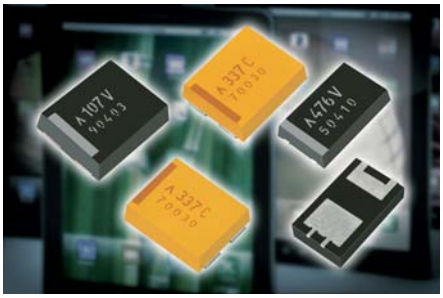
# TCN Series

## Highest CV/cc Conductive Polymer Chip Capacitors Undertab



## FEATURES

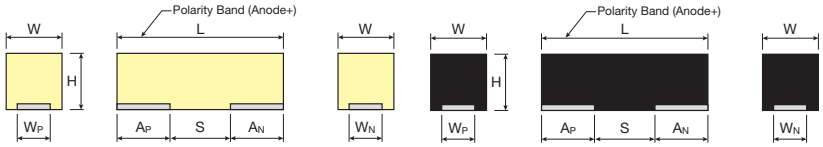
- Highest CV/cc in broad range of low profiles
- Conductive polymer electrode
- Benign failure mode under recommended use conditions
- Lower ESR
- Undertab terminations layout:
  - High Volumetric Efficiency
  - High PCB assembly density
  - High capacitance in smaller dimensions
- 3x reflow 260°C compatible
- 10 case sizes available

LEAD-FREE
LEAD-FREE COMPATIBLE COMPONENT

RoHS COMPLIANT

## APPLICATIONS

- Consumer applications (e.g. mobiles, MP3 etc.)
- Bulk decoupling of SoC (System on chip)

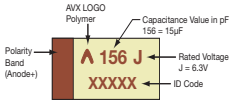


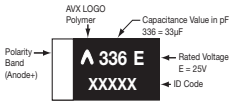

## CASE DIMENSIONS: millimeters (inches)

| Code | EIA Code | EIA Metric | L±0.20 (0.008) | W+0.20 (0.008) -0.10 (0.004) | H max. | $W_P$±0.10 (0.004) | $W_N$±0.10 (0.004) | $A_P$±0.10 (0.004) | $A_N$±0.10 (0.004) | S Min. |
|---|---|---|---|---|---|---|---|---|---|---|
| M | 0805 | 2012-09 | 2.05 (0.081) | 1.30 (0.051) | 0.90 (0.035) | 1.00 (0.039) | 1.00 (0.039) | 0.85 (0.033) | 0.85 (0.033) | 0.40 (0.016) |
| N | 0805 | 2012-10 | 2.05 (0.081) | 1.30 (0.051) | 1.00 (0.039) | 1.00 (0.039) | 1.00 (0.039) | 0.85 (0.033) | 0.85 (0.033) | 0.40 (0.016) |
| O | 1206 | 3216-06 | 3.20 (0.126) | 1.60 (0.063) | 0.60 (0.024) | 1.30 (0.051) | 1.30 (0.051) | 1.15 (0.045) | 1.15 (0.045) | 0.90 (0.035) |
| K | 1206 | 3216-10 | 3.20 (0.126) | 1.60 (0.063) | 1.00 (0.039) | 1.30 (0.051) | 1.30 (0.051) | 1.15 (0.045) | 1.15 (0.045) | 0.90 (0.035) |
| S | 1206 | 3216-12 | 3.20 (0.126) | 1.60 (0.063) | 1.20 (0.047) | 1.30 (0.051) | 1.30 (0.051) | 1.15 (0.045) | 1.15 (0.045) | 0.90 (0.035) |
| L | 1210 | 3528-10 | 3.50 (0.138) | 2.80 (0.110) | 1.00 (0.039) | 2.50 (0.098) | 2.10 (0.083) | 1.15 (0.045) | 1.35 (0.053) | 1.00 (0.039) |
| T | 1210 | 3528-12 | 3.50 (0.138) | 2.80 (0.110) | 1.20 (0.047) | 2.50 (0.098) | 2.10 (0.083) | 1.15 (0.045) | 1.35 (0.053) | 1.00 (0.039) |
| H | 1210 | 3528-15 | 3.50 (0.138) | 2.80 (0.110) | 1.50 (0.059) | 2.50 (0.098) | 2.10 (0.083) | 1.15 (0.045) | 1.35 (0.053) | 1.00 (0.039) |
| X | 2917 | 7343-15 | 7.30 (0.287) | 4.30 (0.169) | 1.50 (0.059) | 3.25 (0.128) | 3.25 (0.128) | 2.00 (0.079) | 3.20 (0.126) | 2.10 (0.083) |
| 4 | 2924 | 7361-20 | 7.30 (0.287) | 6.10 (0.240) | 2.00 (0.079) | 4.75 (0.187) | 4.75 (0.187) | 2.00 (0.079) | 3.20 (0.126) | 2.10 (0.083) |

