

# Type 160 Metallized Polyester Radial Lead Capacitors

## Radial Box Metallized Polyester Capacitors



The Type 160 series radial lead metallized polyester box capacitors are constructed in rugged rectangular plastic cases with lead spacings that are standard in the electronics industry. All Type 160 capacitors are available in bulk with a .217" ±.039" lead length, and they are good for general purpose applications such as bypass, decoupling, energy storage/discharge and arc suppression.

### Highlights

- RoHS compliant
- Rugged plastic case
- Case and epoxy fill meets UL94V0
- 10 mm through 27.5 mm lead spacings
- Non-inductively wound
- Non-polar
- Wire lead material, tinned copper clad steel

## Specifications

|                                      |  |
|--------------------------------------|--|
| <b>Capacitance Range:</b>            | 0.0022 $\mu$ F to 10.0 $\mu$ F   |
| <b>Voltage Range:</b>                | 63 Vdc to 1000 Vdc   |
| <b>Capacitance Tolerance:</b>        | $\pm$ 5%, $\pm$ 10%, $\pm$ 20%   |
| <b>Operating Temperature Range:</b>  | -55 $^{\circ}$ C to +105 $^{\circ}$ C (derating voltage to 1.25% per $^{\circ}$ C above 85 $^{\circ}$ C) |
| <b>Dielectric Withstand Voltage:</b> | 1.6 x rated voltage for 2 sec @ +25 $^{\circ}$ C $\pm$ 5 $^{\circ}$ C                                    |
| <b>Dissipation Factor (DF):</b>      | $\tan\delta \times 10^{-4}$ at 25 $^{\circ}$ C $\pm$ 5 $^{\circ}$ C                                      |

| kHz | C $\leq$ 1 $\mu$ F | C > 1 $\mu$ F |
|-----|--------------------|---------------|
| 1   | $\leq$ 100         | $\leq$ 100    |
| 10  | $\geq$ 150         |               |

### Total Self Inductance (L):

| Pitch (mm)       | 10 | 15 | 22.5 | 27.5 |
|------------------|----|----|------|------|
| L (nH) $\approx$ | 9  | 10 | 18   | 18   |

**Long Term Stability (after two years):** Capacitance change  $\Delta C/C \leq \pm 3\%$  under standard environmental conditions

**Corona (Partial Discharge Inception Voltage):**  
200 Vac for 100 Vdc, 200 Vdc  
250 Vac for 400 Vdc, 630 Vdc  
300 Vac for 1000 Vdc

### Maximum Pulse Rise Time (dv/dt):

| Vn      | Pitch (mm) |     |      |      |
|---------|------------|-----|------|------|
|         | 10         | 15  | 22.5 | 27.5 |
| 63      | 3          | 1.5 | 1    | 1    |
| 100/160 | 6/8        | 3   | 2    | 1    |
| 250     | 11         | 7   | 4    | 3    |
| 400     | 20         | 10  | 5.5  | 5    |
| 630     | 30         | 15  | 8    | 7    |
| 1000    | 60         | 25  | 15   | 10   |

If the working voltage (V) is less than the nominal voltage (Vn), the capacitor can work at higher dv/dt. In this case, the maximum value allowed is obtained by multiplying the above value with the ratio Vn/V.



Complies with the EU Directive 2002/95/EC requirement restricting the use of Lead (Pb), Mercury (Hg), Cadmium (Cd), Hexavalent chromium (Cr(VI)), PolyBrominated Biphenyls (PBB) and PolyBrominated Diphenyl Ethers (PBDE).

# Type 160 Metallized Polyester Radial Lead Capacitors

## Capacitor Outline Drawing

## Test Method and Performance



**Note:** The lead diameter is a maximum dimension for lead spacing  $\leq 15$  mm and a nominal for lead spacing  $> 15$  mm

| Insulation Resistance              |  |
|------------------------------------|--|
| <b>Test Conditions</b>             |  |
| Temperature                        | 25 °C $\pm 5$ °C   |
| Voltage Charge Time                | 1 minute   |
| Voltage Charge                     | 50 Vdc for $V_n < 100$ Vdc<br>100 Vdc for $V_n \geq 100$ Vdc   |
| <b>Performance</b>                 |  |
| For $V_n > 100$ Vdc                | $\geq 30,000$ M $\Omega$ for $\leq 0.33\mu\text{F}$<br>$\geq 10,000$ M $\Omega \times \mu\text{F}$ for $C > 0.33\mu\text{F}$   |
| For $V_n \leq 100$ Vdc             | $\geq 10,000$ M $\Omega$ for $C \leq 0.1\mu\text{F}$<br>$\geq 1,000$ M $\Omega \times \mu\text{F}$ for $\leq 0.1\mu\text{F}$   |
| Damp Heat Test                     |  |
| <b>Test Conditions</b>             |  |
| Temperature                        | +40 °C   |
| Relative Humidity                  | 95%  |
| Test Duration                      | 21 days  |
| <b>Performance</b>                 |  |
| Capacitance Change $\Delta C/C$    | $\leq \pm 5\%$   |
| DF Change $\Delta \text{tg}\delta$ | $\leq 50 \times 10^{-4}$ at 1 kHz  |
| Insulation Resistance              | $\geq 50\%$ of limit value   |
| Life Test                          |  |
| <b>Test Conditions</b>             |  |
| Temperature                        | +85 °C   |
| Test Duration                      | 1000 hrs   |
| Voltage Applied                    | 1.25 x $V_n$   |
| <b>Performance</b>                 |  |
| Capacitance Change $\Delta C/C$    | $\leq \pm 5\%$   |
| DF Change $\Delta \text{tg}\delta$ | $\leq 30 \times 10^{-4}$ at 10 kHz for $C \leq 1.0 \mu\text{F}$<br>$\leq 20 \times 10^{-4}$ at 1 kHz for $C > 1.0 \mu\text{F}$ |
| Insulation Resistance              | $\geq 50\%$ of limit value   |

