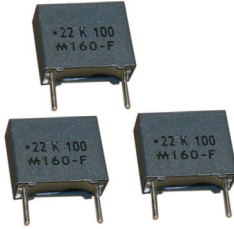


# Type 160 Metallized Polyester Radial Lead Capacitors

## 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

**Capacitance Range:** 0.0022  $\mu$ F to 10.0  $\mu$ F

**Voltage Range:** 63 Vdc to 1000 Vdc

**Capacitance Tolerance:**  $\pm$ 5%,  $\pm$ 10%,  $\pm$ 20%

**Operating Temperature Range:** -55  $^{\circ}$ C to +105  $^{\circ}$ C (derating voltage to 1.25% per  $^{\circ}$ C above 85  $^{\circ}$ C)

**Dielectric Withstand Voltage:** 1.6 x rated voltage for 2 sec @ +25  $^{\circ}$ C  $\pm$ 5  $^{\circ}$ C

**Dissipation Factor (DF):**  $\tan \delta \times 10^{-4}$  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):**

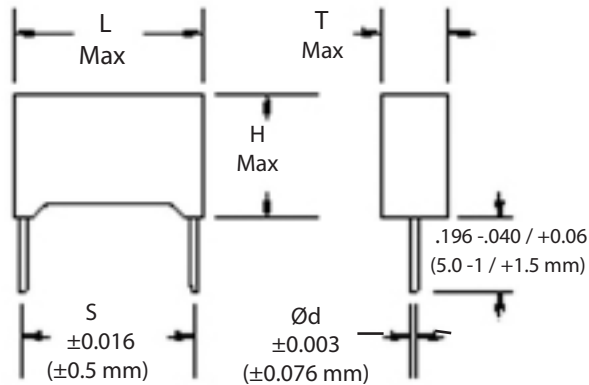
| Vn      | Pitch (mm) |     |      |      |
|---------|------------|-----|------|------|
|         | 10         | 15  | 22.5 | 27.5 |
| 63      | 3          | 1.5 | 1    | 1    |
| 100/160 | 6/8        | 3   | 2    | 1    |
| 250     | 11         | 7   | 4    | 3    |
| 400     | 20         | 10  |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

| 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 $V_n < 100$ Vdc<br>100 Vdc for $V_n \geq 100$ Vdc                                                       |
| <b>Performance</b>              |                                                                                                                    |
| For $V_n > 100$ Vdc             | $\geq 30,000 M\Omega$ for $\leq 0.33 \mu F$<br>$\geq 10,000 M\Omega \times \mu F$ for $C > 0.33 \mu F$             |
| For $V_n \leq 100$ Vdc          | $\geq 10,000 M\Omega$ for $C \leq 0.1 \mu F$<br>$\geq 1,000 M\Omega \times \mu F$ for $C \leq 0.1 \mu F$           |
| 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 $V_n$                                                                                                       |
| <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                 |        |       |       |       |       |             |      |      |      |     |
| .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>(µF) | Catalog<br>Part Number | Inches |       |       |       |       | Millimeters |      |      |      |     |
|-------------|------------------------|--------|-------|-------|-------|-------|-------------|------|------|------|-----|
|             |                        | L      | T     | H     | S     | Ød    | L           | T    | H    | S    | Ød  |
| 100 Vdc     |                        |        |       |       |       |       |             |      |      |      |     |
| .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 |
| 160 Vdc     |                        |        |       |       |       |       |             |      |      |      |     |
| .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     |                        |        |       |       |       |       |             |      |      |      |     |
| .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     |                        |        |       |       |       |       |             |      |      |      |     |
| 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     |                        |        |       |       |       |       |             |      |      |      |     |
| .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     |                        |        |       |       |       |       |             |      |      |      |     |
| .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 Vdc     |                        |        |       |       |       |       |             |      |      |      |     |
| .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    |                        |        |       |       |       |       |             |      |      |      |     |
| .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 = ±5%, K = ±10%, M = ±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 µF     | J = ±5%          | 100 = 100 Vdc   | C                |                       |
|               | 103 = .01 µF       | K = ±10%         | 250 = 250 Vdc   | D                |                       |
|               | 104 = .1 µF        | M = ±20%         | 630 = 630 Vdc   | E                |                       |
|               | 105 = 1.0 µF       |                  | 1000 = 1000 Vdc | F                |                       |
|               |                    |                  |                 | etc.             |                       |

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