

# TPS Series

## Low ESR



- Low ESR series of robust MnO<sub>2</sub> solid electrolyte capacitors
- CV range: 0.15-1500µF / 2.5-50V
- 14 case sizes available
- Power supply applications



SnPb termination option is not RoHS compliant.

### CASE DIMENSIONS: millimeters (inches)

| Code | EIA Code | EIA Metric | L±0.20 (0.008) | W±0.20 (0.008)<br>-0.10 (0.004) | H±0.20 (0.008)<br>-0.10 (0.004) | W <sub>1</sub> ±0.20 (0.008) | A±0.30 (0.012)<br>-0.20 (0.008) | S Min.       |
|------|----------|------------|----------------|---------------------------------|---------------------------------|------------------------------|---------------------------------|--------------|
| A    | 1206     | 3216-18    | 3.20 (0.126)   | 1.60 (0.063)                    | 1.60 (0.063)                    | 1.20 (0.047)                 | 0.80 (0.031)                    | 1.10 (0.043) |
| B    | 1210     | 3528-21    | 3.50 (0.138)   | 2.80 (0.110)                    | 1.90 (0.075)                    | 2.20 (0.087)                 | 0.80 (0.031)                    | 1.40 (0.055) |
| C    | 2312     | 6032-28    | 6.00 (0.236)   | 3.20 (0.126)                    | 2.60 (0.102)                    | 2.20 (0.087)                 | 1.30 (0.051)                    | 2.90 (0.114) |
| D    | 2917     | 7343-31    | 7.30 (0.287)   | 4.30 (0.169)                    | 2.90 (0.114)                    | 2.40 (0.094)                 | 1.30 (0.051)                    | 4.40 (0.173) |
| E    | 2917     | 7343-43    | 7.30 (0.287)   | 4.30 (0.169)                    | 4.10 (0.162)                    | 2.40 (0.094)                 | 1.30 (0.051)                    | 4.40 (0.173) |
| F    | 2312     | 6032-20    | 6.00 (0.236)   | 3.20 (0.126)                    | 2.00 (0.079) max.               | 2.20 (0.087)                 | 1.30 (0.051)                    | 2.90 (0.114) |
| P    | 0805     | 2012-15    | 2.05 (0.081)   | 1.35 (0.053)                    | 1.50 (0.059) max.               | 1.00±0.10 (0.039±0.004)      | 0.50 (0.020)                    | 0.85 (0.033) |
| R    | 0805     | 2012-12    | 2.05 (0.081)   | 1.30 (0.051)                    | 1.20 (0.047) max.               | 1.00±0.10 (0.039±0.004)      | 0.50 (0.020)                    | 0.85 (0.033) |
| S    | 1206     | 3216-12    | 3.20 (0.126)   | 1.60 (0.063)                    | 1.20 (0.047) max.               | 1.20 (0.047)                 | 0.80 (0.031)                    | 1.10 (0.043) |
| T    | 1210     | 3528-12    | 3.50 (0.138)   | 2.80 (0.110)                    | 1.20 (0.047) max.               | 2.20 (0.087)                 | 0.80 (0.031)                    | 1.40 (0.055) |
| V    | 2924     | 7361-38    | 7.30 (0.287)   | 6.10 (0.240)                    | 3.55 (0.140)                    | 3.10 (0.120)                 | 1.30 (0.051)                    | 4.40 (0.173) |
| W    | 2312     | 6032-15    | 6.00 (0.236)   | 3.20 (0.126)                    | 1.50 (0.059) max.               | 2.20 (0.087)                 | 1.30 (0.051)                    | 2.90 (0.114) |
| X    | 2917     | 7343-15    | 7.30 (0.287)   | 4.30 (0.169)                    | 1.50 (0.059) max.               | 2.40 (0.094)                 | 1.30 (0.051)                    | 4.40 (0.173) |
| Y    | 2917     | 7343-20    | 7.30 (0.287)   | 4.30 (0.169)                    | 2.00 (0.079) max.               | 2.40 (0.094)                 | 1.30 (0.051)                    | 4.40 (0.173) |

W1 dimension applies to the termination width for A dimensional area only.



For part marking see page 132

### HOW TO ORDER

| TPS  | C                            | 107                                                                                                                                    | M                                 | 010                                                                                                                                                      | R                                                                                                                                                                                                                                     | 0100      | —                                                                                                        |
|------|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|----------------------------------------------------------------------------------------------------------|
| Type | 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>002 = 2.5Vdc<br>004 = 4Vdc<br>006 = 6.3Vdc<br>010 = 10Vdc<br>016 = 16Vdc<br>020 = 20Vdc<br>025 = 25Vdc<br>035 = 35Vdc<br>050 = 50Vdc | Packaging<br>R = Pure Tin 7" Reel<br>S = Pure Tin 13" Reel<br>A = Gold Plating 7" Reel<br>B = Gold Plating 13" Reel<br>H = Tin Lead 7" Reel (Contact Manufacturer)<br>K = Tin Lead 13" Reel (Contact Manufacturer)<br>H, K = Non RoHS | ESR in mΩ | Additional characters may be added for special requirements<br>V = Dry pack Option (selected codes only) |

### TECHNICAL SPECIFICATIONS

|                                    |                                                                                              |     |     |     |    |    |    |    |    |    |
|------------------------------------|----------------------------------------------------------------------------------------------|-----|-----|-----|----|----|----|----|----|----|
| Technical Data:                    | All technical data relate to an ambient temperature of +25°C                                 |     |     |     |    |    |    |    |    |    |
| Capacitance Range:                 | 0.15 µF to 1500 µF                                                                           |     |     |     |    |    |    |    |    |    |
| Capacitance Tolerance:             | ±10%; ±20%                                                                                   |     |     |     |    |    |    |    |    |    |
| Rated Voltage (V <sub>R</sub> )    | ≤ +85°C:                                                                                     | 2.5 | 4   | 6.3 | 10 | 16 | 20 | 25 | 35 | 50 |
| Category Voltage (V <sub>C</sub> ) | ≤ +125°C:                                                                                    | 1.7 | 2.7 | 4   | 7  | 10 | 13 | 17 | 23 | 33 |
| Surge Voltage (V <sub>S</sub> )    | ≤ +85°C:                                                                                     | 3.3 | 5.2 | 8   | 13 | 20 | 26 | 32 | 46 | 65 |
| Surge Voltage (V <sub>S</sub> )    | ≤ +125°C:                                                                                    | 2.2 | 3.4 | 5   | 8  | 13 | 16 | 20 | 28 | 40 |
| Temperature Range:                 | -55°C to +125°C                                                                              |     |     |     |    |    |    |    |    |    |
| Environmental Classification:      | 55/125/56 (IEC 68-2)                                                                         |     |     |     |    |    |    |    |    |    |
| Reliability:                       | 1% per 1000 hours at 85°C, V <sub>R</sub> with 0.1Ω/V series impedance, 60% confidence level |     |     |     |    |    |    |    |    |    |
| Termination Finished:              | Sn Plating (standard), Gold and SnPb Plating upon request                                    |     |     |     |    |    |    |    |    |    |
|                                    | For AEC-Q200 availability, please contact AVX                                                |     |     |     |    |    |    |    |    |    |



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

| Capacitance |      | Rated Voltage DC (V <sub>R</sub> ) to 85°C |                                            |                                                                         |                                                                                                                           |                                                                                               |                                                     |                                                    |                                                |                                  |
|-------------|------|--------------------------------------------|--------------------------------------------|-------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|-----------------------------------------------------|----------------------------------------------------|------------------------------------------------|----------------------------------|
| μF          | Code | 2.5V (e)                                   | 4V (G)                                     | 6.3V (J)                                                                | 10V (A)                                                                                                                   | 16V (C)                                                                                       | 20V (D)                                             | 25V (E)                                            | 35V (V)                                        | 50V (T)                          |
| 0.15        | 154  |                                            |                                            |                                                                         |                                                                                                                           |                                                                                               |                                                     |                                                    |                                                | A(9000)                          |
| 0.22        | 224  |                                            |                                            |                                                                         |                                                                                                                           |                                                                                               |                                                     |                                                    | A(6000)                                        | A(7000)                          |
| 0.33        | 334  |                                            |                                            |                                                                         |                                                                                                                           |                                                                                               |                                                     |                                                    | A(6000)                                        | A(7000)                          |
| 0.47        | 474  |                                            |                                            |                                                                         |                                                                                                                           |                                                                                               |                                                     | A(7000)                                            | A(6000)<br>B(4000)                             | A(6500), B(6000)<br>C(2300)      |
| 0.68        | 684  |                                            |                                            |                                                                         |                                                                                                                           |                                                                                               |                                                     | A(6000)                                            | A(6000)                                        | B(4000)                          |
| 1.0         | 105  |                                            |                                            |                                                                         | R(9000)                                                                                                                   | A(6200)                                                                                       | A(3000), R(6000)<br>S(6000), T(2000)                | A(4000)<br>R(2500,4000)                            | A(3000)<br>B(2000)                             | B(3000)<br>C(2500)               |
| 1.5         | 155  |                                            |                                            |                                                                         |                                                                                                                           |                                                                                               | A(3000)                                             | A(3000)<br>B(1800)                                 | A(3000)<br>B(2500)                             | C(1500,2000)                     |
| 2.2         | 225  |                                            |                                            | R(7000)                                                                 | A(1800)                                                                                                                   | A(1800,3500)<br>T(2000)                                                                       | A(3000), B(1700)                                    | A(2500)<br>B(900,1200,2500)                        | A(1500), B(750,<br>1500,2000), C(1000)         | C(1500)<br>D(1200)               |
| 3.3         | 335  |                                            |                                            | A(2100)                                                                 | T(1500)                                                                                                                   | A(3500), B(2500)                                                                              | A(2500)<br>B(1300)                                  | A(1000,1500)<br>B(750,1500,2000)                   | B(1000)<br>C(700)                              | C(1000)<br>D(800)                |
| 4.7         | 475  |                                            |                                            | S(4000)                                                                 | A(1400), B(1400)<br>R(3000,5000)                                                                                          | A(2000)<br>B(800,1500)                                                                        | A(1800)<br>B(750,1000)                              | B(700,900,1500)<br>C(700)                          | B(700,1500)<br>C(600), D(700)                  | C(800)<br>D(300,500,700)         |
| 6.8         | 685  |                                            |                                            | A(1800)                                                                 | A(1800), B(1300)<br>T(1800)                                                                                               | A(1500)<br>B(600,1200)                                                                        | A(1000)<br>B(600,1000)<br>C(700)                    | B(700)<br>C(500,600,700)                           | C(350)<br>D(150,400,500)                       | D(200, 300,<br>500,600)          |
| 10          | 106  |                                            | R(3000)                                    | A(1500), B(1500)<br>R(1000,1500,3000)<br>T(1000)                        | A(900,1800), B(1000)<br>P(2000) <sup>M</sup> , S(900)<br>T(1000,2000)                                                     | A(1000), B(500,800)<br>C(500), T(800,1000)<br>W(500,600)                                      | B(500,1000)<br>C(500,700)<br>W(250, 500)            | B(1800)<br>C(300,500)<br>D(500)                    | C(600)<br>D(125,300)<br>E(200), Y(250)         | D(500)<br>E(250,300,<br>400,500) |
| 15          | 156  |                                            |                                            | A(700,1500)                                                             | A(1000)<br>B(450,600), C(700)<br>T(1200)                                                                                  | B(500,800), C(700)                                                                            | B(500)<br>C(400,450)                                | C(220,300)<br>D(100,300)                           | C(350,450)<br>D(100,300)<br>Y(250)             | E(250)<br>V(250)                 |
| 22          | 226  |                                            |                                            | A(500,900)<br>B(375,600)<br>C(500), S(900)                              | A(900)<br>B(400,500,700)<br>C(300), T(800)                                                                                | B(400,600)<br>C(150,250,300,375)<br>D(700), W(500)                                            | B(400,600)<br>C(100,150,400)<br>D(200,300)          | C(275,400)<br>D(100,200,300)                       | D(125,200,300,400)<br>E(125,200,300)<br>Y(200) |                                  |
| 33          | 336  |                                            |                                            | A(600)<br>B(250,350,450,600)<br>T(800)                                  | A(700)<br>B(250,425,500,650)<br>C(150,375,500)<br>W(350)                                                                  | B(350,500)<br>C(100,150,225,300)<br>D(200), W(140,175,<br>250,400,500)<br>Y(300,400)          | C(300)<br>D(100,200)                                | D(100,200,300)<br>E(100,175,<br>200,300)<br>Y(200) | D(200,300)<br>E(100,250,300)<br>V(200)         |                                  |
| 47          | 476  |                                            | A(500)                                     | A(800)<br>B(250,350,500)<br>C(300), T(1200)                             | B(250,350,500,650)<br>C(200,350)<br>D(100,300)<br>W(125,150,250)                                                          | C(110,350)<br>D(80,100,150,200)<br>W(200)<br>X(180), Y(250)                                   | D(75,100,200)<br>E(70,125,150,<br>200,250)          | D(125,150,250)<br>E(80,100,125)                    | E(200,250)<br>V(150,200)                       |                                  |
| 68          | 686  |                                            |                                            | B(250,350,500)<br>C(150,200)<br>W(110,125,250)                          | B(600)<br>C(80,100,200,300)<br>D(100,150), W(100,150)<br>Y(100,200)                                                       | C(125,200)<br>D(70,100,150)<br>F(200), X(150)<br>Y(150,200,250)                               | D(70,150,<br>200,300)<br>E(125,150,200)             | E(125,200)<br>V(80,95,150,200)                     | V(150,200)                                     |                                  |
| 100         | 107  | B(200)                                     | B(200,250,<br>350,500)<br>W(100)           | B(250,400)<br>C(75,150), D(300)<br>W(100,150)<br>Y(100)                 | B(400) <sup>M</sup><br>C(75,100,150,200)<br>D(50,65,80,100,125,<br>150), E(125) W(150)<br>X(85,150,200)<br>Y(100,150,200) | C(200)<br>D(60,100,125,150)<br>E(55,100,125,150)<br>F(150,200) <sup>M</sup><br>Y(100,150,200) | D(85,100,150)<br>E(100,150,200)<br>V(60,85,100,200) | E(150) <sup>M</sup> , V(100)                       |                                                |                                  |
| 150         | 157  | B(150)                                     | B(250)<br>C(70,80)                         | C(50,90,150,200,250)<br>D(50,125),<br>Y(40,50)                          | C(150), D(50,85,100),<br>E(100), F(200), X(100) <sup>M</sup><br>Y(100,150,200)                                            | D(60,85,100,125,150)<br>E(100), V(45,75)<br>Y(200) <sup>M</sup>                               | V(80)                                               | V(150) <sup>M</sup>                                |                                                |                                  |
| 220         | 227  | B(150,<br>200,600)<br>D(45)                | D(40,50,100)<br>Y(40,50,75)                | C(70,100,125,250)<br>D(50,100,125)<br>E(100), F(200)<br>Y(100,150)      | D(40,50,100,150)<br>E(50,60,70,100,<br>125,150)<br>Y(100,150,200)                                                         | E(100,150)<br>V(50,75,100,150)                                                                |                                                     |                                                    |                                                |                                  |
| 330         | 337  | Y(40)                                      | C(100)<br>D(35,45,100)<br>F(200)<br>X(100) | C(80,100)<br>D(45,50,70,100)<br>E(50,100,125,150)<br>V(100), Y(100,150) | D(50,65,100,150)<br>E(40,50,60,100)<br>V(40,60,100)                                                                       | E(200) <sup>M</sup>                                                                           |                                                     |                                                    |                                                |                                  |
| 470         | 477  | D(35)<br>F(200)<br>Y(100)                  | D(45,100)<br>E(35,45,100)                  | D(45,60,100,200)<br>E(45,50,60,100,200)<br>V(40,55,100), Y(150)         | E(45,50,60,100,200)<br>V(40,60,100)                                                                                       |                                                                                               |                                                     |                                                    |                                                |                                  |
| 680         | 687  | D(35,50)<br>E(35,50)<br>Y(100)             | D(45,60,100)<br>E(40,60,100)               | E(45,60,100)<br>V(35,40,50)                                             |                                                                                                                           |                                                                                               |                                                     |                                                    |                                                |                                  |
| 1000        | 108  | E(30,40)<br>Y(100) <sup>M</sup>            | E(40,60)<br>V(25,35,40,50)                 | E(100) <sup>M</sup> , V(40,50) <sup>M</sup>                             |                                                                                                                           |                                                                                               |                                                     |                                                    |                                                |                                  |
| 1500        | 158  | D(100)<br>E(50)<br>V(30,40) <sup>M</sup>   | E(50,75)<br>V(50,75) <sup>M</sup>          |                                                                         |                                                                                                                           |                                                                                               |                                                     |                                                    |                                                |                                  |

Not recommended for new designs, higher voltage or smaller case size substitution are offered.

Released codes (M tolerance only)

Engineering samples - please contact manufacturer

\*Codes under development - subject to change

ESR limits quoted in brackets (milliohms)

NOTE: Voltage ratings are minimum values.

AVX reserves the right to supply higher ratings in the same case size, to the same reliability standards.

### RATINGS & PART NUMBER REFERENCE

| AVX<br>Part No.                    | Case<br>Size | Capacitance<br>(μF) | Rated<br>Voltage<br>(V) | DCL<br>(μA)<br>Max. | DF<br>%<br>Max. | ESR<br>Max. (mΩ)<br>@100kHz | MSL             | 100kHz RMS Current (A) |       |       | 100kHz RMS Voltage (V) |       |       |
|------------------------------------|--------------|---------------------|-------------------------|---------------------|-----------------|-----------------------------|-----------------|------------------------|-------|-------|------------------------|-------|-------|
|                                    |              |                     |                         |                     |                 |                             |                 | 25°C                   | 85°C  | 125°C | 25°C                   | 85°C  | 125°C |
| 2.5 Volt @ 85°C (1.7 Volt @ 125°C) |              |                     |                         |                     |                 |                             |                 |                        |       |       |                        |       |       |
| TPSB107*002#0200                   | B            | 100                 | 2.5                     | 2.5                 | 8               | 200                         | 1               | 0.652                  | 0.587 | 0.261 | 0.130                  | 0.117 | 0.052 |
| TPSB157*002#0150                   | B            | 150                 | 2.5                     | 3                   | 10              | 150                         | 1               | 0.753                  | 0.677 | 0.301 | 0.113                  | 0.102 | 0.045 |
| TPSB227*002#0150                   | B            | 220                 | 2.5                     | 4.4                 | 16              | 150                         | 1               | 0.753                  | 0.677 | 0.301 | 0.113                  | 0.102 | 0.045 |
| TPSB227*002#0200                   | B            | 220                 | 2.5                     | 4.4                 | 16              | 200                         | 1               | 0.652                  | 0.587 | 0.261 | 0.130                  | 0.117 | 0.052 |
| TPSB227*002#0600                   | B            | 220                 | 2.5                     | 4.4                 | 16              | 600                         | 1               | 0.376                  | 0.339 | 0.151 | 0.226                  | 0.203 | 0.090 |
| TPSD227*002#0045                   | D            | 220                 | 2.5                     | 5.5                 | 8               | 45                          | 1               | 1.826                  | 1.643 | 0.730 | 0.082                  | 0.074 | 0.033 |
| TPSY337*002#0040                   | Y            | 330                 | 2.5                     | 8.2                 | 8               | 40                          | 1 <sup>1)</sup> | 1.768                  | 1.591 | 0.707 | 0.071                  | 0.064 | 0.028 |
| TPSD477*002#0035                   | D            | 470                 | 2.5                     | 11.6                | 8               | 35                          | 1               | 2.070                  | 1.863 | 0.828 | 0.072                  | 0.065 | 0.029 |
| TPSF477*002#0200                   | F            | 470                 | 2.5                     | 11.8                | 12              | 200                         | 1               | 0.707                  | 0.636 | 0.283 | 0.141                  | 0.127 | 0.057 |
| TPSY477*002#0100                   | Y            | 470                 | 2.5                     | 11                  | 12              | 100                         | 1 <sup>1)</sup> | 1.118                  | 1.006 | 0.447 | 0.112                  | 0.101 | 0.045 |
| TPSD687*002#0035                   | D            | 680                 | 2.5                     | 17                  | 16              | 35                          | 1               | 2.070                  | 1.863 | 0.828 | 0.072                  | 0.065 | 0.029 |
| TPSD687*002#0050                   | D            | 680                 | 2.5                     | 17                  | 16              | 50                          | 1               | 1.732                  | 1.559 | 0.693 | 0.087                  | 0.078 | 0.035 |
| TPSE687*002#0035                   | E            | 680                 | 2.5                     | 17                  | 10              | 35                          | 1 <sup>1)</sup> | 2.171                  | 1.954 | 0.868 | 0.076                  | 0.068 | 0.030 |
| TPSE687*002#0050                   | E            | 680                 | 2.5                     | 17                  | 10              | 50                          | 1 <sup>1)</sup> | 1.817                  | 1.635 | 0.727 | 0.091                  | 0.082 | 0.036 |
| TPSY687*002#0100                   | Y            | 680                 | 2.5                     | 17                  | 12              | 100                         | 1 <sup>1)</sup> | 1.118                  | 1.006 | 0.447 | 0.112                  | 0.101 | 0.045 |
| TPSE108*002#0030                   | E            | 1000                | 2.5                     | 25                  | 14              | 30                          | 1 <sup>1)</sup> | 2.345                  | 2.111 | 0.938 | 0.070                  | 0.063 | 0.028 |
| TPSE108*002#0040                   | E            | 1000                | 2.5                     | 25                  | 14              | 40                          | 1 <sup>1)</sup> | 2.031                  | 1.828 | 0.812 | 0.081                  | 0.073 | 0.032 |
| TPSY108M002#0100                   | Y            | 1000                | 2.5                     | 25                  | 30              | 100                         | 1 <sup>1)</sup> | 1.118                  | 1.006 | 0.447 | 0.112                  | 0.101 | 0.045 |
| TPSD158*002#0100                   | D            | 1500                | 2.5                     | 37.5                | 60              | 100                         | 1               | 1.125                  | 1.102 | 0.490 | 0.122                  | 0.110 | 0.049 |
| TPSE158*002#0050                   | E            | 1500                | 2.5                     | 37.5                | 20              | 50                          | 1 <sup>1)</sup> | 1.817                  | 1.635 | 0.727 | 0.001                  | 0.082 | 0.036 |
| TPSV158M002#0030                   | V            | 1500                | 2.5                     | 30                  | 20              | 30                          | 1 <sup>1)</sup> | 2.887                  | 2.598 | 1.155 | 0.087                  | 0.078 | 0.035 |
| TPSV158M002#0040                   | V            | 1500                | 2.5                     | 30                  | 20              | 40                          | 1 <sup>1)</sup> | 2.500                  | 2.250 | 1.000 | 0.100                  | 0.090 | 0.040 |
| 4 Volt @ 85°C (2.7 Volt @ 125°C)   |              |                     |                         |                     |                 |                             |                 |                        |       |       |                        |       |       |
| TPSR106*004#3000                   | R            | 10                  | 4                       | 0.5                 | 6               | 3000                        | 1               | 0.135                  | 0.122 | 0.054 | 0.406                  | 0.366 | 0.162 |
| TPSA476*004#0500                   | A            | 47                  | 4                       | 1.9                 | 8               | 500                         | 1               | 0.387                  | 0.349 | 0.155 | 0.194                  | 0.174 | 0.077 |
| TPSB107*004#0200                   | B            | 100                 | 4                       | 4                   | 8               | 200                         | 1               | 0.652                  | 0.587 | 0.261 | 0.130                  | 0.117 | 0.052 |
| TPSB107*004#0250                   | B            | 100                 | 4                       | 4                   | 8               | 250                         | 1               | 0.583                  | 0.525 | 0.233 | 0.146                  | 0.131 | 0.058 |
| TPSB107*004#0350                   | B            | 100                 | 4                       | 4                   | 8               | 350                         | 1               | 0.493                  | 0.444 | 0.197 | 0.172                  | 0.155 | 0.069 |
| TPSB107*004#0500                   | B            | 100                 | 4                       | 4                   | 8               | 500                         | 1               | 0.412                  | 0.371 | 0.165 | 0.206                  | 0.186 | 0.082 |
| TPSW107*004#0100                   | W            | 100                 | 4                       | 4                   | 6               | 100                         | 1               | 0.949                  | 0.854 | 0.379 | 0.095                  | 0.085 | 0.038 |
| TPSB157*004#0250                   | B            | 150                 | 4                       | 6                   | 10              | 250                         | 1               | 0.583                  | 0.525 | 0.233 | 0.146                  | 0.131 | 0.058 |
| TPSC157*004#0070                   | C            | 150                 | 4                       | 6                   | 6               | 70                          | 1               | 1.254                  | 1.128 | 0.501 | 0.088                  | 0.079 | 0.035 |
| TPSC157*004#0080                   | C            | 150                 | 4                       | 6                   | 6               | 80                          | 1               | 1.173                  | 1.055 | 0.469 | 0.094                  | 0.084 | 0.038 |
| TPSD227*004#0040                   | D            | 220                 | 4                       | 8.8                 | 8               | 40                          | 1               | 1.936                  | 1.743 | 0.775 | 0.077                  | 0.070 | 0.031 |
| TPSD227*004#0050                   | D            | 220                 | 4                       | 8.8                 | 8               | 50                          | 1               | 1.732                  | 1.559 | 0.693 | 0.087                  | 0.078 | 0.035 |
| TPSD227*004#0100                   | D            | 220                 | 4                       | 8.8                 | 8               | 100                         | 1               | 1.225                  | 1.102 | 0.490 | 0.122                  | 0.110 | 0.049 |
| TPSY227*004#0040                   | Y            | 220                 | 4                       | 8.8                 | 8               | 40                          | 1 <sup>1)</sup> | 1.768                  | 1.591 | 0.707 | 0.071                  | 0.064 | 0.028 |
| TPSY227*004#0050                   | Y            | 220                 | 4                       | 8.8                 | 8               | 50                          | 1 <sup>1)</sup> | 1.581                  | 1.423 | 0.632 | 0.095                  | 0.085 | 0.038 |
| TPSY227*004#0075                   | Y            | 220                 | 4                       | 8.8                 | 8               | 75                          | 1 <sup>1)</sup> | 1.291                  | 1.162 | 0.516 | 0.097                  | 0.087 | 0.039 |
| TPSC337*004#0100                   | C            | 330                 | 4                       | 13.2                | 8               | 100                         | 1               | 1.049                  | 0.944 | 0.420 | 0.105                  | 0.094 | 0.042 |
| TPSD337*004#0035                   | D            | 330                 | 4                       | 13.2                | 8               | 35                          | 1               | 2.070                  | 1.863 | 0.828 | 0.072                  | 0.065 | 0.029 |
| TPSD337*004#0045                   | D            | 330                 | 4                       | 13.2                | 8               | 45                          | 1               | 1.826                  | 1.643 | 0.730 | 0.082                  | 0.074 | 0.033 |
| TPSD337*004#0100                   | D            | 330                 | 4                       | 13.2                | 8               | 100                         | 1               | 1.225                  | 1.102 | 0.490 | 0.122                  | 0.110 | 0.049 |
| TPSF337*004#0200                   | F            | 330                 | 4                       | 13.2                | 10              | 200                         | 1               | 0.707                  | 0.636 | 0.283 | 0.141                  | 0.127 | 0.057 |
| TPSX337*004#0100                   | X            | 330                 | 4                       | 13.2                | 8               | 100                         | 1 <sup>1)</sup> | 1.000                  | 0.900 | 0.400 | 0.100                  | 0.090 | 0.040 |
| TPSD477*004#0045                   | D            | 470                 | 4                       | 18.8                | 12              | 45                          | 1               | 1.826                  | 1.643 | 0.730 | 0.082                  | 0.074 | 0.033 |
| TPSD477*004#0100                   | D            | 470                 | 4                       | 18.8                | 12              | 100                         | 1               | 1.225                  | 1.102 | 0.490 | 0.122                  | 0.110 | 0.049 |
| TPSE477*004#0035                   | E            | 470                 | 4                       | 18.8                | 10              | 35                          | 1 <sup>1)</sup> | 2.171                  | 1.954 | 0.868 | 0.076                  | 0.068 | 0.030 |
| TPSE477*004#0045                   | E            | 470                 | 4                       | 18.8                | 10              | 45                          | 1 <sup>1)</sup> | 1.915                  | 1.723 | 0.766 | 0.086                  | 0.078 | 0.034 |
| TPSE477*004#0100                   | E            | 470                 | 4                       | 18.8                | 10              | 100                         | 1 <sup>1)</sup> | 1.285                  | 1.156 | 0.514 | 0.128                  | 0.116 | 0.051 |
| TPSD687*004#0045                   | D            | 680                 | 4                       | 27.2                | 14              | 45                          | 1               | 1.915                  | 1.643 | 0.730 | 0.082                  | 0.074 | 0.033 |
| TPSD687*004#0060                   | D            | 680                 | 4                       | 27.2                | 14              | 60                          | 1               | 1.581                  | 1.423 | 0.632 | 0.095                  | 0.085 | 0.038 |
| TPSD687*004#0100                   | D            | 680                 | 4                       | 27.2                | 14              | 100                         | 1               | 1.225                  | 1.102 | 0.490 | 0.122                  | 0.110 | 0.049 |
| TPSE687*004#0040                   | E            | 680                 | 4                       | 27.2                | 10              | 40                          | 1 <sup>1)</sup> | 2.031                  | 1.828 | 0.812 | 0.081                  | 0.073 | 0.032 |
| TPSE687*004#0060                   | E            | 680                 | 4                       | 27.2                | 10              | 60                          | 1 <sup>1)</sup> | 1.658                  | 1.492 | 0.663 | 0.099                  | 0.090 | 0.040 |
| TPSE687*004#0100                   | E            | 680                 | 4                       | 27.2                | 10              | 100                         | 1 <sup>1)</sup> | 1.285                  | 1.156 | 0.514 | 0.128                  | 0.116 | 0.051 |
| TPSE108*004#0040                   | E            | 1000                | 4                       | 40                  | 14              | 40                          | 1 <sup>1)</sup> | 2.031                  | 1.828 | 0.812 | 0.081                  | 0.073 | 0.032 |
| TPSE108*004#0060                   | E            | 1000                | 4                       | 40                  | 14              | 60                          | 1 <sup>1)</sup> | 1.658                  | 1.492 | 0.663 | 0.099                  | 0.090 | 0.040 |
| TPSV108*004#0025                   | V            | 1000                | 4                       | 40                  | 16              | 25                          | 1 <sup>1)</sup> | 3.162                  | 2.846 | 1.265 | 0.079                  | 0.071 | 0.032 |
| TPSV108*004#0035                   | V            | 1000                | 4                       | 40                  | 16              | 35                          | 1 <sup>1)</sup> | 2.673                  | 2.405 | 1.069 | 0.094                  | 0.084 | 0.037 |
| TPSV108*004#0040                   | V            | 1000                | 4                       | 40                  | 16              | 40                          | 1 <sup>1)</sup> | 2.500                  | 2.250 | 1.000 | 0.100                  | 0.090 | 0.040 |
| TPSV108*004#0050                   | V            | 1000                | 4                       | 40                  | 16              | 50                          | 1 <sup>1)</sup> | 2.236                  | 2.012 | 0.894 | 0.112                  | 0.101 | 0.045 |
| TPSE158*004#0050                   | E            | 1500                | 4                       | 60                  | 30              | 50                          | 1 <sup>1)</sup> | 1.817                  | 1.635 | 0.727 | 0.091                  | 0.082 | 0.036 |
| TPSE158*004#0075                   | E            | 1500                | 4                       | 60                  | 30              | 75                          | 1 <sup>1)</sup> | 1.483                  | 1.335 | 0.593 | 0.111                  | 0.100 | 0.044 |
| TPSV158M004#0050                   | V            | 1500                | 4                       | 60                  | 30              | 50                          | 1 <sup>1)</sup> | 2.236                  | 2.012 | 0.894 | 0.112                  | 0.101 | 0.045 |
| TPSV158M004#0075                   | V            | 1500                | 4                       | 60                  | 30              | 75                          | 1 <sup>1)</sup> | 1.826                  | 1.643 | 0.730 | 0.137                  | 0.123 | 0.055 |

