



## Standard and Low Profile Tantalum Microchip Capacitors



### FEATURES

- The world's smallest surface mount tantalum capacitor
- CV range: 0.10-150µF / 2-25V
- 11 case sizes available, standard and low profile

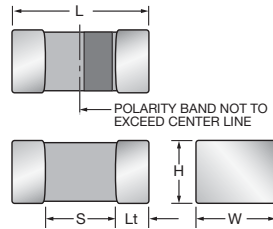


LEAD-FREE

LEAD-FREE COMPATIBLE COMPONENT

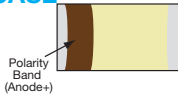
### APPLICATIONS

- Hearing Aids, Non-life support medical, Long life miniature designs
- Industrial and hand-held and wearable applications



### MARKING

A, B, H, I, J, K, L, R, T, U, V CASE



### STANDARD CASE DIMENSIONS: millimeters (inches)

| Code | EIA Code | EIA Metric | L+0.20 (0.008)<br>-0.00 (0.000) | W+0.15 (0.006)<br>-0.00 (0.000)                    | H+0.15 (0.006)<br>-0.00 (0.000)                    | Termination Spacing(S) | Minimum Termination Length (Lt) |
|------|----------|------------|---------------------------------|--|--|------------------------|---------------------------------|
| A    | 1206     | 3216-18    | 3.20 ± 0.20<br>(0.126 ± 0.008)  | 1.60 ± 0.20<br>(0.063 ± 0.008)                     | 1.60 ± 0.20<br>(0.063 ± 0.008)                     | 1.80 (0.071) min       | 0.15 (0.006)                    |
| B    | 1210     | 3528-15    | 3.50 ± 0.20<br>(0.138 ± 0.008)  | 2.80 +0.20<br>-0.10<br>+0.008<br>-0.004<br>(0.110) | 1.50 (0.059) max                                   | 2.00 (0.079) min       | 0.15 (0.006)                    |
| K    | 0402     | 1005-07    | 1.00 (0.039)                    | 0.50 +0.20<br>-0.00<br>+0.008<br>-0.000<br>(0.020) | 0.50 +0.20<br>-0.00<br>+0.008<br>-0.000<br>(0.020) | 0.40 (0.016) min       | 0.10 (0.004)                    |
| L    | 0603     | 1608-10    | 1.60 (0.063)                    | 0.85 (0.033)                                       | 0.85 (0.033)                                       | 0.55 (0.022) min       | 0.15 (0.006)                    |
| R    | 0805     | 2012-15    | 2.00 (0.079)                    | 1.35 (0.053)                                       | 1.35 (0.053)                                       | 0.70 (0.028) min       | 0.15 (0.006)                    |

### LOW PROFILE CASE DIMENSIONS: millimeters (inches)

| Code | EIA Code | EIA Metric | L+0.20 (0.008)<br>-0.00 (0.000) | W+0.15 (0.006)<br>-0.00 (0.000)                    | H max        | Termination Spacing(S) | Minimum Termination Length (Lt) |
|------|----------|------------|---------------------------------|--|--------------|------------------------|---------------------------------|
| H    | 0805     | 2012-10    | 2.00 (0.079)                    | 1.35 (0.053)                                       | 1.00 (0.039) | 0.70 (0.028) min       | 0.15 (0.006)                    |
| I    | 1206     | 3216-05    | 3.20±0.20<br>(0.126±0.008)      | 1.60±0.20<br>(0.063±0.008)                         | 0.50 (0.020) | 1.80 (0.071) min.      | 0.15 (0.006)                    |
| J    | 0603     | 1608-08    | 1.60 (0.063)                    | 0.85 (0.033)                                       | 0.75 (0.030) | 0.55 (0.022) min       | 0.15 (0.006)                    |
| T    | 1210     | 3528-12    | 3.50 ± 0.20<br>(0.138 ± 0.008)  | 2.80 +0.20<br>-0.10<br>+0.008<br>-0.004<br>(0.110) | 1.20 (0.047) | 2.00 (0.079) min       | 0.15 (0.006)                    |
| U    | 0805     | 2012-06    | 2.00 (0.079)                    | 1.35 (0.053)                                       | 0.60 (0.024) | 0.70 (0.028) min       | 0.15 (0.006)                    |
| V    | 1206     | 3216-08    | 3.20 ± 0.20<br>(0.126 ± 0.008)  | 1.60 ± 0.20<br>(0.063 ± 0.008)                     | 0.75 (0.030) | 1.80 (0.071) min       | 0.15 (0.006)                    |

### HOW TO ORDER

|               |                 |  |                  |  |  |   |
|---------------|-----------------|--|------------------|--|--|---|
| <b>TAC</b>    | <b>L</b>        | <b>226</b>   | <b>*</b>         | <b>004</b>   | <b>R</b>   | <b>TA</b>   |
| Type          | Case Size       | Capacitance Code   | Tolerance        | Rated DC Voltage   | Packaging  | Alternative characters may be used for special requirements |
| TACmicrochip® | See table above | pF code: 1st two digits represent significant figures, 3rd digit represents multiplier (number of zeros to follow) | K=±10%<br>M=±20% | 002=2Vdc<br>003=3Vdc<br>004=4Vdc<br>006=6.3Vdc<br>010=10Vdc<br>016=16Vdc<br>020=20Vdc<br>025=25Vdc | R, P = 7" Standard Tin Termination Plastic Tape<br>X, Q = 4 1/4" Standard Tin Termination Plastic Tape<br>A, M = 7" Gold Termination Plastic Tape<br>F, N = 4 1/4" Gold Termination Plastic Tape |   |

### TECHNICAL SPECIFICATIONS

|                                    |  |     |     |     |     |    |    |    |    |
|------------------------------------|--|-----|-----|-----|-----|----|----|----|----|
| Technical Data:                    | All technical data relate to an ambient temperature of +25°C                                 |     |     |     |     |    |    |    |    |
| Capacitance Range:                 | 0.10 µF to 150 µF  |     |     |     |     |    |    |    |    |
| Capacitance Tolerance:             | ±10%; ±20%   |     |     |     |     |    |    |    |    |
| Leakage Current DCL:               | 0.01CV or 0.5µA whichever is the greater   |     |     |     |     |    |    |    |    |
| Rated Voltage (V <sub>R</sub> )    | ≤ +85°C:   | 2   | 3   | 4   | 6.3 | 10 | 16 | 20 | 25 |
| Category Voltage (V <sub>C</sub> ) | ≤ +125°C:  | 1.3 | 2   | 2.7 | 4   | 7  | 10 | 13 | 17 |
| Surge Voltage (V <sub>S</sub> )    | ≤ +85°C:   | 2.7 | 3.9 | 5.2 | 8   | 13 | 20 | 26 | 32 |
| Surge Voltage (V <sub>S</sub> )    | ≤ +125°C:  | 1.7 | 2.6 | 3.2 | 5   | 8  | 12 | 16 | 20 |
| Temperature Range:                 | -55°C to +125°C  |     |     |     |     |    |    |    |    |
| Reliability:                       | 1% per 1000 hours at 85°C, V <sub>R</sub> with 0.1Ω/V series impedance, 60% confidence level |     |     |     |     |    |    |    |    |
| Termination Finish:                | Tin Plating over Nickel (standard), Gold Plating over Nickel option available upon request   |     |     |     |     |    |    |    |    |

