

Solid Tantalum Chip Capacitors TANTAMOUNT[®], Conformal Coated



FEATURES

- 8 mm, 12 mm tape packaging to EIA-481 reeling per IEC 60286-3.
7" (178 mm) standard 13" (330 mm) available
- US and European case sizes available
- Mounting: Surface mount
- Terminations: 100 % tin (2) standard, tin/lead available
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912



Note

* Lead (Pb)-containing terminations are not RoHS-compliant. Exemptions may apply.

PERFORMANCE/ELECTRICAL CHARACTERISTICS

www.vishay.com/doc?40088

Operating Temperature: - 55 °C to + 125 °C
(above 85 °C, voltage derating is required)

Capacitance Range: 0.1 μF to 330 μF

Capacitance Tolerance: ± 10 %, ± 20 % standard

Voltage Rating: 2 V_{DC} to 50 V_{DC}

| ORDERING INFORMATION | | | | | | |
|----------------------|--|--|--|----------------------------------|--|---|
| 195D | 106 | X0 | 004 | S | 2 | T |
| TYPE | CAPACITANCE | CAPACITANCE TOLERANCE | DC VOLTAGE RATING AT + 85 °C | CASE CODE | TERMINATION | PACKAGING |
| | This is expressed in picofarads. The first two digits are the significant figures. The third is the number of zeros to follow. | X0 = ± 20 % X9 = ± 10 % X5 = ± 5 % (Special order) | This is expressed in volts. To complete the three-digit block, zeros precede the voltage rating. A decimal point is indicated by an "R" (6R3 = 6.3 V). | See Ratings and Case Codes table | Style 2 is standard 2 = 100 % tin 4 = Gold plated 8 = Solder plated (60/40) Special order | T = Tape and reel 7" [178 mm] reel standard. For H case size lengthwise W = Tape and reel 13" [330 mm] reel available See Standard Packaging Quantity table |

Note

- Preferred tolerance and reel sizes are in bold.
We reserve the right to supply higher voltage ratings and tighter capacitance tolerance capacitors in the same case size.

