

AC Line Rated Disc Capacitors Class X1, 760 V_{AC}, Class Y1, 500 V_{AC}


FEATURES

- Complying with IEC 60384-14, 3rd edition
- High reliability
- Vertical (inline) kinked or straight leads
- Material categorization:
For definitions of compliance please see www.vishay.com/doc?99912



RoHS
COMPLIANT
HALOGEN
FREE
Available

APPLICATIONS

- X1, Y1 according to IEC 60384-14.3
- 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 10.0 mm and 12.5 mm. Encapsulation is made of flammable resistant epoxy resin in accordance with "UL 94 V-0".

| QUICK REFERENCE DATA | | | | | | | |
|----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|-----|
| DESCRIPTION | CLASS X1 (U2J) | CLASS X1 (Y5S) | CLASS X1 (Y5U) | CLASS Y1 (U2J) | CLASS Y1 (Y5S) | CLASS Y1 (Y5U) | |
| Voltage (V _{AC}) | 760 | | | 500 | 250 | 500 | 250 |
| Min. Capacitance (pF) | 10 | 33 | 470 | 10 | 33 | 470 | |
| Max. Capacitance (pF) | 22 | 330 | 4700 | 22 | 330 | 4700 | |
| Mounting | Through hole | | | | | | |

OPERATING TEMPERATURE RANGE

- 40 °C to + 125 °C

TEMPERATURE CHARACTERISTICS

See Ordering Information table

CLIMATIC CATEGORY

40/125/21 according to EN 60068-1

COATING

According to UL 94 V-0

Epoxy resin, isolating, flame retardant

APPROVALS

ENEC VDE (DE1-32019)

UL 60384-14 file E183844

CSA 22.2

PACKAGING

Bulk, tape and reel, taped ammpack

CAPACITANCE RANGE

10 pF to 4700 pF

RATED VOLTAGE U_R

IEC 60384-14.3 and UL 60384-14:

(X1): 760 V_{AC}, 50 Hz

(Y1): 500 V_{AC}, 50 Hz

TEST VOLTAGE

Component test (100 %):

4000 V_{AC}, 50 Hz, 2 s

Random sampling test (destructive test):

4000 V_{AC}, 50 Hz, 60 s

Voltage proof of coating (destructive test):

4000 V_{AC}, 50 Hz, 60 s

INSULATION RESISTANCE

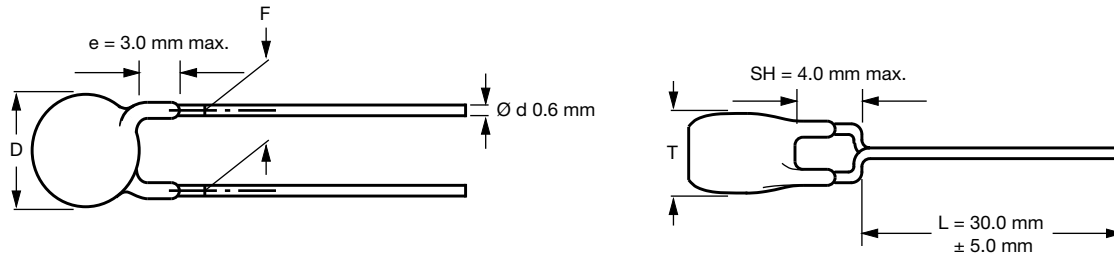
10 000 MΩ minimum

TOLERANCE OF CAPACITANCE

± 20 % (code M); ± 10 % (code K)