## Standard and Low Profile Tantalum Microchip Capacitors

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

| Capacitance |      | Voltage Rating DC (V <sub>R</sub> ) at 85°C |      |      |      |       |     |     |     |
|-------------|------|---|------|------|------|-------|-----|-----|-----|
| µF          | Code | 2.0V  | 3.0V | 4.0V | 6.3V | 10V   | 16V | 20V | 25V |
| 0.10        | 104  |   |      |      |      |       | K   |     |     |
| 0.15        | 154  |   |      |      |      | K     | K   |     |     |
| 0.22        | 224  |   |      |      |      | K     | K   | K   |     |
| 0.33        | 334  |   |      |      |      | K     | K   |     |     |
| 0.47        | 474  |   |      |      |      | K/L   | L   |     |     |
| 0.68        | 684  |   |      |      |      | K/L   | L   |     |     |
| 1.0         | 105  |   |      |      | K/L  | K/L/R | L   |     | R   |
| 1.5         | 155  |   |      | L    | L    | L     | L   |     |     |
| 2.2         | 225  |   | K/L  | L    | K/L  | L     | L   |     |     |
| 3.3         | 335  | K/L   | K/L  | L    | L    | L/R   |     | R   |     |
| 4.7         | 475  | K/L   | K/L  | L    | L    | L/R   |     | R   |     |
| 6.8         | 685  | K/L   | L    | L    | L/R  | L/R   |     | R   |     |
| 10          | 106  | K/L   | L    | L/R  | L/R  | L/R   | R   |     |     |
| 15          | 156  |   | R    | L/R  | L/R  | R     |     |     |     |
| 22          | 226  | R   | L/R  | L/R  | R    | R     |     |     |     |
| 33          | 336  | R   | R    | R    | R    | A/R   |     |     |     |
| 47          | 476  | R   | R    | R    | A/R  | B     |     |     |     |
| 68          | 686  | R   | A/R  | A    |      |       |     |     |     |
| 100         | 107  |   | A/R  | A/R  | A    |       |     |     |     |
| 150         | 157  | A   |      |      |      |       |     |     |     |
| 220         | 227  |   |      |      |      |       |     |     |     |

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

| Capacitance |      | Voltage Rating DC (V <sub>R</sub> ) at 85°C |      |      |                  |     |     |
|-------------|------|---|------|------|------------------|-----|-----|
| µF          | Code | 2.0V  | 3.0V | 4.0V | 6.3V             | 10V | 16V |
| 1.0         | 105  |   |      |      |                  |     | U   |
| 1.5         | 155  |   |      |      |                  |     |     |
| 2.2         | 225  |   |      |      |                  | U   |     |
| 3.3         | 335  |   |      |      | U                |     |     |
| 4.7         | 475  |   |      | U    |                  |     |     |
| 6.8         | 685  |   |      |      |                  |     |     |
| 10          | 106  | U   |      | J    | <sup>(M)</sup> H | H/V |     |
| 15          | 156  |   |      |      | H                | V   |     |
| 22          | 226  |   |      |      | H                |     |     |
| 33          | 336  |   |      | H    |                  |     |     |
| 47          | 476  |   | H    |      |                  | T   |     |
| 68          | 686  |   |      |      |                  | T   |     |
| 100         | 107  |   |      |      |                  | T   |     |

Released ratings <sup>(M tolerance only)</sup>

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.

