

TCP Series - DLA 09009



TCP Series Low ESR Tantalum Modules



TCP Series tantalum modules represent high packing density for applications utilizing multiple components in a parallel configuration, and are available with testing to DLA 09009.

These modules feature stacked assemblies of CWR29 capacitors which provide ultra low ESR and utilize established reliability capacitors (Weibull Grade voltage conditioning) in accordance with MIL-PRF-55365. They can also be supplied with SRC9000 Space Level components.

The stacked construction of fully molded capacitors is compatible with a wide range of SMT board assembly processes including reflow solder or conductive epoxy.

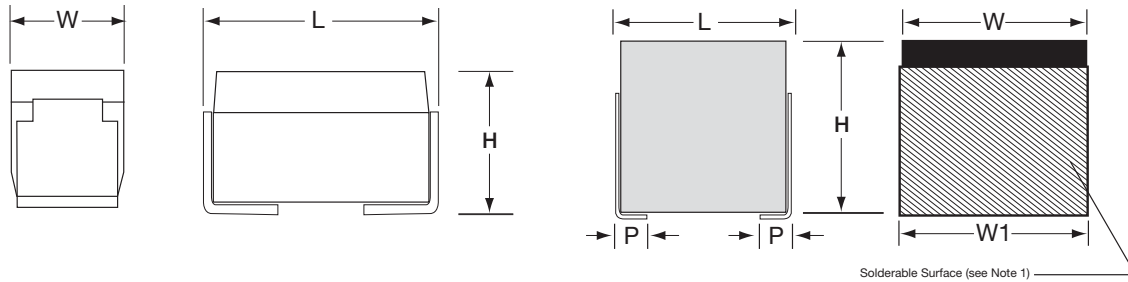
There are two termination finishes available: hot solder dipped ("C") and gold plated ("B").

The molding compound has been selected to meet the requirements of UL94V-0 and out-gassing requirements of ASTM E-595.

For moisture sensitivity levels please refer to the High Reliability Tantalum MSL section located in the back of the High Reliability Tantalum Catalog.

**Note: Additional form factors and ratings are available.
Contact plant for details.**

DIMENSIONS



CASE DIMENSIONS:

millimeters (inches)

| Case Code | Length (L) ±0.38 (0.015) | Width (W) ±0.38 (0.015) | Height (H) ±0.38 (0.015) | Term. Width (W _t) ±0.38 (0.015) | Term. Length (P) For Reference Only |
|-----------|-----------------------------|----------------------------|-----------------------------|--|--|
| 2H | 7.82 (0.308) | 4.06 (0.160) | 6.10 (0.240) | 4.06 (0.160) | 1.52 (0.060) |
| 4H | 7.82 (0.308) | 8.13 (0.320) | 6.10 (0.240) | 8.13 (0.320) | 1.52 (0.060) |
| 6H | 7.82 (0.308) | 8.13 (0.320) | 9.14 (0.360) | 8.13 (0.320) | 1.52 (0.060) |

Additional form factors and ratings are available – contact plant for details.

CAPACITANCE AND RATED VOLTAGE CASE SIZE (ESR IN mΩ)

| Capacitance | | Rated voltage DC (V _R) to 85°C | | | | | | |
|-------------|------|--|---------|---------|---------|---------|----------|----------|
| μF | Code | 6V | 10V | 15V | 20V | 25V | 35V | 50V |
| 9.4 | 945 | | | | | | | 2H (200) |
| 18.8 | 196 | | | | | | | 4H (100) |
| 20 | 206 | | | | | | 2H (200) | |
| 28.2 | 286 | | | | | | | 6H (67) |
| 40 | 406 | | | | | | 4H (100) | |
| 60 | 606 | | | | | | 6H (67) | |
| 66 | 666 | | | | | 2H (85) | | |
| 94 | 946 | | | | 2H (75) | | | |
| 132 | 137 | | | | | 4H (43) | | |
| 188 | 197 | | | | 4H (38) | | | |
| 198 | 207 | | | | | 6H (28) | | |
| 200 | 207 | | | 2H (63) | | | | |
| 282 | 287 | | | | 6H (25) | | | |
| 400 | 407 | | | 4H (31) | | | | |
| 440 | 447 | | 2H (50) | | | | | |
| 600 | 607 | | | 6H (21) | | | | |
| 660 | 667 | 2H (50) | | | | | | |
| 880 | 887 | | 4H (25) | | | | | |
| 1,320 | 138 | 4H (25) | 6H (17) | | | | | |
| 1,980 | 208 | 6H (17) | | | | | | |