DISSIPATION FACTOR

2.5 % maximum

DIMENSIONS


Capacitors with 10.0 mm and 12.5 mm lead spacing

ORDERING INFORMATION

| C (pF) | TOL. (%) | TEMP. COEFFICIENT | BODY DIAMETER $D_{MAX.}$ (mm) | BODY THICKNESS $T_{MAX.}$ (mm) | LEAD SPACING F (mm) | CLEAR TEXT CODE | | | | | | |
|--------|-------------------|-------------------|-------------------------------|--------------------------------|---------------------|--|-----------------------|-----|-----|------|-------------------|-------------------|
| | | | | | | 15 TH DIGIT: T = REEL; U = AMMO; 3 = BULK ⁽¹⁾ | | | | | | |
| | | | | | | RoHS COMPLIANT | RoHS AND HALOGEN-FREE | | | | | |
| 10 | ± 10 | U2J (N750) | 8.0 | 5.0 | 10.0 | VY1100K31U2JQ6*V0 | VY1100K31U2JG6*V0 | | | | | |
| 15 | | | | | | VY1150K31U2JQ6*V0 | VY1150K31U2JG6*V0 | | | | | |
| 22 | | | | | | VY1220K31U2JQ6*V0 | VY1220K31U2JG6*V0 | | | | | |
| 33 | | | | | | VY1330K31Y5SQ6*V0 | VY1330K31Y5SG6*V0 | | | | | |
| 47 | | | | | | VY1470K31Y5SQ6*V0 | VY1470K31Y5SG6*V0 | | | | | |
| 68 | | Y5S (2C3) | | | | VY1680K31Y5SQ6*V0 | VY1680K31Y5SG6*V0 | | | | | |
| 100 | | | | | | VY1101K31Y5SQ6*V0 | VY1101K31Y5SG6*V0 | | | | | |
| 150 | | | | | | VY1151K31Y5SQ6*V0 | VY1151K31Y5SG6*V0 | | | | | |
| 220 | | | | | | VY1221K31Y5SQ6*V0 | VY1221K31Y5SG6*V0 | | | | | |
| 330 | | | | | | VY1331K31Y5SQ6*V0 | VY1331K31Y5SG6*V0 | | | | | |
| 470 | ± 20 | Y5U (2E3) | 9.0 | 5.0 | 10.0 | VY1471M31Y5UQ6*V0 | VY1471M31Y5UG6*V0 | | | | | |
| 680 | | | | | | VY1681M31Y5UQ6*V0 | VY1681M31Y5UG6*V0 | | | | | |
| 1000 | | | | | | VY1102M35Y5UQ6*V0 | VY1102M35Y5UG6*V0 | | | | | |
| 1500 | | | | | | VY1152M41Y5UQ6*V0 | VY1152M41Y5UG6*V0 | | | | | |
| 2200 | | | | | | VY1222M47Y5UQ6*V0 | VY1222M47Y5UG6*V0 | | | | | |
| 3300 | | | | | | VY1332M59Y5UQ6*V0 | VY1332M59Y5UG6*V0 | | | | | |
| 3900 | | | | | | VY1392M61Y5UQ6*V0 | VY1392M61Y5UG6*V0 | | | | | |
| 4700 | | | | | | VY1472M63Y5UQ6*V0 | VY1472M63Y5UG6*V0 | | | | | |
| 10 | | | | | | ± 10 | U2J (N750) | 8.0 | 5.0 | 12.5 | VY1100K31U2JQ6*VX | VY1100K31U2JG6*VX |
| 15 | | | | | | | | | | | VY1150K31U2JQ6*VX | VY1150K31U2JG6*VX |
| 22 | VY1220K31U2JQ6*VX | VY1220K31U2JG6*VX | | | | | | | | | | |
| 33 | VY1330K31Y5SQ6*VX | VY1330K31Y5SG6*VX | | | | | | | | | | |
| 47 | VY1470K31Y5SQ6*VX | VY1470K31Y5SG6*VX | | | | | | | | | | |
| 68 | Y5S (2C3) | VY1680K31Y5SQ6*VX | VY1680K31Y5SG6*VX | | | | | | | | | |
| 100 | | VY1101K31Y5SQ6*VX | VY1101K31Y5SG6*VX | | | | | | | | | |
| 150 | | VY1151K31Y5SQ6*VX | VY1151K31Y5SG6*VX | | | | | | | | | |
| 220 | | VY1221K31Y5SQ6*VX | VY1221K31Y5SG6*VX | | | | | | | | | |
| 330 | | VY1331K31Y5SQ6*VX | VY1331K31Y5SG6*VX | | | | | | | | | |
| 470 | ± 20 | Y5U (2E3) | 9.0 | 5.0 | 12.5 | VY1471M31Y5UQ6*VX | VY1471M31Y5UG6*VX | | | | | |
| 680 | | | | | | VY1681M31Y5UQ6*VX | VY1681M31Y5UG6*VX | | | | | |
| 1000 | | | | | | VY1102M35Y5UQ6*VX | VY1102M35Y5UG6*VX | | | | | |
| 1500 | | | | | | VY1152M41Y5UQ6*VX | VY1152M41Y5UG6*VX | | | | | |
| 2200 | | | | | | VY1222M47Y5UQ6*VX | VY1222M47Y5UG6*VX | | | | | |
| 3300 | | | | | | VY1332M59Y5UQ6*VX | VY1332M59Y5UG6*VX | | | | | |
| 3900 | | | | | | VY1392M61Y5UQ6*VX | VY1392M61Y5UG6*VX | | | | | |
| 4700 | | | | | | VY1472M63Y5UQ6*VX | VY1472M63Y5UG6*VX | | | | | |

