

## AC Line Rated Disc Capacitors Class X1, 400 V<sub>AC</sub>/Class Y2, 300 V<sub>AC</sub>



QUICK REFERENCE DATA				
DESCRIPTION	VALUE			
Ceramic Class	1		2	
Ceramic Dielectric	C0G, U2J, P3K, R3L, S3L	C0G, U2J, P3K, R3L, S3L	X7R, Y5U	X7R, Y5U
Voltage (V <sub>AC</sub> )	300	400	300	400
Min. Capacitance (pF)	10		100	
Max. Capacitance (pF)	68		15 000	
Mounting	Radial			

### INSULATION RESISTANCE

Min. 1000 ΩF

### TOLERANCE ON CAPACITANCE

± 10 %; ± 20 %

### DISSIPATION FACTOR

2.0 % max. at 1 kHz; 1 V

### CERAMIC DIELECTRIC

C0G, U2J, P3K, R3L (Class 1)  
X7R, Y5U (Class 2)

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

25/125/21

### OPERATING TEMPERATURE RANGE

-30 °C to +125 °C

### 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)



**RoHS**  
COMPLIANT

### 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 ± 20 %. Coating is made of flame retardant epoxy resin in accordance with "UL 94 V-0."

### CAPACITANCE RANGE

10 pF to 0.015 μF

### RATED VOLTAGE

IEC 60384-14.3:

- X1: 400 V<sub>AC</sub>, 50 Hz
- Y2: 300 V<sub>AC</sub>, 50 Hz

### DIELECTRIC STRENGTH BETWEEN LEADS

Component test:

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

As repeated test admissible only once with:

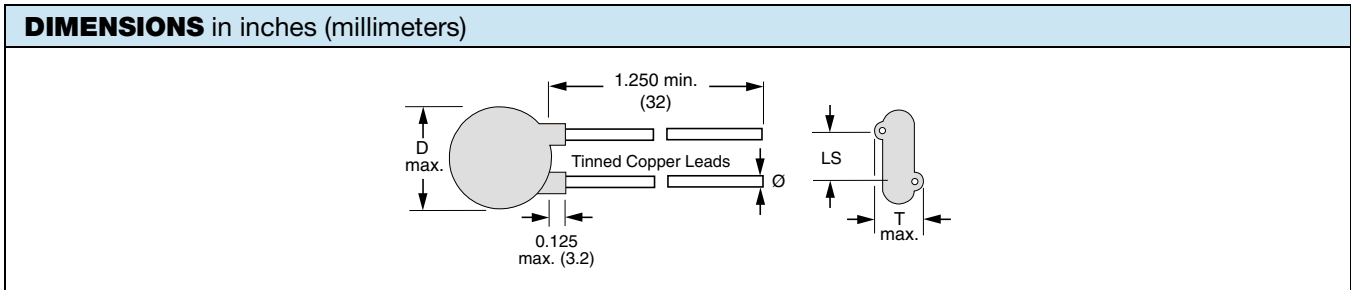
2250 V<sub>AC</sub>, 50 Hz, 2 s

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)



