

# Type 401C –55 °C to 105 °C Low-ESR, Wide Temperature Grade

## The Ultimate in Cold Performance and ESR



The Type 401C is the wide-temperature, low-voltage version of the Type 450C. It is ideal for high-ripple current military and industrial applications that need full performance at cold temperatures. It also excels as a power-supply output capacitor because of its exceptionally low ESR. The extended cathode foil of the 401C assures cool operation and heat flow from the capacitor element to the can in all mounting orientations.

### Highlights

- Better value than large snap-in capacitors
- Ripple Currents to >50 amps at 55 °C
- ESRs to 3.5 mΩ
- > 90% capacitance at –40 °C
- Thermal-Pak™ extended cathode construction

## Specifications

|                               |                                           |
|-------------------------------|-------------------------------------------|
| <b>Operating Temperature:</b> | –55 °C to 105 °C                          |
| <b>Rated Voltage:</b>         | 6.3 to 250 Vdc                            |
| <b>Capacitance:</b>           | 380 μF to 570,000 μF ± 20%                |
| <b>DC Leakage Current:</b>    | ≤ 1.5 $\sqrt{CV}$ μA, 4 mA max, 5 minutes |
| <b>Cold Impedance:</b>        | –55 °C multiple of 25 °C $Z \leq 3$       |

### Ripple Current Multipliers: Ambient Temperature

| 45 °C | 55 °C | 65 °C | 75 °C | 85 °C | 95 °C | 105 °C |
|-------|-------|-------|-------|-------|-------|--------|
| 1.66  | 1.52  | 1.37  | 1.20  | 1.00  | 0.75  | 0.36   |

### Frequency

|                    | 50 Hz | 60 Hz | 120 Hz | 360 Hz | 1 kHz | 5 kHz | 10 kHz & up |
|--------------------|-------|-------|--------|--------|-------|-------|-------------|
| <b>6.3 to 50 V</b> | 0.85  | 0.90  | 1.00   | 1.05   | 1.10  | 1.10  | 1.10        |
| <b>63 to 250 V</b> | 0.50  | 0.53  | 1.00   | 1.15   | 1.15  | 1.20  | 1.20        |

**EIA Ripple Life:** 2,000 h at 85 °C per EIA IS-749 with 85 °C ripple current

Δ Capacitance ±10%

ESR 200% of limit

DCL 100% of limit

**Life Test:** 4,000 h at 105°C with rated voltage

Δ Capacitance ±10%

ESR 200% of limit

DCL 100% of limit

**Shelf Life Test:** 500 h at +105 °C, capacitance, ESR and DCL, will meet initial requirements

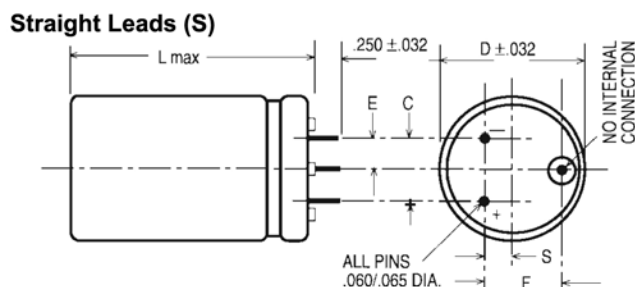
**Vibration:** 10 to 55 Hz, 0.06" and 10 g max, 2 h each plane



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 401C –55 °C to 105 °C Low-ESR, Wide Temperature Grade

## Outline Drawings



## Case Dimensions

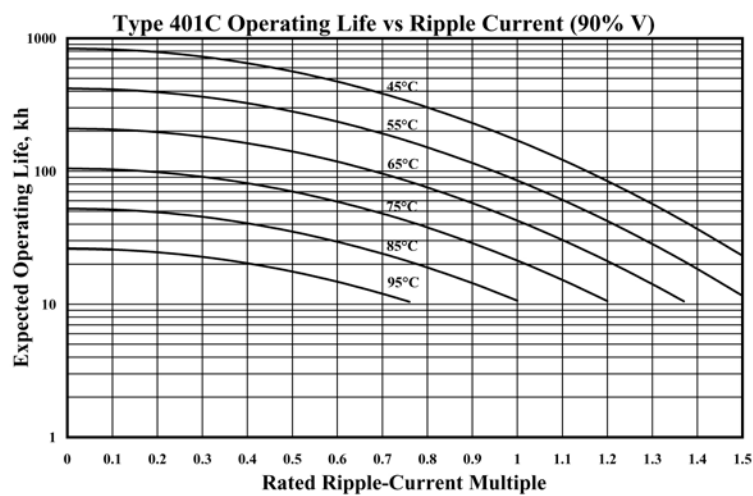
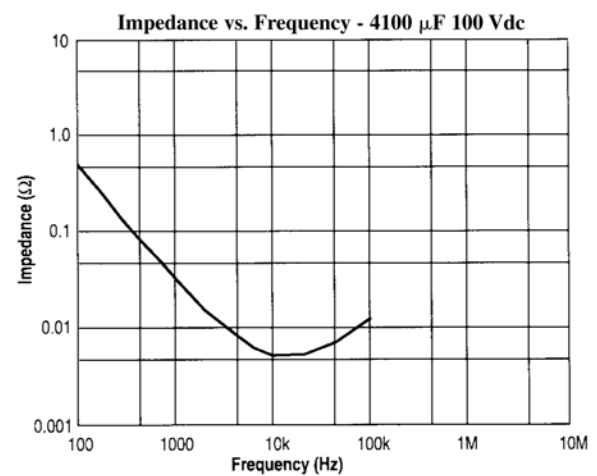
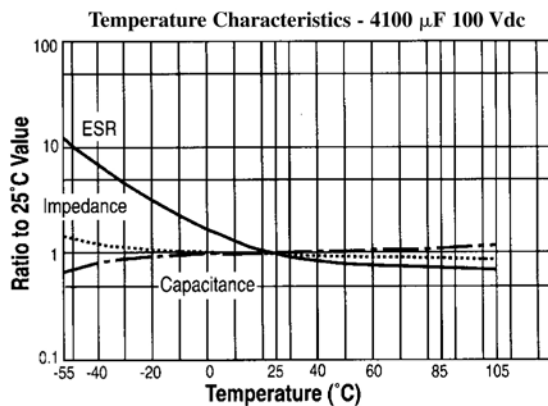
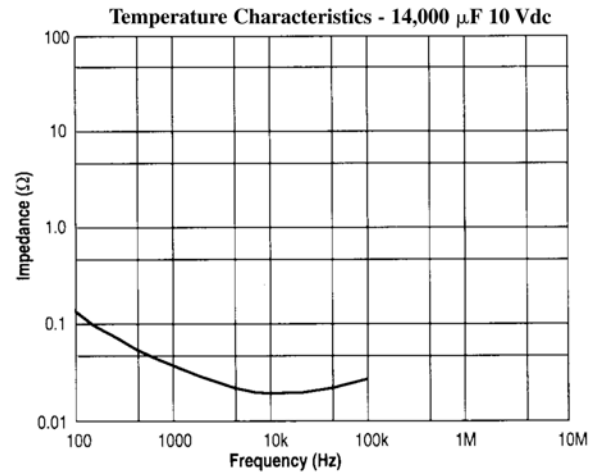
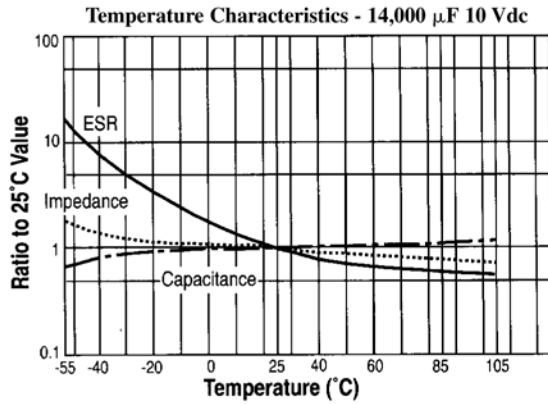
| Case | Inches   |       |          |          |          |          | Millimeters |        |         |         |         |         |
|------|----------|-------|----------|----------|----------|----------|-------------|--------|---------|---------|---------|---------|
| Code | D ± .031 | L MAX | C ± .015 | S ± .031 | E ± .031 | F ± .015 | D ± .78     | L MAX  | C ± .78 | S ± .78 | E ± .78 | F ± .38 |
| AK   | 1.375    | 1.75  | 0.50     | 0.175    | 0.25     | 0.55     | 34.93       | 44.45  | 12.70   | 4.45    | 6.35    | 13.97   |
| AA   | 1.375    | 2.25  | 0.50     | 0.175    | 0.25     | 0.55     | 34.93       | 57.15  | 12.70   | 4.45    | 6.35    | 13.97   |
| AH   | 1.375    | 2.75  | 0.50     | 0.175    | 0.25     | 0.55     | 34.98       | 69.85  | 12.70   | 4.45    | 6.35    | 13.97   |
| AB   | 1.375    | 3.25  | 0.50     | 0.175    | 0.25     | 0.55     | 34.93       | 82.55  | 12.70   | 4.45    | 6.35    | 13.97   |
| AJ   | 1.375    | 3.75  | 0.50     | 0.175    | 0.25     | 0.55     | 34.93       | 95.25  | 12.70   | 4.45    | 6.35    | 13.97   |
| AC   | 1.375    | 4.25  | 0.50     | 0.175    | 0.25     | 0.55     | 34.93       | 107.95 | 12.70   | 4.45    | 6.35    | 13.97   |
| AD   | 1.375    | 4.75  | 0.50     | 0.175    | 0.25     | 0.55     | 34.93       | 120.65 | 12.70   | 4.45    | 6.35    | 13.97   |
| AE   | 1.375    | 5.25  | 0.50     | 0.175    | 0.25     | 0.55     | 34.93       | 133.35 | 12.70   | 4.45    | 6.35    | 13.97   |
| AF   | 1.375    | 5.75  | 0.50     | 0.175    | 0.25     | 0.55     | 34.93       | 146.05 | 12.70   | 4.45    | 6.35    | 13.97   |
| EA   | 1.75     | 2.25  | 0.70     | 0.375    | 0.35     | 0.90     | 44.45       | 57.15  | 17.78   | 9.53    | 8.89    | 22.86   |
| EH   | 1.75     | 2.75  | 0.70     | 0.375    | 0.35     | 0.90     | 44.45       | 69.85  | 17.78   | 9.53    | 8.89    | 22.86   |
| EB   | 1.75     | 3.25  | 0.70     | 0.375    | 0.35     | 0.90     | 44.45       | 82.55  | 17.78   | 9.53    | 8.89    | 22.86   |
| EJ   | 1.75     | 3.75  | 0.70     | 0.375    | 0.35     | 0.90     | 44.45       | 95.25  | 17.78   | 9.53    | 8.89    | 22.86   |
| EC   | 1.75     | 4.25  | 0.70     | 0.375    | 0.35     | 0.90     | 44.45       | 107.95 | 17.78   | 9.53    | 8.89    | 22.86   |
| ED   | 1.75     | 4.75  | 0.70     | 0.375    | 0.35     | 0.90     | 44.45       | 120.65 | 17.78   | 9.53    | 8.89    | 22.86   |
| EE   | 1.75     | 5.25  | 0.70     | 0.375    | 0.35     | 0.90     | 44.45       | 133.35 | 17.78   | 9.53    | 8.89    | 22.86   |
| EF   | 1.75     | 5.75  | 0.70     | 0.375    | 0.35     | 0.90     | 44.45       | 146.05 | 17.78   | 9.53    | 8.89    | 22.86   |
| BA   | 2.00     | 2.25  | 0.80     | 0.425    | 0.40     | 1.00     | 50.80       | 57.15  | 20.32   | 10.80   | 10.16   | 25.40   |
| BH   | 2.00     | 2.75  | 0.80     | 0.425    | 0.40     | 1.00     | 50.80       | 69.85  | 20.32   | 10.80   | 10.16   | 25.40   |
| BB   | 2.00     | 3.25  | 0.80     | 0.425    | 0.40     | 1.00     | 50.80       | 82.55  | 20.32   | 10.80   | 10.16   | 25.40   |
| BJ   | 2.00     | 3.75  | 0.80     | 0.425    | 0.40     | 1.00     | 50.80       | 95.25  | 20.32   | 10.80   | 10.16   | 25.40   |
| BC   | 2.00     | 4.25  | 0.80     | 0.425    | 0.40     | 1.00     | 50.80       | 107.95 | 20.32   | 10.80   | 10.16   | 25.40   |
| BD   | 2.00     | 4.75  | 0.80     | 0.425    | 0.40     | 1.00     | 50.80       | 120.65 | 20.32   | 10.80   | 10.16   | 25.40   |
| BE   | 2.00     | 5.25  | 0.80     | 0.425    | 0.40     | 1.00     | 50.80       | 133.25 | 20.32   | 10.80   | 10.16   | 25.40   |
| BF   | 2.00     | 5.75  | 0.80     | 0.425    | 0.40     | 1.00     | 50.80       | 146.05 | 20.32   | 10.80   | 10.16   | 25.40   |

