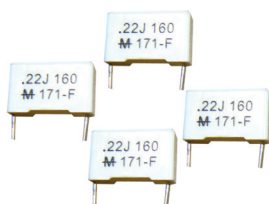


# Type 171 Radial Leaded Metallized Polypropylene

## Radial Box Metallized Polypropylene Capacitors



Type 171 radial leaded, box, metallized polypropylene capacitors are available in five pitch sizes and have a flame retardant case and epoxy encapsulant that meets UL94V-0. The Type 171 is an excellent choice for applications requiring low dielectric losses, high insulation resistance in an AC or DC environment. The polypropylene dielectric gives this capacitor excellent pulse rise time (dv/dt) performance.

### Highlights

- High dv/dt
  - Low leakage
  - Radial leaded (7.5, 10, 15, 22.5, 27.5 mm pitch)
  - Flame retardant case and encapsulant meets UL94V-0
  - Non-inductively wound
- RoHS Compliant**

### Specifications

**Capacitance Range:** 0.0022 to 3.3  $\mu$ F

**Voltage Range:** 160 to 630 Vdc (90 to 250 Vac, 60 Hz)

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

**Operating Temperature Range:**  $-55^{\circ}\text{C}$  to  $+105^{\circ}\text{C}$  (derate linearly to 50% rated voltage from  $85^{\circ}\text{C}$  to  $105^{\circ}\text{C}$ )

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

**Dissipation Factor (DF):**  $\text{tg}\delta \times 10^{-4}$  at  $+25^{\circ}\text{C} \pm 5^{\circ}\text{C}$

| kHz | $C \leq 0.1 \mu\text{F}$ | $0.1 \mu\text{F} < C \leq 1 \mu\text{F}$ | $C > 1 \mu\text{F}$ |
|-----|--------------------------|------------------------------------------|---------------------|
| 1   | $\leq 6$                 | $\leq 6$                                 | $\leq 6$            |
| 10  | $\leq 10$                | $\leq 20$                                | —                   |
| 100 | $\leq 30$                | —                                        | —                   |

**Insulation Resistance:** 100,000  $\text{M}\Omega \times \mu\text{F}$ , 200,000  $\text{M}\Omega$  Min.

**Self Inductance:** 2 mm lead length - total self inductance

| Pitch (mm)       | 7.5 | 10 | 15 | 22.5 | 27.5 |
|------------------|-----|----|----|------|------|
| L (nH) $\approx$ | 8   | 9  | 10 | 18   | 18   |

**Life Test:** 2000 hrs @  $85^{\circ}\text{C}$   $1.25 \times V_n$

**Damp Heat Test:** 95% RH @  $+40^{\circ}\text{C}$  for 56 days

**Soldering:**  $260^{\circ}\text{C} \pm 5^{\circ}\text{C}$  for 10 s  $\pm 1$  s

**Long Term Storage Stability:**  $\Delta C/C \leq \pm 0.5\%$  after 2 years

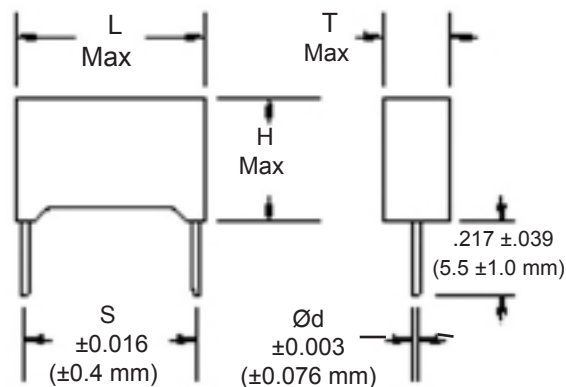
**Maximum Pulse Rise Time dv/dt (V/ $\mu$ ):**

| $V_n$ | Lead Spacing (Pitch) |    |    |      |      |
|-------|----------------------|----|----|------|------|
|       | 7.5                  | 10 | 15 | 22.5 | 27.5 |
| 160   | 5.5                  | 4  | 2  | 1.5  | 1    |
| 250   | 15                   | 11 | 7  | 4    | 3    |
| 400   | 35                   | 20 | 10 | 5.5  | 5    |
| 630   | 55                   | 30 | 15 | 8    | 7    |

