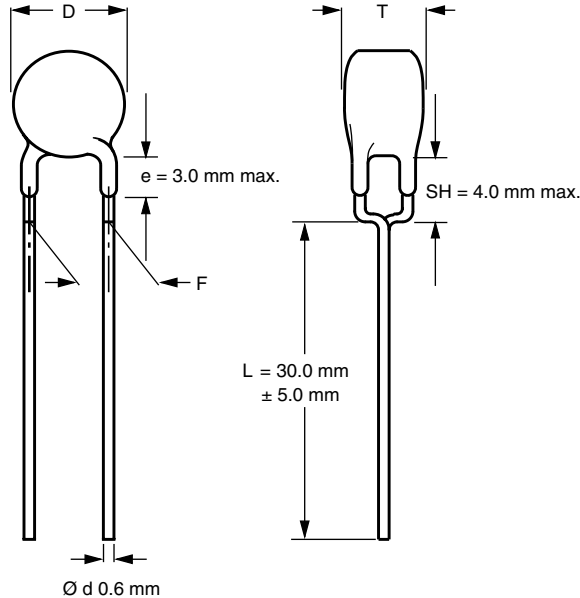


## Ceramic Disc Capacitors

### Safety Standard Approved Disc AC Capacitors



Capacitors with 5.0 mm, 7.5 mm or 10 mm lead spacing

#### FEATURES

- Complying with IEC 60384-14, 3rd edition
- High reliability
- Vertical (inline) kinked or straight leads
- Compliant to RoHS directive 2002/95/EC and in accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21 definition



**RoHS**  
COMPLIANT  
**HALOGEN**  
**FREE**  
Available

#### APPLICATIONS

- Across-the-line
- Line by-pass
- Antenna coupling

#### 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 may be supplied with vertical (inline) kinked leads having a lead spacing of 5.0 mm, 7.5 mm or 10.0 mm. Encapsulation is made of flammable resistant epoxy resin in accordance with "UL 94 V-0".

#### CAPACITANCE RANGE

10 pF to 0.01  $\mu$ F

#### RATED VOLTAGE $U_R$

IEC 60384-14.2:

(X1): 440  $V_{AC}$ , 50 Hz

(Y2): 300  $V_{AC}$ , 50 Hz

#### TEST VOLTAGE

Component test (100 %)

2600  $V_{AC}$ , 50 Hz, 2 s

(2600  $V_{AC}$  for LS 7.5 mm and 10 mm)

(2200  $V_{AC}$  for LS 5.0 mm)

Random sampling test (destructive test)

2600  $V_{AC}$ , 50 Hz, 60 s

Voltage proof of coating (destructive test)

2600  $V_{AC}$ , 50 Hz, 60 s

#### INSULATION RESISTANCE

10 000  $M\Omega$  minimum

#### TOLERANCE OF CAPACITANCE

$\pm 20$  % (code M);  $\pm 10$  % (code K)

