AC Line Rated Ceramic Disc Capacitors
Class X2, 400 V_{AC}

FEATURES
- Complying with IEC 60384-14
- High reliability
- Radial leads
- Singlelayer AC disc safety capacitors

APPLICATIONS
- X2 according to IEC 60384-14
- Across-the-line
- RFI filtering

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 ± 20 %. Coating is made of flame retardant epoxy resin in accordance with “UL 94 V-0.”

CAPACITANCE RANGE
9 nF to 0.1 μF

RATED VOLTAGE
IEC 60384-14:
X2: 400 V_{AC}, 50 Hz

DIELECTRIC STRENGTH BETWEEN LEADS
Component test:
1250 V_{AC}, 50 Hz, 2 s
As repeated test admissible only once with:
1080 V_{AC}, 50 Hz, 2 s
Random sampling test (destructive test):
1250 V_{AC}, 50 Hz, 60 s

DIELECTRIC STRENGTH OF BODY INSULATION
2300 V_{AC}, 50 Hz, 60 s (destructive test)

QUICK REFERENCE DATA

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>VALUE</th>
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</thead>
<tbody>
<tr>
<td>Ceramic Class</td>
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<tr>
<td>Ceramic Dielectric</td>
<td>Y5V</td>
</tr>
<tr>
<td>Z5U</td>
<td></td>
</tr>
<tr>
<td>Voltage (V_{AC})</td>
<td>400</td>
</tr>
<tr>
<td>400</td>
<td></td>
</tr>
<tr>
<td>Min. Capacitance (pF)</td>
<td>9000</td>
</tr>
<tr>
<td>Max. Capacitance (pF)</td>
<td>100 000</td>
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<tr>
<td>Mounting</td>
<td>Radial</td>
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</table>

INSULATION RESISTANCE
Min. 1000 ΩF

TOLERANCE ON CAPACITANCE
± 20 %

DISSIPATION FACTOR
2.0 % max. at 1 kHz; 1 V

CERAMIC DIELECTRIC
Y5V

CATEGORY TEMPERATURE RANGE
-25 °C to +125 °C

CLIMATIC CATEGORY ACC. TO EN 60068-1
25 / 125 / 21

OPERATING TEMPERATURE RANGE
-30 °C to +125 °C
DIMENSIONS in inches (millimeters)

ORDERING INFORMATION, CERAMIC X2 CAPACITORS 20VL

<table>
<thead>
<tr>
<th>C (μF)</th>
<th>TOL. (%)</th>
<th>D_{max} DIAMETER INCH (mm)</th>
<th>T_{max} THICKNESS INCH (mm)</th>
<th>WIRE SIZE</th>
<th>LS LEAD SPACE INCH (mm) ± 1 mm</th>
<th>LO LEAD OFFSET INCH (mm) ± 0.5 mm</th>
<th>ORDERING CODE</th>
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<tbody>
<tr>
<td>Y5V</td>
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<tr>
<td>0.009</td>
<td>± 20</td>
<td>0.530 (13.5)</td>
<td>0.150 (3.8)</td>
<td>0.055 (1.4)</td>
<td>20VLD90-R</td>
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</tr>
<tr>
<td>0.010</td>
<td>± 20</td>
<td>0.620 (15.7)</td>
<td>0.150 (3.8)</td>
<td>0.063 (1.6)</td>
<td>20VLS10-R</td>
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<tr>
<td>0.020</td>
<td>± 20</td>
<td>0.720 (18.3)</td>
<td>0.150 (3.8)</td>
<td>0.055 (1.4)</td>
<td>20VLS20-R</td>
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<td>0.100</td>
<td>± 20</td>
<td>0.950 (24.1)</td>
<td>0.230 (5.8)</td>
<td>0.067 (1.7)</td>
<td>20VLP10-R</td>
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<tr>
<td>Z5U</td>
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<tr>
<td>0.010</td>
<td>± 20</td>
<td>0.530 (13.5)</td>
<td>0.160 (4.1)</td>
<td>0.067 (1.7)</td>
<td>20VLSS10-R</td>
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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.

APPROVALS

IEC 60384-14 - Safety tests
This approval together with CB test certificate substitutes all national approvals.

CB Certificate
X2-capacitor: CB test certificate: DE1-63496
9 nF to 0.1 μF 400 V_{AC}

VDE
X2-capacitor: VDE marks approval:
DIN EN 60384-14 VDE 0565-1-1 - Safety tests
40003982
9 nF to 0.1 μF 400 V_{AC}

Underwriters Laboratories Inc.
X2-capacitor: UL test certificate:
UL 60384-14, CSA E60384-1, CSA E60384-14
E99264
9 nF to 0.1 μF 400 V_{AC}
### MARKING

**Sample**

![Sample Image]

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

### RELATED DOCUMENTS

<table>
<thead>
<tr>
<th>General Information</th>
<th><a href="http://www.vishay.com/doc?23140">www.vishay.com/doc?23140</a></th>
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<td><a href="http://www.vishay.com/doc?22246">www.vishay.com/doc?22246</a></td>
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<tr>
<td>UL Test Certificate</td>
<td><a href="http://www.vishay.com/doc?22245">www.vishay.com/doc?22245</a></td>
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