### RATINGS & PART NUMBER REFERENCE

| AVX Part No.           | Case Size | Capacitance (µF) | Rated Voltage (V) | Rated Temperature (°C) | Category Voltage (V) | Category Temperature (°C) | DCL Max. (µA) | DF Max. (%) | ESR Max. @ 100kHz (Ω) | 100kHz RMS Current (mA) |      |       | Product Category | MSL |
|------------------------|-----------|------------------|-------------------|------------------------|----------------------|---------------------------|---------------|-------------|-----------------------|-------------------------|------|-------|------------------|-----|
|                        |           |                  |                   |                        |                      |                           |               |             |                       | 25°C                    | 85°C | 125°C |                  |     |
| <b>2 Volt @ 85°C</b>   |           |                  |                   |                        |                      |                           |               |             |                       |                         |      |       |                  |     |
| TACK335*002#TA         | K         | 3.3              | 2                 | 85                     | 1.3                  | 125                       | 0.5           | 8           | 15                    | 32                      | 28   | 13    | 3                | 1   |
| TACL335*002#TA         | L         | 3.3              | 2                 | 85                     | 1.3                  | 125                       | 0.5           | 6           | 7.5                   | 58                      | 52   | 23    | 2                | 1   |
| TACK475*002#TA         | K         | 4.7              | 2                 | 85                     | 1.3                  | 125                       | 0.5           | 12          | 15                    | 32                      | 28   | 13    | 3                | 1   |
| TACL475*002#TA         | L         | 4.7              | 2                 | 85                     | 1.3                  | 125                       | 0.5           | 6           | 7.5                   | 58                      | 52   | 23    | 1                | 1   |
| TACK685*002#TA         | K         | 6.8              | 2                 | 85                     | 1.3                  | 125                       | 0.5           | 20          | 15                    | 32                      | 28   | 13    | 3                | 1   |
| TACL685*002#TA         | L         | 6.8              | 2                 | 85                     | 1.3                  | 125                       | 0.5           | 6           | 7.5                   | 58                      | 52   | 23    | 2                | 1   |
| TACK106*002#TA         | K         | 10               | 2                 | 85                     | 1.3                  | 125                       | 0.5           | 15          | 15                    | 32                      | 28   | 13    | 3                | 1   |
| TACL106*002#TA         | L         | 10               | 2                 | 85                     | 1.3                  | 125                       | 0.5           | 10          | 7.5                   | 58                      | 52   | 23    | 3                | 1   |
| TACU106*002#TA         | U         | 10               | 2                 | 85                     | 1.3                  | 125                       | 0.5           | 8           | 5                     | 84                      | 75   | 33    | 1                | 1   |
| TACR226*002#TA         | R         | 22               | 2                 | 85                     | 1.3                  | 125                       | 0.5           | 8           | 5                     | 95                      | 85   | 38    | 1                | 1   |
| TACR336*002#TA         | R         | 33               | 2                 | 85                     | 1.3                  | 125                       | 0.7           | 10          | 5                     | 95                      | 85   | 38    | 2                | 1   |
| TACR476*002#TA         | R         | 47               | 2                 | 85                     | 1.3                  | 125                       | 0.9           | 10          | 5                     | 95                      | 85   | 38    | 2                | 1   |
| TACR686*002#TA         | R         | 68               | 2                 | 85                     | 1.3                  | 125                       | 1.4           | 14          | 5                     | 95                      | 85   | 38    | 2                | 1   |
| TACA157*002#TA         | A         | 150              | 2                 | 85                     | 1.3                  | 125                       | 3             | 20          | 1                     | 200                     | 180  | 80    | 2                | 1   |
| <b>3 Volt @ 85°C</b>   |           |                  |                   |                        |                      |                           |               |             |                       |                         |      |       |                  |     |
| TACK225*003#TA         | K         | 2.2              | 3                 | 85                     | 2                    | 125                       | 0.5           | 6           | 15                    | 32                      | 28   | 13    | 2                | 1   |
| TACL225*003#TA         | L         | 2.2              | 3                 | 85                     | 2                    | 125                       | 0.5           | 6           | 7.5                   | 58                      | 52   | 23    | 1                | 1   |
| TACK335*003#TA         | K         | 3.3              | 3                 | 85                     | 2                    | 125                       | 0.5           | 8           | 15                    | 32                      | 28   | 13    | 3                | 1   |
| TACL335*003#TA         | L         | 3.3              | 3                 | 85                     | 2                    | 125                       | 0.5           | 6           | 7.5                   | 58                      | 52   | 23    | 2                | 1   |
| TACK475*003#TA         | K         | 4.7              | 3                 | 85                     | 2                    | 125                       | 0.5           | 12          | 15                    | 32                      | 28   | 13    | 3                | 1   |
| TACL475*003#TA         | L         | 4.7              | 3                 | 85                     | 2                    | 125                       | 0.5           | 6           | 7.5                   | 58                      | 52   | 23    | 1                | 1   |
| TACL685*003#TA         | L         | 6.8              | 3                 | 85                     | 2                    | 125                       | 0.5           | 6           | 7.5                   | 58                      | 52   | 23    | 2                | 1   |
| TACL106*003#TA         | L         | 10               | 3                 | 85                     | 2                    | 125                       | 0.5           | 10          | 7.5                   | 58                      | 52   | 23    | 3                | 1   |
| TACR156*003#TA         | R         | 15               | 3                 | 85                     | 2                    | 125                       | 0.5           | 8           | 5                     | 95                      | 85   | 38    | 1                | 1   |
| TACL226*003#TA         | L         | 22               | 3                 | 85                     | 2                    | 125                       | 0.7           | 20          | 7.5                   | 58                      | 52   | 23    | 3                | 1   |
| TACR226*003#TA         | R         | 22               | 3                 | 85                     | 2                    | 125                       | 0.7           | 8           | 5                     | 95                      | 85   | 38    | 1                | 1   |
| TACR336*003#TA         | R         | 33               | 3                 | 85                     | 2                    | 125                       | 1             | 10          | 5                     | 95                      | 85   | 38    | 2                | 1   |
| TACH476*003#TA         | H         | 47               | 3                 | 85                     | 2                    | 125                       | 1.4           | 20          | 5                     | 89                      | 80   | 36    | 3                | 1   |
| TACR476*003#TA         | R         | 47               | 3                 | 85                     | 2                    | 125                       | 1.5           | 10          | 5                     | 95                      | 85   | 38    | 2                | 1   |
| TACA686*003#TA         | A         | 68               | 3                 | 85                     | 2                    | 125                       | 2             | 15          | 2                     | 141                     | 127  | 57    | 1                | 1   |
| TACR686*003#TA         | R         | 68               | 3                 | 85                     | 2                    | 125                       | 2             | 14          | 5                     | 95                      | 85   | 38    | 3                | 1   |
| TACA107*003#TA         | A         | 100              | 3                 | 85                     | 2                    | 125                       | 3             | 15          | 1                     | 200                     | 180  | 80    | 2                | 1   |
| TACR107*003#TA         | R         | 100              | 3                 | 85                     | 2                    | 125                       | 3             | 30          | 5                     | 95                      | 85   | 38    | 3                | 1   |