#### DISSIPATION FACTOR

2.5 % maximum

#### CATEGORY TEMPERATURE RANGE

- 40 °C to + 125 °C

#### TEMPERATURE CHARACTERISTICS

See Ordering Information Tables

#### CLIMATIC CATEGORY

40/125/21 according to EN60068-1

#### COATING

According to UL 94 V-0

Epoxy resin, isolating, flame retardant

#### APPROVALS

ENEC - VDE DE 1-30691

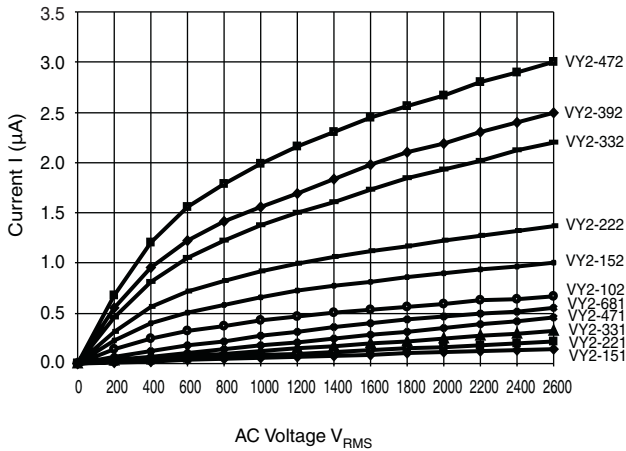
UL 1414 file E183844

CSA 22.2

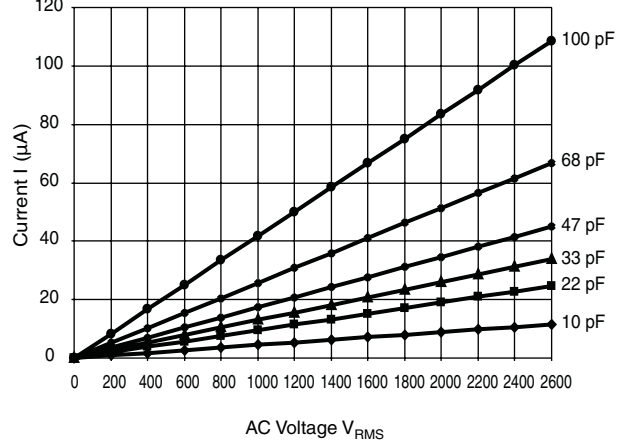
#### PACKAGING

Bulk; tape and reel; taped ammpack

Typical Current vs. Voltage (Leakage Current) at 60 Hz 25 °C



Typical Current vs. Voltage (Leakage Current) at 60 Hz 25 °C



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

| ORDERING INFORMATION       |                   |                   |                                      |                                   |                      |  |  |                       |     |     |     |                   |                   |
|----------------------------|-------------------|-------------------|--------------------------------------|-----------------------------------|----------------------|--|--|-----------------------|-----|-----|-----|-------------------|-------------------|
| C (pF)                     | TOL. (%)          | TEMP. COEFFICIENT | BODY DIAMETER D <sub>max.</sub> (mm) | BODY THICK T <sub>max.</sub> (mm) | LEAD SPACING F (mm)  | COATING EXTENSION e <sub>max.</sub> (4) (mm) | CLEAR TEXT CODE (15 <sup>th</sup> DIGIT *: T = REEL; U = AMMO; 3 = BULK (2)) |                       |     |     |     |                   |                   |
|                            |                   |                   |                                      |                                   |                      |  | RoHS COMPLIANT   | RoHS AND HALOGEN-FREE |     |     |     |                   |                   |
| VY2 FOR LEADSPACING 5.0 mm |                   |                   |                                      |                                   | 2200 VAC, 50 Hz, 2 s |  |  |                       |     |     |     |                   |                   |
| 10                         | ± 10              | U2J (N750)        | 7.5                                  | 5.0                               | 5.0                  | 3.0  | VY2100K29U2JS6*V5  | VY2100K29U2JG6*V5     |     |     |     |                   |                   |
| 15                         |                   |                   |                                      |                                   |                      |  | VY2150K29U2JS6*V5  | VY2150K29U2JG6*V5     |     |     |     |                   |                   |
| 22                         |                   |                   |                                      |                                   |                      |  | VY2220K29U2JS6*V5  | VY2220K29U2JG6*V5     |     |     |     |                   |                   |
| 33                         |                   |                   |                                      |                                   |                      |  | VY2330K29U2JS6*V5  | VY2330K29U2JG6*V5     |     |     |     |                   |                   |
| 47                         |                   |                   |                                      |                                   |                      |  | VY2470K29U2JS6*V5  | VY2470K29U2JG6*V5     |     |     |     |                   |                   |
| 68                         |                   |                   |                                      |                                   |                      |  | Y5S (2C3)  | 7.5                   | 5.0 | 5.0 | 3.0 | VY2680K29Y5SS6*V5 | VY2680K29Y5SG6*V5 |
| 100                        |                   |                   |                                      |                                   |                      |  |  |                       |     |     |     | VY2101K29Y5SS6*V5 | VY2101K29Y5SG6*V5 |
| 150                        |                   |                   |                                      |                                   |                      |  |  |                       |     |     |     | VY2151K29Y5SS6*V5 | VY2151K29Y5SG6*V5 |
| 220                        |                   |                   |                                      |                                   |                      |  |  |                       |     |     |     | VY2221K29Y5SS6*V5 | VY2221K29Y5SG6*V5 |
| 330                        |                   |                   |                                      |                                   |                      |  |  |                       |     |     |     | VY2331K29Y5SS6*V5 | VY2331K29Y5SG6*V5 |
| 470                        | VY2471K29Y5SS6*V5 | VY2471K29Y5SG6*V5 |                                      |                                   |                      |  |  |                       |     |     |     |                   |                   |
| 680                        | Y5U (2E3)         | 8.0               | 5.0                                  | 5.0                               | 3.0                  | VY2681M29Y5US6*V5                            |  |                       |     |     |     | VY2681M29Y5UG6*V5 |                   |
| 1000                       |                   |                   |                                      |                                   |                      | VY2102M29Y5US6*V5                            |  |                       |     |     |     | VY2102M29Y5UG6*V5 |                   |
| 1500                       |                   |                   |                                      |                                   |                      | VY2152M31Y5US6*V5                            |  |                       |     |     |     | VY2152M31Y5UG6*V5 |                   |
| 2200                       |                   |                   |                                      |                                   |                      | VY2222M35Y5US6*V5                            |  |                       |     |     |     | VY2222M35Y5UG6*V5 |                   |
| 3300                       |                   |                   |                                      |                                   |                      | VY2332M41Y5US6*V5                            | VY2332M41Y5UG6*V5  |                       |     |     |     |                   |                   |
| 3900                       |                   |                   |                                      |                                   |                      | VY2392M43Y5US6*V5                            | VY2392M43Y5UG6*V5  |                       |     |     |     |                   |                   |

