

Solid-Electrolyte TANTALEX™ Capacitors, Military MIL-PRF-39003/01 Qualified, Style CSR13



FEATURES

- Hermetically sealed
- Metal cased
- Axial lead
- Weibull failure rates G, B, C, D
- Exponential failure rates M, P, R, S
- Tape and reel available per EIA-296 standard

STYLE, MILITARY SPECIFICATION SHEET

Style CSR13, M39003/01 MIL-PRF-39003/1

PERFORMANCE CHARACTERISTICS

Operating Temperature: -55 °C to +125 °C
(above 85 °C, voltage derating is required)

Capacitance Range: 0.033 µF to 330 µF

Capacitance Tolerance: ± 5 %, ± 10 %, ± 20 %

Voltage Rating: 6 V_{DC} to 100 V_{DC}

DESCRIPTION

Solid-Electrolyte TANTALEX capacitors to military specification MIL-PRF-39003 - Exponential and Weibull Distribution: hermetically sealed, metal cased, axial leaded tubular capacitors manufactured as military style CSR13. These capacitors are furnished to the requirements of the military specification, including marking, testing and inspection.

In accordance with the specification, all capacitors are marked with the military part number (M39003/xx-xxxx) rather than the older style designation (CSRxxxxxxx) and should be ordered as such. All capacitors covered by MIL-PRF-39003 are now ordered with the military part number as illustrated in the Part Numbering System chart. Capacitors must not be ordered using the style number identification.

MIL-PRF-39003 establishes failure rates (expressed in percent per 1000 h) based on exponential and Weibull distribution. Care must be exercised in ordering to insure the part number correctly identifies the desired failure rate level.

In addition, each order for military style CSR13, CSR21, CSR23 capacitors requiring government inspection must state whether inspection is to be at the destination or at the Vishay plant. Orders requiring source inspection cannot be shipped until this has been accomplished.

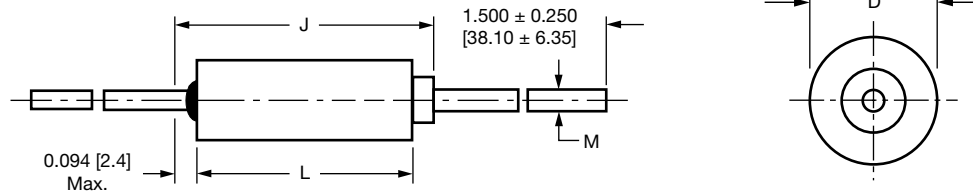
Style CS13 capacitors previously shown in MIL-C-26655 are directly replaced by style CSR13 and style CSR23 capacitors are extended capacitance range versions of military style CSR13.

For information on the performance characteristics of these capacitors, please refer to the latest issue of the military specification.

| ORDERING INFORMATION | | | | |
|---|---|---|---|---|
| <u>M39003</u> | <u>/01</u> | <u>-2254</u> | <u>A</u> | <u>/TR</u> |
| BASIC DOCUMENT NUMBER | SLASH SHEET | DASH NUMBER | SURGE CURRENT OPTION LETTER | PACKAGING OPTION ⁽¹⁾ |
| Indicates the Basic Specification; in this case MIL-PRF-39003 | Indicates the Specification Sheet of the Basic Military Specification | Taken from Ratings table of the Specification Sheet | Blank = standard (no surge current) A = +25 °C, after Weibull B = -55 °C and +85 °C, after Weibull C = -55 °C and +85 °C, before Weibull D = +25 °C, after Weibull, high temperature solder E = -55 °C and +85 °C, after Weibull, high temperature solder F = -55 °C and +85 °C, before Weibull, high temperature solder H = high temperature solder only (no surge) | Blank = bulk /TR = tape and reel, full reel /HR = tape and reel, half reel /PR = tape and reel, partial reel /RR = tape and reel, option R, full reel /WR = tape and reel, option W, full reel |

Note

⁽¹⁾ See detailed packaging information following the Standard Ratings table

DIMENSIONS in inches [millimeters]


| CASE CODE | L ± 0.031 [0.79] | D + 0.016 [0.41] - 0.015 [0.38] | M ± 0.002 [0.05] | J (MAX.) |
|-----------|---------------------|---------------------------------------|---------------------|---------------|
| A | 0.286 [7.26] | 0.135 [3.43] | 0.020 [0.51] | 0.422 [10.72] |
| B | 0.474 [12.04] | 0.185 [4.70] | 0.020 [0.51] | 0.610 [15.49] |
| C | 0.686 [17.42] | 0.289 [7.34] | 0.025 [0.64] | 0.822 [20.88] |
| D | 0.786 [19.96] | 0.351 [8.92] | 0.025 [0.64] | 0.922 [23.42] |

Notes

- The case insulation shall extend 0.015" [0.38 mm] minimum beyond each end. However, when a shrink-fitted insulation is used, it shall lap over the ends of the capacitor body
- A minimum lead length of 1.0" [2.54 mm] for use with tape and reel automatic insertion equipment is available upon request

RATINGS AND CASE CODES

| μF | 6 V | 10 V | 15 V | 20 V | 35 V | 50 V | 75 V | 100 V |
|-------|-----|------|------|------|------|------|------|-------|
| 0.033 | | | | | | A | | A |
| 0.039 | | | | | | A | | A |
| 0.047 | | | | | | A | | A |
| 0.056 | | | | | | A | | A |
| 0.068 | | | | | | A | | A |
| 0.082 | | | | | | A | | A |
| 0.10 | | | | | | A | A | A |
| 0.12 | | | | | | A | A | A |
| 0.15 | | | | | | A | A | A |
| 0.18 | | | | | | A | A | A |
| 0.22 | | | | | | A | A | A |
| 0.27 | | | | | | A | A | A |
| 0.33 | | | | | | A | A | A |
| 0.39 | | | | | | A | A | A |
| 0.47 | | | | | | A | A | A |
| 0.56 | | | | | | A | A | A |
| 0.68 | | | | | | A | A | B |
| 0.82 | | | | | | A | B | B |
| 1.0 | | | | | | A | B | B |
| 1.2 | | | | A | | B | B | B |
| 1.5 | | | | A | | B | B | B |
| 1.8 | | | | A | | B | B | B |
| 2.2 | | | | A | | B | B | B |
| 2.7 | | | A | | | B | B | B |
| 3.3 | | | A | | | B | B | C |
| 3.9 | | A | | | | B | B | C |
| 4.7 | | A | | | | B | C | C |
| 5.6 | A | | | | B | C | C | C |
| 6.8 | A | | | | B | C | C | C |



| RATINGS AND CASE CODES | | | | | | | | |
|------------------------|-----|------|------|------|------|------|------|-------|
| µF | 6 V | 10 V | 15 V | 20 V | 35 V | 50 V | 75 V | 100 V |
| 8.2 | | | | B | | C | C | |
| 10 | | | | B | | C | C | |
| 12 | | | | B | | C | D | |
| 15 | | | | B | | C | D | |
| 18 | | | B | | | C | | |
| 22 | | | B | | C | D | | |
| 27 | | B | | C | D | | | |
| 33 | | B | | C | D | | | |
| 39 | | B | | C | D | | | |
| 47 | B | | | C | D | | | |
| 56 | B | | C | D | | | | |
| 68 | | | C | D | | | | |
| 82 | | C | | D | | | | |
| 100 | | C | | D | | | | |
| 120 | | C | D | | | | | |
| 150 | C | | D | | | | | |
| 180 | C | D | | | | | | |
| 220 | | D | | | | | | |
| 270 | D | | | | | | | |
| 330 | D | | | | | | | |