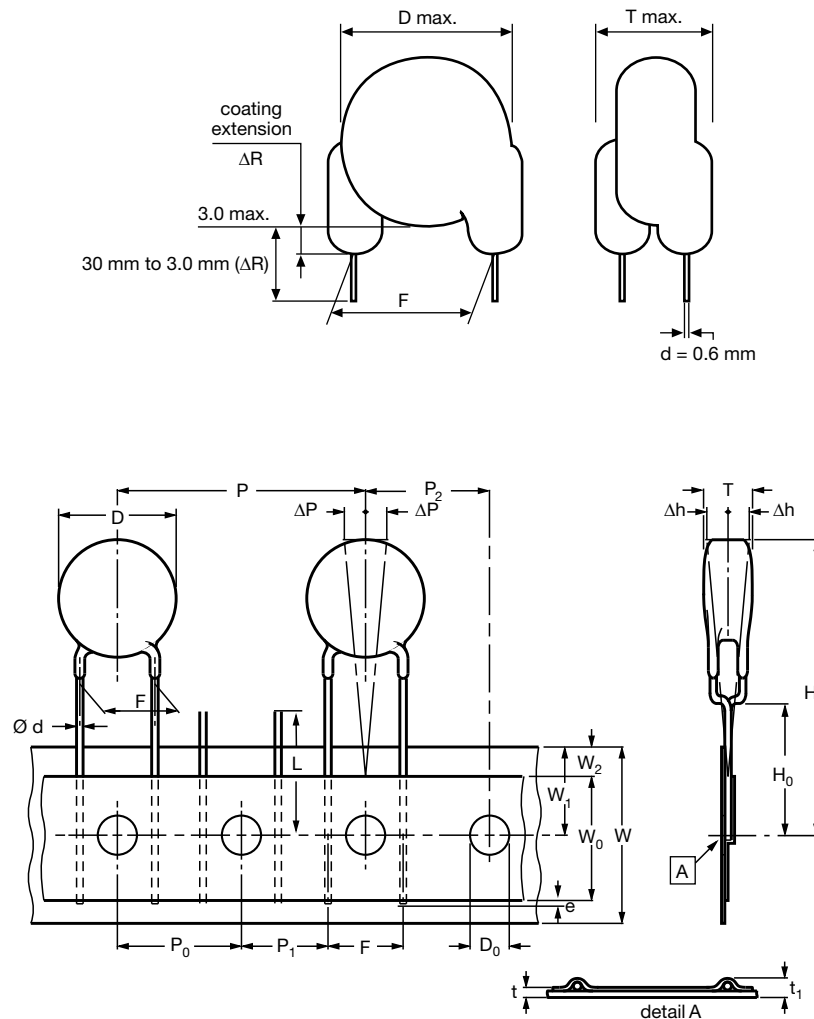
Notes

- Straight leads are available on request
 - Coating extension DR valid for straight leads only
 - On request available: ± 10 % tolerance
- ⁽¹⁾ 15th digit of the clear text code number to be completed with the packaging code

