

## AC Line Rated Disc Capacitors

### Class X1, 400 V<sub>AC</sub>/Class Y2, 300 V<sub>AC</sub>/250 V<sub>AC</sub>



| QUICK REFERENCE DATA       |        |     |     |        |     |     |
|----------------------------|--------|-----|-----|--------|-----|-----|
| DESCRIPTION                | VALUE  |     |     |        |     |     |
| Ceramic Class              | 2      |     |     |        |     |     |
| Ceramic Dielectric         | Y5U    | Y5U | Y5U | Y5V    | Y5V | Y5V |
| Voltage (V <sub>AC</sub> ) | 250    | 300 | 400 | 250    | 300 | 400 |
| Min. Capacitance (pF)      | 1000   |     |     | 4700   |     |     |
| Max. Capacitance (pF)      | 10 000 |     |     | 10 000 |     |     |
| Mounting                   | Radial |     |     |        |     |     |

#### INSULATION RESISTANCE

Min. 1000 ΩF

#### TOLERANCE ON CAPACITANCE

± 20 %

#### DISSIPATION FACTOR

2.0 % max. at 1 kHz; 1 V

#### CERAMIC DIELECTRIC

Y5U, Y5V (Class 2)

#### CLIMATIC CATEGORY ACC. TO EN 60068-1

25/125/21

#### OPERATING TEMPERATURE RANGE

- 30 °C to + 125 °C

#### FEATURES

- Complying with IEC 60384-14 3<sup>rd</sup> edition
- High reliability
- Complete range of capacitance values
- Radial leads
- Singlelayer AC Disc capacitors
- Material categorization: For definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



**RoHS**  
COMPLIANT

#### APPLICATIONS

- X1/Y2 according to IEC 60384-14.3
- Across-the-line
- Line by-pass
- Antenna coupling

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

#### CAPACITANCE RANGE

1.0 nF to 0.01 μF

#### RATED VOLTAGE

IEC 60384-14.3:

- X1: 400 V<sub>AC</sub>, 50 Hz
- Y2: 300 V<sub>AC</sub>, 50 Hz (LS ≥ 5.5 mm)
- Y2: 250 V<sub>AC</sub>, 50 Hz (LS < 5.5 mm)

#### DIELECTRIC STRENGTH BETWEEN LEADS

Component test:

2500 V<sub>AC</sub>, 50 Hz, 2 s

As repeated test admissible only once with:

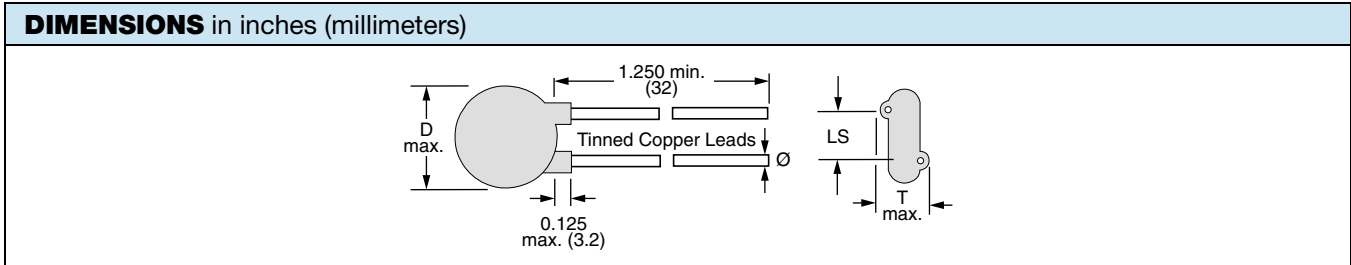
2250 V<sub>AC</sub>, 50 Hz, 2 s

Random sampling test (destructive test):

