

## Type 3188 85 °C Best Value, Screw Terminal, Aluminum

### 85 °C Long Life Screw Terminal Type



Type 3188 has twice the life of the 3186 and twice the ripple-current capability. While the standard encasement is by compression with the capacitor element captured on an aluminum peg in the can bottom and a phenolic peg in the top, rilled construction is available. With rilled construction the element is secured by rills, spoon shaped dimples in the side of the can. Rilled construction offers the industry's highest vibration and shock withstanding and excellent heat transfer. Besides increasing ripple-current handling, the rilled construction facilitates use in military and transportation applications.

### Highlights

- Rilled cans withstand high shock and vibration.
- 2 times the ripple-current capability
- High capacitance per can

### Specifications

|                                 |                                                                                                                     |       |        |        |         |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------|-------|--------|--------|---------|
| Temperature Range               | -40 °C to +85 °C                                                                                                    |       |        |        |         |
| Rated Voltage Range             | 16 Vdc to 450 Vdc                                                                                                   |       |        |        |         |
| Capacitance Range               | 270 μF to 1.0 F                                                                                                     |       |        |        |         |
| Capacitance Tolerance           | -10% +75% ≤ 100 Vdc<br>-10% +50% ≥ 200 Vdc                                                                          |       |        |        |         |
| Leakage Current                 | ≤6√CV μA (6 mA max.) at 5 minutes                                                                                   |       |        |        |         |
| Ripple Current Multipliers      | Ambient Temperature                                                                                                 |       |        |        |         |
|                                 | 45 °C                                                                                                               | 55 °C | 65 °C  | 75 °C  | 85 °C   |
|                                 | 2.24                                                                                                                | 2.00  | 1.73   | 1.41   | 1.00    |
|                                 | Frequency                                                                                                           |       |        |        |         |
|                                 |                                                                                                                     | 60 Hz | 120 Hz | 300 Hz | 1000 Hz |
|                                 | 16 – 100 V                                                                                                          | 0.90  | 1.00   | 1.15   | 1.25    |
|                                 | 200 – 450 V                                                                                                         | 0.90  | 1.00   | 1.25   | 1.40    |
|                                 |                                                                                                                     |       |        |        | ≥10 kHz |
|                                 |                                                                                                                     |       |        |        | 1.30    |
|                                 |                                                                                                                     |       |        |        | 1.50    |
| Low Temperature Characteristics | Impedance ratio: Z <sub>-20°C</sub> /Z <sub>+25°C</sub><br>≤ 8 (16–50 Vdc)<br>≤ 4 (63–100 Vdc)<br>≤ 3 (150–450 Vdc) |       |        |        |         |
| Endurance Life Test             | 4,000 h @ full load at 85 °C<br>ΔCapacitance ±10%<br>ESR 200% of limit<br>DCL 100% of limit                         |       |        |        |         |
| Shelf Life Test                 | 500 h @ 85 °C<br>ΔCapacitance ±10%<br>ESR 175% of limit<br>DCL 100% of limit                                        |       |        |        |         |
| Vibration                       | 10 to 55 Hz, 0.06" & 10 g max for compression,<br>15 g max for rilled, 1.5 h ea. of 2 axes                          |       |        |        |         |
| RoHS Compliant                  |                                                                                                                     |       |        |        |         |

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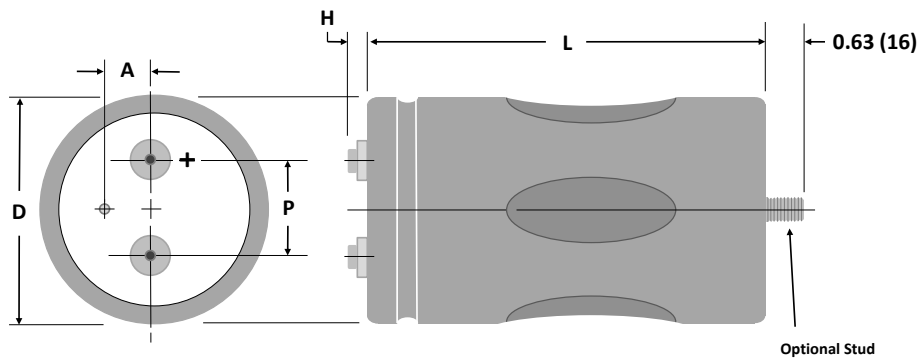
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### Part Numbering System