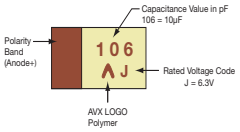
## MARKING

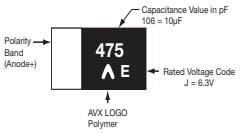
### H, K, L, O, S, T, X CASE



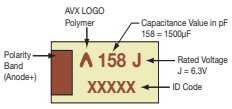



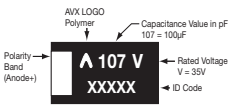

### M, N CASE




### 4 CASE




## HOW TO ORDER

| TCN | L | 157 | M | 006 | R | 0200 | E |
|---|---|---|---|---|---|---|---|
| **Type** | **Case Size** See table above | **Capacitance Code** pF code: 1st two digits represent significant figures, 3rd digit represents multiplier (number of zeros to follow) | **Tolerance** M = ±20% | **Rated DC Voltage** 006 = 6.3Vdc 016 = 16Vdc 020 = 20Vdc 025 = 25Vdc 035 = 35Vdc 050 = 50Vdc | **Packaging** R = Pure Tin 7" Reel S = Pure Tin 13" Reel | **ESR in mΩ** | **Additional Character** E = Black resin |

# TCN Series

## Highest CV/cc Conductive Polymer Chip Capacitors Undertab

## TECHNICAL SPECIFICATIONS

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Technical Data: | | All technical data relate to an ambient temperature of +25°C | | | | | | | | |
| Capacitance Range: | | 1.0 µF to 1500 µF | | | | | | | | |
| Capacitance Tolerance: | | ±20% | | | | | | | | |
| Leakage Current DCL: | | 0.1CV | | | | | | | | |
| Rated Voltage ($V_R$) | ≤ +85°C: | 4 | 6.3 | 10 | 16 | 20 | 25 | 35 | 50 | |
| Category Voltage ($V_C$) | ≤ +105°C: | 3.2 | 5 | 8 | 13 | 16 | 20 | 28 | 40 | |
| Surge Voltage ($V_S$) | ≤ +85°C: | 5.2 | 8 | 13 | 21 | 26 | 33 | 46 | 65 | |
| Surge Voltage ($V_S$) | ≤ +105°C: | 4 | 6 | 10 | 16 | 20 | 25 | 35 | 50 | |
| Temperature Range: | | -55°C to +105°C | | | | | | | | |
| Reliability: | | 1% per 1000 hours at 85°C, $V_R$ with 0.1Ω/V series impedance 60% confidence level | | | | | | | | |

NOTE: Conductive Polymer Capacitors are designed to operate within the limits of the environmental conditions specified for each series. If operated continuously at their maximum temperature and / or humidity limit, or beyond these limits, capacitors may exhibit a parametric shift in capacitance and increases in ESR. These changes may occur earlier if the specified environmental conditions are exceeded. Similarly, their normal operational time period will be significantly extended if their general duty cycle includes operation below maximum temperature within humidity controlled environments. Careful attention should be paid to maximum temperature with associated high humidity environments as well as voltage derating, ripple current and current surges. Please reference the AVX Conductive Polymer Capacitor Guidelines for more information or contact factory for application assistance.