## Part Numbering System

|      |                               |                                            |                            |           |                                                                      |                                      |
|------|-------------------------------|--------------------------------------------|----------------------------|-----------|----------------------------------------------------------------------|--------------------------------------|
| 401C | 393                           | M                                          | 100                        | AK        | 8                                                                    |                                      |
| Type | Capacitance                   | Tolerance                                  | Voltage                    | Case Code | Insulation                                                           | Terminal<br>(blank) = Straight Leads |
|      | 242 = 2400 µF<br>221 = 220 µF | M = ±20%<br>T = -10% +50%<br>U = -10% +75% | 100 = 100 V<br>450 = 100 V |           | 0 = Bare can<br>8 = PVC and Standoffs<br>9 = Polyester and Standoffs |                                      |

# Type 401C -55 °C to 105 °C Low-ESR, Wide Temperature Grade

## Typical Performance Curves



# Type 401C –55 °C to 105 °C Low-ESR, Wide Temperature Grade

## Ratings

| Cap.<br>(µF)           | Catalog Part<br>Number | ESR Max.<br>25 °C |                | Ripple Amps,<br>85 °C |               | Nominal<br>Size<br>D X L<br>(in) |
|------------------------|------------------------|-------------------|----------------|-----------------------|---------------|----------------------------------|
|                        |                        | 120 Hz<br>(mΩ)    | 20 kHz<br>(mΩ) | 120 Hz<br>(A)         | 20 kHz<br>(A) |                                  |
| 6.3 Vdc (9 Vdc Surge)  |                        |                   |                |                       |               |                                  |
| 42000                  | 401C423M6R3AK8         | 33.40             | 22.70          | 8.40                  | 9.20          | 1 3/8 X 1 5/8                    |
| 66000                  | 401C663M6R3AA8         | 23.00             | 16.10          | 10.80                 | 11.80         | 1 3/8 X 2 1/8                    |
| 92000                  | 401C923M6R3AH8         | 16.80             | 12.00          | 13.00                 | 14.20         | 1 3/8 X 2 5/8                    |
| 100000                 | 401C104M6R3EA8         | 21.20             | 15.00          | 11.90                 | 13.40         | 1 3/4 X 2 1/8                    |
| 120000                 | 401C124M6R3AB8         | 14.60             | 8.50           | 15.40                 | 17.00         | 1 3/8 X 3 1/8                    |
| 140000                 | 401C144M6R3AJ8         | 12.30             | 7.30           | 17.70                 | 19.20         | 1 3/8 X 3 5/8                    |
| 150000                 | 401C154M6R3BA8         | 12.70             | 10.30          | 16.40                 | 17.20         | 2 X 2 1/8                        |
| 150000                 | 401C154M6R3EH8         | 15.10             | 10.70          | 15.10                 | 16.90         | 1 3/4 X 2 5/8                    |
| 170000                 | 401C174M6R3AC8         | 10.80             | 6.40           | 19.70                 | 21.30         | 1 3/8 X 4 1/8                    |
| 200000                 | 401C204M6R3AD8         | 9.70              | 5.80           | 21.50                 | 23.10         | 1 3/8 X 4 5/8                    |
| 200000                 | 401C204M6R3BH8         | 9.30              | 7.30           | 20.50                 | 22.10         | 2 X 2 5/8                        |
| 200000                 | 401C204M6R3EB8         | 11.90             | 8.40           | 18.20                 | 20.40         | 1 3/4 X 3 1/8                    |
| 230000                 | 401C234M6R3AE8         | 9.00              | 5.40           | 23.30                 | 24.90         | 1 3/8 X 5 1/8                    |
| 250000                 | 401C254M6R3BB8         | 7.40              | 5.80           | 24.20                 | 26.00         | 2 X 3 1/8                        |
| 250000                 | 401C254M6R3EJ8         | 10.00             | 7.10           | 20.50                 | 22.80         | 1 3/4 X 3 5/8                    |
| 260000                 | 401C264M6R3AF8         | 8.40              | 5.10           | 25.10                 | 26.70         | 1 3/8 X 5 5/8                    |
| 290000                 | 401C294M6R3EC8         | 8.70              | 6.20           | 22.60                 | 25.20         | 1 3/4 X 4 1/8                    |
| 310000                 | 401C314M6R3BJ8         | 6.50              | 4.90           | 26.60                 | 28.80         | 2 X 3 5/8                        |
| 350000                 | 401C354M6R3ED8         | 7.80              | 5.60           | 25.00                 | 27.80         | 1 3/4 X 4 5/8                    |
| 370000                 | 401C374M6R3BC8         | 5.70              | 4.30           | 29.00                 | 30.80         | 2 X 4 1/8                        |
| 390000                 | 401C394M6R3EE8         | 7.20              | 5.10           | 27.50                 | 30.50         | 1 3/4 X 5 1/8                    |
| 420000                 | 401C424M6R3BD8         | 5.20              | 3.90           | 30.90                 | 33.40         | 2 X 4 5/8                        |
| 440000                 | 401C444M6R3EF8         | 6.70              | 4.80           | 30.30                 | 33.40         | 1 3/4 X 5 5/8                    |
| 510000                 | 401C514M6R3BE8         | 4.80              | 3.60           | 32.60                 | 35.80         | 2 X 5 1/8                        |
| 570000                 | 401C574M6R3BF8         | 4.50              | 3.50           | 34.00                 | 37.90         | 2 X 5 5/8                        |
| 7.5 Vdc (10 Vdc Surge) |                        |                   |                |                       |               |                                  |
| 41000                  | 401C413M7R5AK8         | 33.40             | 22.70          | 8.40                  | 9.20          | 1 3/8 X 1 5/8                    |
| 62000                  | 401C623M7R5AA8         | 23.00             | 16.10          | 10.80                 | 11.80         | 1 3/8 X 2 1/8                    |
| 90000                  | 401C903M7R5AH8         | 16.80             | 12.00          | 13.00                 | 14.20         | 1 3/8 X 2 5/8                    |
| 100000                 | 401C104M7R5EA8         | 21.20             | 15.00          | 11.90                 | 13.40         | 1 3/4 X 2 1/8                    |
| 120000                 | 401C124M7R5AB8         | 14.60             | 9.50           | 15.40                 | 17.00         | 1 3/8 X 3 1/8                    |
| 140000                 | 401C144M7R5AJ8         | 12.30             | 8.00           | 17.70                 | 19.20         | 1 3/8 X 3 5/8                    |
| 140000                 | 401C144M7R5BA8         | 12.70             | 10.30          | 16.40                 | 17.20         | 2 X 2 1/8                        |
| 150000                 | 401C154M7R5EH8         | 15.10             | 10.70          | 15.10                 | 16.90         | 1 3/4 X 2 5/8                    |
| 170000                 | 401C174M7R5AC8         | 10.80             | 7.10           | 19.70                 | 21.30         | 1 3/8 X 4 1/8                    |
| 190000                 | 401C194M7R5AD8         | 9.70              | 6.40           | 21.50                 | 23.10         | 1 3/8 X 4 5/8                    |
| 190000                 | 401C194M7R5BH8         | 9.30              | 7.30           | 20.50                 | 22.10         | 2 X 2 5/8                        |
| 190000                 | 401C194M7R5EB8         | 11.90             | 8.40           | 18.20                 | 20.40         | 1 3/4 X 3 1/8                    |
| 230000                 | 401C234M7R5AE8         | 9.00              | 5.90           | 23.30                 | 24.90         | 1 3/8 X 5 1/8                    |
| 240000                 | 401C244M7R5EJ8         | 10.00             | 7.10           | 20.50                 | 22.80         | 1 3/4 X 3 5/8                    |
| 250000                 | 401C254M7R5AF8         | 8.40              | 5.60           | 25.10                 | 26.70         | 1 3/8 X 5 5/8                    |
| 250000                 | 401C254M7R5BB8         | 7.40              | 5.80           | 24.20                 | 26.00         | 2 X 3 1/8                        |
| 290000                 | 401C294M7R5EC8         | 8.70              | 6.20           | 22.60                 | 25.20         | 1 3/4 X 4 1/8                    |
