

## AC Line Rated Disc Capacitors

### Class X1, 400 V<sub>AC</sub> / Class Y2, 300 V<sub>AC</sub> / 250 V<sub>AC</sub>


**RoHS**  
COMPLIANT

#### FEATURES

- Complying with IEC 60384-14 3<sup>rd</sup> edition
- High reliability
- Complete range of capacitance values
- Radial leads
- Singlelayer AC disc safety capacitors
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)

#### APPLICATIONS

- X1 / Y2 according to IEC 60384-14.3
- Across-the-line
- Line by-pass
- Antenna coupling

#### DESIGN

The capacitors consist of a ceramic disc of which both sides are silver-plated. Connection leads are made of tinned copper having a diameter of 0.032" (0.81 mm) or 0.025" (0.64 mm). The capacitors may be supplied with radial kinked or straight leads having a lead spacing of 0.375" (9.5 mm) or 0.250" (6.4 mm). The standard tolerance is  $\pm 20\%$ . Coating is made of flame retardant epoxy resin in accordance with "UL 94 V-0."

#### CAPACITANCE RANGE

1.0 nF to 0.01  $\mu$ F

#### RATED VOLTAGE

IEC 60384-14.3:

- X1: 400 V<sub>AC</sub>, 50 Hz
- Y2: 300 V<sub>AC</sub>, 50 Hz (LS  $\geq 5.5$  mm)
- Y2: 250 V<sub>AC</sub>, 50 Hz (LS < 5.5 mm)

#### DIELECTRIC STRENGTH BETWEEN LEADS

Component test:

2500 V<sub>AC</sub>, 50 Hz, 2 s

As repeated test admissible only once with:

2250 V<sub>AC</sub>, 50 Hz, 2 s

Random sampling test (destructive test):

2500 V<sub>AC</sub>, 50 Hz, 60 s

#### DIELECTRIC STRENGTH OF BODY INSULATION

2300 V<sub>AC</sub>, 50 Hz, 60 s (destructive test)

#### QUICK REFERENCE DATA

DESCRIPTION	VALUE					
Ceramic Class	2					
Ceramic Dielectric	Y5U	Y5U	Y5U	Y5V	Y5V	Y5V
Voltage (V <sub>AC</sub> )	250	300	400	250	300	400
Min. Capacitance (pF)	1000			4700		
Max. Capacitance (pF)	10 000			10 000		
Mounting	Radial					

#### INSULATION RESISTANCE

Min. 1000  $\Omega$ F

#### TOLERANCE ON CAPACITANCE

 $\pm 20\%$ 

#### DISSIPATION FACTOR

2.0 % max. at 1 kHz; 1 V

#### CERAMIC DIELECTRIC

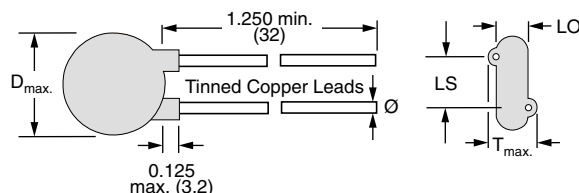
Y5U, Y5V (Class 2)

