

## AC Line Rated Disc Capacitors Class X1, 400 VAC/Class Y2, 300 VAC



LO' = 0.132" (3.4 mm) typ.

### INSULATION RESISTANCE

Min. 1000 ΩF

### TOLERANCE ON CAPACITANCE

± 10 %; ± 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

### CLIMATIC CATEGORY ACC. TO EN60068-1

25/125/21

### OPERATING TEMPERATURE RANGE

- 30 °C to + 125 °C

### FEATURES

- Worldwide safety agency recognition  
Underwriters laboratories - UL1414 and UL1283  
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) 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

10 pF to 0.015 μF

### RATED VOLTAGE

|                 |                      |
|-----------------|----------------------|
| IEC 60384-14.2: | (Y2): 300 VAC, 50 Hz |
| IEC 60384-14.2: | (X1): 400 VAC, 50 Hz |
| UL 1414:        | 250 VAC, 60 Hz       |
| UL 1283:        | 250 VAC, 60 Hz       |
| CSA 22.2 No.1:  | 250 VAC, 60 Hz       |
| CSA 22.2 No.8:  | 400 VAC, 60 Hz       |

### DIELECTRIC STRENGTH BETWEEN LEADS

Component test:

2500 VAC, 50 Hz, 2 s

As repeated test admissible only once with:

2250 VAC, 50 Hz, 2 s

Random sampling test (destructive test):

2500 VAC, 50 Hz, 60 s

### DIELECTRIC STRENGTH OF BODY INSULATION

2300 VAC, 50 Hz, 60 s (destructive test)

# 30LV Series

Vishay Cera-Mite

AC Line Rated Disc Capacitors  
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| ORDERING INFORMATION, CERAMIC X1/Y2 CAPACITORS 30LV |              |                            |                             |           |              |                               |                  |
|---|--------------|----------------------------|-----------------------------|-----------|--------------|-------------------------------|------------------|
| C<br>(pF)   | TOL.<br>(%)  | D<br>DIAMETER<br>INCH (mm) | T<br>THICKNESS<br>INCH (mm) | WIRE SIZE |              | LS<br>LEAD SPACE<br>INCH (mm) | ORDERING<br>CODE |
|   |              |                            |                             | AWG       | INCH (mm)    |                               |                  |
| <b>C0G</b>  |              |                            |                             |           |              |                               |                  |
| 10  | ± 10 %       | 0.330 (8.4)                | 0.185 (4.7)                 | 22        | 0.025 (0.64) | 0.250 (6.4)                   | 30LVQ10-R        |
| <b>U2J</b>  |              |                            |                             |           |              |                               |                  |
| 15  | ± 10 %       | 0.330 (8.4)                | 0.200 (5.1)                 | 22        | 0.025 (0.64) | 0.250 (6.4)                   | 30LVQ15-R        |
| <b>P3K</b>  |              |                            |                             |           |              |                               |                  |
| 22  | ± 10 %       | 0.330 (8.4)                | 0.180 (4.6)                 | 22        | 0.025 (0.64) | 0.250 (6.4)                   | 30LVQ22-R        |
| <b>R3L</b>  |              |                            |                             |           |              |                               |                  |
| 33  | ± 10 %       | 0.330 (8.4)                | 0.190 (4.8)                 | 22        | 0.025 (0.64) | 0.250 (6.4)                   | 30LVQ33-R        |
| 47  | ± 10 %       | 0.330 (8.4)                | 0.170 (4.3)                 | 22        | 0.025 (0.64) | 0.250 (6.4)                   | 30LVQ47-R        |
| <b>S3L</b>  |              |                            |                             |           |              |                               |                  |
| 68  | ± 10 %       | 0.330 (8.4)                | 0.175 (4.4)                 | 22        | 0.025 (0.64) | 0.250 (6.4)                   | 30LVQ68-R        |
| <b>X7R</b>  |              |                            |                             |           |              |                               |                  |
| 100   | ± 10 %       | 0.330 (8.4)                | 0.180 (4.6)                 | 22        | 0.025 (0.64) | 0.250 (6.4)                   | 30LVT10-R        |
| 150   |              | 0.330 (8.4)                | 0.180 (4.6)                 |           |              |                               | 30LVT15-R        |
| 220   |              | 0.330 (8.4)                | 0.195 (5.0)                 |           |              |                               | 30LVT22-R        |
| 330   |              | 0.330 (8.4)                | 0.195 (5.0)                 |           |              |                               | 30LVT33-R        |
| 470   |              | 0.330 (8.4)                | 0.180 (4.6)                 |           |              |                               | 30LVT47-R        |
| 560   |              | 0.330 (8.4)                | 0.200 (5.1)                 |           |              |                               | 30LVT56-R        |
| 680   |              | 0.330 (8.4)                | 0.180 (4.6)                 |           |              |                               | 30LVT68-R        |
| 1000  |              | 0.365 (9.3)                | 0.185 (4.7)                 |           |              |                               | 30LVT10-R        |
| 1500  |              | 0.460 (11.7)               | 0.180 (4.6)                 |           |              |                               | 30LVT15-R        |
| <b>Y5U</b>  |              |                            |                             |           |              |                               |                  |
| 680   | ± 20 %       | 0.330 (8.4)                | 0.220 (5.6)                 | 22        | 0.025 (0.64) | 0.250 (6.4)                   | 30LVT68-R        |
| 1000  |              | 0.330 (8.4)                | 0.215 (5.5)                 |           |              |                               | 30LVD10-R        |
| 1500  |              | 0.330 (8.4)                | 0.195 (5.0)                 |           |              |                               | 30LVD15-R        |
| 2000  |              | 0.400 (10.2)               | 0.210 (5.3)                 |           |              |                               | 30LVD20-R        |
| 2200  |              | 0.400 (10.2)               | 0.200 (5.1)                 |           |              |                               | 30LVD22-R        |
| 2700  |              | 0.430 (10.9)               | 0.200 (5.1)                 |           |              |                               | 30LVD27-R        |
| 2800  |              | 0.430 (10.9)               | 0.200 (5.1)                 |           |              |                               | 30LVD28-R        |
| 3000  |              | 0.460 (11.7)               | 0.205 (5.2)                 |           |              |                               | 30LVD30-R        |
| 3200  |              | 0.460 (11.7)               | 0.200 (5.1)                 |           |              |                               | 30LVD32-R        |
| 3300  |              | 0.460 (11.7)               | 0.195 (5.0)                 |           |              |                               | 30LVD33-R        |
| 3900  |              | 0.490 (12.4)               | 0.200 (5.1)                 | 30LVD39-R |              |                               |                  |
| 4000  |              | 0.530 (13.5)               | 0.210 (5.3)                 | 30LVD40-R |              |                               |                  |
| 4700  |              | 0.620 (15.7)               | 0.220 (5.6)                 | 30LVD47-R |              |                               |                  |
| 5000  |              | 0.620 (15.7)               | 0.215 (5.5)                 | 30LVD50-R |              |                               |                  |
| 5500  |              | 0.560 (14.2)               | 0.195 (5.0)                 | 30LVD55-R |              |                               |                  |
| 5600  |              | 0.560 (14.2)               | 0.195 (5.0)                 | 30LVD56-R |              |                               |                  |
| 6800  |              | 0.680 (17.3)               | 0.205 (5.2)                 | 30LVD68-R |              |                               |                  |
| 8000  |              | 0.680 (17.3)               | 0.195 (5.0)                 | 30LVD80-R |              |                               |                  |
| 9000  |              | 0.720 (18.3)               | 0.200 (5.1)                 | 30LVD90-R |              |                               |                  |
| 0.010 µF  |              | 0.790 (20.1)               | 0.190 (4.8)                 | 30LVS10-R |              |                               |                  |
| 0.015 µF  | 0.900 (22.9) | 0.200 (5.1)                | 30LVS15-R                   |           |              |                               |                  |