|             |                  |                                           |                                                      |                           |                                                                                                                           |                                                                |                                                                          |
|-------------|------------------|-------------------------------------------|------------------------------------------------------|---------------------------|---------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|--------------------------------------------------------------------------|
| <b>3188</b> | <b>GH</b>        | <b>562</b>                                | <b>T</b>                                             | <b>400</b>                | <b>M</b>                                                                                                                  | <b>P</b>                                                       | <b>A1</b>                                                                |
| <b>Type</b> | <b>Case Code</b> | <b>Capacitance</b>                        | <b>Tolerance</b>                                     | <b>Voltage</b>            | <b>Terminal</b>                                                                                                           | <b>Insulation</b>                                              | <b>Construction*</b>                                                     |
|             |                  | 562=5600 µF<br>223=22000 µF<br>821=820 µF | M= ±20%<br>S= -10 +30%<br>T= -10 +50%<br>U= -10 +75% | 016=16 Vdc<br>450=450 Vdc | A=high post<br>B=low post<br>D=high current<br>low post<br>K=high current<br>high post<br>M=M5 high post<br>J=M6 low post | P=0.008" PVC<br>with mounting<br>clamp/bracket<br>R=0.008" PVC | A1=compression<br>R1=rilled<br>S1=stud & compression<br>T1=stud & rilled |

\* Construction code is also a sequence number, e.g., A1, A2,---,A9, B1,B2,---, for customer specifications. Sequence number 1 in A1, R1, S1 and T1 denotes the standard catalog capacitor with no special requirements.

### Outline Drawing



### Stud Dimensions

| Case  | Stud   | P ± 0.039"    |
|-------|--------|---------------|
| Diam. | Thread | (±1.0 mm)     |
| 1.375 | M8     | 0.470" (12.0) |
| 1.750 | M8     | 0.470" (12.0) |
| 2.000 | M12    | 0.630" (16.0) |
| 2.500 | M12    | 0.630" (16.0) |
| 3.000 | M12    | 0.630" (16.0) |

### Can Dimensions Insulation Adders

|            | Diameter (D) |      | Length (L) |      | Standing Height (H) |      |
|------------|--------------|------|------------|------|---------------------|------|
|            | (in)         | (mm) | (in)       | (mm) | (in)                | (mm) |
| 0.008" PVC | 0.02         | 0.51 | 0.032      | 0.81 | 0.024               | 0.61 |

### Terminal Dimensions

| Terminal Style     | For Case   | Code | Post Diameter |      | H max |     | Thread | min Full Thread |      | Torque |      |
|--------------------|------------|------|---------------|------|-------|-----|--------|-----------------|------|--------|------|
|                    | Diameters  |      | in            | mm   | in    | mm  |        | in              | mm   | in-lb  | N-m  |
| Low Post           | 1 3/8 to 3 | B    | 0.314         | 8.0  | 0.094 | 2.4 | 10-32  | 0.218           | 5.5  | 25     | 2.82 |
| High Post          | 1 3/8 to 3 | A    | 0.314         | 8.0  | 0.281 | 7.1 | 10-32  | 0.375           | 9.5  | 25     | 2.82 |
| High Current, Low  | 2 1/2 & 3  | D    | 0.684         | 17.4 | 0.125 | 3.2 | ¼-28   | 0.344           | 8.7  | 50     | 5.65 |
| High Current, High | 2 1/2 & 3  | K    | 0.684         | 17.4 | 0.281 | 7.1 | ¼-28   | 0.469           | 11.9 | 60     | 6.78 |
| M5 High Post       | 1 3/8 to 2 | M    | 0.314         | 8.0  | 0.281 | 7.1 | M5     | 0.375           | 9.5  | 25     | 2.82 |
| M5 Post            | 2 1/2 & 3  | F    | 0.512         | 13.0 | 0.230 | 5.8 | M5     | 0.344           | 8.7  | 25     | 2.82 |
| M6 Low Post        | 2 1/2 & 3  | J    | 0.684         | 17.4 | 0.125 | 3.2 | M6     | 0.344           | 8.7  | 50     | 5.65 |