| <b>4 Volt @ 85°C</b>   |           |                  |                   |                        |                      |                           |               |             |                       |                         |      |       |                  |     |
| TACL155*004#TA         | L         | 1.5              | 4                 | 85                     | 2.7                  | 125                       | 0.5           | 6           | 7.5                   | 58                      | 52   | 23    | 1                | 1   |
| TACL225*004#TA         | L         | 2.2              | 4                 | 85                     | 2.7                  | 125                       | 0.5           | 6           | 7.5                   | 58                      | 52   | 23    | 1                | 1   |
| TACL335*004#TA         | L         | 3.3              | 4                 | 85                     | 2.7                  | 125                       | 0.5           | 6           | 7.5                   | 58                      | 52   | 23    | 2                | 1   |
| TACL475*004#TA         | L         | 4.7              | 4                 | 85                     | 2.7                  | 125                       | 0.5           | 6           | 7.5                   | 58                      | 52   | 23    | 1                | 1   |
| TACU475*004#TA         | U         | 4.7              | 4                 | 85                     | 2.7                  | 125                       | 0.5           | 8           | 5                     | 84                      | 75   | 33    | 1                | 1   |
| TACL685*004#TA         | L         | 6.8              | 4                 | 85                     | 2.7                  | 125                       | 0.5           | 8           | 7.5                   | 58                      | 52   | 23    | 2                | 1   |
| TACJ106*004#TA         | J         | 10               | 4                 | 85                     | 2.7                  | 125                       | 0.5           | 20          | 7.5                   | 52                      | 46   | 21    | 3                | 1   |
| TACL106*004#TA         | L         | 10               | 4                 | 85                     | 2.7                  | 125                       | 0.5           | 10          | 7.5                   | 58                      | 52   | 23    | 2                | 1   |
| TACR106*004#TA         | R         | 10               | 4                 | 85                     | 2.7                  | 125                       | 0.5           | 8           | 5                     | 95                      | 85   | 38    | 1                | 1   |
| TACL156*004#TA         | L         | 15               | 4                 | 85                     | 2.7                  | 125                       | 0.6           | 20          | 7.5                   | 58                      | 52   | 23    | 3                | 1   |
| TACR156*004#TA         | R         | 15               | 4                 | 85                     | 2.7                  | 125                       | 0.6           | 8           | 5                     | 95                      | 85   | 38    | 1                | 1   |
| TACL226*004#TA         | L         | 22               | 4                 | 85                     | 2.7                  | 125                       | 0.9           | 20          | 7.5                   | 58                      | 52   | 23    | 3                | 1   |
| TACR226*004#TA         | R         | 22               | 4                 | 85                     | 2.7                  | 125                       | 0.9           | 8           | 5                     | 95                      | 85   | 38    | 1                | 1   |
| TACH336*004#TA         | H         | 33               | 4                 | 85                     | 2.7                  | 125                       | 1.3           | 14          | 5                     | 89                      | 80   | 36    | 2                | 1   |
| TACR336*004#TA         | R         | 33               | 4                 | 85                     | 2.7                  | 125                       | 1.3           | 10          | 5                     | 95                      | 85   | 38    | 2                | 1   |
| TACR476*004#TA         | R         | 47               | 4                 | 85                     | 2.7                  | 125                       | 1.9           | 14          | 5                     | 95                      | 85   | 38    | 3                | 1   |
| TACA686*004#TA         | A         | 68               | 4                 | 85                     | 2.7                  | 125                       | 2.7           | 15          | 1                     | 200                     | 180  | 80    | 1                | 1   |
| TACA107*004#TA         | A         | 100              | 4                 | 85                     | 2.7                  | 125                       | 4             | 20          | 1                     | 200                     | 180  | 80    | 2                | 1   |
| TACR107*004#TA         | R         | 100              | 4                 | 85                     | 2.7                  | 125                       | 4             | 30          | 5                     | 95                      | 85   | 38    | 3                | 1   |
| <b>6.3 Volt @ 85°C</b> |           |                  |                   |                        |                      |                           |               |             |                       |                         |      |       |                  |     |
| TACK105*006#TA         | K         | 1                | 6.3               | 85                     | 4                    | 125                       | 0.5           | 6           | 15                    | 32                      | 28   | 13    | 2                | 1   |
| TACL105*006#TA         | L         | 1                | 6.3               | 85                     | 4                    | 125                       | 0.5           | 6           | 7.5                   | 58                      | 52   | 23    | 1                | 1   |
| TACL155*006#TA         | L         | 1.5              | 6.3               | 85                     | 4                    | 125                       | 0.5           | 6           | 7.5                   | 58                      | 52   | 23    | 1                | 1   |
| TACK225*006#TA         | K         | 2.2              | 6.3               | 85                     | 4                    | 125                       | 0.5           | 8           | 15                    | 32                      | 28   | 13    | 3                | 1   |
| TACL225*006#TA         | L         | 2.2              | 6.3               | 85                     | 4                    | 125                       | 0.5           | 6           | 7.5                   | 58                      | 52   | 23    | 1                | 1   |
| TACL335*006#TA         | L         | 3.3              | 6.3               | 85                     | 4                    | 125                       | 0.5           | 6           | 7.5                   | 58                      | 52   | 23    | 2                | 1   |
| TACU335*006#TA         | U         | 3.3              | 6.3               | 85                     | 4                    | 125                       | 0.5           | 8           | 5                     | 84                      | 75   | 33    | 1                | 1   |
| TACL475*006#TA         | L         | 4.7              | 6.3               | 85                     | 4                    | 125                       | 0.5           | 8           | 7.5                   | 58                      | 52   | 23    | 2                | 1   |
| TACL685*006#TA         | L         | 6.8              | 6.3               | 85                     | 4                    | 125                       | 0.5           | 10          | 7.5                   | 58                      | 52   | 23    | 2                | 1   |
| TACR685*006#TA         | R         | 6.8              | 6.3               | 85                     | 4                    | 125                       | 0.5           | 8           | 5                     | 95                      | 85   | 38    | 1                | 1   |
| TACL106M006#TA         | I         | 10               | 6.3               | 85                     | 4                    | 125                       | 0.6           | 20          | 5                     | 84                      | 75   | 33    | 2                | 1   |
| TACL106*006#TA         | L         | 10               | 6.3               | 85                     | 4                    | 125                       | 0.6           | 10          | 6                     | 65                      | 58   | 26    | 2                | 1   |
| TACR106*006#TA         | R         | 10               | 6.3               | 85                     | 4                    | 125                       | 0.6           | 8           | 5                     | 95                      | 85   | 38    | 1                | 1   |
| TACH156*006#TA         | H         | 15               | 6.3               | 85                     | 4                    | 125                       | 0.9           | 8           | 5                     | 89                      | 80   | 36    | 3                | 1   |
| TACL156*006#TA         | L         | 15               | 6.3               | 85                     | 4                    | 125                       | 0.9           | 20          | 7.5                   | 58                      | 52   | 23    | 3                | 1   |
| TACR156*006#TA         | R         | 15               | 6.3               | 85                     | 4                    | 125                       | 0.9           | 8           | 5                     | 95                      | 85   | 38    | 1                | 1   |