#### CLIMATIC CATEGORY ACC. TO EN 60068-1

25/125/21

#### OPERATING TEMPERATURE RANGE

-30 °C to +125 °C

**DIMENSIONS** in inches (millimeters)

**ORDERING INFORMATION, CERAMIC X1 / Y2 CAPACITORS 30LVS**

C (pF)	TOL. (%)	D <sub>max.</sub> DIAMETER INCH (mm)	T <sub>max.</sub> THICKNESS INCH (mm)	WIRE SIZE		LS LEAD SPACE INCH (mm) ± 1 mm	LO LEAD OFFSET INCH (mm) ± 0.5 mm	ORDERING CODE
				AWG	INCH (mm)			
Y5U								
1000	± 20	0.330 (8.4)	0.195 (5.0)	22	0.025 (0.64)	0.250 (6.4)	0.098 (2.5)	30LVSD10-R
1500		0.330 (8.4)	0.185 (4.7)				0.091 (2.3)	30LVSD15-R
2000		0.330 (8.4)	0.180 (4.6)				0.083 (2.1)	30LVSD20-R
2200		0.330 (8.4)	0.170 (4.3)				0.079 (2.0)	30LVSD22-R
2700		0.365 (9.3)	0.180 (4.6)				0.083 (2.1)	30LVSD27-R
2800		0.365 (9.3)	0.175 (4.4)				0.079 (2.0)	30LVSD28-R
3000		0.400 (10.2)	0.180 (4.6)				0.083 (2.1)	30LVSD30-R
3200		0.400 (10.2)	0.180 (4.6)				0.091 (2.3)	30LVSD32-R
3300		0.400 (10.2)	0.175 (4.4)				0.083 (2.1)	30LVSD33-R
3900		0.460 (11.7)	0.185 (4.7)				0.098 (2.5)	30LVSD39-R
4000		0.490 (12.4)	0.190 (4.8)				0.102 (2.6)	30LVSD40-R
4700		0.490 (12.4)	0.185 (4.7)				0.094 (2.4)	30LVSD47-R
5000		0.530 (13.5)	0.190 (4.8)				0.098 (2.5)	30LVSD50-R
5500		0.530 (13.5)	0.180 (4.6)				0.091 (2.3)	30LVSD55-R
6800		0.620 (15.7)	0.200 (5.1)				20	0.032 (0.81)
0.010 μF		0.720 (18.3)	0.200 (5.1)	0.102 (2.6)	30LVSS10-R			
Y5V								
4700	± 20	0.430 (10.9)	0.185 (4.7)	22	0.025 (0.64)	0.250 (6.4)	0.091 (2.3)	30LVSD47-R
0.010 μF	± 20	0.620 (15.7)	0.200 (5.1)	20	0.032 (0.81)	0.375 (9.5)	0.098 (2.5)	30LVSVS10-R

**Notes**

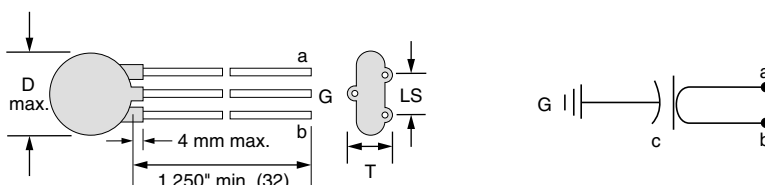
- Alternate lead spacings of 7.5 mm and 10 mm are available bulk or tape and reel on request.
- Minimum lead clearance according to IEC 60384-14: 0.118" (3 mm)

**TAPE AND REEL OPTIONS**

Part number codes and specifications for tape and reel packaging are found in the general information document - find web-link below.