ORDERING INFORMATION, CERAMIC X1/2 CAPACITORS 30LV							
C (pF)	TOL. (%)	D <sub>max.</sub> DIAMETER INCH (mm)	T <sub>max.</sub> THICKNESS INCH (mm)	WIRE SIZE		LS LEAD SPACE INCH (mm)	ORDERING CODE
				AWG	INCH (mm)		
<b>C0G</b>							
10	± 10	0.330 (8.4)	0.190 (4.8)	22	0.025 (0.64)	0.250 (6.4)	30LVQ10-R
<b>U2J</b>							
15	± 10	0.330 (8.4)	0.200 (5.1)	22	0.025 (0.64)	0.250 (6.4)	30LVQ15-R
<b>P3K</b>							
22	± 10	0.330 (8.4)	0.185 (4.7)	22	0.025 (0.64)	0.250 (6.4)	30LVQ22-R
<b>R3L</b>							
33	± 10	0.330 (8.4)	0.190 (4.8)	22	0.025 (0.64)	0.250 (6.4)	30LVQ33-R
47	± 10	0.330 (8.4)	0.170 (4.3)	22	0.025 (0.64)	0.250 (6.4)	30LVQ47-R
<b>S3L</b>							
68	± 10	0.330 (8.4)	0.175 (4.4)	22	0.025 (0.64)	0.250 (6.4)	30LVQ68-R
<b>X7R</b>							
100	± 10	0.330 (8.4)	0.200 (5.1)	22	0.025 (0.64)	0.250 (6.4)	30LVT10-R
150		0.330 (8.4)	0.180 (4.6)				30LVT15-R
220		0.330 (8.4)	0.190 (4.8)				30LVT22-R
330		0.330 (8.4)	0.210 (5.3)				30LVT33-R
470		0.330 (8.4)	0.180 (4.6)				30LVT47-R
560		0.330 (8.4)	0.190 (4.8)				30LVT56-R
680		0.330 (8.4)	0.180 (4.6)				30LVT68-R
1000		0.365 (9.3)	0.185 (4.7)				30LVTD10-R
1500		0.460 (11.7)	0.180 (4.6)				30LVTD15-R
<b>Y5U</b>							
680	± 20	0.330 (8.4)	0.210 (5.3)	22	0.025 (0.64)	0.250 (6.4)	30LVT68-R
1000		0.330 (8.4)	0.215 (5.5)				30LVD10-R
1500		0.330 (8.4)	0.195 (5.0)				30LVD15-R
2000		0.400 (10.2)	0.210 (5.3)				30LVD20-R
2200		0.400 (10.2)	0.200 (5.1)				30LVD22-R
2700		0.430 (10.9)	0.200 (5.1)				30LVD27-R
2800		0.430 (10.9)	0.200 (5.1)				30LVD28-R
3000		0.460 (11.7)	0.200 (5.1)				30LVD30-R
3200		0.430 (10.9)	0.200 (5.1)				30LVD32-R
3300		0.460 (11.7)	0.195 (5.0)				30LVD33-R
3900		0.490 (12.4)	0.200 (5.1)				30LVD39-R
4000		0.530 (13.5)	0.210 (5.3)				30LVD40-R

ORDERING INFORMATION, CERAMIC X1/Y2 CAPACITORS 30LV							
C (pF)	TOL. (%)	D <sub>max.</sub> DIAMETER INCH (mm)	T <sub>max.</sub> THICKNESS INCH (mm)	WIRE SIZE		LS LEAD SPACE INCH (mm)	ORDERING CODE
				AWG	INCH (mm)		
<b>Y5U</b>							
4700	± 20	0.620 (15.7)	0.230 (5.8)	20	0.032 (0.81)	0.375 (9.5)	30LVD47-R
5000		0.620 (15.7)	0.225 (5.7)				30LVD50-R
5500		0.560 (14.2)	0.195 (5.0)				30LVD55-R
5600		0.560 (14.2)	0.205 (5.2)				30LVD56-R
6800		0.620 (15.7)	0.215 (5.5)				30LVD68-R
8000		0.680 (17.3)	0.205 (5.2)				30LVD80-R
9000		0.720 (18.3)	0.210 (5.3)				30LVD90-R
0.010 μF		0.790 (20.1)	0.225 (5.7)				30LVS10-R
0.015 μF		0.900 (22.9)	0.210 (5.3)				30LVS15-R

### Notes

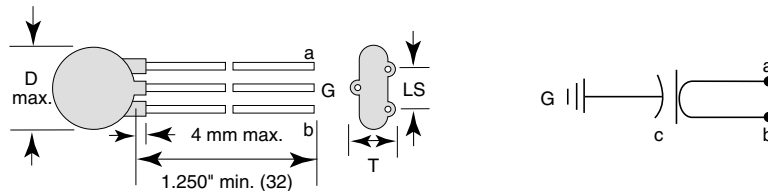
- Alternate lead spacings of 7.5 mm and 10 mm are available bulk or tape and reel on request.
- Minimum lead clearance according to IEC 60384-14: 0.118" (3 mm)

