

## Aluminum Capacitors + 85 °C, Tubular, Axial Lead, General Purpose



Fig.1 Component outlines

**FEATURES**

- General purpose capacitor
- Rugged construction
- Largest CV ratings in axial lead capacitor



| QUICK REFERENCE DATA                    |   |
|---|---|
| DESCRIPTION                             | VALUE   |
| Nominal case size<br>Ø D x L in mm      | 0.75" x 1.125"<br>[19.05 x 28.575]<br>to<br>1.375" x 4.125"<br>[34.925 x 104.775]   |
| Operating temperature                   | - 40 °C to + 85 °C  |
| Rated capacitance range, C <sub>R</sub> | 15 µF to 220 000 µF   |
| Tolerance on C <sub>R</sub>             | - 10 %, + 50 %; - 10 %, + 75 %  |
| Rated voltage range, U <sub>R</sub>     | 6.3 WVDC to 450 WVDC  |
| Termination                             | Axial leads   |
| Life validation test at 85 °C           | 1000 hours: Δ CAP ≤ 15 % from initial measurement. Δ ESR ≤ 1.5 x initial specified limit. Δ DCL ≤ initial specified limit       |
| Shelf life at 85 °C                     | 500 hours: Δ CAP ≤ 10 % from initial measurement. Δ ESR ≤ 1.3 x initial specified limit. Δ DCL ≤ 2.0 x initial specified limit. |
| DC leakage current                      | $I = K \sqrt{CV}$<br>K = 6.0 at + 25 °C;<br>36.0 at + 85 °C<br>I in µA, C in µF, V in Volts                                     |

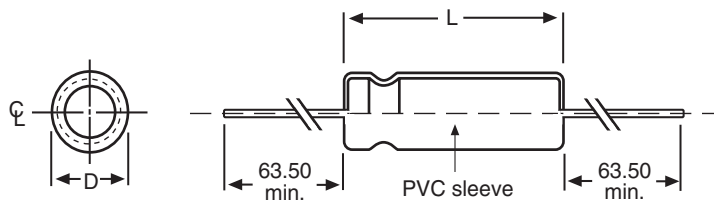
| RIPPLE CURRENT MULTIPLIERS |         |             |             |
|----------------------------|---------|-------------|-------------|
| TEMPERATURE                |         |             |             |
| Ambient Temperature        |         | Multipliers |             |
| + 75 °C                    |         | 1.4         |             |
| + 65 °C                    |         | 1.7         |             |
| + 45 °C and below          |         | 2.0         |             |
| FREQUENCY (Hz)             |         |             |             |
| WVDC                       | 50 - 60 | 300 - 400   | 1000 AND UP |
| 0 - 50                     | 0.85    | 1.10        | 1.15        |
| 51 - 299                   | 0.85    | 1.15        | 1.20        |
| 300 - up                   | 0.80    | 1.30        | 1.40        |

| LOW TEMPERATURE PERFORMANCE  |                       |
|--|-----------------------|
| CAPACITANCE RATIO C <sup>-40 °C</sup> /C <sup>+25 °C</sup> MINIMUM at 120 Hz |                       |
| Rated Voltage (WVDC)   | Capacitance Remaining |
| 0 - 40   | 35                    |
| 41 - 63  | 45                    |
| 64 - 100   | 60                    |
| 101 - 350  | 20                    |
| 351 - 450  | 15                    |
| ESR RATIO ESR <sup>-40 °C</sup> /ESR <sup>+25 °C</sup> MAXIMUM at 120 Hz     |                       |
| Rated Voltage (WVDC)   | Multiplier            |
| 0 - 40   | 60                    |
| 41 - 63  | 55                    |
| 64 - 100   | 65                    |
| 101 - 350  | 180                   |
| 351 - 450  | 190                   |