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

# Type 171 Radial Leaded Metallized Polypropylene

## Outline Drawing



## Ratings

**RoHS Compliant**

| Cap<br>( $\mu$ F)      | Catalog<br>Part Number | Inches (mm)  |              |              |              |             | ESR (m $\Omega$ )<br>20 kHz to<br>100 kHz                                                         | IRMS (Amps) |       |       |
|------------------------|------------------------|--------------|--------------|--------------|--------------|-------------|---------------------------------------------------------------------------------------------------|-------------|-------|-------|
|                        |                        | L Max        | T Max        | H Max        | S (Pitch)    | Ød          |                                                                                                   | 25 °C       | 45 °C | 85 °C |
| 160 Vdc / 90 Vac 60 Hz |                        |              |              |              |              |             |                                                                                                   |             |       |       |
| 0.033                  | 171333*160B-F          | 0.413 (10.5) | 0.157 (4.0)  | 0.374 (9.5)  | 0.295 (7.5)  | 0.024 (0.6) | Not applicable. These capacitance values are not customarily used in switched-mode power supplies |             |       |       |
| 0.047                  | 171473*160B-F          | 0.413 (10.5) | 0.157 (4.0)  | 0.374 (9.5)  | 0.295 (7.5)  | 0.024 (0.6) |                                                                                                   |             |       |       |
| 0.047                  | 171473*160C-F          | 0.512 (13.0) | 0.157 (4.0)  | 0.374 (9.5)  | 0.394 (10)   | 0.024 (0.6) |                                                                                                   |             |       |       |
| 0.068                  | 171683*160C7-F         | 0.413 (10.5) | 0.197 (5.0)  | 0.433 (11.0) | 0.295 (7.5)  | 0.024 (0.6) |                                                                                                   |             |       |       |
| 0.068                  | 171683*160D-F          | 0.512 (13.0) | 0.197 (5.0)  | 0.433 (11.0) | 0.394 (10.0) | 0.024 (0.6) |                                                                                                   |             |       |       |
| 0.1                    | 171104*160C7-F         | 0.413 (10.5) | 0.197 (5.0)  | 0.433 (11.0) | 0.295 (7.5)  | 0.024 (0.6) |                                                                                                   |             |       |       |
| 0.1                    | 171104*160E-F          | 0.512 (13.0) | 0.236 (6.0)  | 0.472 (12.0) | 0.394 (10.0) | 0.024 (0.6) |                                                                                                   |             |       |       |
| 0.15                   | 171154*160D7-F         | 0.413 (10.5) | 0.236 (6.0)  | 0.472 (12.0) | 0.295 (7.5)  | 0.024 (0.6) |                                                                                                   |             |       |       |
| 0.15                   | 171154*160E-F          | 0.512 (13.0) | 0.236 (6.0)  | 0.472 (12.0) | 0.394 (10)   | 0.024 (0.6) |                                                                                                   |             |       |       |
| 0.22                   | 171224*160F-F          | 0.709 (18.0) | 0.197 (5.0)  | 0.433 (11.0) | 0.591 (15.0) | 0.031 (0.8) |                                                                                                   |             |       |       |