| DIMENSIONS in inches [millimeters] | | | | | | | | |
|------------------------------------|--------------------------------|--|--------------------------------|--------------------------------|--------------------------------|----------------|-----------------|-----------------|
| | | | | | | | | |
| CASE CODE | L | W | H | A | B | C (MIN.) | D (REF.) | J (MAX.) |
| STANDARD CASE CODES | | | | | | | | |
| C | 0.087 max. [2.21 max.] | 0.045 ± 0.010 [1.14 ± 0.25] | 0.045 ± 0.010 [1.14 ± 0.25] | 0.016 ± 0.008 [0.40 ± 0.20] | 0.042 ± 0.010 [1.07 ± 0.25] | - | 0.063 [1.60] | 0.004 [0.10] |
| S | 0.143 max. [3.63 max.] | 0.072 ± 0.008 [1.83 ± 0.20] | 0.048 ± 0.008 [1.22 ± 0.20] | 0.023 ± 0.010 [0.58 ± 0.25] | 0.085 ± 0.015 [2.16 ± 0.37] | - | 0.114 [2.90] | 0.004 [0.10] |
| V | 0.143 max. [3.63 max.] | 0.104 ± 0.010 [2.65 ± 0.25] | 0.051 ± 0.010 [1.30 ± 0.25] | 0.023 ± 0.010 [0.58 ± 0.25] | 0.085 ± 0.015 [2.16 ± 0.37] | - | 0.114 [2.90] | 0.004 [0.10] |
| X | 0.285 max. [7.24 max.] | 0.104 ± 0.010 [2.65 ± 0.25] | 0.051 ± 0.010 [1.30 ± 0.25] | 0.039 ± 0.020 [1.00 ± 0.50] | 0.200 ± 0.027 [5.08 ± 0.69] | - | 0.244 [6.20] | 0.004 [0.10] |
| Y | 0.285 max. [7.24 max.] | 0.104 ± 0.010 [2.65 ± 0.25] | 0.069 ± 0.010 [1.75 ± 0.25] | 0.039 ± 0.020 [1.00 ± 0.50] | 0.200 ± 0.027 [5.08 ± 0.69] | - | 0.244 [6.20] | 0.004 [0.10] |
| Z | 0.285 max. [7.24 max.] | 0.104 ± 0.010 [2.65 ± 0.25] | 0.104 ± 0.010 [2.65 ± 0.25] | 0.039 ± 0.020 [1.00 ± 0.50] | 0.200 ± 0.027 [5.08 ± 0.69] | - | 0.244 [6.20] | 0.004 [0.10] |
| R | 0.283 max. [7.20 max.] | 0.236 + 0.012/- 0.024 [6.0 + 0.30/- 0.60] | 0.138 ± 0.012 [3.50 ± 0.30] | 0.051 ± 0.012 [1.30 ± 0.30] | 0.181 ± 0.025 [4.60 ± 0.60] | - | 0.244 [6.20] | 0.004 [0.10] |
| EUROPEAN CASE CODES | | | | | | | | |
| A | 0.110 ± 0.008 [2.80 ± 0.20] | 0.0591 ± 0.012 [1.5 ± 0.30] | 0.055 max. [1.40 max.] | 0.028 ± 0.012 [0.70 ± 0.30] | 0.063 ± 0.012 [1.60 ± 0.30] | 0.012 [0.3] | - | - |
| B | 0.165 ± 0.008 [4.20 ± 0.20] | 0.055 ± 0.012 [1.4 ± 0.30] | 0.063 max. [1.6 max.] | 0.031 ± 0.012 [0.80 ± 0.30] | 0.098 ± 0.012 [2.50 ± 0.30] | 0.012 [0.3] | - | - |
| D | 0.165 ± 0.008 [4.20 ± 0.20] | 0.083 ± 0.012 [2.1 ± 0.30] | 0.063 max. [1.6 max.] | 0.031 ± 0.012 [0.80 ± 0.30] | 0.098 ± 0.012 [2.50 ± 0.30] | 0.02 [0.5] | - | - |
| E | 0.217 ± 0.012 [5.50 ± 0.30] | 0.083 ± 0.012 [2.1 ± 0.30] | 0.067 max. [1.70 max.] | 0.039 ± 0.012 [1.00 ± 0.30] | 0.126 ± 0.012 [3.20 ± 0.30] | 0.031 [0.8] | - | - |
| F | 0.197 ± 0.012 [5.0 ± 0.30] | 0.130 ± 0.012 [3.3 ± 0.30] | 0.079 max. [2.00 max.] | 0.039 ± 0.012 [1.00 ± 0.30] | 0.142 ± 0.012 [3.60 ± 0.30] | 0.031 [0.8] | - | - |
| G | 0.276 ± 0.012 [7.00 ± 0.30] | 0.102 ± 0.012 [2.6 ± 0.30] | 0.110 max. [2.80 max.] | 0.039 ± 0.012 [1.00 ± 0.30] | 0.177 ± 0.012 [4.5 ± 0.30] | 0.031 [0.8] | - | - |
| H | 0.307 ± 0.012 [7.80 ± 0.30] | 0.146 ± 0.012 [3.7 ± 0.30] | 0.118 max. [3.0 max.] | 0.039 ± 0.012 [1.00 ± 0.30] | 0.197 ± 0.012 [5.00 ± 0.30] | 0.031 [0.8] | - | - |

Note

- The anode termination (D less B) will be a minimum of 0.010" (0.25 mm), C case = 0.005" (0.131 mm) minimum



| RATINGS AND CASE CODES | | | | | | | | | | | |
|------------------------|-----|-----|-------|------|------|-------|------|------|------|------|-------|
| μF | 2 V | 4 V | 6.3 V | 10 V | 15 V | 16 V | 20 V | 25 V | 35 V | 40 V | 50 V |
| 0.10 | | | | | | | | | A | A | A/C |
| 0.15 | | | | | | | | | A | A | A/C |
| 0.22 | | | | S | | | | | A | A | B/C/S |
| 0.33 | | | | | | | | A | B/C | B | B/S |
| 0.47 | | | | | A | A | A | C | B/S | B | D/V |
| 0.68 | | | | | A | A | C | B/S | D/S | D | D/V |
| 1.0 | | | | A/S | B | B/C | B/S | S | D/S | D | E/X |
| 1.5 | | | A | C | B | B/S | S | D/S | E/V | E | F/X |
| 2.2 | | A | C | B/S | | S | D/S | E/V | F/X | F | F/Y |
| 3.3 | A | C | B/S | S | D | D/S | E/V | X | F/Y | F | G/Z |
| 4.7 | A | B/S | S | D/S | E | E/V | X | F/X | G/Z | G | H/Z |
| 6.8 | A | S | D/S | E/V | | X | F/X | G/Y | H/Z | H | R |
| 10 | A | D/S | E/V | X | F | F/X | Y | G/Y | Z | | R |
| 15 | | E/V | X | F/X | | Y | G/Z | H/Z | R | | |
| 22 | | X | F/X | Y | G | G/Y/Z | H/Z | R | R | | |
| 33 | | F/X | Y | G/Z | H | H/Z | R | R | | | |
| 47 | | Y | G/Y | H/Z | | R | R | | | | |
| 68 | | G/Y | H/Z | R | | R | | | | | |
| 100 | | H/Z | Z | H/R | | | | | | | |
| 120 | | R | R | R | | | | | | | |
| 150 | | R | R | R | | | | | | | |
| 180 | | R | R | | | | | | | | |
| 220 | | R | R | | | | | | | | |
| 330 | | R | | | | | | | | | |