| 300000                 | 401C304M7R5BJ8         | 6.50              | 4.90           | 26.60                 | 28.80         | 2 X 3 5/8                        |
| 340000                 | 401C344M7R5ED8         | 7.80              | 5.60           | 25.00                 | 27.80         | 1 3/4 X 4 5/8                    |
| 370000                 | 401C374M7R5BC8         | 5.70              | 4.30           | 29.00                 | 30.80         | 2 X 4 1/8                        |

| Cap.<br>(µF)                 | Catalog Part<br>Number | ESR Max.<br>25 °C |                | Ripple Amps,<br>85 °C |               | Nominal<br>Size<br>D X L<br>(in) |
|------------------------------|------------------------|-------------------|----------------|-----------------------|---------------|----------------------------------|
|                              |                        | 120 Hz<br>(mΩ)    | 20 kHz<br>(mΩ) | 120 Hz<br>(A)         | 20 kHz<br>(A) |                                  |
| 380000                       | 401C384M7R5EE8         | 7.20              | 5.10           | 27.50                 | 30.50         | 1 3/4 X 5 1/8                    |
| 420000                       | 401C424M7R5BD8         | 5.20              | 3.90           | 30.90                 | 33.40         | 2 X 4 5/8                        |
| 440000                       | 401C444M7R5EF8         | 6.70              | 4.80           | 30.30                 | 33.40         | 1 3/4 X 5 5/8                    |
| 500000                       | 401C504M7R5BE8         | 4.80              | 3.60           | 32.60                 | 35.80         | 2 X 5 1/8                        |
| 560000                       | 401C564M7R5BF8         | 4.50              | 3.50           | 34.00                 | 37.90         | 2 X 5 5/8                        |
| <b>10 Vdc (15 Vdc Surge)</b> |                        |                   |                |                       |               |                                  |
| 31000                        | 401C313M010AK8         | 33.40             | 22.70          | 8.40                  | 9.20          | 1 3/8 X 1 5/8                    |
| 50000                        | 401C503M010AA8         | 23.00             | 16.10          | 10.80                 | 11.80         | 1 3/8 X 2 1/8                    |
| 69000                        | 401C693M010AH8         | 16.80             | 12.00          | 13.00                 | 14.20         | 1 3/8 X 2 5/8                    |
| 81000                        | 401C813M010EA8         | 21.20             | 13.30          | 11.90                 | 13.40         | 1 3/4 X 2 1/8                    |
| 91000                        | 401C913M010AB8         | 14.60             | 9.50           | 15.40                 | 17.00         | 1 3/8 X 3 1/8                    |
| 110000                       | 401C114M010AJ8         | 12.30             | 8.00           | 17.70                 | 19.20         | 1 3/8 X 3 5/8                    |
| 110000                       | 401C114M010BA8         | 12.70             | 10.30          | 16.40                 | 17.20         | 2 X 2 1/8                        |
| 120000                       | 401C124M010EH8         | 15.10             | 9.50           | 15.10                 | 16.90         | 1 3/4 X 2 5/8                    |
| 130000                       | 401C134M010AC8         | 10.80             | 7.10           | 19.70                 | 21.30         | 1 3/8 X 4 1/8                    |
| 150000                       | 401C154M010AD8         | 9.70              | 6.40           | 21.50                 | 23.10         | 1 3/8 X 4 5/8                    |
| 150000                       | 401C154M010BH8         | 9.30              | 7.30           | 20.50                 | 22.10         | 2 X 2 5/8                        |
| 150000                       | 401C154M010EB8         | 11.90             | 7.50           | 18.20                 | 20.40         | 1 3/4 X 3 1/8                    |
| 170000                       | 401C174M010AE8         | 9.00              | 5.90           | 23.30                 | 24.90         | 1 3/8 X 5 1/8                    |
| 180000                       | 401C184M010EJ8         | 10.00             | 6.30           | 20.50                 | 22.80         | 1 3/4 X 3 5/8                    |
| 190000                       | 401C194M010AF8         | 8.40              | 5.60           | 25.10                 | 26.70         | 1 3/8 X 5 5/8                    |
| 190000                       | 401C194M010BB8         | 7.40              | 5.80           | 24.20                 | 26.00         | 2 X 3 1/8                        |
| 230000                       | 401C234M010EC8         | 8.70              | 5.50           | 22.60                 | 25.20         | 1 3/4 X 4 1/8                    |
| 240000                       | 401C244M010BJ8         | 6.50              | 4.90           | 26.60                 | 28.80         | 2 X 3 5/8                        |
| 260000                       | 401C264M010ED8         | 7.80              | 5.00           | 25.00                 | 27.80         | 1 3/4 X 4 5/8                    |
| 280000                       | 401C284M010BC8         | 5.70              | 4.30           | 29.00                 | 30.80         | 2 X 4 1/8                        |
| 290000                       | 401C294M010EE8         | 7.20              | 4.60           | 27.50                 | 30.50         | 1 3/4 X 5 1/8                    |
| 330000                       | 401C334M010BD8         | 5.20              | 3.90           | 30.90                 | 33.40         | 2 X 4 5/8                        |
| 340000                       | 401C344M010EF8         | 6.70              | 4.30           | 30.30                 | 33.40         | 1 3/4 X 5 5/8                    |
| 390000                       | 401C394M010BE8         | 4.80              | 3.60           | 32.60                 | 35.80         | 2 X 5 1/8                        |
| 440000                       | 401C444M010BF8         | 4.50              | 3.50           | 34.00                 | 37.90         | 2 X 5 5/8                        |
| <b>16 Vdc (24 Vdc Surge)</b> |                        |                   |                |                       |               |                                  |
| 20000                        | 401C203M016AK8         | 34.70             | 23.00          | 8.30                  | 9.10          | 1 3/8 X 1 5/8                    |
| 33000                        | 401C333M016AA8         | 23.90             | 16.30          | 10.60                 | 11.70         | 1 3/8 X 2 1/8                    |
| 46000                        | 401C463M016AH8         | 17.40             | 11.20          | 12.80                 | 14.20         | 1 3/8 X 2 5/8                    |
| 53000                        | 401C533M016EA8         | 21.50             | 15.90          | 11.80                 | 13.30         | 1 3/4 X 2 1/8                    |
| 60000                        | 401C603M016AB8         | 14.90             | 8.90           | 15.20                 | 16.90         | 1 3/8 X 3 1/8                    |
| 74000                        | 401C743M016AJ8         | 12.50             | 7.50           | 17.50                 | 19.10         | 1 3/8 X 3 5/8                    |
| 75000                        | 401C753M016BA8         | 12.70             | 10.20          | 16.40                 | 17.40         | 2 X 2 1/8                        |
| 78000                        | 401C783M016EH8         | 15.30             | 11.30          | 14.90                 | 16.80         | 1 3/4 X 2 5/8                    |
| 89000                        | 401C893M016AC8         | 11.00             | 6.60           | 19.50                 | 21.20         | 1 3/8 X 4 1/8                    |
| 100000                       | 401C104M016AD8         | 9.40              | 7.30           | 20.40                 | 22.10         | 2 X 2 5/8                        |
| 100000                       | 401C104M016BH8         | 12.00             | 8.90           | 18.10                 | 20.30         | 1 3/4 X 3 1/8                    |
| 100000                       | 401C104M016EB8         | 9.90              | 6.00           | 21.30                 | 23.00         | 1 3/8 X 4 5/8                    |
| 120000                       | 401C124M016AE8         | 9.10              | 5.50           | 23.10                 | 24.80         | 1 3/8 X 5 1/8                    |
| 130000                       | 401C134M016AF8         | 8.60              | 5.20           | 24.90                 | 26.60         | 1 3/8 X 5 5/8                    |
| 130000                       | 401C134M016BB8         | 7.50              | 5.80           | 24.00                 | 26.00         | 2 X 3 1/8                        |