### RATINGS & PART NUMBER REFERENCE

| AVX Part No.          | Case Size | Capacitance (µF) | Rated Voltage (V) | Rated Temperature (°C) | Category Voltage (V) | Category Temperature (°C) | DCL Max. (µA) | DF Max. (%) | ESR Max. @ 100kHz (Ω) | 100kHz RMS Current (mA) |      |       | Product Category | MSL |
|-----------------------|-----------|------------------|-------------------|------------------------|----------------------|---------------------------|---------------|-------------|-----------------------|-------------------------|------|-------|------------------|-----|
|                       |           |                  |                   |                        |                      |                           |               |             |                       | 25°C                    | 85°C | 125°C |                  |     |
| TACH226*006#TA        | H         | 22               | 6.3               | 85                     | 4                    | 125                       | 1.4           | 10          | 5                     | 89                      | 80   | 36    | 2                | 1   |
| TACR226*006#TA        | R         | 22               | 6.3               | 85                     | 4                    | 125                       | 1.4           | 10          | 5                     | 95                      | 85   | 38    | 1                | 1   |
| TACR336*006#TA        | R         | 33               | 6.3               | 85                     | 4                    | 125                       | 2.1           | 12          | 5                     | 95                      | 85   | 38    | 2                | 1   |
| TACA476*006#TA        | A         | 47               | 6.3               | 85                     | 4                    | 125                       | 3             | 15          | 1                     | 200                     | 180  | 80    | 1                | 1   |
| TACR476*006#TA        | R         | 47               | 6.3               | 85                     | 4                    | 125                       | 3             | 20          | 5                     | 95                      | 85   | 38    | 3                | 1   |
| TACT686*006#TA        | T         | 68               | 6.3               | 85                     | 4                    | 125                       | 4.3           | 15          | 1                     | 200                     | 180  | 80    | 2                | 1   |
| TACA107*006#TA        | A         | 100              | 6.3               | 85                     | 4                    | 125                       | 6.3           | 20          | 1                     | 200                     | 180  | 80    | 2                | 1   |
| TACT107*006#TA        | T         | 100              | 6.3               | 85                     | 4                    | 125                       | 6.3           | 12          | 1                     | 200                     | 180  | 80    | 2                | 1   |
| <b>10 Volt @ 85°C</b> |           |                  |                   |                        |                      |                           |               |             |                       |                         |      |       |                  |     |
| TACK154*010#TA        | K         | 0.15             | 10                | 85                     | 7                    | 125                       | 0.5           | 6           | 40                    | 19                      | 17   | 8     | 1                | 1   |
| TACK224*010#TA        | K         | 0.22             | 10                | 85                     | 7                    | 125                       | 0.5           | 6           | 30                    | 22                      | 20   | 9     | 1                | 1   |
| TACK334*010#TA        | K         | 0.33             | 10                | 85                     | 7                    | 125                       | 0.5           | 6           | 20                    | 27                      | 25   | 11    | 1                | 1   |
| TACK474*010#TA        | K         | 0.47             | 10                | 85                     | 7                    | 125                       | 0.5           | 6           | 15                    | 32                      | 28   | 13    | 1                | 1   |
| TACL474*010#TA        | L         | 0.47             | 10                | 85                     | 7                    | 125                       | 0.5           | 6           | 7.5                   | 58                      | 52   | 23    | 1                | 1   |
| TACK684*010#TA        | K         | 0.68             | 10                | 85                     | 7                    | 125                       | 0.5           | 8           | 15                    | 32                      | 28   | 13    | 2                | 1   |
| TACL684*010#TA        | L         | 0.68             | 10                | 85                     | 7                    | 125                       | 0.5           | 6           | 7.5                   | 58                      | 52   | 23    | 1                | 1   |
| TACK105*010#TA        | K         | 1                | 10                | 85                     | 7                    | 125                       | 0.5           | 6           | 15                    | 32                      | 28   | 13    | 2                | 1   |
| TACL105*010#TA        | L         | 1                | 10                | 85                     | 7                    | 125                       | 0.5           | 6           | 7.5                   | 58                      | 52   | 23    | 1                | 1   |
| TACR105*010#TA        | R         | 1                | 10                | 85                     | 7                    | 125                       | 0.5           | 6           | 7                     | 80                      | 72   | 32    | 1                | 1   |
| TACL155*010#TA        | L         | 1.5              | 10                | 85                     | 7                    | 125                       | 0.5           | 6           | 7.5                   | 58                      | 52   | 23    | 1                | 1   |
| TACL225*010#TA        | L         | 2.2              | 10                | 85                     | 7                    | 125                       | 0.5           | 6           | 7.5                   | 58                      | 52   | 23    | 1                | 1   |
| TACU225*010#TA        | U         | 2.2              | 10                | 85                     | 7                    | 125                       | 0.5           | 8           | 5                     | 84                      | 75   | 33    | 1                | 1   |
| TACL335*010#TA        | L         | 3.3              | 10                | 85                     | 7                    | 125                       | 0.5           | 8           | 7.5                   | 58                      | 52   | 23    | 2                | 1   |
| TACR335*010#TA        | R         | 3.3              | 10                | 85                     | 7                    | 125                       | 0.5           | 8           | 5                     | 95                      | 85   | 38    | 1                | 1   |
| TACL475*010#TA        | L         | 4.7              | 10                | 85                     | 7                    | 125                       | 0.5           | 10          | 6                     | 65                      | 58   | 26    | 2                | 1   |
| TACR475*010#TA        | R         | 4.7              | 10                | 85                     | 7                    | 125                       | 0.5           | 8           | 6                     | 87                      | 78   | 35    | 1                | 1   |
| TACL685*010#TA        | L         | 6.8              | 10                | 85                     | 7                    | 125                       | 0.7           | 20          | 7.5                   | 58                      | 52   | 23    | 3                | 1   |
| TACR685*010#TA        | R         | 6.8              | 10                | 85                     | 7                    | 125                       | 0.7           | 8           | 5                     | 95                      | 85   | 38    | 1                | 1   |
| TACH106*010#TA        | H         | 10               | 10                | 85                     | 7                    | 125                       | 1.0           | 8           | 5                     | 89                      | 80   | 36    | 2                | 1   |
| TACL106*010#TA        | L         | 10               | 10                | 85                     | 7                    | 125                       | 1             | 20          | 7.5                   | 58                      | 52   | 23    | 3                | 1   |
| TACR106*010#TA        | R         | 10               | 10                | 85                     | 7                    | 125                       | 1             | 8           | 5                     | 95                      | 85   | 38    | 1                | 1   |
| TACV106*010#TA        | V         | 10               | 10                | 85                     | 7                    | 125                       | 1.0           | 10          | 2                     | 132                     | 119  | 53    | 2                | 1   |
| TACR156*010#TA        | R         | 15               | 10                | 85                     | 7                    | 125                       | 1.5           | 10          | 5                     | 95                      | 85   | 38    | 1                | 1   |
| TACV156*010#TA        | V         | 15               | 10                | 85                     | 7                    | 125                       | 1.5           | 10          | 2                     | 132                     | 119  | 53    | 2                | 1   |
| TACR226*010#TA        | R         | 22               | 10                | 85                     | 7                    | 125                       | 2.2           | 14          | 5                     | 95                      | 85   | 38    | 2                | 1   |
| TACA336*010#TA        | A         | 33               | 10                | 85                     | 7                    | 125                       | 3.3           | 12          | 1                     | 200                     | 180  | 80    | 1                | 1   |
| TACR336*010#TA        | R         | 33               | 10                | 85                     | 7                    | 125                       | 3.3           | 20          | 5                     | 95                      | 85   | 38    | 3                | 1   |
| TACB476*010#TA        | B         | 47               | 10                | 85                     | 7                    | 125                       | 4.7           | 15          | 1                     | 200                     | 180  | 80    | 1                | 1   |
| TACT476*010#TA        | T         | 47               | 10                | 85                     | 7                    | 125                       | 4.7           | 12          | 1                     | 200                     | 180  | 80    | 1                | 1   |
| <b>16 Volt @ 85°C</b> |           |                  |                   |                        |                      |                           |               |             |                       |                         |      |       |                  |     |
| TACK104*016#TA        | K         | 0.1              | 16                | 85                     | 10                   | 125                       | 0.5           | 6           | 40                    | 19                      | 17   | 8     | 1                | 1   |
| TACK154*016#TA        | K         | 0.15             | 16                | 85                     | 10                   | 125                       | 0.5           | 6           | 30                    | 22                      | 20   | 9     | 1                | 1   |
| TACK224*016#TA        | K         | 0.22             | 16                | 85                     | 10                   | 125                       | 0.5           | 6           | 20                    | 27                      | 25   | 11    | 1                | 1   |
| TACK334*016#TA        | K         | 0.33             | 16                | 85                     | 10                   | 125                       | 0.5           | 6           | 20                    | 27                      | 25   | 11    | 1                | 1   |
| TACK474*016#TA        | L         | 0.47             | 16                | 85                     | 10                   | 125                       | 0.5           | 6           | 7.5                   | 58                      | 52   | 23    | 1                | 1   |
| TACL684*016#TA        | L         | 0.68             | 16                | 85                     | 10                   | 125                       | 0.5           | 6           | 7.5                   | 58                      | 52   | 23    | 1                | 1   |
| TACL105*016#TA        | L         | 1                | 16                | 85                     | 10                   | 125                       | 0.5           | 6           | 7.5                   | 58                      | 52   | 23    | 1                | 1   |
| TACU105*016#TA        | U         | 1                | 16                | 85                     | 10                   | 125                       | 0.5           | 8           | 5                     | 84                      | 75   | 33    | 1                | 1   |
| TACL225*016#TA        | L         | 2.2              | 16                | 85                     | 10                   | 125                       | 0.5           | 10          | 7.5                   | 58                      | 52   | 23    | 1                | 1   |
| TACR106*016#TA        | R         | 10               | 16                | 85                     | 10                   | 125                       | 1.6           | 10          | 5                     | 95                      | 85   | 38    | 2                | 1   |
| <b>20 Volt @ 85°C</b> |           |                  |                   |                        |                      |                           |               |             |                       |                         |      |       |                  |     |
| TACK224*020#TA        | K         | 0.22             | 20                | 85                     | 13                   | 125                       | 0.5           | 6           | 20                    | 27                      | 25   | 11    | 1                | 1   |
| TACR335*020#TA        | R         | 3.3              | 20                | 85                     | 13                   | 125                       | 0.7           | 8           | 5                     | 95                      | 85   | 38    | 1                | 1   |
| TACR475*020#TA        | R         | 4.7              | 20                | 85                     | 13                   | 125                       | 0.9           | 8           | 5                     | 95                      | 85   | 38    | 1                | 1   |
| <b>25 Volt @ 85°C</b> |           |                  |                   |                        |                      |                           |               |             |                       |                         |      |       |                  |     |
| TACR105*025#TA        | R         | 1                | 25                | 85                     | 17                   | 125                       | 0.5           | 8           | 5                     | 95                      | 85   | 38    | 1                | 1   |