| DIMENSIONS in inches [millimeters] |                                |                                |                    |           |                                |                                 |                    |
|------------------------------------|--------------------------------|--------------------------------|--------------------|-----------|--------------------------------|---------------------------------|--------------------|
| CASE CODE                          | STYLE 6 AND 7                  |                                | TYPICAL WEIGHT     | CASE CODE | STYLE 6 AND 7                  |                                 | TYPICAL WEIGHT     |
|                                    | D                              | L                              |                    |           | D                              | L                               |                    |
| GE                                 | 0.760 ± 0.020<br>[19.3 ± 0.51] | 1.141 ± 0.062<br>[29.0 ± 1.58] | 0.46 oz.<br>(13 g) | GL        | 0.760 ± 0.020<br>[19.3 ± 0.51] | 2.141 ± 0.062<br>[54.4 ± 1.58]  | 0.74 oz.<br>(21 g) |
| GJ                                 | 0.760 ± 0.020<br>[19.3 ± 0.51] | 1.641 ± 0.062<br>[41.7 ± 1.58] | 0.67 oz.<br>(19 g) | GP        | 0.760 ± 0.020<br>[19.3 ± 0.51] | 2.641 ± 0.062<br>[67.1 ± 1.58]  | 0.88 oz.<br>(25 g) |
| GS                                 | 0.760 ± 0.020<br>[19.3 ± 0.51] | 3.141 ± 0.062<br>[79.8 ± 1.58] | 1.16 oz.<br>(33 g) | KS        | 1.135 ± 0.020<br>[28.8 ± 0.51] | 3.141 ± 0.062<br>[79.8 ± 1.58]  | 2.54 oz.<br>(72 g) |
| GT                                 | 0.760 ± 0.020<br>[19.3 ± 0.51] | 3.641 ± 0.062<br>[92.5 ± 1.58] | 1.34 oz.<br>(38 g) | KT        | 1.135 ± 0.020<br>[28.8 ± 0.51] | 3.641 ± 0.062<br>[92.5 ± 1.58]  | 2.96 oz.<br>(84 g) |
| HE                                 | 0.885 ± 0.020<br>[22.5 ± 0.51] | 1.141 ± 0.062<br>[29.0 ± 1.58] | 0.63 oz.<br>(18 g) | KD        | 1.135 ± 0.020<br>[28.8 ± 0.51] | 4.141 ± 0.062<br>[105.2 ± 1.58] | 3.35 oz.<br>(95 g) |

