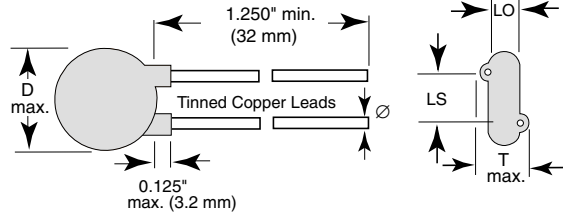


## AC Line Rated Disc Capacitors Class X1, 400 VAC/Class Y1, 500 VAC



LO' = 0.158" (4.0 mm) typ.

### INSULATION RESISTANCE

min. 1000  $\Omega$ F

### TOLERANCE ON CAPACITANCE

$\pm 10\%$ ;  $\pm 20\%$

### 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  $\pm 10\%$  or  $\pm 20\%$ . Coating is made of flame retardant epoxy resin in accordance with "UL 94 V-0".

### CAPACITANCE RANGE

10 pF to 0.01  $\mu$ F

### RATED VOLTAGE $U_R$

|                |                      |
|----------------|----------------------|
| 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  
Class X1, 400 VAC/Class Y1, 500 VAC



| ORDERING INFORMATION, CERAMIC X1/Y1 CAPACITORS 440L |             |               |                |           |              |                  |                  |
|-----------------------------------------------------|-------------|---------------|----------------|-----------|--------------|------------------|------------------|
| C<br>(pF)                                           | TOL.<br>(%) | D<br>DIAMETER | T<br>THICKNESS | WIRE SIZE |              | LS<br>LEAD SPACE | ORDERING<br>CODE |
| C0G                                                 |             |               |                |           |              |                  |                  |
| 10                                                  | ± 10 %      | 0.330 (8.4)   | 0.195 (5.0)    | 20        | 0.032 (0.81) | 0.375 (9.5)      | 440LQ10-R        |
| U2J                                                 |             |               |                |           |              |                  |                  |
| 15                                                  | ± 10 %      | 0.330 (8.4)   | 0.210 (5.3)    | 20        | 0.032 (0.81) | 0.375 (9.5)      | 440LQ15-R        |
| P3K                                                 |             |               |                |           |              |                  |                  |
| 22                                                  | ± 10 %      | 0.330 (8.4)   | 0.190 (4.8)    | 20        | 0.032 (0.81) | 0.375 (9.5)      | 440LQ22-R        |
| R3L                                                 |             |               |                |           |              |                  |                  |
| 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        |
| X7R                                                 |             |               |                |           |              |                  |                  |
| 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        |
| Y5U                                                 |             |               |                |           |              |                  |                  |
| 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)      |