## CAPACITANCE AND RATED VOLTAGE RANGE (LETTER DENOTES CASE SIZE)

| Capacitance | | Rated Voltage DC to 85°C / 0.66DC to 105°C | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| µF | Code | 4V (G) | 6.3V (J) | 10V (A) | 16V (C) | 20V (D) | 25V (E) | 35V (V) | 50V (T) |
| 1.0 | 105 | | | | | | | | N(1500) |
| 4.7 | 475 | | | | | | N(500E) | L(300)<br>T(200E) | |
| 6.8 | 685 | | | | O(500) | | | | |
| 10 | 106 | | | O(500) | O(500) | | K(350)<br>S(350) | T(200E) | |
| 15 | 156 | | O(500) | O(500) | | | | | |
| 22 | 226 | O(500) | O(500) | | | | T(200E) | | |
| 33 | 336 | | | | L(200)<br>T(200E) | | T(250E) | | |
| 47 | 476 | | M(500) | | L(250)<br>T(200)<br>T(150E) | | X(100) | X(150E) | |
| 68 | 686 | | | | | | | | |
| 100 | 107 | | K(200,250)<br>L(200)<br>S(250E) | | | | 3(70)*<br>4(100) | 3(200)*<br>4(100E) | |
| 150 | 157 | | L(200)<br>S(250)<br>T(200E) | | X(100E) | | 4(70) | | |
| 220 | 227 | | H(170)<br>T(200E) | | 4(70) | 4(100) | 4(100E) | | |
| 330 | 337 | | | | 4(70E) | 4(100E) | | | |
| 470 | 477 | | X(50) | | 4(100E) | | | | |
| 1000 | 108 | | X(200)/3(100)*<br>4(55) | | | | | | |
| 1500 | 158 | | 4(55) | | | | | | |

Not recommended for new designs; higher voltage or smaller case size alternatives are available.
Released ratings, (ESR ratings in mOhms in parentheses)
*Codes under developement - subject to change
Note: Voltage ratings are minimum values. AVX reserves the right to supply higher voltage ratings in the same case size, to the same reliability standards.

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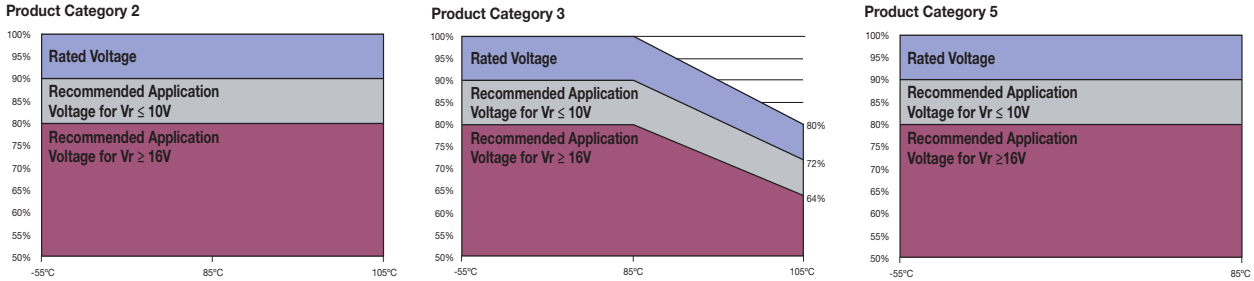
## RATINGS & PART NUMBER REFERENCE