| STANDARD RATINGS | | | | | | | | | | | | | | | |
|---|-----------|-----------------|--|------|------|-------|------|------|------|-------|------------------|--------|---------|------------------|-------------------|
| CAPACITANCE (µF) | CASE CODE | CAP. TOL. (± %) | PART NO. M39003/01- FAILURE RATE LEVEL (%/1000 h) | | | | | | | | MAX. DCL (µA) AT | | | MAX. DF (%) AT | |
| | | | M | P | R | S | G | B | C | D | +25 °C | +85 °C | +125 °C | -55 °C +25 °C | +85 °C +125 °C |
| | | | 1.0 | 0.1 | 0.01 | 0.001 | 1.0 | 0.1 | 0.01 | 0.001 | | | | | |
| 6 V_{DC} AT +85 °C, SURGE = 8 V; 4 V_{DC} AT +125 °C | | | | | | | | | | | | | | | |
| 5.6 | A | 5 | 5001 | 5201 | 5401 | 5601 | 4001 | 6001 | 7001 | 8001 | 0.3 | 6 | 7.5 | 4 | 4 |
| 5.6 | A | 10 | 2241 | 2481 | 2721 | 2961 | 4002 | 6002 | 7002 | 8002 | 0.3 | 6 | 7.5 | 4 | 4 |
| 6.8 | A | 5 | 5002 | 5202 | 5402 | 5602 | 4003 | 6003 | 7003 | 8003 | 0.3 | 6 | 7.5 | 6 | 6 |
| 6.8 | A | 10 | 2242 | 2482 | 2722 | 2962 | 4004 | 6004 | 7004 | 8004 | 0.3 | 6 | 7.5 | 6 | 6 |
| 6.8 | A | 20 | 2243 | 2483 | 2723 | 2963 | 4005 | 6005 | 7005 | 8005 | 0.3 | 6 | 7.5 | 6 | 6 |
| 47 | B | 5 | 5003 | 5203 | 5403 | 5603 | 4006 | 6006 | 7006 | 8006 | 1.5 | 24 | 30 | 6 | 6 |
| 47 | B | 10 | 2244 | 2484 | 2724 | 2964 | 4007 | 6007 | 7007 | 8007 | 1.5 | 24 | 30 | 6 | 6 |
| 47 | B | 20 | 2245 | 2485 | 2725 | 2965 | 4008 | 6008 | 7008 | 8008 | 1.5 | 24 | 30 | 6 | 6 |
| 56 | B | 5 | 5004 | 5204 | 5404 | 5604 | 4009 | 6009 | 7009 | 8009 | 1.5 | 24 | 30 | 6 | 6 |
| 56 | B | 10 | 2246 | 2486 | 2726 | 2966 | 4010 | 6010 | 7010 | 8010 | 1.5 | 24 | 30 | 6 | 6 |
| 150 | C | 5 | 5005 | 5205 | 5405 | 5605 | 4011 | 6011 | 7011 | 8011 | 4.5 | 90 | 113 | 8 | 8 |
| 150 | C | 10 | 2247 | 2487 | 2727 | 2967 | 4012 | 6012 | 7012 | 8012 | 4.5 | 90 | 113 | 8 | 8 |
| 150 | C | 20 | 2248 | 2488 | 2728 | 2968 | 4013 | 6013 | 7013 | 8013 | 4.5 | 90 | 113 | 8 | 8 |
| 180 | C | 5 | 5006 | 5206 | 5406 | 5606 | 4014 | 6014 | 7014 | 8014 | 5.5 | 110 | 138 | 8 | 8 |
| 180 | C | 10 | 2249 | 2489 | 2729 | 2969 | 4015 | 6015 | 7015 | 8015 | 5.5 | 110 | 138 | 8 | 8 |
| 270 | D | 5 | 5007 | 5207 | 5407 | 5607 | 4016 | 6016 | 7016 | 8016 | 6.5 | 130 | 163 | 8 | 8 |
| 270 | D | 10 | 2250 | 2490 | 2730 | 2970 | 4017 | 6017 | 7017 | 8017 | 6.5 | 130 | 163 | 8 | 8 |
| 330 | D | 5 | 5008 | 5208 | 5408 | 5608 | 4018 | 6018 | 7018 | 8018 | 7.5 | 150 | 188 | 8 | 8 |
| 330 | D | 10 | 2251 | 2491 | 2731 | 2971 | 4019 | 6019 | 7019 | 8019 | 7.5 | 150 | 188 | 8 | 8 |
| 330 | D | 20 | 2252 | 2492 | 2732 | 2972 | 4020 | 6020 | 7020 | 8020 | 7.5 | 150 | 188 | 8 | 8 |



| STANDARD RATINGS | | | | | | | | | | | | | | | |
|--|--------------|----------------------------|--|------|------|-------|------|------|------|-------|------------------------|--------|---------|------------------|-------------------|
| CAPACITANCE (μ F) | CASE CODE | CAP. TOL. (\pm %) | PART NO. M39003/01- FAILURE RATE LEVEL (%/1000 h) | | | | | | | | MAX. DCL (μ A) AT | | | MAX. DF (%) AT | |
| | | | M | P | R | S | G | B | C | D | +25 °C | +85 °C | +125 °C | -55 °C +25 °C | +85 °C +125 °C |
| | | | 1.0 | 0.1 | 0.01 | 0.001 | 1.0 | 0.1 | 0.01 | 0.001 | | | | | |
| 10 V_{DC} AT +85 °C, SURGE = 13 V; 7 V_{DC} AT +125 °C | | | | | | | | | | | | | | | |
| 3.9 | A | 5 | 5009 | 5209 | 5409 | 5609 | 4021 | 6021 | 7021 | 8021 | 0.3 | 6 | 7.5 | 4 | 4 |
| 3.9 | A | 10 | 2253 | 2493 | 2733 | 2973 | 4022 | 6022 | 7022 | 8022 | 0.3 | 6 | 7.5 | 4 | 4 |
| 4.7 | A | 5 | 5010 | 5210 | 5410 | 5610 | 4023 | 6023 | 7023 | 8023 | 0.4 | 7 | 8.8 | 4 | 4 |
| 4.7 | A | 10 | 2254 | 2494 | 2734 | 2974 | 4024 | 6024 | 7024 | 8024 | 0.4 | 7 | 8.8 | 4 | 4 |
| 4.7 | A | 20 | 2255 | 2495 | 2735 | 2975 | 4025 | 6025 | 7025 | 8025 | 0.4 | 7 | 8.8 | 4 | 4 |
| 27 | B | 5 | 5011 | 5211 | 5411 | 5611 | 4026 | 6026 | 7026 | 8026 | 2 | 40 | 50 | 6 | 6 |
| 27 | B | 10 | 2256 | 2496 | 2736 | 2976 | 4027 | 6027 | 7027 | 8027 | 2 | 40 | 50 | 6 | 6 |
| 33 | B | 5 | 5012 | 5212 | 5412 | 5612 | 4028 | 6028 | 7028 | 8028 | 2.5 | 50 | 63 | 6 | 6 |
| 33 | B | 10 | 2257 | 2497 | 2737 | 2977 | 4029 | 6029 | 7029 | 8029 | 2.5 | 50 | 63 | 6 | 6 |
| 33 | B | 20 | 2258 | 2498 | 2738 | 2978 | 4030 | 6030 | 7030 | 8030 | 2.5 | 50 | 63 | 6 | 6 |
| 39 | B | 5 | 5013 | 5213 | 5413 | 5613 | 4031 | 6031 | 7031 | 8031 | 2.5 | 50 | 63 | 6 | 6 |
| 39 | B | 10 | 2259 | 2499 | 2739 | 2979 | 4032 | 6032 | 7032 | 8032 | 2.5 | 50 | 63 | 6 | 6 |
| 82 | C | 5 | 5014 | 5214 | 5414 | 5614 | 4033 | 6033 | 7033 | 8033 | 4 | 80 | 100 | 6 | 6 |
| 82 | C | 10 | 2260 | 2500 | 2740 | 2980 | 4034 | 6034 | 7034 | 8034 | 4 | 80 | 100 | 6 | 6 |
| 100 | C | 5 | 5015 | 5215 | 5415 | 5615 | 4035 | 6035 | 7035 | 8035 | 5 | 100 | 125 | 8 | 8 |
| 100 | C | 10 | 2261 | 2501 | 2741 | 2981 | 4036 | 6036 | 7036 | 8036 | 5 | 100 | 125 | 8 | 8 |
| 100 | C | 20 | 2262 | 2502 | 2742 | 2982 | 4037 | 6037 | 7037 | 8037 | 5 | 100 | 125 | 8 | 8 |
| 120 | C | 5 | 5016 | 5216 | 5416 | 5616 | 4038 | 6038 | 7038 | 8038 | 6 | 120 | 150 | 8 | 8 |
| 120 | C | 10 | 2263 | 2503 | 2743 | 2983 | 4039 | 6039 | 7039 | 8039 | 6 | 120 | 150 | 8 | 8 |
| 180 | D | 5 | 5017 | 5217 | 5417 | 5617 | 4040 | 6040 | 7040 | 8040 | 9 | 180 | 226 | 8 | 8 |
| 180 | D | 10 | 2264 | 2504 | 2744 | 2984 | 4041 | 6041 | 7041 | 8041 | 9 | 180 | 226 | 8 | 8 |
| 220 | D | 5 | 5018 | 5218 | 5418 | 5618 | 4042 | 6042 | 7042 | 8042 | 10 | 200 | 250 | 8 | 8 |
| 220 | D | 10 | 2265 | 2505 | 2745 | 2985 | 4043 | 6043 | 7043 | 8043 | 10 | 200 | 250 | 8 | 8 |
| 220 | D | 20 | 2266 | 2506 | 2746 | 2986 | 4044 | 6044 | 7044 | 8044 | 10 | 200 | 250 | 8 | 8 |
| 15 V_{DC} AT +85 °C, SURGE = 20 V; 10 V_{DC} AT +125 °C | | | | | | | | | | | | | | | |
| 2.7 | A | 5 | 5019 | 5219 | 5419 | 5619 | 4045 | 6045 | 7045 | 8045 | 0.3 | 6 | 7.5 | 4 | 4 |
| 2.7 | A | 10 | 2267 | 2507 | 2747 | 2987 | 4046 | 6046 | 7046 | 8046 | 0.3 | 6 | 7.5 | 4 | 4 |
| 3.3 | A | 5 | 5020 | 5220 | 5420 | 5620 | 4047 | 6047 | 7047 | 8047 | 0.4 | 8 | 10 | 4 | 4 |
| 3.3 | A | 10 | 2268 | 2508 | 2748 | 2988 | 4048 | 6048 | 7048 | 8048 | 0.4 | 8 | 10 | 4 | 4 |
| 3.3 | A | 20 | 2269 | 2509 | 2749 | 2989 | 4049 | 6049 | 7049 | 8049 | 0.4 | 8 | 10 | 4 | 4 |
| 18 | B | 5 | 5021 | 5221 | 5421 | 5621 | 4050 | 6050 | 7050 | 8050 | 2 | 35 | 44 | 6 | 6 |
| 18 | B | 10 | 2270 | 2510 | 2750 | 2990 | 4051 | 6051 | 7051 | 8051 | 2 | 35 | 44 | 6 | 6 |
| 22 | B | 5 | 5022 | 5222 | 5422 | 5622 | 4052 | 6052 | 7052 | 8052 | 2 | 40 | 50 | 6 | 6 |
| 22 | B | 10 | 2271 | 2511 | 2751 | 2991 | 4053 | 6053 | 7053 | 8053 | 2 | 40 | 50 | 6 | 6 |
| 22 | B | 20 | 2272 | 2512 | 2752 | 2992 | 4054 | 6054 | 7054 | 8054 | 2 | 40 | 50 | 6 | 6 |
| 56 | C | 5 | 5023 | 5223 | 5423 | 5623 | 4055 | 6055 | 7055 | 8055 | 4 | 80 | 100 | 6 | 6 |
| 56 | C | 10 | 2273 | 2513 | 2753 | 2993 | 4056 | 6056 | 7056 | 8056 | 4 | 80 | 100 | 6 | 6 |
| 68 | C | 5 | 5024 | 5224 | 5424 | 5624 | 4057 | 6057 | 7057 | 8057 | 5 | 100 | 125 | 6 | 6 |
| 68 | C | 10 | 2274 | 2514 | 2754 | 2994 | 4058 | 6058 | 7058 | 8058 | 5 | 100 | 125 | 6 | 6 |
| 68 | C | 20 | 2275 | 2515 | 2755 | 2995 | 4059 | 6059 | 7059 | 8059 | 5 | 100 | 125 | 6 | 6 |
| 120 | D | 5 | 5025 | 5225 | 5425 | 5625 | 4060 | 6060 | 7060 | 8060 | 9 | 180 | 226 | 8 | 8 |
| 120 | D | 10 | 2276 | 2516 | 2756 | 2996 | 4061 | 6061 | 7061 | 8061 | 9 | 180 | 226 | 8 | 8 |
| 150 | D | 5 | 5026 | 5226 | 5426 | 5626 | 4062 | 6062 | 7062 | 8062 | 10 | 200 | 250 | 8 | 8 |
| 150 | D | 10 | 2277 | 2517 | 2757 | 2997 | 4063 | 6063 | 7063 | 8063 | 10 | 200 | 250 | 8 | 8 |
| 150 | D | 20 | 2278 | 2518 | 2758 | 2998 | 4064 | 6064 | 7064 | 8064 | 10 | 200 | 250 | 8 | 8 |



