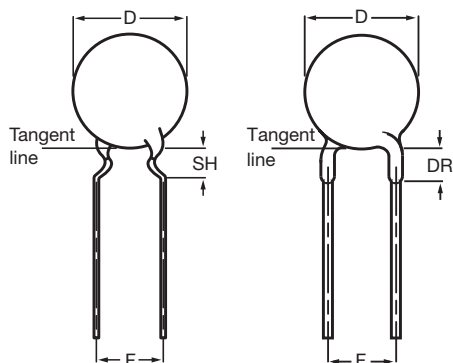


## Ceramic Disc Capacitors

### Class 1 and 2, 100 V<sub>DC</sub>, General Purpose



Capacitors with 5 mm (0.20") and 2.5 mm (0.10") lead spacing

| QUICK REFERENCE DATA       |                       |                                 |
|----------------------------|-----------------------|---------------------------------|
| DESCRIPTION                | CLASS 1<br>(NP0, SL0) | CLASS 2<br>(YP5, Z5U, Y5V, Z5V) |
| Voltage (V <sub>DC</sub> ) | 100                   |                                 |
| Min. Capacitance (pF)      | 1.0                   | 150                             |
| Max. Capacitance (pF)      | 100                   | 47 000                          |
| Mounting                   | Through hole          |                                 |

#### MARKING

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

#### OPERATING TEMPERATURE RANGE

Class 1, - 55 °C to + 125 °C

Class 2, - 30 °C to + 85 °C

#### 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

#### FEATURES

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

#### 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 straight leads with 2.5 mm (0.100"), lead length from 4 mm to 30 mm.