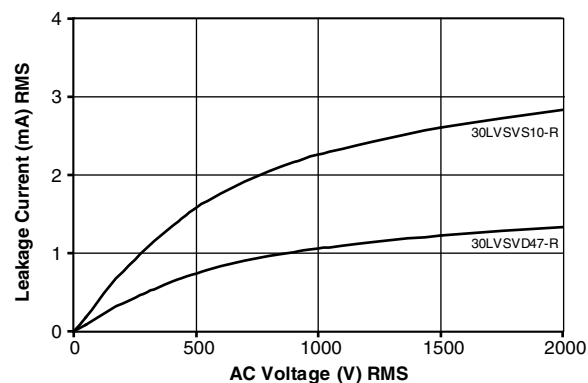
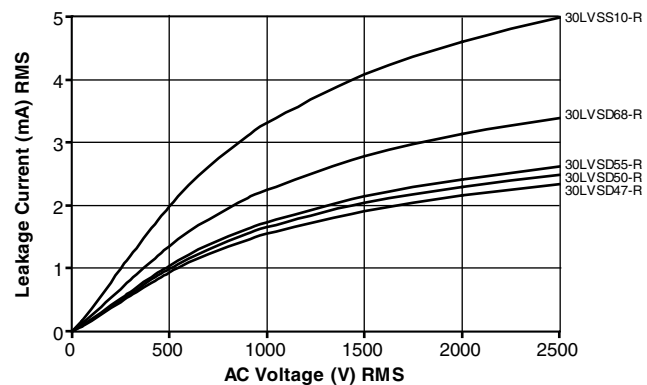
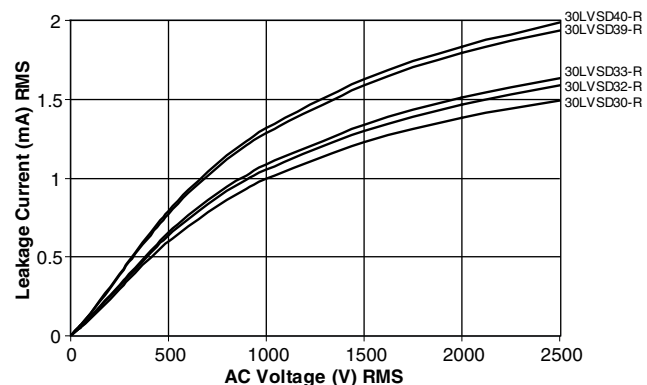
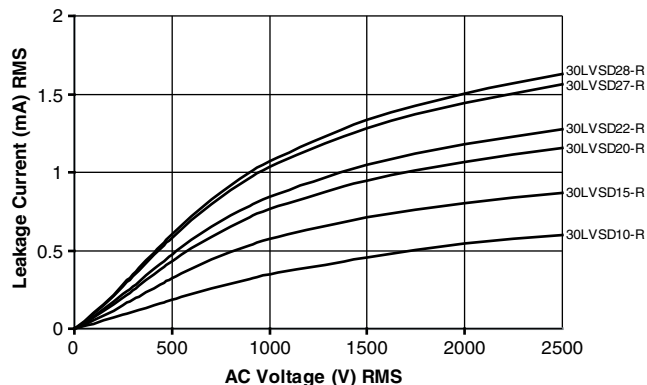
**OPTIONAL 3-LEADED STYLE**

An optional 3-leaded construction is available. It consists of a single capacitor with the two outside leads attached to one electrode, and the center lead attached to the electrode. Used in feed-thru or line-to-ground applications, it allows a short ground lead for enhanced high frequency performance.

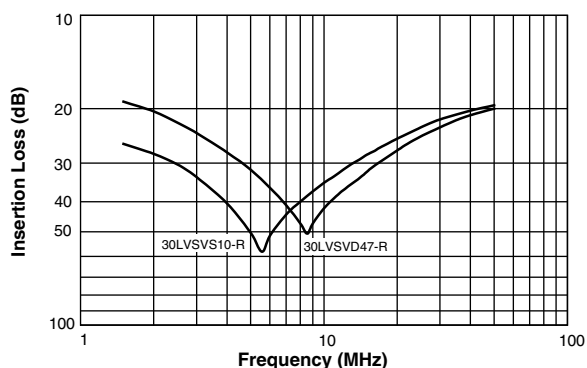
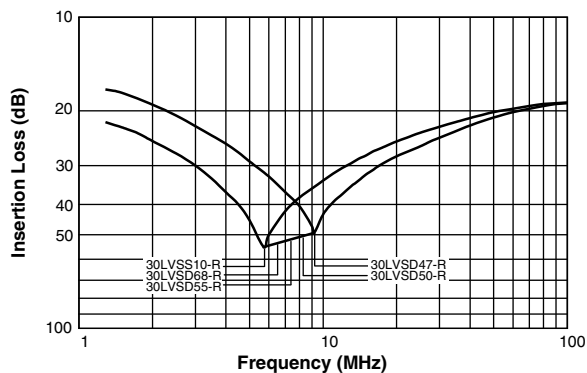
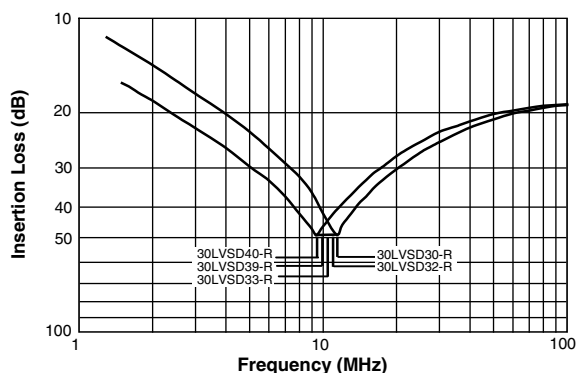
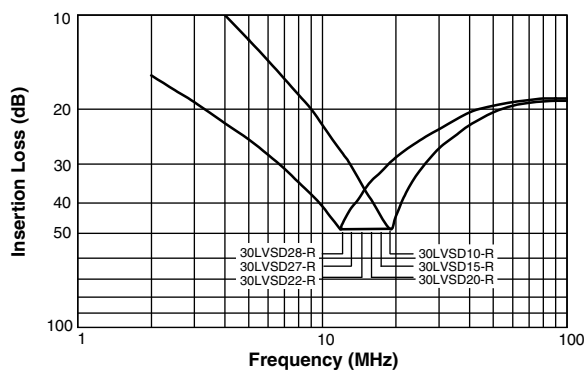




