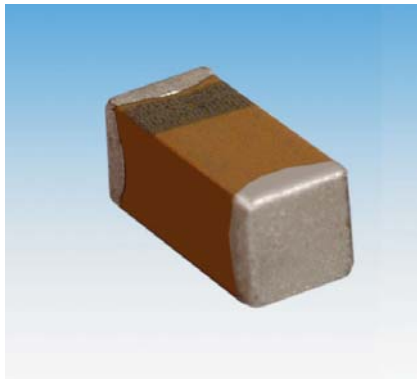


# TPC Series



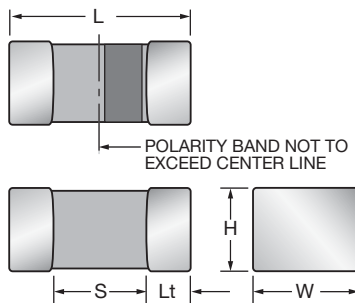
## Low ESR TACmicrochip®



- Low ESR TACmicrochip® capacitor
- Smallest and low profile tantalum
- CV range: 1.0-100µF / 3-25V
- 4 case sizes available
- Power supply applications



### CASE DIMENSIONS: millimeters (inches)



| Code | EIA Code | EIA Metric | Length (L)   | Width (W)  | Height (H)   | Termination Spacing(S) | Minimum Termination Length (Lt) | Average Mass |
|------|----------|------------|--|--|--|------------------------|---------------------------------|--------------|
| H    | 0805     | 2012-10    | 2.00 <sup>+0.20</sup> <sub>-0.00</sub><br>(0.079 <sup>+0.008</sup> <sub>-0.000</sub> ) | 1.35 <sup>+0.15</sup> <sub>-0.00</sub><br>(0.053 <sup>+0.006</sup> <sub>-0.000</sub> ) | 1.00 max.  | 0.70 min               | 0.15 min.                       | 17.1mg       |
| K    | 0402     | 1005-07    | 1.00 <sup>+0.20</sup> <sub>-0.00</sub><br>(0.039 <sup>+0.008</sup> <sub>-0.000</sub> ) | 0.50 <sup>+0.20</sup> <sub>-0.00</sub><br>(0.020 <sup>+0.008</sup> <sub>-0.000</sub> ) | 0.50 <sup>+0.20</sup> <sub>-0.00</sub><br>(0.020 <sup>+0.008</sup> <sub>-0.000</sub> ) | 0.40 min               | 0.10 (0.004)                    | 2.8mg        |
| L    | 0603     | 1608-10    | 1.60 <sup>+0.20</sup> <sub>-0.00</sub><br>(0.063 <sup>+0.008</sup> <sub>-0.000</sub> ) | 0.85 <sup>+0.15</sup> <sub>-0.00</sub><br>(0.033 <sup>+0.006</sup> <sub>-0.000</sub> ) | 0.85 <sup>+0.15</sup> <sub>-0.00</sub><br>(0.033 <sup>+0.006</sup> <sub>-0.000</sub> ) | 0.55 min               | 0.15 (0.006)                    | 8.6mg        |
| R    | 0805     | 2012-15    | 2.00 <sup>+0.20</sup> <sub>-0.00</sub><br>(0.079 <sup>+0.008</sup> <sub>-0.000</sub> ) | 1.35 <sup>+0.15</sup> <sub>-0.00</sub><br>(0.053 <sup>+0.006</sup> <sub>-0.000</sub> ) | 1.35 <sup>+0.15</sup> <sub>-0.00</sub><br>(0.053 <sup>+0.006</sup> <sub>-0.000</sub> ) | 0.70 min               | 0.15 (0.006)                    | 29.9mg       |