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HOW TO ORDER

| TC | 2H | 945 | K | 050 | L | R | # | @ | 0 | ^ | ++ |
|-------------|------------------|---|---|---|---|--|---|---|--|---|---|
| Type | Case Size | Capacitance Code pF code: 1st two digits represent significant figures 3rd digit represents multiplier (number of zeros to follow) | Capacitance Tolerance M = ±20% K = ±10% J = ±5% | Voltage Code 006 = 6Vdc 010 = 10Vdc 015 = 15Vdc 020 = 20Vdc 025 = 25Vdc 035 = 35Vdc 050 = 50Vdc | Standard or Low ESR Range L = Low ESR | Packaging B = Bulk R = 7" T&R | Inspection Level S = Std. Conformance L = Group A D = DLA DWG | Reliability Grade Weibull: B = 0.1%/1000 hrs. 90% conf. C = 0.01%/1000 hrs. 90% conf. D = 0.001%/1000 hrs. 90% conf. Z = Non-ER | Qualification Level 0 = N/A 9 = SRC9000 | Termination Finish 8 = Hot Solder Dipped 9 = Gold Plated | Surge Test Option 00 = None 23 = 10 Cycles, +25°C 24 = 10 Cycles, -55°C & +85°C 45 = 10 cycles, -55°C & +85°C before Weibull |



For RoHS compliant products, please select correct termination style.

DLA DWG P/N:

| 09009 | -01 | K | B | C | A |
|-------------------------|---|--|---|--|---|
| DLA DWG 09009 | Dash Number See Rating Tables | Capacitance Tolerance K = ±10% M = ±20% | Reliability Grade B = B Weibull C = C Weibull D = D Weibull | Termination Finish B = Gold Plated (10 microinch minimum) C = Hot Solder Dip (60 microinch minimum) | Surge Test Option A = 10 cycles, +25°C B = 10 cycles, -55°C & +85°C C = 10 cycles, -55°C & +85°C before Weibull Z = None required Per MIL-PRF-55365 |



For RoHS compliant products, please select correct termination style.

TECHNICAL SPECIFICATIONS

| | | | | | | | | | | |
|------------------------------------|---|-----|------|------|------|------|------|------|--|--|
| Technical Data: | Unless otherwise specified, all technical data relate to an ambient temperature of 25°C | | | | | | | | | |
| Capacitance Range: | 9.4 µF to 1,980 µF | | | | | | | | | |
| Capacitance Tolerance: | ±5%; ±10%; ±20% | | | | | | | | | |
| Rated Voltage (V _R) | ≤ 85°C: | 6 | 10 | 15 | 20 | 25 | 35 | 50 | | |
| Category Voltage (V _C) | ≤ 125°C: | 4 | 6.7 | 10 | 13.3 | 16.7 | 23.3 | 33.3 | | |
| Surge Voltage (V _S) | ≤ 85°C: | 8 | 13.3 | 20 | 26.7 | 33.3 | 46.7 | 66.7 | | |
| Surge Voltage (V _S) | ≤ 125°C: | 5.3 | 8.7 | 13.3 | 17.8 | 22.2 | 31.1 | 44.5 | | |
| Temperature Range: | -55°C to +125°C | | | | | | | | | |

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RATINGS & PART NUMBER REFERENCE

| 2-STACK | | Parametric Specifications by Rating | | | | Typical RMS Ripple Data by Rating | | | | | | | | | | |
|--------------------|---------------|-------------------------------------|-----------|-----------|------------------------------|-----------------------------------|--------|----------------------------|-----------|------------------------------|----|------------------------------|------|------|------|------|
| AVX P/N | DLA P/N | Case | Cap µF | Volt V | ESR @ 100 kHz +25°C mΩ | DC Leakage (max) µA | | Dissipation Factor (max) % | | 100kHz Ripple Current Rating | | 100kHz Ripple Voltage Rating | | | | |
| | | | | | | +25°C | +125°C | +25°C | +85/125°C | -55°C | A | V | A | V | A | V |
| TC2H667*006□□#00++ | 09009-001*@/+ | 2H | 660 | 6 | 50 | 39.6 | 396 | 495 | 10 | 12 | 12 | 2.45 | 0.98 | 0.12 | 0.11 | 0.05 |
| TC2H447*010□□#00++ | 09009-002*@/+ | 2H | 440 | 10 | 50 | 44 | 440 | 550 | 10 | 12 | 12 | 2.45 | 0.98 | 0.12 | 0.11 | 0.05 |
| TC2H207*015□□#00++ | 09009-003*@/+ | 2H | 200 | 15 | 63 | 30 | 300 | 375 | 10 | 12 | 12 | 2.19 | 0.88 | 0.14 | 0.12 | 0.05 |
| TC2H946*020□□#00++ | 09009-004*@/+ | 2H | 94 | 20 | 75 | 18.8 | 188 | 235 | 8 | 10 | 10 | 2.00 | 1.80 | 0.15 | 0.14 | 0.06 |
| TC2H666*025□□#00++ | 09009-005*@/+ | 2H | 66 | 25 | 85 | 16.5 | 165 | 206 | 8 | 10 | 10 | 1.88 | 1.69 | 0.16 | 0.14 | 0.06 |
| TC2H206*035□□#00++ | 09009-006*@/+ | 2H | 20 | 35 | 200 | 7 | 70 | 88 | 8 | 10 | 10 | 1.22 | 1.10 | 0.24 | 0.22 | 0.10 |
| TC2H945*050□□#00++ | 09009-007*@/+ | 2H | 9.4 | 50 | 200 | 4.7 | 47 | 59 | 6 | 8 | 8 | 1.22 | 1.10 | 0.49 | 0.24 | 0.10 |