| Soldering                          |  |
|------------------------------------|--|
| <b>Test Conditions</b>             |  |
| Soldering Temperature              | 260 °C $\pm 5$ °C  |
| Soldering Duration                 | 10 sec $\pm 1$ sec   |
| <b>Performance</b>                 |  |
| Capacitance Change $\Delta C/C$    | $\leq \pm 2\%$   |
| DF Change $\Delta \text{tg}\delta$ | $\leq 30 \times 10^{-4}$ at 10 kHz for $C \leq 1.0 \mu\text{F}$<br>$\leq 20 \times 10^{-4}$ at 1 kHz for $C > 1.0 \mu\text{F}$ |

## Ratings

## RoHS Compliant

| Cap<br>( $\mu\text{F}$ ) | Catalog<br>Part Number | Inches |       |       |       |                 | Millimeters |      |      |      |                 |
|--------------------------|------------------------|--------|-------|-------|-------|-----------------|-------------|------|------|------|-----------------|
|                          |                        | L      | T     | H     | S     | $\varnothing d$ | L           | T    | H    | S    | $\varnothing d$ |
| <b>63 Vdc</b>            |                        |        |       |       |       |                 |             |      |      |      |                 |
| .22                      | 160224*63D-F           | 0.512  | 0.157 | 0.374 | 0.394 | 0.031           | 13.0        | 5.0  | 11.0 | 10.0 | 0.8             |
| .27                      | 160274*63D-F           | 0.512  | 0.157 | 0.374 | 0.394 | 0.031           | 13.0        | 5.0  | 11.0 | 10.0 | 0.8             |
| .33                      | 160334*63E-F           | 0.512  | 0.157 | 0.374 | 0.394 | 0.031           | 13.0        | 6.0  | 12.0 | 10.0 | 0.8             |
| .39                      | 160394*63E-F           | 0.512  | 0.157 | 0.374 | 0.394 | 0.031           | 13.0        | 6.0  | 12.0 | 10.0 | 0.8             |
| .47                      | 160474*63E-F           | 0.512  | 0.197 | 0.433 | 0.394 | 0.031           | 13.0        | 6.0  | 12.0 | 10.0 | 0.8             |
| .56                      | 160564*63D-F           | 0.512  | 0.197 | 0.433 | 0.394 | 0.031           | 13.0        | 5.0  | 11.0 | 10.0 | 0.8             |
| .68                      | 160684*63D-F           | 0.512  | 0.197 | 0.433 | 0.394 | 0.031           | 13.0        | 5.0  | 11.0 | 10.0 | 0.8             |
| .68                      | 160684*63G-F           | 0.709  | 0.236 | 0.472 | 0.591 | 0.031           | 18.0        | 6.0  | 12.0 | 15.0 | 0.8             |
| .82                      | 160824*63E-F           | 0.512  | 0.236 | 0.472 | 0.394 | 0.031           | 13.0        | 6.0  | 12.0 | 10.0 | 0.8             |
| .82                      | 160824*63H-F           | 0.709  | 0.197 | 0.433 | 0.591 | 0.031           | 18.0        | 7.5  | 13.5 | 15.0 | 0.8             |
| 1.0                      | 160105*63H-F           | 0.709  | 0.197 | 0.433 | 0.591 | 0.031           | 18.0        | 7.5  | 13.5 | 15.0 | 0.8             |
| 1.5                      | 160155*63G-F           | 0.709  | 0.236 | 0.472 | 0.591 | 0.031           | 18.0        | 6.0  | 12.5 | 15.0 | 0.8             |
| 2.2                      | 160225*63H-F           | 0.709  | 0.295 | 0.531 | 0.591 | 0.031           | 18.0        | 7.5  | 14.0 | 15.0 | 0.8             |
| 3.3                      | 160335*63M-F           | 1.043  | 0.276 | 0.650 | 0.886 | 0.031           | 18.0        | 10.0 | 16.0 | 15.0 | 0.8             |
| 4.7                      | 160475*63N-F           | 1.043  | 0.335 | 0.669 | 0.886 | 0.031           | 26.5        | 8.5  | 17.0 | 22.5 | 0.8             |
| 6.8                      | 160685*63O-F           | 1.043  | 0.394 | 0.748 | 0.886 | 0.031           | 26.5        | 10.0 | 19.0 | 22.5 | 0.8             |
| 10.0                     | 160106*63P-F           | 1.260  | 0.433 | 0.787 | 1.083 | 0.031           | 26.5        | 13.0 | 23.0 | 22.5 | 0.8             |

