411                   |
| 680         |             | 6.5                      |                              |                           | D681K25Y5PL6.J5                                            |                                                                            |      |      | 2252 618 ..611                   |
| 1000        |             |                          |                              |                           | D102K25Y5PL6.J5                                            |                                                                            |      |      | 2252 618 ..021                   |
| 1500        |             | 7.5                      |                              |                           | D152K29Y5PL6.J5                                            |                                                                            |      |      | 2252 618 ..121                   |
| 2200        |             | 8.5                      |                              |                           | D222K33Y5PL6.J5                                            |                                                                            |      |      | 2252 618 ..221                   |
| 3300        |             | 10.0                     |                              |                           | D332K39Y5PL6.J5                                            |                                                                            |      |      | 2252 618 ..321                   |
| 4700        |             | 11.0                     |                              |                           | D472K43Y5PL6.J5                                            |                                                                            |      |      | 2252 618 ..421                   |
| 6800        |             | 13.5                     | 7.5                          |                           | D682K53Y5PL6.J7                                            | -                                                                          | -    | 31   | 2252 618 ..621                   |
| 10000       |             | 17.5                     |                              |                           | D103K69Y5PL6.J7                                            |                                                                            |      |      | 2252 618 ..031                   |
| CLASS 2 Y5V |             |                          |                              |                           |                                                            |                                                                            |      |      |                                  |
| 1000        | + 80/- 20   | 5.0                      | 5.0                          | 4.0                       | D102Z20Y5VL6.J5                                            | 06                                                                         | 08   | 10   | 2252 638 ..023                   |
| 1500        |             |                          |                              |                           | D152Z20Y5VL6.J5                                            |                                                                            |      |      | 2252 638 ..123                   |
| 2200        |             | 6.5                      |                              |                           | D222Z25Y5VL6.J5                                            |                                                                            |      |      | 2252 638 ..223                   |
| 3300        |             |                          |                              |                           | D322Z25Y5VL6.J5                                            |                                                                            |      |      | 2252 638 ..323                   |
| 4700        |             | 7.5                      |                              |                           | D472Z29Y5VL6.J5                                            |                                                                            |      |      | 2252 638 ..423                   |
| 6800        |             | 8.5                      |                              |                           | D682Z33Y5VL6.J5                                            |                                                                            |      |      | 2252 638 ..623                   |
| 10000       |             | 10.0                     |                              |                           | D103Z39Y5VL6.J5                                            |                                                                            |      |      | 2252 638 ..033                   |
| 15000       |             | 11.0                     |                              |                           | D153Z43Y5VL6.J5                                            |                                                                            |      |      | 2252 638 ..133                   |
| 22000       |             | 13.5                     | 7.5                          |                           | D223Z53Y5VL6.J7                                            | -                                                                          | -    | 31   | 2252 638 ..233                   |
| 33000       |             | 17.5                     |                              |                           | D333Z69Y5VL6.J7                                            |                                                                            |      |      | 2252 638 ..333                   |

