



THE DATASHEET OF
M39006/25-0140



TWC SERIES

MIL-PRF-39006 Series – Military Conventional Wet Tantalum



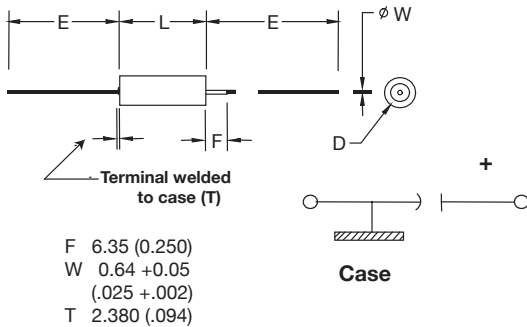
This data sheet contains the MIL-PRF-39006 ratings for which KYOCERA AVX is a qualified approved supplier. This will be continually updated as the qualification expands. For COTS-Plus equivalent ratings please refer to the TWC data sheet located on the website.

This design is an axial leaded tubular case. It includes a welded tantalum can and header assembly that provides a hermetic seal to withstand harsh environments. The 1000 hour failure rates of 1% and 0.1% correspond to "M" and "P" respectively. For details on testing conditions please refer to MIL-PRF-39006.

Currently qualified M39006 ratings include T2-T4 case sizes:

| | M Level Reliability Dashes | P Level Reliability Dashes |
|-----------|-------------------------------|-------------------------------|
| M39006/22 | 6V-100V | 6V-100V |
| M39006/25 | 6V-100V | 6V-100V |
| M39006/30 | 6V-100V | 6V-100V |
| M39006/31 | 6V-100V | 6V-100V |

OUTLINE DIMENSIONS



CASE DIMENSIONS: millimeters (inches)

| DLA Case Size | Case Size | L +0.79 (0.031) -0.41 (0.016) | D Basic Case ±0.41 (0.016) | D Insulated Case Max | E ±6.35 (0.250) |
|---------------|-----------|-------------------------------------|----------------------------------|----------------------------|--------------------|
| T1 | A | 11.51 (0.453) | 4.78 (0.188) | 5.56 (0.219) | 38.10 (1.500) |
| T2 | B | 16.28 (0.641) | 7.14 (0.281) | 7.92 (0.312) | 57.15 (2.250) |
| T3 | D | 19.46 (0.766) | 9.52 (0.375) | 10.31 (0.406) | 57.15 (2.250) |
| T4 | E | 26.97 (1.062) | 9.52 (0.375) | 10.31 (0.406) | 57.15 (2.250) |

VOLTAGE RATINGS (Operating Temperature -55°C to 125°C)

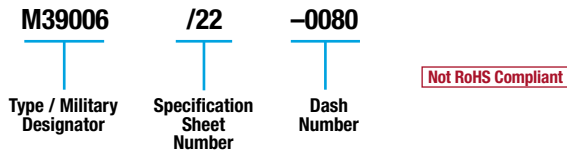
| Voltage (DC) | | | | | | | | | | | |
|------------------------------------|-------|-----|-----|------|------|------|------|------|----|------|-----|
| Rated Voltage: (V _r) | 85°C | 6 | 8 | 10 | 15 | 25 | 30 | 50 | 60 | 75 | 100 |
| Derated Voltage: (V _d) | 125°C | 4 | 5 | 6 | 10 | 15 | 20 | 30 | 40 | 50 | 65 |
| Surge Voltage: (V _s) | 85°C | 6.9 | 9.2 | 11.5 | 17.3 | 28.8 | 34.5 | 57.5 | 69 | 86.3 | 115 |

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HOW TO ORDER MILITARY M39006 PART NUMBER:



RIPPLE CURRENT MULTIPLIERS vs. Frequency, temperature and applied voltage^{1/2/3/}

| Frequency of Applied Ripple Current | | 120Hz | | | | 800Hz | | | | 1kHz | | | |
|-------------------------------------|---------|-------|------|------|------|-------|------|------|------|------|------|------|------|
| | | ≤55 | 85 | 105 | 125 | ≤55 | 85 | 105 | 125 | ≤55 | 85 | 105 | 125 |
| % of 85°C Rated Peak Voltage | 100% | 0.60 | 0.39 | – | – | 0.71 | 0.43 | – | – | 0.72 | 0.45 | – | – |
| | 90% | 0.60 | 0.46 | – | – | 0.71 | 0.55 | – | – | 0.72 | 0.55 | – | – |
| | 80% | 0.60 | 0.52 | 0.35 | – | 0.71 | 0.62 | 0.42 | – | 0.72 | 0.62 | 0.42 | – |
| | 70% | 0.60 | 0.58 | 0.44 | – | 0.71 | 0.69 | 0.52 | – | 0.72 | 0.70 | 0.52 | – |
| | 66-2/3% | 0.60 | 0.60 | 0.46 | 0.27 | 0.71 | 0.71 | 0.55 | 0.32 | 0.72 | 0.72 | 0.55 | 0.32 |

| Frequency of Applied Ripple Current | | 10kHz | | | | 40kHz | | | | 100kHz | | | |
|-------------------------------------|---------|-------|------|------|------|-------|------|------|------|--------|------|------|------|
| | | ≤55 | 85 | 105 | 125 | ≤55 | 85 | 105 | 125 | ≤55 | 85 | 105 | 125 |
| % of 85°C Rated Peak Voltage | 100% | 0.88 | 0.55 | – | – | 1.00 | 0.63 | – | – | 1.10 | 0.69 | – | – |
| | 90% | 0.88 | 0.67 | – | – | 1.00 | 0.77 | – | – | 1.10 | 0.85 | – | – |
| | 80% | 0.88 | 0.76 | 0.52 | – | 1.00 | 0.87 | 0.59 | – | 1.10 | 0.96 | 0.65 | – |
| | 70% | 0.88 | 0.85 | 0.64 | – | 1.00 | 0.97 | 0.73 | – | 1.10 | 1.07 | 0.80 | – |
| | 66-2/3% | 0.88 | 0.88 | 0.68 | 0.40 | 1.00 | 1.00 | 0.77 | 0.45 | 1.10 | 1.10 | 0.85 | 0.50 |

1/ At 125°C the rated voltage of the capacitors decreases to 66 2/3 of the 85°C rated voltage.
 2/ The peak of the applied ac ripple voltage plus the applied dc voltage must not exceed the dc voltage rating of the capacitors.
 3/ The ripple current listed in the parametric tables represents a rating calculated by using a maximum internal temperature rise (ΔT) at 50°C at 40 kHz at 85°C ambient temperature, with a maximum peak rated voltage of 66.67 percent of the 85°C peak voltage rating.