2500 V<sub>AC</sub>, 50 Hz, 60 s

#### DIELECTRIC STRENGTH OF BODY INSULATION

2300 V<sub>AC</sub>, 50 Hz, 60 s (destructive test)



| ORDERING INFORMATION, CERAMIC X1/Y2 CAPACITORS 30LVS |          |                              |                               |           |              |                         |               |              |             |            |
|--|----------|------------------------------|-------------------------------|-----------|--------------|-------------------------|---------------|--------------|-------------|------------|
| 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)    |                         |               |              |             |            |
| <b>Y5U</b>   |          |                              |                               |           |              |                         |               |              |             |            |
| 1000   | ± 20     | 0.330 (8.4)                  | 0.195 (5.0)                   | 22        | 0.025 (0.64) | 0.250 (6.4)             | 30LVSD10-R    |              |             |            |
| 1500   |          | 0.330 (8.4)                  | 0.185 (4.7)                   |           |              |                         | 30LVSD15-R    |              |             |            |
| 2000   |          | 0.330 (8.4)                  | 0.180 (4.6)                   |           |              |                         | 30LVSD20-R    |              |             |            |
| 2200   |          | 0.330 (8.4)                  | 0.170 (4.3)                   |           |              |                         | 30LVSD22-R    |              |             |            |
| 2700   |          | 0.365 (9.3)                  | 0.180 (4.6)                   |           |              |                         | 30LVSD27-R    |              |             |            |
| 2800   |          | 0.365 (9.3)                  | 0.175 (4.4)                   |           |              |                         | 30LVSD28-R    |              |             |            |
| 3000   |          | 0.400 (10.2)                 | 0.180 (4.6)                   |           |              |                         | 30LVSD30-R    |              |             |            |
| 3200   |          | 0.400 (10.2)                 | 0.180 (4.6)                   |           |              |                         | 30LVSD32-R    |              |             |            |
| 3300   |          | 0.400 (10.2)                 | 0.175 (4.4)                   |           |              |                         | 30LVSD33-R    |              |             |            |
| 3900   |          | 0.460 (11.7)                 | 0.185 (4.7)                   |           |              |                         | 30LVSD39-R    |              |             |            |
| 4000   |          | 0.490 (12.4)                 | 0.190 (4.8)                   |           |              |                         | 30LVSD40-R    |              |             |            |
| 4700   |          | 0.490 (12.4)                 | 0.185 (4.7)                   |           |              |                         | 30LVSD47-R    |              |             |            |
| 5000   |          | 0.530 (13.5)                 | 0.190 (4.8)                   |           |              |                         | 30LVSD50-R    |              |             |            |
| 5500   |          | 0.530 (13.5)                 | 0.180 (4.6)                   |           |              |                         | 30LVSD55-R    |              |             |            |
| 6800   |          | 0.620 (15.7)                 | 0.200 (5.1)                   |           |              |                         | 20            | 0.032 (0.81) | 0.375 (9.5) | 30LVSD68-R |
| 0.010 $\mu$ F  |          | 0.720 (18.3)                 | 0.200 (5.1)                   |           |              |                         |               |              |             | 30LVSS10-R |
| <b>Y5V</b>   |          |                              |                               |           |              |                         |               |              |             |            |
| 4700   | ± 20     | 0.430 (10.9)                 | 0.185 (4.7)                   | 22        | 0.025 (0.64) | 0.250 (6.4)             | 30LVSD47-R    |              |             |            |
| 0.010 $\mu$ F  | ± 20     | 0.620 (15.7)                 | 0.200 (5.1)                   | 20        | 0.032 (0.81) | 0.375 (9.5)             | 30LVSVS10-R   |              |             |            |

**Notes**

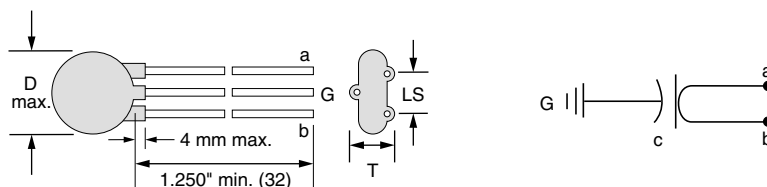
- Alternate lead spacings of 7.5 mm and 10 mm are available bulk or tape and reel on request.
- Minimum lead clearance according to IEC 60384-14: 0.118" (3 mm)

