

## Ceramic Disc Capacitors

### Class 1 and 2, 100 V (DC) General Purpose

#### FEATURES

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



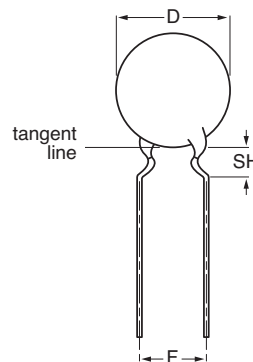
#### APPLICATIONS

- 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") and a lead length from 4 to 30 mm. Encapsulation is made of phenolic resin.



Capacitors with 5 mm (0.20") lead spacing.

#### CAPACITANCE RANGE:

Class 1, at 1 MHz, 1.2 V (RMS); 1.0 to 100 pF  
1 kHz,  $1 \pm 0.2V$  (RMS) for capacitance values higher than 1000 pF.

Class 2, at 1 kHz,  $1 \pm 0.2 V$  (RMS); 150 to 47000 pF

#### RATED DC VOLTAGE:

100 V

#### DIELECTRIC STRENGTH:

250 % of rated voltage

#### INSULATION RESISTANCE AT 100V (DC):

$\geq 10000 M\Omega$

#### TOLERANCE ON CAPACITANCE:

$\pm 0.25 pF$ ;  $\pm 0.5 pF$ ;  $\pm 5 \%$ ;  $\pm 10 \%$ ;  $\pm 20 \%$ ;  $+ 80 \%$  /  $- 20 \%$

#### DISSIPATION FACTOR:

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

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

Class 2,  $\leq 3.0 \%$

#### TEMPERATURE COEFFICIENTS:

Class 1 NP0; SL0

Class 2 Y5P; Z5U; Y5V; Z5V

#### 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:

Class 1 - 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  $25 \pm 3 ^\circ C$ , at normal atmospheric conditions

Ceramic Disc Capacitors  
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Vishay BCcomponents

**ORDERING INFORMATION, CLASS 1, 100 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><br><br>3 <sup>rd</sup> DIGIT:<br>5 = STANDARD<br>8 = RoHS<br>COMPLIANT |
|-------------|-------------|--------------------------|------------------------------|---------------------------|-----------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|------|------|---------------------------------------------------------------------------------------------------------|
|             |             |                          |                              |                           | 13 <sup>th</sup> DIGIT:<br>T = REEL; U = AMMO;<br>3 = BULK<br><br>16 <sup>th</sup> DIGIT:<br>R = RoHS COMPLIANT | REEL                                                                       | AMMO | BULK |                                                                                                         |
| CLASS 1 NP0 |             |                          |                              |                           |                                                                                                                 |                                                                            |      |      |                                                                                                         |
| 1.0         | ± 0.25 pF   | 5.0                      | 5.0                          | 4.0                       | D109C20C0KH6.J5.                                                                                                | 06                                                                         | 08   | 10   | 22.2 506 ..044                                                                                          |
| 1.5         |             |                          |                              |                           | D159C20C0KH6.J5.                                                                                                |                                                                            |      |      | 22.2 506 ..144                                                                                          |
| 2.2         |             |                          |                              |                           | D229C20C0KH6.J5.                                                                                                |                                                                            |      |      | 22.2 506 ..244                                                                                          |
| 3.3         |             |                          |                              |                           | D339C20C0KH6.J5.                                                                                                |                                                                            |      |      | 22.2 506 ..344                                                                                          |
| 4.7         |             |                          |                              |                           | D479C20C0KH6.J5.                                                                                                |                                                                            |      |      | 22.2 506 ..444                                                                                          |
| 6.8         | ± 0.5 pF    |                          |                              |                           | D689D20C0HH6.J5.                                                                                                |                                                                            |      |      | 22.2 506 ..645                                                                                          |
| 10          | ± 5         |                          |                              |                           | D100J20C0GH6.J5.                                                                                                |                                                                            |      |      | 22.2 506 ..005                                                                                          |
| 12          |             |                          |                              |                           | D120J20C0GH6.J5.                                                                                                |                                                                            |      |      | 22.2 506 ..055                                                                                          |
| 15          |             |                          |                              |                           | D150J20C0GH6.J5.                                                                                                |                                                                            |      |      | 22.2 506 ..105                                                                                          |
| 18          |             |                          |                              |                           | D180J20C0GH6.J5.                                                                                                |                                                                            |      |      | 22.2 506 ..155                                                                                          |
| 22          |             |                          |                              |                           | D220J20C0GH6.J5.                                                                                                |                                                                            |      |      | 22.2 506 ..205                                                                                          |
| 27          |             |                          |                              |                           | D270J20C0GH6.J5.                                                                                                |                                                                            |      |      | 22.2 506 ..255                                                                                          |
| 33          |             |                          |                              |                           | D330J20C0GH6.J5.                                                                                                |                                                                            |      |      | 22.2 506 ..305                                                                                          |
| 39          |             |                          |                              |                           | D390J25C0GH6.J5.                                                                                                |                                                                            |      |      | 22.2 506 ..355                                                                                          |
| 47          |             | 6.5                      | D470J25C0GH6.J5.             | 22.2 506 ..405            |                                                                                                                 |                                                                            |      |      |                                                                                                         |
| CLASS 1 SL0 |             |                          |                              |                           |                                                                                                                 |                                                                            |      |      |                                                                                                         |
| 56          | ± 5         | 5.0                      | 5.0                          | 4.0                       | D560J20SL0H6.J5.                                                                                                | 06                                                                         | 08   | 10   | 22.2 566 ..505                                                                                          |
| 68          |             |                          |                              |                           | D680J20SL0H6.J5.                                                                                                |                                                                            |      |      | 22.2 566 ..605                                                                                          |
| 82          |             |                          |                              |                           | D820J20SL0H6.J5.                                                                                                |                                                                            |      |      | 22.2 566 ..805                                                                                          |
| 100         |             |                          |                              |                           | D101J20SL0H6.J5.                                                                                                |                                                                            |      |      | 22.2 566 ..015                                                                                          |