| AVX Part No. | Case Size | Cap (µF) | Rated Voltage (V) | Maximum Operating Temperature (°C) | DCL Max. (µA) | DF Max. (%) | ESR Max. @ 100kHz (mΩ) | 100kHz RMS Current (mA) | | | Product Category | MSL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | 45°C | 85°C | 105°C | | |
| **4 Volt @ 85°C** | | | | | | | | | | | | |
| TCNO226M004#0500 | O | 22 | 4 | 105 | 8.8 | 10 | 500 | 400 | 300 | 200 | 3 | 3 |
| **6.3 Volt @ 85°C** | | | | | | | | | | | | |
| TCNO156M006#0500 | O | 15 | 6.3 | 105 | 9 | 10 | 500 | 400 | 300 | 200 | 3 | 3 |
| TCNO226M006#0500 | O | 22 | 6.3 | 105 | 13.2 | 10 | 500 | 400 | 300 | 200 | 3 | 3 |
| TCNM476M006#0500 | M | 47 | 6.3 | 105 | 28.2 | 10 | 500 | 400 | 300 | 200 | 3 | 3 |
| TCNK107M006#0200 | K | 100 | 6.3 | 105 | 60 | 10 | 200 | 700 | 500 | 300 | 3 | 5 |
| TCNK107M006#0250 | K | 100 | 6.3 | 105 | 60 | 10 | 250 | 600 | 400 | 300 | 3 | 5 |
| TCNL107M006#0200 | L | 100 | 6.3 | 105 | 60 | 10 | 200 | 700 | 500 | 300 | 3 | 5 |
| TCNS107M006#0250E | S | 100 | 6.3 | 105 | 60 | 10 | 250 | 600 | 400 | 300 | 3 | 3 |
| TCNL157M006#0200 | L | 150 | 6.3 | 105 | 90 | 10 | 200 | 700 | 500 | 300 | 3 | 5 |
| TCNS157M006#0250 | S | 150 | 6.3 | 85 | 90 | 10 | 250 | 600 | 400 | – | 5 | 3 |
| TCNT157M006#0200E | T | 150 | 6.3 | 105 | 90 | 10 | 200 | 700 | 500 | 300 | 3 | 4 |
| TCNH227M006#0170 | H | 220 | 6.3 | 105 | 132 | 10 | 170 | 800 | 600 | 400 | 3 | 4 |
| TCNT227M006#0200E | T | 220 | 6.3 | 85 | 132 | 10 | 200 | 700 | 500 | – | 5 | 4 |
| TCNX477M006#0050 | X | 470 | 6.3 | 85 | 282 | 10 | 50 | 1900 | 1300 | – | 5 | 5 |
| TCNX108M006#0200 | X | 1000 | 6.3 | 85 | 600 | 30 | 200 | 900 | 600 | – | 5 | 5 |
| TCN3108M006#0100 | 3 | 1000 | 6.3 | 105 | 600 | 20 | 100 | 1200 | 840 | 480 | 3 | 5 |
| TCN4108M006#0055 | 4 | 1000 | 6.3 | 85 | 600 | 20 | 55 | 1860 | 1302 | – | 5 | 4 |
| TCN4158M006#0055 | 4 | 1500 | 6.3 | 85 | 900 | 20 | 55 | 1860 | 1302 | – | 5 | 4 |
| **10 Volt @ 85°C** | | | | | | | | | | | | |
| TCNO106M010#0500 | O | 10 | 10 | 105 | 10 | 10 | 500 | 400 | 300 | 200 | 3 | 3 |
| TCNO156M010#0500 | O | 15 | 10 | 105 | 15 | 10 | 500 | 400 | 300 | 200 | 3 | 3 |
| **16 Volt @ 85°C** | | | | | | | | | | | | |
| TCNO685M016#0500 | O | 6.8 | 16 | 105 | 10.9 | 10 | 500 | 400 | 300 | 200 | 3 | 3 |
| TCNO106M016#0500 | O | 10 | 16 | 105 | 16 | 10 | 500 | 400 | 300 | 200 | 3 | 3 |
| TCNL336M016#0200 | L | 33 | 16 | 85 | 52.8 | 6 | 200 | 700 | 500 | – | 5 | 5 |