<sup>1)</sup> Dry pack option (see How to order) recommended for reduction of stress during soldering. Dry pack parts should be treated as MSL 3.

Moisture Sensitivity Level (MSL) is defined according to J-STD-020.

For AEC-Q200 availability, please contact AVX.

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 126.

**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.**

### RATINGS & PART NUMBER REFERENCE

| AVX<br>Part No.                  | Case<br>Size | Capacitance<br>(μF) | Rated<br>Voltage<br>(V) | DCL<br>(μA)<br>Max. | DF<br>%<br>Max. | ESR<br>Max. (mΩ)<br>@100kHz | MSL             | 100kHz RMS Current (A) |       |       | 100kHz RMS Voltage (V) |       |       |
|----------------------------------|--------------|---------------------|-------------------------|---------------------|-----------------|-----------------------------|-----------------|------------------------|-------|-------|------------------------|-------|-------|
|                                  |              |                     |                         |                     |                 |                             |                 | 25°C                   | 85°C  | 125°C | 25°C                   | 85°C  | 125°C |
| 6.3 Volt @ 85°C (4 Volt @ 125°C) |              |                     |                         |                     |                 |                             |                 |                        |       |       |                        |       |       |
| TPSR225*006#7000                 | R            | 2.2                 | 6.3                     | 0.5                 | 6               | 7000                        | 1               | 0.089                  | 0.080 | 0.035 | 0.620                  | 0.558 | 0.248 |
| TPSA335*006#2100                 | A            | 3.3                 | 6.3                     | 0.5                 | 6               | 2100                        | 1               | 0.189                  | 0.170 | 0.076 | 0.397                  | 0.357 | 0.159 |
| TPSS475*006#4000                 | S            | 4.7                 | 6.3                     | 0.5                 | 6               | 4000                        | 1               | 0.127                  | 0.115 | 0.051 | 0.510                  | 0.459 | 0.204 |
| TPSA685*006#1800                 | A            | 6.8                 | 6.3                     | 0.5                 | 6               | 1800                        | 1               | 0.204                  | 0.184 | 0.082 | 0.367                  | 0.331 | 0.147 |
| TPSA106*006#1500                 | A            | 10                  | 6.3                     | 0.6                 | 6               | 1500                        | 1               | 0.224                  | 0.201 | 0.089 | 0.335                  | 0.302 | 0.134 |
| TPSB106*006#1500                 | B            | 10                  | 6.3                     | 0.6                 | 6               | 1500                        | 1               | 0.238                  | 0.214 | 0.095 | 0.357                  | 0.321 | 0.143 |
| TPSR106*006#1000                 | R            | 10                  | 6.3                     | 0.6                 | 8               | 1000                        | 1               | 0.235                  | 0.211 | 0.094 | 0.235                  | 0.211 | 0.094 |
| TPSR106*006#1500                 | R            | 10                  | 6.3                     | 0.6                 | 8               | 1500                        | 1               | 0.191                  | 0.172 | 0.077 | 0.287                  | 0.259 | 0.115 |
| TPSR106*006#3000                 | R            | 10                  | 6.3                     | 0.6                 | 8               | 3000                        | 1               | 0.135                  | 0.122 | 0.054 | 0.406                  | 0.366 | 0.162 |
| TPST106*006#1000                 | T            | 10                  | 6.3                     | 0.6                 | 6               | 1000                        | 1               | 0.283                  | 0.255 | 0.113 | 0.283                  | 0.255 | 0.113 |
| TPSA156*006#0700                 | A            | 15                  | 6.3                     | 0.9                 | 6               | 700                         | 1               | 0.327                  | 0.295 | 0.131 | 0.229                  | 0.206 | 0.092 |
| TPSA156*006#1500                 | A            | 15                  | 6.3                     | 0.9                 | 6               | 1500                        | 1               | 0.224                  | 0.201 | 0.089 | 0.335                  | 0.302 | 0.134 |
| TPSA226*006#0500                 | A            | 22                  | 6.3                     | 1.4                 | 6               | 500                         | 1               | 0.387                  | 0.349 | 0.155 | 0.194                  | 0.174 | 0.077 |
| TPSA226*006#0900                 | A            | 22                  | 6.3                     | 1.4                 | 6               | 900                         | 1               | 0.289                  | 0.260 | 0.115 | 0.260                  | 0.234 | 0.104 |
| TPSB226*006#0375                 | B            | 22                  | 6.3                     | 1.4                 | 6               | 375                         | 1               | 0.476                  | 0.428 | 0.190 | 0.179                  | 0.161 | 0.071 |
| TPSB226*006#0600                 | B            | 22                  | 6.3                     | 1.4                 | 6               | 600                         | 1               | 0.376                  | 0.339 | 0.151 | 0.226                  | 0.203 | 0.090 |
| TPSC226*006#0500                 | C            | 22                  | 6.3                     | 1.4                 | 6               | 500                         | 1               | 0.469                  | 0.422 | 0.188 | 0.235                  | 0.211 | 0.094 |
| TPSS226*006#0900                 | S            | 22                  | 6.3                     | 1.3                 | 10              | 900                         | 1               | 0.269                  | 0.242 | 0.107 | 0.242                  | 0.218 | 0.097 |
| TPSA336*006#0600                 | A            | 33                  | 6.3                     | 2.1                 | 8               | 600                         | 1               | 0.354                  | 0.318 | 0.141 | 0.212                  | 0.191 | 0.085 |
| TPSB336*006#0250                 | B            | 33                  | 6.3                     | 2.1                 | 6               | 250                         | 1               | 0.583                  | 0.525 | 0.233 | 0.146                  | 0.131 | 0.058 |
| TPSB336*006#0350                 | B            | 33                  | 6.3                     | 2.1                 | 6               | 350                         | 1               | 0.493                  | 0.444 | 0.197 | 0.172                  | 0.155 | 0.069 |
| TPSB336*006#0450                 | B            | 33                  | 6.3                     | 2.1                 | 6               | 450                         | 1               | 0.435                  | 0.391 | 0.174 | 0.196                  | 0.176 | 0.078 |
| TPSB336*006#0600                 | B            | 33                  | 6.3                     | 2.1                 | 6               | 600                         | 1               | 0.376                  | 0.339 | 0.151 | 0.226                  | 0.203 | 0.090 |
| TPST336*006#0800                 | T            | 33                  | 6.3                     | 2.1                 | 10              | 800                         | 1               | 0.316                  | 0.285 | 0.126 | 0.253                  | 0.228 | 0.101 |
| TPSA476*006#0800                 | A            | 47                  | 6.3                     | 2.8                 | 10              | 800                         | 1               | 0.306                  | 0.276 | 0.122 | 0.245                  | 0.220 | 0.098 |
| TPSB476*006#0250                 | B            | 47                  | 6.3                     | 3                   | 6               | 250                         | 1               | 0.583                  | 0.525 | 0.233 | 0.146                  | 0.131 | 0.058 |
| TPSB476*006#0350                 | B            | 47                  | 6.3                     | 3                   | 6               | 350                         | 1               | 0.493                  | 0.444 | 0.197 | 0.172                  | 0.155 | 0.069 |
| TPSB476*006#0500                 | B            | 47                  | 6.3                     | 3                   | 6               | 500                         | 1               | 0.412                  | 0.371 | 0.165 | 0.206                  | 0.186 | 0.082 |
| TPSC476*006#0300                 | C            | 47                  | 6.3                     | 3                   | 6               | 300                         | 1               | 0.606                  | 0.545 | 0.242 | 0.182                  | 0.163 | 0.073 |
| TPST476*006#1200                 | T            | 47                  | 6.3                     | 2.8                 | 10              | 1200                        | 1               | 0.258                  | 0.232 | 0.103 | 0.310                  | 0.279 | 0.124 |
| TPSB686*006#0250                 | B            | 68                  | 6.3                     | 4                   | 8               | 250                         | 1               | 0.583                  | 0.525 | 0.233 | 0.146                  | 0.131 | 0.058 |
| TPSB686*006#0350                 | B            | 68                  | 6.3                     | 4                   | 8               | 350                         | 1               | 0.493                  | 0.444 | 0.197 | 0.172                  | 0.155 | 0.069 |
| TPSB686*006#0500                 | B            | 68                  | 6.3                     | 4                   | 8               | 500                         | 1               | 0.412                  | 0.371 | 0.165 | 0.206                  | 0.186 | 0.082 |
| TPSC686*006#0150                 | C            | 68                  | 6.3                     | 4.3                 | 6               | 150                         | 1               | 0.856                  | 0.771 | 0.343 | 0.128                  | 0.116 | 0.051 |
| TPSC686*006#0200                 | C            | 68                  | 6.3                     | 4.3                 | 6               | 200                         | 1               | 0.742                  | 0.667 | 0.297 | 0.148                  | 0.133 | 0.059 |
| TPSW686*006#0110                 | W            | 68                  | 6.3                     | 4.3                 | 6               | 110                         | 1               | 0.905                  | 0.814 | 0.362 | 0.099                  | 0.090 | 0.040 |
| TPSW686*006#0125                 | W            | 68                  | 6.3                     | 4.3                 | 6               | 125                         | 1               | 0.849                  | 0.764 | 0.339 | 0.106                  | 0.095 | 0.042 |
| TPSW686*006#0250                 | W            | 68                  | 6.3                     | 4.3                 | 6               | 250                         | 1               | 0.600                  | 0.540 | 0.240 | 0.150                  | 0.135 | 0.060 |
| TPSB107*006#0250                 | B            | 100                 | 6.3                     | 6.3                 | 10              | 250                         | 1               | 0.583                  | 0.525 | 0.233 | 0.146                  | 0.131 | 0.058 |
| TPSB107*006#0400                 | B            | 100                 | 6.3                     | 6.3                 | 10              | 400                         | 1               | 0.461                  | 0.415 | 0.184 | 0.184                  | 0.166 | 0.074 |
| TPSC107*006#0075                 | C            | 100                 | 6.3                     | 6.3                 | 6               | 75                          | 1               | 1.211                  | 1.090 | 0.484 | 0.091                  | 0.082 | 0.036 |
| TPSC107*006#0150                 | C            | 100                 | 6.3                     | 6.3                 | 6               | 150                         | 1               | 0.856                  | 0.771 | 0.343 | 0.128                  | 0.116 | 0.051 |
| TPSD107*006#0300                 | D            | 100                 | 6.3                     | 6.3                 | 6               | 300                         | 1               | 0.707                  | 0.636 | 0.283 | 0.212                  | 0.191 | 0.085 |
| TPSW107*006#0100                 | W            | 100                 | 6.3                     | 6.3                 | 6               | 100                         | 1               | 0.949                  | 0.854 | 0.379 | 0.095                  | 0.085 | 0.038 |
| TPSW107*006#0150                 | W            | 100                 | 6.3                     | 6.3                 | 6               | 150                         | 1               | 0.775                  | 0.697 | 0.310 | 0.116                  | 0.105 | 0.046 |
| TPSY107*006#0100                 | Y            | 100                 | 6.3                     | 6.3                 | 6               | 100                         | 1 <sup>1)</sup> | 1.118                  | 1.006 | 0.447 | 0.112                  | 0.101 | 0.045 |
| TPSC157*006#0050                 | C            | 150                 | 6.3                     | 9.5                 | 6               | 50                          | 1               | 1.483                  | 1.335 | 0.593 | 0.074                  | 0.067 | 0.030 |
| TPSC157*006#0090                 | C            | 150                 | 6.3                     | 9.5                 | 6               | 90                          | 1               | 1.106                  | 0.995 | 0.442 | 0.099                  | 0.090 | 0.040 |
| TPSC157*006#0150                 | C            | 150                 | 6.3                     | 9.5                 | 6               | 150                         | 1               | 0.856                  | 0.771 | 0.343 | 0.128                  | 0.116 | 0.051 |
| TPSC157*006#0200                 | C            | 150                 | 6.3                     | 9.5                 | 6               | 200                         | 1               | 0.742                  | 0.667 | 0.297 | 0.148                  | 0.133 | 0.059 |
| TPSC157*006#0250                 | C            | 150                 | 6.3                     | 9.5                 | 6               | 250                         | 1               | 0.663                  | 0.597 | 0.265 | 0.166                  | 0.149 | 0.066 |
| TPSD157*006#0050                 | D            | 150                 | 6.3                     | 9.5                 | 6               | 50                          | 1               | 1.732                  | 1.559 | 0.693 | 0.087                  | 0.078 | 0.035 |
| TPSD157*006#0125                 | D            | 150                 | 6.3                     | 9.5                 | 6               | 125                         | 1               | 1.095                  | 0.986 | 0.438 | 0.137                  | 0.123 | 0.055 |
| TPSY157*006#0040                 | Y            | 150                 | 6.3                     | 9.5                 | 6               | 40                          | 1 <sup>1)</sup> | 1.768                  | 1.591 | 0.707 | 0.071                  | 0.064 | 0.028 |
| TPSY157*006#0050                 | Y            | 150                 | 6.3                     | 9.5                 | 6               | 50                          | 1 <sup>1)</sup> | 1.581                  | 1.423 | 0.632 | 0.079                  | 0.071 | 0.032 |
| TPSC227*006#0070                 | C            | 220                 | 6.3                     | 13.9                | 8               | 70                          | 1               | 1.254                  | 1.128 | 0.501 | 0.088                  | 0.079 | 0.035 |
| TPSC227*006#0100                 | C            | 220                 | 6.3                     | 13.9                | 8               | 100                         | 1               | 1.049                  | 0.944 | 0.420 | 0.105                  | 0.094 | 0.042 |
| TPSC227*006#0125                 | C            | 220                 | 6.3                     | 13.9                | 8               | 125                         | 1               | 0.938                  | 0.844 | 0.375 | 0.117                  | 0.106 | 0.047 |
| TPSC227*006#0250                 | C            | 220                 | 6.3                     | 13.9                | 8               | 250                         | 1               | 0.663                  | 0.597 | 0.265 | 0.166                  | 0.149 | 0.066 |
| TPSD227*006#0050                 | D            | 220                 | 6.3                     | 13.9                | 8               | 50                          | 1               | 1.732                  | 1.559 | 0.693 | 0.087                  | 0.078 | 0.035 |
| TPSD227*006#0100                 | D            | 220                 | 6.3                     | 13.9                | 8               | 100                         | 1               | 1.225                  | 1.102 | 0.490 | 0.122                  | 0.110 | 0.049 |
| TPSD227*006#0125                 | D            | 220                 | 6.3                     | 13.9                | 8               | 125                         | 1               | 1.095                  | 0.986 | 0.438 | 0.137                  | 0.123 | 0.055 |
| TPSE227*006#0100                 | E            | 220                 | 6.3                     | 13.9                | 8               | 100                         | 1 <sup>1)</sup> | 1.285                  | 1.156 | 0.514 | 0.128                  | 0.116 | 0.051 |
| TPSF227*006#0200                 | F            | 220                 | 6.3                     | 13.2                | 10              | 200                         | 1               | 0.707                  | 0.636 | 0.283 | 0.141                  | 0.127 | 0.057 |
| TPSY227*006#0100                 | Y            | 220                 | 6.3                     | 13.9                | 8               | 100                         | 1 <sup>1)</sup> | 1.118                  | 1.006 | 0.447 | 0.112                  | 0.101 | 0.045 |
| TPSY227*006#0150                 | Y            | 220                 | 6.3                     | 13.9                | 8               | 150                         | 1 <sup>1)</sup> | 0.913                  | 0.822 | 0.365 | 0.137                  | 0.123 | 0.055 |

<sup>1)</sup> Dry pack option (see How to order) recommended for reduction of stress during soldering. Dry pack parts should be treated as MSL 3.

Moisture Sensitivity Level (MSL) is defined according to J-STD-020.

For AEC-Q200 availability, please contact AVX.

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 126.