### HOW TO ORDER

|                       |                              |  |                               |  |   |             |
|-----------------------|------------------------------|--|-------------------------------|--|---|-------------|
| <b>TPC</b>            | <b>R</b>                     | <b>106</b>   | <b>M</b>                      | <b>010</b>   | <b>R</b>  | <b>1800</b> |
| Type<br>TACmicrochip® | Case Size<br>See table above | Capacitance Code<br>pF code: 1st two digits represent significant figures, 3rd digit represents multiplier (number of zeros to follow) | Tolerance<br>K=±10%<br>M=±20% | Rated DC Voltage<br>003=3Vdc<br>004=4Vdc<br>006=6.3Vdc<br>010=10Vdc<br>016=16Vdc<br>020=20Vdc<br>025=25Vdc | Packaging<br>R, P = 7" Standard Tin Termination Plastic Tape<br>X, Q = 4¼" Standard Tin Termination Plastic Tape<br>A, M = 7" Gold Termination Plastic Tape<br>F, N = 4¼" Gold Termination Plastic Tape | ESR in mΩ   |

### TECHNICAL SPECIFICATIONS

|                                    |  |     |     |     |    |    |    |    |  |
|------------------------------------|--|-----|-----|-----|----|----|----|----|--|
| Technical Data:                    | All technical data relate to an ambient temperature of +25°C                                 |     |     |     |    |    |    |    |  |
| Capacitance Range:                 | 1.0 µF to 100 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:   | 3   | 4   | 6.3 | 10 | 16 | 20 | 25 |  |
| Category Voltage (V <sub>C</sub> ) | ≤ +125°C:  | 2   | 2.7 | 4   | 7  | 10 | 13 | 17 |  |
| Surge Voltage (V <sub>S</sub> )    | ≤ +85°C:   | 3.9 | 5.2 | 8   | 13 | 20 | 26 | 32 |  |
| Surge Voltage (V <sub>S</sub> )    | ≤ +125°C:  | 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:                | Nickel and Tin Plating (standard),<br>Nickel and Gold Plating option available upon request  |     |     |     |    |    |    |    |  |



# TPC Series



## Low ESR TACmicrochip®

### LOW ESR RANGE (LETTER DENOTES CASE SIZE)

| Capacitance |      | Voltage Rating DC (V <sub>R</sub> ) at 85°C |                                 |                        |  |         |                         |         |
|-------------|------|---|---------------------------------|------------------------|--|---------|-------------------------|---------|
| µF          | Code | 3.0V  | 4.0V                            | 6.3V                   | 10V  | 16V     | 20V                     | 25V     |
| 1.0         | 105  |   |                                 |                        | L(5000)                                    |         |                         | R(3000) |
| 1.5         | 155  |   |                                 |                        |  |         |                         |         |
| 2.2         | 225  |   |                                 | K(8000)/L(5000)        | L(5000)                                    | L(5000) |                         |         |
| 3.3         | 335  |   |                                 |                        | L(5000)                                    |         |                         |         |
| 4.7         | 475  | K(8000)                                     |                                 |                        | L(5000) <sup>(M)</sup>                     |         | R(1500) <sup>(M)*</sup> |         |
| 6.8         | 685  |   |                                 |                        |  |         |                         |         |
| 10          | 106  |   |                                 | L(4000) <sup>(M)</sup> | H(2500)<br>L(4000) <sup>(M)</sup> ,R(1800) | R(1800) |                         |         |
| 15          | 156  |   |                                 | R(1800)                | R(1500)                                    |         |                         |         |
| 22          | 226  |   | L(5000) <sup>(M)</sup> /R(1800) | R(1500)                | R(1500)                                    |         |                         |         |
| 33          | 336  | R(1800)                                     | H(1500) <sup>(M)</sup> /R(1500) |                        | R(1500) <sup>(M)</sup>                     |         |                         |         |
| 47          | 476  | R(1500)                                     |                                 | R(1800) <sup>(M)</sup> |  |         |                         |         |
| 68          | 686  |   |                                 |                        |  |         |                         |         |
| 100         | 107  |   | R(1000) <sup>(M)</sup>          |                        |  |         |                         |         |

Codes shown are examples of ESR values offered on certain CV and case size. Other codes and ESR values available upon request.