| ORDERING INFORMATION       |          |                   |                                      |                                   |                      |  |  |                       |  |
|----------------------------|----------|-------------------|--------------------------------------|-----------------------------------|----------------------|--|--|-----------------------|--|
| C (pF)                     | TOL. (%) | TEMP. COEFFICIENT | BODY DIAMETER D <sub>max.</sub> (mm) | BODY THICK T <sub>max.</sub> (mm) | LEAD SPACING F (mm)  | COATING EXTENSION e <sub>max.</sub> (4) (mm) | CLEAR TEXT CODE (15 <sup>th</sup> DIGIT *: T = REEL; U = AMMO; 3 = BULK (2)) |                       |  |
|                            |          |                   |                                      |                                   |                      |  | RoHS COMPLIANT   | RoHS AND HALOGEN-FREE |  |
| VY2 FOR LEADSPACING 7.5 mm |          |                   |                                      |                                   | 2600 VAC, 50 Hz, 2 s |  |  |                       |  |
| 10                         | ± 10     | U2J (N750)        | 7.5                                  | 5.0                               | 7.5                  | 3.0  | VY2100K29U2JS6*V7  | VY2100K29U2JG6*V7     |  |
| 15                         |          |                   |                                      |                                   |                      |  | VY2150K29U2JS6*V7  | VY2150K29U2JG6*V7     |  |
| 22                         |          |                   |                                      |                                   |                      |  | VY2220K29U2JS6*V7  | VY2220K29U2JG6*V7     |  |
| 33                         |          |                   |                                      |                                   |                      |  | VY2330K29U2JS6*V7  | VY2330K29U2JG6*V7     |  |
| 47                         |          |                   |                                      |                                   |                      |  | VY2470K29U2JS6*V7  | VY2470K29U2JG6*V7     |  |