| 0.33                   | 171334*160G-F          | 0.709 (18.0) | 0.236 (6.0)  | 0.472 (12.0) | 0.591 (15.0) | 0.031 (0.8) | 37                                                                                                | 3.7         | 3.1   | 1.4   |
| 0.47                   | 171474*160H-F          | 0.709 (18.0) | 0.295 (7.5)  | 0.531 (13.5) | 0.591 (15.0) | 0.031 (0.8) |                                                                                                   |             |       |       |
| 0.68                   | 171684*160L -F         | 1.043 (26.5) | 0.236 (6.0)  | 0.591 (15.0) | 0.886 (22.5) | 0.031 (0.8) |                                                                                                   |             |       |       |
| 1.0                    | 171105*160N-F          | 1.043 (26.5) | 0.335 (8.5)  | 0.669 (17.0) | 0.886 (22.5) | 0.031 (0.8) |                                                                                                   |             |       |       |
| 1.5                    | 171155*160O-F          | 1.043 (26.5) | 0.394 (10.0) | 0.748 (19.0) | 0.886 (22.5) | 0.031 (0.8) |                                                                                                   |             |       |       |
| 2.2                    | 171225*160P-F          | 1.26 (32.0)  | 0.433 (11.0) | 0.787 (20.0) | 1.083 (27.5) | 0.031 (0.8) | 26                                                                                                | 5.5         | 4.7   | 2.6   |
| 3.3                    | 171335*160Q-F          | 1.26 (32.0)  | 0.512 (13.0) | 0.886 (22.5) | 1.083 (27.5) | 0.031 (0.8) | 20                                                                                                | 6.1         | 5.1   | 3.1   |
| 250 Vdc / 90 Vac 60 Hz |                        |              |              |              |              |             |                                                                                                   |             |       |       |
| 0.015                  | 171153*250B-F          | 0.413 (10.5) | 0.157 (4.0)  | 0.374 (9.5)  | 0.295 (7.5)  | 0.024 (0.6) | Not applicable. These capacitance values are not customarily used in switched-mode power supplies |             |       |       |
| 0.022                  | 171223*250B-F          | 0.413 (10.5) | 0.157 (4.0)  | 0.374 (9.5)  | 0.295 (7.5)  | 0.024 (0.6) |                                                                                                   |             |       |       |
| 0.022                  | 171223*250C-F          | 0.512 (13.0) | 0.157 (4.0)  | 0.374 (9.5)  | 0.394 (10)   | 0.024 (0.6) |                                                                                                   |             |       |       |
| 0.033                  | 171333*250C-F          | 0.512 (13.0) | 0.157 (4.0)  | 0.374 (9.5)  | 0.394 (10)   | 0.024 (0.6) |                                                                                                   |             |       |       |
| 0.047                  | 171473*250D-F          | 0.512 (13.0) | 0.197 (5.0)  | 0.433 (11.0) | 0.394 (10)   | 0.024 (0.6) |                                                                                                   |             |       |       |
| 0.068                  | 171683*250E-F          | 0.512 (13.0) | 0.236 (6.0)  | 0.472 (12.0) | 0.394 (10)   | 0.024 (0.6) |                                                                                                   |             |       |       |