\* Indicates capacitance tolerance: J =  $\pm 5\%$ , K =  $\pm 10\%$ , M =  $\pm 20\%$

# Type 160 Metallized Polyester Radial Lead Capacitors

**RoHS Compliant**

| Cap<br>( $\mu$ F) | Catalog<br>Part Number | Inches |       |       |       |                 | Millimeters |      |      |      |                 |
|-------------------|------------------------|--------|-------|-------|-------|-----------------|-------------|------|------|------|-----------------|
|                   |                        | L      | T     | H     | S     | $\varnothing$ d | L           | T    | H    | S    | $\varnothing$ d |
| <b>100 Vdc</b>    |                        |        |       |       |       |                 |             |      |      |      |                 |
| .10               | 160104*100C-F          | 0.512  | 0.157 | 0.374 | 0.394 | 0.031           | 13.0        | 4.0  | 9.5  | 10.0 | 0.8             |
| .12               | 160124*100C-F          | 0.512  | 0.157 | 0.374 | 0.394 | 0.031           | 13.0        | 4.0  | 9.5  | 10.0 | 0.8             |
| .15               | 160154*100C-F          | 0.512  | 0.157 | 0.374 | 0.394 | 0.031           | 13.0        | 4.0  | 9.5  | 10.0 | 0.8             |
| .18               | 160184*100C-F          | 0.512  | 0.157 | 0.374 | 0.394 | 0.031           | 13.0        | 4.0  | 9.5  | 10.0 | 0.8             |
| .22               | 160224*100D-F          | 0.512  | 0.197 | 0.433 | 0.394 | 0.031           | 13.0        | 5.0  | 11.0 | 10.0 | 0.8             |
| .27               | 160274*100D-F          | 0.512  | 0.197 | 0.433 | 0.394 | 0.031           | 13.0        | 5.0  | 11.0 | 10.0 | 0.8             |
| .33               | 160334*100E-F          | 0.512  | 0.236 | 0.472 | 0.394 | 0.031           | 13.0        | 6.0  | 12.0 | 10.0 | 0.8             |
| .33               | 160334*100F-F          | 0.709  | 0.197 | 0.433 | 0.591 | 0.031           | 18.0        | 5.0  | 11.0 | 15.0 | 0.8             |
| .39               | 160394*100E-F          | 0.512  | 0.236 | 0.472 | 0.394 | 0.031           | 13.0        | 6.0  | 12.0 | 10.0 | 0.8             |
| .39               | 160394*100F-F          | 0.709  | 0.197 | 0.433 | 0.591 | 0.031           | 18.0        | 5.0  | 11.0 | 15.0 | 0.8             |
| .47               | 160474*100E-F          | 0.512  | 0.236 | 0.472 | 0.394 | 0.031           | 13.0        | 6.0  | 12.0 | 10.0 | 0.8             |
| .47               | 160474*100F-F          | 0.709  | 0.197 | 0.433 | 0.591 | 0.031           | 18.0        | 5.0  | 11.0 | 15.0 | 0.8             |
| .56               | 160564*100G-F          | 0.709  | 0.236 | 0.472 | 0.591 | 0.031           | 18.0        | 6.0  | 12.0 | 15.0 | 0.8             |
| .68               | 160684*100G-F          | 0.709  | 0.236 | 0.472 | 0.591 | 0.031           | 18.0        | 6.0  | 12.0 | 15.0 | 0.8             |
| .82               | 160824*100H-F          | 0.709  | 0.295 | 0.531 | 0.591 | 0.031           | 18.0        | 7.5  | 13.5 | 15.0 | 0.8             |
| 1.0               | 160105*100H-F          | 0.709  | 0.295 | 0.531 | 0.591 | 0.031           | 18.0        | 7.5  | 13.5 | 15.0 | 0.8             |
| 1.5               | 160155*100M-F          | 1.043  | 0.276 | 0.650 | 0.886 | 0.031           | 26.5        | 7.0  | 16.5 | 22.5 | 0.8             |
| 2.2               | 160225*100N-F          | 1.043  | 0.335 | 0.669 | 0.886 | 0.031           | 26.5        | 8.5  | 17.0 | 22.5 | 0.8             |
| 3.3               | 160335*100O-F          | 1.043  | 0.394 | 0.748 | 0.886 | 0.031           | 26.5        | 10.0 | 19.0 | 22.5 | 0.8             |
| 4.7               | 160475*100P-F          | 1.260  | 0.433 | 0.787 | 1.083 | 0.031           | 32.0        | 11.0 | 20.0 | 27.5 | 0.8             |
| 6.8               | 160685*100Q-F          | 1.260  | 0.512 | 0.886 | 1.083 | 0.031           | 32.0        | 13.0 | 22.5 | 27.5 | 0.8             |
| 10.0              | 160106*100S-F          | 1.457  | 0.709 | 1.299 | 1.083 | 0.031           | 37.0        | 18.0 | 33.0 | 27.5 | 0.8             |