Ceramic Disc Capacitors  
Safety Standard Approved Disc AC Capacitors

Vishay BCcomponents

| ORDERING INFORMATION |             |                      |   |  |                              |  |   |                          |  |
|----------------------|-------------|----------------------|---|--|------------------------------|--|---|--------------------------|--|
| C<br>(pF)            | TOL.<br>(%) | TEMP.<br>COEFFICIENT | BODY<br>DIAMETER<br>D <sub>max.</sub><br>(mm) | BODY<br>THICK<br>T <sub>max.</sub><br>(mm) | LEAD<br>SPACING<br>F<br>(mm) | COATING<br>EXTENSION<br>e <sub>max.</sub> <sup>(4)</sup><br>(mm) | CLEAR TEXT CODE<br>(15 <sup>th</sup> DIGIT *: T = REEL; U = AMMO; 3 = BULK <sup>(2)</sup> ) |                          |  |
|                      |             |                      |   |  |                              |  | RoHS COMPLIANT  | RoHS AND<br>HALOGEN-FREE |  |
| 68                   | ± 10        | Y5S (2C3)            | 7.5   | 5.0  | 7.5                          | 3.0  | VY2680K29Y5SS6*V7   | VY2680K29Y5SG6*V7        |  |
| 100                  |             |                      |   |  |                              |  | VY2101K29Y5SS6*V7   | VY2101K29Y5SG6*V7        |  |
| 150                  |             |                      |   |  |                              |  | VY2151K29Y5SS6*V7   | VY2151K29Y5SG6*V7        |  |
| 220                  |             |                      |   |  |                              |  | VY2221K29Y5SS6*V7   | VY2221K29Y5SG6*V7        |  |
| 330                  |             |                      |   |  |                              |  | VY2331K29Y5SS6*V7   | VY2331K29Y5SG6*V7        |  |
| 470                  |             |                      |   |  |                              |  | VY2471K29Y5SS6*V7   | VY2471K29Y5SG6*V7        |  |
| 680                  |             |                      |   |  |                              |  | VY2681M29Y5US6*V7   | VY2681M29Y5UG6*V7        |  |
| 1000                 | ± 20        | Y5U (2E3)            | 8.0   | 5.0  | 7.5                          | 3.0  | VY2102M29Y5US6*V7   | VY2102M29Y5UG6*V7        |  |
| 1500                 |             |                      |   |  |                              |  | VY2152M31Y5US6*V7   | VY2152M31Y5UG6*V7        |  |
| 2200                 |             |                      |   |  |                              |  | VY2222M35Y5US6*V7   | VY2222M35Y5UG6*V7        |  |
| 3300                 |             |                      |   |  |                              |  | VY2332M41Y5US6*V7   | VY2332M41Y5UG6*V7        |  |
| 3900                 |             |                      |   |  |                              |  | VY2392M43Y5US6*V7   | VY2392M43Y5UG6*V7        |  |
| 4700                 |             |                      |   |  |                              |  | VY2472M49Y5US6*V7   | VY2472M49Y5UG6*V7        |  |
| 6800                 |             |                      |   |  |                              |  | VY2682M59Y5US63V7   | VY2682M59Y5UG63V7        |  |
| 0.01 µF              |             |                      |   |  |                              |  | VY2103M63Y5US63V7   | VY2103M63Y5UG63V7        |  |