| STANDARD RATINGS | | | | | | | | | | | | | | | |
|--|--------------|----------------------------|--|------|------|-------|------|------|------|-------|------------------------|--------|---------|------------------|-------------------|
| CAPACITANCE (μ F) | CASE CODE | CAP. TOL. (\pm %) | PART NO. M39003/01- FAILURE RATE LEVEL (%/1000 h) | | | | | | | | MAX. DCL (μ A) AT | | | MAX. DF (%) AT | |
| | | | M | P | R | S | G | B | C | D | +25 °C | +85 °C | +125 °C | -55 °C +25 °C | +85 °C +125 °C |
| | | | 1.0 | 0.1 | 0.01 | 0.001 | 1.0 | 0.1 | 0.01 | 0.001 | | | | | |
| 20 V_{DC} AT +85 °C, SURGE = 26 V; 13 V_{DC} AT +125 °C | | | | | | | | | | | | | | | |
| 1.2 | A | 5 | 5027 | 5227 | 5427 | 5627 | 4065 | 6065 | 7065 | 8065 | 0.3 | 6 | 7.5 | 4 | 4 |
| 1.2 | A | 10 | 2279 | 2519 | 2759 | 2999 | 4066 | 6066 | 7066 | 8066 | 0.3 | 6 | 7.5 | 4 | 4 |
| 1.5 | A | 5 | 5028 | 5228 | 5428 | 5628 | 4067 | 6067 | 7067 | 8067 | 0.3 | 6 | 7.5 | 4 | 4 |
| 1.5 | A | 10 | 2280 | 2520 | 2760 | 3000 | 4068 | 6068 | 7068 | 8068 | 0.3 | 6 | 7.5 | 4 | 4 |
| 1.5 | A | 20 | 2281 | 2521 | 2761 | 3001 | 4069 | 6069 | 7069 | 8069 | 0.3 | 6 | 7.5 | 4 | 4 |
| 1.5 | A | 5 | 5029 | 5229 | 5429 | 5629 | 4070 | 6070 | 7070 | 8070 | 0.3 | 6 | 7.5 | 4 | 4 |
| 1.8 | A | 10 | 2282 | 2522 | 2762 | 3002 | 4071 | 6071 | 7071 | 8071 | 0.3 | 6 | 7.5 | 4 | 4 |
| 2.2 | A | 5 | 5030 | 5230 | 5430 | 5630 | 4072 | 6072 | 7072 | 8072 | 0.4 | 8 | 10 | 4 | 4 |
| 2.2 | A | 10 | 2283 | 2523 | 2763 | 3003 | 4073 | 6073 | 7073 | 8073 | 0.4 | 8 | 10 | 4 | 4 |
| 2.2 | A | 20 | 2284 | 2524 | 2764 | 3004 | 4074 | 6074 | 7074 | 8074 | 0.4 | 8 | 10 | 4 | 4 |
| 8.2 | B | 5 | 5031 | 5231 | 5431 | 5631 | 4075 | 6075 | 7075 | 8075 | 1 | 20 | 25 | 6 | 6 |
| 8.2 | B | 10 | 2285 | 2525 | 2765 | 3005 | 4076 | 6076 | 7076 | 8076 | 1 | 20 | 25 | 6 | 6 |
| 10 | B | 5 | 5032 | 5232 | 5432 | 5632 | 4077 | 6077 | 7077 | 8077 | 1.5 | 30 | 38 | 6 | 6 |
| 10 | B | 10 | 2286 | 2526 | 2766 | 3006 | 4078 | 6078 | 7078 | 8078 | 1.5 | 30 | 38 | 6 | 6 |
| 10 | B | 20 | 2287 | 2527 | 2767 | 3007 | 4079 | 6079 | 7079 | 8079 | 1.5 | 30 | 38 | 6 | 6 |
| 12 | B | 5 | 5033 | 5233 | 5433 | 5633 | 4080 | 6080 | 7080 | 8080 | 1.8 | 35 | 44 | 6 | 6 |
| 12 | B | 10 | 2288 | 2528 | 2768 | 3008 | 4081 | 6081 | 7081 | 8081 | 1.8 | 35 | 44 | 6 | 6 |
| 15 | B | 5 | 5034 | 5234 | 5434 | 5634 | 4082 | 6082 | 7082 | 8082 | 2 | 40 | 50 | 6 | 6 |
| 15 | B | 10 | 2289 | 2529 | 2769 | 3009 | 4083 | 6083 | 7083 | 8083 | 2 | 40 | 50 | 6 | 6 |
| 15 | B | 20 | 2290 | 2530 | 2770 | 3010 | 4084 | 6084 | 7084 | 8084 | 2 | 40 | 50 | 6 | 6 |
| 27 | C | 5 | 5035 | 5235 | 5435 | 5635 | 4085 | 6085 | 7085 | 8085 | 2.5 | 50 | 63 | 6 | 6 |
| 27 | C | 10 | 2291 | 2531 | 2771 | 3011 | 4086 | 6086 | 7086 | 8086 | 2.5 | 50 | 63 | 6 | 6 |
| 33 | C | 5 | 5036 | 5236 | 5436 | 5636 | 4087 | 6087 | 7087 | 8087 | 3.5 | 70 | 88 | 6 | 6 |
| 33 | C | 10 | 2292 | 2532 | 2772 | 3012 | 4088 | 6088 | 7088 | 8088 | 3.5 | 70 | 88 | 6 | 6 |
| 33 | C | 20 | 2293 | 2533 | 2773 | 3013 | 4089 | 6089 | 7089 | 8089 | 3.5 | 70 | 88 | 6 | 6 |
| 39 | C | 5 | 5037 | 5237 | 5437 | 5637 | 4090 | 6090 | 7090 | 8090 | 4 | 80 | 100 | 6 | 6 |
| 39 | C | 10 | 2294 | 2534 | 2774 | 3014 | 4091 | 6091 | 7091 | 8091 | 4 | 80 | 100 | 6 | 6 |
| 47 | C | 5 | 5038 | 5238 | 5438 | 5638 | 4092 | 6092 | 7092 | 8092 | 4.5 | 90 | 113 | 6 | 6 |
| 47 | C | 10 | 2295 | 2535 | 2775 | 3015 | 4093 | 6093 | 7093 | 8093 | 4.5 | 90 | 113 | 6 | 6 |
| 47 | C | 20 | 2296 | 2536 | 2776 | 3016 | 4094 | 6094 | 7094 | 8094 | 4.5 | 90 | 113 | 6 | 6 |
| 56 | D | 5 | 5039 | 5239 | 5439 | 5639 | 4095 | 6095 | 7095 | 8095 | 5.5 | 110 | 138 | 6 | 6 |
| 56 | D | 10 | 2297 | 2537 | 2777 | 3017 | 4096 | 6096 | 7096 | 8096 | 5.5 | 110 | 138 | 6 | 6 |
| 68 | D | 5 | 5040 | 5240 | 5440 | 5640 | 4097 | 6097 | 7097 | 8097 | 7 | 140 | 175 | 6 | 6 |
| 68 | D | 10 | 2298 | 2538 | 2778 | 3018 | 4098 | 6098 | 7098 | 8098 | 7 | 140 | 175 | 6 | 6 |
| 68 | D | 20 | 2299 | 2539 | 2779 | 3019 | 4099 | 6099 | 7099 | 8099 | 7 | 140 | 175 | 6 | 6 |
| 82 | D | 5 | 5041 | 5241 | 5441 | 5641 | 4100 | 6100 | 7100 | 8100 | 8 | 160 | 200 | 6 | 6 |
| 82 | D | 10 | 2300 | 2540 | 2780 | 3020 | 4101 | 6101 | 7101 | 8101 | 8 | 160 | 200 | 6 | 6 |
| 100 | D | 5 | 5042 | 5242 | 5442 | 5642 | 4102 | 6102 | 7102 | 8102 | 10 | 200 | 250 | 8 | 8 |
| 100 | D | 10 | 2301 | 2541 | 2781 | 3021 | 4103 | 6103 | 7103 | 8103 | 10 | 200 | 250 | 8 | 8 |
| 100 | D | 20 | 2302 | 2542 | 2782 | 3022 | 4104 | 6104 | 7104 | 8104 | 10 | 200 | 250 | 8 | 8 |
| 35 V_{DC} AT +85 °C, SURGE = 46 V; 23 V_{DC} AT +125 °C | | | | | | | | | | | | | | | |
| 5.6 | B | 5 | 5043 | 5243 | 5443 | 5643 | 4105 | 6105 | 7105 | 8105 | 1.3 | 25 | 32 | 4 | 4 |
| 5.6 | B | 10 | 2303 | 2543 | 2783 | 3023 | 4106 | 6106 | 7106 | 8106 | 1.3 | 25 | 32 | 4 | 4 |
| 6.8 | B | 5 | 5044 | 5244 | 5444 | 5644 | 4107 | 6107 | 7107 | 8107 | 1.5 | 30 | 38 | 6 | 6 |
| 6.8 | B | 10 | 2304 | 2544 | 2784 | 3024 | 4108 | 6108 | 7108 | 8108 | 1.5 | 30 | 38 | 6 | 6 |
| 6.8 | B | 20 | 2305 | 2545 | 2785 | 3025 | 4109 | 6109 | 7109 | 8109 | 1.5 | 30 | 38 | 6 | 6 |
| 22 | C | 5 | 5045 | 5245 | 5445 | 5645 | 4110 | 6110 | 7110 | 8110 | 4 | 80 | 100 | 6 | 6 |
| 22 | C | 10 | 2306 | 2546 | 2786 | 3026 | 4111 | 6111 | 7111 | 8111 | 4 | 80 | 100 | 6 | 6 |
| 22 | C | 20 | 2307 | 2547 | 2787 | 3027 | 4112 | 6112 | 7112 | 8112 | 4 | 80 | 100 | 6 | 6 |
| 27 | D | 5 | 5046 | 5246 | 5446 | 5646 | 4113 | 6113 | 7113 | 8113 | 4.5 | 90 | 113 | 6 | 6 |
| 27 | D | 10 | 2308 | 2548 | 2788 | 3028 | 4114 | 6114 | 7114 | 8114 | 4.5 | 90 | 113 | 6 | 6 |
| 33 | D | 5 | 5047 | 5247 | 5447 | 5647 | 4115 | 6115 | 7115 | 8115 | 5.5 | 110 | 138 | 6 | 6 |
| 33 | D | 10 | 2309 | 2549 | 2789 | 3029 | 4116 | 6116 | 7116 | 8116 | 5.5 | 110 | 138 | 6 | 6 |
| 33 | D | 20 | 2310 | 2550 | 2790 | 3030 | 4117 | 6117 | 7117 | 8117 | 5.5 | 110 | 138 | 6 | 6 |
| 39 | D | 5 | 5048 | 5248 | 5448 | 5648 | 4118 | 6118 | 7118 | 8118 | 7 | 140 | 175 | 6 | 6 |
| 39 | D | 10 | 2311 | 2551 | 2791 | 3031 | 4119 | 6119 | 7119 | 8119 | 7 | 140 | 175 | 6 | 6 |
| 47 | D | 5 | 5049 | 5249 | 5449 | 5649 | 4120 | 6120 | 7120 | 8120 | 8 | 160 | 200 | 6 | 6 |
| 47 | D | 10 | 2312 | 2552 | 2792 | 3032 | 4121 | 6121 | 7121 | 8121 | 8 | 160 | 200 | 6 | 6 |
| 47 | D | 20 | 2313 | 2553 | 2793 | 3033 | 4122 | 6122 | 7122 | 8122 | 8 | 160 | 200 | 6 | 6 |



