

## AC Line Rated Ceramic Disc Capacitors Class X1, 400 V<sub>AC</sub> / Class Y2, 300 V<sub>AC</sub> / 250 V<sub>AC</sub>



### FEATURES

- Complying with IEC 60384-14
- 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
- Across-the-line
- Line by-pass
- Antenna coupling
- EMI / RFI suppression

### 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."

<b>QUICK REFERENCE DATA</b>	
DESCRIPTION	VALUE
Ceramic Class	2
Ceramic Dielectric	Y5S
Voltage (V <sub>AC</sub> )	250      300      400
Min. Capacitance (pF)	1000
Max. Capacitance (pF)	8000
Mounting	Radial

### INSULATION RESISTANCE

Min. 1000 M $\Omega$

### TOLERANCE ON CAPACITANCE

$\pm 20\%$

### DISSIPATION FACTOR

2.0 % max. at 1 kHz; 1 V

### CERAMIC DIELECTRIC

Y5S (Class 2)

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

25/125/21

### OPERATING TEMPERATURE RANGE

-30 °C to +125 °C

### CAPACITANCE RANGE

1.0 nF to 8.0 nF

### RATED VOLTAGE

IEC 60384-14:

- 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:

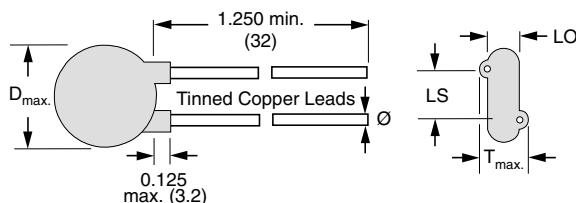
2250 V<sub>AC</sub>, 50 Hz, 2 s

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)