TWC SERIES

MIL-PRF-39006 Series – Military Conventional Wet Tantalum



M39006 /22 RATINGS AND DASH NUMBER REFERENCE

| M39006/22 Dashes | | Tolerance ± (%) | Cap (µF) 25°C at 120Hz | DC Rated Voltage (V) at 85°C | DC Leakage (µA) | | DF max (%) | ESR max (Ohms) at 120Hz | Impedance max (Ohms) -55°C at 120Hz | Maximum Capacitance Change (%) | | | AC Ripple (mA rms) 85°C at 40kHz | Case Size |
|------------------|---------|-----------------|------------------------|------------------------------|-----------------|----------------|------------|-------------------------|-------------------------------------|--------------------------------|-------|--------|----------------------------------|-----------|
| M Level | P Level | | | | +25°C | +85°C & +125°C | | | | -55°C | +85°C | +125°C | | |
| -0007 | -0227 | 20 | 140 | 6 | 1 | 3 | 21 | 1.99 | 40 | -40 | 14 | 16 | 1200 | T2 |
| -0008 | -0228 | 10 | | | | | | | | | | | | |
| -0009 | -0229 | 5 | | | | | | | | | | | | |
| -0010 | -0230 | 20 | 270 | 6 | 1 | 6.5 | 45 | 2.21 | 25 | -44 | 17.5 | 20 | 1375 | T2 |
| -0011 | -0231 | 10 | | | | | | | | | | | | |
| -0012 | -0232 | 5 | | | | | | | | | | | | |
| -0013 | -0233 | 20 | 330 | 6 | 2 | 7.9 | 36 | 1.45 | 20 | -44 | 14 | 16 | 1800 | T3 |
| -0014 | -0234 | 10 | | | | | | | | | | | | |
| -0015 | -0235 | 5 | | | | | | | | | | | | |
| -0016 | -0236 | 20 | 560 | 6 | 2 | 13 | 55 | 1.3 | 25 | -64 | 17.5 | 20 | 1900 | T3 |
| -0017 | -0237 | 10 | | | | | | | | | | | | |
| -0018 | -0238 | 5 | | | | | | | | | | | | |
| -0019 | -0239 | 20 | 1200 | 6 | 3 | 14 | 90 | 1 | 20 | -80 | 25 | 25 | 2265 | T4 |
| -0020 | -0240 | 10 | | | | | | | | | | | | |
| -0021 | -0241 | 5 | | | | | | | | | | | | |
| -0022 | -0242 | 20 | 120 | 8 | 1 | 2 | 20 | 2.21 | 50 | -44 | 17.5 | 20 | 1220 | T2 |
| -0023 | -0243 | 10 | | | | | | | | | | | | |
| -0024 | -0244 | 5 | | | | | | | | | | | | |
| -0025 | -0245 | 20 | 220 | 8 | 1 | 7 | 37 | 2.23 | 30 | -44 | 17.5 | 20 | 1370 | T2 |
| -0026 | -0246 | 10 | | | | | | | | | | | | |
| -0027 | -0247 | 5 | | | | | | | | | | | | |
| -0028 | -0248 | 20 | 290 | 8 | 2 | 6 | 34 | 1.56 | 25 | -64 | 17.5 | 20 | 1770 | T3 |
| -0029 | -0249 | 10 | | | | | | | | | | | | |
| -0030 | -0250 | 5 | | | | | | | | | | | | |
| -0031 | -0251 | 20 | 430 | 8 | 2 | 14 | 46 | 1.42 | 25 | -64 | 17.5 | 20 | 1825 | T3 |
| -0032 | -0252 | 10 | | | | | | | | | | | | |
| -0033 | -0253 | 5 | | | | | | | | | | | | |
| -0034 | -0254 | 20 | 850 | 8 | 4 | 16 | 60 | 0.94 | 22 | -80 | 25 | 25 | 2330 | T4 |
| -0035 | -0255 | 10 | | | | | | | | | | | | |
| -0036 | -0256 | 5 | | | | | | | | | | | | |
| -0037 | -0257 | 20 | 100 | 10 | 1 | 4 | 15 | 1.99 | 60 | -36 | 14 | 16 | 1200 | T2 |
| -0038 | -0258 | 10 | | | | | | | | | | | | |
| -0039 | -0259 | 5 | | | | | | | | | | | | |
| -0040 | -0260 | 20 | 180 | 10 | 1 | 7 | 30 | 2.21 | 40 | -36 | 14 | 16 | 1.365 | T2 |
| -0041 | -0261 | 10 | | | | | | | | | | | | |
| -0042 | -0262 | 5 | | | | | | | | | | | | |
| -0043 | -0263 | 20 | 250 | 10 | 2 | 10 | 30 | 1.59 | 30 | -40 | 14 | 16 | 1720 | T3 |
