

## AC Line Rated Disc Capacitors Class X2, 400 V<sub>AC</sub>


**RoHS  
COMPLIANT**
**FEATURES**

- Worldwide safety agency recognition  
Underwriters Laboratories UL 1283  
Canadian Standards Association - CSA 22.2  
European EN132400 to IEC 60384-14 second edition
- Complete range of capacitance values
- Radial leads
- Compliant to RoHS Directive 2002/95/EC

**APPLICATIONS**

- Required in AC power supply and filter applications
- Specific industry requirements

**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 0.025" (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."

QUICK REFERENCE DATA		
DESCRIPTION	VALUE	
Ceramic Class	2	
Ceramic Dielectric	Y5V	Z5U
Voltage (V <sub>AC</sub> )	250, 400	250, 400
Min. Capacitance (pF)	9000	10 000
Max. Capacitance (pF)	100 000	10 000
Mounting	Through hole	

**INSULATION RESISTANCE**

 Min. 1000  $\Omega$ F

**TOLERANCE ON CAPACITANCE**
 $\pm 20\%$ 
**DISSIPATION FACTOR**

2.0 % max. at 1 kHz; 1 V

**CERAMIC DIELECTRIC**

Y5V, Z5U (class 2)

**CATEGORY TEMPERATURE RANGE**

- 25 °C to + 125 °C

**CLIMATIC CATEGORY ACC. TO EN60068-1**

25/125/21

**OPERATING TEMPERATURE RANGE**

- 30 °C to + 125 °C

**CAPACITANCE RANGE**

 9 nF to 0.1  $\mu$ F

**RATED VOLTAGE**

 IEC 60384-14.12: (X2): 400 V<sub>AC</sub>, 50 Hz

 UL 1238: 250 V<sub>AC</sub>, 60 Hz

 CSA 22.2 No.8: 250 V<sub>AC</sub>, 60 Hz

**DIELECTRIC STRENGTH BETWEEN LEADS**

Component test:

 1250 V<sub>AC</sub>, 50 Hz, 2 s

As repeated test admissible only once with:

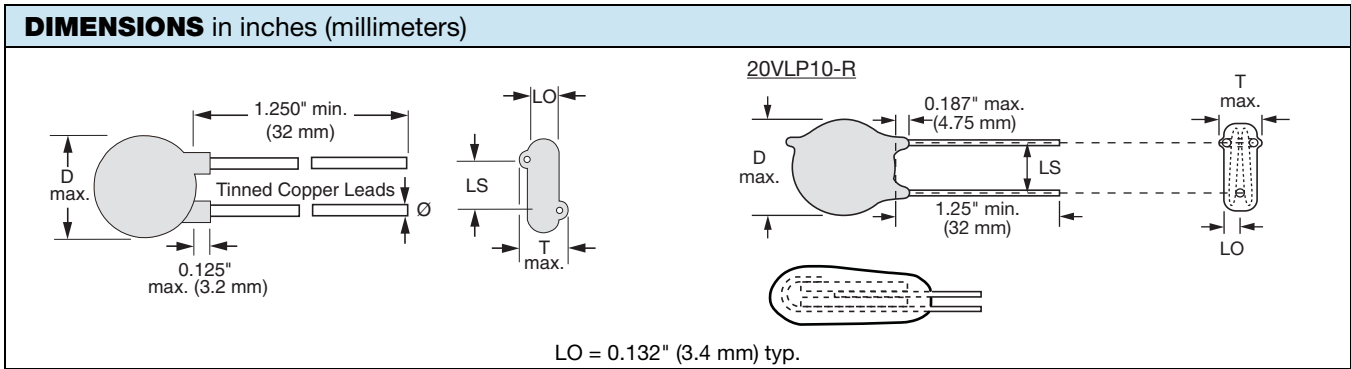
 1080 V<sub>AC</sub>, 50 Hz, 2 s

Random sampling test (destructive test):

 1250 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 X2 CAPACITORS 20VL							
C ( $\mu$ F)	TOL. (%)	D DIAMETER INCH (mm)	T THICKNESS INCH (mm)	WIRE SIZE		LS LEAD SPACE INCH (mm)	ORDERING CODE
				AWG	INCH (mm)		
<b>Y5V</b>							
0.009	$\pm 20$	0.530 (13.5)	0.150 (3.8)	22	0.025 (0.64)	0.375 (9.5)	20VLD90-R
0.010	$\pm 20$	0.620 (15.7)	0.150 (3.8)				20VLS10-R
0.020	$\pm 20$	0.720 (18.3)	0.150 (3.8)				20VLS20-R
0.100	$\pm 20$	0.940 (23.9)	0.240 (6.1)				20VLP10-R <sup>(1)</sup>
<b>Z5U</b>							
0.010	$\pm 20$	0.530 (13.5)	0.160 (4.1)	22	0.025 (0.64)	0.250 (6.4)	20VLS10-R

**Notes**

- Alternate lead spacings of 7.5 mm and 10 mm are available bulk or tape and reel on request.
- European required minimum lead clearance (prevents use of inside crimp) 0.118" (3 mm)
- <sup>(1)</sup> 20VLP10-R not available with CSA 22.2 no. 8 recognition

**TAPE AND REEL OPTIONS**

- To specify tape and reel, add two letter suffix to the ordering code (details of the packaging code see general section of the catalog).

APPROVALS						
IEC 60384 - 14/2nd Issue (1993) incl. Am.1 (1995) - Safety Tests						
EN132400 (1994) - Safety Tests						
That approval together with CB Test Certificate substitutes the national approval of the following nations:						
Belgium	France	Italy	Austria	China	Japan	Spain
Denmark	Greece	Luxembourg	Portugal	Singapore	Poland	United Kingdom
Germany	Ireland	Netherlands	Sweden	Slovenia	Hungaria	Czech Republic
Finland	Iceland	Norway	Switzerland	Korea	Israel	
X2 Capacitor: CB-Test Certificate:		DE 1-19450	9000 pF to 0.1 $\mu$ F	400 V <sub>AC</sub>		
<b>UNDERWRITERS LABORATORIES INC.</b>						
<b>UL 1238</b>	EMI filters Agency File/ License	E128046 V1S1	9000 pF to 0.1 $\mu$ F	250 V <sub>AC</sub>		
<b>CANADIAN STANDARDS ASSOCIATION</b>						
<b>CSA C22.8</b>	EMI filters Agency File/ License	LR 62016-3	9000 pF to 0.020 $\mu$ F	250 V <sub>AC</sub>		

**Note**

IEC 60384-14 subclass X capacitors:

- A capacitor of a type suitable for use in situations where failure of the capacitor would not lead to danger of electric shock.
- Class X capacitors are divided into sub-classes according to the peak impulse test voltage superimposed on the main voltage.



**MARKING**

Sample



Type: 055C140A251BY103ZLA203-R

CM PN: 20VLSS10-R E3	LOT1: 11642525	DC1: 0622	SN: 29081A69D001
Qty.: 250	LOT2:	DC2:	
IEC60384-14/2:	R.C.: 7032 S.L.: 0010	Op.No.: 771	
X2 (400~)	BATCH NO.: 200622CZ	<b>Pb</b> <b>e3</b>	
<b>UL</b> <b>SF</b> LR62016	PN: 20VLSS10-R	PO: 0011642525/0001	

RoHS



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