

**AC Line Rated Disc Capacitors**  
**Class X1, 400 VAC/Class Y1, 500 VAC**



LO' = 0.158" (4.0 mm) typ.

**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)

**CATEGORY TEMPERATURE RANGE**

- 25 °C to + 125 °C

**OPERATING TEMPERATURE RANGE**

- 30 °C to + 125 °C

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

25/125/21

**FEATURES**

- Worldwide Safety Agency Recognition  
Underwriters Laboratories - UL 1414 and 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 0.032" (0.81 mm). The capacitors may be supplied with radial kinked or straight leads having a lead spacing of 0.375" (9.5 mm). The standard tolerances are ± 10 % or ± 20 %. Coating is made of flame retardant epoxy resin in accordance with "UL 94 V-0".

**CAPACITANCE RANGE**

10 pF to 0.01 μF

**RATED VOLTAGE U<sub>R</sub>**

IEC 60384-14.2	(Y1): 500 VAC, 50 Hz
IEC 60384-14.2	(X1): 400 VAC, 50 Hz
UL 1414:	250 VAC, 60 Hz
UL 1283:	600 VAC, 60 Hz
CSA 22.2:	250 VAC, 60 Hz

**DIELECTRIC STRENGTH BETWEEN LEADS**

Component test:  
4000 VAC, 50 Hz, 2 s  
As repeated test admissible only once with:  
3600 VAC, 50 Hz, 2 s  
Random sampling test (destructive test):  
4000 VAC, 50 Hz, 60 s

**DIELECTRIC STRENGTH OF BODY INSULATION**

4000 VAC, 50 Hz, 60 s (destructive test)

# 440L Series

Vishay Cera-Mite

AC Line Rated Disc Capacitors  
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ORDERING INFORMATION, CERAMIC X1/Y1 CAPACITORS 440L							
C (pF)	TOL. (%)	D DIAMETER	T THICKNESS	WIRE SIZE		LS LEAD SPACE	ORDERING CODE
				AWG	INCH (mm)		
<b>C0G</b>							
10	± 10 %	0.330 (8.4)	0.195 (5.0)	20	0.032 (0.81)	0.375 (9.5)	440LQ10-R
<b>U2J</b>							
15	± 10 %	0.330 (8.4)	0.210 (5.3)	20	0.032 (0.81)	0.375 (9.5)	440LQ15-R
<b>P3K</b>							
22	± 10 %	0.330 (8.4)	0.190 (4.8)	20	0.032 (0.81)	0.375 (9.5)	440LQ22-R
<b>R3L</b>							
33	± 10 %	0.330 (8.4)	0.200 (5.1)	20	0.032 (0.81)	0.375 (9.5)	440LQ33-R
47	± 10 %	0.330 (8.4)	0.180 (4.6)	20	0.032 (0.81)	0.375 (9.5)	440LQ47-R
<b>X7R</b>							
68	± 10 %	0.330 (8.4)	0.220 (5.6)	20	0.032 (0.81)	0.375 (9.5)	440LQ68-R
100			0.220 (5.6)				440LT10-R
150			0.235 (6.0)				440LT15-R
220			0.235 (6.0)				440LT22-R
330			0.225 (5.7)				440LT33-R
<b>Y5U</b>							
470	± 20 %	0.330 (8.4)	0.230 (5.8)	20	0.032 (0.81)	0.375 (9.5)	440LT47-R
560		0.330 (8.4)	0.230 (5.8)				440LT56-R
680		0.330 (8.4)	0.235 (6.0)				440LT68-R
1000		0.365 (9.3)	0.220 (5.6)				440LD10-R
1500		0.365 (9.3)	0.220 (5.6)				440LD15-R
2000		0.400 (10.2)	0.220 (5.6)				440LD20-R
2200		0.430 (10.9)	0.225 (5.7)				440LD22-R
2700		0.460 (11.7)	0.225 (5.7)				440LD27-R
2800		0.460 (11.7)	0.220 (5.6)				440LD28-R
3000		0.490 (12.4)	0.225 (5.7)				440LD30-R
3200		0.490 (12.4)	0.220 (5.6)				440LD32-R
3300		0.490 (10.9)	0.215 (5.5)				440LD33-R
3900		0.530 (13.5)	0.220 (5.6)				440LD39-R
4000		0.530 (13.5)	0.220 (5.6)				440LD40-R
4700		0.620 (15.7)	0.230 (5.8)				440LD47-R
5000		0.620 (15.7)	0.225 (5.7)				440LD50-R
5500		0.680 (17.3)	0.230 (5.8)				440LD55-R
5600		0.680 (17.3)	0.230 (5.8)				440LD56-R
6800		0.720 (18.3)	0.235 (6.0)				440LD68-R
8000		0.720 (18.3)	0.220 (5.6)				440LD80-R
9000	0.790 (20.1)	0.225 (5.7)	440LD90-R				
0.01 µF		0.850 (21.6)	0.230 (5.8)				440LS10-R