**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.**

### RATINGS & PART NUMBER REFERENCE

| AVX Part No.                    | Case Size | Capacitance (μF) | Rated Voltage (V) | DCL (μA) Max. | DF % Max. | ESR Max. (mΩ) @100kHz | MSL             | 100kHz RMS Current (A) |       |       | 100kHz RMS Voltage (V) |       |       |
|---------------------------------|-----------|------------------|-------------------|---------------|-----------|-----------------------|-----------------|------------------------|-------|-------|------------------------|-------|-------|
|                                 |           |                  |                   |               |           |                       |                 | 25°C                   | 85°C  | 125°C | 25°C                   | 85°C  | 125°C |
| TPSC337*006#0080                | C         | 330              | 6.3               | 19.8          | 12        | 80                    | 1               | 1.173                  | 1.055 | 0.469 | 0.094                  | 0.084 | 0.038 |
| TPSC337*006#0100                | C         | 330              | 6.3               | 19.8          | 12        | 100                   | 1               | 1.049                  | 0.944 | 0.420 | 0.105                  | 0.094 | 0.042 |
| TPSD337*006#0045                | D         | 330              | 6.3               | 20.8          | 8         | 45                    | 1               | 1.826                  | 1.643 | 0.730 | 0.082                  | 0.074 | 0.033 |
| TPSD337*006#0050                | D         | 330              | 6.3               | 20.8          | 8         | 50                    | 1               | 1.732                  | 1.559 | 0.693 | 0.087                  | 0.078 | 0.035 |
| TPSD337*006#0070                | D         | 330              | 6.3               | 20.8          | 8         | 70                    | 1               | 1.464                  | 1.317 | 0.586 | 0.102                  | 0.092 | 0.041 |
| TPSD337*006#0100                | D         | 330              | 6.3               | 20.8          | 8         | 100                   | 1               | 1.225                  | 1.102 | 0.490 | 0.122                  | 0.110 | 0.049 |
| TPSE337*006#0050                | E         | 330              | 6.3               | 20.8          | 8         | 50                    | 1 <sup>1)</sup> | 1.817                  | 1.635 | 0.727 | 0.091                  | 0.082 | 0.036 |
| TPSE337*006#0100                | E         | 330              | 6.3               | 20.8          | 8         | 100                   | 1 <sup>1)</sup> | 1.285                  | 1.156 | 0.514 | 0.128                  | 0.116 | 0.051 |
| TPSE337*006#0125                | E         | 330              | 6.3               | 20.8          | 8         | 125                   | 1 <sup>1)</sup> | 1.149                  | 1.034 | 0.460 | 0.144                  | 0.129 | 0.057 |
| TPSE337*006#0150                | E         | 330              | 6.3               | 20.8          | 8         | 150                   | 1 <sup>1)</sup> | 1.049                  | 0.944 | 0.420 | 0.157                  | 0.142 | 0.063 |
| TPSV337*006#0100                | V         | 330              | 6.3               | 20.8          | 8         | 100                   | 1 <sup>1)</sup> | 1.581                  | 1.423 | 0.632 | 0.158                  | 0.142 | 0.063 |
| TPSY337*006#0100                | Y         | 330              | 6.3               | 20.8          | 12        | 100                   | 1 <sup>1)</sup> | 1.118                  | 1.006 | 0.447 | 0.112                  | 0.101 | 0.045 |
| TPSY337*006#0150                | Y         | 330              | 6.3               | 20.8          | 12        | 150                   | 1 <sup>1)</sup> | 0.913                  | 0.822 | 0.365 | 0.137                  | 0.123 | 0.055 |
| TPSD477*006#0045                | D         | 470              | 6.3               | 28            | 12        | 45                    | 1               | 1.826                  | 1.643 | 0.730 | 0.082                  | 0.074 | 0.033 |
| TPSD477*006#0060                | D         | 470              | 6.3               | 28            | 12        | 60                    | 1               | 1.581                  | 1.423 | 0.632 | 0.095                  | 0.085 | 0.038 |
| TPSD477*006#0100                | D         | 470              | 6.3               | 28            | 12        | 100                   | 1               | 1.225                  | 1.102 | 0.490 | 0.122                  | 0.110 | 0.049 |
| TPSD477*006#0200                | D         | 470              | 6.3               | 28            | 12        | 200                   | 1               | 0.866                  | 0.779 | 0.346 | 0.173                  | 0.156 | 0.069 |
| TPSE477*006#0045                | E         | 470              | 6.3               | 28            | 10        | 45                    | 1 <sup>1)</sup> | 1.915                  | 1.723 | 0.766 | 0.086                  | 0.078 | 0.034 |
| TPSE477*006#0050                | E         | 470              | 6.3               | 28            | 10        | 50                    | 1 <sup>1)</sup> | 1.817                  | 1.635 | 0.727 | 0.091                  | 0.082 | 0.036 |
| TPSE477*006#0060                | E         | 470              | 6.3               | 28            | 10        | 60                    | 1 <sup>1)</sup> | 1.658                  | 1.492 | 0.663 | 0.099                  | 0.090 | 0.040 |
| TPSE477*006#0100                | E         | 470              | 6.3               | 28            | 10        | 100                   | 1 <sup>1)</sup> | 1.285                  | 1.156 | 0.514 | 0.128                  | 0.116 | 0.051 |
| TPSE477*006#0200                | E         | 470              | 6.3               | 28            | 10        | 200                   | 1 <sup>1)</sup> | 0.908                  | 0.817 | 0.363 | 0.182                  | 0.163 | 0.073 |
| TPSV477*006#0040                | V         | 470              | 6.3               | 28            | 10        | 40                    | 1 <sup>1)</sup> | 2.500                  | 2.250 | 1.000 | 0.100                  | 0.090 | 0.040 |
| TPSV477*006#0055                | V         | 470              | 6.3               | 28            | 10        | 55                    | 1 <sup>1)</sup> | 2.132                  | 1.919 | 0.853 | 0.117                  | 0.106 | 0.047 |
| TPSV477*006#0100                | V         | 470              | 6.3               | 28            | 10        | 100                   | 1 <sup>1)</sup> | 1.581                  | 1.423 | 0.632 | 0.158                  | 0.142 | 0.063 |
| TPSY477*006#0150                | Y         | 470              | 6.3               | 28.2          | 20        | 150                   | 1 <sup>1)</sup> | 0.913                  | 0.822 | 0.365 | 0.137                  | 0.123 | 0.055 |
| TPSE687*006#0045                | E         | 680              | 6.3               | 42.8          | 10        | 45                    | 1 <sup>1)</sup> | 1.915                  | 1.723 | 0.766 | 0.086                  | 0.078 | 0.034 |
| TPSE687*006#0060                | E         | 680              | 6.3               | 42.8          | 10        | 60                    | 1 <sup>1)</sup> | 1.658                  | 1.492 | 0.663 | 0.099                  | 0.090 | 0.040 |
| TPSE687*006#0100                | E         | 680              | 6.3               | 42.8          | 10        | 100                   | 1 <sup>1)</sup> | 1.285                  | 1.156 | 0.514 | 0.128                  | 0.116 | 0.051 |
| TPSV687*006#0035                | V         | 680              | 6.3               | 42.8          | 14        | 35                    | 1 <sup>1)</sup> | 2.673                  | 2.405 | 1.069 | 0.094                  | 0.084 | 0.037 |
| TPSV687*006#0040                | V         | 680              | 6.3               | 42.8          | 10        | 40                    | 1 <sup>1)</sup> | 2.500                  | 2.250 | 1.000 | 0.100                  | 0.090 | 0.040 |
| TPSV687*006#0050                | V         | 680              | 6.3               | 42.8          | 10        | 50                    | 1 <sup>1)</sup> | 2.236                  | 2.012 | 0.894 | 0.112                  | 0.101 | 0.045 |
| TPSE108M006#0100                | E         | 1000             | 6.3               | 60            | 20        | 100                   | 1 <sup>1)</sup> | 1.285                  | 1.156 | 0.514 | 0.128                  | 0.116 | 0.051 |
| TPSV108M006#0040                | V         | 1000             | 6.3               | 60            | 16        | 40                    | 1 <sup>1)</sup> | 2.500                  | 2.250 | 1.000 | 0.100                  | 0.090 | 0.040 |
| TPSV108M006#0050                | V         | 1000             | 6.3               | 60            | 16        | 50                    | 1 <sup>1)</sup> | 2.236                  | 2.012 | 0.894 | 0.112                  | 0.101 | 0.045 |
| 10 Volt @ 85°C (7 Volt @ 125°C) |           |                  |                   |               |           |                       |                 |                        |       |       |                        |       |       |
| TPSR105*010#9000                | R         | 1                | 10                | 0.5           | 4         | 9000                  | 1               | 0.078                  | 0.078 | 0.031 | 0.704                  | 0.633 | 0.281 |
| TPSA225*010#1800                | A         | 2.2              | 10                | 0.5           | 6         | 1800                  | 1               | 0.204                  | 0.184 | 0.082 | 0.367                  | 0.331 | 0.147 |
| TPST335*010#1500                | T         | 3.3              | 10                | 0.5           | 6         | 1500                  | 1               | 0.231                  | 0.208 | 0.092 | 0.346                  | 0.312 | 0.139 |
| TPSA475*010#1400                | A         | 4.7              | 10                | 0.5           | 6         | 1400                  | 1               | 0.231                  | 0.208 | 0.093 | 0.324                  | 0.292 | 0.130 |
| TPSB475*010#1400                | B         | 4.7              | 10                | 0.5           | 6         | 1400                  | 1               | 0.246                  | 0.222 | 0.099 | 0.345                  | 0.310 | 0.138 |
| TPSR475*010#3000                | R         | 4.7              | 10                | 0.5           | 6         | 3000                  | 1               | 0.135                  | 0.122 | 0.054 | 0.406                  | 0.366 | 0.162 |
| TPSR475*010#5000                | R         | 4.7              | 10                | 0.5           | 6         | 5000                  | 1               | 0.105                  | 0.094 | 0.042 | 0.524                  | 0.472 | 0.210 |
| TPSA685*010#1800                | A         | 6.8              | 10                | 0.7           | 6         | 1800                  | 1               | 0.204                  | 0.184 | 0.082 | 0.367                  | 0.331 | 0.147 |
| TPSB685*010#1300                | B         | 6.8              | 10                | 0.7           | 6         | 1300                  | 1               | 0.256                  | 0.230 | 0.102 | 0.332                  | 0.299 | 0.133 |
| TPST685*010#1800                | T         | 6.8              | 10                | 0.7           | 6         | 1800                  | 1               | 0.211                  | 0.190 | 0.084 | 0.379                  | 0.342 | 0.152 |
| TPSA106*010#0900                | A         | 10               | 10                | 1             | 6         | 900                   | 1               | 0.289                  | 0.260 | 0.115 | 0.260                  | 0.234 | 0.104 |
| TPSA106*010#1800                | A         | 10               | 10                | 1             | 6         | 1800                  | 1               | 0.204                  | 0.184 | 0.082 | 0.367                  | 0.331 | 0.147 |
| TPSB106*010#1000                | B         | 10               | 10                | 1             | 6         | 1000                  | 1               | 0.292                  | 0.262 | 0.117 | 0.292                  | 0.262 | 0.117 |
| TPSP106M010#2000                | P         | 10               | 10                | 1             | 8         | 2000                  | 1               | 0.173                  | 0.156 | 0.069 | 0.346                  | 0.312 | 0.139 |
| TPSS106*010#0900                | S         | 10               | 10                | 1             | 8         | 900                   | 1               | 0.269                  | 0.242 | 0.107 | 0.242                  | 0.218 | 0.097 |
| TPST106*010#1000                | T         | 10               | 10                | 1             | 6         | 1000                  | 1               | 0.283                  | 0.255 | 0.113 | 0.283                  | 0.255 | 0.113 |
| TPST106*010#2000                | T         | 10               | 10                | 1             | 6         | 2000                  | 1               | 0.200                  | 0.180 | 0.080 | 0.400                  | 0.360 | 0.160 |
| TPSA156*010#1000                | A         | 15               | 10                | 1.5           | 6         | 1000                  | 1               | 0.274                  | 0.246 | 0.110 | 0.274                  | 0.246 | 0.110 |
| TPSB156*010#0450                | B         | 15               | 10                | 1.5           | 6         | 450                   | 1               | 0.435                  | 0.391 | 0.174 | 0.196                  | 0.176 | 0.078 |
| TPSB156*010#0600                | B         | 15               | 10                | 1.5           | 6         | 600                   | 1               | 0.376                  | 0.339 | 0.151 | 0.226                  | 0.203 | 0.090 |
| TPSC156*010#0700                | C         | 15               | 10                | 1.5           | 6         | 700                   | 1               | 0.396                  | 0.357 | 0.159 | 0.277                  | 0.250 | 0.111 |
| TPST156*010#1200                | T         | 15               | 10                | 1.5           | 8         | 1200                  | 1               | 0.258                  | 0.232 | 0.103 | 0.310                  | 0.279 | 0.124 |
| TPSA226*010#0900                | A         | 22               | 10                | 2.2           | 8         | 900                   | 1               | 0.289                  | 0.260 | 0.115 | 0.260                  | 0.234 | 0.104 |
| TPSB226*010#0400                | B         | 22               | 10                | 2.2           | 6         | 400                   | 1               | 0.461                  | 0.415 | 0.184 | 0.184                  | 0.166 | 0.074 |
| TPSB226*010#0500                | B         | 22               | 10                | 2.2           | 6         | 500                   | 1               | 0.412                  | 0.371 | 0.165 | 0.206                  | 0.186 | 0.082 |
| TPSB226*010#0700                | B         | 22               | 10                | 2.2           | 6         | 700                   | 1               | 0.348                  | 0.314 | 0.139 | 0.244                  | 0.220 | 0.098 |
| TPSC226*010#0300                | C         | 22               | 10                | 2.2           | 6         | 300                   | 1               | 0.606                  | 0.545 | 0.242 | 0.182                  | 0.163 | 0.073 |
| TPST226*010#0800                | T         | 22               | 10                | 2.2           | 8         | 800                   | 1               | 0.316                  | 0.285 | 0.126 | 0.253                  | 0.228 | 0.101 |
| TPSA336*010#0700                | A         | 33               | 10                | 3.3           | 8         | 700                   | 1               | 0.327                  | 0.295 | 0.131 | 0.229                  | 0.206 | 0.092 |
| TPSB336*010#0250                | B         | 33               | 10                | 3.3           | 6         | 250                   | 1               | 0.583                  | 0.525 | 0.233 | 0.146                  | 0.131 | 0.058 |
| TPSB336*010#0425                | B         | 33               | 10                | 3.3           | 6         | 425                   | 1               | 0.447                  | 0.402 | 0.179 | 0.190                  | 0.171 | 0.076 |
| TPSB336*010#0500                | B         | 33               | 10                | 3.3           | 6         | 500                   | 1               | 0.412                  | 0.371 | 0.165 | 0.206                  | 0.186 | 0.082 |
| TPSB336*010#0650                | B         | 33               | 10                | 3.3           | 6         | 650                   | 1               | 0.362                  | 0.325 | 0.145 | 0.235                  | 0.212 | 0.094 |

<sup>1)</sup> Dry pack option (see How to order) recommended for reduction of stress during soldering. Dry pack parts should be treated as MSL 3.

Moisture Sensitivity Level (MSL) is defined according to J-STD-020.

For AEC-Q200 availability, please contact AVX.

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 126.

**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.**

### RATINGS & PART NUMBER REFERENCE

| AVX<br>Part No.  | Case<br>Size | Capacitance<br>(μF) | Rated<br>Voltage<br>(V) | DCL<br>(μA)<br>Max. | DF<br>%<br>Max. | ESR<br>Max. (mΩ)<br>@100kHz | MSL             | 100kHz RMS Current (A) |       |       | 100kHz RMS Voltage (V) |       |       |
|------------------|--------------|---------------------|-------------------------|---------------------|-----------------|-----------------------------|-----------------|------------------------|-------|-------|------------------------|-------|-------|
|                  |              |                     |                         |                     |                 |                             |                 | 25°C                   | 85°C  | 125°C | 25°C                   | 85°C  | 125°C |
| TPSC336*010#0150 | C            | 33                  | 10                      | 3.3                 | 6               | 150                         | 1               | 0.856                  | 0.771 | 0.343 | 0.128                  | 0.116 | 0.051 |
| TPSC336*010#0375 | C            | 33                  | 10                      | 3.3                 | 6               | 375                         | 1               | 0.542                  | 0.487 | 0.217 | 0.203                  | 0.183 | 0.081 |
| TPSC336*010#0500 | C            | 33                  | 10                      | 3.3                 | 6               | 500                         | 1               | 0.469                  | 0.422 | 0.188 | 0.235                  | 0.211 | 0.094 |
| TPSW336*010#0350 | W            | 33                  | 10                      | 3.3                 | 6               | 350                         | 1               | 0.507                  | 0.456 | 0.203 | 0.177                  | 0.160 | 0.071 |
| TPSB476*010#0250 | B            | 47                  | 10                      | 4.7                 | 8               | 250                         | 1               | 0.583                  | 0.525 | 0.233 | 0.146                  | 0.131 | 0.058 |
| TPSB476*010#0350 | B            | 47                  | 10                      | 4.7                 | 8               | 350                         | 1               | 0.493                  | 0.444 | 0.197 | 0.172                  | 0.155 | 0.069 |
| TPSB476*010#0500 | B            | 47                  | 10                      | 4.7                 | 8               | 500                         | 1               | 0.412                  | 0.371 | 0.165 | 0.206                  | 0.186 | 0.082 |
| TPSB476*010#0650 | B            | 47                  | 10                      | 4.7                 | 8               | 650                         | 1               | 0.362                  | 0.325 | 0.145 | 0.235                  | 0.212 | 0.094 |
| TPSC476*010#0200 | C            | 47                  | 10                      | 4.7                 | 6               | 200                         | 1               | 0.742                  | 0.667 | 0.297 | 0.148                  | 0.133 | 0.059 |
| TPSC476*010#0350 | C            | 47                  | 10                      | 4.7                 | 6               | 350                         | 1               | 0.561                  | 0.505 | 0.224 | 0.196                  | 0.177 | 0.078 |
| TPSD476*010#0100 | D            | 47                  | 10                      | 4.7                 | 6               | 100                         | 1               | 1.225                  | 1.102 | 0.490 | 0.122                  | 0.110 | 0.049 |
| TPSD476*010#0300 | D            | 47                  | 10                      | 4.7                 | 6               | 300                         | 1               | 0.707                  | 0.636 | 0.283 | 0.212                  | 0.191 | 0.085 |
| TPSW476*010#0125 | W            | 47                  | 10                      | 4.7                 | 6               | 125                         | 1               | 0.849                  | 0.764 | 0.339 | 0.106                  | 0.095 | 0.042 |
| TPSW476*010#0150 | W            | 47                  | 10                      | 4.7                 | 6               | 150                         | 1               | 0.775                  | 0.697 | 0.310 | 0.116                  | 0.105 | 0.046 |
| TPSW476*010#0250 | W            | 47                  | 10                      | 4.7                 | 6               | 250                         | 1               | 0.600                  | 0.540 | 0.240 | 0.150                  | 0.135 | 0.060 |
| TPSB686*010#0600 | B            | 68                  | 10                      | 6.8                 | 8               | 600                         | 1               | 0.376                  | 0.339 | 0.151 | 0.226                  | 0.203 | 0.090 |
| TPSC686*010#0080 | C            | 68                  | 10                      | 6.8                 | 6               | 80                          | 1               | 1.173                  | 1.055 | 0.469 | 0.094                  | 0.084 | 0.038 |
| TPSC686*010#0100 | C            | 68                  | 10                      | 6.8                 | 6               | 100                         | 1               | 1.049                  | 0.944 | 0.420 | 0.105                  | 0.094 | 0.042 |
| TPSC686*010#0200 | C            | 68                  | 10                      | 6.8                 | 6               | 200                         | 1               | 0.742                  | 0.667 | 0.297 | 0.148                  | 0.133 | 0.059 |
| TPSC686*010#0300 | C            | 68                  | 10                      | 6.8                 | 6               | 300                         | 1               | 0.606                  | 0.545 | 0.242 | 0.182                  | 0.163 | 0.073 |
| TPSD686*010#0100 | D            | 68                  | 10                      | 6.8                 | 6               | 100                         | 1               | 1.225                  | 1.102 | 0.490 | 0.122                  | 0.110 | 0.049 |
| TPSD686*010#0150 | D            | 68                  | 10                      | 6.8                 | 6               | 150                         | 1               | 1.000                  | 0.900 | 0.400 | 0.150                  | 0.135 | 0.060 |
| TPSY686*010#0100 | Y            | 68                  | 10                      | 6.8                 | 6               | 100                         | 1 <sup>1)</sup> | 1.118                  | 1.006 | 0.447 | 0.112                  | 0.101 | 0.045 |
| TPSY686*010#0200 | Y            | 68                  | 10                      | 6.8                 | 6               | 200                         | 1 <sup>1)</sup> | 0.791                  | 0.712 | 0.316 | 0.158                  | 0.142 | 0.063 |
| TPSW686*010#0100 | W            | 68                  | 10                      | 6.8                 | 6               | 100                         | 1               | 0.949                  | 0.854 | 0.379 | 0.095                  | 0.085 | 0.038 |
| TPSW686*010#0150 | W            | 68                  | 10                      | 6.8                 | 6               | 150                         | 1               | 0.775                  | 0.697 | 0.310 | 0.116                  | 0.105 | 0.046 |
| TPSB107*010#0400 | B            | 100                 | 10                      | 10                  | 8               | 400                         | 1               | 0.461                  | 0.415 | 0.184 | 0.184                  | 0.166 | 0.074 |
| TPSC107*010#0075 | C            | 100                 | 10                      | 10                  | 8               | 75                          | 1               | 1.211                  | 1.090 | 0.484 | 0.091                  | 0.082 | 0.036 |
| TPSC107*010#0100 | C            | 100                 | 10                      | 10                  | 8               | 100                         | 1               | 1.049                  | 0.944 | 0.420 | 0.105                  | 0.094 | 0.042 |
| TPSC107*010#0150 | C            | 100                 | 10                      | 10                  | 8               | 150                         | 1               | 0.856                  | 0.771 | 0.343 | 0.128                  | 0.116 | 0.051 |
| TPSC107*010#0200 | C            | 100                 | 10                      | 10                  | 8               | 200                         | 1               | 0.742                  | 0.667 | 0.297 | 0.148                  | 0.133 | 0.059 |
| TPSD107*010#0050 | D            | 100                 | 10                      | 10                  | 6               | 50                          | 1               | 1.732                  | 1.559 | 0.693 | 0.087                  | 0.078 | 0.035 |
| TPSD107*010#0065 | D            | 100                 | 10                      | 10                  | 6               | 65                          | 1               | 1.519                  | 1.367 | 0.608 | 0.099                  | 0.089 | 0.039 |
| TPSD107*010#0080 | D            | 100                 | 10                      | 10                  | 6               | 80                          | 1               | 1.369                  | 1.232 | 0.548 | 0.110                  | 0.099 | 0.044 |
| TPSD107*010#0100 | D            | 100                 | 10                      | 10                  | 6               | 100                         | 1               | 1.225                  | 1.102 | 0.490 | 0.122                  | 0.110 | 0.049 |
| TPSD107*010#0125 | D            | 100                 | 10                      | 10                  | 6               | 125                         | 1               | 1.095                  | 0.986 | 0.438 | 0.137                  | 0.123 | 0.055 |
| TPSD107*010#0150 | D            | 100                 | 10                      | 10                  | 6               | 150                         | 1               | 1.000                  | 0.900 | 0.400 | 0.150                  | 0.135 | 0.060 |
| TPSE107*010#0125 | E            | 100                 | 10                      | 10                  | 6               | 125                         | 1 <sup>1)</sup> | 1.149                  | 1.034 | 0.460 | 0.144                  | 0.129 | 0.057 |
| TPSW107*010#0150 | W            | 100                 | 10                      | 10                  | 6               | 150                         | 1               | 0.775                  | 0.697 | 0.310 | 0.116                  | 0.105 | 0.046 |
| TPSX107*010#0085 | X            | 100                 | 10                      | 10                  | 8               | 85                          | 1 <sup>1)</sup> | 1.085                  | 0.976 | 0.434 | 0.092                  | 0.083 | 0.037 |
| TPSX107*010#0150 | X            | 100                 | 10                      | 10                  | 8               | 150                         | 1 <sup>1)</sup> | 0.816                  | 0.735 | 0.327 | 0.122                  | 0.110 | 0.049 |
| TPSX107*010#0200 | X            | 100                 | 10                      | 10                  | 8               | 200                         | 1 <sup>1)</sup> | 0.707                  | 0.636 | 0.283 | 0.141                  | 0.127 | 0.057 |
| TPSY107*010#0100 | Y            | 100                 | 10                      | 10                  | 6               | 100                         | 1 <sup>1)</sup> | 1.118                  | 1.006 | 0.447 | 0.112                  | 0.101 | 0.045 |
| TPSY107*010#0150 | Y            | 100                 | 10                      | 10                  | 6               | 150                         | 1 <sup>1)</sup> | 0.913                  | 0.822 | 0.365 | 0.137                  | 0.123 | 0.055 |
| TPSY107*010#0200 | Y            | 100                 | 10                      | 10                  | 6               | 200                         | 1 <sup>1)</sup> | 0.791                  | 0.712 | 0.316 | 0.158                  | 0.142 | 0.063 |
| TPSC157*010#0150 | C            | 150                 | 10                      | 15                  | 8               | 150                         | 1               | 0.856                  | 0.771 | 0.343 | 0.128                  | 0.116 | 0.051 |
| TPSD157*010#0050 | D            | 150                 | 10                      | 15                  | 8               | 50                          | 1               | 1.732                  | 1.559 | 0.693 | 0.087                  | 0.078 | 0.035 |
| TPSD157*010#0085 | D            | 150                 | 10                      | 15                  | 8               | 85                          | 1               | 1.328                  | 1.196 | 0.531 | 0.113                  | 0.102 | 0.045 |
| TPSD157*010#0100 | D            | 150                 | 10                      | 15                  | 8               | 100                         | 1               | 1.225                  | 1.102 | 0.490 | 0.122                  | 0.110 | 0.049 |
| TPSE157*010#0100 | E            | 150                 | 10                      | 15                  | 8               | 100                         | 1 <sup>1)</sup> | 1.285                  | 1.156 | 0.514 | 0.128                  | 0.116 | 0.051 |
| TPSF157*010#0200 | F            | 150                 | 10                      | 15                  | 10              | 200                         | 1               | 0.707                  | 0.636 | 0.283 | 0.141                  | 0.127 | 0.057 |
| TPSX157*010#0100 | X            | 150                 | 10                      | 15                  | 6               | 100                         | 1 <sup>1)</sup> | 1.000                  | 0.900 | 0.400 | 0.100                  | 0.090 | 0.040 |
| TPSY157*010#0100 | Y            | 150                 | 10                      | 15                  | 6               | 100                         | 1 <sup>1)</sup> | 1.118                  | 1.006 | 0.447 | 0.112                  | 0.101 | 0.045 |
| TPSY157*010#0150 | Y            | 150                 | 10                      | 15                  | 6               | 150                         | 1 <sup>1)</sup> | 0.913                  | 0.822 | 0.365 | 0.137                  | 0.123 | 0.055 |
| TPSY157*010#0200 | Y            | 150                 | 10                      | 15                  | 6               | 200                         | 1 <sup>1)</sup> | 0.791                  | 0.712 | 0.316 | 0.158                  | 0.142 | 0.063 |
| TPSD227*010#0050 | D            | 220                 | 10                      | 22                  | 8               | 50                          | 1               | 1.732                  | 1.559 | 0.693 | 0.087                  | 0.078 | 0.035 |
| TPSD227*010#0100 | D            | 220                 | 10                      | 22                  | 8               | 100                         | 1               | 1.225                  | 1.102 | 0.490 | 0.122                  | 0.110 | 0.049 |
| TPSD227*010#0150 | D            | 220                 | 10                      | 22                  | 8               | 150                         | 1               | 1.000                  | 0.900 | 0.400 | 0.150                  | 0.135 | 0.060 |
| TPSE227*010#0050 | E            | 220                 | 10                      | 22                  | 8               | 50                          | 1 <sup>1)</sup> | 1.817                  | 1.635 | 0.727 | 0.091                  | 0.082 | 0.036 |
| TPSE227*010#0060 | E            | 220                 | 10                      | 22                  | 8               | 60                          | 1 <sup>1)</sup> | 1.658                  | 1.492 | 0.663 | 0.099                  | 0.090 | 0.040 |
| TPSE227*010#0070 | E            | 220                 | 10                      | 22                  | 8               | 70                          | 1 <sup>1)</sup> | 1.535                  | 1.382 | 0.614 | 0.107                  | 0.097 | 0.043 |
| TPSE227*010#0100 | E            | 220                 | 10                      | 22                  | 8               | 100                         | 1 <sup>1)</sup> | 1.285                  | 1.156 | 0.514 | 0.128                  | 0.116 | 0.051 |
| TPSE227*010#0125 | E            | 220                 | 10                      | 22                  | 8               | 125                         | 1 <sup>1)</sup> | 1.149                  | 1.034 | 0.460 | 0.144                  | 0.129 | 0.057 |
| TPSE227*010#0150 | E            | 220                 | 10                      | 22                  | 8               | 150                         | 1 <sup>1)</sup> | 1.049                  | 0.944 | 0.420 | 0.157                  | 0.142 | 0.063 |
| TPSY227*010#0100 | Y            | 220                 | 10                      | 22                  | 10              | 100                         | 1 <sup>1)</sup> | 1.118                  | 1.006 | 0.447 | 0.112                  | 0.101 | 0.045 |
| TPSY227*010#0150 | Y            | 220                 | 10                      | 22                  | 10              | 150                         | 1 <sup>1)</sup> | 0.913                  | 0.822 | 0.365 | 0.137                  | 0.123 | 0.055 |
| TPSY227*010#0200 | Y            | 220                 | 10                      | 22                  | 10              | 200                         | 1 <sup>1)</sup> | 0.791                  | 0.712 | 0.316 | 0.158                  | 0.142 | 0.063 |
| TPSD337*010#0050 | D            | 330                 | 10                      | 33                  | 8               | 50                          | 1               | 1.732                  | 1.559 | 0.693 | 0.087                  | 0.078 | 0.035 |

<sup>1)</sup> Dry pack option (see How to order) recommended for reduction of stress during soldering. Dry pack parts should be treated as MSL 3.

Moisture Sensitivity Level (MSL) is defined according to J-STD-020.

For AEC-Q200 availability, please contact AVX.

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 weight and composition see page 126.