| STANDARD RATINGS | | | | | | | | | | | | | | | |
|--|--------------|-----------------------|--|------|------|-------|------|------|------|-------|------------------|--------|---------|------------------|-------------------|
| CAPACITANCE (μF) | CASE CODE | CAP. TOL. (± %) | PART NO. M39003/01- FAILURE RATE LEVEL (%/1000 h) | | | | | | | | MAX. DCL (μA) AT | | | MAX. DF (%) AT | |
| | | | M | P | R | S | G | B | C | D | +25 °C | +85 °C | +125 °C | -55 °C +25 °C | +85 °C +125 °C |
| | | | 1.0 | 0.1 | 0.01 | 0.001 | 1.0 | 0.1 | 0.01 | 0.001 | | | | | |
| 50 V_{DC} AT +85 °C, SURGE = 65 V; 33 V_{DC} AT +125 °C | | | | | | | | | | | | | | | |
| 0.033 | A | 5 | 5060 | 5260 | 5460 | 5660 | 4148 | 6148 | 7148 | 8148 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.033 | A | 10 | 2329 | 2569 | 2809 | 3049 | 4149 | 6149 | 7149 | 8149 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.033 | A | 20 | 2330 | 2570 | 2810 | 3050 | 4150 | 6150 | 7150 | 8150 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.039 | A | 5 | 5061 | 5261 | 5461 | 5661 | 4151 | 6151 | 7151 | 8151 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.039 | A | 10 | 2331 | 2571 | 2811 | 3051 | 4152 | 6152 | 7152 | 8152 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.047 | A | 5 | 5062 | 5262 | 5462 | 5662 | 4153 | 6153 | 7153 | 8153 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.047 | A | 10 | 2332 | 2572 | 2812 | 3052 | 4154 | 6154 | 7154 | 8154 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.047 | A | 20 | 2333 | 2573 | 2813 | 3053 | 4155 | 6155 | 7155 | 8155 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.056 | A | 5 | 5063 | 5263 | 5463 | 5663 | 4156 | 6156 | 7156 | 8156 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.056 | A | 10 | 2334 | 2574 | 2814 | 3054 | 4157 | 6157 | 7157 | 8157 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.068 | A | 5 | 5064 | 5264 | 5464 | 5664 | 4158 | 6158 | 7158 | 8158 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.068 | A | 10 | 2335 | 2575 | 2815 | 3055 | 4159 | 6159 | 7159 | 8159 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.068 | A | 20 | 2336 | 2576 | 2816 | 3056 | 4160 | 6160 | 7160 | 8160 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.082 | A | 5 | 5065 | 5265 | 5465 | 5665 | 4161 | 6161 | 7161 | 8161 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.082 | A | 10 | 2337 | 2577 | 2817 | 3057 | 4162 | 6162 | 7162 | 8162 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.10 | A | 5 | 5066 | 5266 | 5466 | 5666 | 4163 | 6163 | 7163 | 8163 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.10 | A | 10 | 2338 | 2578 | 2818 | 3058 | 4164 | 6164 | 7164 | 8164 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.10 | A | 20 | 2339 | 2579 | 2819 | 3059 | 4165 | 6165 | 7165 | 8165 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.12 | A | 5 | 5067 | 5267 | 5467 | 5667 | 4166 | 6166 | 7166 | 8166 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.12 | A | 10 | 2340 | 2580 | 2820 | 3060 | 4167 | 6167 | 7167 | 8167 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.15 | A | 5 | 5068 | 5268 | 5468 | 5668 | 4168 | 6168 | 7168 | 8168 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.15 | A | 10 | 2341 | 2581 | 2821 | 3061 | 4169 | 6169 | 7169 | 8169 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.15 | A | 20 | 2342 | 2582 | 2822 | 3062 | 4170 | 6170 | 7170 | 8170 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.18 | A | 5 | 5069 | 5269 | 5469 | 5669 | 4171 | 6171 | 7171 | 8171 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.18 | A | 10 | 2343 | 2583 | 2823 | 3063 | 4172 | 6172 | 7172 | 8172 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.22 | A | 5 | 5070 | 5270 | 5470 | 5670 | 4173 | 6173 | 7173 | 8173 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.22 | A | 10 | 2344 | 2584 | 2824 | 3064 | 4174 | 6174 | 7174 | 8174 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.22 | A | 20 | 2345 | 2585 | 2825 | 3065 | 4175 | 6175 | 7175 | 8175 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.27 | A | 5 | 5071 | 5271 | 5471 | 5671 | 4176 | 6176 | 7176 | 8176 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.27 | A | 10 | 2346 | 2586 | 2826 | 3066 | 4177 | 6177 | 7177 | 8177 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.33 | A | 5 | 5072 | 5272 | 5472 | 5672 | 4178 | 6178 | 7178 | 8178 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.33 | A | 10 | 2347 | 2587 | 2827 | 3067 | 4179 | 6179 | 7179 | 8179 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.33 | A | 20 | 2348 | 2588 | 2828 | 3068 | 4180 | 6180 | 7180 | 8180 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.39 | A | 5 | 5073 | 5273 | 5473 | 5673 | 4181 | 6181 | 7181 | 8181 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.39 | A | 10 | 2349 | 2589 | 2829 | 3069 | 4182 | 6182 | 7182 | 8182 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.47 | A | 5 | 5074 | 5274 | 5474 | 5674 | 4183 | 6183 | 7183 | 8183 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.47 | A | 10 | 2350 | 2590 | 2830 | 3070 | 4184 | 6184 | 7184 | 8184 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.47 | A | 20 | 2351 | 2591 | 2831 | 3071 | 4185 | 6185 | 7185 | 8185 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.56 | A | 5 | 5075 | 5275 | 5475 | 5675 | 4186 | 6186 | 7186 | 8186 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.56 | A | 10 | 2352 | 2592 | 2832 | 3072 | 4187 | 6187 | 7187 | 8187 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.68 | A | 5 | 5076 | 5276 | 5476 | 5676 | 4188 | 6188 | 7188 | 8188 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.68 | A | 10 | 2353 | 2593 | 2833 | 3073 | 4189 | 6189 | 7189 | 8189 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.68 | A | 20 | 2354 | 2594 | 2834 | 3074 | 4190 | 6190 | 7190 | 8190 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.82 | A | 5 | 5077 | 5277 | 5477 | 5677 | 4191 | 6191 | 7191 | 8191 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.82 | A | 10 | 2355 | 2595 | 2835 | 3075 | 4192 | 6192 | 7192 | 8192 | 0.3 | 5 | 6.3 | 2 | 4 |
| 1.0 | A | 5 | 5078 | 5278 | 5478 | 5678 | 4193 | 6193 | 7193 | 8193 | 0.4 | 8 | 10 | 2 | 4 |
| 1.0 | A | 10 | 2356 | 2596 | 2836 | 3076 | 4194 | 6194 | 7194 | 8194 | 0.4 | 8 | 10 | 2 | 4 |
| 1.0 | A | 20 | 2357 | 2597 | 2837 | 3077 | 4195 | 6195 | 7195 | 8195 | 0.4 | 8 | 10 | 2 | 4 |
| 1.2 | B | 5 | 5079 | 5279 | 5479 | 5679 | 4196 | 6196 | 7196 | 8196 | 0.4 | 9 | 11 | 4 | 4 |
| 1.2 | B | 10 | 2358 | 2598 | 2838 | 3078 | 4197 | 6197 | 7197 | 8197 | 0.4 | 9 | 11 | 4 | 4 |
| 1.5 | B | 5 | 5080 | 5280 | 5480 | 5680 | 4198 | 6198 | 7198 | 8198 | 0.6 | 12 | 15 | 4 | 4 |
| 1.5 | B | 10 | 2359 | 2599 | 2839 | 3079 | 4199 | 6199 | 7199 | 8199 | 0.6 | 12 | 15 | 4 | 4 |
| 1.5 | B | 20 | 2360 | 2600 | 2840 | 3080 | 4200 | 6200 | 7200 | 8200 | 0.6 | 12 | 15 | 4 | 4 |
| 1.8 | B | 5 | 5081 | 5281 | 5481 | 5681 | 4201 | 6201 | 7201 | 8201 | 0.7 | 14 | 18 | 4 | 4 |
| 1.8 | B | 10 | 2361 | 2601 | 2841 | 3081 | 4202 | 6202 | 7202 | 8202 | 0.7 | 14 | 18 | 4 | 4 |
| 2.2 | B | 5 | 5082 | 5282 | 5482 | 5682 | 4203 | 6203 | 7203 | 8203 | 0.8 | 17 | 22 | 4 | 4 |
| 2.2 | B | 10 | 2362 | 2602 | 2842 | 3082 | 4204 | 6204 | 7204 | 8204 | 0.8 | 17 | 22 | 4 | 4 |
| 2.2 | B | 20 | 2363 | 2603 | 2843 | 3083 | 4205 | 6205 | 7205 | 8205 | 0.8 | 17 | 22 | 4 | 4 |
| 2.7 | B | 5 | 5083 | 5283 | 5483 | 5683 | 4206 | 6206 | 7206 | 8206 | 1 | 20 | 25 | 4 | 4 |