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### Case Dimensions, Uninsulated Bare Can

| Case Code | Diameter (D)    |            | Length (L)      |             | Pitch (P)       |             | Plug (A)   |        | Typical     |            | Optional Bracket Part No. |
|-----------|-----------------|------------|-----------------|-------------|-----------------|-------------|------------|--------|-------------|------------|---------------------------|
|           | ±0.031 (Inches) | ±0.79 (mm) | ±0.062 (Inches) | ±1.157 (mm) | ±0.014 (Inches) | ±0.356 (mm) | A (Inches) | A (mm) | Weight (oz) | Weight (g) |                           |
| BA        | 1.375           | 34.9       | 2.125           | 54.0        | 0.500           | 12.7        | 0.390      | 9.9    | 2.53        | 72         | 115058-06                 |
| BB        | 1.375           | 34.9       | 2.625           | 66.7        | 0.500           | 12.7        | 0.390      | 9.9    | 3.17        | 90         | 115058-06                 |
| BC        | 1.375           | 34.9       | 3.125           | 79.4        | 0.500           | 12.7        | 0.390      | 9.9    | 3.70        | 105        | 115058-06                 |
| BD        | 1.375           | 34.9       | 3.625           | 92.1        | 0.500           | 12.7        | 0.390      | 9.9    | 4.22        | 120        | 115058-06                 |
| BE        | 1.375           | 34.9       | 4.125           | 104.8       | 0.500           | 12.7        | 0.390      | 9.9    | 4.75        | 135        | 115058-06                 |
| BF        | 1.375           | 34.9       | 4.625           | 117.5       | 0.500           | 12.7        | 0.390      | 9.9    | 5.98        | 170        | 115058-06                 |
| BG        | 1.375           | 34.9       | 5.125           | 130.2       | 0.500           | 12.7        | 0.390      | 9.9    | 7.74        | 220        | 115058-06                 |
| BH        | 1.375           | 34.9       | 5.625           | 142.9       | 0.500           | 12.7        | 0.390      | 9.9    | 9.50        | 270        | 115058-06                 |
| DA        | 1.75            | 44.5       | 2.125           | 54.0        | 0.750           | 19.1        | 0.453      | 11.5   | 5.63        | 160        | 115058-15                 |
| DB        | 1.75            | 44.5       | 2.625           | 66.7        | 0.750           | 19.1        | 0.453      | 11.5   | 6.16        | 175        | 115058-15                 |
| DC        | 1.75            | 44.5       | 3.125           | 79.4        | 0.750           | 19.1        | 0.453      | 11.5   | 6.34        | 180        | 115058-15                 |
| DD        | 1.75            | 44.5       | 3.625           | 92.1        | 0.750           | 19.1        | 0.453      | 11.5   | 7.22        | 205        | 115058-15                 |
| DE        | 1.75            | 44.5       | 4.125           | 104.8       | 0.750           | 19.1        | 0.453      | 11.5   | 7.74        | 220        | 115058-15                 |
| DF        | 1.75            | 44.5       | 4.625           | 117.5       | 0.750           | 19.1        | 0.453      | 11.5   | 8.27        | 235        | 115058-15                 |
| DG        | 1.75            | 44.5       | 5.125           | 130.2       | 0.750           | 19.1        | 0.453      | 11.5   | 8.80        | 250        | 115058-15                 |
| DH        | 1.75            | 44.5       | 5.625           | 142.9       | 0.750           | 19.1        | 0.453      | 11.5   | 9.50        | 270        | 115058-15                 |
| EA        | 2               | 50.8       | 2.125           | 54.0        | 0.875           | 22.2        | 0.500      | 12.7   | 5.98        | 170        | 115058-09                 |
| EB        | 2               | 50.8       | 2.625           | 66.7        | 0.875           | 22.2        | 0.500      | 12.7   | 6.34        | 180        | 115058-09                 |