**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.

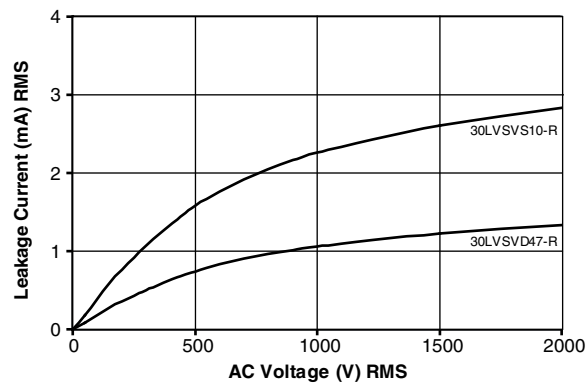
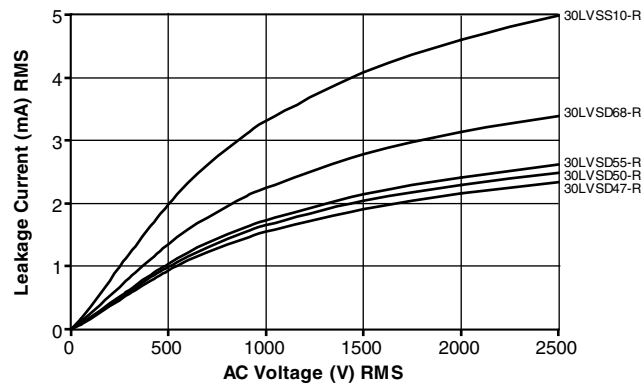
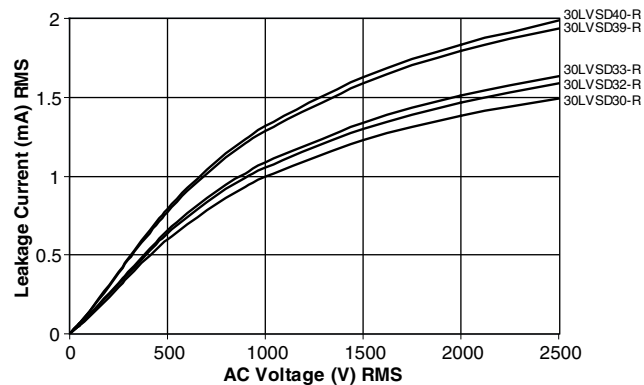
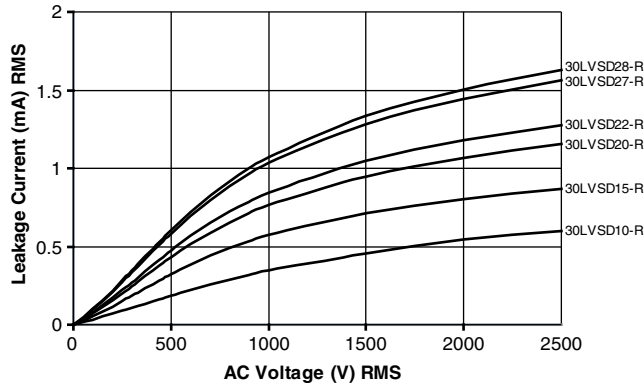
**OPTIONAL 3-LEADED STYLE**

An optional 3-leaded construction is available. It consists of a single capacitor with the two outside leads attached to one electrode, and the center lead attached to the electrode. Used in feed-thru or line-to-ground applications, it allows a short ground lead for enhanced high frequency performance.

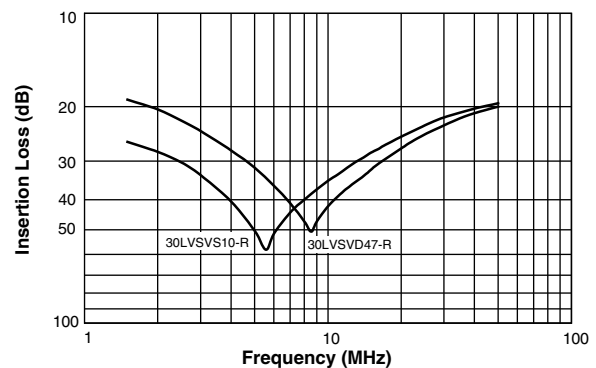
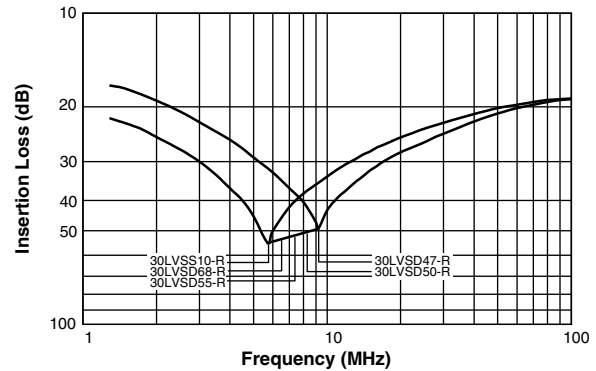
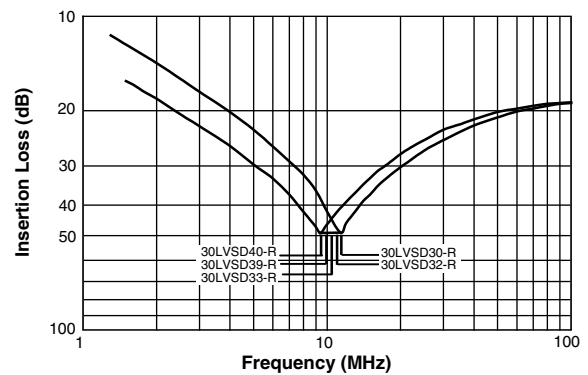
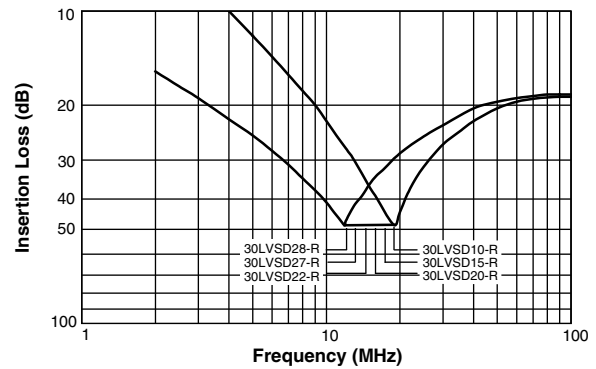