| -0044 | -0264 | 10 | | | | | | | | | | | | |
| -0045 | -0265 | 5 | | | | | | | | | | | | |
| -0046 | -0266 | 20 | 390 | 10 | 2 | 16 | 44 | 1.5 | 25 | -64 | 17.5 | 20 | 1800 | T3 |
| -0047 | -0267 | 10 | | | | | | | | | | | | |
| -0048 | -0268 | 5 | | | | | | | | | | | | |
| -0049 | -0269 | 20 | 750 | 10 | 4 | 16 | 50 | 0.88 | 23 | -80 | 25 | 25 | 2360 | T4 |
| -0050 | -0270 | 10 | | | | | | | | | | | | |
| -0051 | -0271 | 5 | | | | | | | | | | | | |
| -0052 | -0272 | 20 | 70 | 15 | 1 | 4 | 13 | 2.46 | 75 | -28 | 14 | 16 | 1150 | T2 |
| -0053 | -0273 | 10 | | | | | | | | | | | | |
| -0054 | -0274 | 5 | | | | | | | | | | | | |
| -0055 | -0275 | 20 | 120 | 15 | 1 | 7 | 18 | 1.99 | 50 | -28 | 17.5 | 20 | 1450 | T2 |
| -0056 | -0276 | 10 | | | | | | | | | | | | |
| -0057 | -0277 | 5 | | | | | | | | | | | | |
| -0058 | -0278 | 20 | 170 | 15 | 2 | 10 | 25 | 1.95 | 35 | -32 | 14 | 16 | 1480 | T3 |
| -0059 | -0279 | 10 | | | | | | | | | | | | |
| -0060 | -0280 | 5 | | | | | | | | | | | | |
| -0061 | -0281 | 20 | 270 | 15 | 2 | 16 | 32 | 1.57 | 30 | -56 | 17.5 | 20 | 1740 | T3 |
| -0062 | -0282 | 10 | | | | | | | | | | | | |
| -0063 | -0283 | 5 | | | | | | | | | | | | |
| -0064 | -0284 | 20 | 540 | 15 | 6 | 24 | 40 | 0.98 | 23 | -80 | 25 | 25 | 2330 | T4 |
| -0065 | -0285 | 10 | | | | | | | | | | | | |
| -0066 | -0286 | 5 | | | | | | | | | | | | |
| -0067 | -0287 | 20 | 50 | 25 | 1 | 2 | 11 | 2.92 | 70 | -28 | 13 | 15 | 1130 | T2 |
| -0068 | -0288 | 10 | | | | | | | | | | | | |
| -0069 | -0289 | 5 | | | | | | | | | | | | |
| -0070 | -0290 | 20 | 100 | 25 | 1 | 10 | 15 | 1.99 | 50 | -28 | 13 | 15 | 1435 | T2 |
| -0071 | -0291 | 10 | | | | | | | | | | | | |
| -0072 | -0292 | 5 | | | | | | | | | | | | |
| -0073 | -0293 | 20 | 120 | 25 | 2 | 6 | 21 | 2.32 | 38 | -32 | 13 | 15 | 1450 | T3 |
| -0074 | -0294 | 10 | | | | | | | | | | | | |
| -0075 | -0295 | 5 | | | | | | | | | | | | |
| -0076 | -0296 | 20 | 180 | 25 | 2 | 18 | 26 | 1.92 | 32 | -48 | 13 | 15 | 1525 | T3 |
| -0077 | -0297 | 10 | | | | | | | | | | | | |
| -0078 | -0298 | 5 | | | | | | | | | | | | |
| -0079 | -0299 | 20 | | | | | | | | | | | | |
| -0080 | -0300 | 10 | | | | | | | | | | | | |
| -0081 | -0301 | 20 | | | | | | | | | | | | |
| -0082 | -0302 | 10 | | | | | | | | | | | | |
| -0083 | -0303 | 5 | | | | | | | | | | | | |
| -0084 | -0304 | 20 | | | | | | | | | | | | |
| -0085 | -0305 | 10 | | | | | | | | | | | | |
| -0086 | -0306 | 5 | | | | | | | | | | | | |
| -0087 | -0307 | 20 | | | | | | | | | | | | |
| -0088 | -0308 | 10 | | | | | | | | | | | | |
| -0089 | -0309 | 5 | | | | | | | | | | | | |
| -0090 | -0310 | 20 | | | | | | | | | | | | |
| -0091 | -0311 | 10 | | | | | | | | | | | | |
| -0092 | -0312 | 5 | | | | | | | | | | | | |
| -0093 | -0313 | 20 | | | | | | | | | | | | |
| -0094 | -0314 | 10 | | | | | | | | | | | | |
| -0095 | -0315 | 5 | | | | | | | | | | | | |
| -0096 | -0316 | 20 | | | | | | | | | | | | |
| -0097 | -0317 | 10 | | | | | | | | | | | | |
| -0098 | -0318 | 5 | | | | | | | | | | | | |