| TCNT336M016#0200E | T | 33 | 16 | 105 | 52.8 | 6 | 200 | 700 | 500 | 300 | 3 | 4 |
| TCNL476M016#0250 | L | 47 | 16 | 85 | 75.2 | 6 | 250 | 600 | 400 | – | 5 | 5 |
| TCNT476M016#0150E | T | 47 | 16 | 105 | 75.2 | 6 | 150 | 800 | 600 | 400 | 3 | 4 |
| TCNT476M016#0200 | T | 47 | 16 | 105 | 75.2 | 6 | 200 | 700 | 500 | 300 | 3 | 4 |
| TCNX157M016#0100E | X | 150 | 16 | 105 | 240 | 6 | 100 | 1300 | 900 | 600 | 3 | 4 |
| TCN4227M016#0070 | 4 | 220 | 16 | 105 | 352 | 20 | 70 | 1650 | 1155 | 660 | 2 | 4 |
| TCN4337M016#0070E | 4 | 330 | 16 | 105 | 528 | 20 | 70 | 1650 | 1155 | 660 | 3 | 4 |
| TCN4477M016#0100E | 4 | 470 | 16 | 85 | 752 | 20 | 100 | 1380 | 966 | – | 5 | 4 |
| **20 Volt @ 85°C** | | | | | | | | | | | | |
| TCN4227M020#0100 | 4 | 220 | 20 | 85 | 440 | 10 | 100 | 1380 | 966 | – | 5 | 4 |
| TCN4337M020#0100E | 4 | 330 | 20 | 85 | 660 | 20 | 100 | 1380 | 966 | – | 5 | 4 |
| **25 Volt @ 85°C** | | | | | | | | | | | | |
| TCNN475M025#0500E | N | 4.7 | 25 | 105 | 11.8 | 10 | 500 | 400 | 300 | 200 | 3 | 3 |
| TCNK106M025#0350 | K | 10 | 25 | 105 | 25 | 10 | 350 | 500 | 400 | 200 | 3 | 5 |
| TCNS106M025#0350 | S | 10 | 25 | 105 | 25 | 10 | 350 | 500 | 400 | 200 | 3 | 5 |
| TCNT226M025#0200E | T | 22 | 25 | 105 | 55 | 6 | 200 | 700 | 500 | 300 | 3 | 4 |
| TCNT336M025#0250E | T | 33 | 25 | 105 | 82.5 | 10 | 250 | 600 | 400 | 300 | 3 | 4 |
| TCNX476M025#0100 | X | 47 | 25 | 105 | 117.5 | 6 | 100 | 1300 | 900 | 600 | 2 | 5 |
| TCN3107M025#0070 | 3 | 100 | 25 | 105 | 250 | 6 | 70 | 1440 | 1008 | 576 | 2 | 5 |
| TCN4107M025#0100 | 4 | 100 | 25 | 105 | 250 | 6 | 100 | 1380 | 966 | 552 | 2 | 4 |
| TCN4157M025#0070 | 4 | 150 | 25 | 105 | 375 | 6 | 70 | 1650 | 1155 | 660 | 2 | 4 |
| TCN4227M025#0100E | 4 | 220 | 25 | 105 | 550 | 10 | 100 | 1380 | 966 | 552 | 3 | 4 |
| **35 Volt @ 85°C** | | | | | | | | | | | | |
| TCNL475M035#0300 | L | 4.7 | 35 | 105 | 16.5 | 6 | 300 | 600 | 400 | 300 | 2 | 5 |
| TCNT475M035#0200E | T | 4.7 | 35 | 105 | 16.5 | 10 | 200 | 700 | 500 | 300 | 3 | 4 |
| TCNT106M035#0200E | T | 10 | 35 | 105 | 35 | 10 | 200 | 700 | 500 | 300 | 3 | 4 |
| TCNX476M035#0150E | X | 47 | 35 | 105 | 164.5 | 10 | 150 | 1100 | 800 | 500 | 3 | 4 |
| TCN3107M035#0200 | 3 | 100 | 35 | 85 | 350 | 10 | 200 | 850 | 595 | - | 5 | 5 |
| TCN4107M035#0100E | 4 | 100 | 35 | 105 | 350 | 10 | 100 | 1380 | 966 | 552 | 2 | 3 |
| **50 Volt @ 85°C** | | | | | | | | | | | | |
| TCNN105M050#1500 | N | 1 | 50 | 105 | 5 | 10 | 1500 | 200 | 100 | 100 | 3 | 3 |

