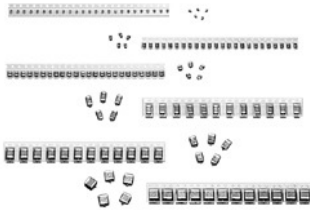


## Solid Tantalum Chip Capacitors, TANTAMOUNT<sup>®</sup>, Conformal Coated



### FEATURES

- 8 mm, 12 mm tape packaging to EIA-481-1 reeling per IEC 286-3. 7" (178 mm) standard 13" (330 mm) available
- US and European case sizes available
- Compliant to RoHS directive 2002/95/EC



Available  
**RoHS\***  
COMPLIANT

### PERFORMANCE/ELECTRICAL CHARACTERISTICS

**Operating Temperature:** - 55 °C to + 85 °C  
(To + 125 °C with voltage derating)

**Note**

- Refer to Doc. 40088

**Capacitance Range:** 0.1 µF to 330 µF

**Capacitance Tolerance:** ± 10 %, ± 20 % standard

**Voltage Rating:** 4 WVDC to 50 WVDC

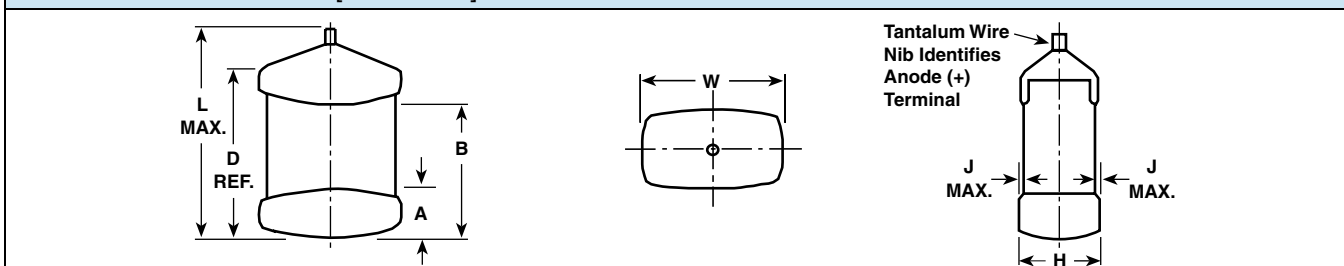
### ORDERING INFORMATION

195D TYPE	106 CAPACITANCE	X0 CAPACITANCE TOLERANCE	004 DC VOLTAGE RATING AT + 85 °C	S CASE CODE	2 TERMINATION	T PACKAGING
	This is expressed in picofarads. The first two digits are the significant figures. The third is the number of zeros to follow.	<b>X0 = ± 20 %</b> 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 <b>2 = 100% tin</b> 4 = Gold plated 8 = Solder plated (60/40) Special order	<b>T = Tape and reel</b> <b>7" [178 mm] reel standard</b> <b>1/2" reel minimum</b> <b>13" [330 mm] reel available excluding the "R" case, on request.</b> See tape and reel specification

**Notes**

- 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
- Voltage substitutions will be marked with the higher voltage rating

### DIMENSIONS in inches [millimeters]



CASE CODE	L (MAX.)	W	H	A	B	D (REF.)	J (MAX.)
C	0.087 [2.21]	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]
R	0.283 [7.2]	0.235 + 0.012/- 0.024 [6.0 + 0.3/- 0.6]	0.136 ± 0.012 [3.5 ± 0.3]	0.051 ± 0.012 [1.3 ± 0.3]	0.180 ± 0.025 [4.6 ± 0.6]	0.243 [6.20]	0.004 [0.10]
S	0.143 [3.63]	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]	0.115 [2.90]	0.004 [0.10]
V	0.143 [3.63]	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]	0.115 [2.90]	0.004 [0.10]
X	0.285 [7.24]	0.104 ± 0.010 [2.65 ± 0.25]	0.051 ± 0.010 [1.30 ± 0.25]	0.040 ± 0.020 [1.00 ± 0.50]	0.200 ± 0.027 [5.08 ± 0.69]	0.243 [6.20]	0.004 [0.10]
Y	0.285 [7.24]	0.104 ± 0.010 [2.65 ± 0.25]	0.069 ± 0.010 [1.75 ± 0.25]	0.040 ± 0.020 [1.00 ± 0.50]	0.200 ± 0.027 [5.08 ± 0.69]	0.243 [6.20]	0.004 [0.10]
Z	0.285 [7.24]	0.104 ± 0.010 [2.65 ± 0.25]	0.104 ± 0.010 [2.65 ± 0.25]	0.040 ± 0.020 [1.00 ± 0.50]	0.200 ± 0.023 [5.08 ± 0.59]	0.243 [6.20]	0.004 [0.10]