| PACKAGING | | | | | |
|--------------------|-----------|-------------------------------------|----------------------|------|------|
| CAPACITANCE VALUE | SIZE CODE | BODY DIAMETER $D_{MAX.}$ (mm) | PACKAGING QUANTITIES | | |
| | | | BULK | REEL | AMMO |
| 10 pF to 2200 pF | 31 to 47 | 12.0 | 1000 | 500 | 750 |
| 3300 pF to 4700 pF | 51 to 63 | 16.0 | 500 | 500 | 750 |

Note

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

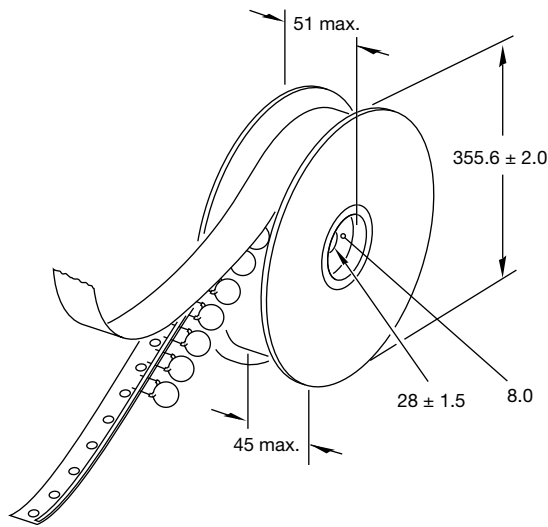
STRAIGHT LEADS


Lead spacing 10.0 mm and 12.5 mm, sprocket hole pitch 25.04 mm for lead spacing

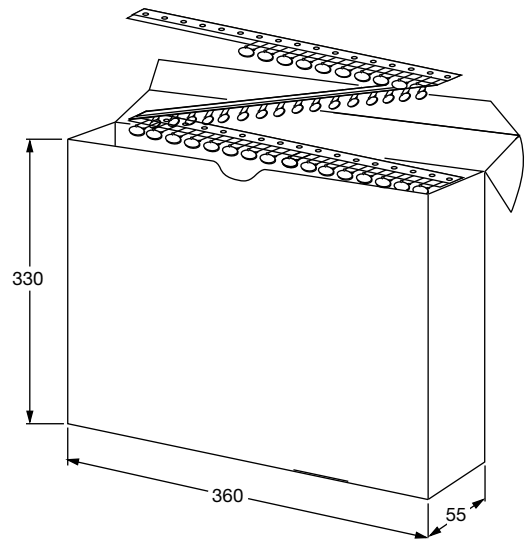
| DIMENSIONS OF TAPE | | |
|-------------------------------|--|--------------------------|
| SYMBOL | PARAMETER | DIMENSIONS (mm) |
| | | FIG. 2 |
| D ⁽¹⁾ | Body diameter | 16.0 max. |
| d | Lead diameter | 0.6 ± 0.05 |
| P | Pitch of component | 25.4 ± 1 |
| P ₀ ⁽²⁾ | Pitch of sprocket hole | 12.7 ± 0.3 |
| P ₁ ⁽³⁾ | Distance, hole center to lead | 7.7 or 6.4 ± 1.0 |
| P ₂ ⁽³⁾ | Distance, hole to center of component | 12.7 ± 1.5 |
| F | Lead spacing | 10.0 or 12.5 + 0.6/- 0.4 |
| Δh | Average deviation across tape | ± 1.0 max. |
| ΔP | Average deviation in direction of reeling | ± 1.0 max. |
| W | Carrier tape width | 18.0 + 1/- 0.5 |
| W ₀ | Hold-down tape width | 5.0 min. |
| W ₁ | Position of sprocket hole | 9.0 + 0.75/- 0.5 |
| W ₂ | Distance of hold-down tape | 3.0 max. |
| H ₁ | Maximum component height | 40.0 |
| H ₀ | Height to seating plane (for kinked leads) | 16.0 ± 0.5 |
| H ₀ | Height to seating plane (for straight leads) | 20.0 ± 0.5 |
| L | Length of cut leads | 11.0 max. |
| l | Length of lead protrusion | 1.0 max. |
| D ₀ | Diameter of sprocket hole | 4.0 ± 0.2 |
| t | Total tape thickness | 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