#### CAPACITANCE RANGE

1.0 pF to 100 pF; Class 1, at 1 MHz, 1.2 V<sub>RMS</sub>

150 pF to 47 000 pF; Class 2, at 1 kHz, 1 V<sub>RMS</sub> ± 0.2 V<sub>RMS</sub>

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

#### RATED DC VOLTAGE

100 V

#### DIELECTRIC STRENGTH

250 % of rated voltage

#### INSULATION RESISTANCE AT 100 V<sub>DC</sub>

≥ 10 000 MΩ

#### TOLERANCE ON CAPACITANCE

± 0.25 pF; ± 0.5 pF; ± 5 % ; ± 10 % ; ± 20 % ; + 80/- 20 %

#### DISSIPATION FACTOR

Class 1, C ≤ 30 pF; ≤ 2 x (10/C + 0.7) x 10<sup>-4</sup> maximum

Class 1, C > 30 pF; ≤ 0.2 %

Class 2, ≤ 3.0 %



**RoHS**  
COMPLIANT

#### Note

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



Ceramic Disc Capacitors  
Class 1 and 2, 100 V<sub>DC</sub>, General Purpose

Vishay BCcomponents

| ORDERING INFORMATION, CLASS 1, 100 V <sub>DC</sub> , KINKED AND STRAIGHT |             |                           |                           |                                              |                                                         |                  |
|--------------------------------------------------------------------------|-------------|---------------------------|---------------------------|----------------------------------------------|---------------------------------------------------------|------------------|
| C<br>(pF)                                                                | TOL.<br>(%) | D <sub>MAX.</sub><br>(mm) | LEAD SPACING<br>F<br>(mm) | SH/DR <sub>MAX.</sub> <sup>(1)</sup><br>(mm) | CLEAR TEXT CODE                                         |                  |
|                                                                          |             |                           |                           |                                              | 13 <sup>TH</sup> DIGIT:<br>T = REEL; U = AMMO; 3 = BULK |                  |
| CLASS 1 NP0                                                              |             |                           |                           |                                              |                                                         |                  |
| 1.0                                                                      | ± 0.25 pF   | 5.0                       | 5.0                       | 4.0                                          | D109C20C0KH6.J5R                                        |                  |
|                                                                          |             |                           | 2.5                       | 1.5                                          | D109C20C0KH6.L2R                                        |                  |
| 1.5                                                                      |             |                           | 5.0                       | 4.0                                          | D159C20C0KH6.J5R                                        |                  |
|                                                                          |             |                           | 2.5                       | 1.5                                          | D159C20C0KH6.L2R                                        |                  |
| 2.2                                                                      |             |                           | 5.0                       | 4.0                                          | D229C20C0JH6.J5R                                        |                  |
|                                                                          |             |                           | 2.5                       | 1.5                                          | D229C20C0JH6.L2R                                        |                  |
| 3.3                                                                      |             |                           | 5.0                       | 4.0                                          | D339C20C0JH6.J5R                                        |                  |
|                                                                          |             |                           | 2.5                       | 1.5                                          | D339C20C0JH6.L2R                                        |                  |
| 4.7                                                                      |             |                           | 5.0                       | 4.0                                          | D479C20C0HH6.J5R                                        |                  |
|                                                                          |             |                           | 2.5                       | 1.5                                          | D479C20C0HH6.L2R                                        |                  |
| 6.8                                                                      | ± 0.5 pF    |                           |                           | 5.0                                          | 4.0                                                     | D689D20C0HH6.J5R |
|                                                                          |             |                           |                           | 2.5                                          | 1.5                                                     | D689D20C0HH6.L2R |
| 10                                                                       | ± 5         |                           |                           | 5.0                                          | 4.0                                                     | D100J20C0GH6.J5R |
|                                                                          |             |                           |                           | 2.5                                          | 1.5                                                     | D100J20C0GH6.L2R |
| 12                                                                       |             |                           |                           | 5.0                                          | 4.0                                                     | D120J20C0GH6.J5R |
|                                                                          |             |                           |                           | 2.5                                          | 1.5                                                     | D120J20C0GH6.L2R |