**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
- \* Pb containing terminations are not RoHS compliant, exemptions may apply



RATINGS AND CASE CODES								
μF	4 V	6.3 V	10 V	16 V	20 V	25 V	35 V	50 V
0.10								C
0.15								C
0.22			S					C/S
0.33							C	S
0.47						C	S	V
0.68					C	S	S	V
1.0			S	C	S	S	S	X
1.5			C	S	S	S	V	X
2.2		C	S	S	S	V	X	Y
3.3	C	S	S	S	V	X	Y	Z
4.7	S	S	S	V	X	X	Z	Z
6.8	S	S	V	X	X	Y	Z	R
10	S	V	X	X	Y	Y	Z	R
15	V	X	X	Y	Z	Z	R	
22	X	X	Y	Y/Z	Z	R	R	
33	X	Y	Z	Z	R	R		
47	Y	Y	Z	R	R			
68	Y	Z	R	R				
100	Z	Z	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 (1)	MAX. DCL AT + 25 °C (μA)	MAX. DF AT + 25 °C 120 Hz (%)	
<b>4 WVDC AT + 85 °C, 2.7 WVDC AT + 125 °C</b>					
3.3	C	195D335X_004C2T	0.5	6	
4.7	S	195D475X_004S2T	0.5	6	
6.8	S	195D685X_004S2T	0.5	6	
10	S	195D106X_004S2T	0.5	6	
15	V	195D156X_004V2T	0.6	6	
22	X	195D226X_004X2T	0.9	6	
33	X	195D336X_004X2T	1.3	6	
47	Y	195D476X_004Y2T	1.9	6	
68	Y	195D686X_004Y2T	2.7	6	
100	Z	195D107X_004Z2T	4.0	8	
120	R	195D127X_004R2T	4.8	8	
150	R	195D157X_004R2T	6.0	8	
180	R	195D187X_004R2T	7.2	8	
220	R	195D227X_004R2T	8.8	8	
330	R	195D337X_004R2T	13.2	8	
<b>6.3 WVDC AT + 85 °C, 4 WVDC AT + 125 °C</b>					
2.2	C	195D225X_6R3C2T	0.5	6	
3.3	S	195D335X_6R3S2T	0.5	6	
4.7	S	195D475X_6R3S2T	0.5	6	
6.8	S	195D685X_6R3S2T	0.5	6	

**Note**

(1) For 10 % tolerance, specify "9"; for 20 % tolerance, change to "0".