| <b>160 Vdc</b>    |                        |        |       |       |       |                 |             |      |      |      |                 |
| .10               | 160104*160C-F          | 0.512  | 0.157 | 0.374 | 0.394 | 0.031           | 13.0        | 4.0  | 9.5  | 10.0 | 0.8             |
| <b>250 Vdc</b>    |                        |        |       |       |       |                 |             |      |      |      |                 |
| .033              | 160333*250C-F          | 0.512  | 0.157 | 0.374 | 0.394 | 0.031           | 13.0        | 4.0  | 9.5  | 10.0 | 0.8             |
| .039              | 160393*250C-F          | 0.512  | 0.157 | 0.374 | 0.394 | 0.031           | 13.0        | 4.0  | 9.5  | 10.0 | 0.8             |
| .047              | 160473*250C-F          | 0.512  | 0.157 | 0.374 | 0.394 | 0.031           | 13.0        | 4.0  | 9.5  | 10.0 | 0.8             |
| .056              | 160563*250C-F          | 0.512  | 0.157 | 0.374 | 0.394 | 0.031           | 13.0        | 4.0  | 9.5  | 10.0 | 0.8             |
| .068              | 160683*250C-F          | 0.512  | 0.157 | 0.374 | 0.394 | 0.031           | 13.0        | 4.0  | 9.5  | 10.0 | 0.8             |
| .082              | 160823*250D-F          | 0.512  | 0.197 | 0.433 | 0.394 | 0.031           | 13.0        | 5.0  | 11.0 | 10.0 | 0.8             |
| .10               | 160104*250D-F          | 0.512  | 0.197 | 0.433 | 0.394 | 0.031           | 13.0        | 5.0  | 11.0 | 10.0 | 0.8             |
| .10               | 160104*250F-F          | 0.709  | 0.197 | 0.433 | 0.591 | 0.031           | 18.0        | 5.0  | 11.0 | 15.0 | 0.8             |
| .12               | 160124*250D-F          | 0.512  | 0.236 | 0.472 | 0.394 | 0.031           | 13.0        | 6.0  | 12.0 | 10.0 | 0.8             |
| .12               | 160124*250F-F          | 0.709  | 0.197 | 0.433 | 0.591 | 0.031           | 18.0        | 5.0  | 11.0 | 15.0 | 0.8             |
| .15               | 160154*250E-F          | 0.512  | 0.236 | 0.472 | 0.394 | 0.031           | 13.0        | 6.0  | 12.0 | 10.0 | 0.8             |
| .15               | 160154*250F-F          | 0.709  | 0.197 | 0.433 | 0.591 | 0.031           | 18.0        | 5.0  | 11.0 | 15.0 | 0.8             |
| .18               | 160184*250E-F          | 0.512  | 0.236 | 0.472 | 0.394 | 0.031           | 13.0        | 6.0  | 12.0 | 10.0 | 0.8             |
| .18               | 160184*250F-F          | 0.709  | 0.197 | 0.433 | 0.591 | 0.031           | 18.0        | 5.0  | 11.0 | 15.0 | 0.8             |
| .22               | 160224*250F-F          | 0.709  | 0.197 | 0.433 | 0.591 | 0.031           | 18.0        | 5.0  | 11.0 | 15.0 | 0.8             |
| .27               | 160274*250G-F          | 0.709  | 0.236 | 0.472 | 0.591 | 0.031           | 18.0        | 6.0  | 12.0 | 15.0 | 0.8             |
| .33               | 160334*250G-F          | 0.709  | 0.236 | 0.472 | 0.591 | 0.031           | 18.0        | 6.0  | 12.0 | 15.0 | 0.8             |
| .39               | 160394*250H-F          | 0.709  | 0.295 | 0.531 | 0.591 | 0.031           | 18.0        | 7.5  | 13.5 | 15.0 | 0.8             |
| .47               | 160474*250H-F          | 0.709  | 0.295 | 0.531 | 0.591 | 0.031           | 18.0        | 7.5  | 13.5 | 15.0 | 0.8             |
| .47               | 160474*250L-F          | 1.043  | 0.236 | 0.591 | 0.886 | 0.031           | 26.5        | 6.0  | 15.0 | 22.5 | 0.8             |
| .56               | 160564*250I-F          | 0.709  | 0.335 | 0.571 | 0.591 | 0.031           | 18.0        | 8.5  | 14.5 | 15.0 | 0.8             |
| .56               | 160564*250M-F          | 1.043  | 0.276 | 0.650 | 0.886 | 0.031           | 26.5        | 7.0  | 16.5 | 22.5 | 0.8             |
| .68               | 160684*250I-F          | 0.709  | 0.335 | 0.571 | 0.591 | 0.031           | 18.0        | 8.5  | 14.5 | 15.0 | 0.8             |
| .68               | 160684*250M-F          | 1.043  | 0.276 | 0.650 | 0.886 | 0.031           | 26.5        | 7.0  | 16.5 | 22.5 | 0.8             |
| .82               | 160824*250M-F          | 1.043  | 0.335 | 0.669 | 0.886 | 0.031           | 26.5        | 8.5  | 17.0 | 22.5 | 0.8             |