| STANDARD RATINGS | | | | | |
|--|-----------|----------------------|--------------------------|-------------------------------|--|
| CAPACITANCE (μF) | CASE CODE | PART NUMBER | MAX. DCL AT + 25 °C (μA) | MAX. DF AT + 25 °C 120 Hz (%) | |
| 2 V_{DC} AT + 85 °C, 1.2 V_{DC} AT + 125 °C | | | | | |
| 3.3 | A | 195D335(1)002A(2)(3) | 0.5 | 8 | |
| 4.7 | A | 195D475(1)002A(2)(3) | 0.5 | 8 | |
| 6.8 | A | 195D685(1)002A(2)(3) | 0.5 | 8 | |
| 10 | A | 195D106(1)002A(2)(3) | 0.6 | 8 | |
| 4 V_{DC} AT + 85 °C, 2.7 V_{DC} AT + 125 °C | | | | | |
| 2.2 | A | 195D225(1)004A(2)(3) | 0.5 | 8 | |
| 3.3 | C | 195D335(1)004C(2)(3) | 0.5 | 6 | |
| 4.7 | B | 195D475(1)004B(2)(3) | 0.5 | 8 | |
| 4.7 | S | 195D475(1)004S(2)(3) | 0.5 | 6 | |
| 6.8 | S | 195D685(1)004S(2)(3) | 0.5 | 6 | |
| 10 | D | 195D106(1)004D(2)(3) | 0.5 | 8 | |
| 10 | S | 195D106(1)004S(2)(3) | 0.5 | 6 | |
| 15 | E | 195D156(1)004E(2)(3) | 0.6 | 8 | |
| 15 | V | 195D156(1)004V(2)(3) | 0.6 | 6 | |
| 22 | X | 195D226(1)004X(2)(3) | 0.9 | 6 | |

Note

- Part number definitions:
 - Tolerance: For 10 % tolerance, specify "X9", for 20 % tolerance, change to "X0"
 - Termination: For 100 % tin specify "2", for gold plated specify "4", for solder plated 60/40 specify "8"
 - Packaging code: For 7" reels specify "T", for 13" reels specify "W"