<b>STANDARD RATINGS</b>				
CAPACITANCE (μF)	CASE CODE	PART NUMBER (1)	MAX. DCL AT + 25 °C (μA)	MAX. DF AT + 25 °C 120 Hz (%)
<b>6.3 WVDC AT + 85 °C, 4 WVDC AT + 125 °C</b>				
10	V	195D106X_6R3V2T	0.6	6
15	X	195D156X_6R3X2T	0.9	6
22	X	195D226X_6R3X2T	1.3	6
33	Y	195D336X_6R3Y2T	2.0	6
47	Y	195D476X_6R3Y2T	2.8	6
68	Z	195D686X_6R3Z2T	4.1	6
100	Z	195D107X_6R3Z2T	6.0	8
120	R	195D127X_6R3R2T	7.2	8
150	R	195D157X_6R3R2T	9.0	8
180	R	195D187X_6R3R2T	10.8	8
220	R	195D227X_6R3R2T	13.2	8
<b>10 WVDC AT + 85 °C, 7 WVDC AT + 125 °C</b>				
0.22	S	195D224X_010S2T	0.5	4
1	S	195D105X_010S2T	0.4	6
1.5	C	195D155X_010C2T	0.5	6
2.2	S	195D225X_010S2T	0.5	6
3.3	S	195D335X_010S2T	0.5	6
4.7	S	195D475X_010S2T	0.5	6
6.8	V	195D685X_010V2T	0.7	6
10	X	195D106X_010X2T	1.0	6
15	X	195D156X_010X2T	1.5	6
22	Y	195D226X_010Y2T	2.2	6
33	Z	195D336X_010Z2T	3.0	6
47	Z	195D476X_010Z2T	4.7	6
68	R	195D686X_010R2T	6.8	6
100	R	195D107X_010R2T	10	8
120	R	195D127X_010R2T	12	8
150	R	195D157X_010R2T	15	8
<b>16 WVDC AT + 85 °C, 10 WVDC AT + 125 °C</b>				
1.0	C	195D105X_016C2T	0.5	4
1.5	S	195D155X_016S2T	0.5	6
2.2	S	195D225X_016S2T	0.5	6
3.3	S	195D335X_016S2T	0.5	6
4.7	V	195D475X_016V2T	0.7	6
6.8	X	195D685X_016X2T	1.0	6
10	X	195D106X_016X2T	1.5	6
15	Y	195D156X_016Y2T	2.3	6
22	Y	195D226X_016Y2T	3.2	6
22	Z	195D226X_016Z2T	3.3	6
33	Z	195D336X_016Z2T	5.0	6
47	R	195D476X_016R2T	7.1	6
68	R	195D686X_016R2T	10.2	6
<b>20 WVDC AT + 85 °C, 13 WVDC AT + 125 °C</b>				
0.68	C	195D684X_020C2T	0.5	4
1.0	S	195D105X_020S2T	0.5	4
1.5	S	195D155X_020S2T	0.5	6
2.2	S	195D225X_020S2T	0.5	6
3.3	V	195D335X_020V2T	0.7	6
4.7	X	195D475X_020X2T	0.9	6
6.8	X	195D685X_020X2T	1.4	6

**Note**

(1) For 10 % tolerance, specify "9"; for 20 % tolerance, change to "0".