Moisture Sensitivity Level (MSL) is defined according to J-STD-020.
All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5RMS with DC bias of 2.2 volts. DCL is measured at rated voltage after 5 minutes.
ESR allowed to move up to 1.25 times catalog limit post mounting.
For typical weight and composition see page 270.
**NOTE: AVX reserves the right to supply higher voltage ratings in the same case size to the same reliability standards.**

## RECOMMENDED DERATING FACTOR

Voltage and temperature derating as percentage of Vr




## PRODUCT CATEGORY 2, 3 (TEMPERATURE RANGE -55°C TO +105°C)

| TEST | Condition | Characteristics | |
|---|---|---|---|
| **Endurance** | Apply rated voltage (Ur) at 85°C for 2000 hours through a circuit impedance of ≤0.1Ω/V (all CATEGORIES). And / or apply rated voltage (Ur) (CATEGORY 2) or 0.8x rated voltage (CATEGORY 3) at 105°C for 2000 hours through a circuit impedance of ≤0.1Ω/V. Always stabilize at room temperature for 1-2 hours before measuring. | Visual examination | no visible damage |
| | | DCL | 1.25 x initial limit |
| | | ΔC/C | within ±20% of initial value |
| | | DF | 1.5 x initial limit |
| | | ESR | 2 x initial limit |
| **Storage Life** | Store at 105°C, no voltage applied, for 2000 hours. Stabilize at room temperature for 1-2 hours before measuring. | Visual examination | no visible damage |
| | | DCL ($V_R \leq 75V$) | 1.25 x initial limit |
| | | DCL ($V_R > 75V$) | 2 x initial limit |
| | | ΔC/C | within ±20% of initial value |
| | | DF | 1.5 x initial limit |
| | | ESR | 2 x initial limit |
| **Humidity** | Store at 65°C and 95% relative humidity for 500 hours, with no applied voltage. Stabilize at room temperature and humidity for 1-2 hours before measuring. | Visual examination | no visible damage |
| | | DCL | 3 x initial limit |
| | | ΔC/C | within +30/-20% of initial value |
| | | DF | 1.5 x initial limit |
| | | ESR | 2 x initial limit |
| **Temperature Stability** | Step 1: Temperature °C +20, Duration (min) 15<br>Step 2: -55, 15<br>Step 3: +20, 15<br>Step 4: +85, 15<br>Step 5: +105, 15<br>Step 6: +20, 15 | | +20°C / -55°C / +20°C / +85°C / +105°C / +20°C |
| | | DCL | IL* / n/a / IL* / 10 x IL* / 12.5 x IL* / IL* |
| | | ΔC/C | n/a / +0/-20% / ±5% / +20/-0% / +30/-0% / ±5% |
| | | DF | IL* / 1.5 x IL* / IL* / 1.5 x IL* / 2 x IL* / IL* |
| **Surge Voltage** | Apply 1.3x rated voltage (Ur) at 105°C for CATEGORY 2, or apply 1.3x 0.8x rated voltage (Ur) at 105°C for CATEGORY 3 for 1000 cycles of duration 6 min (30 sec charge, 5 min 30 sec discharge) through a charge / discharge resistance of 1000Ω | Visual examination | no visible damage |
| | | DCL | initial limit |
| | | ΔC/C | within +10/-20% of initial value for Vr ≤ 10V<br>within +20/-30% of initial value for Vr ≥ 16V |
| | | DF | 1.25 x initial limit |
| **Mechanical Shock** | MIL-STD-202, Method 213, Condition C | Visual examination | no visible damage |
| | | DCL | initial limit |
| | | ΔC/C | within ±5% of initial value |
| | | DF | initial limit |
| | | ESR | initial limit |
| **Vibration** | MIL-STD-202, Method 204, Condition D | Visual examination | no visible damage |
| | | DCL | initial limit |
| | | ΔC/C | within ±5% of initial value |
| | | DF | initial limit |
| | | ESR | initial limit |