**ORDERING INFORMATION (PREFERRED TYPES), CLASS 2, 500 V (DC), KINKED**

| C<br>(pF)   | TOL.<br>(%) | D <sub>max</sub><br>(mm) | LEAD<br>SPACING<br>F<br>(mm) | SH <sup>(2)</sup><br>(mm) | CLEAR TEXT CODE                                            | PACKAGING CODE<br>8 <sup>th</sup> AND 9 <sup>th</sup> DIGIT <sup>(3)</sup> |      |      | CATALOG<br>NUMBER <sup>(4)</sup> |
|-------------|-------------|--------------------------|------------------------------|---------------------------|------------------------------------------------------------|----------------------------------------------------------------------------|------|------|----------------------------------|
|             |             |                          |                              |                           | 13 <sup>th</sup> DIGIT:<br>T = REEL; U = AMMO;<br>3 = BULK | REEL                                                                       | AMMO | BULK |                                  |
| CLASS 2 Z5U |             |                          |                              |                           |                                                            |                                                                            |      |      |                                  |
| 1000        | ± 20        | 5.0                      | 5.0                          | 4.0                       | D102M20Z5UL6.J5                                            | 06                                                                         | 08   | 10   | 2252 648 ..022                   |
| 1500        |             |                          |                              |                           | D152M25Z5UL6.J5                                            |                                                                            |      |      | 2252 648 ..122                   |
| 2200        |             |                          |                              |                           | D222M25Z5UL6.J5                                            |                                                                            |      |      | 2252 648 ..222                   |
| 3300        |             |                          |                              |                           | D332M29Z5UL6.J5                                            |                                                                            |      |      | 2252 648 ..322                   |
| 4700        |             | 7.5                      |                              |                           | D472M33Z5UL6.J5                                            | 2252 648 ..422                                                             |      |      |                                  |
| 6800        |             | 8.5                      |                              |                           | D682M39Z5UL6.J5                                            | 2252 648 ..622                                                             |      |      |                                  |
| 10000       |             | 10.0                     |                              |                           | D103M43Z5UL6.J5                                            | 2252 648 ..032                                                             |      |      |                                  |
| 15000       |             | 11.0                     |                              |                           | D153M53Z5UL6.J7                                            | -                                                                          | -    | 31   | 2252 648 ..132                   |
| 22000       |             | 13.5                     |                              |                           | D223M59Z5UL6.J7                                            |                                                                            |      |      | 2252 648 ..232                   |
|             |             | 15.0                     | 7.5                          |                           |                                                            |                                                                            |      |      |                                  |

**Notes**

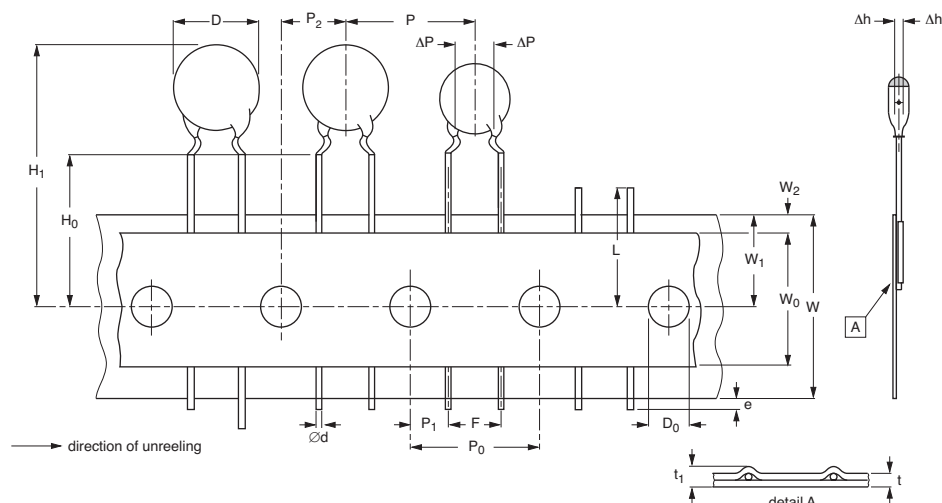
- Maximum thickness 4.0 mm.
- SH = seated height.
- Packaging codes refer to inward kinked leads. Other styles available on request.
- 8th and 9th digit of the catalog number to be completed with the packaging code.