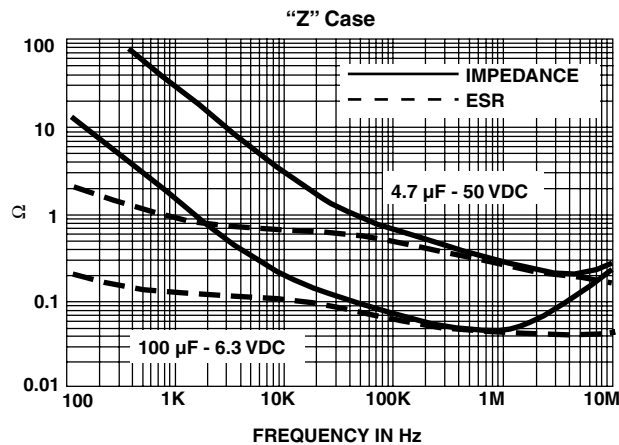
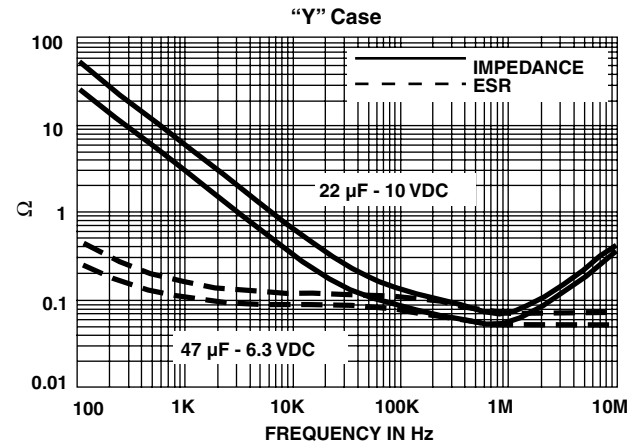
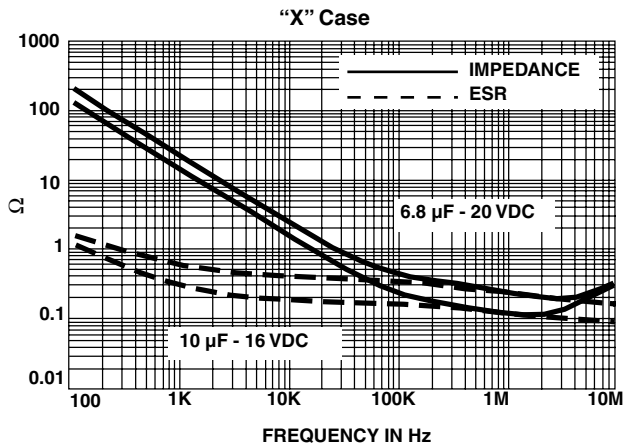
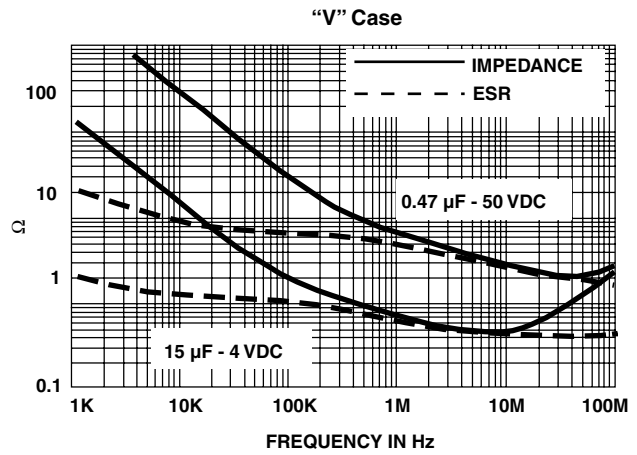
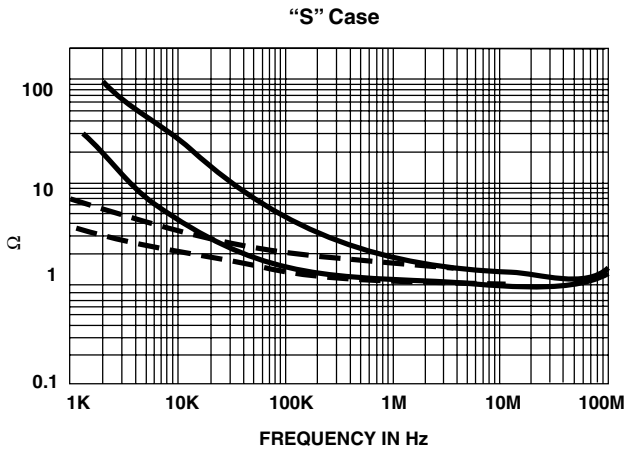