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5RMS with DC bias of 2.2V. DCL is measured at rated voltage after 5 minutes.

330 The Important Information/Disclaimer is incorporated in the catalog where these specifications came from or available online at www.kyocera-avx.com/disclaimer/ by reference and should be reviewed in full before placing any order.

TDS-HIRELTANT-0012 | Rev 1

TWC SERIES

MIL-PRF-39006 Series – Military Conventional Wet Tantalum



| M39006/22 Dashes | | Tolerance ± (%) | Cap (µF) 25°C at 120Hz | DC Rated Voltage (V) at 85°C | DC Leakage (µA) | | DF max (%) | ESR max (Ohms) at 120Hz | Impedance max (Ohms) -55°C at 120Hz | Maximum Capacitance Change (%) | | | AC Ripple (mA rms) 85°C at 40kHz | Case Size |
|------------------|---------|-----------------|------------------------|------------------------------|-----------------|----------------|------------|-------------------------|-------------------------------------|--------------------------------|-------|--------|----------------------------------|-----------|
| M Level | P Level | | | | +25°C | +85°C & +125°C | | | | -55°C | +85°C | +125°C | | |
| -0099 | -0319 | 20 | 350 | 25 | 7 | 28 | 35 | 1.33 | 24 | -70 | 25 | 25 | 1970 | T4 |
| -0100 | -0320 | 10 | | | | | | | | | | | | |
| -0107 | -0327 | 20 | | | | | | | | | | | | |
| -0108 | -0328 | 10 | 40 | 30 | 1 | 5 | 10 | 3.32 | 65 | -24 | 10.5 | 12 | 1120 | T2 |
| -0109 | -0329 | 5 | | | | | | | | | | | | |
| -0110 | -0330 | 20 | | | | | | | | | | | | |
| -0111 | -0331 | 10 | 68 | 30 | 1 | 8 | 13 | 2.54 | 60 | -24 | 13 | 15 | 1285 | T2 |
| -0112 | -0332 | 5 | | | | | | | | | | | | |
| -0113 | -0333 | 20 | | | | | | | | | | | | |
| -0114 | -0334 | 10 | 100 | 30 | 2 | 12 | 17 | 2.26 | 40 | -28 | 10.5 | 12 | 1450 | T3 |
| -0115 | -0335 | 5 | | | | | | | | | | | | |
| -0116 | -0336 | 20 | | | | | | | | | | | | |
| -0117 | -0337 | 10 | 150 | 30 | 2 | 18 | 23 | 2.03 | 35 | -48 | 13 | 15 | 1525 | T3 |
| -0118 | -0338 | 5 | | | | | | | | | | | | |
| -0119 | -0339 | 20 | | | | | | | | | | | | |
| -0120 | -0340 | 10 | 300 | 30 | 8 | 32 | 31 | 1.37 | 25 | -60 | 25 | 25 | 1950 | T4 |
| -0127 | -0347 | 20 | | | | | | | | | | | | |
| -0128 | -0348 | 10 | | | | | | | | | | | | |
| -0129 | -0349 | 5 | 25 | 50 | 1 | 5 | 8 | 4.25 | 95 | -20 | 10.5 | 12 | 1005 | T2 |
| -0130 | -0350 | 20 | | | | | | | | | | | | |
| -0131 | -0351 | 10 | | | | | | | | | | | | |
| -0132 | -0352 | 5 | 47 | 50 | 1 | 9 | 11 | 3.11 | 70 | -28 | 13 | 15 | 1155 | T2 |
| -0133 | -0353 | 20 | | | | | | | | | | | | |
| -0134 | -0354 | 10 | | | | | | | | | | | | |
| -0135 | -0355 | 5 | 60 | 50 | 2 | 12 | 12 | 2.65 | 45 | -16 | 10.5 | 12 | 1335 | T3 |
| -0136 | -0356 | 20 | | | | | | | | | | | | |
| -0137 | -0357 | 10 | | | | | | | | | | | | |
| -0138 | -0358 | 5 | 82 | 50 | 2 | 16 | 15 | 2.43 | 45 | -32 | 13 | 15 | 1400 | T3 |
| -0139 | -0359 | 20 | | | | | | | | | | | | |
| -0140 | -0360 | 10 | | | | | | | | | | | | |
| -0147 | -0367 | 20 | 160 | 50 | 8 | 32 | 17 | 1.41 | 27 | -50 | 25 | 25 | 1900 | T4 |
| -0148 | -0368 | 10 | | | | | | | | | | | | |
| -0149 | -0369 | 5 | | | | | | | | | | | | |
| -0150 | -0370 | 20 | 20 | 60 | 1 | 5 | 7 | 4.64 | 105 | -16 | 10.5 | 12 | 930 | T2 |
| -0151 | -0371 | 10 | | | | | | | | | | | | |
| -0152 | -0372 | 5 | | | | | | | | | | | | |
| -0153 | -0373 | 20 | 39 | 60 | 1 | 9 | 10 | 3.4 | 90 | -28 | 10.5 | 12 | 1110 | T2 |
| -0154 | -0374 | 10 | | | | | | | | | | | | |
| -0155 | -0375 | 5 | | | | | | | | | | | | |
| -0156 | -0376 | 20 | 50 | 60 | 2 | 12 | 10 | 2.65 | 50 | -16 | 10.5 | 12 | 1330 | T3 |
| -0157 | -0377 | 10 | | | | | | | | | | | | |
| -0158 | -0378 | 5 | | | | | | | | | | | | |
| -0159 | -0379 | 20 | 68 | 60 | 2 | 16 | 13 | 2.54 | 50 | -32 | 10.5 | 12 | 1365 | T3 |
| -0160 | -0380 | 10 | | | | | | | | | | | | |
| -0167 | -0387 | 20 | | | | | | | | | | | | |
| -0168 | -0388 | 10 | 140 | 60 | 8 | 32 | 16 | 1.52 | 28 | -40 | 20 | 20 | 1850 | T4 |
| -0169 | -0389 | 5 | | | | | | | | | | | | |
| -0170 | -0390 | 20 | | | | | | | | | | | | |
| -0171 | -0391 | 10 | 15 | 75 | 1 | 5 | 6 | 5.31 | 150 | -16 | 8 | 9 | 890 | T2 |
| -0172 | -0392 | 5 | | | | | | | | | | | | |
| -0173 | -0393 | 20 | | | | | | | | | | | | |
| -0174 | -0394 | 10 | 33 | 75 | 1 | 10 | 10 | 4.02 | 90 | -24 | 10.5 | 15 | 1000 | T2 |
| -0177 | -0397 | 10 | | | | | | | | | | | | |
| -0178 | -0398 | 5 | | | | | | | | | | | | |
| -0179 | -0399 | 20 | 40 | 75 | 2 | 12 | 9 | 2.99 | 60 | -16 | 10.5 | 12 | 1250 | T3 |
| -0175 | -0395 | 5 | | | | | | | | | | | | |
| -0176 | -0396 | 20 | | | | | | | | | | | | |
| -0177 | -0397 | 10 | 56 | 75 | 2 | 17 | 11 | 2.61 | 60 | -28 | 10.5 | 15 | 1335 | T3 |
| -0178 | -0398 | 5 | | | | | | | | | | | | |
| -0179 | -0399 | 20 | | | | | | | | | | | | |
| -0180 | -0400 | 10 | 110 | 75 | 9 | 36 | 12 | 1.45 | 29 | -35 | 20 | 20 | 1850 | T4 |
| -0187 | -0407 | 20 | | | | | | | | | | | | |
| -0188 | -0408 | 10 | | | | | | | | | | | | |
| -0189 | -0409 | 5 | 11 | 100 | 1 | 4 | 5 | 6.03 | 200 | -16 | 8 | 8 | 835 | T2 |
| -0190 | -0410 | 20 | | | | | | | | | | | | |
| -0191 | -0411 | 10 | | | | | | | | | | | | |
| -0192 | -0412 | 5 | 22 | 100 | 1 | 9 | 7.5 | 4.52 | 100 | -16 | 8 | 8 | 965 | T2 |
| -0193 | -0413 | 20 | | | | | | | | | | | | |
| -0194 | -0414 | 10 | | | | | | | | | | | | |
| -0195 | -0415 | 5 | 30 | 100 | 2 | 12 | 7 | 3.1 | 80 | -16 | 8 | 8 | 1240 | T3 |
| -0196 | -0416 | 20 | | | | | | | | | | | | |
| -0197 | -0417 | 10 | | | | | | | | | | | | |
| -0198 | -0418 | 5 | 43 | 100 | 2 | 17 | 8.5 | 2.62 | 70 | -20 | 8 | 8 | 1335 | T3 |
| -0199 | -0419 | 20 | | | | | | | | | | | | |
| -0200 | -0420 | 10 | | | | | | | | | | | | |