\* Indicates capacitance tolerance: J =  $\pm 5\%$ , K =  $\pm 10\%$ , M =  $\pm 20\%$

# Type 160 Metallized Polyester Radial Lead Capacitors

**RoHS Compliant**

| Cap<br>( $\mu$ F) | Catalog<br>Part Number | Inches |       |       |       |               | Millimeters |      |      |      |               |
|-------------------|------------------------|--------|-------|-------|-------|---------------|-------------|------|------|------|---------------|
|                   |                        | L      | T     | H     | S     | $\emptyset$ d | L           | T    | H    | S    | $\emptyset$ d |
| <b>250Vdc</b>     |                        |        |       |       |       |               |             |      |      |      |               |
| 1.0               | 160105*250N-F          | 1.043  | 0.335 | 0.669 | 0.886 | 0.031         | 26.5        | 8.5  | 17.0 | 22.5 | 0.8           |
| 1.5               | 160155*250O-F          | 1.043  | 0.394 | 0.748 | 0.886 | 0.031         | 26.5        | 10.0 | 19.0 | 22.5 | 0.8           |
| 2.2               | 160225*250P-F          | 1.260  | 0.433 | 0.787 | 1.083 | 0.031         | 32.0        | 11.0 | 20.0 | 27.5 | 0.8           |
| 3.3               | 160335*250Q-F          | 1.260  | 0.512 | 0.886 | 1.083 | 0.031         | 32.0        | 13.0 | 22.5 | 27.5 | 0.8           |
| 4.7               | 160475*250R-F          | 1.260  | 0.591 | 1.181 | 1.083 | 0.031         | 32.0        | 15.0 | 30.0 | 27.5 | 0.8           |
| 6.8               | 160685*250S-F          | 1.457  | 0.709 | 1.299 | 1.083 | 0.031         | 37.0        | 18.0 | 33.0 | 27.5 | 0.8           |
| <b>400Vdc</b>     |                        |        |       |       |       |               |             |      |      |      |               |
| .012              | 160123*400C-F          | 0.512  | 0.157 | 0.374 | 0.394 | 0.031         | 13.0        | 4.0  | 9.5  | 10.0 | 0.8           |
| .015              | 160153*400C-F          | 0.512  | 0.157 | 0.374 | 0.394 | 0.031         | 13.0        | 4.0  | 9.5  | 10.0 | 0.8           |
| .018              | 160183*400C-F          | 0.512  | 0.157 | 0.374 | 0.394 | 0.031         | 13.0        | 4.0  | 9.5  | 10.0 | 0.8           |
| .022              | 160223*400C-F          | 0.512  | 0.157 | 0.374 | 0.394 | 0.031         | 13.0        | 4.0  | 9.5  | 10.0 | 0.8           |
| .027              | 160273*400C-F          | 0.512  | 0.157 | 0.374 | 0.394 | 0.031         | 13.0        | 4.0  | 9.5  | 10.0 | 0.8           |
| .033              | 160333*400D-F          | 0.512  | 0.197 | 0.433 | 0.394 | 0.031         | 13.0        | 5.0  | 11.0 | 10.0 | 0.8           |
| .039              | 160393*400D-F          | 0.512  | 0.197 | 0.433 | 0.394 | 0.031         | 13.0        | 5.0  | 11.0 | 10.0 | 0.8           |
| .047              | 160473*400E-F          | 0.512  | 0.236 | 0.472 | 0.394 | 0.031         | 13.0        | 6.0  | 12.0 | 10.0 | 0.8           |
| .047              | 160473*400F-F          | 0.709  | 0.197 | 0.433 | 0.591 | 0.031         | 18.0        | 5.0  | 11.0 | 15.0 | 0.8           |
| .056              | 160563*400F-F          | 0.709  | 0.197 | 0.433 | 0.591 | 0.031         | 18.0        | 5.0  | 11.0 | 15.0 | 0.8           |
| .068              | 160683*400F-F          | 0.709  | 0.197 | 0.433 | 0.591 | 0.031         | 18.0        | 5.0  | 11.0 | 15.0 | 0.8           |
| .082              | 160823*400F-F          | 0.709  | 0.197 | 0.433 | 0.591 | 0.031         | 18.0        | 5.0  | 11.0 | 15.0 | 0.8           |
| .10               | 160104*400G-F          | 0.709  | 0.236 | 0.472 | 0.591 | 0.031         | 18.0        | 6.0  | 12.0 | 15.0 | 0.8           |
| .12               | 160124*400G-F          | 0.709  | 0.236 | 0.472 | 0.591 | 0.031         | 18.0        | 6.0  | 12.0 | 15.0 | 0.8           |
| .15               | 160154*400H-F          | 0.709  | 0.295 | 0.531 | 0.591 | 0.031         | 18.0        | 7.5  | 13.5 | 15.0 | 0.8           |