| ORDERING INFORMATION        |                   |                      |   |  |                              |  |   |                          |  |
|-----------------------------|-------------------|----------------------|---|--|------------------------------|--|---|--------------------------|--|
| C<br>(pF)                   | TOL.<br>(%)       | TEMP.<br>COEFFICIENT | BODY<br>DIAMETER<br>D <sub>max.</sub><br>(mm) | BODY<br>THICK<br>T <sub>max.</sub><br>(mm) | LEAD<br>SPACING<br>F<br>(mm) | COATING<br>EXTENSION<br>e <sub>max.</sub> <sup>(3)</sup><br>(mm) | CLEAR TEXT CODE<br>(15 <sup>th</sup> DIGIT *: T = REEL; U = AMMO; 3 = BULK <sup>(2)</sup> ) |                          |  |
|                             |                   |                      |   |  |                              |  | RoHS COMPLIANT  | RoHS AND<br>HALOGEN-FREE |  |
| VY2 FOR LEADSPACING 10.0 mm |                   |                      |   |  |                              |  | 2600 VAC, 50 Hz, 2 s  |                          |  |
| 10                          | ± 10              | U2J (N750)           | 7.5   | 5.0  | 10.0                         | 3.0  | VY2100K29U2JS6*V0   | VY2100K29U2JG6*V0        |  |
| 15                          |                   |                      |   |  |                              |  | VY2150K29U2JS6*V0   | VY2150K29U2JG6*V0        |  |
| 22                          |                   |                      |   |  |                              |  | VY2220K29U2JS6*V0   | VY2220K29U2JG6*V0        |  |
| 33                          |                   |                      |   |  |                              |  | VY2330K29U2JS6*V0   | VY2330K29U2JG6*V0        |  |
| 47                          |                   |                      |   |  |                              |  | VY2470K29U2JS6*V0   | VY2470K29U2JG6*V0        |  |
| 68                          |                   |                      |   |  |                              |  | VY2680K29Y5SS6*V0   | VY2680K29Y5SG6*V0        |  |
| 100                         |                   |                      |   |  |                              |  | VY2101K29Y5SS6*V0   | VY2101K29Y5SG6*V0        |  |
| 150                         | ± 20              | Y5S (2C3)            | 7.5   | 5.0  | 10.0                         | 3.0  | VY2151K29Y5SS6*V0   | VY2151K29Y5SG6*V0        |  |
| 220                         |                   |                      |   |  |                              |  | VY2221K29Y5SS6*V0   | VY2221K29Y5SG6*V0        |  |
| 330                         |                   |                      |   |  |                              |  | VY2331K29Y5SS6*V0   | VY2331K29Y5SG6*V0        |  |
| 470                         |                   |                      |   |  |                              |  | VY2471K29Y5SS6*V0   | VY2471K29Y5SG6*V0        |  |
| 680                         |                   |                      |   |  |                              |  | VY2681M29Y5US6*V0   | VY2681M29Y5UG6*V0        |  |
| 1000                        |                   |                      |   |  |                              |  | VY2102M29Y5US6*V0   | VY2102M29Y5UG6*V0        |  |
| 1500                        |                   |                      |   |  |                              |  | VY2152M31Y5US6*V0   | VY2152M31Y5UG6*V0        |  |
| 2200                        |                   |                      |   |  |                              |  | VY2222M35Y5US6*V0   | VY2222M35Y5UG6*V0        |  |
| 3300                        |                   |                      |   |  |                              |  | VY2332M41Y5US6*V0   | VY2332M41Y5UG6*V0        |  |
| 3900                        |                   |                      |   |  |                              |  | VY2392M43Y5US6*V0   | VY2392M43Y5UG6*V0        |  |
| 4700                        | VY2472M49Y5US6*V0 | VY2472M49Y5UG6*V0    |   |  |                              |  |   |                          |  |
| 6800                        | VY2682M59Y5US63V0 | VY2682M59Y5UG63V0    |   |  |                              |  |   |                          |  |
| 0.01 µF                     | VY2103M63Y5US63V0 | VY2103M63Y5UG63V0    |   |  |                              |  |   |                          |  |

Notes

- (1) Straight leads are available on request.
- (2) 15<sup>th</sup> digit of the clear text code number to be completed with the packaging code.
- (3) Coating extension e valid for straight leads only.
- (4) On request available: ± 10 % tolerance for capacitance value 680 pF.

## LEADSPACING 5.0 mm AND 7.5 mm

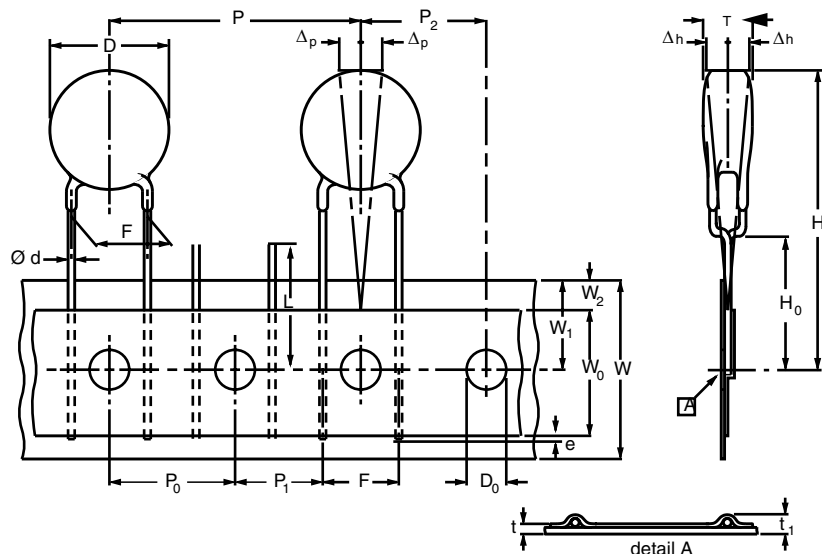
| PACKAGING               |           |                               |                      |      |      |
|-------------------------|-----------|-------------------------------|----------------------|------|------|
| CAPACITANCE VALUE       | SIZE CODE | BODY DIAMETER $D_{max.}$ (mm) | PACKAGING QUANTITIES |      |      |
|                         |           |                               | BULK                 | REEL | AMMO |
| 10 pF to 4700 pF        | 29 ~ 49   | 12.5                          | 1000                 | 1000 | 1000 |
| 6800 pF to 0.01 $\mu$ F | 59 ~ 63   | 16.0                          | 500                  | -    | -    |