**Notes**

1. Maximum thickness 4.0 mm.
2. SH = seated height.
3. Packaging codes refer to inward kinked leads. Other styles available on request.
4. 3<sup>rd</sup> digit to complete RoHS catalog number. 8<sup>th</sup> and 9<sup>th</sup> digit of the catalog number to be completed with the packaging code.

**ORDERING INFORMATION, CLASS 2, 100 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><br>3 <sup>rd</sup> DIGIT:<br>5 = STANDARD<br>8 = RoHS<br>COMPLIANT |                |
|-------------|-------------|--------------------------|------------------------------|---------------------------|-------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|------|------|-----------------------------------------------------------------------------------------------------|----------------|
|             |             |                          |                              |                           | 13 <sup>th</sup> DIGIT:<br>T = REEL; U = AMMO;<br>3 = BULK<br>16 <sup>th</sup> DIGIT:<br>R = RoHS COMPLIANT | REEL                                                                       | AMMO | BULK |                                                                                                     |                |
| CLASS 2 Y5P |             |                          |                              |                           |                                                                                                             |                                                                            |      |      |                                                                                                     |                |
| 150         | ± 10        | 5.0                      | 5.0                          | 4.0                       | D151K20Y5PH6.J5.                                                                                            | 06                                                                         | 08   | 10   | 22.2 616 ..111                                                                                      |                |
| 180         |             |                          |                              |                           | D181K20Y5PH6.J5.                                                                                            |                                                                            |      |      | 22.2 616 ..161                                                                                      |                |
| 220         |             |                          |                              |                           | D221K20Y5PH6.J5.                                                                                            |                                                                            |      |      | 22.2 616 ..211                                                                                      |                |
| 330         |             |                          |                              |                           | D331K20Y5PH6.J5.                                                                                            |                                                                            |      |      | 22.2 616 ..311                                                                                      |                |
| 470         |             |                          |                              |                           | D471K20Y5PH6.J5.                                                                                            |                                                                            |      |      | 22.2 616 ..411                                                                                      |                |
| 680         |             |                          |                              |                           | D681K20Y5PH6.J5.                                                                                            |                                                                            |      |      | 22.2 616 ..611                                                                                      |                |
| 1000        |             |                          |                              |                           | D102K20Y5PH6.J5.                                                                                            |                                                                            |      |      | 22.2 616 ..021                                                                                      |                |
| 1500        |             |                          |                              |                           | D152K25Y5PH6.J5.                                                                                            |                                                                            |      |      | 22.2 616 ..121                                                                                      |                |
| 1800        |             | 6.5                      |                              |                           | D182K25Y5PH6.J5.                                                                                            |                                                                            |      |      | 22.2 616 ..171                                                                                      |                |
| 2200        |             |                          |                              |                           | D222K25Y5PH6.J5.                                                                                            |                                                                            |      |      | 22.2 616 ..221                                                                                      |                |
| 3300        |             |                          |                              |                           | 7.5                                                                                                         |                                                                            |      |      | D332K29Y5PH6.J5.                                                                                    | 22.2 616 ..321 |
| 4700        |             |                          |                              |                           | 8.5                                                                                                         |                                                                            |      |      | D472K33Y5PH6.J5.                                                                                    | 22.2 616 ..421 |
| 6800        |             |                          |                              |                           | 10.0                                                                                                        |                                                                            |      |      | D682K39Y5PH6.J5.                                                                                    | 22.2 616 ..621 |
| 10000       |             |                          |                              |                           | 11.0                                                                                                        |                                                                            |      |      | D103K43Y5PH6.J5.                                                                                    | 22.2 616 ..031 |