| .15               | 160154*400L-F          | 1.043  | 0.236 | 0.591 | 0.886 | 0.031         | 26.5        | 6.0  | 15.0 | 22.5 | 0.8           |
| .18               | 160184*400L-F          | 1.043  | 0.236 | 0.591 | 0.886 | 0.031         | 26.5        | 6.0  | 15.0 | 22.5 | 0.8           |
| .22               | 160224*400L-F          | 1.043  | 0.236 | 0.591 | 0.886 | 0.031         | 26.5        | 6.0  | 15.0 | 22.5 | 0.8           |
| .27               | 160274*400M-F          | 1.043  | 0.276 | 0.650 | 0.886 | 0.031         | 26.5        | 7.0  | 16.5 | 22.5 | 0.8           |
| .33               | 160334*400M-F          | 1.043  | 0.276 | 0.650 | 0.886 | 0.031         | 26.5        | 7.0  | 16.5 | 22.5 | 0.8           |
| .39               | 160394*400N-F          | 1.043  | 0.335 | 0.669 | 0.886 | 0.031         | 26.5        | 8.5  | 17.0 | 22.5 | 0.8           |
| .47               | 160474*400N-F          | 1.043  | 0.335 | 0.669 | 0.886 | 0.031         | 26.5        | 8.5  | 17.0 | 22.5 | 0.8           |
| .56               | 160564*400O-F          | 1.043  | 0.394 | 0.748 | 0.886 | 0.031         | 26.5        | 10.0 | 19.0 | 22.5 | 0.8           |
| .68               | 160684*400P-F          | 1.260  | 0.433 | 0.787 | 1.083 | 0.031         | 32.0        | 11.0 | 20.0 | 27.5 | 0.8           |
| .82               | 160824*400P-F          | 1.260  | 0.433 | 0.787 | 1.083 | 0.031         | 32.0        | 11.0 | 20.0 | 27.5 | 0.8           |
| 1.0               | 160105*400P-F          | 1.260  | 0.433 | 0.787 | 1.083 | 0.031         | 32.0        | 11.0 | 20.0 | 27.5 | 0.8           |
| 1.0               | 160105*400Q-F          | 1.260  | 0.512 | 0.886 | 1.083 | 0.031         | 32.0        | 13.0 | 22.5 | 27.5 | 0.8           |
| <b>630Vdc</b>     |                        |        |       |       |       |               |             |      |      |      |               |
| .0039             | 160392*630C-F          | 0.512  | 0.157 | 0.374 | 0.394 | 0.031         | 13.0        | 4.0  | 9.5  | 10.0 | 0.8           |
| .0047             | 160472*630C-F          | 0.512  | 0.157 | 0.374 | 0.394 | 0.031         | 13.0        | 4.0  | 9.5  | 10.0 | 0.8           |
| .0056             | 160562*630C-F          | 0.512  | 0.157 | 0.374 | 0.394 | 0.031         | 13.0        | 4.0  | 9.5  | 10.0 | 0.8           |
| .0068             | 160682*630C-F          | 0.512  | 0.157 | 0.374 | 0.394 | 0.031         | 13.0        | 4.0  | 9.5  | 10.0 | 0.8           |
| .0082             | 160822*630C-F          | 0.512  | 0.157 | 0.374 | 0.394 | 0.031         | 13.0        | 4.0  | 9.5  | 10.0 | 0.8           |
| .010              | 160103*630C-F          | 0.512  | 0.157 | 0.374 | 0.394 | 0.031         | 13.0        | 4.0  | 9.5  | 10.0 | 0.8           |
| .012              | 160123*630D-F          | 0.512  | 0.197 | 0.433 | 0.394 | 0.031         | 13.0        | 5.0  | 11.0 | 10.0 | 0.8           |
| .015              | 160153*630D-F          | 0.512  | 0.197 | 0.433 | 0.394 | 0.031         | 13.0        | 5.0  | 11.0 | 10.0 | 0.8           |
| .018              | 160183*630D-F          | 0.512  | 0.197 | 0.433 | 0.394 | 0.031         | 13.0        | 5.0  | 11.0 | 10.0 | 0.8           |
| .022              | 160223*630E-F          | 0.512  | 0.236 | 0.472 | 0.394 | 0.031         | 13.0        | 6.0  | 12.0 | 10.0 | 0.8           |
| .027              | 160273*630F-F          | 0.709  | 0.197 | 0.433 | 0.591 | 0.031         | 18.0        | 5.0  | 11.0 | 15.0 | 0.8           |
| .033              | 160333*630F-F          | 0.709  | 0.197 | 0.433 | 0.591 | 0.031         | 18.0        | 5.0  | 11.0 | 15.0 | 0.8           |
| .039              | 160393*630G-F          | 0.709  | 0.236 | 0.472 | 0.591 | 0.031         | 18.0        | 6.0  | 12.0 | 15.0 | 0.8           |
| .047              | 160473*630G-F          | 0.709  | 0.236 | 0.472 | 0.591 | 0.031         | 18.0        | 6.0  | 12.0 | 15.0 | 0.8           |
| .056              | 160563*630G-F          | 0.709  | 0.236 | 0.472 | 0.591 | 0.031         | 18.0        | 6.0  | 12.0 | 15.0 | 0.8           |