<b>STANDARD RATINGS</b>				
CAPACITANCE (μF)	CASE CODE	PART NUMBER (1)	MAX. DCL AT + 25 °C (μA)	MAX. DF AT + 25 °C 120 Hz (%)
<b>20 WVDC AT + 85 °C, 13 WVDC AT + 125 °C</b>				
10	Y	195D106X_020Y2T	2.0	6
15	Z	195D156X_020Z2T	3.0	6
22	Z	195D226X_020Z2T	4.4	6
33	R	195D336X_020R2T	6.6	6
47	R	195D476X_020R2T	9.4	6
<b>25 WVDC AT + 85 °C, 17 WVDC AT + 125 °C</b>				
0.47	C	195D474X_025C2T	0.5	4
0.68	S	195D684X_025S2T	0.5	4
1.0	S	195D105X_025S2T	0.5	4
1.5	S	195D155X_025S2T	0.5	6
2.2	V	195D225X_025V2T	0.6	6
3.3	X	195D335X_025X2T	0.8	6
4.7	X	195D475X_025X2T	1.2	6
6.8	Y	195D685X_025Y2T	1.7	6
10	Y	195D106X_025Y2T	2.5	6
15	Z	195D156X_025Z2T	3.8	6
22	R	195D226X_025R2T	5.5	6
33	R	195D336X_025R2T	8.3	6
<b>35 WVDC AT + 85 °C, 23 WVDC AT + 125 °C</b>				
0.33	C	195D334X_035C2T	0.5	4
0.47	S	195D474X_035S2T	0.5	4
0.68	S	195D684X_035S2T	0.5	4
1.0	S	195D105X_035S2T	0.5	4
1.5	V	195D155X_035V2T	0.5	6
2.2	X	195D225X_035X2T	0.8	6
3.3	Y	195D335X_035Y2T	1.2	6
4.7	Z	195D475X_035Z2T	1.6	6
6.8	Z	195D685X_035Z2T	2.4	6
10	Z	195D106X_035Z2T	3.5	6
15	R	195D156X_035R2T	5.3	6
22	R	195D226X_035R2T	7.7	6
<b>50 WVDC AT + 85 °C, 33 WVDC AT + 125 °C</b>				
0.1	C	195D104X_050C2T	0.5	4
0.15	C	195D154X_050C2T	0.5	4
0.22	C	195D224X_050C2T	0.5	4
0.22	S	195D224X_050S2T	0.4	4
0.33	S	195D334X_050S2T	0.5	4
0.47	V	195D474X_050V2T	0.5	4
0.68	V	195D684X_050V2T	0.5	4
1.0	X	195D105X_050X2T	0.5	4
1.5	X	195D155X_050X2T	0.8	6
2.2	Y	195D225X_050Y2T	1.1	6
3.3	Z	195D335X_050Z2T	1.7	6
4.7	Z	195D475X_050Z2T	2.4	6
6.8	R	195D685X_050R2T	3.4	6
10	R	195D106X_050R2T	5.0	6

**Note**

(1) For 10 % tolerance, specify "9"; for 20 % tolerance, change to "0".

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

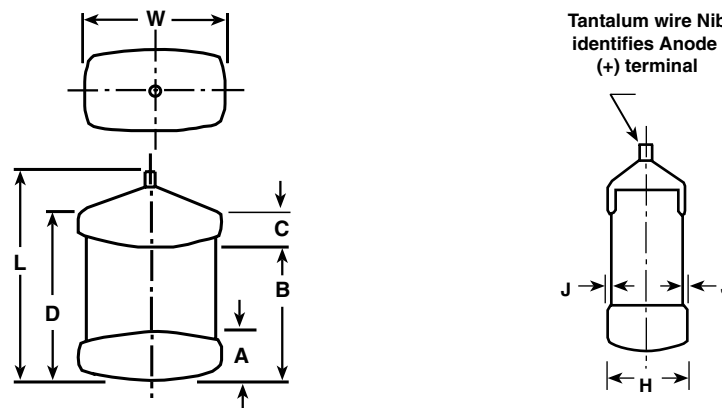


**ORDERING INFORMATION - EUROPEAN USE ONLY**

195D TYPE	106 CAPACITANCE	X0 CAPACITANCE TOLERANCE	004 DC VOLTAGE RATING AT + 85 °C	D CASE CODE	2 TERMINATION	T PACKAGING
	This is expressed in picofarads. The first two digits are the significant figures. The third is the number of zeros to follow.	<b>X0 = ± 20 %</b> <b>X9 = ± 10 %</b>	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 <b>2 = 100 % Tin</b> 4 = Gold plated 8 = Solder plated (60/40) Special order	<b>T = Tape and reel 180 mm reel standard</b> See tape and reel specifications.

**Notes**

- 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.
- Voltage substitutions will be marked with the higher voltage rating.

**DIMENSIONS** in millimeters


CASE CODE	L ± 0.3	W ± 0.3	H (MAX.)	A ± 0.3	B ± 0.3	C (MIN.)
A	2.8 ± 0.2	1.5	1.4	0.7	1.6	0.3
B	4.2 ± 0.2	1.4	1.6	0.8	2.5	0.3
D	4.2 ± 0.2	2.1	1.6	0.8	2.5	0.5
E	5.5	2.1	1.7	1.0	3.2	0.8
F	5.0	3.3	2.0	1.0	3.6	0.8
G	7.0	2.6	2.8	1.0	4.5	0.8
H	7.8	3.7	3.0	1.0	5.0	0.8

