

## AC Line Rated Disc Capacitors Class X1, 400 VAC/Class Y2, 250 VAC



LO' = 0.125" (3.2 mm) typ.

### 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)

### 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 - UL 1414 and UL 1283  
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

1.0 nF to 0.01 μF

### RATED VOLTAGE

|                 |                      |
|-----------------|----------------------|
| IEC 60384-14.2: | (Y2): 250 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)

| ORDERING INFORMATION, CERAMIC X1/Y2 CAPACITORS 30LVS |             |                            |                             |           |              |                               |                  |              |             |            |
|------------------------------------------------------|-------------|----------------------------|-----------------------------|-----------|--------------|-------------------------------|------------------|--------------|-------------|------------|
| 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>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)                | 0.175 (4.4)                 |           |              |                               | 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)                | 0.180 (4.6)                 |           |              |                               | 30LVSD28-R       |              |             |            |
| 3000                                                 |             | 0.400 (10.2)               | 0.180 (4.6)                 |           |              |                               | 30LVSD30-R       |              |             |            |
| 3200                                                 |             | 0.400 (10.2)               | 0.175 (4.4)                 |           |              |                               | 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)               | 0.185 (4.7)                 |           |              |                               | 30LVSD40-R       |              |             |            |
| 4700                                                 |             | 0.490 (12.4)               | 0.180 (4.6)                 |           |              |                               | 30LVSD47-R       |              |             |            |
| 5000                                                 |             | 0.530 (13.5)               | 0.180 (4.6)                 |           |              |                               | 30LVSD50-R       |              |             |            |
| 5500                                                 |             | 0.530 (13.5)               | 0.185 (4.7)                 |           |              |                               | 30LVSD55-R       |              |             |            |
| 6800                                                 |             | 0.620 (15.7)               | 0.200 (5.1)                 |           |              |                               | 20               | 0.032 (0.81) | 0.375 (9.5) | 30LVSD68-R |
| 0.010 μF                                             |             | 0.720 (18.3)               | 0.200 (5.1)                 |           |              |                               | 20               | 0.032 (0.81) | 0.375 (9.5) | 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 μF                                             | ± 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.
- 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)

**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 - 14/2 <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              |                     |
| X1 Capacitor: CB-Test Certificate:                                                                             | DE 1-19445                                        |             | 1000 pF... 0.010 μF |                     | 400 V <sub>AC</sub> |                     |
| Y2 Capacitor: CB-Test Certificate:                                                                             | DE 1-19445                                        |             | 1000 pF... 0.010 μF |                     | 250 V <sub>AC</sub> |                     |
| UNDERWRITERS LABORATORIES INC.                                                                                 |                                                   |             |                     |                     |                     |                     |
| <b>UL 1414</b>                                                                                                 | Line-by-pass component<br>Agency File/License     | E99264 V2S3 |                     | 1000 pF... 0.010 μF |                     | 250 V <sub>AC</sub> |
| <b>UL 1283</b>                                                                                                 | EMI Filters<br>Agency File/License                | E99264 V1S1 |                     | 1000 pF... 0.010 μF |                     | 250 V <sub>AC</sub> |
| CANADIAN STANDARDS ASSOCIATION                                                                                 |                                                   |             |                     |                     |                     |                     |
| <b>CSA C22.2 No. 1</b>                                                                                         | Isolation component<br>Agency File/License        | LR 62016-12 |                     | 1000 pF... 0.010 μF |                     | 250 V <sub>AC</sub> |
| <b>CSA C22.2 No. 8</b>                                                                                         | Line-to-ground, EMI filter<br>Agency File/License | LR 62016-3  |                     | 1000 pF... 0.010 μF |                     | 400 V <sub>AC</sub> |

**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 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> <div style="text-align: center;"> </div> | <div style="text-align: right;"> </div> <div style="text-align: center;"> </div> <p>Type: 019C085B251RR332MLA637 - R<br/>         CM PN: 30LVSD33KA - R E3<br/>         Qty. : 1500      LOT1: 11642586      DC1: 0622<br/>         IEC60384 - 14 / 2:      LOT2:      DC2:<br/>         Y2 (250~), X1 (400~)      R.C.: 7032 S.L.: 0010      Op.No.: 771<br/>  LR62016      BATCH NO.: 200622CZ            SN: 290B1AGDA001<br/>         PN: 30LVSD33KA - R      PO: 0011642586/0001      </p> |



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