| 4-STACK | | Parametric Specifications by Rating | | | | Typical RMS Ripple Data by Rating | | | | | | | | | | |
|--------------------|---------------|-------------------------------------|-----------|-----------|------------------------------|-----------------------------------|--------|----------------------------|-----------|------------------------------|----|------------------------------|------|------|------|------|
| AVX P/N | DLA P/N | Case | Cap µF | Volt V | ESR @ 100 kHz +25°C mΩ | DC Leakage (max) µA | | Dissipation Factor (max) % | | 100kHz Ripple Current Rating | | 100kHz Ripple Voltage Rating | | | | |
| | | | | | | +25°C | +125°C | +25°C | +85/125°C | -55°C | A | V | A | V | A | V |
| TC4H138*006□□#00++ | 09009-008*@/+ | 4H | 1320 | 6 | 25 | 79.2 | 792 | 990 | 10 | 12 | 12 | 4.90 | 4.41 | 0.12 | 0.11 | 0.05 |
| TC4H887*010□□#00++ | 09009-009*@/+ | 4H | 880 | 10 | 25 | 88 | 880 | 1100 | 10 | 12 | 12 | 4.90 | 4.41 | 0.12 | 0.11 | 0.05 |
| TC4H407*015□□#00++ | 09009-010*@/+ | 4H | 400 | 15 | 31 | 60 | 600 | 750 | 10 | 12 | 12 | 4.38 | 3.94 | 0.14 | 0.12 | 0.05 |
| TC4H197*020□□#00++ | 09009-011*@/+ | 4H | 188 | 20 | 38 | 37.6 | 376 | 470 | 10 | 10 | 10 | 4.00 | 3.60 | 0.15 | 0.14 | 0.06 |
| TC4H137*025□□#00++ | 09009-012*@/+ | 4H | 132 | 25 | 43 | 33 | 330 | 413 | 8 | 10 | 10 | 3.74 | 3.36 | 0.16 | 0.14 | 0.06 |
| TC4H406*035□□#00++ | 09009-013*@/+ | 4H | 40 | 35 | 100 | 14 | 140 | 175 | 8 | 10 | 10 | 2.45 | 2.20 | 0.24 | 0.22 | 0.10 |
| TC4H196*050□□#00++ | 09009-014*@/+ | 4H | 18.8 | 50 | 100 | 9.4 | 94 | 118 | 6 | 8 | 8 | 2.45 | 2.20 | 0.24 | 0.22 | 0.10 |

| 6-STACK | | Parametric Specifications by Rating | | | | Typical RMS Ripple Data by Rating | | | | | | | | | | |
|--------------------|---------------|-------------------------------------|-----------|-----------|------------------------------|-----------------------------------|--------|----------------------------|-----------|------------------------------|----|------------------------------|------|------|------|------|
| AVX P/N | DLA P/N | Case | Cap µF | Volt V | ESR @ 100 kHz +25°C mΩ | DC Leakage (max) µA | | Dissipation Factor (max) % | | 100kHz Ripple Current Rating | | 100kHz Ripple Voltage Rating | | | | |
| | | | | | | +25°C | +125°C | +25°C | +85/125°C | -55°C | A | V | A | V | A | V |
| TC6H208*006□□#00++ | 09009-015*@/+ | 6H | 1980 | 6 | 17 | 118.8 | 1188 | 1485 | 10 | 12 | 12 | 7.35 | 6.61 | 0.12 | 0.11 | 0.05 |
| TC6H138*010□□#00++ | 09009-016*@/+ | 6H | 1320 | 10 | 17 | 132 | 1320 | 1650 | 10 | 12 | 12 | 7.35 | 6.61 | 0.12 | 0.11 | 0.05 |
| TC6H607*015□□#00++ | 09009-017*@/+ | 6H | 600 | 15 | 21 | 90 | 900 | 1125 | 10 | 12 | 12 | 6.57 | 5.92 | 0.14 | 0.12 | 0.05 |
| TC6H287*020□□#00++ | 09009-018*@/+ | 6H | 282 | 20 | 25 | 56.4 | 564 | 705 | 8 | 10 | 10 | 6.00 | 5.40 | 0.15 | 0.14 | 0.06 |
| TC6H207*025□□#00++ | 09009-019*@/+ | 6H | 198 | 25 | 28 | 49.5 | 495 | 619 | 8 | 10 | 10 | 5.67 | 5.10 | 0.16 | 0.14 | 0.06 |
| TC6H606*035□□#00++ | 09009-020*@/+ | 6H | 60 | 35 | 67 | 21 | 210 | 263 | 8 | 10 | 10 | 3.67 | 3.31 | 0.24 | 0.22 | 0.10 |
| TC6H286*050□□#00++ | 09009-021*@/+ | 6H | 28.2 | 50 | 67 | 14.1 | 141 | 176 | 6 | 8 | 8 | 3.67 | 3.31 | 0.24 | 0.22 | 0.10 |

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

NOTE: AVX reserves the right to supply a higher voltage rating or tighter tolerance part in the same case size, to the same reliability standards.



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