**LEAKAGE CURRENT VS. VOLTAGE** (Typical)



**INSERTION LOSS VS. FREQUENCY** (Typical)



**APPROVALS**

IEC 60384-14.3 - Safety tests

This approval together with CB test certificate substitutes all national approvals.

**CB Certificate**

Y2-capacitor: CB test certificate:	CA/14038/CSA	1 nF to 10 nF	300 V <sub>AC</sub> <sup>(1)</sup>
Y2-capacitor: CB test certificate:	CA/14038/CSA	1 nF to 10 nF	250 V <sub>AC</sub> <sup>(1)</sup>
X1-capacitor: CB test certificate:	CA/14038/CSA	1 nF to 10 nF	400 V <sub>AC</sub>

**VDE**

Y2-capacitor: VDE marks approval:	40003969	1 nF to 10 nF	250 V <sub>AC</sub>
X1-capacitor: VDE marks approval:	40003969	1 nF to 10 nF	400 V <sub>AC</sub>



DIN EN 60384-14 VDE 0565-1-1:2006-04 - Safety tests

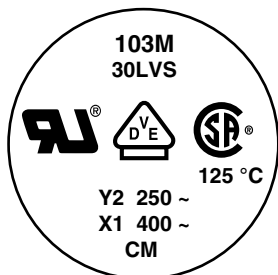
**Underwriters Laboratories Inc.**

Y2-capacitor: UL test certificate:	E99264	1 nF to 10 nF	300 V <sub>AC</sub> <sup>(1)</sup>
Y2-capacitor: UL test certificate:	E99264	1 nF to 10 nF	250 V <sub>AC</sub> <sup>(1)</sup>
X1-capacitor: UL test certificate:	E99264	1 nF to 10 nF	400 V <sub>AC</sub>



UL 60384-14, CSA E60384-1:03, CSA E60384-14:09

Fixed capacitors for electromagnetic interference suppression and connection to the supply mains.

**Note**<sup>(1)</sup> LS ≥ 5.5 mm: 300 V<sub>AC</sub>; LS < 5.5 mm: 250 V<sub>AC</sub>**MARKING****Sample****RELATED DOCUMENTS**

General Information	<a href="http://www.vishay.com/doc?23140">www.vishay.com/doc?23140</a>
CB Test Certificate	<a href="http://www.vishay.com/doc?22231">www.vishay.com/doc?22231</a>
VDE Marks Approval	<a href="http://www.vishay.com/doc?22232">www.vishay.com/doc?22232</a>
UL Test Certificate	<a href="http://www.vishay.com/doc?22233">www.vishay.com/doc?22233</a>



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