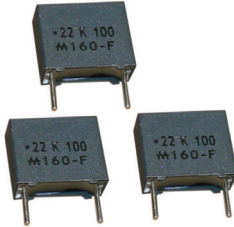


# Type 160 Metallized Polyester Radial Lead Capacitors

## 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"  $\pm$ .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 (40 Vac - 250 Vac 50/60 Hz)                                                           |
| <b>Capacitance Tolerance:</b>        | $\pm$ 5%, $\pm$ 10%, $\pm$ 20%                                                                           |
| <b>Operating Temperature Range:</b>  | -55 $^{\circ}$ C to +125 $^{\circ}$ 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):

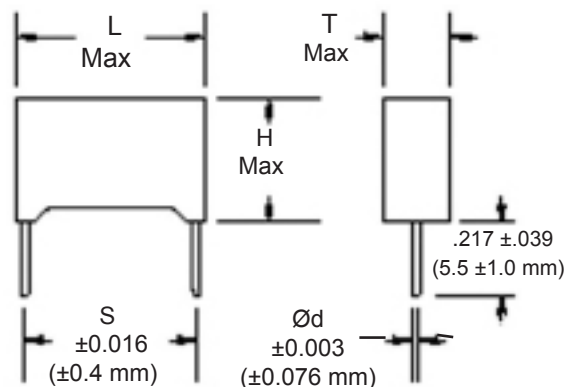
| Vn      | Pitch (mm) |     |      |      |
|---------|------------|-----|------|------|
|         | 10         | 15  | 22.5 | 27.5 |
| 63      | 3          | 1.5 | 1    | 1    |
| 100/160 | 6/8        | 3   | 2    | 1    |
| 250     | 11         | 7   | 4    | 3    |
| 400     | 20         | 10  | 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



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

## Test Method and Performance

| 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 $\Delta \tan \delta$  | $\leq 30 \times 10^{-4}$ at 10 kHz for C $\leq 1.0$ $\mu$ F<br>$\leq 20 \times 10^{-4}$ at 1 kHz for C $> 1.0$ $\mu$ F |

| Insulation Resistance           |                                                                                                                        |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------|
| <b>Test Conditions</b>          |                                                                                                                        |
| Temperature                     | 25 °C $\pm 5$ °C                                                                                                       |
| Voltage Charge Time             | 1 minute                                                                                                               |
| Voltage Charge                  | 50 Vdc for Vn $< 100$ Vdc<br>100 Vdc for Vn $\geq 100$ Vdc                                                             |
| <b>Performance</b>              |                                                                                                                        |
| For Vn $> 100$ Vdc              | $\geq 30,000$ M $\Omega$ for $\leq 0.33 \mu$ F<br>$\geq 10,000$ M $\Omega \times \mu$ F for C $> 0.33 \mu$ F           |
| For Vn $\leq 100$ Vdc           | $\geq 10,000$ M $\Omega$ for C $\leq 0.1 \mu$ F<br>$\geq 1,000$ M $\Omega \times \mu$ F for $\leq 0.1 \mu$ 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 $\Delta \tan \delta$  | $\leq 50 \times 10^{-4}$ 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 Vn                                                                                                              |
| <b>Performance</b>              |                                                                                                                        |
| Capacitance Change $\Delta C/C$ | $\leq \pm 5\%$                                                                                                         |
| DF Change $\Delta \tan \delta$  | $\leq 30 \times 10^{-4}$ at 10 kHz for C $\leq 1.0$ $\mu$ F<br>$\leq 20 \times 10^{-4}$ at 1 kHz for C $> 1.0$ $\mu$ F |
| Insulation Resistance           | $\geq 50\%$ of limit value                                                                                             |