| STANDARD RATINGS | | | | |
|--|-----------|----------------------|--------------------------------------|-------------------------------------|
| CAPACITANCE (μ F) | CASE CODE | PART NUMBER | MAX. DCL AT + 25 °C (μ A) | MAX. DF AT + 25 °C 120 Hz (%) |
| 4 V_{DC} AT + 85 °C, 2.7 V_{DC} AT + 125 °C | | | | |
| 33 | F | 195D336(1)004F(2)(3) | 1.3 | 8 |
| 33 | X | 195D336(1)004X(2)(3) | 1.3 | 6 |
| 47 | Y | 195D476(1)004Y(2)(3) | 1.9 | 6 |
| 68 | G | 195D686(1)004G(2)(3) | 2.7 | 8 |
| 68 | Y | 195D686(1)004Y(2)(3) | 2.7 | 6 |
| 100 | H | 195D107(1)004H(2)(3) | 4.0 | 8 |
| 100 | Z | 195D107(1)004Z(2)(3) | 4.0 | 8 |
| 120 | R | 195D127(1)004R(2)(3) | 4.8 | 8 |
| 150 | R | 195D157(1)004R(2)(3) | 6.0 | 8 |
| 180 | R | 195D187(1)004R(2)(3) | 7.2 | 8 |
| 220 | R | 195D227(1)004R(2)(3) | 8.8 | 8 |
| 330 | R | 195D337(1)004R(2)(3) | 13.2 | 8 |
| 6.3 V_{DC} AT + 85 °C, 4 V_{DC} AT + 125 °C | | | | |
| 1.5 | A | 195D155(1)6R3A(2)(3) | 0.5 | 8 |
| 2.2 | C | 195D225(1)6R3C(2)(3) | 0.5 | 6 |
| 3.3 | B | 195D335(1)6R3B(2)(3) | 0.5 | 8 |
| 3.3 | S | 195D335(1)6R3S(2)(3) | 0.5 | 6 |
| 4.7 | S | 195D475(1)6R3S(2)(3) | 0.5 | 6 |
| 6.8 | D | 195D685(1)6R3D(2)(3) | 0.5 | 8 |
| 6.8 | S | 195D685(1)6R3S(2)(3) | 0.5 | 6 |
| 10 | E | 195D106(1)6R3E(2)(3) | 0.6 | 8 |
| 10 | V | 195D106(1)6R3V(2)(3) | 0.6 | 6 |
| 15 | X | 195D156(1)6R3X(2)(3) | 0.9 | 6 |
| 22 | F | 195D226(1)6R3F(2)(3) | 1.3 | 8 |
| 22 | X | 195D226(1)6R3X(2)(3) | 1.3 | 6 |
| 33 | Y | 195D336(1)6R3Y(2)(3) | 2.0 | 6 |
| 47 | G | 195D476(1)6R3G(2)(3) | 2.8 | 8 |
| 47 | Y | 195D476(1)6R3Y(2)(3) | 2.8 | 6 |
| 68 | H | 195D686(1)6R3H(2)(3) | 4.1 | 8 |
| 68 | Z | 195D686(1)6R3Z(2)(3) | 4.1 | 6 |
| 100 | Z | 195D107(1)6R3Z(2)(3) | 6.0 | 8 |
| 120 | R | 195D127(1)6R3R(2)(3) | 7.2 | 8 |
| 150 | R | 195D157(1)6R3R(2)(3) | 9.0 | 8 |
| 180 | R | 195D187(1)6R3R(2)(3) | 10.8 | 8 |
| 220 | R | 195D227(1)6R3R(2)(3) | 13.2 | 8 |
| 10 V_{DC} AT + 85 °C, 7 V_{DC} AT + 125 °C | | | | |
| 0.22 | S | 195D224(1)010S(2)(3) | 0.5 | 4 |
| 1.0 | A | 195D105(1)010A(2)(3) | 0.5 | 6 |
| 1.0 | S | 195D105(1)010S(2)(3) | 0.5 | 6 |
| 1.5 | C | 195D155(1)010C(2)(3) | 0.5 | 6 |
| 2.2 | B | 195D225(1)010B(2)(3) | 0.5 | 6 |
| 2.2 | S | 195D225(1)010S(2)(3) | 0.5 | 6 |
| 3.3 | S | 195D335(1)010S(2)(3) | 0.5 | 6 |
| 4.7 | D | 195D475(1)010D(2)(3) | 0.5 | 6 |
| 4.7 | S | 195D475(1)010S(2)(3) | 0.5 | 6 |
| 6.8 | E | 195D685(1)010E(2)(3) | 0.7 | 6 |
| 6.8 | V | 195D685(1)010V(2)(3) | 0.7 | 6 |

Note

- Part number definitions:
 - Tolerance: For 10 % tolerance, specify "X9", for 20 % tolerance, change to "X0"
 - Termination: For 100 % tin specify "2", for gold plated specify "4", for solder plated 60/40 specify "8"
 - Packaging code: For 7" reels specify "T", for 13" reels specify "W"



