

AC Line Rated Ceramic Disc Capacitors Class X1, 400 V_{AC}/Class Y4, 125 V_{AC}


**RoHS
COMPLIANT**
FEATURES

- Worldwide safety agency recognition
Underwriters laboratories - UL 1414
Canadian standards association - CSA 22.2
European EN132400 to IEC 60384-14 2nd edition
- Complete range of capacitance values
- Radial leads
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912

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) 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".

| QUICK REFERENCE DATA | | | |
|----------------------------|--------------|-----|-----|
| DESCRIPTION | VALUE | | |
| Ceramic Class | 2 | | |
| Ceramic Dielectric | Y5V | | |
| Voltage (V _{AC}) | 125 | 250 | 400 |
| Min. Capacitance (pF) | 1000 | | |
| Max. Capacitance (pF) | 50 000 | | |
| Mounting | Through hole | | |

INSULATION RESISTANCE

 Min. 1000 Ω F

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

2.0 % max. at 1 kHz; 1 V

CERAMIC DIELECTRIC

Y5V (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

 1.0 nF to 0.050 μ F

RATED VOLTAGE

 IEC 60384-14.2: (Y4): 125 V_{AC}, 50 Hz

 IEC 60384-14.2: (X1): 400 V_{AC}, 50 Hz

 UL 1414: 250 V_{AC}, 60 Hz

 CSA 22.2 No.1: 125 V_{AC}/250 V_{AC}, 60 Hz

DIELECTRIC STRENGTH BETWEEN LEADS

Component test:

 2000 V_{AC}, 50 Hz, 2 s

As repeated test admissible only once with:

 1800 V_{AC}, 50 Hz, 2 s

Random sampling test (destructive test):

 2000 V_{AC}, 50 Hz, 60 s

DIELECTRIC STRENGTH OF BODY INSULATION

 2300 V_{AC}, 50 Hz, 60 s (destructive test)

DIMENSIONS in inches (millimeters)



LO' = 0.132" (3.4 mm) typ.

ORDERING INFORMATION, CERAMIC X1/Y4 CAPACITORS 125L

| C (pF) | TOL. (%) | D _{max.} DIAMETER INCH (mm) | T _{max.} THICKNESS INCH (mm) | WIRE SIZE | | LS LEAD SPACE INCH (mm) | ORDERING CODE | |
|------------|-------------|--|---|-----------|--------------|-------------------------------|------------------|-----------|
| | | | | AWG | INCH (mm) | | | |
| Y5V | | | | | | | | |
| 1000 | ± 20 % | 0.330 (8.4) | 0.195 (5.0) | 20 | 0.032 (0.81) | 0.250 (6.4) | 125LD10-R | |
| 1500 | | 0.330 (8.4) | 0.195 (5.0) | | | | 125LD15-R | |
| 2000 | | 0.330 (8.4) | 0.188 (4.8) | | | | 125LD20-R | |
| 2200 | | 0.330 (8.4) | 0.182 (4.7) | | | | 125LD22-R | |
| 3300 | | 0.365 (9.3) | 0.195 (5.0) | | | | 125LD33-R | |
| 4700 | | 0.400 (10.2) | 0.185 (4.7) | | | | 125LD47-R | |
| 5000 | | 0.430 (11.0) | 0.195 (5.0) | | | 125LD50-R | | |
| 6800 | | 0.490 (12.5) | 0.198 (5.1) | | | 125LD68-R | | |
| 8200 | | 0.530 (13.5) | 0.193 (5.0) | | | 125LD82-R | | |
| 0.010 μF | | 0.560 (14.3) | 0.195 (5.0) | | | 125LS10-R | | |
| 0.015 μF | | 0.720 (18.3) | 0.205 (5.3) | | | 125LS15-R | | |
| 0.018 μF | | 0.790 (20.1) | 0.205 (5.3) | | | 125LS18-R | | |
| 0.020 μF | | 0.720 (18.3) | 0.250 (6.4) | | | 22 | 0.025 (0.64) | 125LS20-R |
| 0.022 μF | | 0.790 (20.1) | 0.192 (4.9) | | | 20 | 0.032 (0.81) | 125LS22-R |
| 0.030 μF | | 0.720 (18.3) | 0.240 (6.1) | | | 22 | 0.025 (0.64) | 125LS30-R |
| 0.050 μF | | 0.925 (23.5) | 0.275 (7.0) | | | 22 | 0.025 (0.64) | 125LS50-R |

Notes

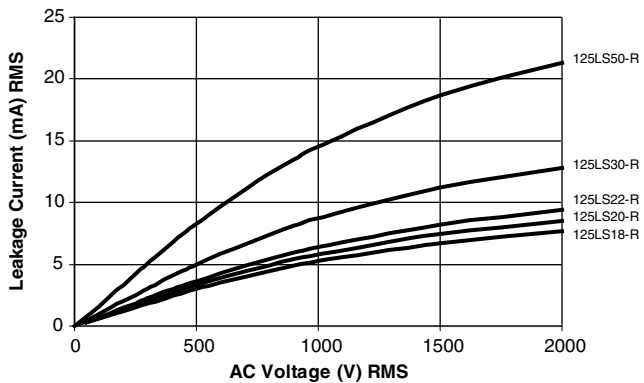
- Alternate lead spacings of 7.5 mm and 10 mm are available bulk or tape and reel on request.
- European required minimum lead clearance (prevents use of inside crimp) 0.118" (3 mm)