| 15                                                                       |             |                           |                           | 5.0                                          | 4.0                                                     | D150J20C0GH6.J5R |
|                                                                          |             |                           |                           | 2.5                                          | 1.5                                                     | D150J20C0GH6.L2R |
| 18                                                                       |             |                           |                           | 5.0                                          | 4.0                                                     | D180J20C0GH6.J5R |
|                                                                          |             |                           |                           | 2.5                                          | 1.5                                                     | D180J20C0GH6.L2R |
| 22                                                                       |             |                           |                           | 5.0                                          | 4.0                                                     | D220J20C0GH6.J5R |
|                                                                          |             |                           |                           | 2.5                                          | 1.5                                                     | D220J20C0GH6.L2R |
| 27                                                                       |             |                           |                           | 5.0                                          | 4.0                                                     | D270J20C0GH6.J5R |
|                                                                          |             |                           |                           | 2.5                                          | 1.5                                                     | D270J20C0GH6.L2R |
| 33                                                                       |             |                           |                           | 5.0                                          | 4.0                                                     | D330J20C0GH6.J5R |
|                                                                          |             |                           |                           | 2.5                                          | 1.5                                                     | D330J20C0GH6.L2R |
| 39                                                                       |             |                           | 6.5                       | 5.0                                          | 4.0                                                     | D390J25C0GH6.J5R |
|                                                                          |             |                           |                           | 2.5                                          | 1.5                                                     | D390J25C0GH6.L2R |
| 47                                                                       |             |                           |                           | 5.0                                          | 4.0                                                     | D470J25C0GH6.J5R |
|                                                                          |             |                           |                           | 2.5                                          | 1.5                                                     | D470J25C0GH6.L2R |
| CLASS 1 SL0                                                              |             |                           |                           |                                              |                                                         |                  |
| 56                                                                       | ± 5         | 5.0                       | 5.0                       | 4.0                                          | D560J20SL0H6.J5R                                        |                  |
|                                                                          |             |                           | 2.5                       | 1.5                                          | D560J20SL0H6.L2R                                        |                  |
| 68                                                                       |             |                           | 5.0                       | 4.0                                          | D680J20SL0H6.J5R                                        |                  |
|                                                                          |             |                           | 2.5                       | 1.5                                          | D680J20SL0H6.L2R                                        |                  |
| 82                                                                       |             |                           | 5.0                       | 4.0                                          | D820J20SL0H6.J5R                                        |                  |
|                                                                          |             |                           | 2.5                       | 1.5                                          | D820J20SL0H6.L2R                                        |                  |
| 100                                                                      |             |                           | 5.0                       | 4.0                                          | D101J20SL0H6.J5R                                        |                  |
|                                                                          |             |                           | 2.5                       | 1.5                                          | D101J20SL0H6.L2R                                        |                  |