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

\*Code under development – subject to change

Note: Voltage ratings are minimum values. AVX reserves the right to supply higher ratings in the same case size, to the same reliability standards

# TPC Series



## Low ESR TACmicrochip®

### RATINGS & PART NUMBER REFERENCE

| AVX Part No.                            | EIA  | Case Size | Cap (µF) | Rated Voltage (V) | DCL (µA) Max. | DF % Max. | ESR Max. (mΩ) @100kHz | MSL | 100kHz Ripple Current Ratings (A) |       |       | 100kHz Ripple Voltage Ratings (V) |       |       |
|---|------|-----------|----------|-------------------|---------------|-----------|-----------------------|-----|-----------------------------------|-------|-------|-----------------------------------|-------|-------|
|   |      |           |          |                   |               |           |                       |     | 25°C                              | 85°C  | 125°C | 25°C                              | 85°C  | 125°C |
| <b>3 Volt @ 85°C (2 Volt @ 125°C)</b>   |      |           |          |                   |               |           |                       |     |                                   |       |       |                                   |       |       |
| TPCK475*003#8000                        | 0402 | K         | 4.7      | 3                 | 0.5           | 12        | 8000                  | 1   | 0.043                             | 0.039 | 0.017 | 0.346                             | 0.312 | 0.139 |
| TPCR336*003#1800                        | 0805 | R         | 33       | 3                 | 1.0           | 10        | 1800                  | 1   | 0.158                             | 0.142 | 0.063 | 0.285                             | 0.256 | 0.114 |
| TPCR476*003#1500                        | 0805 | R         | 47       | 3                 | 1.5           | 10        | 1500                  | 1   | 0.173                             | 0.156 | 0.069 | 0.260                             | 0.234 | 0.104 |
| <b>4 Volt @ 85°C (2.7 Volt @ 125°C)</b> |      |           |          |                   |               |           |                       |     |                                   |       |       |                                   |       |       |
| TPCL226M004#5000                        | 0603 | L         | 22       | 4                 | 0.9           | 6         | 5000                  | 1   | 0.071                             | 0.064 | 0.028 | 0.354                             | 0.318 | 0.141 |
| TPCR226*004#1800                        | 0805 | R         | 22       | 4                 | 0.9           | 8         | 1800                  | 1   | 0.158                             | 0.142 | 0.063 | 0.285                             | 0.256 | 0.114 |
| TPCH336M004#1500                        | 0805 | H         | 33       | 4                 | 1.3           | 14        | 1500                  | 1   | 0.163                             | 0.147 | 0.065 | 0.245                             | 0.221 | 0.098 |
| TPCR336*004#1500                        | 0805 | R         | 33       | 4                 | 1.3           | 10        | 1500                  | 1   | 0.173                             | 0.156 | 0.069 | 0.260                             | 0.234 | 0.104 |
| TPCR107M004#1000                        | 0805 | R         | 100      | 4                 | 4.0           | 30        | 1000                  | 1   | 0.212                             | 0.191 | 0.085 | 0.212                             | 0.191 | 0.085 |
| <b>6.3 Volt @ 85°C (4 Volt @ 125°C)</b> |      |           |          |                   |               |           |                       |     |                                   |       |       |                                   |       |       |
| TPCK225*006#8000                        | 0402 | K         | 2.2      | 6.3               | 0.5           | 8         | 8000                  | 1   | 0.043                             | 0.039 | 0.017 | 0.346                             | 0.312 | 0.139 |
| TPCL225*006#5000                        | 0603 | L         | 2.2      | 6.3               | 0.5           | 6         | 5000                  | 1   | 0.071                             | 0.064 | 0.028 | 0.354                             | 0.318 | 0.141 |
| TPCL106M006#4000                        | 0603 | L         | 10       | 6.3               | 0.6           | 10        | 4000                  | 1   | 0.079                             | 0.071 | 0.032 | 0.316                             | 0.285 | 0.126 |
| TPCR156*006#1800                        | 0805 | R         | 15       | 6.3               | 0.9           | 8         | 1800                  | 1   | 0.158                             | 0.142 | 0.063 | 0.285                             | 0.256 | 0.114 |
| TPCR226*006#1500                        | 0805 | R         | 22       | 6.3               | 1.4           | 10        | 1500                  | 1   | 0.173                             | 0.156 | 0.069 | 0.260                             | 0.234 | 0.104 |