**ORDERING INFORMATION, CLASS 2, 100 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><br>3 <sup>rd</sup> DIGIT:<br>5 = STANDARD<br>8 = RoHS<br>COMPLIANT |
|-------------|-------------|--------------------------|------------------------------|---------------------------|-------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|------|------|-----------------------------------------------------------------------------------------------------|
|             |             |                          |                              |                           | 13 <sup>th</sup> DIGIT:<br>T = REEL; U = AMMO;<br>3 = BULK<br>16 <sup>th</sup> DIGIT:<br>R = RoHS COMPLIANT | REEL                                                                       | AMMO | BULK |                                                                                                     |
| CLASS 2 Z5U |             |                          |                              |                           |                                                                                                             |                                                                            |      |      |                                                                                                     |
| 1000        | ± 20        | 5.0                      | 5.0                          | 4.0                       | D102M20Z5UH6.J5.                                                                                            | 06                                                                         | 08   | 10   | 22.2 646 ..022                                                                                      |
| 1500        |             |                          |                              |                           | D152M20Z5UH6.J5.                                                                                            |                                                                            |      |      | 22.2 646 ..122                                                                                      |
| 2200        |             |                          |                              |                           | D222M20Z5UH6.J5.                                                                                            |                                                                            |      |      | 22.2 646 ..222                                                                                      |
| 3300        |             |                          |                              |                           | D332M20Z5UH6.J5.                                                                                            |                                                                            |      |      | 22.2 646 ..322                                                                                      |
| 4700        |             | 6.5                      |                              |                           | D472M25Z5UH6.J5.                                                                                            |                                                                            |      |      | 22.2 646 ..422                                                                                      |
| 6800        |             |                          |                              |                           | D682M25Z5UH6.J5.                                                                                            |                                                                            |      |      | 22.2 646 ..622                                                                                      |
| 10000       |             |                          |                              |                           | D103M29Z5UH6.J5.                                                                                            |                                                                            |      |      | 22.2 646 ..032                                                                                      |
| 15000       |             |                          |                              |                           | D153M33Z5UH6.J5.                                                                                            |                                                                            |      |      | 22.2 646 ..132                                                                                      |
| 22000       |             |                          |                              |                           | D223M39Z5UH6.J5.                                                                                            |                                                                            |      |      | 22.2 646 ..232                                                                                      |
| CLASS 2 Y5V |             |                          |                              |                           |                                                                                                             |                                                                            |      |      |                                                                                                     |
| 1000        | + 80/– 20 % | 5.0                      | 5.0                          | 4.0                       | D102Z20Y5VH6.J5.                                                                                            | 06                                                                         | 08   | 10   | 22.2 636 ..023                                                                                      |
| 1500        |             |                          |                              |                           | D152Z20Y5VH6.J5.                                                                                            |                                                                            |      |      | 22.2 636 ..123                                                                                      |
| 2200        |             |                          |                              |                           | D222Z20Y5VH6.J5.                                                                                            |                                                                            |      |      | 22.2 636 ..223                                                                                      |
| 3300        |             |                          |                              |                           | D322Z20Y5VH6.J5.                                                                                            |                                                                            |      |      | 22.2 636 ..323                                                                                      |
| 4700        |             | 6.5                      |                              |                           | D472Z20Y5VH6.J5.                                                                                            |                                                                            |      |      | 22.2 636 ..423                                                                                      |
| 6800        |             |                          |                              |                           | D682Z25Y5VH6.J5.                                                                                            |                                                                            |      |      | 22.2 636 ..623                                                                                      |
| 10000       |             |                          |                              |                           | D103Z29Y5VH6.J5.                                                                                            |                                                                            |      |      | 22.2 636 ..033                                                                                      |
| 15000       |             |                          |                              |                           | D153Z33Y5VH6.J5.                                                                                            |                                                                            |      |      | 22.2 636 ..133                                                                                      |
| 22000       |             |                          |                              |                           | D223Z39Y5VH6.J5.                                                                                            |                                                                            |      |      | 22.2 636 ..233                                                                                      |
| CLASS 2 Z5V |             |                          |                              |                           |                                                                                                             |                                                                            |      |      |                                                                                                     |
| 4700        | + 80/– 20 % | 5.0                      | 5.0                          | 4.0                       | D472Z20Z5VH6.J5.                                                                                            | 06                                                                         | 08   | 10   | 22.2 656 ..423                                                                                      |
| 10000       |             | 6.5                      |                              |                           | D103Z25Z5VH6.J5.                                                                                            |                                                                            |      |      | 22.2 656 ..033                                                                                      |
| 22000       |             | 8.5                      |                              |                           | D223Z33Z5VH6.J5.                                                                                            |                                                                            |      |      | 22.2 656 ..233                                                                                      |
| 47000       |             | 11.0                     |                              |                           | D473Z43Z5VH6.J5.                                                                                            |                                                                            |      |      | 22.2 656 ..433                                                                                      |