### 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.

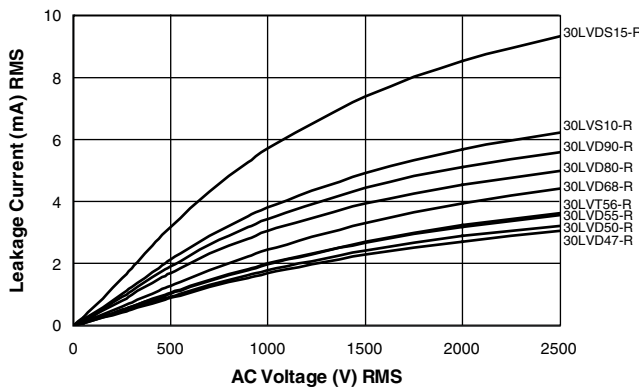
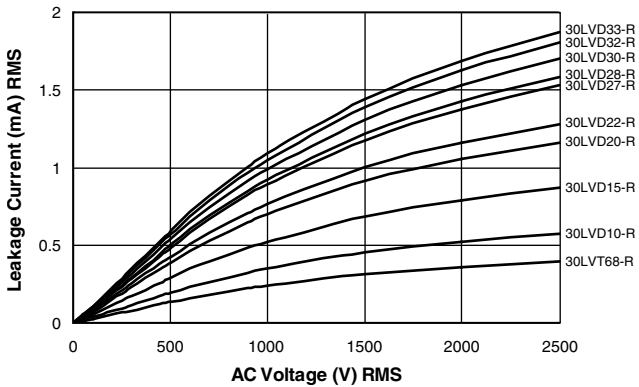
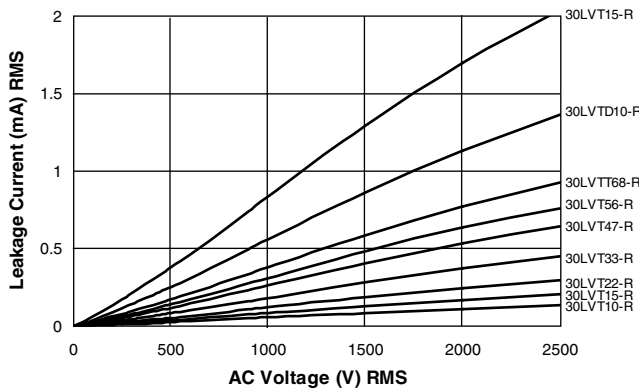
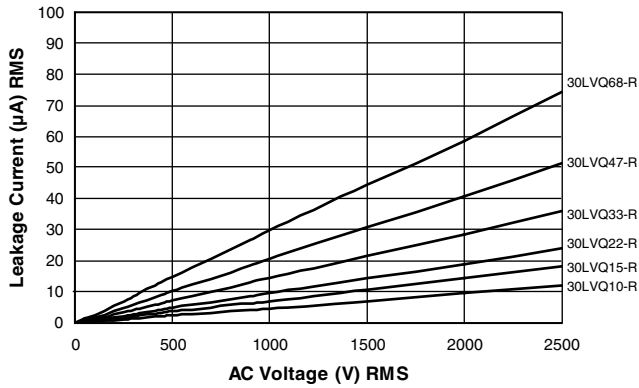
### OPTIONAL 3-LEADED STYLE

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.