TAPE AND REEL OPTIONS

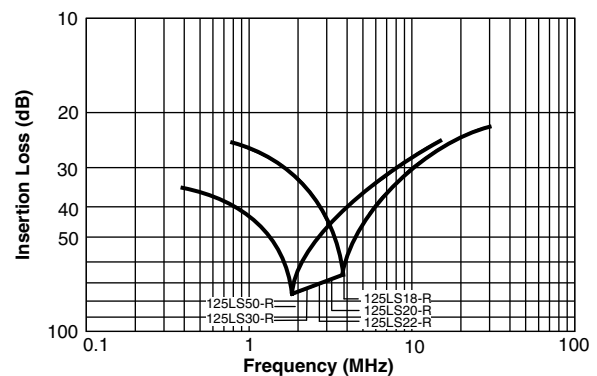
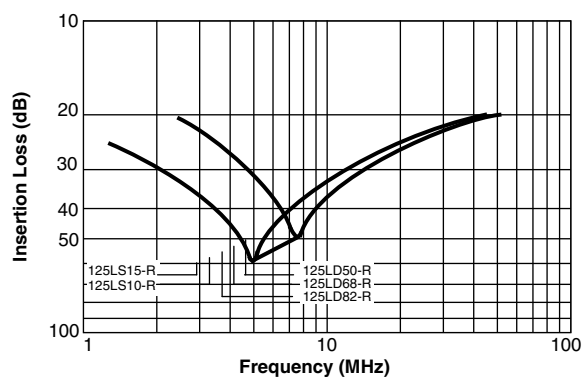
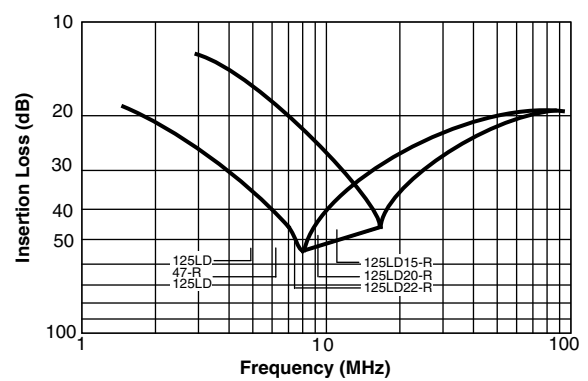
To specify tape and reel, add two letter suffix to the ordering code (for details of the packaging code see general section of the catalog)



LEAKAGE CURRENT VS. VOLTAGE (TYPICAL)



INSERTION LOSS VS. FREQUENCY (TYPICAL)



| APPROVALS | | | | | | |
|--|---|-------------|--------------------|---------------------|----------|----------------|
| IEC 60384 - 14/2nd Issue (1993) incl. Am.1 (1995) - Safety Tests | | | | | | |
| 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 | |
| X1 Capacitor: CB-Test Certificate: | | DE 1-19447 | 1000 pF to 0.05 µF | 400 V _{AC} | | |
| Y4 Capacitor: CB-Test Certificate: | | DE 1-19447 | 1000 pF to 0.05 µF | 125 V _{AC} | | |
| UNDERWRITERS LABORATORIES INC. | | | | | | |
| UL 1414 | Line-by-pass component Agency File/License | E99264 | 1000 pF to 0.05 µF | 250 V _{AC} | | |
| CANADIAN STANDARDS ASSOCIATION | | | | | | |
| CSA C22.2 No. 1 | Isolation component Agency File/License | LR 62016 | 1000 pF to 0.05 µF | 250 V _{AC} | | |

Notes

UL1414 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.

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 subclasses 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.

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>Sample</p> | <p>VISHAY</p> <p>Type: 040C085B251AY202MLA010 - R</p> <p>CM PN: 125LD20 - R E3 LOT1: 11642584 DC1: 0622</p> <p>Qty. : 250 IEC60384 - 14 / 2: LOT2: DC2: Op.No. : 771</p> <p>Y4 (125~), X1 (400~) R.C. : 7032 S.L. : 0010 BATCH NO. : 200622CZ</p> <p> LR62016 PN: 125LD20 - R PO: 0011642584 / 0001 </p> <p style="writing-mode: vertical-rl; transform: rotate(180deg);">S/N: 290R1A6D8012</p> |



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Как с нами связаться

Телефон: 8 (812) 309 58 32 (многоканальный)

Факс: 8 (812) 320-02-42

Электронная почта: org@eplast1.ru

Адрес: 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.