# Type 401C -55 °C to 105 °C Low-ESR, Wide Temperature Grade

| Cap.<br>(µF)          | Catalog Part<br>Number | ESR Max.<br>25 °C |                | Ripple Amps,<br>85 °C |               | Nominal<br>Size<br>D X L<br>(in) |
|-----------------------|------------------------|-------------------|----------------|-----------------------|---------------|----------------------------------|
|                       |                        | 120 Hz<br>(mΩ)    | 20 kHz<br>(mΩ) | 120 Hz<br>(A)         | 20 kHz<br>(A) |                                  |
| 130000                | 401C134M016EJ8         | 10.10             | 7.50           | 20.30                 | 22.80         | 1 3/4 X 3 5/8                    |
| 150000                | 401C154M016EC8         | 8.80              | 6.60           | 22.50                 | 25.10         | 1 3/4 X 4 1/8                    |
| 160000                | 401C164M016BJ8         | 6.60              | 5.00           | 26.40                 | 28.80         | 2 X 3 5/8                        |
| 170000                | 401C174M016ED8         | 7.90              | 6.00           | 24.90                 | 27.70         | 1 3/4 X 4 5/8                    |
| 180000                | 401C184M016BC8         | 5.80              | 4.40           | 28.80                 | 30.70         | 2 X 4 1/8                        |
| 190000                | 401C194M016EE8         | 7.30              | 5.50           | 27.40                 | 30.40         | 1 3/4 X 5 1/8                    |
| 220000                | 401C224M016BD8         | 5.20              | 4.00           | 30.70                 | 33.30         | 2 X 4 5/8                        |
| 220000                | 401C224M016EF8         | 6.80              | 5.20           | 30.10                 | 33.40         | 1 3/4 X 5 5/8                    |
| 260000                | 401C264M016BE8         | 4.80              | 3.70           | 32.40                 | 35.70         | 2 X 5 1/8                        |
| 280000                | 401C284M016BF8         | 4.60              | 3.50           | 33.80                 | 37.90         | 2 X 5 5/8                        |
| 20 Vdc (30 Vdc Surge) |                        |                   |                |                       |               |                                  |
| 17000                 | 401C173M020AK8         | 37.90             | 23.70          | 8.40                  | 9.10          | 1 3/8 X 1 5/8                    |
| 26000                 | 401C263M020AA8         | 26.00             | 16.80          | 10.90                 | 11.70         | 1 3/8 X 2 1/8                    |
| 33000                 | 401C333M020AH8         | 18.90             | 12.40          | 13.20                 | 14.10         | 1 3/8 X 2 5/8                    |
| 45000                 | 401C453M020EA8         | 22.30             | 15.50          | 11.60                 | 13.30         | 1 3/4 X 2 1/8                    |
| 50000                 | 401C503M020AB8         | 15.60             | 9.90           | 15.10                 | 16.80         | 1 3/8 X 3 1/8                    |
| 58000                 | 401C583M020BA8         | 13.20             | 10.40          | 16.10                 | 17.30         | 2 X 2 1/8                        |
| 61000                 | 401C613M020AJ8         | 13.10             | 8.30           | 17.10                 | 19.00         | 1 3/8 X 3 5/8                    |
| 64000                 | 401C643M020EH8         | 15.80             | 11.00          | 14.70                 | 16.80         | 1 3/4 X 2 5/8                    |
| 73000                 | 401C733M020AC8         | 11.50             | 7.30           | 19.10                 | 21.10         | 1 3/8 X 4 1/8                    |
| 82000                 | 401C823M020BH8         | 9.80              | 7.50           | 20.10                 | 22.00         | 2 X 2 5/8                        |
| 84000                 | 401C843M020EB8         | 12.40             | 8.70           | 17.80                 | 20.30         | 1 3/4 X 3 1/8                    |
| 85000                 | 401C853M020AD8         | 10.30             | 6.60           | 20.90                 | 22.90         | 1 3/8 X 4 5/8                    |
| 96000                 | 401C963M020AE8         | 9.50              | 6.10           | 22.60                 | 24.70         | 1 3/8 X 5 1/8                    |
| 100000                | 401C104M020AF8         | 10.40             | 7.30           | 20.00                 | 22.70         | 1 3/4 X 3 5/8                    |
| 100000                | 401C104M020BB8         | 7.70              | 5.90           | 23.70                 | 25.90         | 2 X 3 1/8                        |
| 100000                | 401C104M020EJ8         | 8.90              | 5.80           | 24.40                 | 26.50         | 1 3/8 X 5 5/8                    |
| 120000                | 401C124M020EC8         | 9.10              | 6.40           | 22.10                 | 25.00         | 1 3/4 X 4 1/8                    |
| 130000                | 401C134M020BJ8         | 6.80              | 5.00           | 26.00                 | 28.70         | 2 X 3 5/8                        |
| 140000                | 401C144M020ED8         | 8.10              | 5.70           | 24.50                 | 27.60         | 1 3/4 X 4 5/8                    |
| 150000                | 401C154M020BC8         | 6.00              | 4.50           | 28.50                 | 30.70         | 2 X 4 1/8                        |
| 160000                | 401C164M020EE8         | 7.50              | 5.30           | 27.00                 | 30.30         | 1 3/4 X 5 1/8                    |
| 170000                | 401C174M020BD8         | 5.40              | 4.00           | 30.30                 | 33.20         | 2 X 4 5/8                        |
| 180000                | 401C184M020EF8         | 7.00              | 4.90           | 29.70                 | 33.30         | 1 3/4 X 5 5/8                    |
| 220000                | 401C224M020BE8         | 4.90              | 3.70           | 32.10                 | 35.70         | 2 X 5 1/8                        |
| 240000                | 401C244M020BF8         | 4.70              | 3.50           | 33.50                 | 37.80         | 2 X 5 5/8                        |
| 25 Vdc (35 Vdc Surge) |                        |                   |                |                       |               |                                  |
| 13000                 | 401C133M025AK8         | 41.00             | 24.40          | 8.10                  | 9.00          | 1 3/8 X 1 5/8                    |
| 20000                 | 401C203M025AA8         | 28.10             | 17.20          | 10.50                 | 11.60         | 1 3/8 X 2 1/8                    |
| 33000                 | 401C333M025AH8         | 20.30             | 12.80          | 12.80                 | 14.00         | 1 3/8 X 2 5/8                    |
| 35000                 | 401C353M025EA8         | 23.00             | 15.80          | 11.40                 | 13.20         | 1 3/4 X 2 1/8                    |
| 38000                 | 401C383M025AB8         | 16.30             | 10.10          | 14.60                 | 16.70         | 1 3/8 X 3 1/8                    |
| 45000                 | 401C453M025BA8         | 13.60             | 10.60          | 15.90                 | 17.30         | 2 X 2 1/8                        |
| 48000                 | 401C483M025AJ8         | 13.60             | 8.50           | 16.70                 | 18.90         | 1 3/8 X 3 5/8                    |
| 50000                 | 401C503M025EH8         | 16.30             | 11.20          | 14.40                 | 16.70         | 1 3/4 X 2 5/8                    |
| 57000                 | 401C573M025AC8         | 11.90             | 7.50           | 18.70                 | 21.00         | 1 3/8 X 4 1/8                    |
| 63000                 | 401C633M025BH8         | 10.10             | 7.60           | 19.80                 | 21.90         | 2 X 2 5/8                        |