**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.**

### RATINGS & PART NUMBER REFERENCE

| AVX Part No.                     | Case Size | Capacitance (μF) | Rated Voltage (V) | DCL (μA) Max. | DF % Max. | ESR Max. (mΩ) @100kHz | MSL             | 100kHz RMS Current (A) |       |       | 100kHz RMS Voltage (V) |       |       |
|----------------------------------|-----------|------------------|-------------------|---------------|-----------|-----------------------|-----------------|------------------------|-------|-------|------------------------|-------|-------|
|                                  |           |                  |                   |               |           |                       |                 | 25°C                   | 85°C  | 125°C | 25°C                   | 85°C  | 125°C |
| TPSD337*010#0065                 | D         | 330              | 10                | 33            | 8         | 65                    | 1               | 1.519                  | 1.367 | 0.608 | 0.099                  | 0.089 | 0.039 |
| TPSD337*010#0100                 | D         | 330              | 10                | 33            | 8         | 100                   | 1               | 1.225                  | 1.102 | 0.490 | 0.122                  | 0.110 | 0.049 |
| TPSD337*010#0150                 | D         | 330              | 10                | 33            | 8         | 150                   | 1               | 1.000                  | 0.900 | 0.400 | 0.150                  | 0.135 | 0.060 |
| TPSE337*010#0040                 | E         | 330              | 10                | 33            | 8         | 40                    | 1 <sup>1)</sup> | 2.031                  | 1.828 | 0.812 | 0.081                  | 0.073 | 0.032 |
| TPSE337*010#0050                 | E         | 330              | 10                | 33            | 8         | 50                    | 1 <sup>1)</sup> | 1.817                  | 1.635 | 0.727 | 0.091                  | 0.082 | 0.036 |
| TPSE337*010#0060                 | E         | 330              | 10                | 33            | 8         | 60                    | 1 <sup>1)</sup> | 1.658                  | 1.492 | 0.663 | 0.099                  | 0.090 | 0.040 |
| TPSE337*010#0100                 | E         | 330              | 10                | 33            | 8         | 100                   | 1 <sup>1)</sup> | 1.285                  | 1.156 | 0.514 | 0.128                  | 0.116 | 0.051 |
| TPSV337*010#0040                 | V         | 330              | 10                | 33            | 10        | 40                    | 1 <sup>1)</sup> | 2.500                  | 2.250 | 1.000 | 0.100                  | 0.090 | 0.040 |
| TPSV337*010#0060                 | V         | 330              | 10                | 33            | 10        | 60                    | 1 <sup>1)</sup> | 2.041                  | 1.837 | 0.816 | 0.122                  | 0.110 | 0.049 |
| TPSV337*010#0100                 | V         | 330              | 10                | 33            | 10        | 100                   | 1 <sup>1)</sup> | 1.581                  | 1.423 | 0.632 | 0.158                  | 0.142 | 0.063 |
| TPSE477*010#0045                 | E         | 470              | 10                | 47            | 10        | 45                    | 1 <sup>1)</sup> | 1.915                  | 1.723 | 0.766 | 0.086                  | 0.078 | 0.034 |
| TPSE477*010#0050                 | E         | 470              | 10                | 47            | 10        | 50                    | 1 <sup>1)</sup> | 1.817                  | 1.635 | 0.727 | 0.091                  | 0.082 | 0.036 |
| TPSE477*010#0060                 | E         | 470              | 10                | 47            | 10        | 60                    | 1 <sup>1)</sup> | 1.658                  | 1.492 | 0.663 | 0.099                  | 0.090 | 0.040 |
| TPSE477*010#0100                 | E         | 470              | 10                | 47            | 10        | 100                   | 1 <sup>1)</sup> | 1.285                  | 1.156 | 0.514 | 0.128                  | 0.116 | 0.051 |
| TPSE477*010#0200                 | E         | 470              | 10                | 47            | 10        | 200                   | 1 <sup>1)</sup> | 0.908                  | 0.817 | 0.363 | 0.182                  | 0.163 | 0.073 |
| TPSV477*010#0040                 | V         | 470              | 10                | 47            | 10        | 40                    | 1 <sup>1)</sup> | 2.500                  | 2.250 | 1.000 | 0.100                  | 0.090 | 0.040 |
| TPSV477*010#0060                 | V         | 470              | 10                | 47            | 10        | 60                    | 1 <sup>1)</sup> | 2.041                  | 1.837 | 0.816 | 0.122                  | 0.110 | 0.049 |
| TPSV477*010#0100                 | V         | 470              | 10                | 47            | 10        | 100                   | 1 <sup>1)</sup> | 1.581                  | 1.423 | 0.632 | 0.158                  | 0.142 | 0.063 |
| 16 Volt @ 85°C (10 Volt @ 125°C) |           |                  |                   |               |           |                       |                 |                        |       |       |                        |       |       |
| TPSA105*016#6200                 | A         | 1                | 16                | 0.5           | 4         | 6200                  | 1               | 0.110                  | 0.099 | 0.044 | 0.682                  | 0.614 | 0.273 |
| TPSA225*016#1800                 | A         | 2.2              | 16                | 0.5           | 6         | 1800                  | 1               | 0.204                  | 0.184 | 0.082 | 0.367                  | 0.331 | 0.147 |
| TPSA225*016#3500                 | A         | 2.2              | 16                | 0.5           | 6         | 3500                  | 1               | 0.146                  | 0.132 | 0.059 | 0.512                  | 0.461 | 0.205 |
| TPST225*016#2000                 | T         | 2.2              | 16                | 0.5           | 6         | 2000                  | 1               | 0.200                  | 0.180 | 0.080 | 0.400                  | 0.360 | 0.160 |
| TPSA335*016#3500                 | A         | 3.3              | 16                | 0.5           | 6         | 3500                  | 1               | 0.146                  | 0.132 | 0.059 | 0.512                  | 0.461 | 0.205 |
| TPSB335*016#2500                 | B         | 3.3              | 16                | 0.5           | 6         | 2500                  | 1               | 0.184                  | 0.166 | 0.074 | 0.461                  | 0.415 | 0.184 |
| TPSA475*016#2000                 | A         | 4.7              | 16                | 0.8           | 6         | 2000                  | 1               | 0.194                  | 0.174 | 0.077 | 0.387                  | 0.349 | 0.155 |
| TPSB475*016#0800                 | B         | 4.7              | 16                | 0.8           | 6         | 800                   | 1               | 0.326                  | 0.293 | 0.130 | 0.261                  | 0.235 | 0.104 |
| TPSB475*016#1500                 | B         | 4.7              | 16                | 0.8           | 6         | 1500                  | 1               | 0.238                  | 0.214 | 0.095 | 0.357                  | 0.321 | 0.143 |
| TPSA685*016#1500                 | A         | 6.8              | 16                | 1.1           | 6         | 1500                  | 1               | 0.224                  | 0.201 | 0.089 | 0.335                  | 0.302 | 0.134 |
| TPSB685*016#0600                 | B         | 6.8              | 16                | 1.1           | 6         | 600                   | 1               | 0.376                  | 0.339 | 0.151 | 0.226                  | 0.203 | 0.090 |
| TPSB685*016#1200                 | B         | 6.8              | 16                | 1.1           | 6         | 1200                  | 1               | 0.266                  | 0.240 | 0.106 | 0.319                  | 0.287 | 0.128 |
| TPSA106*016#1000                 | A         | 10               | 16                | 1.6           | 6         | 1000                  | 1               | 0.274                  | 0.246 | 0.110 | 0.274                  | 0.246 | 0.110 |
| TPSB106*016#0500                 | B         | 10               | 16                | 1.6           | 6         | 500                   | 1               | 0.412                  | 0.371 | 0.165 | 0.206                  | 0.186 | 0.082 |
| TPSB106*016#0800                 | B         | 10               | 16                | 1.6           | 6         | 800                   | 1               | 0.326                  | 0.293 | 0.130 | 0.261                  | 0.235 | 0.104 |
| TPSC106*016#0500                 | C         | 10               | 16                | 1.6           | 6         | 500                   | 1               | 0.469                  | 0.422 | 0.188 | 0.235                  | 0.211 | 0.094 |
| TPST106*016#0800                 | T         | 10               | 16                | 1.6           | 8         | 800                   | 1               | 0.316                  | 0.285 | 0.126 | 0.253                  | 0.228 | 0.101 |
| TPST106*016#1000                 | T         | 10               | 16                | 1.6           | 8         | 1000                  | 1               | 0.283                  | 0.255 | 0.113 | 0.283                  | 0.255 | 0.113 |
| TPSW106*016#0500                 | W         | 10               | 16                | 1.6           | 6         | 500                   | 1               | 0.424                  | 0.382 | 0.170 | 0.212                  | 0.191 | 0.085 |
| TPSW106*016#0600                 | W         | 10               | 16                | 1.6           | 6         | 600                   | 1               | 0.387                  | 0.349 | 0.155 | 0.232                  | 0.209 | 0.093 |
| TPSB156*016#0500                 | B         | 15               | 16                | 2.4           | 6         | 500                   | 1               | 0.412                  | 0.371 | 0.165 | 0.206                  | 0.186 | 0.082 |
| TPSB156*016#0800                 | B         | 15               | 16                | 2.4           | 6         | 800                   | 1               | 0.326                  | 0.293 | 0.130 | 0.261                  | 0.235 | 0.104 |
| TPSC156*016#0700                 | C         | 15               | 16                | 2.4           | 6         | 700                   | 1               | 0.396                  | 0.357 | 0.159 | 0.277                  | 0.250 | 0.111 |
| TPSB226*016#0400                 | B         | 22               | 16                | 3.5           | 6         | 400                   | 1               | 0.461                  | 0.415 | 0.184 | 0.184                  | 0.166 | 0.074 |
| TPSB226*016#0600                 | B         | 22               | 16                | 3.5           | 6         | 600                   | 1               | 0.376                  | 0.339 | 0.151 | 0.226                  | 0.203 | 0.090 |
| TPSC226*016#0150                 | C         | 22               | 16                | 3.5           | 6         | 150                   | 1               | 0.856                  | 0.771 | 0.343 | 0.128                  | 0.116 | 0.051 |
| TPSC226*016#0250                 | C         | 22               | 16                | 3.5           | 6         | 250                   | 1               | 0.663                  | 0.597 | 0.265 | 0.166                  | 0.149 | 0.066 |
| TPSC226*016#0300                 | C         | 22               | 16                | 3.5           | 6         | 300                   | 1               | 0.606                  | 0.545 | 0.242 | 0.182                  | 0.163 | 0.073 |
| TPSC226*016#0375                 | C         | 22               | 16                | 3.5           | 6         | 375                   | 1               | 0.542                  | 0.487 | 0.217 | 0.203                  | 0.183 | 0.081 |
| TPSD226*016#0700                 | D         | 22               | 16                | 3.5           | 6         | 700                   | 1               | 0.463                  | 0.417 | 0.185 | 0.324                  | 0.292 | 0.130 |
| TPSW226*016#0500                 | W         | 22               | 16                | 3.5           | 6         | 500                   | 1               | 0.424                  | 0.382 | 0.170 | 0.212                  | 0.191 | 0.085 |
| TPSB336*016#0350                 | B         | 33               | 16                | 5.3           | 8         | 350                   | 1               | 0.493                  | 0.444 | 0.197 | 0.172                  | 0.155 | 0.069 |
| TPSB336*016#0500                 | B         | 33               | 16                | 5.3           | 8         | 500                   | 1               | 0.412                  | 0.371 | 0.165 | 0.206                  | 0.186 | 0.082 |
| TPSC336*016#0100                 | C         | 33               | 16                | 5.3           | 6         | 100                   | 1               | 1.049                  | 0.944 | 0.420 | 0.105                  | 0.094 | 0.042 |
| TPSC336*016#0150                 | C         | 33               | 16                | 5.3           | 6         | 150                   | 1               | 0.856                  | 0.771 | 0.343 | 0.128                  | 0.116 | 0.051 |
| TPSC336*016#0225                 | C         | 33               | 16                | 5.3           | 6         | 225                   | 1               | 0.699                  | 0.629 | 0.280 | 0.157                  | 0.142 | 0.063 |
| TPSC336*016#0300                 | C         | 33               | 16                | 5.3           | 6         | 300                   | 1               | 0.606                  | 0.545 | 0.242 | 0.182                  | 0.163 | 0.073 |
| TPSD336*016#0200                 | D         | 33               | 16                | 5.3           | 6         | 200                   | 1               | 0.866                  | 0.779 | 0.346 | 0.173                  | 0.156 | 0.069 |
| TPSW336*016#0140                 | W         | 33               | 16                | 5.3           | 6         | 140                   | 1               | 0.802                  | 0.722 | 0.321 | 0.112                  | 0.101 | 0.045 |
| TPSW336*016#0175                 | W         | 33               | 16                | 5.3           | 6         | 175                   | 1               | 0.717                  | 0.645 | 0.287 | 0.125                  | 0.113 | 0.050 |
| TPSW336*016#0250                 | W         | 33               | 16                | 5.3           | 6         | 250                   | 1               | 0.600                  | 0.540 | 0.240 | 0.150                  | 0.135 | 0.060 |
| TPSW336*016#0400                 | W         | 33               | 16                | 5.3           | 6         | 400                   | 1               | 0.474                  | 0.427 | 0.190 | 0.190                  | 0.171 | 0.076 |
| TPSW336*016#0500                 | W         | 33               | 16                | 5.3           | 6         | 500                   | 1               | 0.424                  | 0.382 | 0.170 | 0.212                  | 0.191 | 0.085 |
| TPSY336*016#0300                 | Y         | 33               | 16                | 5.3           | 6         | 300                   | 1 <sup>1)</sup> | 0.645                  | 0.581 | 0.258 | 0.194                  | 0.174 | 0.077 |
| TPSY336*016#0400                 | Y         | 33               | 16                | 5.3           | 6         | 400                   | 1 <sup>1)</sup> | 0.559                  | 0.503 | 0.224 | 0.224                  | 0.201 | 0.089 |
| TPSC476*016#0110                 | C         | 47               | 16                | 7.5           | 6         | 110                   | 1               | 1.000                  | 0.900 | 0.400 | 0.110                  | 0.099 | 0.044 |
| TPSC476*016#0350                 | C         | 47               | 16                | 7.5           | 6         | 350                   | 1               | 0.561                  | 0.505 | 0.224 | 0.196                  | 0.177 | 0.078 |
| TPSD476*016#0080                 | D         | 47               | 16                | 7.5           | 6         | 80                    | 1               | 1.369                  | 1.232 | 0.548 | 0.110                  | 0.099 | 0.044 |

<sup>1)</sup> Dry pack option (see How to order) recommended for reduction of stress during soldering. Dry pack parts should be treated as MSL 3.

Moisture Sensitivity Level (MSL) is defined according to J-STD-020.

For AEC-Q200 availability, please contact AVX.

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 126.

**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.**

### RATINGS & PART NUMBER REFERENCE

| AVX Part No.                     | Case Size | Capacitance (μF) | Rated Voltage (V) | DCL (μA) Max. | DF % Max. | ESR Max. (mΩ) @100kHz | MSL             | 100kHz RMS Current (A) |       |       | 100kHz RMS Voltage (V) |       |       |
|----------------------------------|-----------|------------------|-------------------|---------------|-----------|-----------------------|-----------------|------------------------|-------|-------|------------------------|-------|-------|
|                                  |           |                  |                   |               |           |                       |                 | 25°C                   | 85°C  | 125°C | 25°C                   | 85°C  | 125°C |
| TPSD476*016#0100                 | D         | 47               | 16                | 7.5           | 6         | 100                   | 1               | 1.225                  | 1.102 | 0.490 | 0.122                  | 0.110 | 0.049 |
| TPSD476*016#0150                 | D         | 47               | 16                | 7.5           | 6         | 150                   | 1               | 1.000                  | 0.900 | 0.400 | 0.150                  | 0.135 | 0.060 |
| TPSD476*016#0200                 | D         | 47               | 16                | 7.5           | 6         | 200                   | 1               | 0.866                  | 0.779 | 0.346 | 0.173                  | 0.156 | 0.069 |
| TPSW476*016#0200                 | W         | 47               | 16                | 7.5           | 6         | 200                   | 1               | 0.671                  | 0.604 | 0.268 | 0.134                  | 0.121 | 0.054 |
| TPSX476*016#0180                 | X         | 47               | 16                | 7.5           | 6         | 180                   | 1 <sup>1)</sup> | 0.745                  | 0.671 | 0.298 | 0.134                  | 0.121 | 0.054 |
| TPSY476*016#0250                 | Y         | 47               | 16                | 7.5           | 6         | 250                   | 1 <sup>1)</sup> | 0.707                  | 0.636 | 0.283 | 0.177                  | 0.159 | 0.071 |
| TPSC686*016#0125                 | C         | 68               | 16                | 10.9          | 6         | 125                   | 1               | 0.938                  | 0.844 | 0.375 | 0.117                  | 0.106 | 0.047 |
| TPSC686*016#0200                 | C         | 68               | 16                | 10.9          | 6         | 200                   | 1               | 0.742                  | 0.667 | 0.297 | 0.148                  | 0.133 | 0.059 |
| TPSD686*016#0070                 | D         | 68               | 16                | 10.9          | 6         | 70                    | 1               | 1.464                  | 1.317 | 0.586 | 0.102                  | 0.092 | 0.041 |
| TPSD686*016#0100                 | D         | 68               | 16                | 10.9          | 6         | 100                   | 1               | 1.225                  | 1.102 | 0.490 | 0.122                  | 0.110 | 0.049 |
| TPSD686*016#0150                 | D         | 68               | 16                | 10.9          | 6         | 150                   | 1               | 1.000                  | 0.900 | 0.400 | 0.150                  | 0.135 | 0.060 |
| TPSF686*016#0200                 | F         | 68               | 16                | 10.9          | 10        | 200                   | 1               | 0.707                  | 0.636 | 0.283 | 0.141                  | 0.127 | 0.057 |
| TPSX686*016#0150                 | X         | 68               | 16                | 10.9          | 8         | 150                   | 1 <sup>1)</sup> | 0.816                  | 0.735 | 0.327 | 0.122                  | 0.110 | 0.049 |
| TPSY686*016#0150                 | Y         | 68               | 16                | 10.9          | 6         | 150                   | 1 <sup>1)</sup> | 0.913                  | 0.822 | 0.365 | 0.137                  | 0.123 | 0.055 |
| TPSY686*016#0200                 | Y         | 68               | 16                | 10.9          | 6         | 200                   | 1 <sup>1)</sup> | 0.791                  | 0.712 | 0.316 | 0.158                  | 0.142 | 0.063 |
| TPSY686*016#0250                 | Y         | 68               | 16                | 10.9          | 6         | 250                   | 1 <sup>1)</sup> | 0.707                  | 0.636 | 0.283 | 0.177                  | 0.159 | 0.071 |
| TPSC107*016#0200                 | C         | 100              | 16                | 16            | 8         | 200                   | 1               | 0.742                  | 0.667 | 0.297 | 0.148                  | 0.133 | 0.059 |
| TPSD107*016#0060                 | D         | 100              | 16                | 16            | 6         | 60                    | 1               | 1.581                  | 1.423 | 0.632 | 0.095                  | 0.085 | 0.038 |
| TPSD107*016#0100                 | D         | 100              | 16                | 16            | 6         | 100                   | 1               | 1.225                  | 1.102 | 0.490 | 0.122                  | 0.110 | 0.049 |
| TPSD107*016#0125                 | D         | 100              | 16                | 16            | 6         | 125                   | 1               | 1.095                  | 0.986 | 0.438 | 0.137                  | 0.123 | 0.055 |
| TPSD107*016#0150                 | D         | 100              | 16                | 16            | 6         | 150                   | 1               | 1.000                  | 0.900 | 0.400 | 0.150                  | 0.135 | 0.060 |
| TPSE107*016#0055                 | E         | 100              | 16                | 16            | 6         | 55                    | 1 <sup>1)</sup> | 1.732                  | 1.559 | 0.693 | 0.095                  | 0.086 | 0.038 |
| TPSE107*016#0100                 | E         | 100              | 16                | 16            | 6         | 100                   | 1 <sup>1)</sup> | 1.285                  | 1.156 | 0.514 | 0.128                  | 0.116 | 0.051 |
| TPSE107*016#0125                 | E         | 100              | 16                | 16            | 6         | 125                   | 1 <sup>1)</sup> | 1.149                  | 1.034 | 0.460 | 0.144                  | 0.129 | 0.057 |
| TPSE107*016#0150                 | E         | 100              | 16                | 16            | 6         | 150                   | 1 <sup>1)</sup> | 1.049                  | 0.944 | 0.420 | 0.157                  | 0.142 | 0.063 |
| TPSF107M016#0150                 | F         | 100              | 16                | 16            | 10        | 150                   | 1               | 0.816                  | 0.735 | 0.327 | 0.122                  | 0.110 | 0.049 |
| TPSF107M016#0200                 | F         | 100              | 16                | 16            | 10        | 200                   | 1               | 0.707                  | 0.636 | 0.283 | 0.141                  | 0.127 | 0.057 |
| TPSY107*016#0100                 | Y         | 100              | 16                | 16            | 8         | 100                   | 1 <sup>1)</sup> | 1.118                  | 1.006 | 0.447 | 0.112                  | 0.101 | 0.045 |
| TPSY107*016#0150                 | Y         | 100              | 16                | 16            | 8         | 150                   | 1 <sup>1)</sup> | 0.913                  | 0.822 | 0.365 | 0.137                  | 0.123 | 0.055 |
| TPSY107*016#0200                 | Y         | 100              | 16                | 16            | 8         | 200                   | 1 <sup>1)</sup> | 0.791                  | 0.712 | 0.316 | 0.158                  | 0.142 | 0.063 |
| TPSD157*016#0060                 | D         | 150              | 16                | 24            | 6         | 60                    | 1               | 1.581                  | 1.423 | 0.632 | 0.095                  | 0.085 | 0.038 |
| TPSD157*016#0085                 | D         | 150              | 16                | 24            | 6         | 85                    | 1               | 1.328                  | 1.196 | 0.531 | 0.113                  | 0.102 | 0.045 |
| TPSD157*016#0100                 | D         | 150              | 16                | 24            | 6         | 100                   | 1               | 1.225                  | 1.102 | 0.490 | 0.122                  | 0.110 | 0.049 |
| TPSD157*016#0125                 | D         | 150              | 16                | 24            | 6         | 125                   | 1               | 1.095                  | 0.986 | 0.438 | 0.137                  | 0.123 | 0.055 |
| TPSD157*016#0150                 | D         | 150              | 16                | 24            | 6         | 150                   | 1               | 1.000                  | 0.900 | 0.400 | 0.150                  | 0.135 | 0.060 |
| TPSE157*016#0100                 | E         | 150              | 16                | 23            | 8         | 100                   | 1 <sup>1)</sup> | 1.285                  | 1.156 | 0.514 | 0.128                  | 0.116 | 0.051 |
| TPSV157*016#0045                 | V         | 150              | 16                | 24            | 8         | 45                    | 1 <sup>1)</sup> | 2.357                  | 2.121 | 0.943 | 0.106                  | 0.095 | 0.042 |
| TPSV157*016#0075                 | V         | 150              | 16                | 24            | 8         | 75                    | 1 <sup>1)</sup> | 1.826                  | 1.643 | 0.730 | 0.137                  | 0.123 | 0.055 |
| TPSY157M016#0200                 | Y         | 150              | 16                | 24            | 15        | 200                   | 1 <sup>1)</sup> | 0.791                  | 0.712 | 0.316 | 0.158                  | 0.142 | 0.063 |
| TPSE227*016#0100                 | E         | 220              | 16                | 35.2          | 10        | 100                   | 1 <sup>1)</sup> | 1.285                  | 1.156 | 0.514 | 0.128                  | 0.116 | 0.051 |
| TPSE227*016#0150                 | E         | 220              | 16                | 35.2          | 10        | 150                   | 1 <sup>1)</sup> | 1.049                  | 0.944 | 0.420 | 0.157                  | 0.142 | 0.063 |
| TPSV227*016#0050                 | V         | 220              | 16                | 35.2          | 8         | 50                    | 1 <sup>1)</sup> | 2.236                  | 2.012 | 0.894 | 0.112                  | 0.101 | 0.045 |
| TPSV227*016#0075                 | V         | 220              | 16                | 35.2          | 8         | 75                    | 1 <sup>1)</sup> | 1.826                  | 1.643 | 0.730 | 0.137                  | 0.123 | 0.055 |
| TPSV227*016#0100                 | V         | 220              | 16                | 35.2          | 8         | 100                   | 1 <sup>1)</sup> | 1.581                  | 1.423 | 0.632 | 0.158                  | 0.142 | 0.063 |
| TPSV227*016#0150                 | V         | 220              | 16                | 35.2          | 8         | 150                   | 1 <sup>1)</sup> | 1.291                  | 1.162 | 0.516 | 0.194                  | 0.174 | 0.077 |
| TPSE337M016#0200                 | E         | 330              | 16                | 52.8          | 30        | 200                   | 1 <sup>1)</sup> | 0.908                  | 0.817 | 0.363 | 0.182                  | 0.163 | 0.073 |
| 20 Volt @ 85°C (13 Volt @ 125°C) |           |                  |                   |               |           |                       |                 |                        |       |       |                        |       |       |
| TPSA105*020#3000                 | A         | 1                | 20                | 0.5           | 4         | 3000                  | 1               | 0.158                  | 0.142 | 0.063 | 0.474                  | 0.427 | 0.190 |
| TPSR105*020#6000                 | R         | 1                | 20                | 0.5           | 4         | 6000                  | 1               | 0.096                  | 0.086 | 0.038 | 0.574                  | 0.517 | 0.230 |
| TPSS105*020#6000                 | S         | 1                | 20                | 0.5           | 4         | 6000                  | 1               | 0.104                  | 0.094 | 0.042 | 0.624                  | 0.562 | 0.250 |
| TPST105*020#2000                 | T         | 1                | 20                | 0.5           | 4         | 2000                  | 1               | 0.200                  | 0.180 | 0.080 | 0.400                  | 0.360 | 0.160 |
| TPSA155*020#3000                 | A         | 1.5              | 20                | 0.5           | 6         | 3000                  | 1               | 0.158                  | 0.142 | 0.063 | 0.474                  | 0.427 | 0.190 |
| TPSA225*020#3000                 | A         | 2.2              | 20                | 0.5           | 6         | 3000                  | 1               | 0.158                  | 0.142 | 0.063 | 0.474                  | 0.427 | 0.190 |
| TPSB225*020#1700                 | B         | 2.2              | 20                | 0.5           | 6         | 1700                  | 1               | 0.224                  | 0.201 | 0.089 | 0.380                  | 0.342 | 0.152 |
| TPSA335*020#2500                 | A         | 3.3              | 20                | 0.7           | 6         | 2500                  | 1               | 0.173                  | 0.156 | 0.069 | 0.433                  | 0.390 | 0.173 |
| TPSB335*020#1300                 | B         | 3.3              | 20                | 0.7           | 6         | 1300                  | 1               | 0.256                  | 0.230 | 0.102 | 0.332                  | 0.299 | 0.133 |
| TPSA475*020#1800                 | A         | 4.7              | 20                | 0.9           | 6         | 1800                  | 1               | 0.204                  | 0.184 | 0.082 | 0.367                  | 0.331 | 0.147 |
| TPSB475*020#0750                 | B         | 4.7              | 20                | 0.9           | 6         | 750                   | 1               | 0.337                  | 0.303 | 0.135 | 0.252                  | 0.227 | 0.101 |
| TPSB475*020#1000                 | B         | 4.7              | 20                | 0.9           | 6         | 1000                  | 1               | 0.292                  | 0.262 | 0.117 | 0.292                  | 0.262 | 0.117 |
| TPSA685*020#1000                 | A         | 6.8              | 20                | 1.4           | 6         | 1000                  | 1               | 0.274                  | 0.246 | 0.110 | 0.274                  | 0.246 | 0.110 |
| TPSB685*020#0600                 | B         | 6.8              | 20                | 1.4           | 6         | 600                   | 1               | 0.376                  | 0.339 | 0.151 | 0.226                  | 0.203 | 0.090 |
| TPSB685*020#1000                 | B         | 6.8              | 20                | 1.4           | 6         | 1000                  | 1               | 0.292                  | 0.262 | 0.117 | 0.292                  | 0.262 | 0.117 |
| TPSC685*020#0700                 | C         | 6.8              | 20                | 1.4           | 6         | 700                   | 1               | 0.396                  | 0.357 | 0.159 | 0.277                  | 0.250 | 0.111 |
| TPSB106*020#0500                 | B         | 10               | 20                | 2             | 6         | 500                   | 1               | 0.412                  | 0.371 | 0.165 | 0.206                  | 0.186 | 0.082 |
| TPSB106*020#1000                 | B         | 10               | 20                | 2             | 6         | 1000                  | 1               | 0.292                  | 0.262 | 0.117 | 0.292                  | 0.262 | 0.117 |
| TPSC106*020#0500                 | C         | 10               | 20                | 2             | 6         | 500                   | 1               | 0.469                  | 0.422 | 0.188 | 0.235                  | 0.211 | 0.094 |
| TPSC106*020#0700                 | C         | 10               | 20                | 2             | 6         | 700                   | 1               | 0.396                  | 0.357 | 0.159 | 0.277                  | 0.250 | 0.111 |

<sup>1)</sup> Dry pack option (see How to order) recommended for reduction of stress during soldering. Dry pack parts should be treated as MSL 3.

