AC Line Rated Ceramic Disc Capacitors  
Class X1, 275 V<sub>AC</sub>

**MARKING**
Marking indicates series, AC rating, capacitance, tolerance code, and approvals.

**OPERATING TEMPERATURE RANGE**
-40 °C to +125 °C

**TEMPERATURE CHARACTERISTICS**
Class 2

**SECTIONAL SPECIFICATIONS**
Climatic category (according to EN 60058-1)
Class 2

**APPROVALS**
IEC 60384-14.3

**FEATURES**
- Complying with IEC 60384-14 3rd edition
- High reliability
- Wide range of different leadstyles
- Singlelayer AC disc safety capacitors
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

**APPLICATIONS**
- X1 according to IEC 60384-14.3
- EMI / RFI suppression

**DESIGN**
The capacitors consist of ceramic disc both sides of which are silver plated. Connection leads are made of tinned copper having diameters of 0.6 mm.

The capacitors may be supplied with straight or kinked leads having a lead spacing of 7.5 mm.

Coating is made of blue colored flame retardant epoxy resin in accordance with UL 94 V-0.

**CAPACITANCE RANGE**
4.7 nF to 22 nF

**TOLERANCE ON CAPACITANCE**
± 20 %

**RATED VOLTAGE**
X1: 275 V<sub>AC</sub>, 50 Hz (IEC 60384-14.3)  
275 V<sub>AC</sub>, 50 Hz/60 Hz (US/UL/CSA 60384-14)

**TEST VOLTAGE**
- 4000 V<sub>DC</sub>, 2 s Component test (100 %)
- 3500 V<sub>DC</sub>, 60 s Random sampling test (destructive)
- 2000 V<sub>AC</sub>, 50 Hz, 60 s Voltage proof of coating (destructive)

**INSULATION RESISTANCE AT 500 V<sub>DC</sub>**
≥ 6000 MΩ (60 s)

**DISSIPATION FACTOR**
Class 2: max. 2.5 % (1 kHz)

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**QUICK REFERENCE DATA**

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ceramic Class</td>
<td>2</td>
</tr>
<tr>
<td>Ceramic Dielectric</td>
<td>Y5V</td>
</tr>
<tr>
<td>Voltage (V&lt;sub&gt;AC&lt;/sub&gt;)</td>
<td>275</td>
</tr>
<tr>
<td>Min. Capacitance (pF)</td>
<td>4700</td>
</tr>
<tr>
<td>Max. Capacitance (pF)</td>
<td>22 000</td>
</tr>
<tr>
<td>Mounting</td>
<td>Radial</td>
</tr>
</tbody>
</table>

For technical questions, contact: slcap@vishay.com

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**W1X Series**

**Vishay Draloric**

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**DIMENSIONS** in millimeters

![Dimensions Diagram]

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**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>CAPACITANCE C (pF)</th>
<th>CAPACITANCE TOLERANCE</th>
<th>BODY DIAMETER DMAX (mm)</th>
<th>BODY THICKNESS SMAX (mm)</th>
<th>LEAD SPACING (1) F (mm)</th>
<th>LEAD DIAMETER (1) d (mm)</th>
<th>WIDTH (1) V (mm)</th>
<th>PART NUMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y5V (2F3)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>4700</td>
<td>± 20 %</td>
<td>11.0</td>
<td></td>
<td>3.0</td>
<td>7.5</td>
<td>0.6</td>
<td>W1X472#CV###KR</td>
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<tr>
<td>6800</td>
<td>± 20 %</td>
<td>11.0</td>
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<td>3.0</td>
<td>7.5</td>
<td>0.6</td>
<td>W1X682#CV###KR</td>
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<tr>
<td>10 000</td>
<td>± 20 %</td>
<td>15.0</td>
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<td>15.0</td>
<td>15.0</td>
<td>1.4</td>
<td>W1X103#CV###KR</td>
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<tr>
<td>15 000</td>
<td>-20 %/+50 %</td>
<td>17.0</td>
<td></td>
<td>17.0</td>
<td>17.0</td>
<td>1.6</td>
<td>W1X153#CV###KR</td>
</tr>
<tr>
<td>22 000</td>
<td>-20 %/+50 %</td>
<td>20.0</td>
<td></td>
<td>20.0</td>
<td>20.0</td>
<td></td>
<td>W1X223#CV###KR</td>
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</tbody>
</table>

**Note**

(1) Standard lead configuration, other lead spacing and diameter available on request

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**ORDERING CODE**

<table>
<thead>
<tr>
<th>#</th>
<th>7th digit</th>
<th>Capacitance tolerance</th>
<th>± 10 % = K, ± 20 % = M</th>
</tr>
</thead>
<tbody>
<tr>
<td>###</td>
<td>10th to 12th digit</td>
<td>Lead configuration</td>
<td>see “General Information”</td>
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</tbody>
</table>

**Example**

W1X 223 M CV CRU K R

<table>
<thead>
<tr>
<th>Series</th>
<th>Capacitance value</th>
<th>Tolerance code</th>
<th>Voltage code</th>
<th>Lead configuration</th>
<th>Internal code</th>
<th>RoHS compliant</th>
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</thead>
<tbody>
<tr>
<td>W1X</td>
<td>223</td>
<td>M</td>
<td>CV</td>
<td>CRU</td>
<td>K</td>
<td>R</td>
</tr>
</tbody>
</table>

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**MARKING**

![Marking Diagram]
APPROVALS

IEC 60384-14.3 - Safety tests
This approval together with CB test certificate substitutes all national approvals.

CB Certificate
X1-capacitor: CB test certificate: DE 1-11148-A1 4.7 nF to 22 nF 275 VAC
Minimum thickness of insulation: 0.4 mm

VDE
X1-capacitor: VDE marks approval: 137890 4.7 nF to 22 nF 275 VAC
DIN EN 60384-14 VDE 0565-1-1:2006-04 - Safety tests
Minimum thickness of insulation: 0.4 mm

LEAKAGE CURRENT VS. VOLTAGE (typical)

IMPEDANCE VS. FREQUENCY (typical)

RELATED DOCUMENTS

<table>
<thead>
<tr>
<th>Document</th>
<th>Link</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Information</td>
<td><a href="http://www.vishay.com/doc?22001">www.vishay.com/doc?22001</a></td>
</tr>
<tr>
<td>CB Test Certificate</td>
<td><a href="http://www.vishay.com/doc?22223">www.vishay.com/doc?22223</a></td>
</tr>
<tr>
<td>VDE Marks Approval</td>
<td><a href="http://www.vishay.com/doc?22224">www.vishay.com/doc?22224</a></td>
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</tbody>
</table>
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