**PACKAGING**

| D <sub>max</sub><br>mm | SIZE CODE | PACKAGING QUANTITIES |      |      |
|------------------------|-----------|----------------------|------|------|
|                        |           | BULK                 | REEL | AMMO |
| 5.0 (0.20")            | 20        | 1000                 | 2000 | 2000 |
| 6.5 (0.25")            | 25        |                      |      |      |
| 7.5 (0.29")            | 29        |                      |      |      |
| 8.5 (0.33")            | 33        |                      |      |      |
| 10.0 (0.39")           | 39        |                      |      |      |
| 11.0 (0.43")           | 43        |                      |      |      |
| 12.0 (0.47")           | 47        | 500                  | -    | -    |
| 13.5 (0.53")           | 53        |                      |      |      |
| 15.0 (0.59")           | 59        |                      |      |      |
| 17.5 (0.69")           | 69        |                      |      |      |

**Note**

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



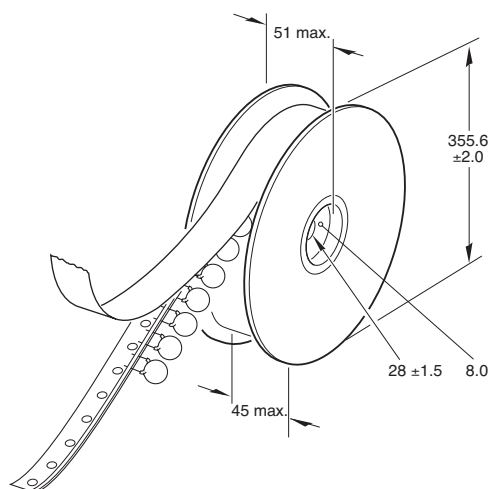
Kinked capacitors on tape, lead spacing 5.0 mm (0.2 inch).

**DIMENSIONS OF TAPE**

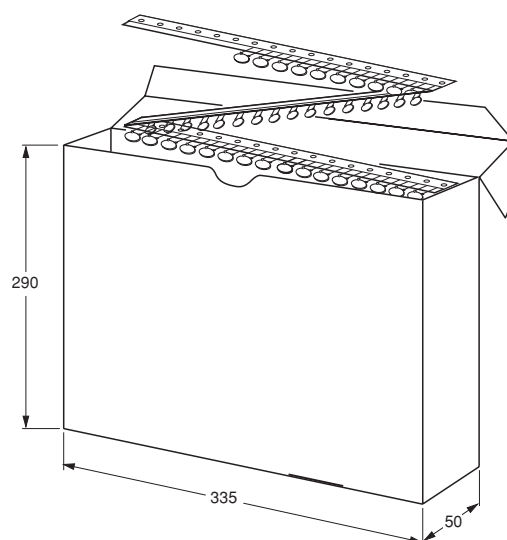
| SYMBOL         | PARAMETER                            | DIMENSIONS (mm) |                    |
|----------------|--------------------------------------|-----------------|--------------------|
|                |                                      | NOMINAL         | TOLERANCE          |
| D              | body diameter                        | 11.0 maximum    | -                  |
| d              | lead diameter                        | 0.6             | $\pm 0.05$         |
| P              | pitch between capacitors             | 12.7            | $\pm 1.0$          |
| P <sub>0</sub> | feed-hole pitch                      | 12.7            | $\pm 0.3$ ; note 1 |
| $\Delta P$     | plane deviation                      | 1.0 maximum     | -                  |
| P <sub>1</sub> | feed-hole centre to lead centre      | 3.85            | $\pm 0.7$ ; note 2 |
| P <sub>2</sub> | feed-hole centre to component centre | 6.35            | $\pm 1.3$ ; note 2 |
| F              | lead spacing                         | 5.0             | + 0.6<br>- 0.4     |
| $\Delta h$     | component alignment                  | 0               | $\pm 1.0$          |
| $\Delta s$     | deviation along tape, left or right  | 0               | $\pm 1.0$          |
| 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            | $\pm 0.5$          |
| H <sub>1</sub> | maximum component height             | 32.0            | -                  |
| e              | lead end protrusion                  | 1.0 maximum     | -                  |
| L              | maximum length of snipped lead       | 11.0            | -                  |
| D <sub>0</sub> | feed-hole diameter                   | 4.0             | $\pm 0.2$          |
| 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

Reel with capacitors on tape.



Ammopack with capacitors on tape.