Reel with capacitors on tape



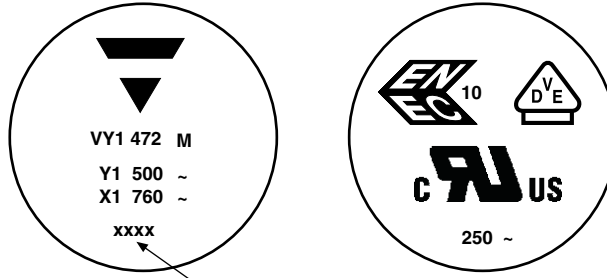
Ammpack with capacitors on tape



STANDARD RECOGNITION

IEC 60384 - 14/3rd issue (2005) - Safety tests
UL 1414 - Across-the-line, antenna-coupling and line-by-pass component
CSA C22.2 - Across-the-line, line to ground and antenna isolation capacitor
CQC - China Quality Certification Center-Safety Tests

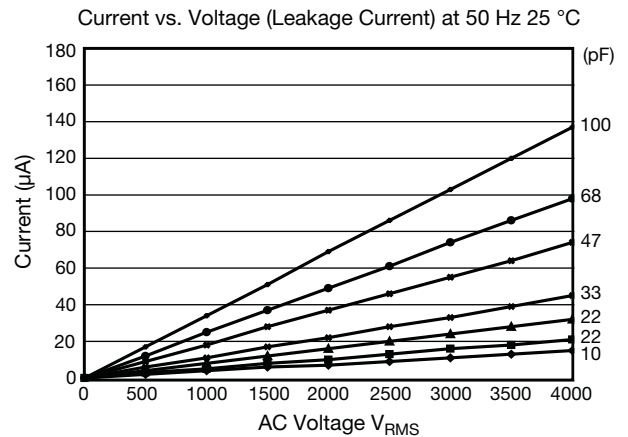
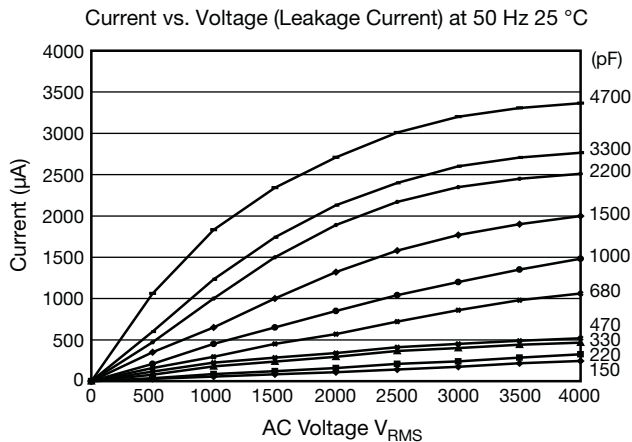
MARKING: 2 SIDES (EXAMPLE)



4 digit date code (year/week)

LABEL (EXAMPLE)

Barcode, Vishay logo, and technical data: PN: VY1471M31Y5UQ6XT0, Lot1: 14Z551S12, DC1: 0601, QTY: 225, Lot2:, DC2:, PO:, Batch: 200601CN, SO:, Region: 9520, SL: 0010, Ser.No: 0601H69340. Includes RoHS and 1/1 markings.



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.



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Тел: +7 (812) 336 43 04 (многоканальный)

Email: org@lifeelectronics.ru