**Notes**

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

**PACKAGING**

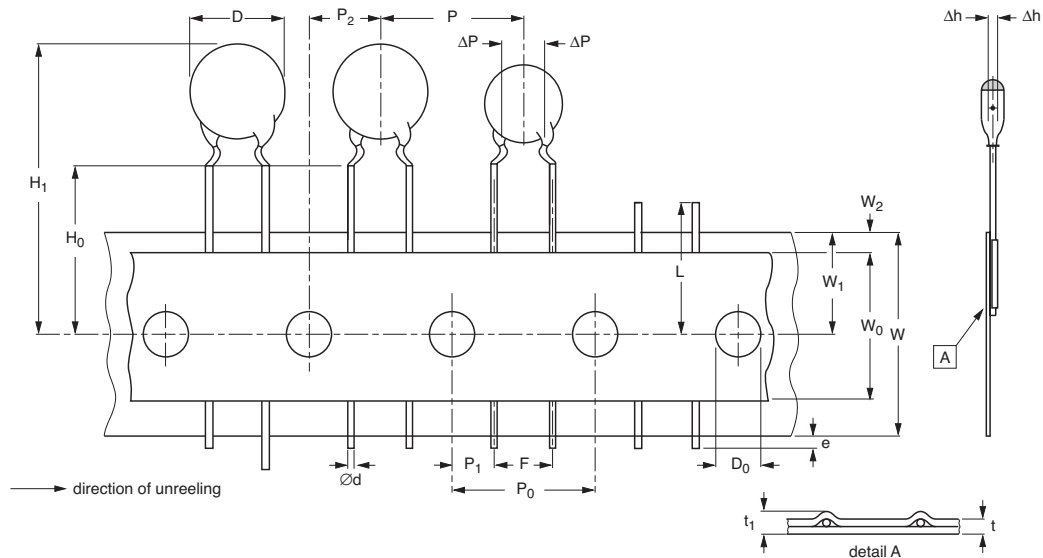
| D <sub>max</sub><br>(mm) | SIZE CODE | PACKAGING QUANTITIES |      |      |
|--------------------------|-----------|----------------------|------|------|
|                          |           | BULK                 | REEL | AMMO |
| 5.0 (0.20")              | 20        | 1000                 | 2500 | 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        |                      |      |      |