| DIMENSIONS in inches [millimeters] |                                |                                |                    |           |                                |                                 |                     |
|------------------------------------|--------------------------------|--------------------------------|--------------------|-----------|--------------------------------|---------------------------------|---------------------|
| CASE CODE                          | STYLE 6 AND 7                  |                                | TYPICAL WEIGHT     | CASE CODE | STYLE 6 AND 7                  |                                 | TYPICAL WEIGHT      |
|                                    | D                              | L                              |                    |           | D                              | L                               |                     |
| HJ                                 | 0.885 ± 0.020<br>[22.5 ± 0.51] | 1.641 ± 0.062<br>[41.7 ± 1.58] | 0.95 oz.<br>(27 g) | LE        | 1.260 ± 0.020<br>[32.0 ± 0.51] | 1.141 ± 0.062<br>[29.0 ± 1.58]  | 1.13 oz.<br>(32 g)  |
| HL                                 | 0.885 ± 0.020<br>[22.5 ± 0.51] | 2.141 ± 0.062<br>[54.4 ± 1.58] | 1.02 oz.<br>(29 g) | LJ        | 1.260 ± 0.020<br>[32.0 ± 0.51] | 1.641 ± 0.062<br>[41.7 ± 1.58]  | 1.62 oz.<br>(46 g)  |
| HP                                 | 0.885 ± 0.020<br>[22.5 ± 0.51] | 2.641 ± 0.062<br>[67.1 ± 1.58] | 1.38 oz.<br>(39 g) | LL        | 1.260 ± 0.020<br>[32.0 ± 0.51] | 2.141 ± 0.062<br>[54.4 ± 1.58]  | 2.11 oz.<br>(60 g)  |
| HS                                 | 0.885 ± 0.020<br>[22.5 ± 0.51] | 3.141 ± 0.062<br>[79.8 ± 1.58] | 1.73 oz.<br>(49 g) | LP        | 1.260 ± 0.020<br>[32.0 ± 0.51] | 2.641 ± 0.062<br>[67.1 ± 1.58]  | 2.65 oz.<br>(75 g)  |
| HT                                 | 0.885 ± 0.020<br>[22.5 ± 0.51] | 3.641 ± 0.062<br>[92.5 ± 1.58] | 2.08 oz.<br>(59 g) | LS        | 1.260 ± 0.020<br>[32.0 ± 0.51] | 3.141 ± 0.062<br>[79.8 ± 1.58]  | 3.14 oz.<br>(89 g)  |
| JE                                 | 1.010 ± 0.020<br>[25.7 ± 0.51] | 1.141 ± 0.062<br>[29.0 ± 1.58] | 0.81 oz.<br>(23 g) | LT        | 1.260 ± 0.020<br>[32.0 ± 0.51] | 3.641 ± 0.062<br>[92.5 ± 1.58]  | 3.63 oz.<br>(103 g) |
| JJ                                 | 1.010 ± 0.020<br>[25.7 ± 0.51] | 1.641 ± 0.062<br>[41.7 ± 1.58] | 1.02 oz.<br>(29 g) | LD        | 1.260 ± 0.020<br>[32.0 ± 0.51] | 4.141 ± 0.062<br>[105.2 ± 1.58] | 4.16 oz.<br>(118 g) |
| JL                                 | 1.010 ± 0.020<br>[25.7 ± 0.51] | 2.141 ± 0.062<br>[54.4 ± 1.58] | 1.55 oz.<br>(44 g) | ME        | 1.375 ± 0.020<br>[34.9 ± 0.51] | 1.141 ± 0.062<br>[29.0 ± 1.58]  | 1.38 oz.<br>(39 g)  |
| JP                                 | 1.010 ± 0.020<br>[25.7 ± 0.51] | 2.641 ± 0.062<br>[67.1 ± 1.58] | 1.87 oz.<br>(53 g) | MJ        | 1.375 ± 0.020<br>[34.9 ± 0.51] | 1.641 ± 0.062<br>[41.7 ± 1.58]  | 1.98 oz.<br>(56 g)  |
| JS                                 | 1.010 ± 0.020<br>[25.7 ± 0.51] | 3.141 ± 0.062<br>[79.8 ± 1.58] | 2.22 oz.<br>(63 g) | ML        | 1.375 ± 0.020<br>[34.9 ± 0.51] | 2.141 ± 0.062<br>[54.4 ± 1.58]  | 2.57 oz.<br>(73 g)  |
| JT                                 | 1.010 ± 0.020<br>[25.7 ± 0.51] | 3.641 ± 0.062<br>[92.5 ± 1.58] | 2.54 oz.<br>(72 g) | MP        | 1.375 ± 0.020<br>[34.9 ± 0.51] | 2.641 ± 0.062<br>[67.1 ± 1.58]  | 3.21 oz.<br>(91 g)  |
| KE                                 | 1.135 ± 0.020<br>[28.8 ± 0.51] | 1.141 ± 0.062<br>[29.0 ± 1.58] | 0.92 oz.<br>(26 g) | MS        | 1.375 ± 0.020<br>[34.9 ± 0.51] | 3.141 ± 0.062<br>[79.8 ± 1.58]  | 3.81 oz.<br>(108 g) |
| KJ                                 | 1.135 ± 0.020<br>[28.8 ± 0.51] | 1.641 ± 0.062<br>[41.7 ± 1.58] | 1.31 oz.<br>(37 g) | MT        | 1.375 ± 0.020<br>[34.9 ± 0.51] | 3.641 ± 0.062<br>[92.5 ± 1.58]  | 4.44 oz.<br>(126 g) |
| KL                                 | 1.135 ± 0.020<br>[28.8 ± 0.51] | 2.141 ± 0.062<br>[54.4 ± 1.58] | 1.73 oz.<br>(49 g) | MD        | 1.375 ± 0.020<br>[34.9 ± 0.51] | 4.141 ± 0.062<br>[105.2 ± 1.58] | 5.04 oz.<br>(143 g) |
| KP                                 | 1.135 ± 0.020<br>[28.8 ± 0.51] | 2.641 ± 0.062<br>[67.1 ± 1.58] | 2.15 oz.<br>(61 g) | -         | -                              | -                               | -                   |