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, 0.5V RMS with a maximum DC bias of 2.2 volts.

DCL is measured at rated voltage after 5 minutes.

For typical weight and composition see page 274.

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

## Standard and Low Profile Tantalum Microchip Capacitors

### QUALIFICATION TABLE – CATEGORY 1

| TEST                  | TAC series (Temperature range -55°C to +125°C)  |               |               |                    |                                    |       |            |           |            |         |           |
|-----------------------|---|---------------|---------------|--------------------|------------------------------------|-------|------------|-----------|------------|---------|-----------|
|                       | Condition   |               |               | Characteristics    |                                    |       |            |           |            |         |           |
| Endurance             | Apply rated voltage (Ur) at 85°C and / or category voltage (Uc) at 125°C for 2000 hours through a circuit impedance of $\leq 0.1\Omega/V$ . Stabilize at room temperature for 1-2 hours before measuring. |               |               | Visual examination | no visible damage                  |       |            |           |            |         |           |
|                       |   |               |               | DCL                | 1.25 x initial limit               |       |            |           |            |         |           |
|                       |   |               |               | $\Delta C/C$       | within $\pm 10\%$ of initial value |       |            |           |            |         |           |
|                       |   |               |               | DF                 | 1.5 x initial limit                |       |            |           |            |         |           |
|                       |   |               |               | ESR                | 1.5 x initial limit                |       |            |           |            |         |           |
| Humidity              | Store at 40°C and 90-95% relative humidity for 1344 hours, with no applied voltage. Stabilize at room temperature and humidity for 1-2 hours before measuring.  |               |               | Visual examination | no visible damage                  |       |            |           |            |         |           |
|                       |   |               |               | DCL                | initial limit                      |       |            |           |            |         |           |
|                       |   |               |               | $\Delta C/C$       | within $\pm 5\%$ of initial value  |       |            |           |            |         |           |
|                       |   |               |               | DF                 | 1.2 x initial limit                |       |            |           |            |         |           |
|                       |   |               |               | ESR                | 1.2 x initial limit                |       |            |           |            |         |           |
| Temperature Stability | Step  | Temperature°C | Duration(min) |                    | +20°C                              | -55°C | +20°C      | +85°C     | +125°C     | +20°C   |           |
|                       | 1   | +20           | 15            | DCL                | IL*                                | n/a   | IL*        | 10 x IL*  | 12.5 x IL* | IL*     |           |
|                       | 2   | -55           | 15            |                    | $\Delta C/C$                       | n/a   | +0/-10%    | $\pm 5\%$ | +10/-0%    | +15/-0% | $\pm 5\%$ |
|                       | 3   | +20           | 15            | DF                 |                                    | IL*   | 1.5 x IL*  | IL*       | 1.5 x IL*  | 2 x IL* | IL*       |
|                       | 4   | +85           | 15            |                    | ESR                                | IL*   | 1.25 x IL* | IL*       | 1.25 x IL* | 2 x IL* | IL*       |
|                       | 5   | +125          | 15            |                    |                                    |       |            |           |            |         |           |
|                       | 6   | +20           | 15            |                    |                                    |       |            |           |            |         |           |
| Surge Voltage         | Apply 1.3x rated voltage (Ur) at 85°C for 1000 cycles of duration 6 min (30 sec charge, 5 min 30 sec discharge) through a charge / discharge resistance of 1000 $\Omega$ .                                |               |               | Visual examination | no visible damage                  |       |            |           |            |         |           |
|                       |   |               |               | DCL                | initial limit                      |       |            |           |            |         |           |
|                       |   |               |               | $\Delta C/C$       | within $\pm 10\%$ of initial value |       |            |           |            |         |           |
|                       |   |               |               | DF                 | initial limit                      |       |            |           |            |         |           |
|                       |   |               |               | ESR                | initial limit                      |       |            |           |            |         |           |