**Note**

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

**195D STANDARD RANGE, RATINGS AND CASE CODES**

µF	2 V	4 V	6.3 V	10 V	15 V	20 V	25 V	35/40 V	50 V
0.10								A	A
0.15								A	A
0.22								A	B
0.33							A	B	B
0.47					A	A		B	D
0.68					A		B	D	D
1.0				A	B	B		D	E
1.5			A		B		D	E	F
2.2		A		B		D	E	F	F
3.3	A		B		D	E		F	G
4.7	A	B		D	E		F	G	H
6.8	A		D	E		F	G	H	

**195D STANDARD RANGE, RATINGS AND CASE CODES**

μF	2 V	4 V	6.3 V	10 V	15 V	20 V	25 V	35/40 V	50 V
10	A	D	E		F		G		
15		E		F		G	H		
22			F		G	H			
33		F		G	H				
47			G	H					
68		G	H						
100		H		H					

**STANDARD RATINGS**

CAPACITANCE (μF)	CASE CODE	PART NUMBER <sup>(1)</sup>	MAX. DCL AT + 25 °C (μA)	MAX. DF AT + 25 °C 120 Hz (%)
<b>2 WVDC AT + 85 °C, 1.2 WVDC AT + 125 °C</b>				
3.3	A	195D335X_002A2T	0.5	8
4.7	A	195D475X_002A2T	0.5	8
6.8	A	195D685X_002A2T	0.5	8
10	A	195D106X_002A2T	0.6	8
<b>4 WVDC AT + 85 °C, 2.7 WVDC AT + 125 °C</b>				
2.2	A	195D225X_004A2T	0.5	8
4.7	B	195D475X_004B2T	0.5	8
10	D	195D106X_004D2T	0.5	8
15	E	195D156X_004E2T	0.6	8
33	F	195D336X_004F2T	1.3	8
68	G	195D686X_004G2T	2.7	8
100	H	195D107X_004H2T	4.0	8
<b>6.3 WVDC AT + 85 °C, 4 WVDC AT + 125 °C</b>				
1.5	A	195D155X_6R3A2T	0.5	8
3.3	B	195D335X_6R3B2T	0.5	8
6.8	D	195D685X_6R3D2T	0.5	8
10	E	195D106X_6R3E2T	0.6	8
22	F	195D226X_6R3F2T	1.3	8
47	G	195D476X_6R3G2T	2.8	8
68	H	195D686X_6R3H2T	4.1	8
<b>10 WVDC AT + 85 °C, 7 WVDC AT + 125 °C</b>				
1.0	A	195D105X_010A2T	0.5	6
2.2	B	195D225X_010B2T	0.5	6
4.7	D	195D475X_010D2T	0.5	6
6.8	E	195D685X_010E2T	0.7	6
15	F	195D156X_010F2T	1.5	6
47	H	195D476X_010H2T	4.7	6
100	H	195D107X_010H2T	8.0	7
<b>15 WVDC AT + 85 °C, 10 WVDC AT + 125 °C</b>				
0.47	A	195D474X_015A2T	0.5	6
0.68	A	195D684X_015A2T	0.5	6
1.0	B	195D105X_015B2T	0.5	6
1.5	B	195D155X_015B2T	0.5	6
3.3	D	195D335X_015D2T	0.5	6
4.7	E	195D475X_015E2T	0.7	6
10	F	195D106X_015F2T	1.5	6
22	G	195D226X_015G2T	3.3	6
33	H	195D336X_015H2T	5.0	6

**Note**

<sup>(1)</sup> For 10 % tolerance, specify "9"; for 20 % tolerance, change to "0".