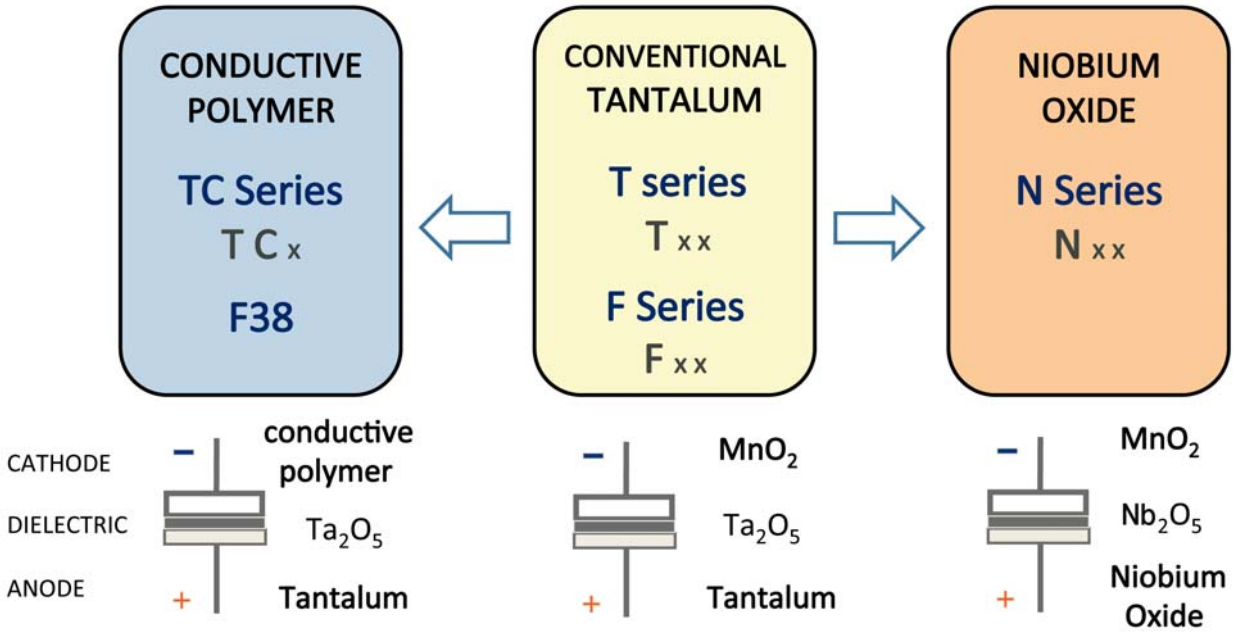
*Initial Limit  Initial measurement max. 1hr after the removal from dry pack or after pretreatment at 85°C for 24 hours.