**DIMENSIONS** in inches (millimeters)

**ORDERING INFORMATION, CERAMIC X1 / Y2 CAPACITORS 25Y**

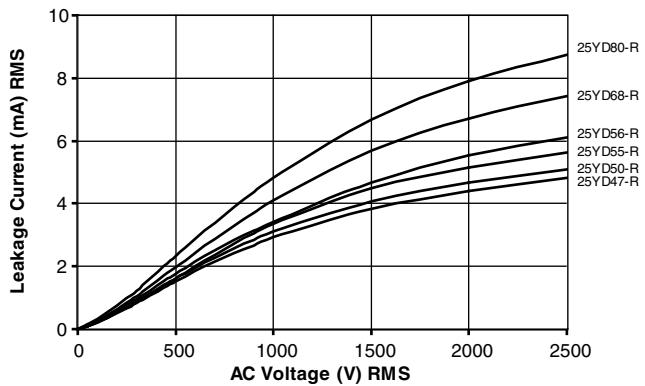
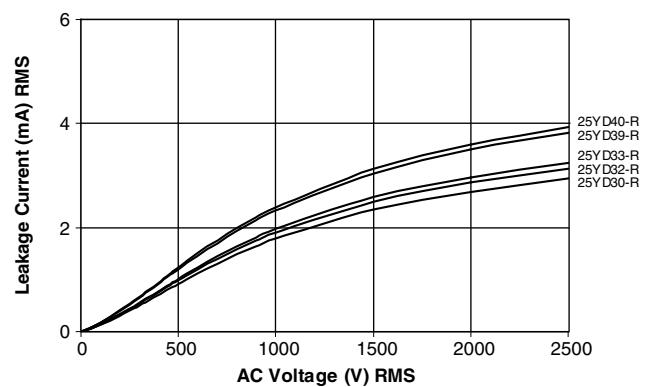
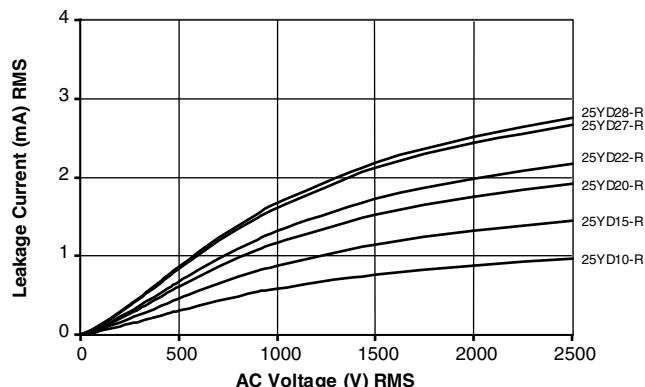
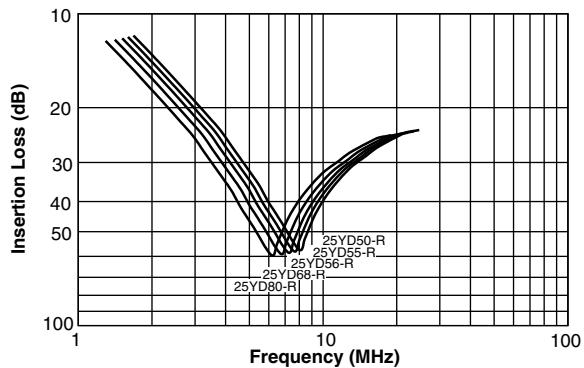
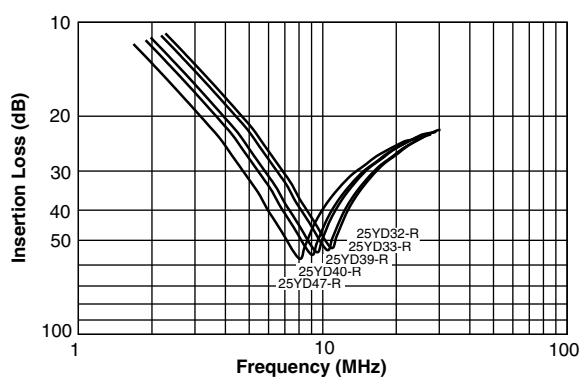
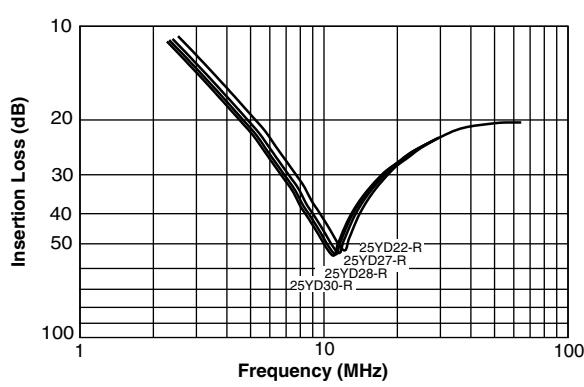
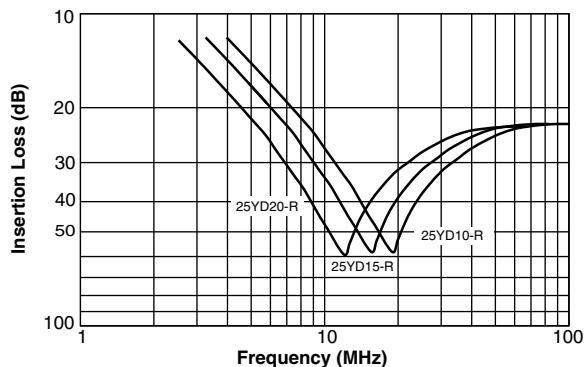
C (pF)	TOL. (%)	D <sub>max.</sub> DIAMETER INCH (mm)	T <sub>max.</sub> THICKNESS INCH (mm)	WIRE SIZE		LS LEAD SPACE INCH (mm) ± 1 mm	LO LEAD OFFSET INCH (mm) ± 0.5 mm	ORDERING CODE			
Y5S TEMPERATURE STABLE (± 22 %, -30 °C TO +85 °C)											
1000	± 20	0.330 (8.4)	0.170 (4.3)	22	0.025 (0.64)	0.250 (6.4)	0.075 (1.9)	25YD10-R			
1500		0.400 (10.2)	0.175 (4.4)				0.079 (2.0)	25YD15-R			
2000		0.430 (10.9)	0.170 (4.3)				0.075 (1.9)	25YD20-R			
2200		0.460 (11.7)					0.079 (2.0)	25YD22-R			
2700		0.490 (12.4)					0.075 (1.9)	25YD27-R			
2800		0.530 (13.5)	0.175 (4.4)				0.079 (2.0)	25YD28-R			
3000		0.530 (13.5)	0.175 (4.4)				0.079 (2.0)	25YD30-R			
3200		0.560 (14.2)	0.185 (4.7)	20	0.032 (0.81)	0.375 (9.5)	0.087 (2.2)	25YD32-R			
3300		0.560 (14.2)					0.087 (2.2)	25YD33-R			
3900		0.620 (15.7)					0.087 (2.2)	25YD39-R			
4000		0.620 (15.7)	0.175 (4.4)				0.083 (2.1)	25YD40-R			
4700		0.680 (17.3)	0.185 (4.7)				0.087 (2.2)	25YD47-R			
5000		0.680 (17.3)	0.185 (4.7)				0.087 (2.2)	25YD50-R			
5500		0.720 (18.3)	0.190 (4.7)				0.091 (2.3)	25YD55-R			
5600		0.720 (18.3)	0.190 (4.7)				0.091 (2.3)	25YD56-R			
6800		0.790 (20.1)	0.185 (4.7)				0.087 (2.2)	25YD68-R			
8000		0.900 (22.9)	0.200 (5.1)				0.102 (2.6)	25YD80-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.