| Cap.<br>(µF)          | Catalog Part<br>Number | ESR Max.<br>25 °C |                | Ripple Amps,<br>85 °C |               | Nominal<br>Size<br>D X L<br>(in) |
|-----------------------|------------------------|-------------------|----------------|-----------------------|---------------|----------------------------------|
|                       |                        | 120 Hz<br>(mΩ)    | 20 kHz<br>(mΩ) | 120 Hz<br>(A)         | 20 kHz<br>(A) |                                  |
| 66000                 | 401C663M025AD8         | 10.70             | 6.80           | 20.40                 | 22.80         | 1 3/8 X 4 5/8                    |
| 66000                 | 401C663M025EB8         | 12.80             | 8.80           | 17.50                 | 20.20         | 1 3/4 X 3 1/8                    |
| 75000                 | 401C753M025AE8         | 9.90              | 6.30           | 22.20                 | 24.60         | 1 3/8 X 5 1/8                    |
| 81000                 | 401C813M025EJ8         | 10.70             | 7.40           | 19.70                 | 22.60         | 1 3/4 X 3 5/8                    |
| 83000                 | 401C833M025BB8         | 8.00              | 6.10           | 23.40                 | 25.80         | 2 X 3 1/8                        |
| 84000                 | 401C843M025AF8         | 9.20              | 5.90           | 23.90                 | 26.40         | 1 3/8 X 5 5/8                    |
| 96000                 | 401C963M025EC8         | 9.30              | 6.50           | 21.80                 | 25.00         | 1 3/4 X 4 1/8                    |
| 100000                | 401C104M025BJ8         | 7.00              | 5.10           | 25.70                 | 28.60         | 2 X 3 5/8                        |
| 110000                | 401C114M025ED8         | 8.40              | 5.80           | 24.20                 | 27.50         | 1 3/4 X 4 5/8                    |
| 120000                | 401C124M025BC8         | 6.10              | 4.50           | 28.10                 | 30.60         | 2 X 4 1/8                        |
| 130000                | 401C134M025EE8         | 7.70              | 5.30           | 26.60                 | 30.20         | 1 3/4 X 5 1/8                    |
| 140000                | 401C144M025BD8         | 5.50              | 4.10           | 29.90                 | 33.20         | 2 X 4 5/8                        |
| 140000                | 401C144M025EF8         | 7.10              | 5.00           | 29.30                 | 33.20         | 1 3/4 X 5 5/8                    |
| 160000                | 401C164M025BE8         | 5.10              | 3.80           | 31.70                 | 35.60         | 2 X 5 1/8                        |
| 180000                | 401C184M025BF8         | 4.80              | 3.60           | 33.10                 | 37.70         | 2 X 5 5/8                        |
| 40 Vdc (60 Vdc Surge) |                        |                   |                |                       |               |                                  |
| 8200                  | 401C822M040AK8         | 44.20             | 25.90          | 7.60                  | 8.80          | 1 3/8 X 1 5/8                    |
| 12000                 | 401C123M040AA8         | 30.20             | 18.30          | 9.70                  | 11.40         | 1 3/8 X 2 1/8                    |
| 20000                 | 401C203M040EA8         | 24.70             | 16.50          | 11.00                 | 13.10         | 1 3/4 X 2 1/8                    |
| 22000                 | 401C223M040AH8         | 22.10             | 13.60          | 11.90                 | 13.80         | 1 3/8 X 2 5/8                    |
| 23000                 | 401C233M040AB8         | 17.80             | 10.70          | 13.70                 | 16.50         | 1 3/8 X 3 1/8                    |
| 27000                 | 401C273M040BA8         | 14.70             | 11.10          | 15.10                 | 17.10         | 2 X 2 1/8                        |
| 28000                 | 401C283M040AJ8         | 14.90             | 9.00           | 15.20                 | 18.60         | 1 3/8 X 3 5/8                    |
| 30000                 | 401C303M040EH8         | 17.50             | 11.70          | 13.90                 | 16.50         | 1 3/4 X 2 5/8                    |
| 34000                 | 401C343M040AC8         | 13.00             | 7.90           | 16.50                 | 20.70         | 1 3/8 X 4 1/8                    |
| 38000                 | 401C383M040BH8         | 10.80             | 8.00           | 19.00                 | 21.80         | 2 X 2 5/8                        |
| 39000                 | 401C393M040AD8         | 11.60             | 7.10           | 18.10                 | 22.50         | 1 3/8 X 4 5/8                    |
| 39000                 | 401C393M040EB8         | 13.70             | 9.20           | 16.90                 | 20.00         | 1 3/4 X 3 1/8                    |
| 45000                 | 401C453M040AE8         | 10.70             | 6.60           | 19.70                 | 24.30         | 1 3/8 X 5 1/8                    |
| 49000                 | 401C493M040EJ8         | 11.40             | 7.70           | 19.10                 | 22.50         | 1 3/4 X 3 5/8                    |
| 50000                 | 401C503M040BB8         | 8.60              | 6.30           | 22.50                 | 25.70         | 2 X 3 1/8                        |
| 50000                 | 401C503M040AF8         | 9.90              | 6.20           | 21.30                 | 26.10         | 1 3/8 X 5 5/8                    |
| 58000                 | 401C583M040EC8         | 9.90              | 6.70           | 21.10                 | 24.80         | 1 3/4 X 4 1/8                    |
| 61000                 | 401C613M040BJ8         | 7.50              | 5.30           | 25.00                 | 28.40         | 2 X 3 5/8                        |
| 68000                 | 401C683M040ED8         | 8.90              | 6.00           | 23.40                 | 27.40         | 1 3/4 X 4 5/8                    |
| 73000                 | 401C733M040BC8         | 6.50              | 4.70           | 27.00                 | 30.40         | 2 X 4 1/8                        |
| 77000                 | 401C773M040EE8         | 8.10              | 5.50           | 25.90                 | 30.00         | 1 3/4 X 5 1/8                    |
| 84000                 | 401C843M040BD8         | 5.90              | 4.20           | 29.10                 | 33.00         | 2 X 4 5/8                        |
| 86000                 | 401C863M040EF8         | 7.60              | 5.20           | 28.50                 | 33.00         | 1 3/4 X 5 5/8                    |
| 100000                | 401C104M040BE8         | 5.40              | 3.90           | 30.90                 | 35.40         | 2 X 5 1/8                        |
| 110000                | 401C114M040BF8         | 5.10              | 3.70           | 31.80                 | 37.50         | 2 X 5 5/8                        |
| 50 Vdc (75 Vdc Surge) |                        |                   |                |                       |               |                                  |
| 5600                  | 401C562M050AK8         | 46.60             | 27.30          | 7.20                  | 8.40          | 1 3/8 X 1 5/8                    |
| 8400                  | 401C842M050AA8         | 30.20             | 19.30          | 9.20                  | 10.80         | 1 3/8 X 2 1/8                    |
| 11000                 | 401C113M050AH8         | 22.50             | 14.30          | 11.60                 | 13.10         | 1 3/8 X 2 5/8                    |
| 14000                 | 401C143M050EA8         | 28.30             | 18.90          | 10.00                 | 11.80         | 1 3/4 X 2 1/8                    |
| 15000                 | 401C153M050AB8         | 18.10             | 11.30          | 13.40                 | 15.70         | 1 3/8 X 3 1/8                    |