| STANDARD RATINGS | | | | |
|--|-----------|----------------------|--------------------------------------|-------------------------------------|
| CAPACITANCE (μ F) | CASE CODE | PART NUMBER | MAX. DCL AT + 25 °C (μ A) | MAX. DF AT + 25 °C 120 Hz (%) |
| 10 V_{DC} AT + 85 °C, 7 V_{DC} AT + 125 °C | | | | |
| 10 | X | 195D106(1)010X(2)(3) | 1.0 | 6 |
| 15 | F | 195D156(1)010F(2)(3) | 1.5 | 6 |
| 15 | X | 195D156(1)010X(2)(3) | 1.5 | 6 |
| 22 | Y | 195D226(1)010Y(2)(3) | 2.2 | 6 |
| 33 | G | 195D336(1)010G(2)(3) | 3.3 | 6 |
| 33 | Z | 195D336(1)010Z(2)(3) | 3.0 | 6 |
| 47 | H | 195D476(1)010H(2)(3) | 4.7 | 6 |
| 47 | Z | 195D476(1)010Z(2)(3) | 4.7 | 6 |
| 68 | R | 195D686(1)010R(2)(3) | 6.8 | 6 |
| 100 | H | 195D107(1)010H(2)(3) | 8.0 | 7 |
| 100 | R | 195D107(1)010R(2)(3) | 10.0 | 8 |
| 120 | R | 195D127(1)010R(2)(3) | 12.0 | 8 |
| 150 | R | 195D157(1)010R(2)(3) | 15.0 | 8 |
| 15 V_{DC} AT + 85 °C, 10 V_{DC} AT + 125 °C | | | | |
| 0.47 | A | 195D474(1)015A(2)(3) | 0.5 | 6 |
| 0.68 | A | 195D684(1)015A(2)(3) | 0.5 | 6 |
| 1.0 | B | 195D105(1)015B(2)(3) | 0.5 | 6 |
| 1.5 | B | 195D155(1)015B(2)(3) | 0.5 | 6 |
| 3.3 | D | 195D335(1)015D(2)(3) | 0.5 | 6 |
| 4.7 | E | 195D475(1)015E(2)(3) | 0.7 | 6 |
| 10 | F | 195D106(1)015F(2)(3) | 1.5 | 6 |
| 22 | G | 195D226(1)015G(2)(3) | 3.3 | 6 |
| 33 | H | 195D336(1)015H(2)(3) | 5.0 | 6 |
| 16 V_{DC} AT + 85 °C, 10 V_{DC} AT + 125 °C | | | | |
| 0.47 | A | 195D474(1)016A(2)(3) | 0.5 | 6 |
| 0.68 | A | 195D684(1)016A(2)(3) | 0.5 | 6 |
| 1.0 | B | 195D105(1)016B(2)(3) | 0.5 | 6 |
| 1.0 | C | 195D105(1)016C(2)(3) | 0.5 | 4 |
| 1.5 | B | 195D155(1)016B(2)(3) | 0.5 | 6 |
| 1.5 | S | 195D155(1)016S(2)(3) | 0.5 | 6 |
| 2.2 | S | 195D225(1)016S(2)(3) | 0.5 | 6 |
| 3.3 | D | 195D335(1)016D(2)(3) | 0.5 | 6 |
| 3.3 | S | 195D335(1)016S(2)(3) | 0.5 | 6 |
| 4.7 | E | 195D475(1)016E(2)(3) | 0.7 | 6 |
| 4.7 | V | 195D475(1)016V(2)(3) | 0.7 | 6 |
| 6.8 | X | 195D685(1)016X(2)(3) | 1.0 | 6 |
| 10 | F | 195D106(1)016F(2)(3) | 1.5 | 6 |
| 10 | X | 195D106(1)016X(2)(3) | 1.5 | 6 |
| 15 | Y | 195D156(1)016Y(2)(3) | 2.3 | 6 |
| 22 | G | 195D226(1)016G(2)(3) | 3.3 | 6 |
| 22 | Y | 195D226(1)016Y(2)(3) | 3.2 | 6 |
| 22 | Z | 195D226(1)016Z(2)(3) | 3.3 | 6 |
| 33 | H | 195D336(1)016H(2)(3) | 5.0 | 6 |
| 33 | Z | 195D336(1)016Z(2)(3) | 5.0 | 6 |
| 47 | R | 195D476(1)016R(2)(3) | 7.1 | 6 |
| 68 | R | 195D686(1)016R(2)(3) | 10.2 | 6 |

Note

- Part number definitions:
 - Tolerance: For 10 % tolerance, specify "X9", for 20 % tolerance, change to "X0"
 - Termination: For 100 % tin specify "2", for gold plated specify "4", for solder plated 60/40 specify "8"
 - Packaging code: For 7" reels specify "T", for 13" reels specify "W"



