

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
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

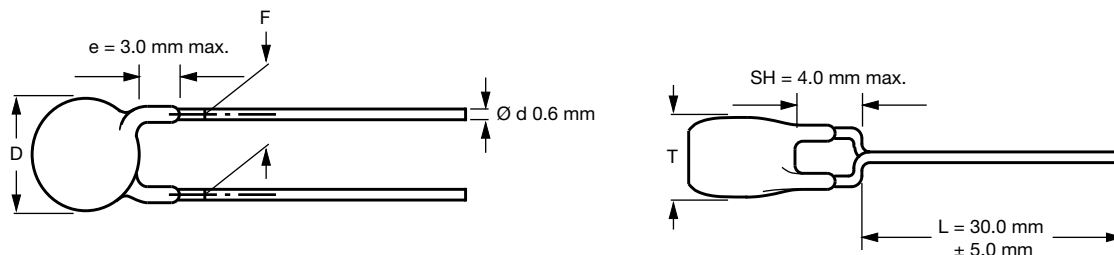
TOLERANCE OF CAPACITANCE

± 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		Y5S (2C3)				VY1330K31Y5SQ6*V0	VY1330K31Y5SG6*V0
47						VY1470K31Y5SQ6*V0	VY1470K31Y5SG6*V0
68						VY1680K31Y5SQ6*V0	VY1680K31Y5SG6*V0
100						VY1101K31Y5SQ6*V0	VY1101K31Y5SG6*V0
150						VY1151K31Y5SQ6*V0	VY1151K31Y5SG6*V0
220						VY1221K31Y5SQ6*V0	VY1221K31Y5SG6*V0
330	± 20	Y5U (2E3)	VY1331K31Y5SQ6*V0	VY1331K31Y5SG6*V0			
470			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		Y5S (2C3)				VY1330K31Y5SQ6*VX	VY1330K31Y5SG6*VX
47						VY1470K31Y5SQ6*VX	VY1470K31Y5SG6*VX
68						VY1680K31Y5SQ6*VX	VY1680K31Y5SG6*VX
100						VY1101K31Y5SQ6*VX	VY1101K31Y5SG6*VX
150						VY1151K31Y5SQ6*VX	VY1151K31Y5SG6*VX
220						VY1221K31Y5SQ6*VX	VY1221K31Y5SG6*VX
330	± 20	Y5U (2E3)	VY1331K31Y5SQ6*VX	VY1331K31Y5SG6*VX			
470			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			