# Type 401C –55 °C to 105 °C Low-ESR, Wide Temperature Grade

| Cap.<br>(µF)          | Catalog Part<br>Number | ESR Max.<br>25 °C |                | Ripple Amps,<br>85 °C |               | Nominal<br>Size<br>D X L<br>(in) |
|-----------------------|------------------------|-------------------|----------------|-----------------------|---------------|----------------------------------|
|                       |                        | 120 Hz<br>(mΩ)    | 20 kHz<br>(mΩ) | 120 Hz<br>(A)         | 20 kHz<br>(A) |                                  |
| 18000                 | 401C183M050BA8         | 18.70             | 14.40          | 12.40                 | 14.80         | 2 X 2 1/8                        |
| 19000                 | 401C193M050AJ8         | 15.10             | 9.50           | 14.60                 | 17.80         | 1 3/8 X 3 5/8                    |
| 20000                 | 401C203M050EH8         | 20.00             | 13.40          | 12.70                 | 15.00         | 1 3/4 X 2 5/8                    |
| 23000                 | 401C233M050AC8         | 13.00             | 8.30           | 15.30                 | 19.90         | 1 3/8 X 4 1/8                    |
| 26000                 | 401C263M050BH8         | 13.70             | 10.20          | 15.90                 | 18.90         | 2 X 2 5/8                        |
| 27000                 | 401C273M050AD8         | 12.20             | 7.40           | 16.70                 | 21.70         | 1 3/8 X 4 5/8                    |
| 27000                 | 401C273M050EB8         | 15.60             | 10.50          | 15.50                 | 18.20         | 1 3/4 X 3 1/8                    |
| 30000                 | 401C303M050AE8         | 11.20             | 6.80           | 18.10                 | 23.40         | 1 3/8 X 5 1/8                    |
| 33000                 | 401C333M050EJ8         | 13.00             | 8.80           | 17.60                 | 20.50         | 1 3/4 X 3 5/8                    |
| 34000                 | 401C343M050AF8         | 10.40             | 6.40           | 19.40                 | 25.20         | 1 3/8 X 5 5/8                    |
| 34000                 | 401C343M050BB8         | 10.80             | 8.10           | 18.90                 | 22.40         | 2 X 3 1/8                        |
| 39000                 | 401C393M050EC8         | 11.20             | 7.60           | 19.50                 | 22.70         | 1 3/4 X 4 1/8                    |
| 41000                 | 401C413M050BJ8         | 9.30              | 6.80           | 22.60                 | 25.00         | 2 X 3 5/8                        |
| 46000                 | 401C463M050ED8         | 10.00             | 6.80           | 21.70                 | 25.20         | 1 3/4 X 4 5/8                    |
| 50000                 | 401C503M050BC8         | 8.10              | 5.90           | 24.30                 | 26.90         | 2 X 4 1/8                        |
| 52000                 | 401C523M050EE8         | 9.10              | 6.20           | 24.10                 | 27.80         | 1 3/4 X 5 1/8                    |
| 58000                 | 401C583M050EF8         | 8.40              | 5.80           | 26.60                 | 30.60         | 1 3/4 X 5 5/8                    |
| 58000                 | 401C583M050BD8         | 7.20              | 5.30           | 26.10                 | 29.20         | 2 X 4 5/8                        |
| 60000                 | 401C603M050BE8         | 6.50              | 4.80           | 28.00                 | 31.70         | 2 X 5 1/8                        |
| 70000                 | 401C703M050BF8         | 6.10              | 4.50           | 28.90                 | 33.90         | 2 X 5 5/8                        |
| 63 Vdc (90 Vdc Surge) |                        |                   |                |                       |               |                                  |
| 4800                  | 401C482M063AK8         | 50.00             | 28.20          | 6.90                  | 8.30          | 1 3/8 X 1 5/8                    |
| 7200                  | 401C722M063AA8         | 32.40             | 19.60          | 8.90                  | 10.70         | 1 3/8 X 2 1/8                    |
| 11000                 | 401C113M063AH8         | 24.10             | 14.70          | 11.20                 | 13.00         | 1 3/8 X 2 5/8                    |
| 12000                 | 401C123M063EA8         | 26.00             | 19.30          | 9.90                  | 11.80         | 1 3/4 X 2 1/8                    |
| 13000                 | 401C133M063AB8         | 19.00             | 11.60          | 13.00                 | 15.60         | 1 3/8 X 3 1/8                    |
| 15000                 | 401C153M063BA8         | 19.30             | 14.70          | 11.90                 | 14.80         | 2 X 2 1/8                        |
| 16000                 | 401C163M063AJ8         | 15.80             | 9.70           | 14.20                 | 17.70         | 1 3/8 X 3 5/8                    |
| 17000                 | 401C173M063EH8         | 18.30             | 13.70          | 12.50                 | 14.90         | 1 3/4 X 2 5/8                    |
| 19000                 | 401C193M063AC8         | 13.60             | 8.50           | 14.90                 | 19.80         | 1 3/8 X 4 1/8                    |
| 22000                 | 401C223M063BH8         | 14.10             | 10.40          | 15.30                 | 18.90         | 2 X 2 5/8                        |
| 23000                 | 401C233M063EB8         | 12.70             | 7.60           | 16.30                 | 21.50         | 1 3/8 X 4 5/8                    |
| 23000                 | 401C233M063AD8         | 14.30             | 10.70          | 15.30                 | 18.10         | 1 3/4 X 3 1/8                    |
| 26000                 | 401C263M063AE8         | 11.60             | 7.00           | 17.70                 | 23.30         | 1 3/8 X 5 1/8                    |
| 28000                 | 401C283M063EJ8         | 11.90             | 8.90           | 17.30                 | 20.40         | 1 3/4 X 3 5/8                    |
| 29000                 | 401C293M063BB8         | 10.80             | 6.60           | 19.10                 | 25.10         | 1 3/8 X 5 5/8                    |
| 29000                 | 401C293M063AF8         | 11.10             | 8.20           | 18.10                 | 22.40         | 2 X 3 1/8                        |
| 34000                 | 401C343M063EC8         | 10.30             | 7.70           | 19.20                 | 22.60         | 1 3/4 X 4 1/8                    |
| 36000                 | 401C363M063BJ8         | 9.60              | 6.90           | 22.20                 | 24.90         | 2 X 3 5/8                        |
| 39000                 | 401C393M063ED8         | 9.20              | 6.90           | 21.40                 | 25.10         | 1 3/4 X 4 5/8                    |
| 42000                 | 401C423M063BC8         | 8.30              | 6.00           | 24.00                 | 26.80         | 2 X 4 1/8                        |
| 45000                 | 401C453M063EE8         | 8.30              | 6.30           | 23.70                 | 27.70         | 1 3/4 X 5 1/8                    |
| 50000                 | 401C503M063BD8         | 7.70              | 5.90           | 26.30                 | 30.50         | 1 3/4 X 5 5/8                    |
| 50000                 | 401C503M063EF8         | 7.40              | 5.40           | 25.80                 | 29.10         | 2 X 4 5/8                        |
| 59000                 | 401C593M063BE8         | 6.70              | 4.80           | 27.70                 | 31.70         | 2 X 5 1/8                        |
| 66000                 | 401C663M063BF8         | 6.20              | 4.50           | 28.60                 | 33.80         | 2 X 5 5/8                        |