| TPCR476M006#1800                        | 0805 | R         | 47       | 6.3               | 3.0           | 20        | 1800                  | 1   | 0.158                             | 0.142 | 0.063 | 0.285                             | 0.256 | 0.114 |
| <b>10 Volt @ 85°C (7 Volt @ 125°C)</b>  |      |           |          |                   |               |           |                       |     |                                   |       |       |                                   |       |       |
| TPCL105*010#5000                        | 0603 | L         | 1.0      | 10                | 0.5           | 6         | 5000                  | 1   | 0.071                             | 0.064 | 0.028 | 0.354                             | 0.318 | 0.141 |
| TPCL225*010#5000                        | 0603 | L         | 2.2      | 10                | 0.5           | 6         | 5000                  | 1   | 0.071                             | 0.064 | 0.028 | 0.354                             | 0.318 | 0.141 |
| TPCL335*010#5000                        | 0603 | L         | 3.3      | 10                | 0.5           | 8         | 5000                  | 1   | 0.071                             | 0.064 | 0.028 | 0.354                             | 0.318 | 0.141 |
| TPCL475M010#5000                        | 0603 | L         | 4.7      | 10                | 0.5           | 10        | 5000                  | 1   | 0.071                             | 0.064 | 0.028 | 0.354                             | 0.318 | 0.141 |
| TPCH106*010#2500                        | 0805 | H         | 10       | 10                | 1.0           | 8         | 2500                  | 1   | 0.126                             | 0.113 | 0.050 | 0.100                             | 0.09  | 0.040 |
| TPCL106M010#4000                        | 0603 | L         | 10       | 10                | 1.0           | 20        | 4000                  | 1   | 0.079                             | 0.071 | 0.032 | 0.316                             | 0.285 | 0.126 |
| TPCR106*010#1800                        | 0805 | R         | 10       | 10                | 1.0           | 8         | 1800                  | 1   | 0.158                             | 0.142 | 0.063 | 0.285                             | 0.256 | 0.114 |
| TPCR156*010#1500                        | 0805 | R         | 15       | 10                | 1.5           | 10        | 1500                  | 1   | 0.173                             | 0.156 | 0.069 | 0.260                             | 0.234 | 0.104 |
| TPCR226*010#1500                        | 0805 | R         | 22       | 10                | 2.2           | 14        | 1500                  | 1   | 0.173                             | 0.156 | 0.069 | 0.260                             | 0.234 | 0.104 |
| TPCR336M010#1500                        | 0805 | R         | 33       | 10                | 3.3           | 20        | 1500                  | 1   | 0.173                             | 0.156 | 0.069 | 0.260                             | 0.234 | 0.104 |
| <b>16 Volt @ 85°C (10 Volt @ 125°C)</b> |      |           |          |                   |               |           |                       |     |                                   |       |       |                                   |       |       |
| TPCL225*016#5000                        | 0603 | L         | 2.2      | 16                | 0.5           | 10        | 5000                  | 1   | 0.071                             | 0.064 | 0.028 | 0.354                             | 0.318 | 0.141 |
| TPCR106*016#1800                        | 0805 | R         | 10       | 16                | 1.6           | 10        | 1800                  | 1   | 0.158                             | 0.142 | 0.063 | 0.285                             | 0.256 | 0.114 |
| <b>20 Volt @ 85°C (13 Volt @ 125°C)</b> |      |           |          |                   |               |           |                       |     |                                   |       |       |                                   |       |       |
| TPCR475M020#1500                        | 0805 | R         | 4.7      | 20                | 0.9           | 8         | 1500                  | 1   | 0.173                             | 0.156 | 0.069 | 0.260                             | 0.234 | 0.104 |
| <b>25 Volt @ 85°C (17 Volt @ 125°C)</b> |      |           |          |                   |               |           |                       |     |                                   |       |       |                                   |       |       |
| TPCR105*025#3000                        | 0805 | R         | 1.0      | 25                | 0.5           | 8         | 3000                  | 1   | 0.122                             | 0.110 | 0.049 | 0.367                             | 0.331 | 0.147 |

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.

The EIA & CECC standards for low ESR Solid Tantalum Capacitors allow an ESR movement to 1.25 times catalogue limit post mounting.

For typical weight and composition see page 123.

**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.**