### LEAKAGE CURRENT VS. VOLTAGE (Typical)



### INSERTION LOSS VS. FREQUENCY (Typical)





| APPROVALS  |              |               |                                    |  |
|--|--------------|---------------|------------------------------------|--|
| IEC 60384-14.3 - Safety tests<br>This approval together with CB test certificate substitutes all national approvals. |              |               |                                    |  |
| <b>CB Certificate</b>  |              |               |                                    |  |
| Y2-capacitor: CB test certificate:   | CA/14038/CSA | 1 nF to 10 nF | 300 V <sub>AC</sub> <sup>(1)</sup> |  |
| Y2-capacitor: CB test certificate:   | CA/14038/CSA | 1 nF to 10 nF | 250 V <sub>AC</sub> <sup>(1)</sup> |  |
| X1-capacitor: CB test certificate:   | CA/14038/CSA | 1 nF to 10 nF | 400 V <sub>AC</sub>                |  |
| <b>VDE</b>   |              |               |                                    |  |
| Y2-capacitor: VDE marks approval:  | 40003969     | 1 nF to 10 nF | 250 V <sub>AC</sub>                |  |
| X1-capacitor: VDE marks approval:  | 40003969     | 1 nF to 10 nF | 400 V <sub>AC</sub>                |  |
| DIN EN 60384-14 VDE 0565-1-1:2006-04 - Safety tests  |              |               |                                    |  |
| <b>Underwriters Laboratories Inc.</b>  |              |               |                                    |  |
| Y2-capacitor: UL test certificate:   | E99264       | 1 nF to 10 nF | 300 V <sub>AC</sub> <sup>(1)</sup> |  |
| Y2-capacitor: UL test certificate:   | E99264       | 1 nF to 10 nF | 250 V <sub>AC</sub> <sup>(1)</sup> |  |
| X1-capacitor: UL test certificate:   | E99264       | 1 nF to 10 nF | 400 V <sub>AC</sub>                |  |
| UL 60384-14, CSA E60384-1:03, CSA E60384-14:09   |              |               |                                    |  |
| Fixed capacitors for electromagnetic interference suppression and connection to the supply mains.                    |              |               |                                    |  |

**Note**

<sup>(1)</sup> LS ≥ 5.5 mm: 300 V<sub>AC</sub>; LS < 5.5 mm: 250 V<sub>AC</sub>

| MARKING       |  |
|---------------|--|
| <p>Sample</p> | <p><b>VISHAY</b></p> <p>Type: 019C085B251RR332MLA637-R</p> <p>CM PN: 30LVSD33KA-R E3</p> <p>Qty. : 1500      LOT1: 11642586      DC1: 0622</p> <p>IEC 60384-14 / 2:      LOT2:      DC2:</p> <p>Y2 (250~), X1 (400~)      R.C.: 7032 S.L.: 0010      Op.No.: 771</p> <p>BATCH NO.: 200622GZ      </p> <p>PN: 30LVSD33KA-R      PO: 0011642586/0001      </p> <p style="writing-mode: vertical-rl; transform: rotate(180deg);">SN: 290B1A6DA001</p> |

| RELATED DOCUMENTS   |  |
|---------------------|--|
| General Information | <a href="http://www.vishay.com/doc?23140">www.vishay.com/doc?23140</a> |
| CB Test Certificate | <a href="http://www.vishay.com/doc?22231">www.vishay.com/doc?22231</a> |
| VDE Marks Approval  | <a href="http://www.vishay.com/doc?22232">www.vishay.com/doc?22232</a> |
| UL Test Certificate | <a href="http://www.vishay.com/doc?22233">www.vishay.com/doc?22233</a> |



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