| STANDARD RATINGS | | | | | | | | | | | | | | | |
|--|--------------|----------------------------|--|------|------|-------|------|------|------|-------|------------------------|--------|---------|------------------|-------------------|
| CAPACITANCE (μ F) | CASE CODE | CAP. TOL. (\pm %) | PART NO. M39003/01- FAILURE RATE LEVEL (%/1000 h) | | | | | | | | MAX. DCL (μ A) AT | | | MAX. DF (%) AT | |
| | | | M | P | R | S | G | B | C | D | +25 °C | +85 °C | +125 °C | -55 °C +25 °C | +85 °C +125 °C |
| | | | 1.0 | 0.1 | 0.01 | 0.001 | 1.0 | 0.1 | 0.01 | 0.001 | | | | | |
| 50 V_{DC} AT +85 °C, SURGE = 65 V; 33 V_{DC} AT +125 °C | | | | | | | | | | | | | | | |
| 2.7 | B | 10 | 2364 | 2604 | 2844 | 3084 | 4207 | 6207 | 7207 | 8207 | 1 | 20 | 25 | 4 | 4 |
| 3.3 | B | 5 | 5084 | 5284 | 5484 | 5684 | 4208 | 6208 | 7208 | 8208 | 1.2 | 25 | 32 | 4 | 4 |
| 3.3 | B | 10 | 2365 | 2605 | 2845 | 3085 | 4209 | 6209 | 7209 | 8209 | 1.2 | 25 | 32 | 4 | 4 |
| 3.3 | B | 20 | 2366 | 2606 | 2846 | 3086 | 4210 | 6210 | 7210 | 8210 | 1.2 | 25 | 32 | 4 | 4 |
| 3.9 | B | 5 | 5085 | 5285 | 5485 | 5685 | 4211 | 6211 | 7211 | 8211 | 1.5 | 30 | 38 | 4 | 4 |
| 3.9 | B | 10 | 2367 | 2607 | 2847 | 3087 | 4212 | 6212 | 7212 | 8212 | 1.5 | 30 | 38 | 4 | 4 |
| 4.7 | B | 5 | 5086 | 5286 | 5486 | 5686 | 4213 | 6213 | 7213 | 8213 | 1.7 | 35 | 44 | 4 | 4 |
| 4.7 | B | 10 | 2368 | 2608 | 2848 | 3088 | 4214 | 6214 | 7214 | 8214 | 1.7 | 35 | 44 | 4 | 4 |
| 4.7 | B | 20 | 2369 | 2609 | 2849 | 3089 | 4215 | 6215 | 7215 | 8215 | 1.7 | 35 | 44 | 4 | 4 |
| 5.6 | C | 5 | 5087 | 5287 | 5487 | 5687 | 4216 | 6216 | 7216 | 8216 | 2.2 | 45 | 56 | 4 | 4 |
| 5.6 | C | 10 | 2370 | 2610 | 2850 | 3090 | 4217 | 6217 | 7217 | 8217 | 2.2 | 45 | 56 | 4 | 4 |
| 6.8 | C | 5 | 5088 | 5288 | 5488 | 5688 | 4218 | 6218 | 7218 | 8218 | 2.2 | 45 | 56 | 6 | 6 |
| 6.8 | C | 10 | 2371 | 2611 | 2851 | 3091 | 4219 | 6219 | 7219 | 8219 | 2.2 | 45 | 56 | 6 | 6 |
| 6.8 | C | 20 | 2372 | 2612 | 2852 | 3092 | 4220 | 6220 | 7220 | 8220 | 2.2 | 45 | 56 | 6 | 6 |
| 8.2 | C | 5 | 5089 | 5289 | 5489 | 5689 | 4221 | 6221 | 7221 | 8221 | 2.5 | 50 | 63 | 6 | 6 |
| 8.2 | C | 10 | 2373 | 2613 | 2853 | 3093 | 4222 | 6222 | 7222 | 8222 | 2.5 | 50 | 63 | 6 | 6 |
| 10 | C | 5 | 5090 | 5290 | 5490 | 5690 | 4223 | 6223 | 7223 | 8223 | 2.5 | 50 | 63 | 6 | 6 |
| 10 | C | 10 | 2374 | 2614 | 2854 | 3094 | 4224 | 6224 | 7224 | 8224 | 2.5 | 50 | 63 | 6 | 6 |
| 10 | C | 20 | 2375 | 2615 | 2855 | 3095 | 4225 | 6225 | 7225 | 8225 | 2.5 | 50 | 63 | 6 | 6 |
| 12 | C | 5 | 5091 | 5291 | 5491 | 5691 | 4226 | 6226 | 7226 | 8226 | 3 | 60 | 75 | 6 | 6 |
| 12 | C | 10 | 2376 | 2616 | 2856 | 3096 | 4227 | 6227 | 7227 | 8227 | 3 | 60 | 75 | 6 | 6 |
| 15 | C | 5 | 5092 | 5292 | 5492 | 5692 | 4228 | 6228 | 7228 | 8228 | 4 | 80 | 100 | 6 | 6 |
| 15 | C | 10 | 2377 | 2617 | 2857 | 3097 | 4229 | 6229 | 7229 | 8229 | 4 | 80 | 100 | 6 | 6 |
| 15 | C | 20 | 2378 | 2618 | 2858 | 3098 | 4230 | 6230 | 7230 | 8230 | 4 | 80 | 100 | 6 | 6 |
| 18 | C | 5 | 5093 | 5293 | 5493 | 5693 | 4231 | 6231 | 7231 | 8231 | 4.5 | 90 | 113 | 6 | 6 |
| 18 | C | 10 | 2379 | 2619 | 2859 | 3099 | 4232 | 6232 | 7232 | 8232 | 4.5 | 90 | 113 | 6 | 6 |
| 22 | D | 5 | 5094 | 5294 | 5494 | 5694 | 4233 | 6233 | 7233 | 8233 | 5.5 | 110 | 138 | 6 | 6 |
| 22 | D | 10 | 2380 | 2620 | 2860 | 3100 | 4234 | 6234 | 7234 | 8234 | 5.5 | 110 | 138 | 6 | 6 |
| 22 | D | 20 | 2381 | 2621 | 2861 | 3101 | 4235 | 6235 | 7235 | 8235 | 5.5 | 110 | 138 | 6 | 6 |
| 75 V_{DC} AT +85 °C, SURGE = 98 V; 50 V_{DC} AT +125 °C | | | | | | | | | | | | | | | |
| 0.10 | A | 5 | 5095 | 5295 | 5495 | 5695 | 4236 | 6236 | 7236 | 8236 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.10 | A | 10 | 2382 | 2622 | 2862 | 3102 | 4237 | 6237 | 7237 | 8237 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.10 | A | 20 | 2383 | 2623 | 2863 | 3103 | 4238 | 6238 | 7238 | 8238 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.12 | A | 5 | 5096 | 5296 | 5496 | 5696 | 4239 | 6239 | 7239 | 8239 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.12 | A | 10 | 2384 | 2624 | 2864 | 3104 | 4240 | 6240 | 7240 | 8240 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.15 | A | 5 | 5097 | 5297 | 5497 | 5697 | 4241 | 6241 | 7241 | 8241 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.15 | A | 10 | 2385 | 2625 | 2865 | 3105 | 4242 | 6242 | 7242 | 8242 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.15 | A | 20 | 2386 | 2626 | 2866 | 3106 | 4243 | 6243 | 7243 | 8243 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.18 | A | 5 | 5098 | 5298 | 5498 | 5698 | 4244 | 6244 | 7244 | 8244 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.18 | A | 10 | 2387 | 2627 | 2867 | 3107 | 4245 | 6245 | 7245 | 8245 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.22 | A | 5 | 5099 | 5299 | 5499 | 5699 | 4246 | 6246 | 7246 | 8246 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.22 | A | 10 | 2388 | 2628 | 2868 | 3108 | 4247 | 6247 | 7247 | 8247 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.22 | A | 20 | 2389 | 2629 | 2869 | 3109 | 4248 | 6248 | 7248 | 8248 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.27 | A | 5 | 5100 | 5300 | 5500 | 5700 | 4249 | 6249 | 7249 | 8249 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.27 | A | 10 | 2390 | 2630 | 2870 | 3110 | 4250 | 6250 | 7250 | 8250 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.33 | A | 5 | 5101 | 5301 | 5501 | 5701 | 4251 | 6251 | 7251 | 8251 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.33 | A | 10 | 2391 | 2631 | 2871 | 3111 | 4252 | 6252 | 7252 | 8252 | 0.3 | 5 | 6.3 | 2 | 4 |