| Cap.<br>(µF)            | Catalog Part<br>Number | ESR Max.<br>25 °C |                | Ripple Amps,<br>85 °C |               | Nominal<br>Size<br>D X L<br>(in) |
|-------------------------|------------------------|-------------------|----------------|-----------------------|---------------|----------------------------------|
|                         |                        | 120 Hz<br>(mΩ)    | 20 kHz<br>(mΩ) | 120 Hz<br>(A)         | 20 kHz<br>(A) |                                  |
| 75 Vdc (100 Vdc Surge)  |                        |                   |                |                       |               |                                  |
| 2500                    | 401C252M075AK8         | 93.80             | 46.00          | 5.70                  | 6.40          | 1 3/8 X 1 5/8                    |
| 4100                    | 401C412M075AA8         | 59.00             | 29.10          | 7.60                  | 8.60          | 1 3/8 X 2 1/8                    |
| 6600                    | 401C662M075AH8         | 39.80             | 19.70          | 9.70                  | 10.70         | 1 3/8 X 2 5/8                    |
| 7900                    | 401C792M075EA8         | 41.00             | 21.20          | 9.00                  | 10.70         | 1 3/4 X 2 1/8                    |
| 8200                    | 401C822M075AB8         | 30.30             | 15.10          | 11.40                 | 13.10         | 1 3/8 X 3 1/8                    |
| 10000                   | 401C103M075BA8         | 30.80             | 17.50          | 9.00                  | 14.30         | 2 X 2 1/8                        |
| 10000                   | 401C103M075AJ8         | 24.60             | 12.40          | 12.20                 | 15.00         | 1 3/8 X 3 5/8                    |
| 11000                   | 401C113M075EH8         | 28.70             | 14.90          | 11.40                 | 13.60         | 1 3/4 X 2 5/8                    |
| 12000                   | 401C123M075AC8         | 20.90             | 10.70          | 12.90                 | 17.00         | 1 3/8 X 4 1/8                    |
| 14000                   | 401C143M075BH8         | 18.30             | 9.40           | 14.20                 | 18.70         | 1 3/8 X 4 5/8                    |
| 14000                   | 401C143M075AD8         | 21.70             | 12.30          | 13.00                 | 17.80         | 2 X 2 5/8                        |
| 15000                   | 401C153M075EB8         | 22.30             | 11.70          | 13.90                 | 16.60         | 1 3/4 X 3 1/8                    |
| 16000                   | 401C163M075AE8         | 16.30             | 8.50           | 15.50                 | 20.40         | 1 3/8 X 5 1/8                    |
| 18000                   | 401C183M075BB8         | 14.90             | 7.90           | 16.90                 | 22.20         | 1 3/8 X 5 5/8                    |
| 18000                   | 401C183M075EJ8         | 18.30             | 9.70           | 15.80                 | 18.70         | 1 3/4 X 3 5/8                    |
| 18000                   | 401C183M075AF8         | 16.80             | 9.70           | 15.40                 | 21.60         | 2 X 3 1/8                        |
| 22000                   | 401C223M075EC8         | 15.70             | 8.30           | 17.60                 | 20.80         | 1 3/4 X 4 1/8                    |
| 23000                   | 401C233M075BJ8         | 13.90             | 8.10           | 21.30                 | 24.10         | 2 X 3 5/8                        |
| 25000                   | 401C253M075ED8         | 13.80             | 7.40           | 19.70                 | 23.20         | 1 3/4 X 4 5/8                    |
| 27000                   | 401C273M075BC8         | 12.00             | 7.00           | 20.40                 | 26.00         | 2 X 4 1/8                        |
| 28000                   | 401C283M075EE8         | 12.40             | 6.70           | 21.80                 | 25.70         | 1 3/4 X 5 1/8                    |
| 31000                   | 401C313M075BD8         | 10.60             | 6.20           | 22.30                 | 28.30         | 2 X 4 5/8                        |
| 33000                   | 401C333M075EF8         | 12.80             | 6.20           | 24.30                 | 28.40         | 1 3/4 X 5 5/8                    |
| 37000                   | 401C373M075BE8         | 9.30              | 5.60           | 24.40                 | 30.80         | 2 X 5 1/8                        |
| 41000                   | 401C413M075BF8         | 8.60              | 5.20           | 26.20                 | 32.90         | 2 X 5 5/8                        |
| 100 Vdc (140 Vdc Surge) |                        |                   |                |                       |               |                                  |
| 1400                    | 401C142M100AK8         | 118.00            | 34.70          | 4.30                  | 6.20          | 1 3/8 X 1 5/8                    |
| 2200                    | 401C222M100AA8         | 73.10             | 20.90          | 5.90                  | 8.50          | 1 3/8 X 2 1/8                    |
| 3500                    | 401C352M100AH8         | 46.50             | 14.00          | 7.50                  | 10.60         | 1 3/8 X 2 5/8                    |
| 4100                    | 401C412M100EA8         | 44.70             | 17.50          | 8.00                  | 10.30         | 1 3/4 X 2 1/8                    |
| 4600                    | 401C462M100AB8         | 36.00             | 11.00          | 9.10                  | 12.90         | 1 3/8 X 3 1/8                    |
| 5300                    | 401C532M100BA8         | 37.50             | 16.50          | 8.20                  | 11.90         | 2 X 2 1/8                        |
| 5700                    | 401C572M100AJ8         | 29.60             | 9.20           | 10.50                 | 14.70         | 1 3/8 X 3 5/8                    |
| 6000                    | 401C602M100EH8         | 31.30             | 12.40          | 10.20                 | 13.10         | 1 3/4 X 2 5/8                    |
| 6800                    | 401C682M100AC8         | 25.30             | 8.10           | 11.90                 | 16.50         | 1 3/8 X 4 1/8                    |
| 7500                    | 401C752M100BH8         | 26.30             | 11.70          | 10.60                 | 15.30         | 2 X 2 5/8                        |
| 7900                    | 401C792M100EB8         | 22.20             | 7.20           | 13.20                 | 18.10         | 1 3/8 X 4 5/8                    |
| 7900                    | 401C792M100AD8         | 24.20             | 9.70           | 12.50                 | 15.90         | 1 3/4 X 3 1/8                    |
| 9000                    | 401C902M100AE8         | 19.90             | 6.60           | 14.50                 | 19.80         | 1 3/8 X 5 1/8                    |
| 9700                    | 401C972M100EJ8         | 19.90             | 8.10           | 14.10                 | 18.00         | 1 3/4 X 3 5/8                    |
| 10000                   | 401C103M100BB8         | 20.40             | 9.20           | 12.60                 | 18.20         | 2 X 3 1/8                        |
| 10000                   | 401C103M100AF8         | 18.10             | 6.20           | 15.80                 | 21.40         | 1 3/8 X 5 5/8                    |
| 12000                   | 401C123M100BJ8         | 15.80             | 6.90           | 16.30                 | 23.60         | 2 X 4 1/8                        |
| 12000                   | 401C123M100EC8         | 17.00             | 7.00           | 15.80                 | 20.00         | 1 3/4 X 4 1/8                    |
| 12000                   | 401C123M100BC8         | 16.90             | 7.60           | 15.50                 | 22.30         | 2 X 3 5/8                        |



# Type 401C –55 °C to 105 °C Low-ESR, Wide Temperature Grade

| Cap.<br>(µF)                | Catalog Part<br>Number | ESR Max.<br>25 °C |                | Ripple Amps,<br>85 °C |               | Nominal<br>Size<br>D X L<br>(in) |
|-----------------------------|------------------------|-------------------|----------------|-----------------------|---------------|----------------------------------|
|                             |                        | 120 Hz<br>(mΩ)    | 20 kHz<br>(mΩ) | 120 Hz<br>(A)         | 20 kHz<br>(A) |                                  |
| 13000                       | 401C133M100ED8         | 14.90             | 6.20           | 17.60                 | 22.20         | 1 3/4 X 4 5/8                    |
| 15000                       | 401C153M100BD8         | 13.40             | 5.70           | 19.60                 | 24.60         | 1 3/4 X 5 1/8                    |
| 15000                       | 401C153M100EE8         | 13.60             | 6.30           | 17.90                 | 25.60         | 2 X 4 5/8                        |
| 17000                       | 401C173M100EF8         | 13.80             | 5.30           | 21.80                 | 27.20         | 1 3/4 X 5 5/8                    |
| 18000                       | 401C183M100BE8         | 11.80             | 5.50           | 19.80                 | 28.10         | 2 X 5 1/8                        |
| 20000                       | 401C203M100BF8         | 10.80             | 5.10           | 21.40                 | 30.30         | 2 X 5 5/8                        |
| 150 Volts (200 Volts Surge) |                        |                   |                |                       |               |                                  |
| 710                         | 401C711M150AK8         | 342.00            | 245.00         | 2.60                  | 3.60          | 1 3/8 X 1 5/8                    |
| 1100                        | 401C112M150AA8         | 228.00            | 164.00         | 3.70                  | 5.00          | 1 3/8 X 2 1/8                    |
| 1500                        | 401C152M150AH8         | 159.00            | 114.00         | 4.50                  | 6.30          | 1 3/8 X 2 5/8                    |
| 1700                        | 401C172M150EA8         | 145.00            | 101.00         | 5.30                  | 7.10          | 1 3/4 X 2 1/8                    |
| 1900                        | 401C192M150AB8         | 122.00            | 87.20          | 5.50                  | 7.70          | 1 3/8 X 3 1/8                    |
| 2500                        | 401C252M150AJ8         | 112.00            | 78.80          | 7.00                  | 8.60          | 2 X 2 1/8                        |
| 2500                        | 401C252M150BA8         | 98.80             | 71.00          | 6.40                  | 8.90          | 1 3/8 X 3 5/8                    |
| 2600                        | 401C262M150EH8         | 100.00            | 70.30          | 6.70                  | 9.00          | 1 3/4 X 2 5/8                    |
| 2900                        | 401C292M150AC8         | 83.40             | 59.90          | 7.40                  | 10.20         | 1 3/8 X 4 1/8                    |
| 3400                        | 401C342M150AD8         | 80.20             | 57.00          | 8.90                  | 11.00         | 2 X 2 5/8                        |
| 3400                        | 401C342M150EB8         | 77.00             | 54.00          | 8.30                  | 11.10         | 1 3/4 X 3 1/8                    |
| 3400                        | 401C342M150BH8         | 72.30             | 52.00          | 8.20                  | 11.30         | 1 3/8 X 4 5/8                    |
| 3900                        | 401C392M150AE8         | 63.90             | 46.00          | 9.20                  | 12.40         | 1 3/8 X 5 1/8                    |
| 4200                        | 401C422M150EJ8         | 62.60             | 43.90          | 9.50                  | 12.60         | 1 3/4 X 3 5/8                    |
| 4400                        | 401C442M150AF8         | 62.90             | 41.40          | 10.10                 | 13.50         | 1 3/8 X 5 5/8                    |
| 4500                        | 401C452M150BB8         | 60.10             | 44.20          | 10.70                 | 13.20         | 2 X 3 1/8                        |
| 5000                        | 401C502M150EC8         | 52.90             | 37.20          | 10.70                 | 14.10         | 1 3/4 X 4 1/8                    |
| 5500                        | 401C552M150BJ8         | 48.60             | 36.30          | 12.90                 | 16.20         | 2 X 3 5/8                        |
| 5800                        | 401C582M150ED8         | 45.90             | 32.30          | 12.00                 | 15.80         | 1 3/4 X 4 5/8                    |
| 6600                        | 401C662M150BC8         | 41.10             | 31.20          | 13.70                 | 17.60         | 2 X 4 1/8                        |
| 6700                        | 401C672M150EE8         | 40.60             | 28.60          | 13.50                 | 17.50         | 1 3/4 X 5 1/8                    |
| 7300                        | 401C732M150BD8         | 38.00             | 28.00          | 14.70                 | 19.20         | 2 X 4 5/8                        |
| 7400                        | 401C742M150EF8         | 36.50             | 25.70          | 15.10                 | 19.30         | 1 3/4 X 5 5/8                    |
| 8400                        | 401C842M150BE8         | 34.10             | 25.20          | 15.70                 | 20.90         | 2 X 5 1/8                        |
| 9400                        | 401C942M150BF8         | 31.00             | 23.00          | 16.80                 | 22.60         | 2 X 5 5/8                        |
| 200 Vdc (250 Vdc Surge)     |                        |                   |                |                       |               |                                  |
| 520                         | 401C521M200AK8         | 370.00            | 233.00         | 2.50                  | 3.50          | 1 3/8 X 1 5/8                    |
| 810                         | 401C811M200AA8         | 247.00            | 156.00         | 3.40                  | 4.90          | 1 3/8 X 2 1/8                    |
| 1100                        | 401C112M200AH8         | 172.00            | 111.00         | 4.20                  | 6.10          | 1 3/8 X 2 5/8                    |
| 1300                        | 401C132M200EA8         | 151.00            | 96.20          | 4.80                  | 7.00          | 1 3/4 X 2 1/8                    |
| 1500                        | 401C152M200AB8         | 132.00            | 86.60          | 5.20                  | 7.50          | 1 3/8 X 3 1/8                    |
| 1800                        | 401C182M200AJ8         | 124.00            | 80.80          | 6.60                  | 8.40          | 2 X 2 1/8                        |
| 1800                        | 401C182M200BA8         | 107.00            | 71.80          | 6.00                  | 8.80          | 1 3/8 X 3 5/8                    |
| 1900                        | 401C192M200EH8         | 105.00            | 72.40          | 6.20                  | 8.90          | 1 3/4 X 2 5/8                    |
| 2200                        | 401C222M200AC8         | 90.20             | 61.80          | 6.90                  | 10.10         | 1 3/8 X 4 1/8                    |