Moisture Sensitivity Level (MSL) is defined according to J-STD-020.

For AEC-Q200 availability, please contact AVX.

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 126.

**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.**

### RATINGS & PART NUMBER REFERENCE

| AVX Part No.                     | Case Size | Capacitance (μF) | Rated Voltage (V) | DCL (μA) Max. | DF % Max. | ESR Max. (mΩ) @100kHz | MSL             | 100kHz RMS Current (A) |       |       | 100kHz RMS Voltage (V) |       |       |
|----------------------------------|-----------|------------------|-------------------|---------------|-----------|-----------------------|-----------------|------------------------|-------|-------|------------------------|-------|-------|
|                                  |           |                  |                   |               |           |                       |                 | 25°C                   | 85°C  | 125°C | 25°C                   | 85°C  | 125°C |
| TPSW106*020#0250                 | W         | 10               | 20                | 2             | 6         | 250                   | 1               | 0.600                  | 0.540 | 0.240 | 0.150                  | 0.135 | 0.060 |
| TPSW106*020#0500                 | W         | 10               | 20                | 2             | 6         | 500                   | 1               | 0.424                  | 0.382 | 0.170 | 0.212                  | 0.191 | 0.850 |
| TPSB156*020#0500                 | B         | 15               | 20                | 3             | 6         | 500                   | 1               | 0.412                  | 0.371 | 0.165 | 0.206                  | 0.186 | 0.082 |
| TPSC156*020#0400                 | C         | 15               | 20                | 3             | 6         | 400                   | 1               | 0.524                  | 0.472 | 0.210 | 0.210                  | 0.189 | 0.084 |
| TPSC156*020#0450                 | C         | 15               | 20                | 3             | 6         | 450                   | 1               | 0.494                  | 0.445 | 0.198 | 0.222                  | 0.200 | 0.089 |
| TPSB226*020#0400                 | B         | 22               | 20                | 4.4           | 6         | 400                   | 1               | 0.461                  | 0.415 | 0.184 | 0.184                  | 0.166 | 0.074 |
| TPSB226*020#0600                 | B         | 22               | 20                | 4.4           | 6         | 600                   | 1               | 0.376                  | 0.339 | 0.151 | 0.226                  | 0.203 | 0.090 |
| TPSC226*020#0100                 | C         | 22               | 20                | 4.4           | 6         | 100                   | 1               | 1.049                  | 0.944 | 0.420 | 0.105                  | 0.094 | 0.042 |
| TPSC226*020#0150                 | C         | 22               | 20                | 4.4           | 6         | 150                   | 1               | 0.856                  | 0.771 | 0.343 | 0.128                  | 0.116 | 0.051 |
| TPSC226*020#0400                 | C         | 22               | 20                | 4.4           | 6         | 400                   | 1               | 0.524                  | 0.472 | 0.210 | 0.210                  | 0.189 | 0.084 |
| TPSD226*020#0200                 | D         | 22               | 20                | 4.4           | 6         | 200                   | 1               | 0.866                  | 0.779 | 0.346 | 0.173                  | 0.156 | 0.069 |
| TPSD226*020#0300                 | D         | 22               | 20                | 4.4           | 6         | 300                   | 1               | 0.707                  | 0.636 | 0.283 | 0.212                  | 0.191 | 0.085 |
| TPSC336*020#0300                 | C         | 33               | 20                | 6.6           | 6         | 300                   | 1               | 0.606                  | 0.545 | 0.242 | 0.182                  | 0.163 | 0.073 |
| TPSD336*020#0100                 | D         | 33               | 20                | 6.6           | 6         | 100                   | 1               | 1.225                  | 1.102 | 0.490 | 0.122                  | 0.110 | 0.049 |
| TPSD336*020#0200                 | D         | 33               | 20                | 6.6           | 6         | 200                   | 1               | 0.866                  | 0.779 | 0.346 | 0.173                  | 0.155 | 0.069 |
| TPSD476*020#0075                 | D         | 47               | 20                | 9.4           | 6         | 75                    | 1               | 1.414                  | 1.273 | 0.566 | 0.106                  | 0.095 | 0.042 |
| TPSD476*020#0100                 | D         | 47               | 20                | 9.4           | 6         | 100                   | 1               | 1.225                  | 1.102 | 0.490 | 0.122                  | 0.110 | 0.049 |
| TPSD476*020#0200                 | D         | 47               | 20                | 9.4           | 6         | 200                   | 1               | 0.866                  | 0.779 | 0.346 | 0.173                  | 0.156 | 0.069 |
| TPSE476*020#0070                 | E         | 47               | 20                | 9.4           | 6         | 70                    | 1 <sup>1)</sup> | 1.535                  | 1.382 | 0.614 | 0.107                  | 0.097 | 0.043 |
| TPSE476*020#0125                 | E         | 47               | 20                | 9.4           | 6         | 125                   | 1 <sup>1)</sup> | 1.149                  | 1.034 | 0.460 | 0.144                  | 0.129 | 0.057 |
| TPSE476*020#0150                 | E         | 47               | 20                | 9.4           | 6         | 150                   | 1 <sup>1)</sup> | 1.049                  | 0.944 | 0.420 | 0.157                  | 0.142 | 0.063 |
| TPSE476*020#0200                 | E         | 47               | 20                | 9.4           | 6         | 200                   | 1 <sup>1)</sup> | 0.908                  | 0.817 | 0.363 | 0.182                  | 0.163 | 0.073 |
| TPSE476*020#0250                 | E         | 47               | 20                | 9.4           | 6         | 250                   | 1 <sup>1)</sup> | 0.812                  | 0.731 | 0.325 | 0.203                  | 0.183 | 0.081 |
| TPSD686*020#0070                 | D         | 68               | 20                | 13.6          | 6         | 70                    | 1               | 1.464                  | 1.317 | 0.586 | 0.102                  | 0.092 | 0.041 |
| TPSD686*020#0150                 | D         | 68               | 20                | 13.6          | 6         | 150                   | 1               | 1.000                  | 0.900 | 0.400 | 0.150                  | 0.135 | 0.060 |
| TPSD686*020#0200                 | D         | 68               | 20                | 13.6          | 6         | 200                   | 1               | 0.866                  | 0.779 | 0.346 | 0.173                  | 0.156 | 0.069 |
| TPSD686*020#0300                 | D         | 68               | 20                | 13.6          | 6         | 300                   | 1               | 0.707                  | 0.636 | 0.283 | 0.212                  | 0.191 | 0.085 |
| TPSE686*020#0125                 | E         | 68               | 20                | 13.6          | 6         | 125                   | 1 <sup>1)</sup> | 1.149                  | 1.034 | 0.460 | 0.144                  | 0.129 | 0.057 |
| TPSE686*020#0150                 | E         | 68               | 20                | 13.6          | 6         | 150                   | 1 <sup>1)</sup> | 1.049                  | 0.944 | 0.420 | 0.157                  | 0.142 | 0.063 |
| TPSE686*020#0200                 | E         | 68               | 20                | 13.6          | 6         | 200                   | 1 <sup>1)</sup> | 0.908                  | 0.817 | 0.363 | 0.182                  | 0.163 | 0.073 |
| TPSD107*020#0085                 | D         | 100              | 20                | 20            | 6         | 85                    | 1               | 1.328                  | 1.196 | 0.531 | 0.113                  | 0.102 | 0.045 |
| TPSD107*020#0100                 | D         | 100              | 20                | 20            | 6         | 100                   | 1               | 1.225                  | 1.102 | 0.490 | 0.122                  | 0.110 | 0.049 |
| TPSD107*020#0150                 | D         | 100              | 20                | 20            | 6         | 150                   | 1               | 1.000                  | 0.900 | 0.400 | 0.150                  | 0.135 | 0.060 |
| TPSE107*020#0100                 | E         | 100              | 20                | 20            | 6         | 100                   | 1 <sup>1)</sup> | 1.285                  | 1.156 | 0.514 | 0.128                  | 0.116 | 0.051 |
| TPSE107*020#0150                 | E         | 100              | 20                | 20            | 6         | 150                   | 1 <sup>1)</sup> | 1.049                  | 0.944 | 0.420 | 0.157                  | 0.142 | 0.063 |
| TPSE107*020#0200                 | E         | 100              | 20                | 20            | 6         | 200                   | 1 <sup>1)</sup> | 0.908                  | 0.817 | 0.363 | 0.182                  | 0.163 | 0.073 |
| TPSV107*020#0060                 | V         | 100              | 20                | 20            | 8         | 60                    | 1 <sup>1)</sup> | 2.041                  | 1.837 | 0.816 | 0.122                  | 0.110 | 0.049 |
| TPSV107*020#0085                 | V         | 100              | 20                | 20            | 8         | 85                    | 1 <sup>1)</sup> | 1.715                  | 1.543 | 0.686 | 0.146                  | 0.131 | 0.058 |
| TPSV107*020#0100                 | V         | 100              | 20                | 20            | 8         | 100                   | 1 <sup>1)</sup> | 1.581                  | 1.423 | 0.632 | 0.158                  | 0.142 | 0.063 |
| TPSV107*020#0200                 | V         | 100              | 20                | 20            | 8         | 200                   | 1 <sup>1)</sup> | 1.118                  | 1.006 | 0.447 | 0.224                  | 0.201 | 0.089 |
| TPSV157*020#0080                 | V         | 150              | 20                | 30            | 8         | 80                    | 1 <sup>1)</sup> | 1.768                  | 1.591 | 0.707 | 0.141                  | 0.127 | 0.057 |
| 25 Volt @ 85°C (17 Volt @ 125°C) |           |                  |                   |               |           |                       |                 |                        |       |       |                        |       |       |
| TPSA474*025#7000                 | A         | 0.47             | 25                | 0.5           | 4         | 7000                  | 1               | 0.104                  | 0.093 | 0.041 | 0.725                  | 0.652 | 0.290 |
| TPSA684*025#6000                 | A         | 0.68             | 25                | 0.5           | 4         | 6000                  | 1               | 0.112                  | 0.101 | 0.045 | 0.671                  | 0.604 | 0.268 |
| TPSA105*025#4000                 | A         | 1                | 25                | 0.5           | 4         | 4000                  | 1               | 0.137                  | 0.123 | 0.055 | 0.548                  | 0.493 | 0.219 |
| TPSR105*025#2500                 | R         | 1                | 25                | 0.5           | 4         | 2500                  | 1               | 0.148                  | 0.133 | 0.059 | 0.371                  | 0.334 | 0.148 |
| TPSR105*025#4000                 | R         | 1                | 25                | 0.5           | 4         | 4000                  | 1               | 0.117                  | 0.106 | 0.047 | 0.469                  | 0.422 | 0.188 |
| TPSA155*025#3000                 | A         | 1.5              | 25                | 0.5           | 6         | 3000                  | 1               | 0.158                  | 0.142 | 0.063 | 0.474                  | 0.427 | 0.190 |
| TPSB155*025#1800                 | B         | 1.5              | 25                | 0.5           | 6         | 1800                  | 1               | 0.217                  | 0.196 | 0.087 | 0.391                  | 0.352 | 0.156 |
| TPSA225*025#2500                 | A         | 2.2              | 25                | 0.6           | 6         | 2500                  | 1               | 0.173                  | 0.156 | 0.069 | 0.433                  | 0.390 | 0.173 |
| TPSB225*025#0900                 | B         | 2.2              | 25                | 0.6           | 6         | 900                   | 1               | 0.307                  | 0.277 | 0.123 | 0.277                  | 0.249 | 0.111 |
| TPSB225*025#1200                 | B         | 2.2              | 25                | 0.6           | 6         | 1200                  | 1               | 0.266                  | 0.240 | 0.106 | 0.319                  | 0.287 | 0.128 |
| TPSB225*025#2500                 | B         | 2.2              | 25                | 0.6           | 6         | 2500                  | 1               | 0.184                  | 0.166 | 0.074 | 0.461                  | 0.415 | 0.184 |
| TPSA335*025#1000                 | A         | 3.3              | 25                | 0.8           | 6         | 1000                  | 1               | 0.274                  | 0.246 | 0.110 | 0.274                  | 0.246 | 0.110 |
| TPSA335*025#1500                 | A         | 3.3              | 25                | 0.8           | 6         | 1500                  | 1               | 0.224                  | 0.201 | 0.089 | 0.335                  | 0.302 | 0.134 |
| TPSB335*025#0750                 | B         | 3.3              | 25                | 0.8           | 6         | 750                   | 1               | 0.337                  | 0.303 | 0.135 | 0.252                  | 0.227 | 0.101 |
| TPSB335*025#1500                 | B         | 3.3              | 25                | 0.8           | 6         | 1500                  | 1               | 0.238                  | 0.214 | 0.095 | 0.357                  | 0.321 | 0.143 |
| TPSB335*025#2000                 | B         | 3.3              | 25                | 0.8           | 6         | 2000                  | 1               | 0.206                  | 0.186 | 0.082 | 0.412                  | 0.371 | 0.165 |
| TPSB475*025#0700                 | B         | 4.7              | 25                | 1.2           | 6         | 700                   | 1               | 0.348                  | 0.314 | 0.139 | 0.244                  | 0.220 | 0.098 |
| TPSB475*025#0900                 | B         | 4.7              | 25                | 1.2           | 6         | 900                   | 1               | 0.307                  | 0.277 | 0.123 | 0.277                  | 0.249 | 0.111 |
| TPSB475*025#1500                 | B         | 4.7              | 25                | 1.2           | 6         | 1500                  | 1               | 0.238                  | 0.214 | 0.095 | 0.357                  | 0.321 | 0.143 |
| TPSC475*025#0700                 | C         | 4.7              | 25                | 1.2           | 6         | 700                   | 1               | 0.396                  | 0.357 | 0.159 | 0.277                  | 0.250 | 0.111 |
| TPSB685*025#0700                 | B         | 6.8              | 25                | 1.7           | 6         | 700                   | 1               | 0.348                  | 0.314 | 0.139 | 0.244                  | 0.220 | 0.098 |
| TPSC685*025#0500                 | C         | 6.8              | 25                | 1.7           | 6         | 500                   | 1               | 0.469                  | 0.422 | 0.188 | 0.235                  | 0.211 | 0.094 |
| TPSC685*025#0600                 | C         | 6.8              | 25                | 1.7           | 6         | 600                   | 1               | 0.428                  | 0.385 | 0.171 | 0.257                  | 0.231 | 0.103 |
| TPSC685*025#0700                 | C         | 6.8              | 25                | 1.7           | 6         | 700                   | 1               | 0.396                  | 0.357 | 0.159 | 0.277                  | 0.250 | 0.111 |
| TPSB106*025#1800                 | B         | 10               | 25                | 2.5           | 6         | 1800                  | 1               | 0.217                  | 0.196 | 0.087 | 0.391                  | 0.352 | 0.156 |

<sup>1)</sup> Dry pack option (see How to order) recommended for reduction of stress during soldering. Dry pack parts should be treated as MSL 3.

Moisture Sensitivity Level (MSL) is defined according to J-STD-020.

For AEC-Q200 availability, please contact AVX.

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 126.

**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.**

### RATINGS & PART NUMBER REFERENCE

| AVX Part No.                     | Case Size | Capacitance (μF) | Rated Voltage (V) | DCL (μA) Max. | DF % Max. | ESR Max. (mΩ) @100kHz | MSL             | 100kHz RMS Current (A) |       |       | 100kHz RMS Voltage (V) |       |       |
|----------------------------------|-----------|------------------|-------------------|---------------|-----------|-----------------------|-----------------|------------------------|-------|-------|------------------------|-------|-------|
|                                  |           |                  |                   |               |           |                       |                 | 25°C                   | 85°C  | 125°C | 25°C                   | 85°C  | 125°C |
| TPSC106*025#0300                 | C         | 10               | 25                | 2.5           | 6         | 300                   | 1               | 0.606                  | 0.545 | 0.242 | 0.182                  | 0.163 | 0.073 |
| TPSC106*025#0500                 | C         | 10               | 25                | 2.5           | 6         | 500                   | 1               | 0.469                  | 0.422 | 0.188 | 0.235                  | 0.211 | 0.094 |
| TPSD106*025#0500                 | D         | 10               | 25                | 2.5           | 6         | 500                   | 1               | 0.548                  | 0.493 | 0.219 | 0.274                  | 0.246 | 0.110 |
| TPSC156*025#0220                 | C         | 15               | 25                | 3.8           | 6         | 220                   | 1               | 0.707                  | 0.636 | 0.283 | 0.156                  | 0.140 | 0.062 |
| TPSC156*025#0300                 | C         | 15               | 25                | 3.8           | 6         | 300                   | 1               | 0.606                  | 0.545 | 0.242 | 0.182                  | 0.163 | 0.073 |
| TPSD156*025#0100                 | D         | 15               | 25                | 3.8           | 6         | 100                   | 1               | 1.225                  | 1.102 | 0.490 | 0.122                  | 0.110 | 0.049 |
| TPSD156*025#0300                 | D         | 15               | 25                | 3.8           | 6         | 300                   | 1               | 0.707                  | 0.636 | 0.283 | 0.212                  | 0.191 | 0.085 |
| TPSC226*025#0275                 | C         | 22               | 25                | 5.5           | 6         | 275                   | 1               | 0.632                  | 0.569 | 0.253 | 0.174                  | 0.157 | 0.070 |
| TPSC226*025#0400                 | C         | 22               | 25                | 5.5           | 6         | 400                   | 1               | 0.524                  | 0.472 | 0.210 | 0.210                  | 0.189 | 0.084 |
| TPSD226*025#0100                 | D         | 22               | 25                | 5.5           | 6         | 100                   | 1               | 1.225                  | 1.102 | 0.490 | 0.122                  | 0.110 | 0.049 |
| TPSD226*025#0200                 | D         | 22               | 25                | 5.5           | 6         | 200                   | 1               | 0.866                  | 0.779 | 0.346 | 0.173                  | 0.156 | 0.069 |
| TPSD226*025#0300                 | D         | 22               | 25                | 5.5           | 6         | 300                   | 1               | 0.707                  | 0.636 | 0.283 | 0.212                  | 0.191 | 0.085 |
| TPSD336*025#0100                 | D         | 33               | 25                | 8.3           | 6         | 100                   | 1               | 1.225                  | 1.102 | 0.490 | 0.122                  | 0.110 | 0.049 |
| TPSD336*025#0200                 | D         | 33               | 25                | 8.3           | 6         | 200                   | 1               | 0.866                  | 0.779 | 0.346 | 0.173                  | 0.156 | 0.069 |
| TPSD336*025#0300                 | D         | 33               | 25                | 8.3           | 6         | 300                   | 1               | 0.707                  | 0.636 | 0.283 | 0.212                  | 0.191 | 0.085 |
| TPSE336*025#0100                 | E         | 33               | 25                | 8.3           | 6         | 100                   | 1 <sup>1)</sup> | 1.285                  | 1.156 | 0.514 | 0.128                  | 0.116 | 0.051 |
| TPSE336*025#0175                 | E         | 33               | 25                | 8.3           | 6         | 175                   | 1 <sup>1)</sup> | 0.971                  | 0.874 | 0.388 | 0.170                  | 0.153 | 0.068 |
| TPSE336*025#0200                 | E         | 33               | 25                | 8.3           | 6         | 200                   | 1 <sup>1)</sup> | 0.908                  | 0.817 | 0.363 | 0.182                  | 0.163 | 0.073 |
| TPSE336*025#0300                 | E         | 33               | 25                | 8.3           | 6         | 300                   | 1 <sup>1)</sup> | 0.742                  | 0.667 | 0.297 | 0.222                  | 0.200 | 0.089 |
| TPSY336*025#0200                 | Y         | 33               | 25                | 8.3           | 6         | 200                   | 1 <sup>1)</sup> | 0.791                  | 0.712 | 0.316 | 0.158                  | 0.142 | 0.063 |
| TPSD476*025#0125                 | D         | 47               | 25                | 11.8          | 6         | 125                   | 1               | 1.095                  | 0.986 | 0.438 | 0.137                  | 0.123 | 0.055 |
| TPSD476*025#0150                 | D         | 47               | 25                | 11.8          | 6         | 150                   | 1               | 1.000                  | 0.900 | 0.400 | 0.150                  | 0.135 | 0.060 |
| TPSD476*025#0250                 | D         | 47               | 25                | 11.8          | 6         | 250                   | 1               | 0.775                  | 0.697 | 0.310 | 0.194                  | 0.174 | 0.077 |
| TPSE476*025#0080                 | E         | 47               | 25                | 11.8          | 6         | 80                    | 1 <sup>1)</sup> | 1.436                  | 1.293 | 0.574 | 0.115                  | 0.103 | 0.046 |
| TPSE476*025#0100                 | E         | 47               | 25                | 11.8          | 6         | 100                   | 1 <sup>1)</sup> | 1.285                  | 1.156 | 0.514 | 0.128                  | 0.116 | 0.051 |
| TPSE476*025#0125                 | E         | 47               | 25                | 11.8          | 6         | 125                   | 1 <sup>1)</sup> | 1.149                  | 1.034 | 0.460 | 0.144                  | 0.129 | 0.057 |
| TPSE686*025#0125                 | E         | 68               | 25                | 17            | 6         | 125                   | 1 <sup>1)</sup> | 1.149                  | 1.034 | 0.460 | 0.144                  | 0.129 | 0.057 |
| TPSE686*025#0200                 | E         | 68               | 25                | 17            | 6         | 200                   | 1 <sup>1)</sup> | 0.908                  | 0.817 | 0.363 | 0.182                  | 0.163 | 0.073 |
| TPSV686*025#0080                 | V         | 68               | 25                | 17            | 6         | 80                    | 1 <sup>1)</sup> | 1.768                  | 1.591 | 0.707 | 0.141                  | 0.127 | 0.057 |
| TPSV686*025#0095                 | V         | 68               | 25                | 17            | 6         | 95                    | 1 <sup>1)</sup> | 1.622                  | 1.460 | 0.649 | 0.154                  | 0.139 | 0.062 |
| TPSV686*025#0150                 | V         | 68               | 25                | 17            | 6         | 150                   | 1 <sup>1)</sup> | 1.291                  | 1.162 | 0.516 | 0.194                  | 0.174 | 0.077 |
| TPSV686*025#0200                 | V         | 68               | 25                | 17            | 6         | 200                   | 1 <sup>1)</sup> | 1.118                  | 1.006 | 0.447 | 0.224                  | 0.201 | 0.089 |
| TPSE107M025#0150                 | E         | 100              | 25                | 25            | 10        | 150                   | 1 <sup>1)</sup> | 1.049                  | 0.944 | 0.420 | 0.157                  | 0.142 | 0.063 |
| TPSV107*025#0100                 | V         | 100              | 25                | 25            | 8         | 100                   | 1 <sup>1)</sup> | 1.581                  | 1.423 | 0.632 | 0.158                  | 0.142 | 0.063 |
| TPSV157M025#0150                 | V         | 150              | 25                | 37.5          | 10        | 150                   | 1 <sup>1)</sup> | 1.291                  | 1.162 | 0.516 | 0.194                  | 0.174 | 0.077 |
| 35 Volt @ 85°C (23 Volt @ 125°C) |           |                  |                   |               |           |                       |                 |                        |       |       |                        |       |       |
| TPSA224*035#6000                 | A         | 0.22             | 35                | 0.5           | 4         | 6000                  | 1               | 0.112                  | 0.101 | 0.045 | 0.671                  | 0.604 | 0.268 |
| TPSA334*035#6000                 | A         | 0.33             | 35                | 0.5           | 4         | 6000                  | 1               | 0.112                  | 0.101 | 0.045 | 0.671                  | 0.604 | 0.268 |
| TPSA474*035#6000                 | A         | 0.47             | 35                | 0.5           | 4         | 6000                  | 1               | 0.112                  | 0.101 | 0.045 | 0.671                  | 0.604 | 0.268 |
| TPSB474*035#4000                 | B         | 0.47             | 35                | 0.5           | 4         | 4000                  | 1               | 0.146                  | 0.131 | 0.058 | 0.583                  | 0.525 | 0.233 |
| TPSA684*035#6000                 | A         | 0.68             | 35                | 0.5           | 4         | 6000                  | 1               | 0.112                  | 0.101 | 0.045 | 0.671                  | 0.604 | 0.268 |
| TPSA105*035#3000                 | A         | 1                | 35                | 0.5           | 4         | 3000                  | 1               | 0.158                  | 0.142 | 0.063 | 0.474                  | 0.427 | 0.190 |
| TPSB105*035#2000                 | B         | 1                | 35                | 0.5           | 4         | 2000                  | 1               | 0.206                  | 0.186 | 0.082 | 0.412                  | 0.371 | 0.165 |
| TPSA155*035#3000                 | A         | 1.5              | 35                | 0.5           | 6         | 3000                  | 1               | 0.158                  | 0.142 | 0.063 | 0.474                  | 0.427 | 0.190 |
| TPSB155*035#2500                 | B         | 1.5              | 35                | 0.5           | 6         | 2500                  | 1               | 0.184                  | 0.166 | 0.074 | 0.461                  | 0.415 | 0.184 |
| TPSA225*035#1500                 | A         | 2.2              | 35                | 0.8           | 6         | 1500                  | 1               | 0.224                  | 0.201 | 0.089 | 0.335                  | 0.302 | 0.134 |
| TPSB225*035#0750                 | B         | 2.2              | 35                | 0.8           | 6         | 750                   | 1               | 0.337                  | 0.303 | 0.135 | 0.252                  | 0.227 | 0.101 |
| TPSB225*035#1500                 | B         | 2.2              | 35                | 0.8           | 6         | 1500                  | 1               | 0.238                  | 0.214 | 0.095 | 0.357                  | 0.321 | 0.143 |
| TPSB225*035#2000                 | B         | 2.2              | 35                | 0.8           | 6         | 2000                  | 1               | 0.206                  | 0.186 | 0.082 | 0.412                  | 0.371 | 0.165 |
| TPSC225*035#1000                 | C         | 2.2              | 35                | 0.8           | 6         | 1000                  | 1               | 0.332                  | 0.298 | 0.133 | 0.332                  | 0.298 | 0.133 |
| TPSB335*035#1000                 | B         | 3.3              | 35                | 1.2           | 6         | 1000                  | 1               | 0.292                  | 0.262 | 0.117 | 0.292                  | 0.262 | 0.117 |
| TPSC335*035#0700                 | C         | 3.3              | 35                | 1.2           | 6         | 700                   | 1               | 0.396                  | 0.357 | 0.159 | 0.277                  | 0.250 | 0.111 |
| TPSB475*035#0700                 | B         | 4.7              | 35                | 1.6           | 6         | 700                   | 1               | 0.348                  | 0.314 | 0.139 | 0.244                  | 0.220 | 0.098 |
| TPSB475*035#1500                 | B         | 4.7              | 35                | 1.6           | 6         | 1500                  | 1               | 0.238                  | 0.214 | 0.095 | 0.357                  | 0.321 | 0.143 |
| TPSC475*035#0600                 | C         | 4.7              | 35                | 1.6           | 6         | 600                   | 1               | 0.428                  | 0.385 | 0.171 | 0.257                  | 0.231 | 0.103 |
| TPSD475*035#0700                 | D         | 4.7              | 35                | 1.6           | 6         | 700                   | 1               | 0.463                  | 0.417 | 0.185 | 0.324                  | 0.292 | 0.130 |
| TPSC685*035#0350                 | C         | 6.8              | 35                | 2.4           | 6         | 350                   | 1               | 0.561                  | 0.505 | 0.224 | 0.196                  | 0.177 | 0.078 |
| TPSD685*035#0150                 | D         | 6.8              | 35                | 2.4           | 6         | 150                   | 1               | 1.000                  | 0.900 | 0.400 | 0.150                  | 0.135 | 0.060 |
| TPSD685*035#0400                 | D         | 6.8              | 35                | 2.4           | 6         | 400                   | 1               | 0.612                  | 0.551 | 0.245 | 0.245                  | 0.220 | 0.098 |
| TPSD685*035#0500                 | D         | 6.8              | 35                | 2.4           | 6         | 500                   | 1               | 0.548                  | 0.493 | 0.219 | 0.274                  | 0.246 | 0.110 |
| TPSC106*035#0600                 | C         | 10               | 35                | 3.5           | 6         | 600                   | 1               | 0.428                  | 0.385 | 0.171 | 0.257                  | 0.231 | 0.103 |
| TPSD106*035#0125                 | D         | 10               | 35                | 3.5           | 6         | 125                   | 1               | 1.095                  | 0.986 | 0.438 | 0.137                  | 0.123 | 0.055 |
| TPSD106*035#0300                 | D         | 10               | 35                | 3.5           | 6         | 300                   | 1               | 0.707                  | 0.636 | 0.283 | 0.212                  | 0.191 | 0.085 |
| TPSE106*035#0200                 | E         | 10               | 35                | 3.5           | 6         | 200                   | 1 <sup>1)</sup> | 0.908                  | 0.817 | 0.363 | 0.182                  | 0.163 | 0.073 |
| TPSY106*035#0250                 | Y         | 10               | 35                | 3.5           | 6         | 250                   | 1 <sup>1)</sup> | 0.707                  | 0.636 | 0.283 | 0.177                  | 0.159 | 0.071 |
| TPSC156*035#0350                 | C         | 15               | 35                | 5.3           | 6         | 350                   | 1               | 0.561                  | 0.505 | 0.224 | 0.196                  | 0.177 | 0.078 |
| TPSC156*035#0450                 | C         | 15               | 35                | 5.3           | 6         | 450                   | 1               | 0.494                  | 0.445 | 0.198 | 0.222                  | 0.200 | 0.089 |

<sup>1)</sup> Dry pack option (see How to order) recommended for reduction of stress during soldering. Dry pack parts should be treated as MSL 3.