## LEADSPACING 10.0 mm

| PACKAGING               |           |                               |                      |      |      |
|-------------------------|-----------|-------------------------------|----------------------|------|------|
| CAPACITANCE VALUE       | SIZE CODE | BODY DIAMETER $D_{max.}$ (mm) | PACKAGING QUANTITIES |      |      |
|                         |           |                               | BULK                 | REEL | AMMO |
| 10 pF to 4700 pF        | 29 ~ 49   | 12.5                          | 1000                 | 500  | 750  |
| 6800 pF to 0.01 $\mu$ F | 59 ~ 63   | 16.0                          | 500                  | 500  | 750  |

**Note**

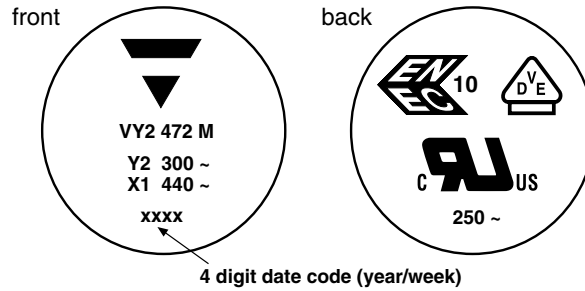
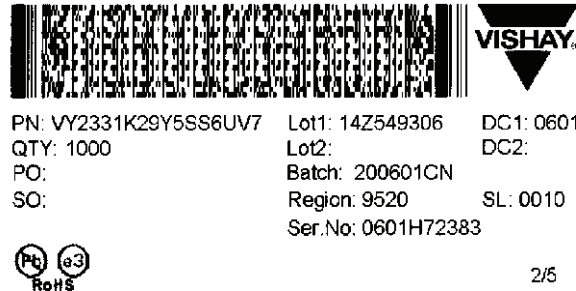
- The capacitors are supplied in bulk packaging (cardboard boxes), in tape on reel or in ammopack.



Inline kink (V) leaded capacitors on tape, lead spacing 5.0 mm (0.200"), 7.5 mm (0.300") and 10 mm (0.400")

**STANDARD RECOGNITION**

IEC 60384 - 14/3rd issue (2005)- Safety Tests  
 UL 1414 - Across-the-line, antenna-coupling and line-by-pass component  
 CQC - China Quality Certification Centre-Safety Tests