### DIMENSIONS AND AVAILABLE FORMS





Aluminum Capacitors  
+ 85 °C, Tubular, Axial Lead, General Purpose

Vishay Sprague

**ORDERING EXAMPLE**

Electrolytic capacitor 53D series: 53D 282 G 025 GJ 6

| DESCRIPTION |  |
|-------------|--|
| CODE        | EXPLANATION                                      |
| 53D         | product type                                     |
| 282         | capacitance value (2800 µF)                      |
| G           | tolerance (G = - 10 %/+ 75 %; F = - 10 %/+ 50 %) |
| 025         | voltage rating at 85 °C (025 = 25 V)             |
| GJ          | can size (see dimensions table)                  |
| 6           | sleeve and sealing (6 = P.V.C. sleeve)           |

| ELECTRICAL DATA AND ORDERING INFORMATION  |           |                 |                                       |  |
|---|-----------|-----------------|---------------------------------------|--|
| CAPACITANCE (µF)                          | CASE CODE | PART NUMBER (1) | MAX. ESR at + 25 °C<br>120 Hz<br>(mΩ) | MAX. RMS RIPPLE at + 85 °C<br>120 Hz<br>(mA) |
| <b>16 WVDC at + 85 °C, SURGE = 18 V</b>   |           |                 |                                       |  |
| 6900.0                                    | HJ        | 53D692G016HJ6   | 73                                    | 2150   |
| 10000.0                                   | HL        | 53D103G016HL6   | 52                                    | 2840   |
| <b>25 WVDC at + 85 °C, SURGE = 35 V</b>   |           |                 |                                       |  |
| 2800.0                                    | GJ        | 53D282G025GJ6   | 103                                   | 1650   |
| 4300.0                                    | HJ        | 53D432G025HJ6   | 72                                    | 2170   |
| 6200.0                                    | HL        | 53D622G025HL6   | 51                                    | 2870   |
| 11000.0                                   | JP        | 53D113G025JP6   | 33                                    | 4230   |
| <b>35 WVDC at + 85 °C, SURGE = 45 V</b>   |           |                 |                                       |  |
| 1100.0                                    | GE        | 53D112G035GE6   | 219                                   | 980  |
| 2100.0                                    | GJ        | 53D212G035GJ6   | 111                                   | 1590   |
| 3200.0                                    | HJ        | 53D322G035HJ6   | 77                                    | 2090   |
| 4700.0                                    | HL        | 53D472G035HL6   | 54                                    | 2780   |
| 8300.0                                    | JP        | 53D832G035JP6   | 34                                    | 4110   |
| <b>50 WVDC at + 85 °C, SURGE = 70 V</b>   |           |                 |                                       |  |
| 1000.0                                    | GE        | 53D102G050GE6   | 231                                   | 950  |
| 1300.0                                    | GJ        | 53D132G050GJ6   | 131                                   | 1470   |
| 1900.0                                    | HJ        | 53D192G050HJ6   | 94                                    | 1900   |
| 2800.0                                    | HL        | 53D282G050HL6   | 65                                    | 2540   |
| 3800.0                                    | JL        | 53D382G050JL6   | 51                                    | 3090   |
| 5000.0                                    | JP        | 53D502G050JP6   | 40                                    | 3810   |
| <b>63 WVDC at + 85 °C, SURGE = 80 V</b>   |           |                 |                                       |  |
| 1000.0                                    | GJ        | 53D102G063GJ6   | 145                                   | 1400   |
| 2200.0                                    | HL        | 53D222G063HL6   | 86                                    | 2210   |
| <b>200 WVDC at + 85 °C, SURGE = 250 V</b> |           |                 |                                       |  |
| 350.0                                     | JL        | 53D351F200JL6   | 499                                   | 1000   |
| 460.0                                     | JP        | 53D461F200JP6   | 379                                   | 1250   |
| <b>250 WVDC at + 85 °C, SURGE = 300 V</b> |           |                 |                                       |  |
| 56.0                                      | GE        | 53D560F250GE6   | 3035                                  | 263  |
| 100.0                                     | GJ        | 53D101F250GJ6   | 1593                                  | 420  |
| 130.0                                     | HJ        | 53D131F250HJ6   | 1238                                  | 520  |
| <b>400 WVDC at + 85 °C, SURGE = 450 V</b> |           |                 |                                       |  |
| 100.0                                     | JL        | 53D101F400JL6   | 1524                                  | 560  |
| 140.0                                     | JS        | 53D141F400JS6   | 1084                                  | 790  |
| 150.0                                     | JS        | 53D151F400JS6   | 1011                                  | 820  |

**Note**

(1) These Part Numbers are normally stocked. Many other values are available on special order. Please contact your distributor for price and delivery.



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