Moisture Sensitivity Level (MSL) is defined according to J-STD-020.

For AEC-Q200 availability, please contact AVX.

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 126.

**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.**

### RATINGS & PART NUMBER REFERENCE

| AVX Part No.                     | Case Size | Capacitance (μF) | Rated Voltage (V) | DCL (μA) Max. | DF % Max. | ESR Max. (mΩ) @100kHz | MSL             | 100kHz RMS Current (A) |       |       | 100kHz RMS Voltage (V) |       |       |
|----------------------------------|-----------|------------------|-------------------|---------------|-----------|-----------------------|-----------------|------------------------|-------|-------|------------------------|-------|-------|
|                                  |           |                  |                   |               |           |                       |                 | 25°C                   | 85°C  | 125°C | 25°C                   | 85°C  | 125°C |
| TPSD156*035#0100                 | D         | 15               | 35                | 5.3           | 6         | 100                   | 1               | 1.225                  | 1.102 | 0.490 | 0.122                  | 0.110 | 0.049 |
| TPSD156*035#0300                 | D         | 15               | 35                | 5.3           | 6         | 300                   | 1               | 0.707                  | 0.636 | 0.283 | 0.212                  | 0.191 | 0.085 |
| TPSY156*035#0250                 | Y         | 15               | 35                | 5.3           | 6         | 250                   | 1 <sup>1)</sup> | 0.707                  | 0.636 | 0.283 | 0.177                  | 0.159 | 0.071 |
| TPSD226*035#0125                 | D         | 22               | 35                | 7.7           | 6         | 125                   | 1               | 1.095                  | 0.986 | 0.438 | 0.137                  | 0.123 | 0.055 |
| TPSD226*035#0200                 | D         | 22               | 35                | 7.7           | 6         | 200                   | 1               | 0.866                  | 0.779 | 0.346 | 0.173                  | 0.156 | 0.069 |
| TPSD226*035#0300                 | D         | 22               | 35                | 7.7           | 6         | 300                   | 1               | 0.707                  | 0.636 | 0.283 | 0.212                  | 0.191 | 0.085 |
| TPSD226*035#0400                 | D         | 22               | 35                | 7.7           | 6         | 400                   | 1               | 0.612                  | 0.551 | 0.245 | 0.245                  | 0.220 | 0.098 |
| TPSE226*035#0125                 | E         | 22               | 35                | 7.7           | 6         | 125                   | 1 <sup>1)</sup> | 1.149                  | 1.034 | 0.460 | 0.144                  | 0.129 | 0.057 |
| TPSE226*035#0200                 | E         | 22               | 35                | 7.7           | 6         | 200                   | 1 <sup>1)</sup> | 0.908                  | 0.817 | 0.363 | 0.182                  | 0.163 | 0.073 |
| TPSE226*035#0300                 | E         | 22               | 35                | 7.7           | 6         | 300                   | 1 <sup>1)</sup> | 0.742                  | 0.667 | 0.297 | 0.222                  | 0.200 | 0.089 |
| TPSY226*035#0200                 | Y         | 22               | 35                | 7.7           | 6         | 200                   | 1 <sup>1)</sup> | 0.791                  | 0.712 | 0.316 | 0.158                  | 0.142 | 0.063 |
| TPSD336*035#0200                 | D         | 33               | 35                | 11.6          | 6         | 200                   | 1               | 0.866                  | 0.779 | 0.346 | 0.173                  | 0.156 | 0.069 |
| TPSD336*035#0300                 | D         | 33               | 35                | 11.6          | 6         | 300                   | 1               | 0.707                  | 0.636 | 0.283 | 0.212                  | 0.191 | 0.085 |
| TPSE336*035#0100                 | E         | 33               | 35                | 11.6          | 6         | 100                   | 1 <sup>1)</sup> | 1.285                  | 1.156 | 0.514 | 0.128                  | 0.116 | 0.051 |
| TPSE336*035#0250                 | E         | 33               | 35                | 11.6          | 6         | 250                   | 1 <sup>1)</sup> | 0.812                  | 0.731 | 0.325 | 0.203                  | 0.183 | 0.081 |
| TPSE336*035#0300                 | E         | 33               | 35                | 11.6          | 6         | 300                   | 1 <sup>1)</sup> | 0.742                  | 0.667 | 0.297 | 0.222                  | 0.200 | 0.089 |
| TPSV336*035#0200                 | V         | 33               | 35                | 11.6          | 6         | 200                   | 1 <sup>1)</sup> | 1.118                  | 1.006 | 0.447 | 0.224                  | 0.201 | 0.089 |
| TPSE476*035#0200                 | E         | 47               | 35                | 16.5          | 6         | 200                   | 1 <sup>1)</sup> | 0.908                  | 0.817 | 0.363 | 0.182                  | 0.163 | 0.073 |
| TPSE476*035#0250                 | E         | 47               | 35                | 16.5          | 6         | 250                   | 1 <sup>1)</sup> | 0.812                  | 0.731 | 0.325 | 0.203                  | 0.183 | 0.081 |
| TPSV476*035#0150                 | V         | 47               | 35                | 16.5          | 6         | 150                   | 1 <sup>1)</sup> | 1.291                  | 1.162 | 0.516 | 0.194                  | 0.174 | 0.077 |
| TPSV476*035#0200                 | V         | 47               | 35                | 16.5          | 6         | 200                   | 1 <sup>1)</sup> | 1.118                  | 1.006 | 0.447 | 0.224                  | 0.201 | 0.089 |
| TPSV686*035#0150                 | V         | 68               | 35                | 23.8          | 6         | 150                   | 1 <sup>1)</sup> | 1.291                  | 1.162 | 0.516 | 0.194                  | 0.174 | 0.077 |
| TPSV686*035#0200                 | V         | 68               | 35                | 23.8          | 6         | 200                   | 1 <sup>1)</sup> | 1.118                  | 1.006 | 0.447 | 0.224                  | 0.201 | 0.089 |
| 50 Volt @ 85°C (33 Volt @ 125°C) |           |                  |                   |               |           |                       |                 |                        |       |       |                        |       |       |
| TPSA154*050#9000                 | A         | 0.15             | 50                | 0.5           | 4         | 9000                  | 1               | 0.091                  | 0.082 | 0.037 | 0.822                  | 0.739 | 0.329 |
| TPSA224*050#7000                 | A         | 0.22             | 50                | 0.5           | 4         | 7000                  | 1               | 0.104                  | 0.093 | 0.041 | 0.725                  | 0.652 | 0.290 |
| TPSA334*050#7000                 | A         | 0.33             | 50                | 0.5           | 4         | 7000                  | 1               | 0.104                  | 0.093 | 0.041 | 0.725                  | 0.652 | 0.290 |
| TPSA474*050#6500                 | A         | 0.47             | 50                | 0.5           | 4         | 6500                  | 1               | 0.107                  | 0.097 | 0.043 | 0.698                  | 0.628 | 0.279 |
| TPSB474*050#6000                 | B         | 0.47             | 50                | 0.5           | 4         | 6000                  | 1               | 0.119                  | 0.107 | 0.048 | 0.714                  | 0.643 | 0.286 |
| TPSC474*050#2300                 | C         | 0.47             | 50                | 0.5           | 4         | 2300                  | 1               | 0.219                  | 0.197 | 0.087 | 0.503                  | 0.453 | 0.201 |
| TPSB684*050#4000                 | B         | 0.68             | 50                | 0.5           | 4         | 4000                  | 1               | 0.146                  | 0.131 | 0.058 | 0.583                  | 0.525 | 0.233 |
| TPSB105*050#3000                 | B         | 1                | 50                | 0.5           | 6         | 3000                  | 1               | 0.168                  | 0.151 | 0.067 | 0.505                  | 0.454 | 0.202 |
| TPSC105*050#2500                 | C         | 1                | 50                | 0.5           | 4         | 2500                  | 1               | 0.210                  | 0.189 | 0.084 | 0.524                  | 0.472 | 0.210 |
| TPSC155*050#1500                 | C         | 1.5              | 50                | 0.8           | 6         | 1500                  | 1               | 0.271                  | 0.244 | 0.108 | 0.406                  | 0.366 | 0.162 |
| TPSC155*050#2000                 | C         | 1.5              | 50                | 0.8           | 6         | 2000                  | 1               | 0.235                  | 0.211 | 0.094 | 0.469                  | 0.422 | 0.188 |
| TPSC225*050#1500                 | C         | 2.2              | 50                | 1.1           | 8         | 1500                  | 1               | 0.271                  | 0.244 | 0.108 | 0.406                  | 0.366 | 0.162 |
| TPSD225*050#1200                 | D         | 2.2              | 50                | 1.1           | 6         | 1200                  | 1               | 0.354                  | 0.318 | 0.141 | 0.424                  | 0.382 | 0.170 |
| TPSC335*050#1000                 | C         | 3.3              | 50                | 1.6           | 6         | 1000                  | 1               | 0.332                  | 0.298 | 0.133 | 0.332                  | 0.298 | 0.133 |
| TPSD335*050#0800                 | D         | 3.3              | 50                | 1.7           | 6         | 800                   | 1               | 0.433                  | 0.390 | 0.173 | 0.346                  | 0.312 | 0.139 |
| TPSC475*050#0800                 | C         | 4.7              | 50                | 2.4           | 6         | 800                   | 1               | 0.371                  | 0.334 | 0.148 | 0.297                  | 0.267 | 0.119 |
| TPSD475*050#0300                 | D         | 4.7              | 50                | 2.4           | 6         | 300                   | 1               | 0.707                  | 0.636 | 0.283 | 0.212                  | 0.191 | 0.085 |
| TPSD475*050#0500                 | D         | 4.7              | 50                | 2.4           | 6         | 500                   | 1               | 0.548                  | 0.493 | 0.219 | 0.274                  | 0.246 | 0.110 |
| TPSD475*050#0700                 | D         | 4.7              | 50                | 2.4           | 6         | 700                   | 1               | 0.463                  | 0.417 | 0.185 | 0.324                  | 0.292 | 0.130 |
| TPSD685*050#0200                 | D         | 6.8              | 50                | 3.4           | 6         | 200                   | 1               | 0.866                  | 0.779 | 0.346 | 0.173                  | 0.156 | 0.069 |
| TPSD685*050#0300                 | D         | 6.8              | 50                | 3.4           | 6         | 300                   | 1               | 0.707                  | 0.636 | 0.283 | 0.212                  | 0.191 | 0.085 |
| TPSD685*050#0500                 | D         | 6.8              | 50                | 3.4           | 6         | 500                   | 1               | 0.548                  | 0.493 | 0.219 | 0.274                  | 0.246 | 0.110 |
| TPSD685*050#0600                 | D         | 6.8              | 50                | 3.4           | 6         | 600                   | 1               | 0.500                  | 0.450 | 0.200 | 0.300                  | 0.270 | 0.120 |
| TPSD106*050#0500                 | D         | 10               | 50                | 5             | 6         | 500                   | 1               | 0.548                  | 0.493 | 0.219 | 0.274                  | 0.246 | 0.110 |
| TPSE106*050#0250                 | E         | 10               | 50                | 5             | 6         | 250                   | 1 <sup>1)</sup> | 0.812                  | 0.731 | 0.325 | 0.203                  | 0.183 | 0.081 |
| TPSE106*050#0300                 | E         | 10               | 50                | 5             | 6         | 300                   | 1 <sup>1)</sup> | 0.742                  | 0.667 | 0.297 | 0.222                  | 0.200 | 0.089 |
| TPSE106*050#0400                 | E         | 10               | 50                | 5             | 6         | 400                   | 1 <sup>1)</sup> | 0.642                  | 0.578 | 0.257 | 0.257                  | 0.231 | 0.103 |
| TPSE106*050#0500                 | E         | 10               | 50                | 5             | 6         | 500                   | 1 <sup>1)</sup> | 0.574                  | 0.517 | 0.230 | 0.287                  | 0.259 | 0.115 |
| TPSE156*050#0250                 | E         | 15               | 50                | 7.5           | 6         | 250                   | 1 <sup>1)</sup> | 0.812                  | 0.731 | 0.325 | 0.203                  | 0.183 | 0.081 |
| TPSV156*050#0250                 | V         | 15               | 50                | 7.5           | 6         | 250                   | 1 <sup>1)</sup> | 1.000                  | 0.900 | 0.400 | 0.250                  | 0.225 | 0.100 |

<sup>1)</sup> Dry pack option (see How to order) recommended for reduction of stress during soldering. Dry pack parts should be treated as MSL 3.

Moisture Sensitivity Level (MSL) is defined according to J-STD-020.

For AEC-Q200 availability, please contact AVX.

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 126.

**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.**

# TPS Automotive Range



## Low ESR - Automotive Product Range

### TPS AUTOMOTIVE RANGE CAPACITANCE AND RATED VOLTAGE, $V_R$ (VOLTAGE CODE) RANGE (LETTER DENOTES CASE SIZE)

| Capacitance |      | Rated Voltage DC ( $V_R$ ) to 85°C    |                                        |                                |                                |                           |                             |                            |
|-------------|------|---------------------------------------|----------------------------------------|--------------------------------|--------------------------------|---------------------------|-----------------------------|----------------------------|
| $\mu F$     | Code | 6.3V (J)                              | 10V (A)                                | 16V (C)                        | 20V (D)                        | 25V (E)                   | 35V (V)                     | 50V (T)                    |
| 0.15        | 154  |                                       |                                        |                                |                                |                           |                             |                            |
| 0.22        | 224  |                                       |                                        |                                |                                |                           |                             | A(7000)                    |
| 0.33        | 334  |                                       |                                        |                                |                                |                           | A(6000)                     | A(7000)                    |
| 0.47        | 474  |                                       |                                        |                                |                                | A(7000)                   | A(6000)                     | A(6500), B(6000)           |
| 0.68        | 684  |                                       |                                        |                                |                                | A(6000)                   | A(6000)                     | B(4000)                    |
| 1.0         | 105  |                                       |                                        | A(6200)                        | A(3000)                        | A(4000)                   | A(3000), B(2000)            | B(3000), C(2500)           |
| 1.5         | 155  |                                       |                                        |                                | A(3000)                        | A(3000)                   | A(3000), B(2500)            | C(1500,2000)               |
| 2.2         | 225  |                                       | A(1800)                                | A(1800,3500)                   | A(3000), B(1700)               | A(2500), B(900,1200,2500) | B(750,1500,2000), C(1000)   | C(1500), D(1200)           |
| 3.3         | 335  | A(2100)                               |                                        | A(3500), B(2500)               | A(2500), B(1300)               | B(750,1500,2000)          | B(1000), C(700)             | C(1000), D(800)            |
| 4.7         | 475  |                                       | A(1400), B(1400)                       | A(2000), B(800,1500)           | A(1800), B(750,1000)           | B(700,900), C(700)        | B(700,1500), C(600), D(700) | C(800), D(500,700)         |
| 6.8         | 685  |                                       | A(1800), B(1300)                       | A(1500), B(600,1200)           | B(600,1000), C(700)            | B(700), C(500,600,700)    | C(350), D(400,500)          | D(500,600)                 |
| 10          | 106  | A(1500), B(1500)                      | A(900,1800), B(1000)                   | A(1000), B(500,800), C(500)    | B(500,1000), C(500,700)        | C(300,500), D(500)        | C(600), D(300)              | D(500), E(250,300,400,500) |
| 15          | 156  | A(700,1500)                           | A(1000), B(450,600), C(700)            | B(500,800), C(700)             | B(500), C(400,450)             | C(220,300), D(300)        | D(300)                      |                            |
| 22          | 226  | A(500,900), B(375,600), C(500)        | A(900), B(400,500,700), C(300)         | B(400,600), C(300,375), D(700) | C(400), D(200,300)             | C(275,400), D(200,300)    | D(200,300,400), E(200,300)  |                            |
| 33          | 336  | A(600), B(250,350,450,600)            | B(250,425,500,650), C(375,500)         | C(225,300), D(200)             | C(300), D(200)                 | D(200,300)                | E(250,300)                  |                            |
| 47          | 476  | B(250,350,500), C(300)                | B(250,350,500,650), C(200,350), D(300) | C(350), D(200)                 | D(200)                         | D(125,150,250), E(125)    |                             |                            |
| 68          | 686  | B(250,350,500), C(150,200)            | C(200,300), D(150)                     | C(200), D(150)                 | D(150,200,300), E(125,150,200) |                           |                             |                            |
| 100         | 107  | C(150), D(300)                        | C(150,200), D(100,125,150)             | D(100,125,150), E(100,125,150) | E(100,150,200)                 |                           |                             |                            |
| 150         | 157  | C(150,200,250), D(125)                | D(85,100), E(100)                      | E(100)                         |                                |                           |                             |                            |
| 220         | 227  | D(100,125)                            | D(100,150), E(70,100,125,150)          |                                |                                |                           |                             |                            |
| 330         | 337  | D(70,100), E(100,125,150)             | E(50,60,100)                           |                                |                                |                           |                             |                            |
| 470         | 477  | D(45,60,100,200), E(45,50,60,100,200) |                                        |                                |                                |                           |                             |                            |
| 680         | 687  | E(45,60,100)                          |                                        |                                |                                |                           |                             |                            |

Not recommended for new designs, higher voltage or smaller case size substitution are offered.

Released codes

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

## HOW TO ORDER

| TPS  | C                            | 107                                                                                                                                    | M                                             | 010                                                                           | T                                                                                  | 0150              |
|------|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|-------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------|
| Type | 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 = $\pm 10\%$<br>M = $\pm 20\%$ | Rated DC Voltage<br>006 = 6.3Vdc<br>010 = 10Vdc<br>016 = 16Vdc<br>020 = 20Vdc | Packaging<br>T = Automotive Lead Free 7" Reel<br>U = Automotive Lead Free 13" Reel | ESR in m $\Omega$ |

## TECHNICAL SPECIFICATIONS

Technical Data:

All technical data relate to an ambient temperature of +25°C

|                               |                                                                                             |     |    |    |    |    |    |    |  |
|-------------------------------|---------------------------------------------------------------------------------------------|-----|----|----|----|----|----|----|--|
| Capacitance Range:            | 0.22 $\mu F$ to 680 $\mu F$                                                                 |     |    |    |    |    |    |    |  |
| Capacitance Tolerance:        | $\pm 10\%$ ; $\pm 20\%$                                                                     |     |    |    |    |    |    |    |  |
| Rated Voltage ( $V_R$ )       | $\leq +85^\circ C$ :                                                                        | 6.3 | 10 | 16 | 20 | 25 | 35 | 50 |  |
| Category Voltage ( $V_C$ )    | $\leq +125^\circ C$ :                                                                       | 4   | 7  | 10 | 13 | 17 | 23 | 33 |  |
| Surge Voltage ( $V_S$ )       | $\leq +85^\circ C$ :                                                                        | 8   | 13 | 20 | 26 | 32 | 46 | 65 |  |
| Surge Voltage ( $V_S$ )       | $\leq +125^\circ C$ :                                                                       | 5   | 8  | 13 | 16 | 20 | 28 | 40 |  |
| Temperature Range:            | -55°C to +125°C                                                                             |     |    |    |    |    |    |    |  |
| Environmental Classification: | 55/125/56 (IEC 68-2)                                                                        |     |    |    |    |    |    |    |  |
| Reliability:                  | 1% per 1000 hours at 85°C, $V_R$ with 0.1 $\Omega/V$ series impedance, 60% confidence level |     |    |    |    |    |    |    |  |
| Termination Finished:         | Sn Plating (standard), Gold and SnPb Plating upon request                                   |     |    |    |    |    |    |    |  |
|                               | Meets requirements of AEC-Q200                                                              |     |    |    |    |    |    |    |  |