| STANDARD RATINGS | | | | | | | | | | | | | | | |
|--|--------------|-----------------------|--|------|------|-------|------|------|------|-------|------------------|--------|---------|------------------|-------------------|
| CAPACITANCE (µF) | CASE CODE | CAP. TOL. (± %) | PART NO. M39003/01- FAILURE RATE LEVEL (%/1000 h) | | | | | | | | MAX. DCL (µA) AT | | | MAX. DF (%) AT | |
| | | | M | P | R | S | G | B | C | D | +25 °C | +85 °C | +125 °C | -55 °C +25 °C | +85 °C +125 °C |
| | | | 1.0 | 0.1 | 0.01 | 0.001 | 1.0 | 0.1 | 0.01 | 0.001 | | | | | |
| 75 V_{DC} AT +85 °C, SURGE = 98 V; 50 V_{DC} AT +125 °C | | | | | | | | | | | | | | | |
| 0.33 | A | 20 | 2392 | 2632 | 2872 | 3112 | 4253 | 6253 | 7253 | 8253 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.39 | A | 5 | 5102 | 5302 | 5502 | 5702 | 4254 | 6254 | 7254 | 8254 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.39 | A | 10 | 2393 | 2633 | 2873 | 3113 | 4255 | 6255 | 7255 | 8255 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.47 | A | 5 | 5103 | 5303 | 5503 | 5703 | 4256 | 6256 | 7256 | 8256 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.47 | A | 10 | 2394 | 2634 | 2874 | 3114 | 4257 | 6257 | 7257 | 8257 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.47 | A | 20 | 2395 | 2635 | 2875 | 3115 | 4258 | 6258 | 7258 | 8258 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.56 | A | 5 | 5104 | 5304 | 5504 | 5704 | 4259 | 6259 | 7259 | 8259 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.56 | A | 10 | 2396 | 2636 | 2876 | 3116 | 4260 | 6260 | 7260 | 8260 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.68 | A | 5 | 5105 | 5305 | 5505 | 5705 | 4261 | 6261 | 7261 | 8261 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.68 | A | 10 | 2397 | 2637 | 2877 | 3117 | 4262 | 6262 | 7262 | 8262 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.68 | A | 20 | 2398 | 2638 | 2878 | 3118 | 4263 | 6263 | 7263 | 8263 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.82 | B | 5 | 5106 | 5306 | 5506 | 5706 | 4264 | 6264 | 7264 | 8264 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.82 | B | 10 | 2399 | 2639 | 2879 | 3119 | 4265 | 6265 | 7265 | 8265 | 0.3 | 5 | 6.3 | 2 | 4 |
| 1.0 | B | 5 | 5107 | 5307 | 5507 | 5707 | 4266 | 6266 | 7266 | 8266 | 0.3 | 5 | 6.3 | 2 | 4 |
| 1.0 | B | 10 | 2400 | 2640 | 2880 | 3120 | 4267 | 6267 | 7267 | 8267 | 0.3 | 5 | 6.3 | 2 | 4 |
| 1.0 | B | 20 | 2401 | 2641 | 2881 | 3121 | 4268 | 6268 | 7268 | 8268 | 0.3 | 5 | 6.3 | 2 | 4 |
| 1.2 | B | 5 | 5108 | 5308 | 5508 | 5708 | 4269 | 6269 | 7269 | 8269 | 0.3 | 5 | 6.3 | 4 | 4 |
| 1.2 | B | 10 | 2402 | 2642 | 2882 | 3122 | 4270 | 6270 | 7270 | 8270 | 0.3 | 5 | 6.3 | 4 | 4 |
| 1.5 | B | 5 | 5109 | 5309 | 5509 | 5709 | 4271 | 6271 | 7271 | 8271 | 0.6 | 10 | 13 | 4 | 4 |
| 1.5 | B | 10 | 2403 | 2643 | 2883 | 3123 | 4272 | 6272 | 7272 | 8272 | 0.6 | 10 | 13 | 4 | 4 |
| 1.5 | B | 20 | 2404 | 2644 | 2884 | 3124 | 4273 | 6273 | 7273 | 8273 | 0.6 | 10 | 13 | 4 | 4 |
| 1.8 | B | 5 | 5110 | 5310 | 5510 | 5710 | 4274 | 6274 | 7274 | 8274 | 0.7 | 10 | 13 | 4 | 4 |
| 1.8 | B | 10 | 2405 | 2645 | 2885 | 3125 | 4275 | 6275 | 7275 | 8275 | 0.7 | 10 | 13 | 4 | 4 |
| 2.2 | B | 5 | 5111 | 5311 | 5511 | 5711 | 4276 | 6276 | 7276 | 8276 | 0.8 | 15 | 19 | 4 | 4 |
| 2.2 | B | 10 | 2406 | 2646 | 2886 | 3126 | 4277 | 6277 | 7277 | 8277 | 0.8 | 15 | 19 | 4 | 4 |
| 2.2 | B | 20 | 2407 | 2647 | 2887 | 3127 | 4278 | 6278 | 7278 | 8278 | 0.8 | 15 | 19 | 4 | 4 |
| 2.7 | B | 5 | 5112 | 5312 | 5512 | 5712 | 4279 | 6279 | 7279 | 8279 | 1 | 15 | 19 | 4 | 4 |
| 2.7 | B | 10 | 2408 | 2648 | 2888 | 3128 | 4280 | 6280 | 7280 | 8280 | 1 | 15 | 19 | 4 | 4 |
| 3.3 | B | 5 | 5113 | 5313 | 5513 | 5713 | 4281 | 6281 | 7281 | 8281 | 1.2 | 20 | 25 | 4 | 4 |
| 3.3 | B | 10 | 2409 | 2649 | 2889 | 3129 | 4282 | 6282 | 7282 | 8282 | 1.2 | 20 | 25 | 4 | 4 |
| 3.3 | B | 20 | 2410 | 2650 | 2890 | 3130 | 4283 | 6283 | 7283 | 8283 | 1.2 | 20 | 25 | 4 | 4 |
| 3.9 | B | 5 | 5114 | 5314 | 5514 | 5714 | 4284 | 6284 | 7284 | 8284 | 1.5 | 20 | 25 | 4 | 4 |
| 3.9 | B | 10 | 2411 | 2651 | 2891 | 3131 | 4285 | 6285 | 7285 | 8285 | 1.5 | 20 | 25 | 4 | 4 |
| 4.7 | C | 5 | 5115 | 5315 | 5515 | 5715 | 4286 | 6286 | 7286 | 8286 | 3 | 60 | 75 | 4 | 4 |
| 4.7 | C | 10 | 2412 | 2652 | 2892 | 3132 | 4287 | 6287 | 7287 | 8287 | 3 | 60 | 75 | 4 | 4 |
| 4.7 | C | 20 | 2413 | 2653 | 2893 | 3133 | 4288 | 6288 | 7288 | 8288 | 3 | 60 | 75 | 4 | 4 |
| 5.6 | C | 5 | 5116 | 5316 | 5516 | 5716 | 4289 | 6289 | 7289 | 8289 | 3 | 60 | 75 | 4 | 4 |
| 5.6 | C | 10 | 2414 | 2654 | 2894 | 3134 | 4290 | 6290 | 7290 | 8290 | 3 | 60 | 75 | 4 | 4 |
| 6.8 | C | 5 | 5117 | 5317 | 5517 | 5717 | 4291 | 6291 | 7291 | 8291 | 5 | 100 | 125 | 6 | 6 |
| 6.8 | C | 10 | 2415 | 2655 | 2895 | 3135 | 4292 | 6292 | 7292 | 8292 | 5 | 100 | 125 | 6 | 6 |
| 6.8 | C | 20 | 2416 | 2656 | 2896 | 3136 | 4293 | 6293 | 7293 | 8293 | 5 | 100 | 125 | 6 | 6 |
| 8.2 | C | 5 | 5118 | 5318 | 5518 | 5718 | 4294 | 6294 | 7294 | 8294 | 5 | 100 | 125 | 6 | 6 |
| 8.2 | C | 10 | 2417 | 2657 | 2897 | 3137 | 4295 | 6295 | 7295 | 8295 | 5 | 100 | 125 | 6 | 6 |
| 10 | C | 5 | 5119 | 5319 | 5519 | 5719 | 4296 | 6296 | 7296 | 8296 | 5 | 100 | 125 | 6 | 6 |
| 10 | C | 10 | 2418 | 2658 | 2898 | 3138 | 4297 | 6297 | 7297 | 8297 | 5 | 100 | 125 | 6 | 6 |
| 10 | C | 20 | 2419 | 2659 | 2899 | 3139 | 4298 | 6298 | 7298 | 8298 | 5 | 100 | 125 | 6 | 6 |
| 12 | D | 5 | 5120 | 5320 | 5520 | 5720 | 4299 | 6299 | 7299 | 8299 | 5 | 100 | 125 | 6 | 6 |
| 12 | D | 10 | 2420 | 2660 | 2900 | 3140 | 4300 | 6300 | 7300 | 8300 | 5 | 100 | 125 | 6 | 6 |
| 15 | D | 5 | 5121 | 5321 | 5521 | 5721 | 4301 | 6301 | 7301 | 8301 | 7 | 140 | 175 | 6 | 6 |
| 15 | D | 10 | 2421 | 2661 | 2901 | 3141 | 4302 | 6302 | 7302 | 8302 | 7 | 140 | 175 | 6 | 6 |
| 15 | D | 20 | 2422 | 2662 | 2902 | 3142 | 4303 | 6303 | 7303 | 8303 | 7 | 140 | 175 | 6 | 6 |