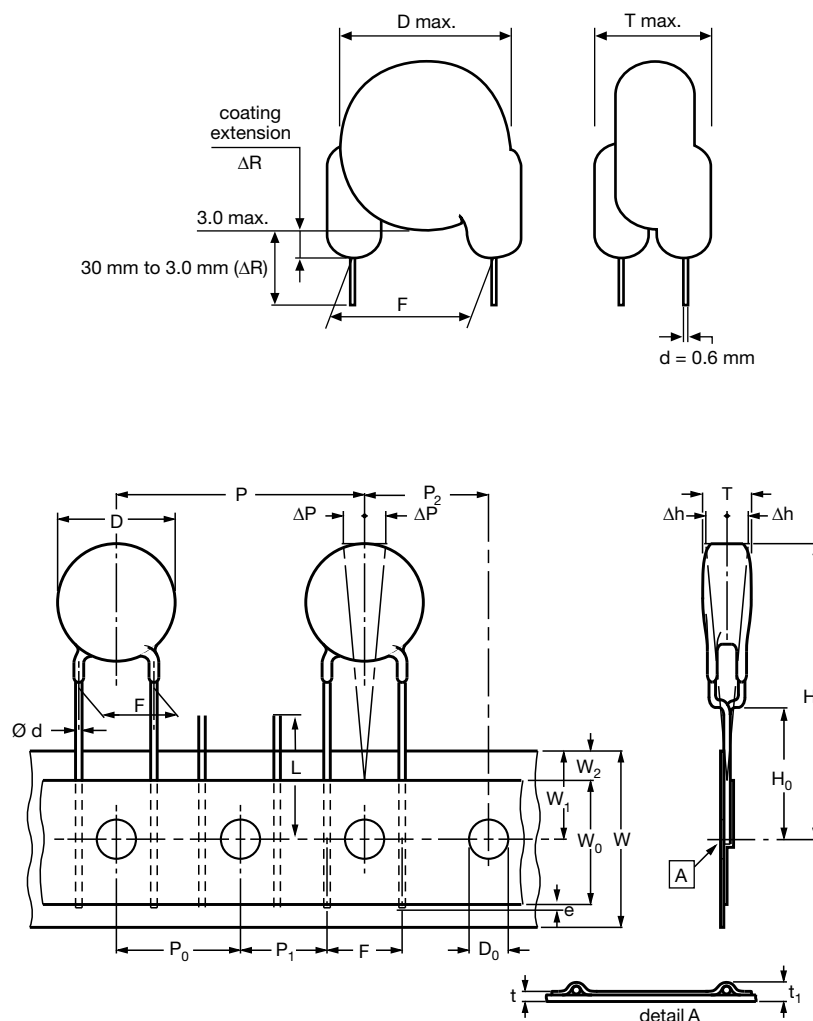
Notes

- 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

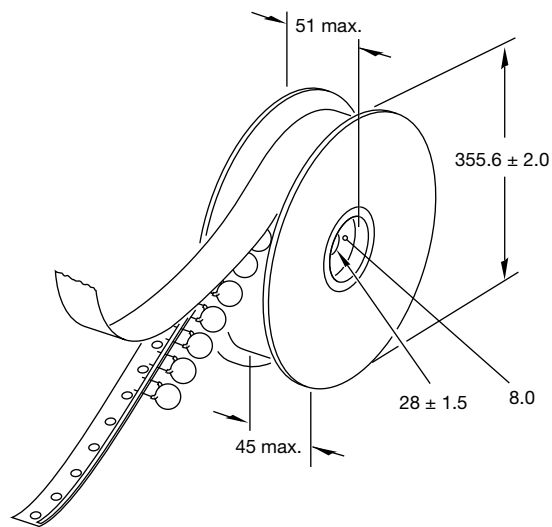
STRAIGHT LEADS


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

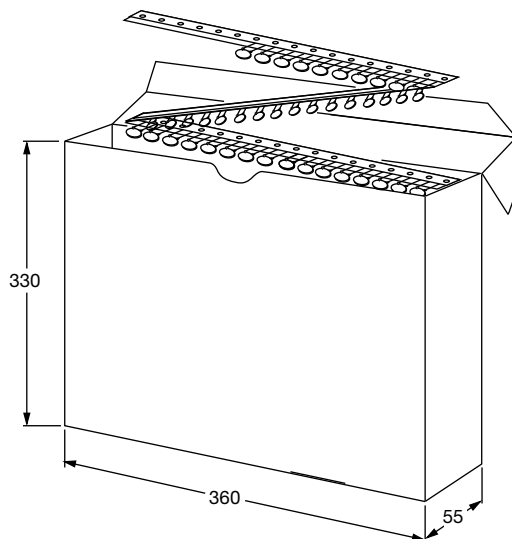
DIMENSIONS OF TAPE		
SYMBOL	PARAMETER	DIMENSIONS (mm)
		FIG. 2
D ⁽¹⁾	Body diameter	16.0 max.
d	Lead diameter	0.6 ± 0.05
P	Pitch of component	25.4 ± 1
P ₀ ⁽²⁾	Pitch of sprocket hole	12.7 ± 0.3
P ₁ ⁽³⁾	Distance, hole center to lead	7.7 or 6.4 ± 1.0
P ₂ ⁽³⁾	Distance, hole to center of component	12.7 ± 1.5
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



Ammopack with capacitors on tape



STANDARD RECOGNITION

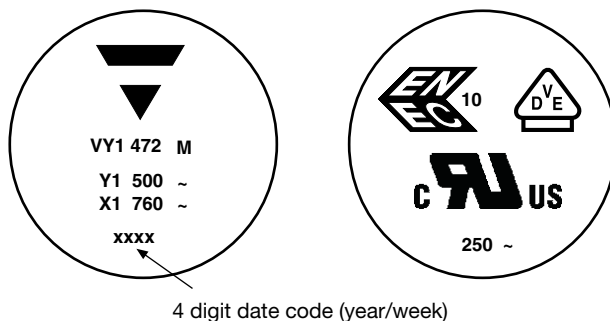
IEC 60384 - 14/3rd issue (2005) - Safety tests

UL 1414 - Across-the-line, antenna-coupling and line-by-pass component

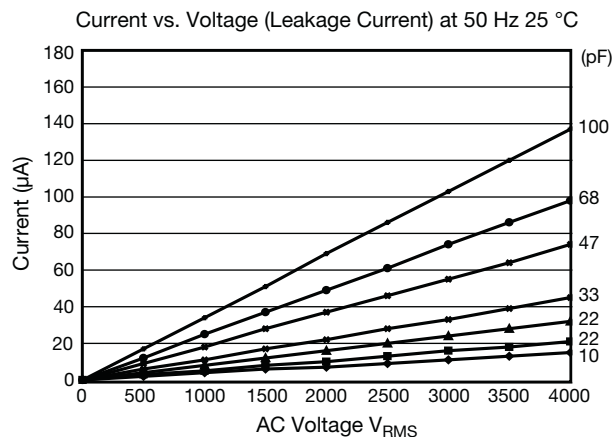
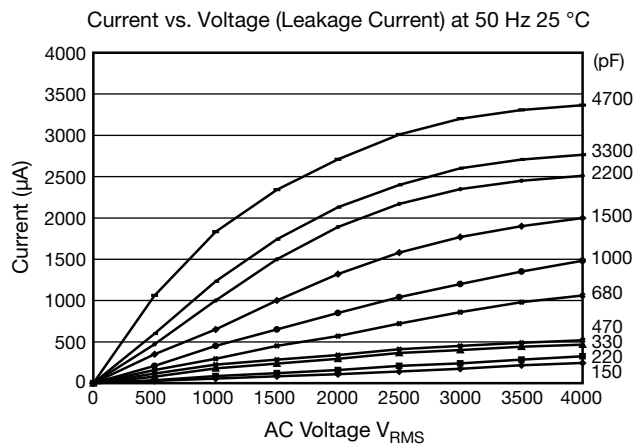
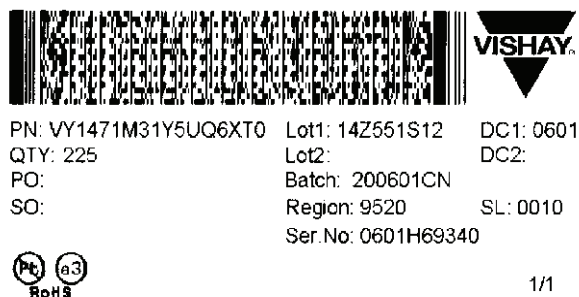
CSA C22.2 - Across-the-line, line to ground and antenna isolation capacitor

CQC - China Quality Certification Center-Safety Tests

MARKING: 2 SIDES (EXAMPLE)



LABEL (EXAMPLE)



Note

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



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