**Notes**

- Alternate lead spacings are available bulk or tape and reel on request.
- European required minimum lead clearance (prevents use of inside crimp) 0.315" (8 mm)

**TAPE AND REEL OPTIONS**

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



### LEAKAGE CURRENT VS. VOLTAGE (TYPICAL)    INSERTION LOSS VS. FREQUENCY (TYPICAL)



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APPROVALS						
IEC 60384 - 14/2nd Issue (1993) incl. Am. 1 (1995) - Safety Tests						
EN 132 400 (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	
Y1 Capacitor: CB-Test Certificate: DE 1-19452				10 pF... 0.01 µF	500 V <sub>AC</sub>	
X1 Capacitor: CB-Test Certificate: DE 1-19452				10 pF... 0.01 µF	400 V <sub>AC</sub>	
UNDERWRITERS LABORATORIES						
<b>UL 1414</b>	Across-the-line, Antenna-coupling and Line-by-pass component.			10 pF... 0.01 µF	250 V <sub>AC</sub>	
	Agency File/License	E99264 V2S2				
<b>UL 1283</b>	EMI Filters			10 pF... 0.01 µF	600 V <sub>AC</sub>	
	Agency File/License	E128046 V1S2				
CANADIAN STANDARDS ASSOCIATION						
<b>CSA C22.2 No. 1-98</b>	Across-the-line, Isolation capacitor			10 pF... 0.01 µF	250 V <sub>AC</sub>	
	Agency File/License	LR 62016-12				
<b>No. 1-94</b>	Across-the-line, Line to ground, Isolation capacitor			100 pF... 0.01 µF	250 V <sub>AC</sub>	
	Agency File/License	LR 62016-1				

### Note 1

UL 1414 Across-The-Line, Antenna Coupling, and Line-By-Pass Capacitors:

- Across-The-Line - A capacitor connected either across a supply circuit or between one side of a supply circuit and a conductive part that may be connected to earth ground.
- Antenna-Coupling - A capacitor connected from an antenna terminal to circuits within an appliance.
- Line-By-Pass - A capacitor connected between one side of a supply circuit and an accessible conductive part.

### Note 2

IEC 60384-14 Subclass Y Capacitors:

- A capacitor of a type suitable for use in situations where failure of the capacitor could lead to danger of electric shock.
- Class Y capacitors are divided into sub-classes based on type of insulation bridged and voltage ranges.
- For definitions of basic, supplementary, double and reinforced insulation, see IEC Publication 536.
- Subclass Y capacitors may be used in applications which require a Subclass X rating.

### Note 3

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 subclasses according to the peak impulse test voltage superimposed on the main voltage.

MARKING	
	<p> <b>Type: 571C085B251AY103MLA612-R</b>            CM PN: 440LS10-R E3            Qty. : 100            IEC60384-14/2:            Y1 (500~), X1 (400~)            R.C.: 7032 S.L.: 0010            BATCH NO.: 200622CZ            PN: 440LS10-R            LOT1: 11647764            LOT2:            DC1: 0622            DC2:            Op.No.: 771            SN: 2901BB14024            RoHS         </p>



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