**Notes**

1. Alternate lead spacings of 7.5 mm and 10 mm are available bulk or tape and reel on request.
2. European required minimum lead clearance (prevents use of inside crimp) 0.118" (3 mm)
3. Type 30 LVS15 not available with UL 1414 recognition.

**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)

**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)



# 30LV Series

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| APPROVALS  |  |             |                   |           |                     |                |
|--|--|-------------|-------------------|-----------|---------------------|----------------|
| IEC 60384 - 14/2 <sup>nd</sup> Issue (1993) incl. Am.1 (1995) - Safety Tests<br>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              |                |
| Y2 Capacitor: CB-Test Certificate:   | DE 1-19455   |             | 10 pF... 0.015 µF |           | 300 V <sub>AC</sub> |                |
| X1 Capacitor: CB-Test Certificate:   | DE 1-19455   |             | 10 pF... 0.015 µF |           | 400 V <sub>AC</sub> |                |
| UNDERWRITERS LABORATORIES INC.   |  |             |                   |           |                     |                |
| <b>UL 1414</b>   | Across-the-line, Antenna-coupling and Line-by-pass component |             | 10 pF... 0.010 µF |           | 250 V <sub>AC</sub> |                |
|  | Agency File/License  | E99264 V2S2 |                   |           |                     |                |
| <b>UL 1283</b>   | EMI Filters  |             | 10 pF... 0.015 µF |           | 250 V <sub>AC</sub> |                |
|  | Agency File/License  | E99264 V2S2 |                   |           |                     |                |
| CANADIAN STANDARDS ASSOCIATION   |  |             |                   |           |                     |                |
| <b>CSA C22.2</b>   | Across-the-line, Isolation capacitor                         |             | 10 pF... 0.015 µF |           | 250 V <sub>AC</sub> |                |
| <b>No. 1</b>   | Agency File/License  | LR 62016-12 |                   |           |                     |                |
| <b>No. 8</b>   | Line-to-ground capacitor                                     |             | 10 pF... 0.015 µF |           | 400 V <sub>AC</sub> |                |
|  | Agency File/License  | LR 62016-12 |                   |           |                     |                |

### Note 1

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

### 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 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>Type: 040C024A251BY331KLA660-R<br/>           CH PN: 30LVT33-R E3<br/>           Qty. : 250<br/>           IEC60384-14/2:<br/>           Y2(300~), X1(400~)<br/>           R.C.: 7032 S.L.: 0010<br/>           BATCH NO.: 200622CZ<br/>           PN: 30LVT33-R<br/>           LOT1: 11636835<br/>           LOT2:<br/>           R.C.: 7032 S.L.: 0010<br/>           BATCH NO.: 200622CZ<br/>           P0: 0011636835/0001</p> <p>DC1: 0622<br/>           DC2:<br/>           Op.No.: 771</p> <p>RoHS</p> <p style="writing-mode: vertical-rl; transform: rotate(180deg);">SN: 290B19063023</p> |



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