**Note**

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

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Vishay BCcomponents



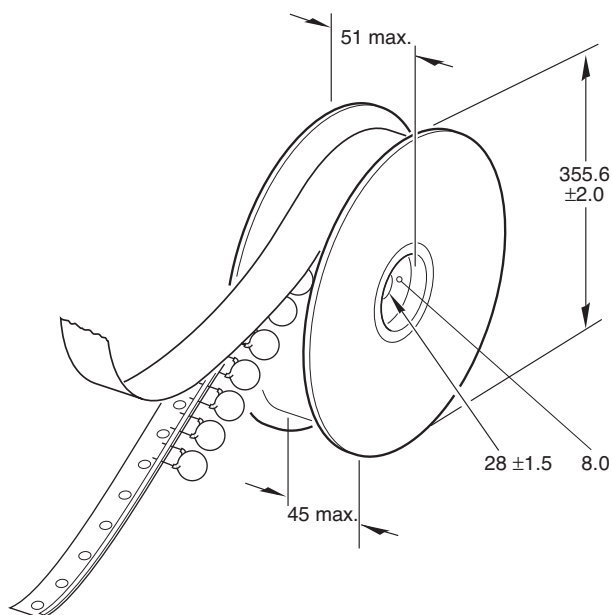
Kinked capacitors on tape, lead spacing 5.0 mm (0.2"), on tape.

| 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>     | feed-hole pitch                      | 12.7            | ± 0.3; note 1   |
| ΔP                 | plane deviation                      | 1.0 maximum     | -               |
| P <sub>1</sub>     | feed-hole centre to lead centre      | 3.85            | ± 0.7; note 2   |
| P <sub>2</sub>     | feed-hole centre to component centre | 6.35            | ± 1.3; note 2   |
| F                  | lead spacing                         | 5.0             | + 0.6<br>- 0.4  |
| Δh                 | component alignment                  | 0               | ± 1.0           |
| Δs                 | deviation along tape, left or right  | 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     | -               |

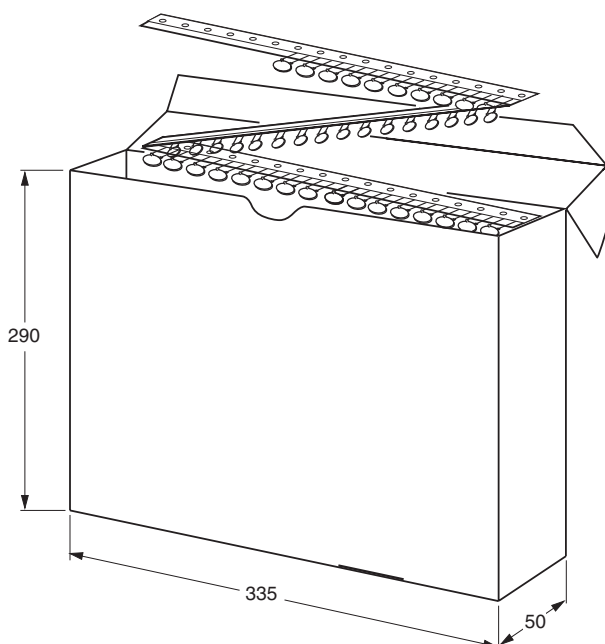
## Notes

- Cumulative pitch error: ± 1 mm /20 pitches.
- Obliquity maximum 3°.

## REEL AND TAPE DATA in millimeters



Reel with capacitors on tape.



Ammopack with capacitors on tape.