# TPS Automotive Range



## Low ESR - Automotive Product Range

### RATINGS & PART NUMBER REFERENCE

| AVX<br>Part No.*                 | Case<br>Size | Capacitance<br>(µF) | Rated<br>Voltage<br>(V) | DCL<br>(µA)<br>Max. | DF<br>%<br>Max. | ESR<br>Max. (mΩ)<br>@100kHz | MSL | 100kHz RMS Current (A) |       |       | 100kHz RMS Voltage (V) |       |       |
|----------------------------------|--------------|---------------------|-------------------------|---------------------|-----------------|-----------------------------|-----|------------------------|-------|-------|------------------------|-------|-------|
|                                  |              |                     |                         |                     |                 |                             |     | 25°C                   | 85°C  | 125°C | 25°C                   | 85°C  | 125°C |
| 6.3 Volt @ 85°C (4 Volt @ 125°C) |              |                     |                         |                     |                 |                             |     |                        |       |       |                        |       |       |
| TPSA335*006T2100                 | A            | 3.3                 | 6.3                     | 0.5                 | 6               | 2100                        | 1   | 0.189                  | 0.170 | 0.076 | 0.397                  | 0.357 | 0.159 |
| TPSA106*006T1500                 | A            | 10                  | 6.3                     | 0.6                 | 6               | 1500                        | 1   | 0.224                  | 0.201 | 0.089 | 0.335                  | 0.302 | 0.134 |
| TPSB106*006T1500                 | B            | 10                  | 6.3                     | 0.6                 | 6               | 1500                        | 1   | 0.238                  | 0.214 | 0.095 | 0.357                  | 0.321 | 0.143 |
| TPSA156*006T0700                 | A            | 15                  | 6.3                     | 0.9                 | 6               | 700                         | 1   | 0.327                  | 0.295 | 0.131 | 0.229                  | 0.206 | 0.092 |
| TPSA156*006T1500                 | A            | 15                  | 6.3                     | 0.9                 | 6               | 1500                        | 1   | 0.224                  | 0.201 | 0.089 | 0.335                  | 0.302 | 0.134 |
| TPSA226*006T0500                 | A            | 22                  | 6.3                     | 1.4                 | 6               | 500                         | 1   | 0.387                  | 0.349 | 0.155 | 0.194                  | 0.174 | 0.077 |
| TPSA226*006T0900                 | A            | 22                  | 6.3                     | 1.4                 | 6               | 900                         | 1   | 0.289                  | 0.260 | 0.115 | 0.260                  | 0.234 | 0.104 |
| TPSB226*006T0375                 | B            | 22                  | 6.3                     | 1.4                 | 6               | 375                         | 1   | 0.476                  | 0.428 | 0.190 | 0.179                  | 0.161 | 0.071 |
| TPSB226*006T0600                 | B            | 22                  | 6.3                     | 1.4                 | 6               | 600                         | 1   | 0.376                  | 0.339 | 0.151 | 0.226                  | 0.203 | 0.090 |
| TPSC226*006T0500                 | C            | 22                  | 6.3                     | 1.4                 | 6               | 500                         | 1   | 0.469                  | 0.422 | 0.188 | 0.235                  | 0.211 | 0.094 |
| TPSA336*006T0600                 | A            | 33                  | 6.3                     | 2.1                 | 8               | 600                         | 1   | 0.354                  | 0.318 | 0.141 | 0.212                  | 0.191 | 0.085 |
| TPSB336*006T0250                 | B            | 33                  | 6.3                     | 2.1                 | 6               | 250                         | 1   | 0.583                  | 0.525 | 0.233 | 0.146                  | 0.131 | 0.058 |
| TPSB336*006T0350                 | B            | 33                  | 6.3                     | 2.1                 | 6               | 350                         | 1   | 0.493                  | 0.444 | 0.197 | 0.172                  | 0.155 | 0.069 |
| TPSB336*006T0450                 | B            | 33                  | 6.3                     | 2.1                 | 6               | 450                         | 1   | 0.435                  | 0.391 | 0.174 | 0.196                  | 0.176 | 0.078 |
| TPSB336*006T0600                 | B            | 33                  | 6.3                     | 2.1                 | 6               | 600                         | 1   | 0.376                  | 0.339 | 0.151 | 0.226                  | 0.203 | 0.090 |
| TPSB476*006T0250                 | B            | 47                  | 6.3                     | 3                   | 6               | 250                         | 1   | 0.583                  | 0.525 | 0.233 | 0.146                  | 0.131 | 0.058 |
| TPSB476*006T0350                 | B            | 47                  | 6.3                     | 3                   | 6               | 350                         | 1   | 0.493                  | 0.444 | 0.197 | 0.172                  | 0.155 | 0.069 |
| TPSB476*006T0500                 | B            | 47                  | 6.3                     | 3                   | 6               | 500                         | 1   | 0.412                  | 0.371 | 0.165 | 0.206                  | 0.186 | 0.082 |
| TPSC476*006T0300                 | C            | 47                  | 6.3                     | 3                   | 6               | 300                         | 1   | 0.606                  | 0.545 | 0.242 | 0.182                  | 0.163 | 0.073 |
| TPSB686*006T0250                 | B            | 68                  | 6.3                     | 4                   | 8               | 250                         | 1   | 0.583                  | 0.525 | 0.233 | 0.146                  | 0.131 | 0.058 |
| TPSB686*006T0350                 | B            | 68                  | 6.3                     | 4                   | 8               | 350                         | 1   | 0.493                  | 0.444 | 0.197 | 0.172                  | 0.155 | 0.069 |
| TPSB686*006T0500                 | B            | 68                  | 6.3                     | 4                   | 8               | 500                         | 1   | 0.412                  | 0.371 | 0.165 | 0.206                  | 0.186 | 0.082 |
| TPSC686*006T0150                 | C            | 68                  | 6.3                     | 4.3                 | 6               | 150                         | 1   | 0.856                  | 0.771 | 0.343 | 0.128                  | 0.116 | 0.051 |
| TPSC686*006T0200                 | C            | 68                  | 6.3                     | 4.3                 | 6               | 200                         | 1   | 0.742                  | 0.667 | 0.297 | 0.148                  | 0.133 | 0.059 |
| TPSC107*006T0150                 | C            | 100                 | 6.3                     | 6.3                 | 6               | 150                         | 1   | 0.856                  | 0.771 | 0.343 | 0.128                  | 0.116 | 0.051 |
| TPSD107*006T0300                 | D            | 100                 | 6.3                     | 6.3                 | 6               | 300                         | 3   | 0.707                  | 0.636 | 0.283 | 0.212                  | 0.191 | 0.085 |
| TPSC157*006T0150                 | C            | 150                 | 6.3                     | 9.5                 | 6               | 150                         | 1   | 0.856                  | 0.771 | 0.343 | 0.128                  | 0.116 | 0.051 |
| TPSC157*006T0200                 | C            | 150                 | 6.3                     | 9.5                 | 6               | 200                         | 1   | 0.742                  | 0.667 | 0.297 | 0.148                  | 0.133 | 0.059 |
| TPSC157*006T0250                 | C            | 150                 | 6.3                     | 9.5                 | 6               | 250                         | 1   | 0.663                  | 0.597 | 0.265 | 0.166                  | 0.149 | 0.066 |
| TPSD157*006T0125                 | D            | 150                 | 6.3                     | 9.5                 | 6               | 125                         | 3   | 1.095                  | 0.986 | 0.438 | 0.137                  | 0.123 | 0.055 |
| TPSD227*006T0100                 | D            | 220                 | 6.3                     | 13.9                | 8               | 100                         | 3   | 1.225                  | 1.102 | 0.490 | 0.122                  | 0.110 | 0.049 |
| TPSD227*006T0125                 | D            | 220                 | 6.3                     | 13.9                | 8               | 125                         | 3   | 1.095                  | 0.986 | 0.438 | 0.137                  | 0.123 | 0.055 |
| TPSD337*006T0070                 | D            | 330                 | 6.3                     | 20.8                | 8               | 70                          | 3   | 1.464                  | 1.317 | 0.586 | 0.102                  | 0.092 | 0.041 |
| TPSD337*006T0100                 | D            | 330                 | 6.3                     | 20.8                | 8               | 100                         | 3   | 1.225                  | 1.102 | 0.490 | 0.122                  | 0.110 | 0.049 |
| TPSE337*006T0100                 | E            | 330                 | 6.3                     | 20.8                | 8               | 100                         | 3   | 1.285                  | 1.156 | 0.514 | 0.128                  | 0.116 | 0.051 |
| TPSE337*006T0125                 | E            | 330                 | 6.3                     | 20.8                | 8               | 125                         | 3   | 1.149                  | 1.034 | 0.460 | 0.144                  | 0.129 | 0.057 |
| TPSE337*006T0150                 | E            | 330                 | 6.3                     | 20.8                | 8               | 150                         | 3   | 1.049                  | 0.944 | 0.420 | 0.157                  | 0.142 | 0.063 |
| TPSD477*006T0045                 | D            | 470                 | 6.3                     | 28                  | 12              | 45                          | 3   | 1.826                  | 1.643 | 0.730 | 0.082                  | 0.074 | 0.033 |
| TPSD477*006T0060                 | D            | 470                 | 6.3                     | 28                  | 12              | 60                          | 3   | 1.581                  | 1.423 | 0.632 | 0.095                  | 0.085 | 0.038 |
| TPSD477*006T0100                 | D            | 470                 | 6.3                     | 28                  | 12              | 100                         | 3   | 1.225                  | 1.102 | 0.490 | 0.122                  | 0.110 | 0.049 |
| TPSD477*006T0200                 | D            | 470                 | 6.3                     | 28                  | 12              | 200                         | 3   | 0.866                  | 0.779 | 0.346 | 0.173                  | 0.156 | 0.069 |
| TPSE477*006T0045                 | E            | 470                 | 6.3                     | 28                  | 10              | 45                          | 3   | 1.915                  | 1.723 | 0.766 | 0.086                  | 0.078 | 0.034 |
| TPSE477*006T0050                 | E            | 470                 | 6.3                     | 28                  | 10              | 50                          | 3   | 1.817                  | 1.635 | 0.727 | 0.091                  | 0.082 | 0.036 |
| TPSE477*006T0060                 | E            | 470                 | 6.3                     | 28                  | 10              | 60                          | 3   | 1.658                  | 1.492 | 0.663 | 0.099                  | 0.090 | 0.040 |
| TPSE477*006T0100                 | E            | 470                 | 6.3                     | 28                  | 10              | 100                         | 3   | 1.285                  | 1.156 | 0.514 | 0.128                  | 0.116 | 0.051 |
| TPSE477*006T0200                 | E            | 470                 | 6.3                     | 28                  | 10              | 200                         | 3   | 0.908                  | 0.817 | 0.363 | 0.182                  | 0.163 | 0.073 |
| TPSE687*006T0045                 | E            | 680                 | 6.3                     | 42.8                | 10              | 45                          | 3   | 1.915                  | 1.723 | 0.766 | 0.086                  | 0.078 | 0.034 |
| TPSE687*006T0060                 | E            | 680                 | 6.3                     | 42.8                | 10              | 60                          | 3   | 1.658                  | 1.492 | 0.663 | 0.099                  | 0.090 | 0.040 |
| TPSE687*006T0100                 | E            | 680                 | 6.3                     | 42.8                | 10              | 100                         | 3   | 1.285                  | 1.156 | 0.514 | 0.128                  | 0.116 | 0.051 |
| 10 Volt @ 85°C (7 Volt @ 125°C)  |              |                     |                         |                     |                 |                             |     |                        |       |       |                        |       |       |
| TPSA225*010T1800                 | A            | 2.2                 | 10                      | 0.5                 | 6               | 1800                        | 1   | 0.204                  | 0.184 | 0.082 | 0.367                  | 0.331 | 0.147 |
| TPSA475*010T1400                 | A            | 4.7                 | 10                      | 0.5                 | 6               | 1400                        | 1   | 0.231                  | 0.208 | 0.093 | 0.324                  | 0.292 | 0.130 |
| TPSB475*010T1400                 | B            | 4.7                 | 10                      | 0.5                 | 6               | 1400                        | 1   | 0.246                  | 0.222 | 0.099 | 0.345                  | 0.310 | 0.138 |
| TPSA685*010T1800                 | A            | 6.8                 | 10                      | 0.7                 | 6               | 1800                        | 1   | 0.204                  | 0.184 | 0.082 | 0.367                  | 0.331 | 0.147 |
| TPSB685*010T1300                 | B            | 6.8                 | 10                      | 0.7                 | 6               | 1300                        | 1   | 0.256                  | 0.230 | 0.102 | 0.332                  | 0.299 | 0.133 |
| TPSA106*010T0900                 | A            | 10                  | 10                      | 1                   | 6               | 900                         | 1   | 0.289                  | 0.260 | 0.115 | 0.260                  | 0.234 | 0.104 |
| TPSA106*010T1800                 | A            | 10                  | 10                      | 1                   | 6               | 1800                        | 1   | 0.204                  | 0.184 | 0.082 | 0.367                  | 0.331 | 0.147 |
| TPSB106*010T1000                 | B            | 10                  | 10                      | 1                   | 6               | 1000                        | 1   | 0.292                  | 0.262 | 0.117 | 0.292                  | 0.262 | 0.117 |
| TPSA156*010T1000                 | A            | 15                  | 10                      | 1.5                 | 6               | 1000                        | 1   | 0.274                  | 0.246 | 0.110 | 0.274                  | 0.246 | 0.110 |
| TPSB156*010T0450                 | B            | 15                  | 10                      | 1.5                 | 6               | 450                         | 1   | 0.435                  | 0.391 | 0.174 | 0.196                  | 0.176 | 0.078 |
| TPSB156*010T0600                 | B            | 15                  | 10                      | 1.5                 | 6               | 600                         | 1   | 0.376                  | 0.339 | 0.151 | 0.226                  | 0.203 | 0.090 |
| TPSC156*010T0700                 | C            | 15                  | 10                      | 1.5                 | 6               | 700                         | 1   | 0.396                  | 0.357 | 0.159 | 0.277                  | 0.250 | 0.111 |
| TPSA226*010T0900                 | A            | 22                  | 10                      | 2.2                 | 8               | 900                         | 1   | 0.289                  | 0.260 | 0.115 | 0.260                  | 0.234 | 0.104 |
| TPSB226*010T0400                 | B            | 22                  | 10                      | 2.2                 | 6               | 400                         | 1   | 0.461                  | 0.415 | 0.184 | 0.184                  | 0.166 | 0.074 |
| TPSB226*010T0500                 | B            | 22                  | 10                      | 2.2                 | 6               | 500                         | 1   | 0.412                  | 0.371 | 0.165 | 0.206                  | 0.186 | 0.082 |
| TPSB226*010T0700                 | B            | 22                  | 10                      | 2.2                 | 6               | 700                         | 1   | 0.348                  | 0.314 | 0.139 | 0.244                  | 0.220 | 0.098 |

Moisture Sensitivity Level (MSL) is defined according to J-STD-020

\*Please use "U" instead of "T" in the suffix letter for 13" reel packaging

Please use specific PN for automotive version – see "HOW TO ORDER".

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 126.

**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.**



# TPS Automotive Range



## Low ESR - Automotive Product Range

### RATINGS & PART NUMBER REFERENCE

| AVX<br>Part No.*                | Case<br>Size | Capacitance<br>(µF) | Rated<br>Voltage<br>(V) | DCL<br>(µA)<br>Max. | DF<br>%<br>Max. | ESR<br>Max. (mΩ)<br>@100kHz | MSL | 100kHz RMS Current (A) |       |       | 100kHz RMS Voltage (V) |       |       |
|---------------------------------|--------------|---------------------|-------------------------|---------------------|-----------------|-----------------------------|-----|------------------------|-------|-------|------------------------|-------|-------|
|                                 |              |                     |                         |                     |                 |                             |     | 25°C                   | 85°C  | 125°C | 25°C                   | 85°C  | 125°C |
| TPSC226*010T0300                | C            | 22                  | 10                      | 2.2                 | 6               | 300                         | 1   | 0.606                  | 0.545 | 0.242 | 0.182                  | 0.163 | 0.073 |
| TPSB336*010T0250                | B            | 33                  | 10                      | 3.3                 | 6               | 250                         | 1   | 0.583                  | 0.525 | 0.233 | 0.146                  | 0.131 | 0.058 |
| TPSB336*010T0425                | B            | 33                  | 10                      | 3.3                 | 6               | 425                         | 1   | 0.447                  | 0.402 | 0.179 | 0.190                  | 0.171 | 0.076 |
| TPSB336*010T0500                | B            | 33                  | 10                      | 3.3                 | 6               | 500                         | 1   | 0.412                  | 0.371 | 0.165 | 0.206                  | 0.186 | 0.082 |
| TPSB336*010T0650                | B            | 33                  | 10                      | 3.3                 | 6               | 650                         | 1   | 0.362                  | 0.325 | 0.145 | 0.235                  | 0.212 | 0.094 |
| TPSC336*010T0375                | C            | 33                  | 10                      | 3.3                 | 6               | 375                         | 1   | 0.542                  | 0.487 | 0.217 | 0.203                  | 0.183 | 0.081 |
| TPSC336*010T0500                | C            | 33                  | 10                      | 3.3                 | 6               | 500                         | 1   | 0.469                  | 0.422 | 0.188 | 0.235                  | 0.211 | 0.094 |
| TPSB476*010T0250                | B            | 47                  | 10                      | 4.7                 | 8               | 250                         | 1   | 0.583                  | 0.525 | 0.233 | 0.146                  | 0.131 | 0.058 |
| TPSB476*010T0350                | B            | 47                  | 10                      | 4.7                 | 8               | 350                         | 1   | 0.493                  | 0.444 | 0.197 | 0.172                  | 0.155 | 0.069 |
| TPSB476*010T0500                | B            | 47                  | 10                      | 4.7                 | 8               | 500                         | 1   | 0.412                  | 0.371 | 0.165 | 0.206                  | 0.186 | 0.082 |
| TPSB476*010T0650                | B            | 47                  | 10                      | 4.7                 | 8               | 650                         | 1   | 0.362                  | 0.325 | 0.145 | 0.235                  | 0.212 | 0.094 |
| TPSC476*010T0200                | C            | 47                  | 10                      | 4.7                 | 6               | 200                         | 1   | 0.742                  | 0.667 | 0.297 | 0.148                  | 0.133 | 0.059 |
| TPSC476*010T0350                | C            | 47                  | 10                      | 4.7                 | 6               | 350                         | 1   | 0.561                  | 0.505 | 0.224 | 0.196                  | 0.177 | 0.078 |
| TPSD476*010T0300                | D            | 47                  | 10                      | 4.7                 | 6               | 300                         | 3   | 0.707                  | 0.636 | 0.283 | 0.212                  | 0.191 | 0.085 |
| TPSC686*010T0200                | C            | 68                  | 10                      | 6.8                 | 6               | 200                         | 1   | 0.742                  | 0.667 | 0.297 | 0.148                  | 0.133 | 0.059 |
| TPSC686*010T0300                | C            | 68                  | 10                      | 6.8                 | 6               | 300                         | 1   | 0.606                  | 0.545 | 0.242 | 0.182                  | 0.163 | 0.073 |
| TPSD686*010T0150                | D            | 68                  | 10                      | 6.8                 | 6               | 150                         | 3   | 1.000                  | 0.900 | 0.400 | 0.150                  | 0.135 | 0.060 |
| TPSC107*010T0150                | C            | 100                 | 10                      | 10                  | 8               | 150                         | 1   | 0.856                  | 0.771 | 0.343 | 0.128                  | 0.116 | 0.051 |
| TPSC107*010T0200                | C            | 100                 | 10                      | 10                  | 8               | 200                         | 1   | 0.742                  | 0.667 | 0.297 | 0.148                  | 0.133 | 0.059 |
| TPSD107*010T0100                | D            | 100                 | 10                      | 10                  | 6               | 100                         | 3   | 1.225                  | 1.102 | 0.490 | 0.122                  | 0.110 | 0.049 |
| TPSD107*010T0125                | D            | 100                 | 10                      | 10                  | 6               | 125                         | 3   | 1.095                  | 0.986 | 0.438 | 0.137                  | 0.123 | 0.055 |
| TPSD107*010T0150                | D            | 100                 | 10                      | 10                  | 6               | 150                         | 3   | 1.000                  | 0.900 | 0.400 | 0.150                  | 0.135 | 0.060 |
| TPSD157*010T0085                | D            | 150                 | 10                      | 15                  | 8               | 85                          | 3   | 1.328                  | 1.196 | 0.531 | 0.113                  | 0.102 | 0.045 |
| TPSD157*010T0100                | D            | 150                 | 10                      | 15                  | 8               | 100                         | 3   | 1.225                  | 1.102 | 0.490 | 0.122                  | 0.110 | 0.049 |
| TPSE157*010T0100                | E            | 150                 | 10                      | 15                  | 8               | 100                         | 3   | 1.285                  | 1.156 | 0.514 | 0.128                  | 0.116 | 0.051 |
| TPSD227*010T0100                | D            | 220                 | 10                      | 22                  | 8               | 100                         | 3   | 1.225                  | 1.102 | 0.490 | 0.122                  | 0.110 | 0.049 |
| TPSD227*010T0150                | D            | 220                 | 10                      | 22                  | 8               | 150                         | 3   | 1.000                  | 0.900 | 0.400 | 0.150                  | 0.135 | 0.060 |
| TPSE227*010T0070                | E            | 220                 | 10                      | 22                  | 8               | 70                          | 3   | 1.535                  | 1.382 | 0.614 | 0.107                  | 0.097 | 0.043 |
| TPSE227*010T0100                | E            | 220                 | 10                      | 22                  | 8               | 100                         | 3   | 1.285                  | 1.156 | 0.514 | 0.128                  | 0.116 | 0.051 |
| TPSE227*010T0125                | E            | 220                 | 10                      | 22                  | 8               | 125                         | 3   | 1.149                  | 1.034 | 0.460 | 0.144                  | 0.129 | 0.057 |
| TPSE227*010T0150                | E            | 220                 | 10                      | 22                  | 8               | 150                         | 3   | 1.049                  | 0.944 | 0.420 | 0.157                  | 0.142 | 0.063 |
| TPSE337*010T0050                | E            | 330                 | 10                      | 33                  | 8               | 50                          | 3   | 1.817                  | 1.635 | 0.727 | 0.091                  | 0.082 | 0.036 |
| TPSE337*010T0060                | E            | 330                 | 10                      | 33                  | 8               | 60                          | 3   | 1.658                  | 1.492 | 0.663 | 0.099                  | 0.090 | 0.040 |
| TPSE337*010T0100                | E            | 330                 | 10                      | 33                  | 8               | 100                         | 3   | 1.285                  | 1.156 | 0.514 | 0.128                  | 0.116 | 0.051 |
| 16 Volt @ 85°C (10 Volt @ 25°C) |              |                     |                         |                     |                 |                             |     |                        |       |       |                        |       |       |
| TPSA105*016T6200                | A            | 1.0                 | 16                      | 0.5                 | 4               | 6200                        | 1   | 0.110                  | 0.099 | 0.044 | 0.682                  | 0.614 | 0.273 |
| TPSA225*016T1800                | A            | 2.2                 | 16                      | 0.5                 | 6               | 1800                        | 1   | 0.204                  | 0.184 | 0.082 | 0.367                  | 0.331 | 0.147 |
| TPSA225*016T3500                | A            | 2.2                 | 16                      | 0.5                 | 6               | 3500                        | 1   | 0.146                  | 0.132 | 0.059 | 0.512                  | 0.461 | 0.205 |
| TPSA335*016T3500                | A            | 3.3                 | 16                      | 0.5                 | 6               | 3500                        | 1   | 0.146                  | 0.132 | 0.059 | 0.512                  | 0.461 | 0.205 |
| TPSB335*016T2500                | B            | 3.3                 | 16                      | 0.5                 | 6               | 2500                        | 1   | 0.184                  | 0.166 | 0.074 | 0.461                  | 0.415 | 0.184 |
| TPSA475*016T2000                | A            | 4.7                 | 16                      | 0.8                 | 6               | 2000                        | 1   | 0.194                  | 0.174 | 0.077 | 0.387                  | 0.349 | 0.155 |
| TPSB475*016T0800                | B            | 4.7                 | 16                      | 0.8                 | 6               | 800                         | 1   | 0.326                  | 0.293 | 0.130 | 0.261                  | 0.235 | 0.104 |
| TPSB475*016T1500                | B            | 4.7                 | 16                      | 0.8                 | 6               | 1500                        | 1   | 0.238                  | 0.214 | 0.095 | 0.357                  | 0.321 | 0.143 |
| TPSA685*016T1500                | A            | 6.8                 | 16                      | 1.1                 | 6               | 1500                        | 1   | 0.224                  | 0.201 | 0.089 | 0.335                  | 0.302 | 0.134 |
| TPSB685*016T0600                | B            | 6.8                 | 16                      | 1.1                 | 6               | 600                         | 1   | 0.376                  | 0.339 | 0.151 | 0.226                  | 0.203 | 0.090 |
| TPSB685*016T1200                | B            | 6.8                 | 16                      | 1.1                 | 6               | 1200                        | 1   | 0.266                  | 0.240 | 0.106 | 0.319                  | 0.287 | 0.128 |
| TPSA106*016T1000                | A            | 10                  | 16                      | 1.6                 | 6               | 1000                        | 1   | 0.274                  | 0.246 | 0.110 | 0.274                  | 0.246 | 0.110 |
| TPSB106*016T0500                | B            | 10                  | 16                      | 1.6                 | 6               | 500                         | 1   | 0.412                  | 0.371 | 0.165 | 0.206                  | 0.186 | 0.082 |
| TPSB106*016T0800                | B            | 10                  | 16                      | 1.6                 | 6               | 800                         | 1   | 0.326                  | 0.293 | 0.130 | 0.261                  | 0.235 | 0.104 |
| TPSC106*016T0500                | C            | 10                  | 16                      | 1.6                 | 6               | 500                         | 1   | 0.469                  | 0.422 | 0.188 | 0.235                  | 0.211 | 0.094 |
| TPSB156*016T0500                | B            | 15                  | 16                      | 2.4                 | 6               | 500                         | 1   | 0.412                  | 0.371 | 0.165 | 0.206                  | 0.186 | 0.082 |
| TPSB156*016T0800                | B            | 15                  | 16                      | 2.4                 | 6               | 800                         | 1   | 0.326                  | 0.293 | 0.130 | 0.261                  | 0.235 | 0.104 |
| TPSC156*016T0700                | C            | 15                  | 16                      | 2.4                 | 6               | 700                         | 1   | 0.396                  | 0.357 | 0.159 | 0.277                  | 0.250 | 0.111 |
| TPSB226*016T0400                | B            | 22                  | 16                      | 3.5                 | 6               | 400                         | 1   | 0.461                  | 0.415 | 0.184 | 0.184                  | 0.166 | 0.074 |
| TPSB226*016T0600                | B            | 22                  | 16                      | 3.5                 | 6               | 600                         | 1   | 0.376                  | 0.339 | 0.151 | 0.226                  | 0.203 | 0.090 |
| TPSC226*016T0300                | C            | 22                  | 16                      | 3.5                 | 6               | 300                         | 1   | 0.606                  | 0.545 | 0.242 | 0.182                  | 0.163 | 0.073 |
| TPSC226*016T0375                | C            | 22                  | 16                      | 3.5                 | 6               | 375                         | 1   | 0.542                  | 0.487 | 0.217 | 0.203                  | 0.183 | 0.081 |
| TPSD226*016T0700                | D            | 22                  | 16                      | 3.5                 | 6               | 700                         | 3   | 0.463                  | 0.417 | 0.185 | 0.324                  | 0.292 | 0.130 |
| TPSC336*016T0225                | C            | 33                  | 16                      | 5.3                 | 6               | 225                         | 1   | 0.699                  | 0.629 | 0.280 | 0.157                  | 0.142 | 0.063 |
| TPSC336*016T0300                | C            | 33                  | 16                      | 5.3                 | 6               | 300                         | 1   | 0.606                  | 0.545 | 0.242 | 0.182                  | 0.163 | 0.073 |
| TPSD336*016T0200                | D            | 33                  | 16                      | 5.3                 | 6               | 200                         | 3   | 0.866                  | 0.779 | 0.346 | 0.173                  | 0.156 | 0.069 |
| TPSC476*016T0350                | C            | 47                  | 16                      | 7.5                 | 6               | 350                         | 1   | 0.561                  | 0.505 | 0.224 | 0.196                  | 0.177 | 0.078 |
| TPSD476*016T0200                | D            | 47                  | 16                      | 7.5                 | 6               | 200                         | 3   | 0.866                  | 0.779 | 0.346 | 0.173                  | 0.156 | 0.069 |
| TPSC686*016T0200                | C            | 68                  | 16                      | 10.9                | 6               | 200                         | 1   | 0.742                  | 0.667 | 0.297 | 0.148                  | 0.133 | 0.059 |
| TPSD686*016T0150                | D            | 68                  | 16                      | 10.9                | 6               | 150                         | 3   | 1.000                  | 0.900 | 0.400 | 0.150                  | 0.135 | 0.060 |
| TPSD107*016T0100                | D            | 100                 | 16                      | 16                  | 6               | 100                         | 3   | 1.225                  | 1.102 | 0.490 | 0.122                  | 0.110 | 0.049 |
| TPSD107*016T0125                | D            | 100                 | 16                      | 16                  | 6               | 125                         | 3   | 1.095                  | 0.986 | 0.438 | 0.137                  | 0.123 | 0.055 |

Moisture Sensitivity Level (MSL) is defined according to J-STD-020

\*Please use "U" instead of "T" in the suffix letter for 13" reel packaging

Please use specific PN for automotive version – see "HOW TO ORDER".

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 126.