| Cap.<br>(µF)            | Catalog Part<br>Number | ESR Max.<br>25 °C |                | Ripple Amps,<br>85 °C |               | Nominal<br>Size<br>D X L<br>(in) |
|-------------------------|------------------------|-------------------|----------------|-----------------------|---------------|----------------------------------|
|                         |                        | 120 Hz<br>(mΩ)    | 20 kHz<br>(mΩ) | 120 Hz<br>(A)         | 20 kHz<br>(A) |                                  |
| 2500                    | 401C252M200EB8         | 89.00             | 58.10          | 8.40                  | 10.80         | 2 X 2 5/8                        |
| 2500                    | 401C252M200AD8         | 81.80             | 54.40          | 7.70                  | 11.00         | 1 3/8 X 4 5/8                    |
| 2500                    | 401C252M200BH8         | 80.40             | 55.60          | 7.60                  | 10.90         | 1 3/4 X 3 1/8                    |
| 2800                    | 401C282M200AE8         | 75.40             | 49.20          | 8.60                  | 12.00         | 1 3/8 X 5 1/8                    |
| 3100                    | 401C312M200EJ8         | 65.40             | 45.20          | 8.70                  | 12.40         | 1 3/4 X 3 5/8                    |
| 3300                    | 401C332M200AF8         | 66.60             | 44.70          | 10.10                 | 12.90         | 2 X 3 1/8                        |
| 3300                    | 401C332M200BB8         | 70.10             | 45.10          | 9.50                  | 12.90         | 1 3/8 X 5 5/8                    |
| 3700                    | 401C372M200EC8         | 55.20             | 38.20          | 9.80                  | 13.90         | 1 3/4 X 4 1/8                    |
| 4000                    | 401C402M200BJ8         | 53.90             | 36.40          | 12.00                 | 15.90         | 2 X 3 5/8                        |
| 4400                    | 401C442M200ED8         | 47.80             | 33.20          | 11.00                 | 15.60         | 1 3/4 X 4 5/8                    |
| 4800                    | 401C482M200BC8         | 45.50             | 30.80          | 12.90                 | 17.30         | 2 X 4 1/8                        |
| 4900                    | 401C492M200EE8         | 42.30             | 29.40          | 12.40                 | 17.50         | 1 3/4 X 5 1/8                    |
| 5500                    | 401C552M200EF8         | 42.10             | 27.40          | 14.00                 | 18.90         | 2 X 4 5/8                        |
| 5500                    | 401C552M200BD8         | 38.00             | 26.40          | 13.90                 | 19.50         | 1 3/4 X 5 5/8                    |
| 6200                    | 401C622M200BE8         | 37.70             | 24.30          | 14.80                 | 20.60         | 2 X 5 1/8                        |
| 7000                    | 401C702M200BF8         | 34.30             | 21.90          | 15.50                 | 22.20         | 2 X 5 5/8                        |
| 250 Vdc (300 Vdc Surge) |                        |                   |                |                       |               |                                  |
| 380                     | 401C381M250AK8         | 510.00            | 285.00         | 2.20                  | 3.30          | 1 3/8 X 1 5/8                    |
| 610                     | 401C611M250AA8         | 309.00            | 190.00         | 3.10                  | 4.70          | 1 3/8 X 2 1/8                    |
| 860                     | 401C861M250AH8         | 215.00            | 132.00         | 3.90                  | 6.00          | 1 3/8 X 2 5/8                    |
| 960                     | 401C961M250EA8         | 222.00            | 113.00         | 4.40                  | 6.60          | 1 3/4 X 2 1/8                    |
| 1100                    | 401C112M250AB8         | 165.00            | 101.00         | 4.70                  | 7.30          | 1 3/8 X 3 1/8                    |
| 1300                    | 401C132M250AJ8         | 134.00            | 82.50          | 5.50                  | 8.30          | 1 3/8 X 3 5/8                    |
| 1400                    | 401C142M250EH8         | 149.00            | 91.20          | 5.90                  | 8.30          | 2 X 2 1/8                        |
| 1400                    | 401C142M250BA8         | 154.00            | 78.60          | 5.60                  | 8.50          | 1 3/4 X 2 5/8                    |
| 1700                    | 401C172M250AC8         | 101.00            | 62.40          | 6.90                  | 10.30         | 1 3/8 X 4 5/8                    |
| 1700                    | 401C172M250AD8         | 100.00            | 62.20          | 6.60                  | 10.00         | 1 3/8 X 4 1/8                    |
| 1800                    | 401C182M250EB8         | 118.00            | 60.40          | 6.90                  | 10.40         | 1 3/4 X 3 1/8                    |
| 1900                    | 401C192M250BH8         | 103.00            | 63.30          | 7.60                  | 10.60         | 2 X 2 5/8                        |
| 2000                    | 401C202M250AE8         | 88.80             | 54.90          | 7.70                  | 11.20         | 1 3/8 X 5 1/8                    |
| 2300                    | 401C232M250EJ8         | 79.30             | 49.20          | 8.60                  | 12.20         | 1 3/8 X 5 5/8                    |
| 2300                    | 401C232M250AF8         | 96.00             | 49.10          | 7.90                  | 11.80         | 1 3/4 X 3 5/8                    |
| 2500                    | 401C252M250BB8         | 79.30             | 48.70          | 9.10                  | 12.70         | 2 X 3 1/8                        |
| 2800                    | 401C282M250EC8         | 81.00             | 41.50          | 8.90                  | 13.30         | 1 3/4 X 4 1/8                    |
| 3000                    | 401C302M250BJ8         | 64.50             | 39.70          | 11.00                 | 15.70         | 2 X 3 5/8                        |
| 3100                    | 401C312M250ED8         | 70.20             | 36.00          | 10.10                 | 14.90         | 1 3/4 X 4 5/8                    |
| 3600                    | 401C362M250EE8         | 62.00             | 31.90          | 11.30                 | 16.70         | 1 3/4 X 5 1/8                    |
| 3700                    | 401C372M250BC8         | 54.50             | 33.60          | 11.90                 | 17.20         | 2 X 4 1/8                        |
| 3900                    | 401C392M250EF8         | 55.60             | 28.60          | 12.70                 | 18.60         | 1 3/4 X 5 5/8                    |
| 4200                    | 401C422M250BD8         | 47.30             | 29.20          | 12.80                 | 18.70         | 2 X 4 5/8                        |
| 4800                    | 401C482M250BE8         | 41.90             | 25.90          | 13.60                 | 20.00         | 2 X 5 1/8                        |
| 5300                    | 401C532M250BF8         | 37.60             | 23.30          | 14.40                 | 21.20         | 2 X 5 5/8                        |

## Type 401C –55 °C to 105 °C Low-ESR, Wide Temperature Grade

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