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5RMS with DC bias of 2.2V. DCL is measured at rated voltage after 5 minutes.

TWC SERIES

MIL-PRF-39006 Series – Military Conventional Wet Tantalum



M39006 /25 RATINGS AND DASH NUMBER REFERENCE

| M39006/25 Dashes | | Tolerance ± (%) | Cap (µF) 25°C at 120Hz | DC Rated Voltage (V) at 85°C | DC Leakage (µA) | | DF max (%) | ESR max (Ohms) at 120Hz | Impedance max (Ohms) -55°C at 120Hz | Maximum Capacitance Change (%) | | | AC Ripple (mA rms) 85°C at 40kHz | Case Size |
|------------------|------------|--------------------|------------------------------------|------------------------------------------|-----------------|----------------------|------------------|-------------------------------------|-------------------------------------------------|-----------------------------------|-------|--------|----------------------------------------------|--------------|
| M Level | P Level | | | | +25°C | +85°C & +125°C | | | | -55°C | +85°C | +125°C | | |
| -0003 | -0091 | 20 | 820 | 6 | 3 | 14 | 155 | 2.51 | 18 | -88 | 16 | 20 | 1500 | T2 |
| -0004 | -0092 | 10 | | | | | | | | | | | | |
| -0005 | -0093 | 20 | 1500 | 6 | 5 | 20 | 172 | 1.52 | 18 | -90 | 20 | 25 | 1900 | T3 |
| -0006 | -0094 | 10 | | | | | | | | | | | | |
| -0007 | -0095 | 20 | 2200 | 6 | 6 | 24 | 170 | 1.03 | 13 | -90 | 25 | 30 | 2300 | T4 |
| -0008 | -0096 | 10 | | | | | | | | | | | | |
| -0011 | -0099 | 20 | 680 | 8 | 3 | 14 | 130 | 2.54 | 22 | -83 | 16 | 20 | 1500 | T2 |
| -0012 | -0100 | 10 | | | | | | | | | | | | |
| -0013 | -0101 | 20 | 1500 | 8 | 5 | 20 | 170 | 1.5 | 18 | -90 | 20 | 25 | 1900 | T3 |
| -0014 | -0102 | 10 | | | | | | | | | | | | |
| -0015 | -0103 | 20 | 1800 | 8 | 7 | 25 | 138 | 1.02 | 14 | -90 | 25 | 30 | 2300 | T4 |
| -0016 | -0104 | 10 | | | | | | | | | | | | |
| -0019 | -0107 | 20 | 560 | 10 | 3 | 16 | 106 | 2.51 | 27 | -77 | 16 | 20 | 1450 | T2 |
| -0020 | -0108 | 10 | | | | | | | | | | | | |
| -0021 | -0109 | 20 | 1200 | 10 | 5 | 20 | 137 | 1.51 | 18 | -88 | 20 | 25 | 1850 | T3 |
| -0022 | -0110 | 10 | | | | | | | | | | | | |
| -0023 | -0111 | 20 | 1500 | 10 | 7 | 25 | 114 | 1.01 | 15 | -88 | 25 | 30 | 2300 | T4 |
| -0024 | -0112 | 10 | | | | | | | | | | | | |
| -0027 | -0115 | 20 | 390 | 15 | 3 | 16 | 74 | 2.52 | 31 | -66 | 16 | 20 | 1450 | T2 |
| -0028 | -0116 | 10 | | | | | | | | | | | | |
| -0029 | -0117 | 20 | 820 | 15 | 6 | 24 | 111 | 1.8 | 22 | -77 | 20 | 25 | 1800 | T3 |
| -0030 | -0118 | 10 | | | | | | | | | | | | |
| -0031 | -0119 | 20 | 1000 | 15 | 8 | 32 | 92 | 1.22 | 17 | -77 | 25 | 30 | 2300 | T4 |
| -0032 | -0120 | 10 | | | | | | | | | | | | |
| -0035 | -0123 | 20 | 270 | 25 | 3 | 16 | 55 | 2.7 | 33 | -62 | 13 | 16 | 1400 | T2 |
| -0036 | -0124 | 10 | | | | | | | | | | | | |
| -0037 | -0125 | 20 | 560 | 25 | 7 | 28 | 76 | 1.8 | 24 | -72 | 20 | 25 | 1750 | T3 |
| -0038 | -0126 | 10 | | | | | | | | | | | | |
| -0039 | -0127 | 20 | 680 | 25 | 8 | 32 | 63 | 1.23 | 19 | -72 | 25 | 30 | 2100 | T4 |
| -0040 | -0128 | 10 | | | | | | | | | | | | |
| -0043 | -0131 | 20 | 220 | 30 | 3 | 16 | 42 | 2.53 | 36 | -60 | 13 | 16 | 1200 | T2 |
| -0044 | -0132 | 10 | | | | | | | | | | | | |
| -0045 | -0133 | 20 | 470 | 30 | 8 | 32 | 64 | 1.81 | 25 | -65 | 20 | 25 | 1500 | T3 |
| -0046 | -0134 | 10 | | | | | | | | | | | | |
| -0047 | -0135 | 20 | 560 | 30 | 9 | 36 | 55 | 1.3 | 20 | -65 | 25 | 30 | 2000 | T4 |
| -0048 | -0136 | 10 | | | | | | | | | | | | |
| -0051 | -0139 | 20 | 120 | 50 | 4 | 24 | 22.5 | 2.49 | 49 | -42 | 12 | 15 | 1200 | T2 |
| -0052 | -0140 | 10 | | | | | | | | | | | | |
| -0053 | -0141 | 20 | 270 | 50 | 8 | 32 | 37 | 1.82 | 29 | -46 | 20 | 25 | 1450 | T3 |
| -0054 | -0142 | 10 | | | | | | | | | | | | |
| -0055 | -0143 | 20 | 330 | 50 | 9 | 36 | 38 | 1.53 | 22 | -46 | 25 | 30 | 1900 | T4 |
| -0056 | -0144 | 10 | | | | | | | | | | | | |
| -0059 | -0147 | 20 | 100 | 60 | 4 | 20 | 19 | 2.52 | 54 | -36 | 12 | 15 | 1100 | T2 |
| -0060 | -0148 | 10 | | | | | | | | | | | | |
| -0061 | -0149 | 20 | 220 | 60 | 8 | 32 | 30 | 1.81 | 29 | -40 | 16 | 20 | 1400 | T3 |
| -0062 | -0150 | 10 | | | | | | | | | | | | |
| -0063 | -0151 | 20 | 270 | 60 | 9 | 36 | 27 | 1.33 | 23 | -45 | 20 | 25 | 1850 | T4 |
| -0064 | -0152 | 10 | | | | | | | | | | | | |
| -0067 | -0155 | 20 | 82 | 75 | 4 | 24 | 15.2 | 2.46 | 63 | -30 | 12 | 15 | 1000 | T2 |
| -0068 | -0156 | 10 | | | | | | | | | | | | |
| -0069 | -0157 | 20 | 180 | 75 | 9 | 36 | 24.4 | 2.23 | 30 | -35 | 16 | 20 | 1300 | T3 |
| -0070 | -0158 | 10 | | | | | | | | | | | | |
| -0071 | -0159 | 20 | 220 | 75 | 10 | 40 | 37 | 1.8 | 24 | -40 | 20 | 25 | 1800 | T4 |
| -0072 | -0160 | 10 | | | | | | | | | | | | |
| -0075 | -0163 | 20 | 39 | 100 | 5 | 24 | 10.4 | 3.54 | 80 | -20 | 12 | 15 | 1300 | T2 |
| -0076 | -0164 | 10 | | | | | | | | | | | | |
| -0077 | -0165 | 20 | 68 | 100 | 10 | 40 | 11.3 | 2.21 | 40 | -30 | 14 | 16 | 1600 | T3 |
| -0078 | -0166 | 10 | | | | | | | | | | | | |
| -0079 | -0167 | 20 | 120 | 100 | 12 | 48 | 25 | 2.76 | 30 | -35 | 15 | 17 | 2000 | T4 |
| -0080 | -0168 | 10 | | | | | | | | | | | | |

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5RMS with DC bias of 2.2V. DCL is measured at rated voltage after 5 minutes.