**Notes**

<sup>(1)</sup> SH = seated height; DR = run down

- Maximum thickness 4.0 mm
- Lead style codes refer to lead configurations

## ORDERING INFORMATION, CLASS 2, 100 V<sub>DC</sub>, KINKED AND STRAIGHT

| C<br>(pF)   | TOL.<br>(%) | D <sub>MAX.</sub><br>(mm) | LEAD SPACING<br>F<br>(mm) | SH/DR <sub>MAX.</sub> <sup>(1)</sup><br>(mm) | CLEAR TEXT CODE                                         |
|-------------|-------------|---------------------------|---------------------------|----------------------------------------------|---------------------------------------------------------|
|             |             |                           |                           |                                              | 13 <sup>TH</sup> DIGIT:<br>T = REEL; U = AMMO; 3 = BULK |
| CLASS 2 Y5P |             |                           |                           |                                              |                                                         |
| 150         | ±10         | 5.0                       | 5.0                       | 4.0                                          | D151K20Y5PH6.J5R                                        |
|             |             |                           | 2.5                       | 1.5                                          | D151K20Y5PH6.L2R                                        |
| 180         |             |                           | 5.0                       | 4.0                                          | D181K20Y5PH6.J5R                                        |
|             |             |                           | 2.5                       | 1.5                                          | D181K20Y5PH6.L2R                                        |
| 220         |             |                           | 5.0                       | 4.0                                          | D221K20Y5PH6.J5R                                        |
|             |             |                           | 2.5                       | 1.5                                          | D221K20Y5PH6.L2R                                        |
| 330         |             |                           | 5.0                       | 4.0                                          | D331K20Y5PH6.J5R                                        |
|             |             |                           | 2.5                       | 1.5                                          | D331K20Y5PH6.L2R                                        |
| 470         |             |                           | 5.0                       | 4.0                                          | D471K20Y5PH6.J5R                                        |
|             |             |                           | 2.5                       | 1.5                                          | D471K20Y5PH6.L2R                                        |
| 680         |             |                           | 5.0                       | 4.0                                          | D681K20Y5PH6.J5R                                        |
|             |             |                           | 2.5                       | 1.5                                          | D681K20Y5PH6.L2R                                        |
| 1000        |             | 5.0                       | 4.0                       | D102K20Y5PH6.J5R                             |                                                         |
|             |             | 2.5                       | 1.5                       | D102K20Y5PH6.L2R                             |                                                         |
| 1500        |             | 6.5                       | 5.0                       | 4.0                                          | D152K25Y5PH6.J5R                                        |
|             |             |                           | 2.5                       | 1.5                                          | D152K25Y5PH6.L2R                                        |
| 1800        |             |                           | 5.0                       | 4.0                                          | D182K25Y5PH6.J5R                                        |
|             |             |                           | 2.5                       | 1.5                                          | D182K25Y5PH6.L2R                                        |
| 2200        |             |                           | 5.0                       | 4.0                                          | D222K25Y5PH6.J5R                                        |
|             |             | 2.5                       | 1.5                       | D222K25Y5PH6.L2R                             |                                                         |
| 3300        |             | 7.5                       | 5.0                       | 4.0                                          | D332K29Y5PH6.J5R                                        |
|             |             |                           | 2.5                       | 1.5                                          | D332K29Y5PH6.L2R                                        |
| 4700        |             | 8.5                       | 5.0                       | 4.0                                          | D472K33Y5PH6.J5R                                        |
|             |             |                           | 2.5                       | 1.5                                          | D472K33Y5PH6.L2R                                        |
| 6800        |             | 10.0                      | 5.0                       | 4.0                                          | D682K39Y5PH6.J5R                                        |
|             |             |                           | 2.5                       | 1.5                                          | D682K39Y5PH6.L2R                                        |
| 10000       |             | 11.0                      | 5.0                       | 4.0                                          | D103K43Y5PH6.J5R                                        |
|             |             |                           | 2.5                       | 1.5                                          | D103K43Y5PH6.L2R                                        |
| CLASS 2 Z5U |             |                           |                           |                                              |                                                         |
| 1000        | ± 20        | 5.0                       | 5.0                       | 4.0                                          | D102M20Z5UH6.J5R                                        |
|             |             |                           | 2.5                       | 1.5                                          | D102M20Z5UH6.L2R                                        |
| 1500        |             |                           | 5.0                       | 4.0                                          | D152M20Z5UH6.J5R                                        |
|             |             |                           | 2.5                       | 1.5                                          | D152M20Z5UH6.L2R                                        |
| 2200        |             |                           | 5.0                       | 4.0                                          | D222M20Z5UH6.J5R                                        |
|             |             |                           | 2.5                       | 1.5                                          | D222M20Z5UH6.L2R                                        |
| 3300        |             | 6.5                       | 5.0                       | 4.0                                          | D332M20Z5UH6.J5R                                        |
|             |             |                           | 2.5                       | 1.5                                          | D332M20Z5UH6.L2R                                        |
| 4700        |             |                           | 5.0                       | 4.0                                          | D472M25Z5UH6.J5R                                        |
|             |             |                           | 2.5                       | 1.5                                          | D472M25Z5UH6.L2R                                        |
| 6800        |             | 7.5                       | 5.0                       | 4.0                                          | D682M25Z5UH6.J5R                                        |
|             |             |                           | 2.5                       | 1.5                                          | D682M25Z5UH6.L2R                                        |
| 10 000      |             |                           | 5.0                       | 4.0                                          | D103M29Z5UH6.J5R                                        |
|             |             |                           | 2.5                       | 1.5                                          | D103M29Z5UH6.L2R                                        |
| 15 000      |             | 8.5                       | 5.0                       | 4.0                                          | D153M33Z5UH6.J5R                                        |
|             |             |                           | 2.5                       | 1.5                                          | D153M33Z5UH6.L2R                                        |
| 22 000      |             | 10.0                      | 5.0                       | 4.0                                          | D223M39Z5UH6.J5R                                        |
|             |             |                           | 2.5                       | 1.5                                          | D223M39Z5UH6.L2R                                        |