| STANDARD RATINGS | | | | |
|--|-----------|----------------------|--------------------------------------|-------------------------------------|
| CAPACITANCE (μ F) | CASE CODE | PART NUMBER | MAX. DCL AT + 25 °C (μ A) | MAX. DF AT + 25 °C 120 Hz (%) |
| 20 V_{DC} AT + 85 °C, 13 V_{DC} AT + 125 °C | | | | |
| 0.47 | A | 195D474(1)020A(2)(3) | 0.5 | 6 |
| 0.68 | C | 195D684(1)020C(2)(3) | 0.5 | 4 |
| 1.0 | B | 195D105(1)020B(2)(3) | 0.5 | 6 |
| 1.0 | S | 195D105(1)020S(2)(3) | 0.5 | 4 |
| 1.5 | S | 195D155(1)020S(2)(3) | 0.5 | 6 |
| 2.2 | D | 195D225(1)020D(2)(3) | 0.5 | 6 |
| 2.2 | S | 195D225(1)020S(2)(3) | 0.5 | 6 |
| 3.3 | E | 195D335(1)020E(2)(3) | 0.7 | 6 |
| 3.3 | V | 195D335(1)020V(2)(3) | 0.7 | 6 |
| 4.7 | X | 195D475(1)020X(2)(3) | 0.9 | 6 |
| 6.8 | F | 195D685(1)020F(2)(3) | 1.4 | 6 |
| 6.8 | X | 195D685(1)020X(2)(3) | 1.4 | 6 |
| 10 | Y | 195D106(1)020Y(2)(3) | 2.0 | 6 |
| 15 | G | 195D156(1)020G(2)(3) | 3.0 | 6 |
| 15 | Z | 195D156(1)020Z(2)(3) | 3.0 | 6 |
| 22 | H | 195D226(1)020H(2)(3) | 4.4 | 6 |
| 22 | Z | 195D226(1)020Z(2)(3) | 4.4 | 6 |
| 33 | R | 195D336(1)020R(2)(3) | 6.6 | 6 |
| 47 | R | 195D476(1)020R(2)(3) | 9.4 | 6 |
| 25 V_{DC} AT + 85 °C, 17 V_{DC} AT + 125 °C | | | | |
| 0.33 | A | 195D334(1)025A(2)(3) | 0.5 | 6 |
| 0.47 | C | 195D474(1)025C(2)(3) | 0.5 | 4 |
| 0.68 | B | 195D684(1)025B(2)(3) | 0.5 | 6 |
| 0.68 | S | 195D684(1)025S(2)(3) | 0.5 | 4 |
| 1.0 | S | 195D105(1)025S(2)(3) | 0.5 | 4 |
| 1.5 | D | 195D155(1)025D(2)(3) | 0.5 | 6 |
| 1.5 | S | 195D155(1)025S(2)(3) | 0.5 | 6 |
| 2.2 | E | 195D225(1)025E(2)(3) | 0.6 | 6 |
| 2.2 | V | 195D225(1)025V(2)(3) | 0.6 | 6 |
| 3.3 | X | 195D335(1)025X(2)(3) | 0.8 | 6 |
| 4.7 | F | 195D475(1)025F(2)(3) | 1.2 | 6 |
| 4.7 | X | 195D475(1)025X(2)(3) | 1.2 | 6 |
| 6.8 | G | 195D685(1)025G(2)(3) | 1.7 | 6 |
| 6.8 | Y | 195D685(1)025Y(2)(3) | 1.7 | 6 |
| 10 | G | 195D106(1)025G(2)(3) | 2.5 | 6 |
| 10 | Y | 195D106(1)025Y(2)(3) | 2.5 | 6 |
| 15 | H | 195D156(1)025H(2)(3) | 3.8 | 6 |
| 15 | Z | 195D156(1)025Z(2)(3) | 3.8 | 6 |
| 22 | R | 195D226(1)025R(2)(3) | 5.5 | 6 |
| 33 | R | 195D336(1)025R(2)(3) | 8.3 | 6 |

Note

- Part number definitions:
 - Tolerance: For 10 % tolerance, specify "X9", for 20 % tolerance, change to "X0"
 - Termination: For 100 % tin specify "2", for gold plated specify "4", for solder plated 60/40 specify "8"
 - Packaging code: For 7" reels specify "T", for 13" reels specify "W"