TWC SERIES

MIL-PRF-39006 Series – Military Conventional Wet Tantalum



M39006 /30 RATINGS AND DASH NUMBER REFERENCE

| M39006/30 Dashes | | Tolerance ± (%) | Cap (µF) 25°C at 120Hz | DC Rated Voltage (V) at 85°C | DC Leakage (µA) | | DF max (%) | ESR max (Ohms) at 120Hz | Impedance max (Ohms) -55°C at 120Hz | Maximum Capacitance Change (%) | | | AC Ripple (mA rms) 85°C at 40kHz | Case Size |
|------------------|------------|--------------------|------------------------------------|------------------------------------------|-----------------|----------------------|------------------|-------------------------------------|-------------------------------------------------|-----------------------------------|-------|--------|----------------------------------------------|--------------|
| M Level | P Level | | | | +25°C | +85°C & +125°C | | | | -55°C | +85°C | +125°C | | |
| -0007 | -0227 | 20 | 140 | 6 | 1 | 3 | 10.5 | 0.99 | 40 | -40 | 14 | 16 | 1200 | T2 |
| -0008 | -0228 | 10 | | | | | | | | | | | | |
| -0009 | -0229 | 5 | | | | | | | | | | | | |
| -0010 | -0230 | 20 | 270 | 6 | 1 | 6.5 | 22.5 | 1.11 | 25 | -44 | 17.5 | 20 | 1375 | T2 |
| -0011 | -0231 | 10 | | | | | | | | | | | | |
| -0012 | -0232 | 5 | | | | | | | | | | | | |
| -0013 | -0233 | 20 | 330 | 6 | 2 | 7.9 | 18 | 0.73 | 20 | -44 | 14 | 16 | 1800 | T3 |
| -0014 | -0234 | 10 | | | | | | | | | | | | |
| -0015 | -0235 | 5 | | | | | | | | | | | | |
| -0016 | -0236 | 20 | 560 | 6 | 2 | 13 | 27.5 | 0.65 | 25 | -64 | 17.5 | 20 | 1900 | T3 |
| -0017 | -0237 | 10 | | | | | | | | | | | | |
| -0018 | -0238 | 5 | | | | | | | | | | | | |
| -0019 | -0239 | 20 | 1200 | 6 | 3 | 14 | 45 | 0.5 | 20 | -80 | 25 | 25 | 2265 | T4 |
| -0020 | -0240 | 10 | | | | | | | | | | | | |
| -0027 | -0247 | 20 | | | | | | | | | | | | |
| -0028 | -0248 | 10 | 120 | 8 | 1 | 2 | 10 | 1.11 | 50 | -44 | 17.5 | 20 | 1220 | T2 |
| -0029 | -0249 | 5 | | | | | | | | | | | | |
| -0030 | -0250 | 20 | | | | | | | | | | | | |
| -0031 | -0251 | 10 | 220 | 8 | 1 | 7 | 18.5 | 1.12 | 30 | -44 | 17.5 | 20 | 1370 | T2 |
| -0032 | -0252 | 5 | | | | | | | | | | | | |
| -0033 | -0253 | 20 | | | | | | | | | | | | |
| -0034 | -0254 | 10 | 290 | 8 | 2 | 6 | 17 | 0.78 | 25 | -64 | 17.5 | 20 | 1770 | T3 |
| -0035 | -0255 | 5 | | | | | | | | | | | | |
| -0036 | -0256 | 20 | | | | | | | | | | | | |
| -0037 | -0257 | 10 | 430 | 8 | 2 | 14 | 23 | 0.71 | 25 | -64 | 17.5 | 20 | 1825 | T3 |
| -0038 | -0258 | 5 | | | | | | | | | | | | |
| -0039 | -0259 | 20 | | | | | | | | | | | | |
| -0040 | -0260 | 10 | 850 | 8 | 4 | 16 | 30 | 0.47 | 22 | -80 | 25 | 25 | 2330 | T4 |
| -0047 | -0267 | 20 | | | | | | | | | | | | |
| -0048 | -0268 | 10 | | | | | | | | | | | | |
| -0049 | -0269 | 5 | 100 | 10 | 1 | 4 | 7.5 | 0.99 | 60 | -36 | 14 | 16 | 1200 | T2 |
| -0050 | -0270 | 20 | | | | | | | | | | | | |
| -0051 | -0271 | 10 | | | | | | | | | | | | |
| -0052 | -0272 | 5 | 180 | 10 | 1 | 7 | 15 | 1.11 | 40 | -36 | 14 | 16 | 1.365 | T2 |
| -0053 | -0273 | 20 | | | | | | | | | | | | |
| -0054 | -0274 | 10 | | | | | | | | | | | | |
| -0055 | -0275 | 5 | 250 | 10 | 2 | 10 | 15 | 0.8 | 30 | -40 | 14 | 16 | 1720 | T3 |
| -0056 | -0276 | 20 | | | | | | | | | | | | |
| -0057 | -0277 | 10 | | | | | | | | | | | | |
| -0058 | -0278 | 5 | 390 | 10 | 2 | 16 | 22 | 0.75 | 25 | -64 | 17.5 | 20 | 1800 | T3 |
| -0059 | -0279 | 20 | | | | | | | | | | | | |
| -0060 | -0280 | 10 | | | | | | | | | | | | |
| -0067 | -0287 | 20 | 70 | 15 | 1 | 4 | 6.5 | 1.23 | 75 | -28 | 14 | 16 | 1150 | T2 |
| -0068 | -0288 | 10 | | | | | | | | | | | | |
| -0069 | -0289 | 5 | | | | | | | | | | | | |
| -0070 | -0290 | 20 | 120 | 15 | 1 | 7 | 9 | 0.99 | 50 | -28 | 17.5 | 20 | 1450 | T2 |
| -0071 | -0291 | 10 | | | | | | | | | | | | |
| -0072 | -0292 | 5 | | | | | | | | | | | | |
| -0073 | -0293 | 20 | 170 | 15 | 2 | 10 | 12.5 | 0.98 | 35 | -32 | 14 | 16 | 1480 | T3 |
| -0074 | -0294 | 10 | | | | | | | | | | | | |
| -0075 | -0295 | 5 | | | | | | | | | | | | |
| -0076 | -0296 | 20 | 270 | 15 | 2 | 16 | 16 | 0.79 | 30 | -56 | 17.5 | 20 | 1740 | T3 |
| -0077 | -0297 | 10 | | | | | | | | | | | | |
| -0078 | -0298 | 5 | | | | | | | | | | | | |
| -0079 | -0299 | 20 | 540 | 15 | 6 | 24 | 20 | 0.49 | 23 | -80 | 25 | 25 | 2330 | T4 |
| -0080 | -0300 | 10 | | | | | | | | | | | | |
| -0087 | -0307 | 20 | | | | | | | | | | | | |
| -0088 | -0308 | 10 | 50 | 25 | 1 | 2 | 5.5 | 1.46 | 70 | -28 | 13 | 15 | 1130 | T2 |
| -0089 | -0309 | 5 | | | | | | | | | | | | |
| -0090 | -0310 | 20 | | | | | | | | | | | | |
| -0091 | -0311 | 10 | 100 | 25 | 1 | 10 | 7.5 | 0.99 | 50 | -28 | 13 | 15 | 1435 | T2 |
| -0092 | -0312 | 5 | | | | | | | | | | | | |
| -0093 | -0313 | 20 | | | | | | | | | | | | |
| -0094 | -0314 | 10 | 120 | 25 | 2 | 6 | 10.5 | 1.16 | 38 | -32 | 13 | 15 | 1450 | T3 |
| -0095 | -0315 | 5 | | | | | | | | | | | | |
| -0096 | -0316 | 20 | | | | | | | | | | | | |
| -0097 | -0317 | 10 | 180 | 25 | 2 | 18 | 13 | 0.96 | 32 | -48 | 13 | 15 | 1525 | T3 |
| -0098 | -0318 | 5 | | | | | | | | | | | | |

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5RMS with DC bias of 2.2V. DCL is measured at rated voltage after 5 minutes.