| EC        | 2               | 50.8       | 3.125           | 79.4        | 0.875           | 22.2        | 0.500      | 12.7   | 6.69        | 190        | 115058-09                 |
| ED        | 2               | 50.8       | 3.625           | 92.1        | 0.875           | 22.2        | 0.500      | 12.7   | 7.74        | 220        | 115058-09                 |
| EE        | 2               | 50.8       | 4.125           | 104.8       | 0.875           | 22.2        | 0.500      | 12.7   | 8.98        | 255        | 115058-09                 |
| EF        | 2               | 50.8       | 4.625           | 117.5       | 0.875           | 22.2        | 0.500      | 12.7   | 10.21       | 290        | 115058-09                 |
| EG        | 2               | 50.8       | 5.125           | 130.2       | 0.875           | 22.2        | 0.500      | 12.7   | 11.26       | 320        | 115058-09                 |
| EH        | 2               | 50.8       | 5.625           | 142.9       | 0.875           | 22.2        | 0.500      | 12.7   | 8.80        | 250        | 115058-09                 |
| FB        | 2.5             | 63.5       | 2.625           | 66.7        | 1.125           | 28.6        | 0.625      | 15.9   | 10.56       | 300        | 115058-14                 |
| FC        | 2.5             | 63.5       | 3.125           | 79.4        | 1.125           | 28.6        | 0.625      | 15.9   | 13.02       | 370        | 115058-14                 |
| FD        | 2.5             | 63.5       | 3.625           | 92.1        | 1.125           | 28.6        | 0.625      | 15.9   | 14.08       | 400        | 115058-14                 |
| FE        | 2.5             | 63.5       | 4.125           | 104.8       | 1.125           | 28.6        | 0.625      | 15.9   | 15.66       | 445        | 115058-14                 |
| FF        | 2.5             | 63.5       | 4.625           | 117.5       | 1.125           | 28.6        | 0.625      | 15.9   | 21.12       | 600        | 115058-14                 |
| FG        | 2.5             | 63.5       | 5.125           | 130.2       | 1.125           | 28.6        | 0.625      | 15.9   | 22.88       | 650        | 115058-14                 |
| FH        | 2.5             | 63.5       | 5.625           | 142.9       | 1.125           | 28.6        | 0.625      | 15.9   | 21.12       | 600        | 115058-14                 |
| GC        | 3               | 76.2       | 3.125           | 79.4        | 1.250           | 31.8        | 0.750      | 19.1   | 18.30       | 520        | 115058-11                 |
| GD        | 3               | 76.2       | 3.625           | 92.1        | 1.250           | 31.8        | 0.750      | 19.1   | 20.06       | 570        | 115058-11                 |
| GE        | 3               | 76.2       | 4.125           | 104.8       | 1.250           | 31.8        | 0.750      | 19.1   | 21.12       | 600        | 115058-11                 |
| GF        | 3               | 76.2       | 4.625           | 117.5       | 1.250           | 31.8        | 0.750      | 19.1   | 25.34       | 720        | 115058-11                 |
| GG        | 3               | 76.2       | 5.125           | 130.2       | 1.250           | 31.8        | 0.750      | 19.1   | 29.92       | 850        | 115058-11                 |
| GH        | 3               | 76.2       | 5.625           | 142.9       | 1.250           | 31.8        | 0.750      | 19.1   | 34.14       | 970        | 115058-11                 |
| GJ        | 3               | 76.2       | 5.875           | 149.2       | 1.250           | 31.8        | 0.750      | 19.1   | 36.96       | 1050       | 115058-11                 |
| GN        | 3               | 76.2       | 8.625           | 219.1       | 1.250           | 31.8        | 0.750      | 19.1   | 51.39       | 1460       | 115058-11                 |