\*Initial Limit

### QUALIFICATION TABLE – CATEGORY 2

| TEST                  | TAC series (Temperature range -55°C to +125°C)  |               |               |                    |                                    |       |            |           |            |         |           |
|-----------------------|---|---------------|---------------|--------------------|------------------------------------|-------|------------|-----------|------------|---------|-----------|
|                       | Condition   |               |               | Characteristics    |                                    |       |            |           |            |         |           |
| Endurance             | Apply rated voltage (Ur) at 85°C and / or category voltage (Uc) at 125°C for 2000 hours through a circuit impedance of $\leq 0.1\Omega/V$ . Stabilize at room temperature for 1-2 hours before measuring. |               |               | Visual examination | no visible damage                  |       |            |           |            |         |           |
|                       |   |               |               | DCL                | 1.25 x initial limit               |       |            |           |            |         |           |
|                       |   |               |               | $\Delta C/C$       | within $\pm 15\%$ of initial value |       |            |           |            |         |           |
|                       |   |               |               | DF                 | 1.5 x initial limit                |       |            |           |            |         |           |
|                       |   |               |               | ESR                | 1.5 x initial limit                |       |            |           |            |         |           |
| Humidity              | Store at 40°C and 90-95% relative humidity for 1344 hours, with no applied voltage. Stabilize at room temperature and humidity for 1-2 hours before measuring.  |               |               | Visual examination | no visible damage                  |       |            |           |            |         |           |
|                       |   |               |               | DCL                | initial limit                      |       |            |           |            |         |           |
|                       |   |               |               | $\Delta C/C$       | within $\pm 10\%$ of initial value |       |            |           |            |         |           |
|                       |   |               |               | DF                 | 1.2 x initial limit                |       |            |           |            |         |           |
|                       |   |               |               | ESR                | 1.2 x initial limit                |       |            |           |            |         |           |
| Temperature Stability | Step  | Temperature°C | Duration(min) |                    | +20°C                              | -55°C | +20°C      | +85°C     | +125°C     | +20°C   |           |
|                       | 1   | +20           | 15            | DCL                | IL*                                | n/a   | IL*        | 10 x IL*  | 12.5 x IL* | IL*     |           |
|                       | 2   | -55           | 15            |                    | $\Delta C/C$                       | n/a   | +0/-15%    | $\pm 5\%$ | +15/-0%    | +20/-0% | $\pm 5\%$ |
|                       | 3   | +20           | 15            | DF                 |                                    | IL*   | 1.5 x IL*  | IL*       | 1.5 x IL*  | 2 x IL* | IL*       |
|                       | 4   | +85           | 15            |                    | ESR                                | IL*   | 1.25 x IL* | IL*       | 1.25 x IL* | 2 x IL* | IL*       |
|                       | 5   | +125          | 15            |                    |                                    |       |            |           |            |         |           |
|                       | 6   | +20           | 15            |                    |                                    |       |            |           |            |         |           |
| Surge Voltage         | Apply 1.3x rated voltage (Ur) at 85°C for 1000 cycles of duration 6 min (30 sec charge, 5 min 30 sec discharge) through a charge / discharge resistance of 1000 $\Omega$ .                                |               |               | Visual examination | no visible damage                  |       |            |           |            |         |           |
|                       |   |               |               | DCL                | 1.5 x initial limit                |       |            |           |            |         |           |
|                       |   |               |               | $\Delta C/C$       | within $\pm 15\%$ of initial value |       |            |           |            |         |           |
|                       |   |               |               | DF                 | 1.5 x initial limit                |       |            |           |            |         |           |
|                       |   |               |               | ESR                | 1.5 x initial limit                |       |            |           |            |         |           |

\*Initial Limit

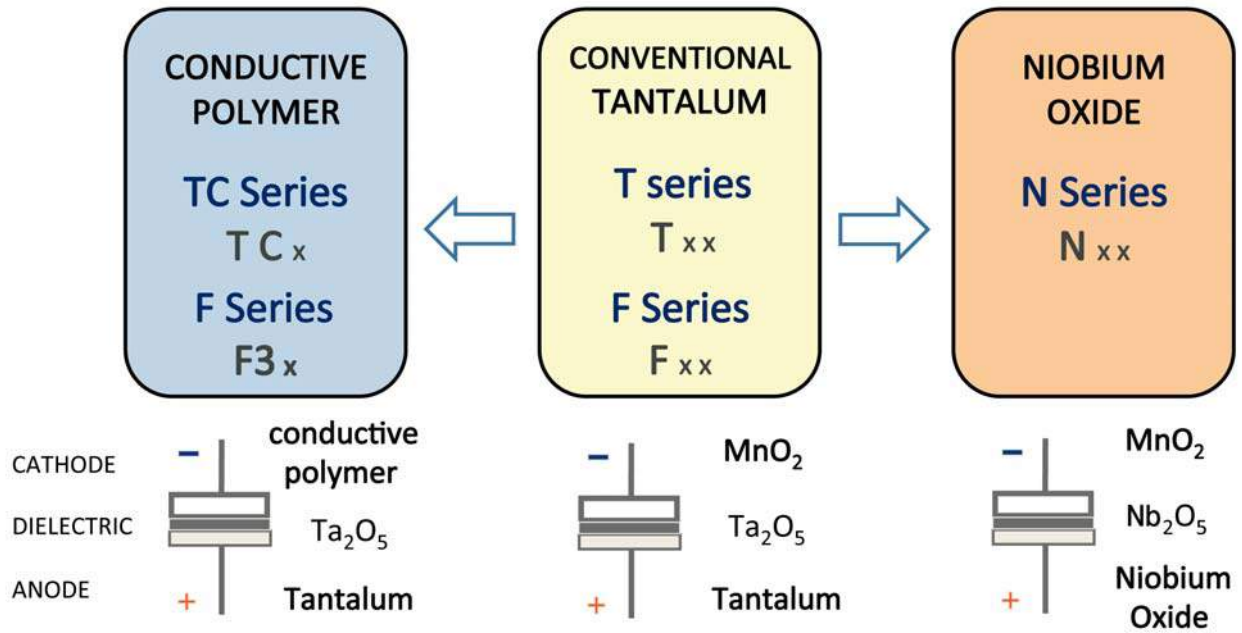
## Standard and Low Profile Tantalum Microchip Capacitors