TWC SERIES

MIL-PRF-39006 Series – Military Conventional Wet Tantalum



| M39006/30 Dashes | | Tolerance ± (%) | Cap (µF) 25°C at 120Hz | DC Rated Voltage (V) at 85°C | DC Leakage (µA) | | DF max (%) | ESR max (Ohms) at 120Hz | Impedance max (Ohms) -55°C at 120Hz | Maximum Capacitance Change (%) | | | AC Ripple (mA rms) 85°C at 40kHz | Case Size |
|------------------|---------|-----------------|------------------------|------------------------------|-----------------|----------------|------------|-------------------------|-------------------------------------|--------------------------------|-------|--------|----------------------------------|-----------|
| M Level | P Level | | | | +25°C | +85°C & +125°C | | | | -55°C | +85°C | +125°C | | |
| -0099 | -0319 | 20 | 350 | 25 | 7 | 28 | 17.5 | 0.67 | 24 | -70 | 25 | 25 | 1970 | T4 |
| -0100 | -0320 | 10 | | | | | | | | | | | | |
| -0107 | -0327 | 20 | | | | | | | | | | | | |
| -0108 | -0328 | 10 | 40 | 30 | 1 | 5 | 5 | 1.66 | 65 | -24 | 10.5 | 12 | 1120 | T2 |
| -0109 | -0329 | 5 | | | | | | | | | | | | |
| -0110 | -0330 | 20 | | | | | | | | | | | | |
| -0111 | -0331 | 10 | 68 | 30 | 1 | 8 | 6.5 | 1.27 | 60 | -24 | 13 | 15 | 1285 | T2 |
| -0112 | -0332 | 5 | | | | | | | | | | | | |
| -0113 | -0333 | 20 | | | | | | | | | | | | |
| -0114 | -0334 | 10 | 100 | 30 | 2 | 12 | 8.5 | 1.13 | 40 | -28 | 10.5 | 12 | 1450 | T3 |
| -0115 | -0335 | 5 | | | | | | | | | | | | |
| -0116 | -0336 | 20 | | | | | | | | | | | | |
| -0117 | -0337 | 10 | 150 | 30 | 2 | 18 | 11.5 | 1.02 | 35 | -48 | 13 | 15 | 1525 | T3 |
| -0118 | -0338 | 5 | | | | | | | | | | | | |
| -0119 | -0339 | 20 | | | | | | | | | | | | |
| -0120 | -0340 | 10 | 300 | 30 | 8 | 32 | 15.5 | 0.69 | 25 | -60 | 25 | 25 | 1950 | T4 |
| -0127 | -0347 | 20 | | | | | | | | | | | | |
| -0128 | -0348 | 10 | | | | | | | | | | | | |
| -0129 | -0349 | 5 | 25 | 50 | 1 | 5 | 4 | 2.13 | 95 | -20 | 10.5 | 12 | 1005 | T2 |
| -0130 | -0350 | 20 | | | | | | | | | | | | |
| -0131 | -0351 | 10 | | | | | | | | | | | | |
| -0132 | -0352 | 5 | 47 | 50 | 1 | 9 | 5.5 | 1.56 | 70 | -28 | 13 | 15 | 1155 | T2 |
| -0133 | -0353 | 20 | | | | | | | | | | | | |
| -0134 | -0354 | 10 | | | | | | | | | | | | |
| -0135 | -0355 | 5 | 60 | 50 | 2 | 12 | 6 | 1.33 | 45 | -16 | 10.5 | 12 | 1335 | T3 |
| -0136 | -0356 | 20 | | | | | | | | | | | | |
| -0137 | -0357 | 10 | | | | | | | | | | | | |
| -0138 | -0358 | 5 | 82 | 50 | 2 | 16 | 7.5 | 1.22 | 45 | -32 | 13 | 15 | 1400 | T3 |
| -0139 | -0359 | 20 | | | | | | | | | | | | |
| -0140 | -0360 | 10 | | | | | | | | | | | | |
| -0147 | -0367 | 20 | 160 | 50 | 8 | 32 | 8.5 | 0.71 | 27 | -50 | 25 | 25 | 1900 | T4 |
| -0148 | -0368 | 10 | | | | | | | | | | | | |
| -0149 | -0369 | 5 | | | | | | | | | | | | |
| -0150 | -0370 | 20 | 20 | 60 | 1 | 5 | 3.5 | 2.32 | 105 | -16 | 10.5 | 12 | 930 | T2 |
| -0151 | -0371 | 10 | | | | | | | | | | | | |
| -0152 | -0372 | 5 | | | | | | | | | | | | |
| -0153 | -0373 | 20 | 39 | 60 | 1 | 9 | 5 | 1.7 | 90 | -28 | 10.5 | 12 | 1110 | T2 |
| -0154 | -0374 | 10 | | | | | | | | | | | | |
| -0155 | -0375 | 5 | | | | | | | | | | | | |
| -0156 | -0376 | 20 | 50 | 60 | 2 | 12 | 5 | 1.33 | 50 | -16 | 10.5 | 12 | 1330 | T3 |
| -0157 | -0377 | 10 | | | | | | | | | | | | |
| -0158 | -0378 | 5 | | | | | | | | | | | | |
| -0159 | -0379 | 20 | 68 | 60 | 2 | 16 | 6.5 | 1.27 | 50 | -32 | 10.5 | 12 | 1365 | T3 |
| -0160 | -0380 | 10 | | | | | | | | | | | | |
| -0167 | -0387 | 20 | | | | | | | | | | | | |
| -0168 | -0388 | 10 | 140 | 60 | 8 | 32 | 8 | 0.76 | 28 | -40 | 20 | 20 | 1850 | T4 |
| -0169 | -0389 | 5 | | | | | | | | | | | | |
| -0170 | -0390 | 20 | | | | | | | | | | | | |
| -0171 | -0391 | 10 | 15 | 75 | 1 | 5 | 3 | 2.66 | 150 | -16 | 8 | 9 | 890 | T2 |
| -0172 | -0392 | 5 | | | | | | | | | | | | |
| -0173 | -0393 | 20 | | | | | | | | | | | | |
| -0174 | -0394 | 10 | 33 | 75 | 1 | 10 | 5 | 2.01 | 90 | -24 | 10.5 | 15 | 1000 | T2 |
| -0175 | -0395 | 5 | | | | | | | | | | | | |
| -0176 | -0396 | 20 | | | | | | | | | | | | |
| -0177 | -0397 | 10 | 40 | 75 | 2 | 12 | 4.5 | 1.5 | 60 | -16 | 10.5 | 12 | 1250 | T3 |
| -0178 | -0398 | 5 | | | | | | | | | | | | |
| -0179 | -0399 | 20 | | | | | | | | | | | | |
| -0180 | -0400 | 10 | 56 | 75 | 2 | 17 | 5.5 | 1.31 | 60 | -28 | 10.5 | 15 | 1335 | T3 |
| -0187 | -0407 | 20 | | | | | | | | | | | | |
| -0188 | -0408 | 10 | | | | | | | | | | | | |
| -0189 | -0409 | 5 | 110 | 75 | 9 | 36 | 6 | 0.73 | 29 | -35 | 20 | 20 | 1850 | T4 |
| -0190 | -0410 | 20 | | | | | | | | | | | | |
| -0191 | -0411 | 10 | | | | | | | | | | | | |
| -0192 | -0412 | 5 | 11 | 100 | 1 | 4 | 2.5 | 3.02 | 200 | -16 | 8 | 8 | 835 | T2 |
| -0193 | -0413 | 20 | | | | | | | | | | | | |
| -0194 | -0414 | 10 | | | | | | | | | | | | |
| -0195 | -0415 | 5 | 22 | 100 | 1 | 9 | 3.75 | 2.26 | 100 | -16 | 8 | 8 | 965 | T2 |
| -0196 | -0416 | 20 | | | | | | | | | | | | |
| -0197 | -0417 | 10 | | | | | | | | | | | | |
| -0198 | -0418 | 5 | 30 | 100 | 2 | 12 | 3.5 | 1.55 | 80 | -16 | 8 | 8 | 1240 | T3 |
| -0199 | -0419 | 20 | | | | | | | | | | | | |
| -0200 | -0420 | 10 | | | | | | | | | | | | |

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5RMS with DC bias of 2.2V. DCL is measured at rated voltage after 5 minutes.