\* Indicates capacitance tolerance: J =  $\pm$ 5%, K =  $\pm$ 10%, M =  $\pm$ 20%

# Type 160 Metallized Polyester Radial Lead Capacitors

**RoHS Compliant**

| Cap<br>( $\mu$ F) | Catalog<br>Part Number | Inches |       |       |       |                 | Millimeters |      |      |      |                 |
|-------------------|------------------------|--------|-------|-------|-------|-----------------|-------------|------|------|------|-----------------|
|                   |                        | L      | T     | H     | S     | $\varnothing$ d | L           | T    | H    | S    | $\varnothing$ d |
| <b>630 Vdc</b>    |                        |        |       |       |       |                 |             |      |      |      |                 |
| .068              | 160683*630H-F          | 0.709  | 0.295 | 0.531 | 0.591 | 0.031           | 18.0        | 7.5  | 13.5 | 15.0 | 0.8             |
| .068              | 160683*630L-F          | 1.043  | 0.236 | 0.591 | 0.886 | 0.031           | 26.5        | 6.0  | 15.0 | 22.5 | 0.8             |
| .082              | 160823*630L-F          | 1.043  | 0.236 | 0.591 | 0.886 | 0.031           | 26.5        | 6.0  | 15.0 | 22.5 | 0.8             |
| .10               | 160104*630L-F          | 1.043  | 0.236 | 0.591 | 0.886 | 0.031           | 26.5        | 6.0  | 15.0 | 22.5 | 0.8             |
| .12               | 160124*630M-F          | 1.043  | 0.276 | 0.650 | 0.886 | 0.031           | 26.5        | 7.0  | 16.5 | 22.5 | 0.8             |
| .15               | 160154*630M-F          | 1.043  | 0.276 | 0.650 | 0.886 | 0.031           | 26.5        | 7.0  | 16.5 | 22.5 | 0.8             |
| .18               | 160184*630N-F          | 1.043  | 0.335 | 0.669 | 0.886 | 0.031           | 26.5        | 8.5  | 17.0 | 22.5 | 0.8             |
| .22               | 160224*630N-F          | 1.043  | 0.335 | 0.669 | 0.886 | 0.031           | 26.5        | 8.5  | 17.0 | 22.5 | 0.8             |
| .27               | 160274*630Q-F          | 1.260  | 0.512 | 0.886 | 1.083 | 0.031           | 32.0        | 13.0 | 22.5 | 27.5 | 0.8             |
| .33               | 160334*630P-F          | 1.260  | 0.433 | 0.787 | 1.083 | 0.031           | 32.0        | 11.0 | 20.0 | 27.5 | 0.8             |
| .39               | 160394*630P-F          | 1.260  | 0.433 | 0.787 | 1.083 | 0.031           | 32.0        | 11.0 | 20.0 | 27.5 | 0.8             |
| .47               | 160474*630Q-F          | 1.260  | 0.512 | 0.886 | 1.083 | 0.031           | 32.0        | 13.0 | 22.5 | 27.5 | 0.8             |
| <b>1000 Vdc</b>   |                        |        |       |       |       |                 |             |      |      |      |                 |
| .0022             | 160222*1000C-F         | 0.512  | 0.157 | 0.374 | 0.394 | 0.031           | 13.0        | 4.0  | 9.5  | 10.0 | 0.8             |
| .0027             | 160272*1000C-F         | 0.512  | 0.157 | 0.374 | 0.394 | 0.031           | 13.0        | 4.0  | 9.5  | 10.0 | 0.8             |
| .0033             | 160332*1000C-F         | 0.512  | 0.157 | 0.374 | 0.394 | 0.031           | 13.0        | 4.0  | 9.5  | 10.0 | 0.8             |
| .0039             | 160392*1000D-F         | 0.512  | 0.197 | 0.433 | 0.394 | 0.031           | 13.0        | 5.0  | 11.0 | 10.0 | 0.8             |
| .0047             | 160472*1000D-F         | 0.512  | 0.197 | 0.433 | 0.394 | 0.031           | 13.0        | 5.0  | 11.0 | 10.0 | 0.8             |
| .0056             | 160562*1000D-F         | 0.512  | 0.197 | 0.433 | 0.394 | 0.031           | 13.0        | 5.0  | 11.0 | 10.0 | 0.8             |
| .0068             | 160682*1000D-F         | 0.512  | 0.197 | 0.433 | 0.394 | 0.031           | 13.0        | 5.0  | 11.0 | 10.0 | 0.8             |
| .0082             | 160822*1000D-F         | 0.512  | 0.197 | 0.433 | 0.394 | 0.031           | 13.0        | 5.0  | 11.0 | 10.0 | 0.8             |