| STANDARD RATINGS | | | | | | | | | | | | | | | |
|--|--------------|----------------------------|--|------|------|-------|------|------|------|-------|------------------------|--------|---------|------------------|-------------------|
| CAPACITANCE (μ F) | CASE CODE | CAP. TOL. (\pm %) | PART NO. M39003/01- FAILURE RATE LEVEL (%/1000 h) | | | | | | | | MAX. DCL (μ A) AT | | | MAX. DF (%) AT | |
| | | | M | P | R | S | G | B | C | D | +25 °C | +85 °C | +125 °C | -55 °C +25 °C | +85 °C +125 °C |
| | | | 1.0 | 0.1 | 0.01 | 0.001 | 1.0 | 0.1 | 0.01 | 0.001 | | | | | |
| 100 V_{DC} AT +85 °C, SURGE = 130 V; 67 V_{DC} AT +125 °C | | | | | | | | | | | | | | | |
| 0.033 | A | 5 | 5132 | 5332 | 5532 | 5732 | 4329 | 6329 | 7329 | 8329 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.033 | A | 10 | 2438 | 2678 | 2918 | 3158 | 4330 | 6330 | 7330 | 8330 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.033 | A | 20 | 2439 | 2679 | 2919 | 3159 | 4331 | 6331 | 7331 | 8331 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.039 | A | 5 | 5133 | 5333 | 5533 | 5733 | 4332 | 6332 | 7332 | 8332 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.039 | A | 10 | 2440 | 2680 | 2920 | 3160 | 4333 | 6333 | 7333 | 8333 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.047 | A | 5 | 5134 | 5334 | 5534 | 5734 | 4334 | 6334 | 7334 | 8334 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.047 | A | 10 | 2441 | 2681 | 2921 | 3161 | 4335 | 6335 | 7335 | 8335 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.047 | A | 20 | 2442 | 2682 | 2922 | 3162 | 4336 | 6336 | 7336 | 8336 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.056 | A | 5 | 5135 | 5335 | 5535 | 5735 | 4337 | 6337 | 7337 | 8337 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.056 | A | 10 | 2443 | 2683 | 2923 | 3163 | 4338 | 6338 | 7338 | 8338 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.068 | A | 5 | 5136 | 5336 | 5536 | 5736 | 4339 | 6339 | 7339 | 8339 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.068 | A | 10 | 2444 | 2684 | 2924 | 3164 | 4340 | 6340 | 7340 | 8340 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.068 | A | 20 | 2445 | 2685 | 2925 | 3165 | 4341 | 6341 | 7341 | 8341 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.082 | A | 5 | 5137 | 5337 | 5537 | 5737 | 4342 | 6342 | 7342 | 8342 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.082 | A | 10 | 2446 | 2686 | 2926 | 3166 | 4343 | 6343 | 7343 | 8343 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.10 | A | 5 | 5138 | 5338 | 5538 | 5738 | 4344 | 6344 | 7344 | 8344 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.10 | A | 10 | 2447 | 2687 | 2927 | 3167 | 4345 | 6345 | 7345 | 8345 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.10 | A | 20 | 2448 | 2688 | 2928 | 3168 | 4346 | 6346 | 7346 | 8346 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.12 | A | 5 | 5139 | 5339 | 5539 | 5739 | 4347 | 6347 | 7347 | 8347 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.12 | A | 10 | 2449 | 2689 | 2929 | 3169 | 4348 | 6348 | 7348 | 8348 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.15 | A | 5 | 5140 | 5340 | 5540 | 5740 | 4349 | 6349 | 7349 | 8349 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.15 | A | 10 | 2450 | 2690 | 2930 | 3170 | 4350 | 6350 | 7350 | 8350 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.15 | A | 20 | 2451 | 2691 | 2931 | 3171 | 4351 | 6351 | 7351 | 8351 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.18 | A | 5 | 5141 | 5341 | 5541 | 5741 | 4352 | 6352 | 7352 | 8352 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.18 | A | 10 | 2452 | 2692 | 2932 | 3172 | 4353 | 6353 | 7353 | 8353 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.22 | A | 5 | 5142 | 5342 | 5542 | 5742 | 4354 | 6354 | 7354 | 8354 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.22 | A | 10 | 2453 | 2693 | 2933 | 3173 | 4355 | 6355 | 7355 | 8355 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.22 | A | 20 | 2454 | 2694 | 2934 | 3174 | 4356 | 6356 | 7356 | 8356 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.27 | A | 5 | 5143 | 5343 | 5543 | 5743 | 4357 | 6357 | 7357 | 8357 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.27 | A | 10 | 2455 | 2695 | 2935 | 3175 | 4358 | 6358 | 7358 | 8358 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.33 | A | 5 | 5144 | 5344 | 5544 | 5744 | 4359 | 6359 | 7359 | 8359 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.33 | A | 10 | 2456 | 2696 | 2936 | 3176 | 4360 | 6360 | 7360 | 8360 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.33 | A | 20 | 2457 | 2697 | 2937 | 3177 | 4361 | 6361 | 7361 | 8361 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.39 | A | 5 | 5145 | 5345 | 5545 | 5745 | 4362 | 6362 | 7362 | 8362 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.39 | A | 10 | 2458 | 2698 | 2938 | 3178 | 4363 | 6363 | 7363 | 8363 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.47 | A | 5 | 5146 | 5346 | 5546 | 5746 | 4364 | 6364 | 7364 | 8364 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.47 | A | 10 | 2459 | 2699 | 2939 | 3179 | 4365 | 6365 | 7365 | 8365 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.47 | A | 20 | 2460 | 2700 | 2940 | 3180 | 4366 | 6366 | 7366 | 8366 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.56 | A | 5 | 5147 | 5347 | 5547 | 5747 | 4367 | 6367 | 7367 | 8367 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.56 | A | 10 | 2461 | 2701 | 2941 | 3181 | 4368 | 6368 | 7368 | 8368 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.68 | B | 5 | 5148 | 5348 | 5548 | 5748 | 4369 | 6369 | 7369 | 8369 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.68 | B | 10 | 2462 | 2702 | 2942 | 3182 | 4370 | 6370 | 7370 | 8370 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.68 | B | 20 | 2463 | 2703 | 2943 | 3183 | 4371 | 6371 | 7371 | 8371 | 0.3 | 5 | 6.3 | 2 | 4 |
| 0.82 | B | 5 | 5149 | 5349 | 5549 | 5749 | 4372 | 6372 | 7372 | 8372 | 0.4 | 5 | 6.3 | 2 | 4 |
| 0.82 | B | 10 | 2464 | 2704 | 2944 | 3184 | 4373 | 6373 | 7373 | 8373 | 0.4 | 5 | 6.3 | 2 | 4 |
| 1.0 | B | 5 | 5150 | 5350 | 5550 | 5750 | 4374 | 6374 | 7374 | 8374 | 0.5 | 5 | 6.3 | 2 | 4 |