| STANDARD RATINGS | | | | |
|---|-----------|----------------------|--------------------------------------|-------------------------------------|
| CAPACITANCE (μ F) | CASE CODE | PART NUMBER | MAX. DCL AT + 25 °C (μ A) | MAX. DF AT + 25 °C 120 Hz (%) |
| 35 V_{DC} AT + 85 °C, 23 V_{DC} AT + 125 °C | | | | |
| 0.10 | A | 195D104(1)035A(2)(3) | 0.5 | 6 |
| 0.15 | A | 195D154(1)035A(2)(3) | 0.5 | 6 |
| 0.22 | A | 195D224(1)035A(2)(3) | 0.5 | 6 |
| 0.33 | B | 195D334(1)035B(2)(3) | 0.5 | 6 |
| 0.33 | C | 195D334(1)035C(2)(3) | 0.5 | 4 |
| 0.47 | B | 195D474(1)035B(2)(3) | 0.5 | 6 |
| 0.47 | S | 195D474(1)035S(2)(3) | 0.5 | 4 |
| 0.68 | D | 195D684(1)035D(2)(3) | 0.5 | 6 |
| 0.68 | S | 195D684(1)035S(2)(3) | 0.5 | 4 |
| 1.0 | D | 195D105(1)035D(2)(3) | 0.5 | 6 |
| 1.0 | S | 195D105(1)035S(2)(3) | 0.5 | 4 |
| 1.5 | E | 195D155(1)035E(2)(3) | 0.5 | 6 |
| 1.5 | V | 195D155(1)035V(2)(3) | 0.5 | 6 |
| 2.2 | F | 195D225(1)035F(2)(3) | 0.8 | 6 |
| 2.2 | X | 195D225(1)035X(2)(3) | 0.8 | 6 |
| 3.3 | F | 195D335(1)035F(2)(3) | 1.2 | 6 |
| 3.3 | Y | 195D335(1)035Y(2)(3) | 1.2 | 6 |
| 4.7 | G | 195D475(1)035G(2)(3) | 1.6 | 6 |
| 4.7 | Z | 195D475(1)035Z(2)(3) | 1.6 | 6 |
| 6.8 | H | 195D685(1)035H(2)(3) | 2.4 | 6 |
| 6.8 | Z | 195D685(1)035Z(2)(3) | 2.4 | 6 |
| 10 | Z | 195D106(1)035Z(2)(3) | 3.5 | 6 |
| 15 | R | 195D156(1)035R(2)(3) | 5.3 | 6 |
| 22 | R | 195D226(1)035R(2)(3) | 7.7 | 6 |
| 40 V_{DC} AT + 85 °C, 23 V_{DC} TO 25 V_{DC} AT + 125 °C | | | | |
| 0.10 | A | 195D104(1)040A(2)(3) | 0.5 | 6 |
| 0.15 | A | 195D154(1)040A(2)(3) | 0.5 | 6 |
| 0.22 | A | 195D224(1)040A(2)(3) | 0.5 | 6 |
| 0.33 | B | 195D334(1)040B(2)(3) | 0.5 | 6 |
| 0.47 | B | 195D474(1)040B(2)(3) | 0.5 | 6 |
| 0.68 | D | 195D684(1)040D(2)(3) | 0.5 | 6 |
| 1.0 | D | 195D105(1)040D(2)(3) | 0.5 | 6 |
| 1.5 | E | 195D155(1)040E(2)(3) | 0.5 | 6 |
| 2.2 | F | 195D225(1)040F(2)(3) | 0.8 | 6 |
| 3.3 | F | 195D335(1)040F(2)(3) | 1.2 | 6 |
| 4.7 | G | 195D475(1)040G(2)(3) | 1.6 | 6 |
| 6.8 | H | 195D685(1)040H(2)(3) | 2.4 | 6 |
| 50 V_{DC} AT + 85 °C, 33 V_{DC} AT + 125 °C | | | | |
| 0.10 | A | 195D104(1)050A(2)(3) | 0.5 | 6 |
| 0.10 | C | 195D104(1)050C(2)(3) | 0.5 | 4 |
| 0.15 | A | 195D154(1)050A(2)(3) | 0.5 | 6 |
| 0.15 | C | 195D154(1)050C(2)(3) | 0.5 | 4 |
| 0.22 | B | 195D224(1)050B(2)(3) | 0.5 | 6 |
| 0.22 | C | 195D224(1)050C(2)(3) | 0.5 | 4 |
| 0.22 | S | 195D224(1)050S(2)(3) | 0.5 | 4 |
| 0.33 | B | 195D334(1)050B(2)(3) | 0.5 | 6 |
| 0.33 | S | 195D334(1)050S(2)(3) | 0.5 | 4 |

Note

- Part number definitions:
 - Tolerance: For 10 % tolerance, specify "X9", for 20 % tolerance, change to "X0"
 - Termination: For 100 % tin specify "2", for gold plated specify "4", for solder plated 60/40 specify "8"
 - Packaging code: For 7" reels specify "T", for 13" reels specify "W"