### QUALIFICATION TABLE – CATEGORY 3

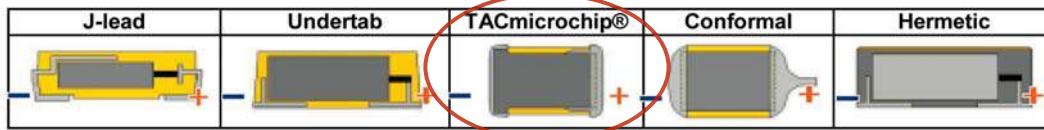
| TEST                         | TAC series (Temperature range -55°C to +125°C)  |               |               |                    |                                    |       |            |           |            |         |            |
|------------------------------|---|---------------|---------------|--------------------|------------------------------------|-------|------------|-----------|------------|---------|------------|
|                              | Condition   |               |               | Characteristics    |                                    |       |            |           |            |         |            |
| <b>Endurance</b>             | Apply rated voltage (Ur) at 85°C and / or category voltage (Uc) at 125°C for 2000 hours through a circuit impedance of $\leq 0.1\Omega/V$ . Stabilize at room temperature for 1-2 hours before measuring. |               |               | Visual examination | no visible damage                  |       |            |           |            |         |            |
|                              |   |               |               | DCL                | 1.25 x initial limit               |       |            |           |            |         |            |
|                              |   |               |               | $\Delta C/C$       | within $\pm 30\%$ of initial value |       |            |           |            |         |            |
|                              |   |               |               | DF                 | 1.5 x initial limit                |       |            |           |            |         |            |
|                              |   |               |               | ESR                | 1.5 x initial limit                |       |            |           |            |         |            |
| <b>Humidity</b>              | Store at 40°C and 90-95% relative humidity for 1344 hours, with no applied voltage. Stabilize at room temperature and humidity for 1-2 hours before measuring.  |               |               | Visual examination | no visible damage                  |       |            |           |            |         |            |
|                              |   |               |               | DCL                | 2 x initial limit                  |       |            |           |            |         |            |
|                              |   |               |               | $\Delta C/C$       | within $\pm 30\%$ of initial value |       |            |           |            |         |            |
|                              |   |               |               | DF                 | 1.5 x initial limit                |       |            |           |            |         |            |
|                              |   |               |               | ESR                | 1.25 x initial limit               |       |            |           |            |         |            |
| <b>Temperature Stability</b> | Step  | Temperature°C | Duration(min) |                    | +20°C                              | -55°C | +20°C      | +85°C     | +125°C     | +20°C   |            |
|                              | 1   | +20           | 15            | DCL                | IL*                                | n/a   | IL*        | 10 x IL*  | 12.5 x IL* | IL*     |            |
|                              | 2   | -55           | 15            |                    | $\Delta C/C$                       | n/a   | +0/-25%    | $\pm 5\%$ | +20/-0%    | +25/-0% | $\pm 20\%$ |
|                              | 3   | +20           | 15            | DF                 |                                    | IL*   | 1.5 x IL*  | IL*       | 1.5 x IL*  | 2 x IL* | 1.5 x IL*  |
|                              | 4   | +85           | 15            |                    | ESR                                | IL*   | 1.25 x IL* | IL*       | 1.25 x IL* | 2 x IL* | 1.5 x IL*  |
|                              | 5   | +125          | 15            |                    |                                    |       |            |           |            |         |            |
|                              | 6   | +20           | 15            |                    |                                    |       |            |           |            |         |            |
| <b>Surge Voltage</b>         | Apply 1.3x rated voltage (Ur) at 85°C for 1000 cycles of duration 6 min (30 sec charge, 5 min 30 sec discharge) through a charge / discharge resistance of 1000 $\Omega$ .                                |               |               | Visual examination | no visible damage                  |       |            |           |            |         |            |
|                              |   |               |               | DCL                | 2 x initial limit                  |       |            |           |            |         |            |
|                              |   |               |               | $\Delta C/C$       | within $\pm 30\%$ of initial value |       |            |           |            |         |            |
|                              |   |               |               | DF                 | 2 x initial limit                  |       |            |           |            |         |            |
|                              |   |               |               | ESR                | 2 x initial limit                  |       |            |           |            |         |            |

\*Initial Limit

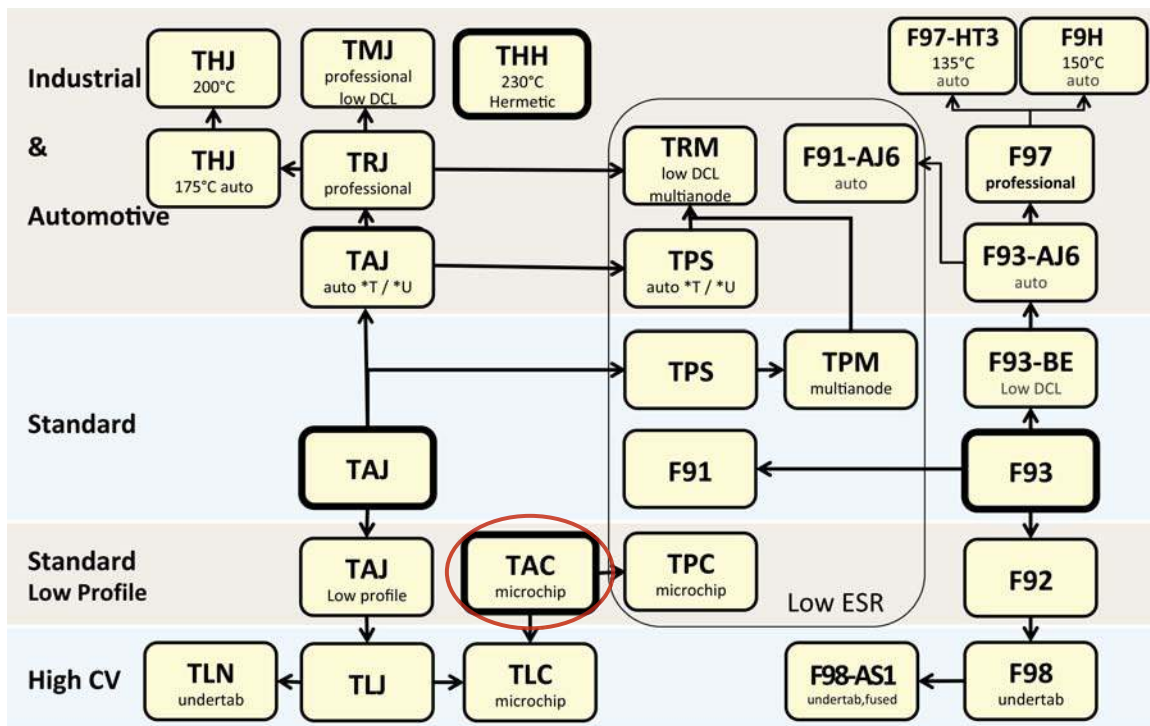
### AVX SOLID ELECTROLYTE CAPACITOR ROADMAP



### Five Capacitor Construction Styles



### SERIES LINE UP: CONVENTIONAL SMD MnO<sub>2</sub>



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