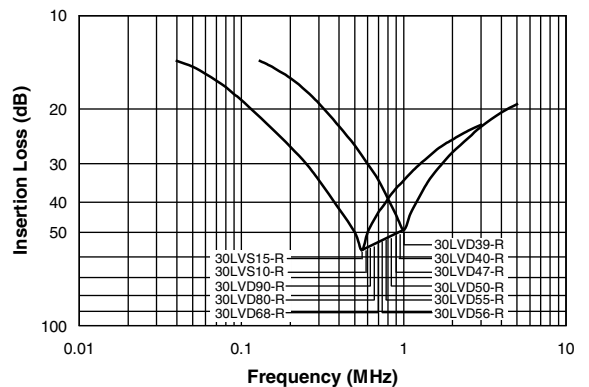
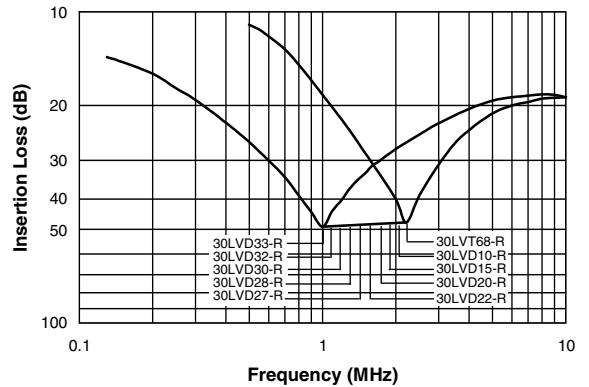
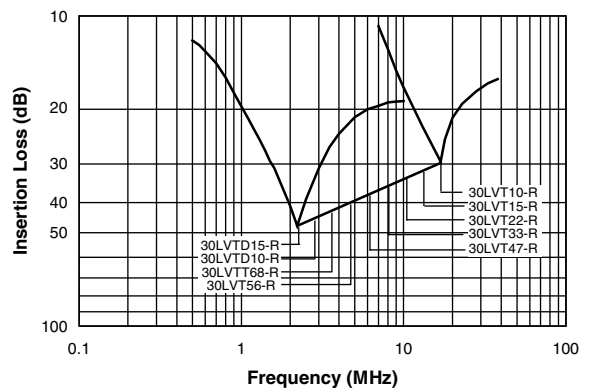
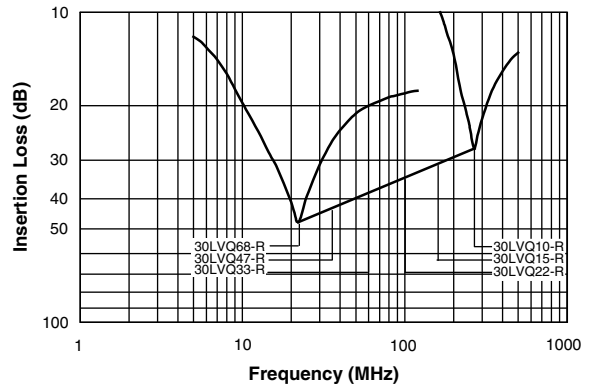




### LEAKAGE CURRENT VS. VOLTAGE (Typical)



### 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/14037/CSA	10 pF to 15 nF	300 V <sub>AC</sub>	
X1-capacitor: CB test certificate:	CA/14037/CSA	10 pF to 15 nF	400 V <sub>AC</sub>	

**VDE**

Y2-capacitor: VDE marks approval:	40003992	10 pF to 15 nF	300 V <sub>AC</sub> <sup>(1)</sup>	
Y2-capacitor: VDE marks approval:	40003992	10 pF to 15 nF	250 V <sub>AC</sub> <sup>(1)</sup>	
X1-capacitor: VDE marks approval:	40003992	10 pF to 15 nF	400 V <sub>AC</sub>	

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

**Underwriters Laboratories Inc.**

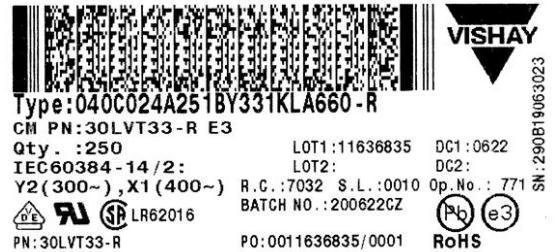
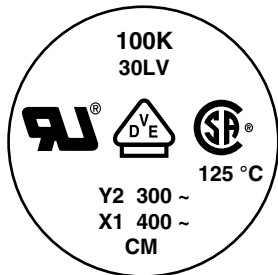
Y2-capacitor: UL test certificate:	E99264	10 pF to 15 nF	300 V <sub>AC</sub>	
X1-capacitor: UL test certificate:	E99264	10 pF to 15 nF	400 V <sub>AC</sub>	

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 ≥ 7.5 mm: 300 V<sub>AC</sub>; 5.0 mm ≤ LS < 7.5 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?22228">www.vishay.com/doc?22228</a>
VDE Marks Approval	<a href="http://www.vishay.com/doc?22229">www.vishay.com/doc?22229</a>
UL Test Certificate	<a href="http://www.vishay.com/doc?22230">www.vishay.com/doc?22230</a>



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