### PRODUCT CATEGORY 5 (TEMPERATURE RANGE -55°C TO +85°C)

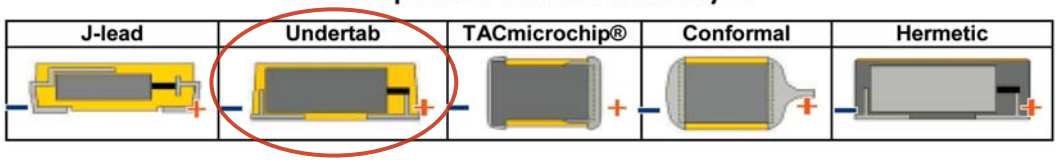
<table>
<tr><th>TEST</th><th>Condition</th><th colspan="6">Characteristics</th></tr>
<tr><td rowspan="5">Endurance</td><td rowspan="5">Apply rated voltage (Ur) at 85ºC for 2000 hours through a circuit impedance of ≤0.1Ω/V. Stabilize at room temperature for 1-2 hours before measuring.</td><td colspan="6">Visual examination</td><td>no visible damage</td></tr>
<tr><td colspan="6">DCL</td><td>1.25 x initial limit</td></tr>
<tr><td colspan="6">ΔC/C</td><td>within ±20% of initial value</td></tr>
<tr><td colspan="6">DF</td><td>1.5 x initial limit</td></tr>
<tr><td colspan="6">ESR</td><td>2 x initial limit</td></tr>
<tr><td rowspan="5">Storage Life</td><td rowspan="5">Store at 85ºC, no voltage applied, for 2000 hours. Stabilize at room temperature for 1-2 hours before measuring.</td><td colspan="6">Visual examination</td><td>no visible damage</td></tr>
<tr><td colspan="6">DCL</td><td>1.25 x initial limit</td></tr>
<tr><td colspan="6">ΔC/C</td><td>within ±20% of initial value</td></tr>
<tr><td colspan="6">DF</td><td>1.5 x initial limit</td></tr>
<tr><td colspan="6">ESR</td><td>2 x initial limit</td></tr>
<tr><td rowspan="5">Humidity</td><td rowspan="5">Store at 65ºC and 95% relative humidity for 500 hours, with no applied voltage. Stabilize at room temperature and humidity for 1-2 hours before measuring.</td><td colspan="6">Visual examination</td><td>no visible damage</td></tr>
<tr><td colspan="6">DCL</td><td>5 x initial limit</td></tr>
<tr><td colspan="6">ΔC/C</td><td>within +40/-20% of initial value</td></tr>
<tr><td colspan="6">DF</td><td>1.5 x initial limit</td></tr>
<tr><td colspan="6">ESR</td><td>2 x initial limit</td></tr>
<tr><td rowspan="6">Temperature Stability</td><td colspan="3"><table><tr><th>Step</th><th>Temperature°C</th><th>Duration(min)</th></tr><tr><td>1</td><td>+20</td><td>15</td></tr><tr><td>2</td><td>-55</td><td>15</td></tr><tr><td>3</td><td>+20</td><td>15</td></tr><tr><td>4</td><td>+85</td><td>15</td></tr><tr><td>5</td><td>+20</td><td>15</td></tr></table></td><td></td><td>+20ºC</td><td>-55ºC</td><td>+20ºC</td><td>+85ºC</td><td>+20ºC</td></tr>
<tr><td colspan="2"></td><td>DCL</td><td>IL*</td><td>n/a</td><td>IL*</td><td>10 x IL*</td><td>IL*</td></tr>
<tr><td colspan="2"></td><td>ΔC/C</td><td>n/a</td><td>+0/-20%</td><td>±5%</td><td>+20/-0%</td><td>±5%</td></tr>
<tr><td colspan="2"></td><td>DF</td><td>IL*</td><td>1.5 x IL*</td><td>IL*</td><td>1.5 x IL*</td><td>IL*</td></tr>
<tr><td rowspan="4">Surge Voltage</td><td rowspan="4">Apply 1.3x rated voltage (Ur) at 85ºC for 1000 cycles of duration 6 min (30 sec charge, 5 min 30 sec discharge) through a charge / discharge resistance of 1000Ω</td><td colspan="6">Visual examination</td><td>no visible damage</td></tr>
<tr><td colspan="6">DCL</td><td>initial limit</td></tr>
<tr><td colspan="6">ΔC/C</td><td>within +10/-20% of initial value for Vr ≤ 10V<br>within +20/-30% of initial value for Vr ≥ 16V</td></tr>
<tr><td colspan="6">DF</td><td>1.25 x initial limit</td></tr>
<tr><td rowspan="5">Mechanical Shock</td><td rowspan="5">MIL-STD-202, Method 213, Condition C</td><td colspan="6">Visual examination</td><td>no visible damage</td></tr>
<tr><td colspan="6">DCL</td><td>initial limit</td></tr>
<tr><td colspan="6">ΔC/C</td><td>within ±5% of initial value</td></tr>
<tr><td colspan="6">DF</td><td>initial limit</td></tr>
<tr><td colspan="6">ESR</td><td>initial limit</td></tr>
<tr><td rowspan="5">Vibration</td><td rowspan="5">MIL-STD-202, Method 204, Condition D</td><td colspan="6">Visual examination</td><td>no visible damage</td></tr>
<tr><td colspan="6">DCL</td><td>initial limit</td></tr>
<tr><td colspan="6">ΔC/C</td><td>within ±5% of initial value</td></tr>
<tr><td colspan="6">DF</td><td>initial limit</td></tr>
<tr><td colspan="6">ESR</td><td>initial limit</td></tr>
</table>

*Initial Limit  Initial measurement max. 1hr after the removal from dry pack or after pretreatment at 85°C for 24 hours.

### AVX SOLID ELECTROLYTIC CAPACITOR ROADMAP




### Five Capacitor Construction Styles




### SERIES LINE UP: CONDUCTIVE POLYMER