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

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


**APPROVALS**

IEC 60384-14 - Safety tests

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

**CB Certificate**

Y2-capacitor: CB test certificate:

DE1-63498

1 nF to 8 nF

 250 V<sub>AC</sub>

X1-capacitor: CB test certificate:

DE1-63498

1 nF to 8 nF

 400 V<sub>AC</sub>

**VDE**

Y2-capacitor: VDE marks approval:

40003978

1 nF to 8 nF

 250 V<sub>AC</sub>

X1-capacitor: VDE marks approval:

40003978

1 nF to 8 nF

 400 V<sub>AC</sub>


DIN EN 60384-14 VDE 0565-1-1 - Safety tests

**Underwriters Laboratories Inc.**

Y2-capacitor: UL test certificate:

E99264

1 nF to 8 nF

 300 V<sub>AC</sub> <sup>(1)</sup>

Y2-capacitor: UL test certificate:

E99264

1 nF to 8 nF

 250 V<sub>AC</sub> <sup>(1)</sup>

X1-capacitor: UL test certificate:

E99264

1 nF to 8 nF

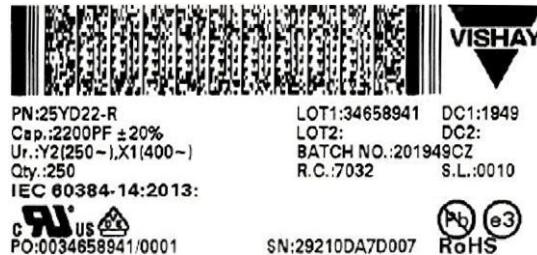
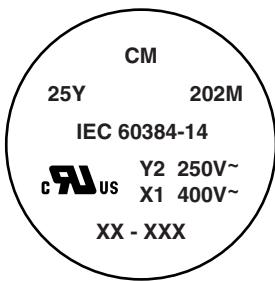
 400 V<sub>AC</sub>

UL 60384-14, CSA E60384-1, CSA E60384-14

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


**Notes**

- Marking IEC 60384-14 does not apply for  $\emptyset \leq 9$  mm
- Coding is as follows: 1<sup>st</sup> figure indicates the year and 2<sup>nd</sup> figure indicates the month according to IEC 60062. The 3<sup>rd</sup> to 5<sup>th</sup> figure indicate the last three digits of the lot number

**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?22240">www.vishay.com/doc?22240</a>
VDE Marks Approval	<a href="http://www.vishay.com/doc?22241">www.vishay.com/doc?22241</a>
UL Test Certificate	<a href="http://www.vishay.com/doc?22242">www.vishay.com/doc?22242</a>

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