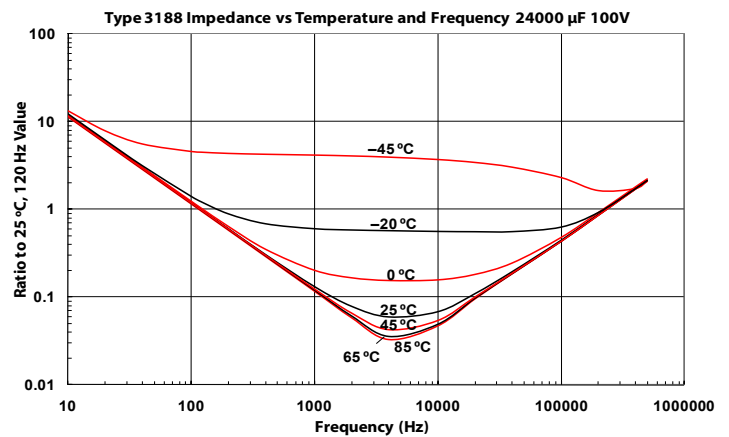
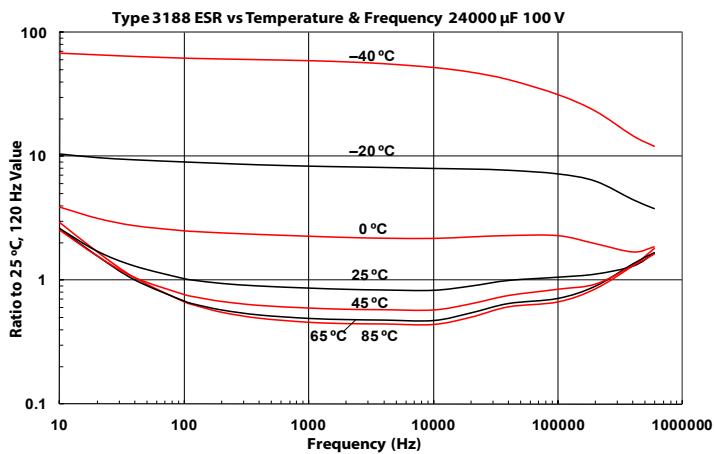
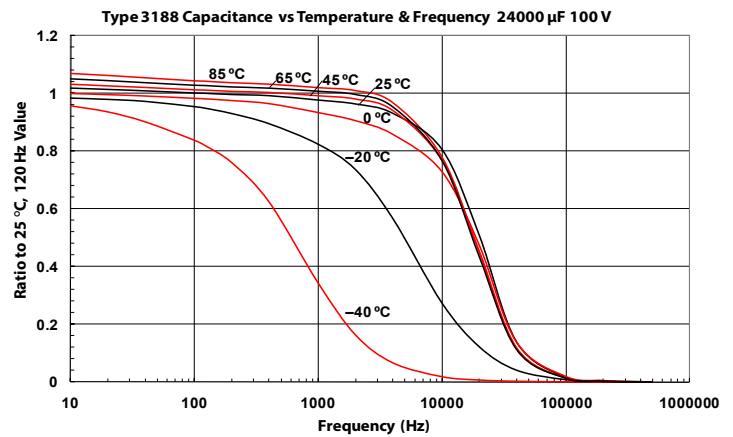
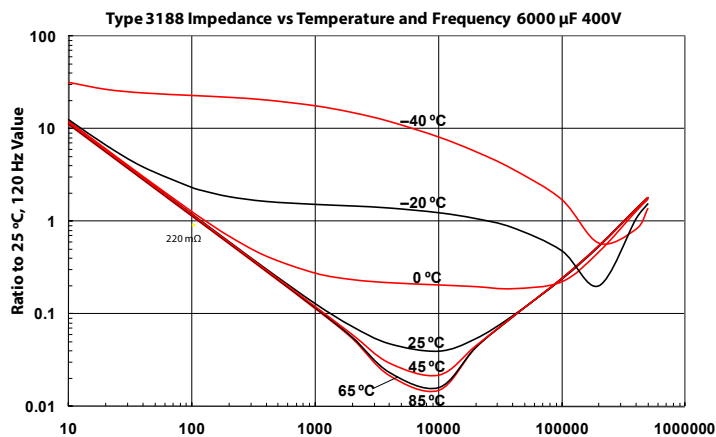
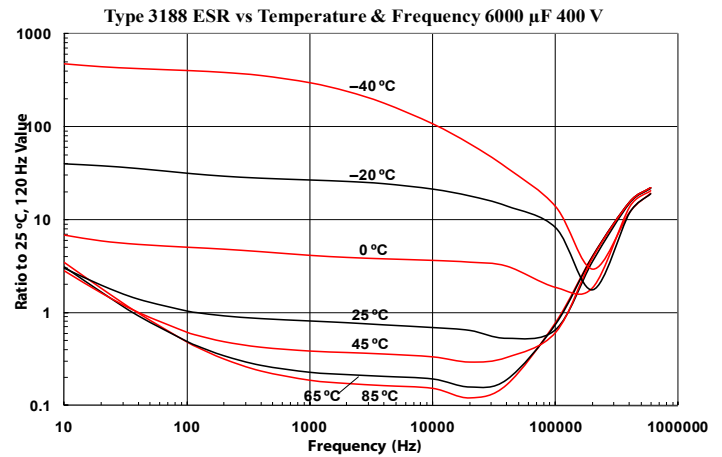
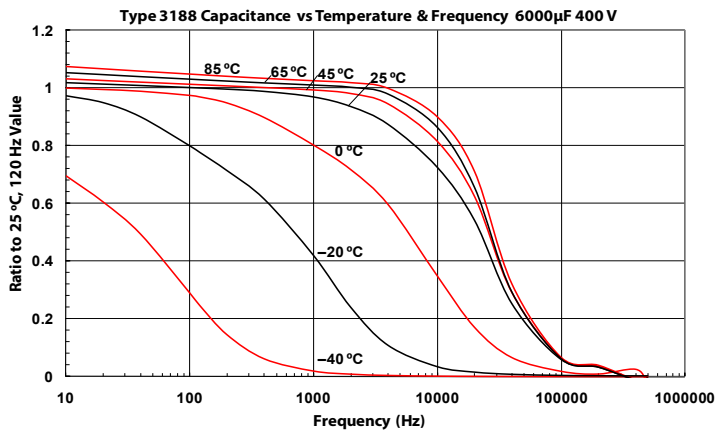




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## 85 °C Long Life Screw Terminal Type

### Typical Performance Curves



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