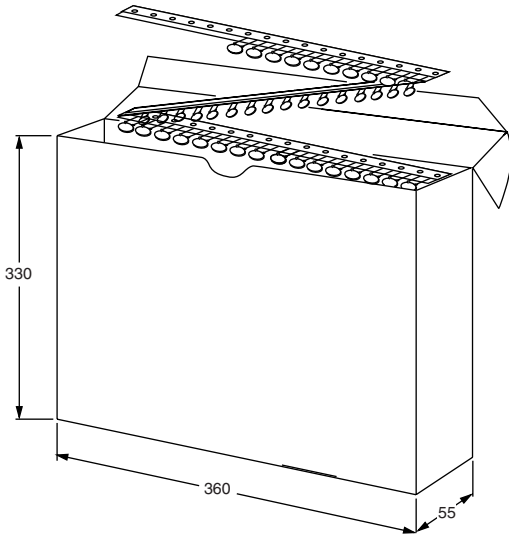
**MARKING: 2 SIDES**  
**(EXAMPLE)**

**LABEL**  
**(EXAMPLE)**


| <b>DIMENSIONS OF TAPE</b>     |  |                   |                   |                    |
|-------------------------------|--|-------------------|-------------------|--------------------|
| SYMBOL                        | PARAMETER                                    | DIMENSIONS (mm)   |                   |                    |
|                               |  | Fig.1 5 mm        | Fig.1 7.5 mm      | Fig.2 10 mm        |
| D <sup>(1)</sup>              | body diameter                                | 11.0 max.         | 14.0 max.         | 16.0 max.          |
| d                             | lead diameter                                | 0.6 ± 0.05        | 0.6 ± 0.05        | 0.6 ± 0.05         |
| P                             | pitch of component                           | 12.7 ± 1          | 15.0 ± 1          | 25.4 ± 1           |
| P <sub>0</sub> <sup>(2)</sup> | pitch of sprocket hole                       | 12.7 ± 0.3        | 15.0 ± 0.3        | 12.7 ± 0.3         |
| P <sub>1</sub> <sup>(3)</sup> | distance, hole centre to lead                | 3.85 ± 0.7        | 3.75 ± 0.7        | 7.7 ± 1.0          |
| P <sub>2</sub> <sup>(3)</sup> | distance, hole to centre of component        | 6.35 ± 1.3        | 7.5 ± 1.5         | 12.7 ± 1.5         |
| F                             | lead spacing                                 | 5.0 (+ 0.6/- 0.4) | 7.5 (+ 0.6/- 0.4) | 10.0 (+ 0.6/- 0.4) |
| Δh                            | average deviation across tape                | ± 1.0 max.        | ± 1.0 max.        | ± 1.0 max.         |
| ΔP                            | average deviation in direction of reeling    | ± 1.0 max.        | ± 1.0 max.        | ± 1.0 max.         |
| W                             | carrier tape width                           | 18.0 + 1/- 0.5    | 18.0 + 1/- 0.5    | 18.0 + 1/- 0.5     |
| W <sub>0</sub>                | hold-down tape width                         | 5.0 min.          | 5.0 min.          | 5.0 min.           |
| W <sub>1</sub>                | position of sprocket hole                    | 9.0 + 0.75 - 0.5  | 9.0 + 0.75 - 0.5  | 9.0 + 0.75 - 0.5   |
| W <sub>2</sub>                | distance of hold-down tape                   | 3.0 max.          | 3.0 max.          | 3.0 max.           |
| H <sub>1</sub>                | maximum component height                     | 32.0              | 40.0              | 40.0               |
| H <sub>0</sub>                | height to seating plane (for kinked leads)   | 16.0 ± 0.5        | 16.0 ± 0.5        | 16.0 ± 0.5         |
| H <sub>0</sub>                | height to seating plane (for straight leads) | 20.0 ± 0.5        | 20.0 ± 0.5        | 20.0 ± 0.5         |
| L                             | length of cut leads                          | 11.0 max.         | 11.0 max.         | 11.0 max.          |
| l                             | length of lead protrusion                    | 1.0 max.          | 1.0 max.          | 1.0 max.           |
| D <sub>0</sub>                | diameter of sprocket hole                    | 4.0 ± 0.2         | 4.0 ± 0.2         | 4.0 ± 0.2          |
| t                             | total tape thickness                         | 0.9 max.          | 0.9 max.          | 0.9 max.           |

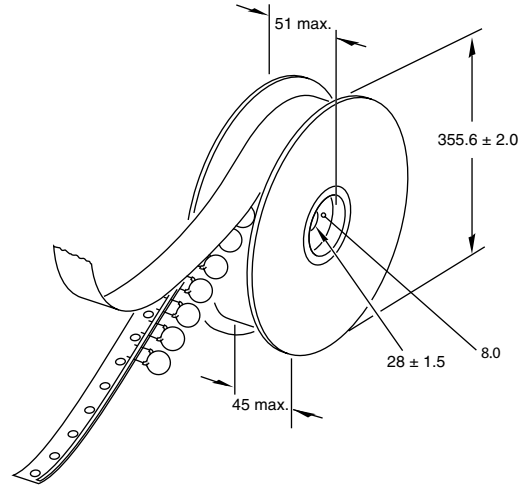
**Notes**

- (1) See ordering information table  
 (2) Cumulative pitch error: ± ≤ 1 mm/20 pitches  
 (3) Obliquity maximum 3°

## REEL AND TAPE DATA in millimeters



Ammopack with capacitors on tape



Reel with capacitors on tape



## Disclaimer

All product specifications and data are subject to change without notice.

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