### Note

<sup>(1)</sup> SH = seated height; DR = run down

- Maximum thickness 4.0 mm
- Lead style codes refer to lead configuration



Ceramic Disc Capacitors  
Class 1 and 2, 100 V<sub>DC</sub>, General Purpose

Vishay BCcomponents

| ORDERING INFORMATION, CLASS 2, 100 V <sub>DC</sub> , KINKED AND STRAIGHT |             |                           |                           |                                              |                                                         |
|--------------------------------------------------------------------------|-------------|---------------------------|---------------------------|----------------------------------------------|---------------------------------------------------------|
| C<br>(pF)                                                                | TOL.<br>(%) | D <sub>MAX.</sub><br>(mm) | LEAD SPACING<br>F<br>(mm) | SH/DR <sub>MAX.</sub> <sup>(1)</sup><br>(mm) | CLEAR TEXT CODE                                         |
|                                                                          |             |                           |                           |                                              | 13 <sup>TH</sup> DIGIT:<br>T = REEL; U = AMMO; 3 = BULK |
| CLASS 2 Y5V                                                              |             |                           |                           |                                              |                                                         |
| 1000                                                                     | + 80/- 20   | 5.0                       | 5.0                       | 4.0                                          | D102Z20Y5VH6.J5R                                        |
|                                                                          |             |                           | 2.5                       | 1.5                                          | D102Z20Y5VH6.L2R                                        |
| 1500                                                                     |             |                           | 5.0                       | 4.0                                          | D152Z20Y5VH6.J5R                                        |
|                                                                          |             |                           | 2.5                       | 1.5                                          | D152Z20Y5VH6.L2R                                        |
| 2200                                                                     |             |                           | 5.0                       | 4.0                                          | D222Z20Y5VH6.J5R                                        |
|                                                                          |             |                           | 2.5                       | 1.5                                          | D222Z20Y5VH6.L2R                                        |
| 3300                                                                     |             |                           | 5.0                       | 4.0                                          | D332Z20Y5VH6.J5R                                        |
|                                                                          |             |                           | 2.5                       | 1.5                                          | D332Z20Y5VH6.L2R                                        |
| 4700                                                                     |             | 6.5                       | 5.0                       | 4.0                                          | D472Z25Y5VH6.J5R                                        |
|                                                                          |             |                           | 2.5                       | 1.5                                          | D472Z25Y5VH6.L2R                                        |
| 6800                                                                     |             |                           | 5.0                       | 4.0                                          | D682Z25Y5VH6.J5R                                        |
|                                                                          |             |                           | 2.5                       | 1.5                                          | D682Z25Y5VH6.L2R                                        |
| 10 000                                                                   |             | 7.5                       | 5.0                       | 4.0                                          | D103Z29Y5VH6.J5R                                        |
|                                                                          |             |                           | 2.5                       | 1.5                                          | D103Z29Y5VH6.L2R                                        |
| 15 000                                                                   |             | 8.5                       | 5.0                       | 4.0                                          | D153Z33Y5VH6.J5R                                        |
|                                                                          |             |                           | 2.5                       | 1.5                                          | D153Z33Y5VH6.L2R                                        |
| 22 000                                                                   |             | 10.0                      | 5.0                       | 4.0                                          | D223Z39Y5VH6.J5R                                        |
|                                                                          |             |                           | 2.5                       | 1.5                                          | D223Z39Y5VH6.L2R                                        |
| CLASS 2 Z5V                                                              |             |                           |                           |                                              |                                                         |
| 4700                                                                     | + 80/- 20   | 5.0                       | 5.0                       | 4.0                                          | D472Z20Z5VH6.J5R                                        |
|                                                                          |             |                           | 2.5                       | 1.5                                          | D472Z20Z5VH6.L2R                                        |
| 10 000                                                                   |             | 6.5                       | 5.0                       | 4.0                                          | D103Z25Z5VH6.J5R                                        |
|                                                                          |             |                           | 2.5                       | 1.5                                          | D103Z25Z5VH6.L2R                                        |
| 22 000                                                                   |             | 8.5                       | 5.0                       | 4.0                                          | D223Z33Z5VH6.J5R                                        |
|                                                                          |             |                           | 2.5                       | 1.5                                          | D223Z33Z5VH6.L2R                                        |
| 47 000                                                                   |             | 11.0                      | 5.0                       | 4.0                                          | D473Z43Z5VH6.J5R                                        |
|                                                                          |             |                           | 2.5                       | 1.5                                          | D473Z43Z5VH6.L2R                                        |

**Note**

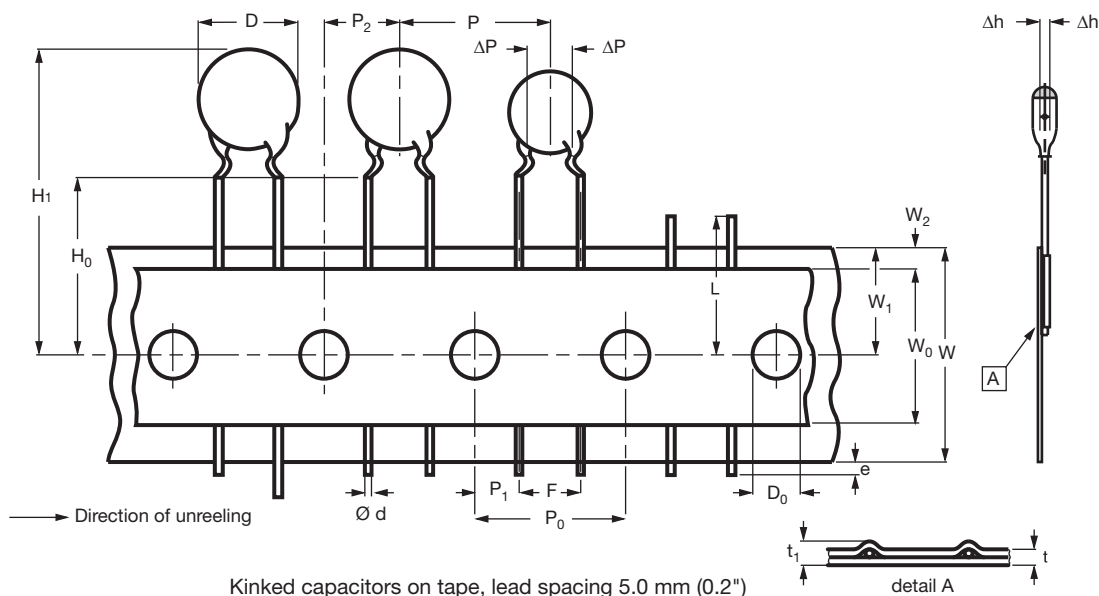
<sup>(1)</sup> SH = seated height; DR = run down