## Notes

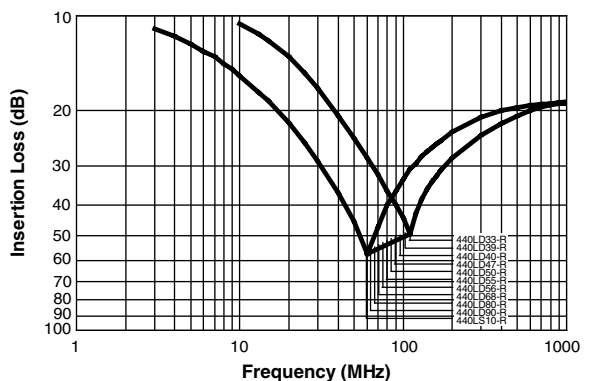
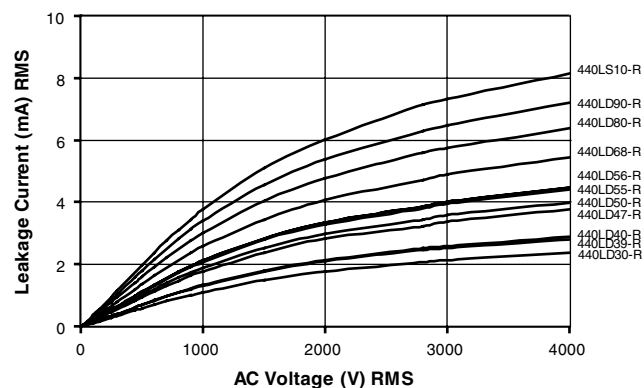
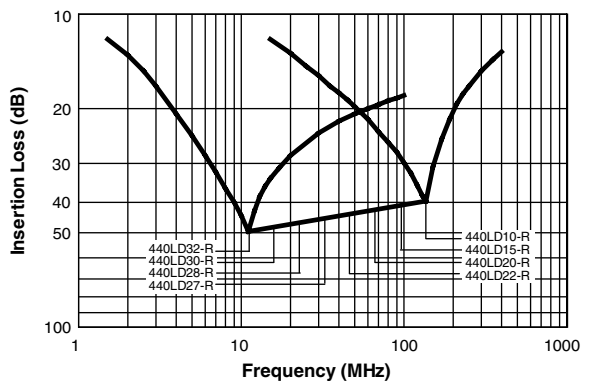
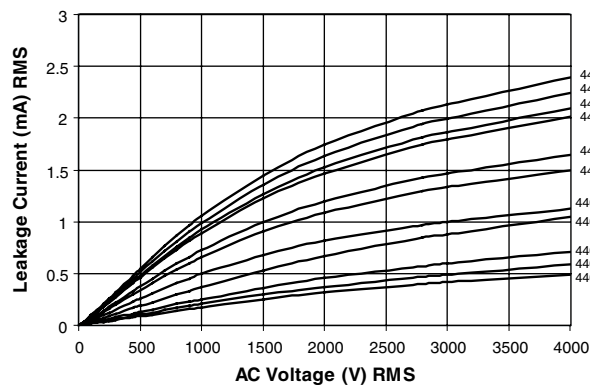
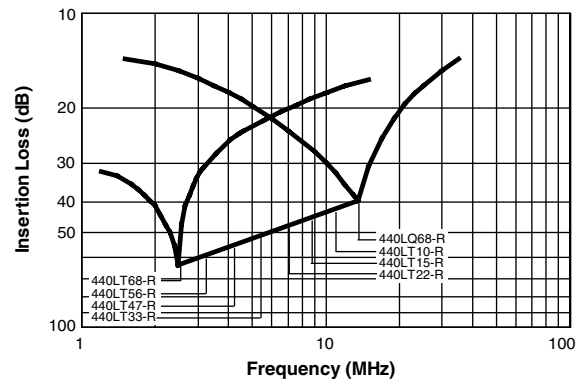
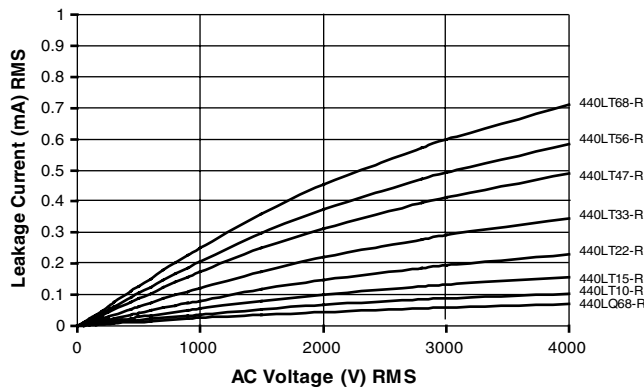
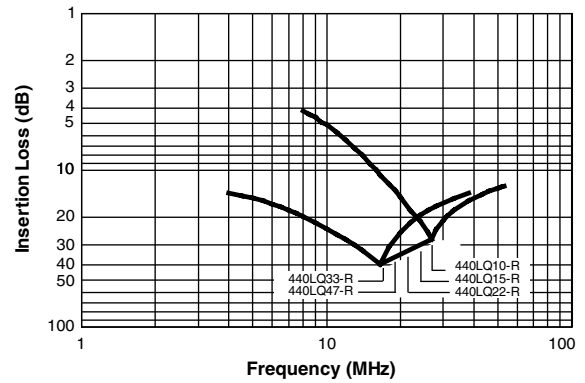
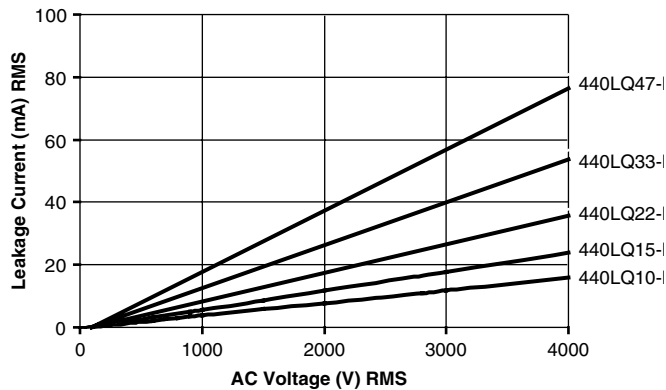
- Alternate lead spacings are available bulk or tape and reel on request.
- European required minimum lead clearance (prevents use of inside crimp) 0.315" (8 mm)

## 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)



### 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  $\mu$ F

500 V<sub>AC</sub>



X1 Capacitor: CB-Test Certificate: DE 1-19452

10 pF... 0.01  $\mu$ F

400 V<sub>AC</sub>

### UNDERWRITERS LABORATORIES

**UL 1414** Across-the-line, Antenna-coupling and Line-by-pass component. 10 pF... 0.01  $\mu$ F  
Agency File/License E99264 V2S2

250 V<sub>AC</sub>



**UL 1283** EMI Filters  
Agency File/License E128046 V1S2

10 pF... 0.01  $\mu$ F

600 V<sub>AC</sub>

### CANADIAN STANDARDS ASSOCIATION

**CSA C22.2** Across-the-line, Isolation capacitor  
**No. 1-98** Agency File/License LR 62016-12

10 pF... 0.01  $\mu$ F

250 V<sub>AC</sub>



**No. 1-94** Across-the-line, Line to ground, Isolation capacitor  
Agency File/License LR 62016-1

100 pF... 0.01  $\mu$ F

250 V<sub>AC</sub>

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



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**Please note that some Vishay documentation may still make reference to RoHS Directive 2002/95/EC. We confirm that all the products identified as being compliant to Directive 2002/95/EC conform to Directive 2011/65/EU.**

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- Индивидуальный подход
- Гибкое ценообразование

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