**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.**

# TPS Automotive Range



## Low ESR - Automotive Product Range

### RATINGS & PART NUMBER REFERENCE

| AVX Part No.*                           | Case Size | Capacitance (µF) | Rated Voltage (V) | DCL (µA) Max. | DF % Max. | ESR Max. (mΩ) @100kHz | MSL | 100kHz RMS Current (A) |       |       | 100kHz RMS Voltage (V) |       |       |
|-----------------------------------------|-----------|------------------|-------------------|---------------|-----------|-----------------------|-----|------------------------|-------|-------|------------------------|-------|-------|
|                                         |           |                  |                   |               |           |                       |     | 25°C                   | 85°C  | 125°C | 25°C                   | 85°C  | 125°C |
| TPSD107*016T0150                        | D         | 100              | 16                | 16            | 6         | 150                   | 3   | 1.000                  | 0.900 | 0.400 | 0.150                  | 0.135 | 0.060 |
| TPSE107*016T0100                        | E         | 100              | 16                | 16            | 6         | 100                   | 3   | 1.285                  | 1.156 | 0.514 | 0.128                  | 0.116 | 0.051 |
| TPSE107*016T0125                        | E         | 100              | 16                | 16            | 6         | 125                   | 3   | 1.149                  | 1.034 | 0.460 | 0.144                  | 0.129 | 0.057 |
| TPSE107*016T0150                        | E         | 100              | 16                | 16            | 6         | 150                   | 3   | 1.049                  | 0.944 | 0.420 | 0.157                  | 0.142 | 0.063 |
| TPSE157*016T0100                        | E         | 150              | 16                | 23            | 8         | 100                   | 3   | 1.285                  | 1.156 | 0.514 | 0.128                  | 0.116 | 0.051 |
| <b>20 Volt @ 85°C (13 Volt @ 125°C)</b> |           |                  |                   |               |           |                       |     |                        |       |       |                        |       |       |
| TPSA105*020T3000                        | A         | 1                | 20                | 0.5           | 4         | 3000                  | 1   | 0.158                  | 0.142 | 0.063 | 0.474                  | 0.427 | 0.190 |
| TPSA155*020T3000                        | A         | 1.5              | 20                | 0.5           | 6         | 3000                  | 1   | 0.158                  | 0.142 | 0.063 | 0.474                  | 0.427 | 0.190 |
| TPSA225*020T3000                        | A         | 2.2              | 20                | 0.5           | 6         | 3000                  | 1   | 0.158                  | 0.142 | 0.063 | 0.474                  | 0.427 | 0.190 |
| TPSB225*020T1700                        | B         | 2.2              | 20                | 0.5           | 6         | 1700                  | 1   | 0.224                  | 0.201 | 0.089 | 0.380                  | 0.342 | 0.152 |
| TPSA335*020T2500                        | A         | 3.3              | 20                | 0.7           | 6         | 2500                  | 1   | 0.173                  | 0.156 | 0.069 | 0.433                  | 0.390 | 0.173 |
| TPSB335*020T1300                        | B         | 3.3              | 20                | 0.7           | 6         | 1300                  | 1   | 0.256                  | 0.230 | 0.102 | 0.332                  | 0.299 | 0.133 |
| TPSA475*020T1800                        | A         | 4.7              | 20                | 0.9           | 6         | 1800                  | 1   | 0.204                  | 0.184 | 0.082 | 0.367                  | 0.331 | 0.147 |
| TPSB475*020T0750                        | B         | 4.7              | 20                | 0.9           | 6         | 750                   | 1   | 0.337                  | 0.303 | 0.135 | 0.252                  | 0.227 | 0.101 |
| TPSB475*020T1000                        | B         | 4.7              | 20                | 0.9           | 6         | 1000                  | 1   | 0.292                  | 0.262 | 0.117 | 0.292                  | 0.262 | 0.117 |
| TPSB685*020T0600                        | B         | 6.8              | 20                | 1.4           | 6         | 600                   | 1   | 0.376                  | 0.339 | 0.151 | 0.226                  | 0.203 | 0.090 |
| TPSB685*020T1000                        | B         | 6.8              | 20                | 1.4           | 6         | 1000                  | 1   | 0.292                  | 0.262 | 0.117 | 0.292                  | 0.262 | 0.117 |
| TPSC685*020T0700                        | C         | 6.8              | 20                | 1.4           | 6         | 700                   | 1   | 0.396                  | 0.357 | 0.159 | 0.277                  | 0.250 | 0.111 |
| TPSB106*020T0500                        | B         | 10               | 20                | 2             | 6         | 500                   | 1   | 0.412                  | 0.371 | 0.165 | 0.206                  | 0.186 | 0.082 |
| TPSB106*020T1000                        | B         | 10               | 20                | 2             | 6         | 1000                  | 1   | 0.292                  | 0.262 | 0.117 | 0.292                  | 0.262 | 0.117 |
| TPSC106*020T0500                        | C         | 10               | 20                | 2             | 6         | 500                   | 1   | 0.469                  | 0.422 | 0.188 | 0.235                  | 0.211 | 0.094 |
| TPSC106*020T0700                        | C         | 10               | 20                | 2             | 6         | 700                   | 1   | 0.396                  | 0.357 | 0.159 | 0.277                  | 0.250 | 0.111 |
| TPSB156*020T0500                        | B         | 15               | 20                | 3             | 6         | 500                   | 1   | 0.412                  | 0.371 | 0.165 | 0.206                  | 0.186 | 0.082 |
| TPSC156*020T0400                        | C         | 15               | 20                | 3             | 6         | 400                   | 1   | 0.524                  | 0.472 | 0.210 | 0.210                  | 0.189 | 0.084 |
| TPSC156*020T0450                        | C         | 15               | 20                | 3             | 6         | 450                   | 1   | 0.494                  | 0.445 | 0.198 | 0.222                  | 0.200 | 0.089 |
| TPSC226*020T0400                        | C         | 22               | 20                | 4.4           | 6         | 400                   | 1   | 0.524                  | 0.472 | 0.210 | 0.210                  | 0.189 | 0.084 |
| TPSD226*020T0200                        | D         | 22               | 20                | 4.4           | 6         | 200                   | 3   | 0.866                  | 0.779 | 0.346 | 0.173                  | 0.156 | 0.069 |
| TPSD226*020T0300                        | D         | 22               | 20                | 4.4           | 6         | 300                   | 3   | 0.707                  | 0.636 | 0.283 | 0.212                  | 0.191 | 0.085 |
| TPSC336*020T0300                        | C         | 33               | 20                | 6.6           | 6         | 300                   | 1   | 0.606                  | 0.545 | 0.242 | 0.182                  | 0.163 | 0.073 |
| TPSD336*020T0200                        | D         | 33               | 20                | 6.6           | 6         | 200                   | 3   | 0.866                  | 0.779 | 0.346 | 0.173                  | 0.156 | 0.069 |
| TPSD476*020T0200                        | D         | 47               | 20                | 9.4           | 6         | 200                   | 3   | 0.866                  | 0.779 | 0.346 | 0.173                  | 0.156 | 0.069 |
| TPSD686*020T0150                        | D         | 68               | 20                | 13.6          | 6         | 150                   | 3   | 1.000                  | 0.900 | 0.400 | 0.150                  | 0.135 | 0.060 |
| TPSD686*020T0200                        | D         | 68               | 20                | 13.6          | 6         | 200                   | 3   | 0.866                  | 0.779 | 0.346 | 0.173                  | 0.156 | 0.069 |
| TPSD686*020T0300                        | D         | 68               | 20                | 13.6          | 6         | 300                   | 3   | 0.707                  | 0.636 | 0.283 | 0.212                  | 0.191 | 0.085 |
| TPSE686*020T0125                        | E         | 68               | 20                | 13.6          | 6         | 125                   | 3   | 1.149                  | 1.034 | 0.460 | 0.144                  | 0.129 | 0.057 |
| TPSE686*020T0150                        | E         | 68               | 20                | 13.6          | 6         | 150                   | 3   | 1.049                  | 0.944 | 0.420 | 0.157                  | 0.142 | 0.063 |
| TPSE686*020T0200                        | E         | 68               | 20                | 13.6          | 6         | 200                   | 3   | 0.908                  | 0.817 | 0.363 | 0.182                  | 0.163 | 0.073 |
| TPSE107*020T0100                        | E         | 100              | 20                | 20            | 6         | 100                   | 3   | 1.285                  | 1.156 | 0.514 | 0.128                  | 0.116 | 0.051 |
| TPSE107*020T0150                        | E         | 100              | 20                | 20            | 6         | 150                   | 3   | 1.049                  | 0.944 | 0.420 | 0.157                  | 0.142 | 0.063 |
| TPSE107*020T0200                        | E         | 100              | 20                | 20            | 6         | 200                   | 3   | 0.908                  | 0.817 | 0.363 | 0.182                  | 0.163 | 0.073 |
| <b>25 Volt @ 85°C (17 Volt @ 125°C)</b> |           |                  |                   |               |           |                       |     |                        |       |       |                        |       |       |
| TPSA474*025T7000                        | A         | 0.47             | 25                | 0.5           | 4         | 7000                  | 1   | 0.104                  | 0.093 | 0.041 | 0.725                  | 0.652 | 0.290 |
| TPSA684*025T6000                        | A         | 0.68             | 25                | 0.5           | 4         | 6000                  | 1   | 0.112                  | 0.101 | 0.045 | 0.671                  | 0.604 | 0.268 |
| TPSA105*025T4000                        | A         | 1.0              | 25                | 0.5           | 4         | 4000                  | 1   | 0.137                  | 0.123 | 0.055 | 0.548                  | 0.493 | 0.219 |
| TPSA155*025T3000                        | A         | 1.5              | 25                | 0.5           | 6         | 3000                  | 1   | 0.158                  | 0.142 | 0.063 | 0.474                  | 0.427 | 0.190 |
| TPSA225*025T2500                        | A         | 2.2              | 25                | 0.6           | 6         | 2500                  | 1   | 0.173                  | 0.156 | 0.069 | 0.433                  | 0.390 | 0.173 |
| TPSB225*025T0900                        | B         | 2.2              | 25                | 0.6           | 6         | 900                   | 1   | 0.307                  | 0.277 | 0.123 | 0.277                  | 0.249 | 0.111 |
| TPSB225*025T1200                        | B         | 2.2              | 25                | 0.6           | 6         | 1200                  | 1   | 0.266                  | 0.240 | 0.106 | 0.319                  | 0.287 | 0.128 |
| TPSB225*025T2500                        | B         | 2.2              | 25                | 0.6           | 6         | 2500                  | 1   | 0.184                  | 0.166 | 0.074 | 0.461                  | 0.415 | 0.184 |
| TPSB335*025T0750                        | B         | 3.3              | 25                | 0.8           | 6         | 750                   | 1   | 0.337                  | 0.303 | 0.135 | 0.252                  | 0.227 | 0.101 |
| TPSB335*025T1500                        | B         | 3.3              | 25                | 0.8           | 6         | 1500                  | 1   | 0.238                  | 0.214 | 0.095 | 0.357                  | 0.321 | 0.143 |
| TPSB335*025T2000                        | B         | 3.3              | 25                | 0.8           | 6         | 2000                  | 1   | 0.206                  | 0.186 | 0.082 | 0.412                  | 0.371 | 0.165 |
| TPSB475*025T0700                        | B         | 4.7              | 25                | 1.2           | 6         | 700                   | 1   | 0.348                  | 0.314 | 0.139 | 0.244                  | 0.220 | 0.098 |
| TPSB475*025T0900                        | B         | 4.7              | 25                | 1.2           | 6         | 900                   | 1   | 0.307                  | 0.277 | 0.123 | 0.277                  | 0.249 | 0.111 |
| TPSC475*025T0700                        | C         | 4.7              | 25                | 1.2           | 6         | 700                   | 1   | 0.396                  | 0.357 | 0.159 | 0.277                  | 0.250 | 0.111 |
| TPSB685*025T0700                        | B         | 6.8              | 25                | 1.7           | 6         | 700                   | 1   | 0.348                  | 0.314 | 0.139 | 0.244                  | 0.220 | 0.098 |
| TPSC685*025T0500                        | C         | 6.8              | 25                | 1.7           | 6         | 500                   | 1   | 0.469                  | 0.422 | 0.188 | 0.235                  | 0.211 | 0.094 |
| TPSC685*025T0600                        | C         | 6.8              | 25                | 1.7           | 6         | 600                   | 1   | 0.428                  | 0.385 | 0.171 | 0.257                  | 0.231 | 0.103 |
| TPSC685*025T0700                        | C         | 6.8              | 25                | 1.7           | 6         | 700                   | 1   | 0.396                  | 0.357 | 0.159 | 0.277                  | 0.250 | 0.111 |
| TPSC106*025T0300                        | C         | 10               | 25                | 2.5           | 6         | 300                   | 1   | 0.606                  | 0.545 | 0.242 | 0.182                  | 0.163 | 0.073 |
| TPSC106*025T0500                        | C         | 10               | 25                | 2.5           | 6         | 500                   | 1   | 0.469                  | 0.422 | 0.188 | 0.235                  | 0.211 | 0.094 |
| TPSD106*025T0500                        | D         | 10               | 25                | 2.5           | 6         | 500                   | 3   | 0.548                  | 0.493 | 0.219 | 0.274                  | 0.246 | 0.110 |
| TPSC156*025T0220                        | C         | 15               | 25                | 3.8           | 6         | 220                   | 1   | 0.707                  | 0.636 | 0.283 | 0.156                  | 0.140 | 0.062 |
| TPSC156*025T0300                        | C         | 15               | 25                | 3.8           | 6         | 300                   | 1   | 0.606                  | 0.545 | 0.242 | 0.182                  | 0.163 | 0.073 |
| TPSD156*025T0300                        | D         | 15               | 25                | 3.8           | 6         | 300                   | 3   | 0.707                  | 0.636 | 0.283 | 0.212                  | 0.191 | 0.085 |
| TPSC226*025T0275                        | C         | 22               | 25                | 5.5           | 6         | 275                   | 1   | 0.632                  | 0.569 | 0.253 | 0.174                  | 0.157 | 0.070 |
| TPSC226*025T0400                        | C         | 22               | 25                | 5.5           | 6         | 400                   | 1   | 0.524                  | 0.472 | 0.210 | 0.210                  | 0.189 | 0.084 |

Moisture Sensitivity Level (MSL) is defined according to J-STD-020

\*Please use "U" instead of "T" in the suffix letter for 13" reel packaging

Please use specific PN for automotive version – see "HOW TO ORDER".

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 126.

**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.**



# TPS Automotive Range



## Low ESR - Automotive Product Range

### RATINGS & PART NUMBER REFERENCE

| AVX Part No.*                           | Case Size | Capacitance (µF) | Rated Voltage (V) | DCL (µA) Max. | DF % Max. | ESR Max. (mΩ) @100kHz | MSL | 100kHz RMS Current (A) |       |       | 100kHz RMS Voltage (V) |       |       |
|-----------------------------------------|-----------|------------------|-------------------|---------------|-----------|-----------------------|-----|------------------------|-------|-------|------------------------|-------|-------|
|                                         |           |                  |                   |               |           |                       |     | 25°C                   | 85°C  | 125°C | 25°C                   | 85°C  | 125°C |
| TPSD226*025T0200                        | D         | 22               | 25                | 5.5           | 6         | 200                   | 3   | 0.866                  | 0.779 | 0.346 | 0.173                  | 0.156 | 0.069 |
| TPSD226*025T0300                        | D         | 22               | 25                | 5.5           | 6         | 300                   | 3   | 0.707                  | 0.636 | 0.283 | 0.212                  | 0.191 | 0.085 |
| TPSD336*025T0200                        | D         | 33               | 25                | 8.3           | 6         | 200                   | 3   | 0.866                  | 0.779 | 0.346 | 0.173                  | 0.156 | 0.069 |
| TPSD336*025T0300                        | D         | 33               | 25                | 8.3           | 6         | 300                   | 3   | 0.707                  | 0.636 | 0.283 | 0.212                  | 0.191 | 0.085 |
| TPSD476*025T0125                        | D         | 47               | 25                | 11.8          | 6         | 125                   | 3   | 1.095                  | 0.986 | 0.438 | 0.137                  | 0.123 | 0.055 |
| TPSD476*025T0150                        | D         | 47               | 25                | 11.8          | 6         | 150                   | 3   | 1.000                  | 0.900 | 0.400 | 0.150                  | 0.135 | 0.060 |
| TPSD476*025T0250                        | D         | 47               | 25                | 11.8          | 6         | 250                   | 3   | 0.775                  | 0.697 | 0.310 | 0.194                  | 0.174 | 0.077 |
| TPSE476*025T0125                        | E         | 47               | 25                | 11.8          | 6         | 125                   | 3   | 1.149                  | 1.034 | 0.460 | 0.144                  | 0.129 | 0.057 |
| <b>35 Volt @ 85°C (23 Volt @ 125°C)</b> |           |                  |                   |               |           |                       |     |                        |       |       |                        |       |       |
| TPSA334*035T6000                        | A         | 0.33             | 35                | 0.5           | 4         | 6000                  | 1   | 0.112                  | 0.101 | 0.045 | 0.671                  | 0.604 | 0.268 |
| TPSA474*035T6000                        | A         | 0.47             | 35                | 0.5           | 4         | 6000                  | 1   | 0.112                  | 0.101 | 0.045 | 0.671                  | 0.604 | 0.268 |
| TPSA684*035T6000                        | A         | 0.68             | 35                | 0.5           | 4         | 6000                  | 1   | 0.112                  | 0.101 | 0.045 | 0.671                  | 0.604 | 0.268 |
| TPSA105*035T3000                        | A         | 1                | 35                | 0.5           | 4         | 3000                  | 1   | 0.158                  | 0.142 | 0.063 | 0.474                  | 0.427 | 0.190 |
| TPSB105*035T2000                        | B         | 1                | 35                | 0.5           | 4         | 2000                  | 1   | 0.206                  | 0.186 | 0.082 | 0.412                  | 0.371 | 0.165 |
| TPSA155*035T3000                        | A         | 1.5              | 35                | 0.5           | 6         | 3000                  | 1   | 0.158                  | 0.142 | 0.063 | 0.474                  | 0.427 | 0.190 |
| TPSB155*035T2500                        | B         | 1.5              | 35                | 0.5           | 6         | 2500                  | 1   | 0.184                  | 0.166 | 0.074 | 0.461                  | 0.415 | 0.184 |
| TPSB225*035T0750                        | B         | 2.2              | 35                | 0.8           | 6         | 750                   | 1   | 0.337                  | 0.303 | 0.135 | 0.252                  | 0.227 | 0.101 |
| TPSB225*035T1500                        | B         | 2.2              | 35                | 0.8           | 6         | 1500                  | 1   | 0.238                  | 0.214 | 0.095 | 0.357                  | 0.321 | 0.143 |
| TPSB225*035T2000                        | B         | 2.2              | 35                | 0.8           | 6         | 2000                  | 1   | 0.206                  | 0.186 | 0.082 | 0.412                  | 0.371 | 0.165 |
| TPSC225*035T1000                        | C         | 2.2              | 35                | 0.8           | 6         | 1000                  | 1   | 0.332                  | 0.298 | 0.133 | 0.332                  | 0.298 | 0.133 |
| TPSB335*035T1000                        | B         | 3.3              | 35                | 1.2           | 6         | 1000                  | 1   | 0.292                  | 0.262 | 0.117 | 0.292                  | 0.262 | 0.117 |
| TPSC335*035T0700                        | C         | 3.3              | 35                | 1.2           | 6         | 700                   | 1   | 0.396                  | 0.357 | 0.159 | 0.277                  | 0.250 | 0.111 |
| TPSB475*035T0700                        | B         | 4.7              | 35                | 1.6           | 6         | 700                   | 1   | 0.348                  | 0.314 | 0.139 | 0.244                  | 0.220 | 0.098 |
| TPSB475*035T1500                        | B         | 4.7              | 35                | 1.6           | 6         | 1500                  | 1   | 0.238                  | 0.214 | 0.095 | 0.357                  | 0.321 | 0.143 |
| TPSC475*035T0600                        | C         | 4.7              | 35                | 1.6           | 6         | 600                   | 1   | 0.428                  | 0.385 | 0.171 | 0.257                  | 0.231 | 0.103 |
| TPSD475*035T0700                        | D         | 4.7              | 35                | 1.6           | 6         | 700                   | 3   | 0.463                  | 0.417 | 0.185 | 0.324                  | 0.292 | 0.130 |
| TPSC685*035T0350                        | C         | 6.8              | 35                | 2.4           | 6         | 350                   | 1   | 0.561                  | 0.505 | 0.224 | 0.196                  | 0.177 | 0.078 |
| TPSD685*035T0400                        | D         | 6.8              | 35                | 2.4           | 6         | 400                   | 3   | 0.612                  | 0.551 | 0.245 | 0.245                  | 0.220 | 0.098 |
| TPSD685*035T0500                        | D         | 6.8              | 35                | 2.4           | 6         | 500                   | 3   | 0.548                  | 0.493 | 0.219 | 0.274                  | 0.246 | 0.110 |
| TPSC106*035T0600                        | C         | 10               | 35                | 3.5           | 6         | 600                   | 1   | 0.428                  | 0.385 | 0.171 | 0.257                  | 0.231 | 0.103 |
| TPSD106*035T0300                        | D         | 10               | 35                | 3.5           | 6         | 300                   | 3   | 0.707                  | 0.636 | 0.283 | 0.212                  | 0.191 | 0.085 |
| TPSD156*035T0300                        | D         | 15               | 35                | 5.3           | 6         | 300                   | 3   | 0.707                  | 0.636 | 0.283 | 0.212                  | 0.191 | 0.085 |
| TPSD226*035T0200                        | D         | 22               | 35                | 7.7           | 6         | 200                   | 3   | 0.866                  | 0.779 | 0.346 | 0.173                  | 0.156 | 0.069 |
| TPSD226*035T0300                        | D         | 22               | 35                | 7.7           | 6         | 300                   | 3   | 0.707                  | 0.636 | 0.283 | 0.212                  | 0.191 | 0.085 |
| TPSD226*035T0400                        | D         | 22               | 35                | 7.7           | 6         | 400                   | 3   | 0.612                  | 0.551 | 0.245 | 0.245                  | 0.220 | 0.098 |
| TPSE226*035T0200                        | E         | 22               | 35                | 7.7           | 6         | 200                   | 3   | 0.908                  | 0.817 | 0.363 | 0.182                  | 0.163 | 0.073 |
| TPSE226*035T0300                        | E         | 22               | 35                | 7.7           | 6         | 300                   | 3   | 0.742                  | 0.667 | 0.297 | 0.222                  | 0.200 | 0.089 |
| TPSE336*035T0250                        | E         | 33               | 35                | 11.6          | 6         | 250                   | 3   | 0.812                  | 0.731 | 0.325 | 0.203                  | 0.183 | 0.081 |
| TPSE336*035T0300                        | E         | 33               | 35                | 11.6          | 6         | 300                   | 3   | 0.742                  | 0.667 | 0.297 | 0.222                  | 0.200 | 0.089 |
| <b>50 Volt @ 85°C (33 Volt @ 125°C)</b> |           |                  |                   |               |           |                       |     |                        |       |       |                        |       |       |
| TPSA224*050T7000                        | A         | 0.22             | 50                | 0.5           | 4         | 7000                  | 1   | 0.104                  | 0.093 | 0.041 | 0.725                  | 0.652 | 0.290 |
| TPSA334*050T7000                        | A         | 0.33             | 50                | 0.5           | 4         | 7000                  | 1   | 0.104                  | 0.093 | 0.041 | 0.725                  | 0.652 | 0.290 |
| TPSA474*050T6500                        | A         | 0.47             | 50                | 0.5           | 4         | 6500                  | 1   | 0.107                  | 0.097 | 0.043 | 0.698                  | 0.628 | 0.279 |
| TPSB474*050T6000                        | B         | 0.47             | 50                | 0.5           | 4         | 6000                  | 1   | 0.119                  | 0.107 | 0.048 | 0.714                  | 0.643 | 0.286 |
| TPSB684*050T4000                        | B         | 0.68             | 50                | 0.5           | 4         | 4000                  | 1   | 0.146                  | 0.131 | 0.058 | 0.583                  | 0.525 | 0.233 |
| TPSB105*050T3000                        | B         | 1                | 50                | 0.5           | 6         | 3000                  | 1   | 0.168                  | 0.151 | 0.067 | 0.505                  | 0.454 | 0.202 |
| TPSC105*050T2500                        | C         | 1                | 50                | 0.5           | 4         | 2500                  | 1   | 0.210                  | 0.189 | 0.084 | 0.524                  | 0.472 | 0.210 |
| TPSC155*050T1500                        | C         | 1.5              | 50                | 0.8           | 6         | 1500                  | 1   | 0.271                  | 0.244 | 0.108 | 0.406                  | 0.366 | 0.162 |
| TPSC155*050T2000                        | C         | 1.5              | 50                | 0.8           | 6         | 2000                  | 1   | 0.235                  | 0.211 | 0.094 | 0.469                  | 0.422 | 0.188 |
| TPSC225*050T1500                        | C         | 2.2              | 50                | 1.1           | 8         | 1500                  | 1   | 0.271                  | 0.244 | 0.108 | 0.406                  | 0.366 | 0.162 |
| TPSD225*050T1200                        | D         | 2.2              | 50                | 1.1           | 6         | 1200                  | 3   | 0.354                  | 0.318 | 0.141 | 0.424                  | 0.382 | 0.170 |
| TPSC335*050T1000                        | C         | 3.3              | 50                | 1.6           | 6         | 1000                  | 1   | 0.332                  | 0.298 | 0.133 | 0.332                  | 0.298 | 0.133 |
| TPSD335*050T0800                        | D         | 3.3              | 50                | 1.7           | 6         | 800                   | 3   | 0.433                  | 0.390 | 0.173 | 0.346                  | 0.312 | 0.139 |
| TPSC475*050T0800                        | C         | 4.7              | 50                | 2.4           | 6         | 800                   | 1   | 0.371                  | 0.334 | 0.148 | 0.297                  | 0.267 | 0.119 |
| TPSD475*050T0500                        | D         | 4.7              | 50                | 2.4           | 6         | 500                   | 3   | 0.548                  | 0.493 | 0.219 | 0.274                  | 0.246 | 0.110 |
| TPSD475*050T0700                        | D         | 4.7              | 50                | 2.4           | 6         | 700                   | 3   | 0.463                  | 0.417 | 0.185 | 0.324                  | 0.292 | 0.130 |
| TPSD685*050T0500                        | D         | 6.8              | 50                | 3.4           | 6         | 500                   | 3   | 0.548                  | 0.493 | 0.219 | 0.274                  | 0.246 | 0.110 |
| TPSD685*050T0600                        | D         | 6.8              | 50                | 3.4           | 6         | 600                   | 3   | 0.500                  | 0.450 | 0.200 | 0.300                  | 0.270 | 0.120 |
| TPSD106*050T0500                        | D         | 10               | 50                | 5             | 6         | 500                   | 3   | 0.548                  | 0.493 | 0.219 | 0.274                  | 0.246 | 0.110 |
| TPSE106*050T0250                        | E         | 10               | 50                | 5             | 6         | 250                   | 3   | 0.812                  | 0.731 | 0.325 | 0.203                  | 0.183 | 0.081 |
| TPSE106*050T0300                        | E         | 10               | 50                | 5             | 6         | 300                   | 3   | 0.742                  | 0.667 | 0.297 | 0.222                  | 0.200 | 0.089 |
| TPSE106*050T0400                        | E         | 10               | 50                | 5             | 6         | 400                   | 3   | 0.642                  | 0.578 | 0.257 | 0.257                  | 0.231 | 0.103 |
| TPSE106*050T0500                        | E         | 10               | 50                | 5             | 6         | 500                   | 3   | 0.574                  | 0.517 | 0.230 | 0.287                  | 0.259 | 0.115 |

Moisture Sensitivity Level (MSL) is defined according to J-STD-020

\*Please use "U" instead of "T" in the suffix letter for 13" reel packaging

Please use specific PN for automotive version – see "HOW TO ORDER".

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 126.

**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.**

## Данный компонент на территории Российской Федерации

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В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

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Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

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