| STANDARD RATINGS | | | | | | | | | | | | | | | |
|--|--------------|----------------------------|--|------|------|-------|------|------|------------|------------|------------------------|--------|---------|------------------|-------------------|
| CAPACITANCE (μ F) | CASE CODE | CAP. TOL. (\pm %) | PART NO. M39003/01- FAILURE RATE LEVEL (%/1000 h) | | | | | | | | MAX. DCL (μ A) AT | | | MAX. DF (%) AT | |
| | | | M | P | R | S | G | B | C | D | +25 °C | +85 °C | +125 °C | -55 °C +25 °C | +85 °C +125 °C |
| | | | 1.0 | 0.1 | 0.01 | 0.001 | 1.0 | 0.1 | 0.01 | 0.001 | | | | | |
| 100 V_{DC} AT +85 °C, SURGE = 130 V; 67 V_{DC} AT +125 °C | | | | | | | | | | | | | | | |
| 1.0 | B | 10 | 2465 | 2705 | 2945 | 3185 | 4375 | 6375 | 7375 | 8375 | 0.5 | 5 | 6.3 | 2 | 4 |
| 1.0 | B | 20 | 2466 | 2706 | 2946 | 3186 | 4376 | 6376 | 7376 | 8376 | 0.5 | 5 | 6.3 | 2 | 4 |
| 1.2 | B | 5 | 5151 | 5351 | 5551 | 5751 | 4377 | 6377 | 7377 | 8377 | 0.5 | 5 | 6.3 | 4 | 4 |
| 1.2 | B | 10 | 2467 | 2707 | 2947 | 3187 | 4378 | 6378 | 7378 | 8378 | 0.5 | 5 | 6.3 | 4 | 4 |
| 1.5 | B | 5 | 5152 | 5352 | 5552 | 5752 | 4379 | 6379 | 7379 | 8379 | 0.7 | 10 | 13 | 4 | 4 |
| 1.5 | B | 10 | 2468 | 2708 | 2948 | 3188 | 4380 | 6380 | 7380 | 8380 | 0.7 | 10 | 13 | 4 | 4 |
| 1.5 | B | 20 | 2469 | 2709 | 2949 | 3189 | 4381 | 6381 | 7381 | 8381 | 0.7 | 10 | 13 | 4 | 4 |
| 1.8 | B | 5 | 5153 | 5353 | 5553 | 5753 | 4382 | 6382 | 7382 | 8382 | 0.7 | 10 | 13 | 4 | 4 |
| 1.8 | B | 10 | 2470 | 2710 | 2950 | 3190 | 4383 | 6383 | 7383 | 8383 | 0.7 | 10 | 13 | 4 | 4 |
| 2.2 | B | 5 | 5154 | 5354 | 5554 | 5754 | 4384 | 6384 | 7384 | 8384 | 0.9 | 15 | 19 | 4 | 4 |
| 2.2 | B | 10 | 2471 | 2711 | 2951 | 3191 | 4385 | 6385 | 7385 | 8385 | 0.9 | 15 | 19 | 4 | 4 |
| 2.2 | B | 20 | 2472 | 2712 | 2952 | 3192 | 4386 | 6386 | 7386 | 8386 | 0.9 | 15 | 19 | 4 | 4 |
| 2.7 | B | 5 | 5155 | 5355 | 5555 | 5755 | 4387 | 6387 | 7387 | 8387 | 1.1 | 15 | 19 | 4 | 4 |
| 2.7 | B | 10 | 2473 | 2713 | 2953 | 3193 | 4388 | 6388 | 7388 | 8388 | 1.1 | 15 | 19 | 4 | 4 |
| 3.3 | C | 5 | 5156 | 5356 | 5556 | 5756 | 4389 | 6389 | Not QPL | Not QPL | 1.5 | 30 | 38 | 6 | 6 |
| 3.3 | C | 10 | 5157 | 5357 | 5557 | 5757 | 4390 | 6390 | Not QPL | Not QPL | 1.5 | 30 | 38 | 6 | 6 |
| 3.3 | C | 20 | 5158 | 5358 | 5558 | 5758 | 4391 | 6391 | Not QPL | Not QPL | 1.5 | 30 | 38 | 6 | 6 |
| 3.9 | C | 5 | 5159 | 5359 | 5559 | 5759 | 4392 | 6392 | Not QPL | Not QPL | 1.5 | 30 | 38 | 6 | 6 |
| 3.9 | C | 10 | 5160 | 5360 | 5560 | 5760 | 4393 | 6393 | Not QPL | Not QPL | 1.5 | 30 | 38 | 6 | 6 |
| 4.7 | C | 5 | 5161 | 5361 | 5561 | 5761 | 4394 | 6394 | Not QPL | Not QPL | 2.5 | 50 | 63 | 6 | 6 |
| 4.7 | C | 10 | 5162 | 5362 | 5562 | 5762 | 4395 | 6395 | Not QPL | Not QPL | 2.5 | 50 | 63 | 6 | 6 |
| 4.7 | C | 20 | 5163 | 5363 | 5563 | 5763 | 4396 | 6396 | Not QPL | Not QPL | 2.5 | 50 | 63 | 6 | 6 |
| 5.6 | C | 5 | 5164 | 5364 | 5564 | 5764 | 4397 | 6397 | Not QPL | Not QPL | 2.5 | 50 | 63 | 6 | 6 |
| 5.6 | C | 10 | 5165 | 5365 | 5565 | 5765 | 4398 | 6398 | Not QPL | Not QPL | 2.5 | 50 | 63 | 6 | 6 |
| 6.8 | C | 5 | 5166 | 5366 | 5566 | 5766 | 4399 | 6399 | Not QPL | Not QPL | 2.5 | 50 | 63 | 6 | 6 |
| 6.8 | C | 10 | 5167 | 5367 | 5567 | 5767 | 4400 | 6400 | Not QPL | Not QPL | 2.5 | 50 | 63 | 6 | 6 |
| 6.8 | C | 20 | 5168 | 5368 | 5568 | 5768 | 4401 | 6401 | Not QPL | Not QPL | 2.5 | 50 | 63 | 6 | 6 |



| STANDARD PACKAGING QUANTITY | | | | | |
|-----------------------------|----------------------------|------------------|---------------------|---------------|---------|
| CASE CODE | QUANTITY (pcs/reel) | | | BULK QUANTITY | |
| | FULL REEL /TR; /RR; /WR | HALF REEL /HR | PARTIAL REEL /PR | PER TRAY | PER BOX |
| A | 1000 | 500 | 100 | n/a | 100 |
| B | 1000 | 500 | 100 | 20 | 100 |
| C | 500 | 250 | 100 | 20 | 100 |
| D | 500 | 250 | 100 | 20 | 80 |

| INSIDE TAPE SPACING | | |
|---------------------|-----------|------------------------------|
| PACKAGING OPTION | CASE CODE | TAPE SPACING |
| /TR; /HR; /PR | A, B | 2.47 ± 0.02 [62.7 ± 0.51] |
| | C, D | 2.88 ± 0.02 [73.0 ± 0.51] |
| /RR | A, B | 2.05 ± 0.02 [52.1 ± 0.51] |
| | C, D | 2.47 ± 0.02 [62.7 ± 0.51] |
| /WR | A, B | - |
| | C, D | 2.05 ± 0.02 [52.1 ± 0.51] |

| PRODUCT INFORMATION | |
|--|--|
| Quick Reference Guide | www.vishay.com/doc?40037 |
| Selector Guide | www.vishay.com/doc?49054 |
| Parameter Comparison Guide | www.vishay.com/doc?40033 |
| Mounting of Through-Hole Components | www.vishay.com/doc?40108 |
| Frequently Asked Questions | www.vishay.com/doc?40110 |
| Solid Tantalum Capacitors (With MnO ₂ Electrolyte) Voltage Derating | www.vishay.com/doc?40246 |



Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and / or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.