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

# Type 171 Radial Leaded Metallized Polypropylene

## Ratings

## RoHS Compliant

| Cap<br>( $\mu$ F)       | Catalog<br>Part Number | Inches (mm)  |              |              |              |                 | ESR (m $\Omega$ )<br>20 kHz to                                                                                | IRMS (Amps) |       |       |
|-------------------------|------------------------|--------------|--------------|--------------|--------------|-----------------|---------------------------------------------------------------------------------------------------------------|-------------|-------|-------|
|                         |                        | L Max        | T Max        | H Max        | S (Pitch)    | $\varnothing$ d | 100 kHz                                                                                                       | 25 °C       | 45 °C | 85 °C |
| 250 Vdc / 90 Vac 60 Hz  |                        |              |              |              |              |                 |                                                                                                               |             |       |       |
| 0.10                    | 171104*250F-F          | 0.709 (18.0) | 0.197 (5.0)  | 0.433 (11.0) | 0.591 (15.0) | 0.031 (0.8)     | Not applicable                                                                                                |             |       |       |
| 0.15                    | 171154*250G-F          | 0.709 (18.0) | 0.236 (6.0)  | 0.472 (12.0) | 0.591 (15.0) | 0.031 (0.8)     |                                                                                                               |             |       |       |
| 0.22                    | 171224*250H-F          | 0.709 (18.0) | 0.295 (7.5)  | 0.531 (13.5) | 0.591 (15.0) | 0.031 (0.8)     |                                                                                                               |             |       |       |
| 0.33                    | 171334*250L-F          | 1.043 (26.5) | 0.236 (6.0)  | 0.591 (15.0) | 0.886 (22.5) | 0.031 (0.8)     |                                                                                                               |             |       |       |
| 0.47                    | 171474*250M-F          | 1.043 (26.5) | 0.276 (7.0)  | 0.650 (16.5) | 0.886 (22.5) | 0.031 (0.8)     |                                                                                                               |             |       |       |
| 0.68                    | 171684*250Q-F          | 1.26 (32.0)  | 0.512 (13.0) | 0.886 (22.5) | 1.083 (27.5) | 0.031 (0.8)     | 35                                                                                                            | 3.8         | 3.6   | 1.7   |
| 1.0                     | 171105*250P-F          | 1.26 (32.0)  | 0.433 (11.0) | 0.787 (20.0) | 1.083 (27.5) | 0.031 (0.8)     | 32                                                                                                            | 4           | 3.8   | 1.9   |
| 1.5                     | 171155*250Q-F          | 1.26 (32.0)  | 0.512 (13.0) | 0.886 (22.5) | 1.083 (27.5) | 0.031 (0.8)     | 28                                                                                                            | 4.4         | 4.4   | 3.2   |
|                         |                        |              |              |              |              |                 | 26                                                                                                            | 5.1         | 4.9   | 3.5   |
| 400 Vdc / 220 Vac 60 Hz |                        |              |              |              |              |                 |                                                                                                               |             |       |       |
| 0.0068                  | 171682*400B-F          | 0.413 (10.5) | 0.157 (4.0)  | 0.374 (9.5)  | 0.295 (7.5)  | 0.024 (0.6)     | Not applicable.<br>These capacitance values<br>are not customarily used<br>in switched-mode power<br>supplies |             |       |       |
| 0.010                   | 171103*400B-F          | 0.413 (10.5) | 0.157 (4.0)  | 0.374 (9.5)  | 0.295 (7.5)  | 0.024 (0.6)     |                                                                                                               |             |       |       |
| 0.010                   | 171103*400C-F          | 0.512 (13.0) | 0.157 (4.0)  | 0.374 (9.5)  | 0.394 (10.0) | 0.024 (0.6)     |                                                                                                               |             |       |       |
| 0.015                   | 171153*400D-F          | 0.512 (13.0) | 0.197 (5.0)  | 0.433 (11.0) | 0.394 (10.0) | 0.024 (0.6)     |                                                                                                               |             |       |       |
| 0.022                   | 171223*400D-F          | 0.512 (13.0) | 0.197 (5.0)  | 0.433 (11.0) | 0.394 (10.0) | 0.024 (0.6)     |                                                                                                               |             |       |       |
| 0.033                   | 171333*400E-F          | 0.512 (13.0) | 0.236 (6.0)  | 0.472 (12.0) | 0.394 (10.0) | 0.024 (0.6)     |                                                                                                               |             |       |       |
| 0.047                   | 171473*400F-F          | 0.709 (18.0) | 0.197 (5.0)  | 0.433 (11.0) | 0.591 (15.0) | 0.031 (0.8)     |                                                                                                               |             |       |       |
| 0.068                   | 171683*400G-F          | 0.709 (18.0) | 0.236 (6.0)  | 0.472 (12.0) | 0.591 (15.0) | 0.031 (0.8)     |                                                                                                               |             |       |       |
| 0.10                    | 171104*400H-F          | 0.709 (18.0) | 0.295 (7.5)  | 0.531 (13.5) | 0.591 (15.0) | 0.031 (0.8)     |                                                                                                               |             |       |       |