## Ratings RoHS Compliant

| Cap<br>(μF) | Catalog<br>Part Number | Inches |       |       |       |       | Millimeters |      |      |      |     |
|-------------|------------------------|--------|-------|-------|-------|-------|-------------|------|------|------|-----|
|             |                        | L      | T     | H     | S     | Ød    | L           | T    | H    | S    | Ød  |
|             | 63 Vdc / 40 Vac        |        |       |       |       |       |             |      |      |      |     |
| .22         | 160224*63C-F           | 0.512  | 0.157 | 0.374 | 0.394 | 0.031 | 13.0        | 4.0  | 9.5  | 10.0 | 0.8 |
| .27         | 160274*63C-F           | 0.512  | 0.157 | 0.374 | 0.394 | 0.031 | 13.0        | 4.0  | 9.5  | 10.0 | 0.8 |
| .33         | 160334*63C-F           | 0.512  | 0.157 | 0.374 | 0.394 | 0.031 | 13.0        | 4.0  | 9.5  | 10.0 | 0.8 |
| .39         | 160394*63C-F           | 0.512  | 0.157 | 0.374 | 0.394 | 0.031 | 13.0        | 4.0  | 9.5  | 10.0 | 0.8 |
| .47         | 160474*63D-F           | 0.512  | 0.197 | 0.433 | 0.394 | 0.031 | 13.0        | 5.0  | 11.0 | 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*63F-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*63F-F           | 0.709  | 0.197 | 0.433 | 0.591 | 0.031 | 18.0        | 5.0  | 11.0 | 15.0 | 0.8 |
| 1.0         | 160105*63F-F           | 0.709  | 0.197 | 0.433 | 0.591 | 0.031 | 18.0        | 5.0  | 11.0 | 15.0 | 0.8 |
| 1.5         | 160155*63F-F           | 0.709  | 0.236 | 0.472 | 0.591 | 0.031 | 18.0        | 6.0  | 12.0 | 15.0 | 0.8 |
| 2.2         | 160225*63G-F           | 0.709  | 0.295 | 0.531 | 0.591 | 0.031 | 18.0        | 7.5  | 13.5 | 15.0 | 0.8 |
| 3.3         | 160335*63M-F           | 1.043  | 0.276 | 0.650 | 0.886 | 0.031 | 26.5        | 7.0  | 16.5 | 22.5 | 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 | 32.0        | 11.0 | 20.0 | 27.5 | 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>(µF)       | Catalog<br>Part Number | Inches |       |       |       |       | Millimeters |      |      |      |     |
|-------------------|------------------------|--------|-------|-------|-------|-------|-------------|------|------|------|-----|
|                   |                        | L      | T     | H     | S     | Ød    | L           | T    | H    | S    | Ød  |
| 100 Vdc / 63 Vac  |                        |        |       |       |       |       |             |      |      |      |     |
| .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*100D-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 |
| 160 Vdc / 100 Vac |                        |        |       |       |       |       |             |      |      |      |     |
| .10               | 160104*160C-F          | 0.512  | 0.157 | 0.374 | 0.394 | 0.031 | 13.0        | 4.0  | 9.5  | 10.0 | 0.8 |
| 250 Vdc / 160 Vac |                        |        |       |       |       |       |             |      |      |      |     |
| .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>(μF)       | Catalog<br>Part Number | Inches |       |       |       |       | Millimeters |      |      |      |     |
|-------------------|------------------------|--------|-------|-------|-------|-------|-------------|------|------|------|-----|
|                   |                        | L      | T     | H     | S     | Ød    | L           | T    | H    | S    | Ød  |
| 250 Vdc / 160 Vac |                        |        |       |       |       |       |             |      |      |      |     |
| 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 |
| 400 Vdc / 200 Vac |                        |        |       |       |       |       |             |      |      |      |     |
| .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 |
| 630 Vdc / 220 Vac |                        |        |       |       |       |       |             |      |      |      |     |
| .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>(μF)        | Catalog<br>Part Number | Inches |       |       |       |       | Millimeters |      |      |      |     |
|--------------------|------------------------|--------|-------|-------|-------|-------|-------------|------|------|------|-----|
|                    |                        | L      | T     | H     | S     | Ød    | L           | T    | H    | S    | Ød  |
| 630 Vac / 220 Vac  |                        |        |       |       |       |       |             |      |      |      |     |
| .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 |
| 1000 Vdc / 250 Vac |                        |        |       |       |       |       |             |      |      |      |     |
| .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.             |                       |