| .010              | 160103*1000F-F         | 0.709  | 0.197 | 0.433 | 0.591 | 0.031           | 18.0        | 5.0  | 11.0 | 15.0 | 0.8             |
| .012              | 160123*1000F-F         | 0.709  | 0.197 | 0.433 | 0.591 | 0.031           | 18.0        | 5.0  | 11.0 | 15.0 | 0.8             |
| .015              | 160153*1000F-F         | 0.709  | 0.236 | 0.472 | 0.591 | 0.031           | 18.0        | 6.0  | 12.0 | 15.0 | 0.8             |
| .018              | 160183*1000G-F         | 0.709  | 0.236 | 0.472 | 0.591 | 0.031           | 18.0        | 6.0  | 12.0 | 15.0 | 0.8             |
| .022              | 160223*1000G-F         | 0.709  | 0.236 | 0.472 | 0.591 | 0.031           | 18.0        | 6.0  | 12.0 | 15.0 | 0.8             |
| .027              | 160273*1000H-F         | 0.709  | 0.295 | 0.531 | 0.591 | 0.031           | 18.0        | 7.5  | 13.5 | 15.0 | 0.8             |
| .033              | 160333*1000L-F         | 1.043  | 0.236 | 0.591 | 0.886 | 0.031           | 26.5        | 6.0  | 15.0 | 22.5 | 0.8             |
| .039              | 160393*1000L-F         | 1.043  | 0.236 | 0.591 | 0.886 | 0.031           | 26.5        | 6.0  | 15.0 | 22.5 | 0.8             |
| .047              | 160473*1000L-F         | 1.043  | 0.236 | 0.591 | 0.886 | 0.031           | 26.5        | 6.0  | 15.0 | 22.5 | 0.8             |
| .056              | 160563*1000M-F         | 1.043  | 0.276 | 0.650 | 0.886 | 0.031           | 26.5        | 7.0  | 16.5 | 22.5 | 0.8             |
| .068              | 160683*1000M-F         | 1.043  | 0.276 | 0.650 | 0.886 | 0.031           | 26.5        | 7.0  | 16.5 | 22.5 | 0.8             |
| .082              | 160823*1000N-F         | 1.043  | 0.335 | 0.669 | 0.886 | 0.031           | 26.5        | 8.5  | 17.0 | 22.5 | 0.8             |
| .10               | 160104*1000N-F         | 1.043  | 0.335 | 0.669 | 0.886 | 0.031           | 26.5        | 8.5  | 17.0 | 22.5 | 0.8             |
| .12               | 160124*1000O-F         | 1.043  | 0.394 | 0.748 | 0.886 | 0.031           | 26.5        | 10.0 | 19.0 | 22.5 | 0.8             |
| .15               | 160154*1000P-F         | 1.260  | 0.433 | 0.787 | 1.083 | 0.031           | 32.0        | 11.0 | 20.0 | 27.5 | 0.8             |
| .18               | 160184*1000Q-F         | 1.260  | 0.512 | 0.886 | 1.083 | 0.031           | 32.0        | 13.0 | 22.5 | 27.5 | 0.8             |
| .22               | 160224*1000Q-F         | 1.260  | 0.512 | 0.886 | 1.083 | 0.031           | 32.0        | 13.0 | 22.5 | 27.5 | 0.8             |

\* Indicates capacitance tolerance: J =  $\pm$ 5%, K =  $\pm$ 10%, M =  $\pm$ 20%

## Part Numbering System

|               |                     |                  |                 |                  |                       |
|---------------|---------------------|------------------|-----------------|------------------|-----------------------|
| <b>160</b>    | <b>104</b>          | <b>K</b>         | <b>100</b>      | <b>C</b>         | <b>-F</b>             |
|               |                     |                  |                 |                  |                       |
| <b>Series</b> | <b>Capacitance</b>  | <b>Tolerance</b> | <b>Voltage</b>  | <b>Case Code</b> | <b>ROHS Compliant</b> |
| 160           | 392 = .0039 $\mu$ F | J = $\pm$ 5%     | 100 = 100 Vdc   | C                |                       |
|               | 103 = .01 $\mu$ F   | K = $\pm$ 10%    | 250 = 250 Vdc   | D                |                       |
|               | 104 = .1 $\mu$ F    | M = $\pm$ 20%    | 630 = 630 Vdc   | E                |                       |
|               | 105 = 1.0 $\mu$ F   |                  | 1000 = 1000 Vdc | F                |                       |
|               |                     |                  |                 | etc.             |                       |

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