| STANDARD RATINGS | | | | |
|---|-----------|----------------------|--------------------------------------|-------------------------------------|
| CAPACITANCE (μ F) | CASE CODE | PART NUMBER | MAX. DCL AT + 25 °C (μ A) | MAX. DF AT + 25 °C 120 Hz (%) |
| 50 V _{DC} AT + 85 °C, 33 V _{DC} AT + 125 °C | | | | |
| 0.47 | D | 195D474(1)050D(2)(3) | 0.5 | 6 |
| 0.47 | V | 195D474(1)050V(2)(3) | 0.5 | 4 |
| 0.68 | D | 195D684(1)050D(2)(3) | 0.5 | 6 |
| 0.68 | V | 195D684(1)050V(2)(3) | 0.5 | 4 |
| 1.0 | E | 195D105(1)050E(2)(3) | 0.5 | 6 |
| 1.0 | X | 195D105(1)050X(2)(3) | 0.5 | 4 |
| 1.5 | F | 195D155(1)050F(2)(3) | 0.8 | 6 |
| 1.5 | X | 195D155(1)050X(2)(3) | 0.8 | 6 |
| 2.2 | F | 195D225(1)050F(2)(3) | 1.1 | 6 |
| 2.2 | Y | 195D225(1)050Y(2)(3) | 1.1 | 6 |
| 3.3 | G | 195D335(1)050G(2)(3) | 1.7 | 6 |
| 3.3 | Z | 195D335(1)050Z(2)(3) | 1.7 | 6 |
| 4.7 | H | 195D475(1)050H(2)(3) | 2.4 | 6 |
| 4.7 | Z | 195D475(1)050Z(2)(3) | 2.4 | 6 |
| 6.8 | R | 195D685(1)050R(2)(3) | 3.4 | 6 |
| 10 | R | 195D106(1)050R(2)(3) | 5.0 | 6 |

Note

- Part number definitions:
 - Tolerance: For 10 % tolerance, specify "X9", for 20 % tolerance, change to "X0"
 - Termination: For 100 % tin specify "2", for gold plated specify "4", for solder plated 60/40 specify "8"
 - Packaging code: For 7" reels specify "T", for 13" reels specify "W"

| RECOMMENDED VOLTAGE DERATING GUIDELINES (for temperature below + 85 °C) | |
|---|-------------------|
| STANDARD CONDITIONS. FOR EXAMPLE: OUTPUT FILTERS | |
| Capacitor Voltage Rating | Operating Voltage |
| 2.0 | 1.2 |
| 4.0 | 2.5 |
| 6.3 | 3.6 |
| 10 | 6 |
| 15/16 | 9 |
| 20 | 12 |
| 25 | 15 |
| 35 | 24 |
| 40 | 26 |
| 50 | 28 |
| SEVERE CONDITIONS. FOR EXAMPLE: INPUT FILTERS | |
| Capacitor Voltage Rating | Operating Voltage |
| 2.0 | 1.0 |
| 4.0 | 2.5 |
| 6.3 | 3.3 |
| 10 | 5.0 |
| 15/16 | 7.5 |
| 20 | 10 |
| 25 | 12 |
| 35 | 15 |
| 40 | 20 |
| 50 | 24 |

TYPICAL CURVES AT + 25 °C, IMPEDANCE AND ESR VS. FREQUENCY





| POWER DISSIPATION | |
|-------------------|--|
| CASE CODE | MAXIMUM PERMISSIBLE POWER DISSIPATION AT + 25 °C (W) IN FREE AIR |
| A | 0.040 |
| B | 0.050 |
| C | 0.030 |
| D | 0.080 |
| E | 0.090 |
| F | 0.110 |
| G | 0.120 |
| H | 0.140 |
| R | 0.250 |
| S | 0.080 |
| V | 0.095 |
| X | 0.110 |
| Y | 0.120 |
| Z | 0.135 |

| STANDARD PACKAGING QUANTITY | | |
|-----------------------------|----------------|----------|
| CASE CODE | UNITS PER REEL | |
| | 7" REEL | 13" REEL |
| A | 2500 | n/a |
| B | 2000 | n/a |
| C | 2500 | 10 000 |
| D | 2000 | n/a |
| E | 2000 | n/a |
| F | 700 | n/a |
| G | 1400 | n/a |
| H | 400 | n/a |
| R | 600 | n/a |
| S | 2500 | 10 000 |
| V | 2500 | 10 000 |
| X | 200 | 10 000 |
| Y | 1500 | 7500 |
| Z | 1500 | 5000 |

| PRODUCT INFORMATION | |
|--------------------------------|--|
| Conformal Coated Guide | www.vishay.com/doc?40150 |
| Moisture Sensitivity | www.vishay.com/doc?40135 |
| SELECTOR GUIDES | |
| Solid Tantalum Selector Guide | www.vishay.com/doc?49053 |
| Solid Tantalum Chip Capacitors | www.vishay.com/doc?40091 |
| FAQ | |
| Frequently Asked Questions | www.vishay.com/doc?40110 |



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