<b>STANDARD RATINGS</b>					
CAPACITANCE (μF)	CASE CODE	PART NUMBER <sup>(1)</sup>	MAX. DCL AT + 25 °C (μA)	MAX. DF AT + 25 °C 120 Hz (%)	
<b>16 WVDC AT + 85 °C, 10 WVDC AT + 125 °C</b>					
0.47	A	195D474X_015A2T	0.5	6	
0.68	A	195D684X_015A2T	0.5	6	
1.0	B	195D105X_015B2T	0.5	6	
1.5	B	195D155X_015B2T	0.5	6	
3.3	D	195D335X_015D2T	0.5	6	
4.7	E	195D475X_015E2T	0.7	6	
10	F	195D106X_015F2T	1.5	6	
22	G	195D226X_015G2T	3.3	6	
33	H	195D336X_015H2T	5.0	6	
<b>20 WVDC AT + 85 °C, 13 WVDC AT + 125 °C</b>					
0.47	A	195D474X_020A2T	0.5	6	
1.0	B	195D105X_020B2T	0.5	6	
2.2	D	195D225X_020D2T	0.5	6	
3.3	E	195D335X_020E2T	0.7	6	
6.8	F	195D685X_020F2T	1.4	6	
15	G	195D156X_020G2T	3.0	6	
22	H	195D226X_020H2T	4.4	6	
<b>25 WVDC AT + 85 °C, 17 WVDC AT + 125 °C</b>					
0.33	A	195D334X_025A2T	0.5	6	
0.68	B	195D684X_025B2T	0.5	6	
1.5	D	195D155X_025D2T	0.5	6	
2.2	E	195D225X_025E2T	0.6	6	
4.7	F	195D475X_025F2T	1.2	6	
6.8	G	195D685X_025G2T	1.7	6	
10	G	195D106X_025G2T	2.5	6	
15	H	195D156X_025H2T	3.8	6	
<b>35 WVDC AT + 85 °C, 23 WVDC TO 25 WVDC AT + 125 °C</b>					
0.10	A	195D104X_035A2T	0.5	6	
0.15	A	195D154X_035A2T	0.5	6	
0.22	A	195D224X_035A2T	0.5	6	
0.33	B	195D334X_035B2T	0.5	6	
0.47	B	195D474X_035B2T	0.5	6	
0.68	D	195D684X_035D2T	0.5	6	
1.0	D	195D105X_035D2T	0.5	6	
1.5	E	195D155X_035E2T	0.5	6	
2.2	F	195D225X_035F2T	0.8	6	
3.3	F	195D335X_035F2T	1.2	6	
4.7	G	195D475X_035G2T	1.6	6	
6.8	H	195D685X_035H2T	2.4	6	

**Note**

<sup>(1)</sup> For 10 % tolerance, specify "9"; for 20 % tolerance, change to "0".





<b>STANDARD RATINGS</b>				
CAPACITANCE (μF)	CASE CODE	PART NUMBER <sup>(1)</sup>	MAX. DCL AT + 25 °C (μA)	MAX. DF AT + 25 °C 120 Hz (%)
<b>40 WVDC AT + 85 °C, 23 WVDC TO 25 WVDC AT + 125 °C</b>				
0.10	A	195D104X_035A2T	0.5	6
0.15	A	195D154X_035A2T	0.5	6
0.22	A	195D224X_035A2T	0.5	6
0.33	B	195D334X_035B2T	0.5	6
0.47	B	195D474X_035B2T	0.5	6
0.68	D	195D684X_035D2T	0.5	6
1.0	D	195D105X_035D2T	0.5	6
1.5	E	195D155X_035E2T	0.5	6
2.2	F	195D225X_035F2T	0.8	6
3.3	F	195D335X_035F2T	1.2	6
4.7	G	195D475X_035G2T	1.6	6
6.8	H	195D685X_035H2T	2.4	6
<b>50 WVDC AT + 85 °C, 33 WVDC AT + 125 °C</b>				
0.10	A	195D104X_050A2T	0.5	6
0.15	A	195D154X_050A2T	0.5	6
0.22	B	195D224X_050B2T	0.5	6
0.33	B	195D334X_050B2T	0.5	6
0.47	D	195D474X_050D2T	0.5	6
0.68	D	195D684X_050D2T	0.5	6
1.0	E	195D105X_050E2T	0.5	6
1.5	F	195D155X_050F2T	0.8	6
2.2	F	195D225X_050F2T	1.1	6
3.3	G	195D335X_050G2T	1.7	6
4.7	H	195D475X_050H2T	2.4	6

**Note**

<sup>(1)</sup> For 10 % tolerance, specify "9"; for 20 % tolerance, change to "0".



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