- Maximum thickness 4.0 mm
- Lead style codes refer to lead configuration

| 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 ammopack



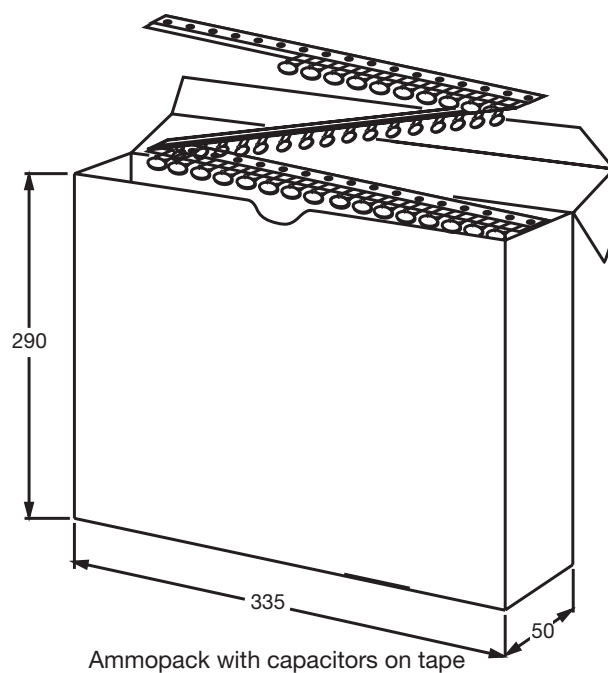
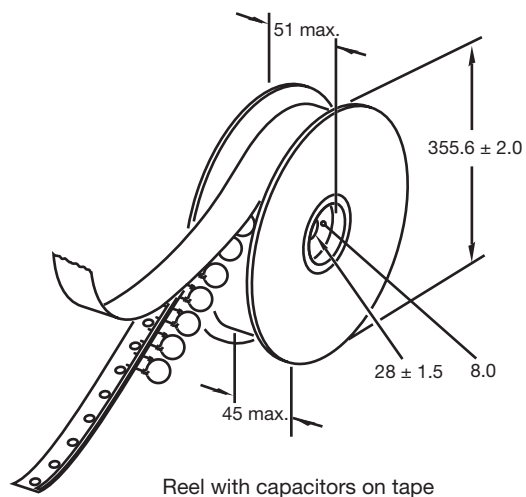
| DIMENSION OF TAPE             |                                      |                 |                       |
|-------------------------------|--------------------------------------|-----------------|-----------------------|
| SYMBOL                        | PARAMETER                            | 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 <sup>(1)</sup>  |
| ΔP                            | Plane deviation                      | 1.0 maximum     | -                     |
| P <sub>1</sub> <sup>(2)</sup> | Feed-hole center to lead center      | 3.85            | ± 0.7; <sup>(2)</sup> |
| P <sub>2</sub> <sup>(2)</sup> | Feed-hole center to component center | 6.35            | ± 1.3; <sup>(2)</sup> |
| 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

<sup>(1)</sup> Cumulative pitch error: ± ≤ 1 mm/20 pitches

<sup>(2)</sup> Obliquity maximum 3°

### REEL AND TAPE DATA in millimeters





## Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

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## Material Category Policy

**Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as RoHS-Compliant fulfill the definitions and restrictions defined under Directive 2011/65/EU of The European Parliament and of the Council of June 8, 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (EEE) - recast, unless otherwise specified as non-compliant.**

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

**Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as Halogen-Free follow Halogen-Free requirements as per JEDEC JS709A standards. Please note that some Vishay documentation may still make reference to the IEC 61249-2-21 definition. We confirm that all the products identified as being compliant to IEC 61249-2-21 conform to JEDEC JS709A standards.**