TWC SERIES

MIL-PRF-39006 Series – Military Conventional Wet Tantalum



M39006 /31 RATINGS AND DASH NUMBER REFERENCE

| M39006/31 Dashes | | Tolerance ± (%) | Cap (µF) 25°C at 120Hz | DC Rated Voltage (V) at 85°C | DC Leakage (µA) | | DF max (%) | ESR max (Ohms) at 120Hz | Impedance max (Ohms) -55°C at 120Hz | Maximum Capacitance Change (%) | | | AC Ripple (mA rms) 85°C at 40kHz | Case Size |
|------------------|------------|--------------------|------------------------------------|------------------------------------------|-----------------|----------------------|------------------|-------------------------------------|-------------------------------------------------|-----------------------------------|-------|--------|----------------------------------------------|--------------|
| M Level | P Level | | | | +25°C | +85°C & +125°C | | | | -55°C | +85°C | +125°C | | |
| -0003 | -0091 | 20 | 820 | 6 | 3 | 14 | 77.5 | 1.26 | 18 | -88 | 16 | 20 | 1500 | T2 |
| -0004 | -0092 | 10 | | | | | | | | | | | | |
| -0005 | -0093 | 20 | 1500 | 6 | 5 | 20 | 86 | 0.76 | 18 | -90 | 20 | 25 | 1900 | T3 |
| -0006 | -0094 | 10 | | | | | | | | | | | | |
| -0007 | -0095 | 20 | 2200 | 6 | 6 | 24 | 85 | 0.52 | 13 | -90 | 25 | 30 | 2300 | T4 |
| -0008 | -0096 | 10 | | | | | | | | | | | | |
| -0011 | -0099 | 20 | 680 | 8 | 3 | 14 | 65 | 1.27 | 22 | -83 | 16 | 20 | 1500 | T2 |
| -0012 | -0100 | 10 | | | | | | | | | | | | |
| -0013 | -0101 | 20 | 1500 | 8 | 5 | 20 | 85 | 0.75 | 18 | -90 | 20 | 25 | 1900 | T3 |
| -0014 | -0102 | 10 | | | | | | | | | | | | |
| -0015 | -0103 | 20 | 1800 | 8 | 7 | 25 | 69 | 0.51 | 14 | -90 | 25 | 30 | 2300 | T4 |
| -0016 | -0104 | 10 | | | | | | | | | | | | |
| -0019 | -0107 | 20 | 560 | 10 | 3 | 16 | 53 | 1.26 | 27 | -77 | 16 | 20 | 1450 | T2 |
| -0020 | -0108 | 10 | | | | | | | | | | | | |
| -0021 | -0109 | 20 | 1200 | 10 | 5 | 20 | 68.5 | 0.76 | 18 | -88 | 20 | 25 | 1850 | T3 |
| -0022 | -0110 | 10 | | | | | | | | | | | | |
| -0023 | -0111 | 20 | 1500 | 10 | 7 | 25 | 57 | 0.51 | 15 | -88 | 25 | 30 | 2300 | T4 |
| -0024 | -0112 | 10 | | | | | | | | | | | | |
| -0027 | -0115 | 20 | 390 | 15 | 3 | 16 | 37 | 1.26 | 31 | -66 | 16 | 20 | 1450 | T2 |
| -0028 | -0116 | 10 | | | | | | | | | | | | |
| -0029 | -0117 | 20 | 820 | 15 | 6 | 24 | 55.5 | 0.9 | 22 | -77 | 20 | 25 | 1800 | T3 |
| -0030 | -0118 | 10 | | | | | | | | | | | | |
| -0031 | -0119 | 20 | 1000 | 15 | 8 | 32 | 46 | 0.61 | 17 | -77 | 25 | 30 | 2300 | T4 |
| -0032 | -0120 | 10 | | | | | | | | | | | | |
| -0035 | -0123 | 20 | 270 | 25 | 3 | 16 | 27.5 | 1.35 | 33 | -62 | 13 | 16 | 1400 | T2 |
| -0036 | -0124 | 10 | | | | | | | | | | | | |
| -0037 | -0125 | 20 | 560 | 25 | 7 | 28 | 38 | 0.9 | 24 | -72 | 20 | 25 | 1750 | T3 |
| -0038 | -0126 | 10 | | | | | | | | | | | | |
| -0039 | -0127 | 20 | 680 | 25 | 8 | 32 | 31.5 | 0.62 | 19 | -72 | 25 | 30 | 2100 | T4 |
| -0040 | -0128 | 10 | | | | | | | | | | | | |
| -0043 | -0131 | 20 | 220 | 30 | 3 | 16 | 21 | 1.27 | 36 | -60 | 13 | 16 | 1200 | T2 |
| -0044 | -0132 | 10 | | | | | | | | | | | | |
| -0045 | -0133 | 20 | 470 | 30 | 8 | 32 | 32 | 0.91 | 25 | -65 | 20 | 25 | 1500 | T3 |
| -0046 | -0134 | 10 | | | | | | | | | | | | |
| -0047 | -0135 | 20 | 560 | 30 | 9 | 36 | 27.5 | 0.65 | 20 | -65 | 25 | 30 | 2000 | T4 |
| -0048 | -0136 | 10 | | | | | | | | | | | | |
| -0051 | -0139 | 20 | 120 | 50 | 4 | 24 | 11.3 | 1.25 | 49 | -42 | 12 | 15 | 1200 | T2 |
| -0052 | -0140 | 10 | | | | | | | | | | | | |
| -0053 | -0141 | 20 | 270 | 50 | 8 | 32 | 18.5 | 0.91 | 29 | -46 | 20 | 25 | 1450 | T3 |
| -0054 | -0142 | 10 | | | | | | | | | | | | |
| -0055 | -0143 | 20 | 330 | 50 | 9 | 36 | 19 | 0.77 | 22 | -46 | 25 | 30 | 1900 | T4 |
| -0056 | -0144 | 10 | | | | | | | | | | | | |
| -0059 | -0147 | 20 | 100 | 60 | 4 | 20 | 9.5 | 1.26 | 54 | -36 | 12 | 15 | 1100 | T2 |
| -0060 | -0148 | 10 | | | | | | | | | | | | |
| -0061 | -0149 | 20 | 220 | 60 | 8 | 32 | 15 | 0.91 | 29 | -40 | 16 | 20 | 1400 | T3 |
| -0062 | -0150 | 10 | | | | | | | | | | | | |
| -0063 | -0151 | 20 | 270 | 60 | 9 | 36 | 13.5 | 0.67 | 23 | -45 | 20 | 25 | 1850 | T4 |
| -0064 | -0152 | 10 | | | | | | | | | | | | |
| -0067 | -0155 | 20 | 82 | 75 | 4 | 24 | 7.6 | 1.23 | 63 | -30 | 12 | 15 | 1000 | T2 |
| -0068 | -0156 | 10 | | | | | | | | | | | | |
| -0069 | -0157 | 20 | 180 | 75 | 9 | 36 | 12.2 | 0.9 | 30 | -35 | 16 | 20 | 1300 | T3 |
| -0070 | -0158 | 10 | | | | | | | | | | | | |
| -0071 | -0159 | 20 | 220 | 75 | 10 | 40 | 18.5 | 1.12 | 24 | -40 | 20 | 25 | 1800 | T4 |
| -0072 | -0160 | 10 | | | | | | | | | | | | |
| -0075 | -0163 | 20 | 39 | 100 | 5 | 24 | 5.2 | 1.77 | 80 | -20 | 12 | 15 | 1300 | T2 |
| -0076 | -0164 | 10 | | | | | | | | | | | | |
| -0077 | -0165 | 20 | 68 | 100 | 10 | 40 | 5.65 | 1.11 | 40 | -30 | 14 | 16 | 1600 | T3 |
| -0078 | -0166 | 10 | | | | | | | | | | | | |
| -0079 | -0167 | 20 | 120 | 100 | 12 | 48 | 12.5 | 1.38 | 30 | -35 | 15 | 17 | 2000 | T4 |
| -0080 | -0168 | 10 | | | | | | | | | | | | |

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5RMS with DC bias of 2.2V. DCL is measured at rated voltage after 5 minutes.

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