| 0.15                    | 171154*400I-F          | 0.709 (18.0) | 0.335 (8.5)  | 0.571 (14.5) | 0.591 (15.0) | 0.031 (0.8)     |                                                                                                               |             |       |       |
| 0.22                    | 171224*400N-F          | 1.043 (26.5) | 0.335 (8.5)  | 0.669 (17.0) | 0.886 (22.5) | 0.031 (0.8)     |                                                                                                               |             |       |       |
| 0.33                    | 171334*400O-F          | 1.043 (26.5) | 0.394 (10.0) | 0.748 (19.0) | 0.886 (22.5) | 0.031 (0.8)     |                                                                                                               |             |       |       |
| 0.47                    | 171474*400P-F          | 1.26 (32.0)  | 0.433 (11.0) | 0.787 (20.0) | 1.083 (27.5) | 0.031 (0.8)     | 32                                                                                                            | 5.7         | 5     | 2.2   |
| 0.68                    | 171684*400Q-F          | 1.26 (32.0)  | 0.512 (13.0) | 0.886 (22.5) | 1.083 (27.5) | 0.031 (0.8)     | 30                                                                                                            | 5.7         | 5.5   | 2.4   |
| 630 Vdc / 250 Vac 60 Hz |                        |              |              |              |              |                 |                                                                                                               |             |       |       |
| 0.0022                  | 171222*630B-F          | 0.413 (10.5) | 0.157 (4.0)  | 0.374 (9.5)  | 0.295 (7.5)  | 0.024 (0.6)     | Not applicable.<br>These capacitance values<br>are not customarily used<br>in switched-mode power<br>supplies |             |       |       |
| 0.0022                  | 171222*630C-F          | 0.512 (13.0) | 0.157 (4.0)  | 0.374 (9.5)  | 0.394 (10.0) | 0.024 (0.6)     |                                                                                                               |             |       |       |
| 0.0033                  | 171332*630B-F          | 0.413 (10.5) | 0.157 (4.0)  | 0.374 (9.5)  | 0.295 (7.5)  | 0.024 (0.6)     |                                                                                                               |             |       |       |
| 0.0033                  | 171332*630C-F          | 0.512 (13.0) | 0.157 (4.0)  | 0.374 (9.5)  | 0.394 (10.0) | 0.024 (0.6)     |                                                                                                               |             |       |       |
| 0.0047                  | 171472*630B-F          | 0.413 (10.5) | 0.157 (4.0)  | 0.374 (9.5)  | 0.295 (7.5)  | 0.024 (0.6)     |                                                                                                               |             |       |       |
| 0.0047                  | 171472*630C-F          | 0.512 (13.0) | 0.157 (4.0)  | 0.374 (9.5)  | 0.394 (10.0) | 0.024 (0.6)     |                                                                                                               |             |       |       |
| 0.0068                  | 171682*630D-F          | 0.512 (13.0) | 0.197 (5.0)  | 0.433 (11.0) | 0.394 (10.0) | 0.024 (0.6)     |                                                                                                               |             |       |       |
| 0.010                   | 171103*630D-F          | 0.512 (13.0) | 0.197 (5.0)  | 0.433 (11.0) | 0.394 (10.0) | 0.024 (0.6)     |                                                                                                               |             |       |       |
| 0.015                   | 171153*630E-F          | 0.512 (13.0) | 0.236 (6.0)  | 0.472 (12.0) | 0.394 (10.0) | 0.024 (0.6)     |                                                                                                               |             |       |       |
| 0.022                   | 171223*630F-F          | 0.709 (18.0) | 0.197 (5.0)  | 0.433 (11.0) | 0.591 (15.0) | 0.031 (0.8)     |                                                                                                               |             |       |       |
| 0.033                   | 171333*630G-F          | 0.709 (18.0) | 0.236 (6.0)  | 0.472 (12.0) | 0.591 (15.0) | 0.031 (0.8)     |                                                                                                               |             |       |       |
| 0.047                   | 171473*630H-F          | 0.709 (18.0) | 0.295 (7.5)  | 0.531 (13.5) | 0.591 (15.0) | 0.031 (0.8)     |                                                                                                               |             |       |       |
| 0.068                   | 171683*630I-F          | 0.709 (18.0) | 0.335 (8.5)  | 0.571 (14.5) | 0.591 (15.0) | 0.031 (0.8)     |                                                                                                               |             |       |       |
| 0.10                    | 171104*630N-F          | 1.043 (26.5) | 0.335 (8.5)  | 0.669 (17.0) | 0.886 (22.5) | 0.031 (0.8)     |                                                                                                               |             |       |       |
| 0.15                    | 171154*630O-F          | 1.043 (26.5) | 0.394 (10.0) | 0.748 (19.0) | 0.886 (22.5) | 0.031 (0.8)     |                                                                                                               |             |       |       |
| 0.22                    | 171224*630P-F          | 1.26 (32.0)  | 0.433 (11.0) | 0.787 (20.0) | 1.083 (27.5) | 0.031 (0.8)     |                                                                                                               |             |       |       |
| 0.33                    | 171334*630Q-F          | 1.26 (32.0)  | 0.512 (13.0) | 0.886 (22.5) | 1.083 (27.5) | 0.031 (0.8)     |                                                                                                               |             |       |       |

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

## Type 171 Radial Leaded Metallized Polypropylene

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