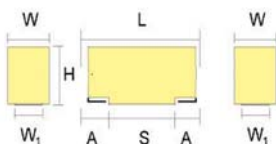
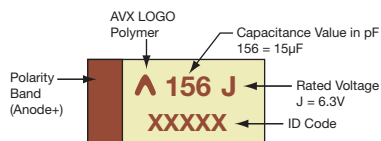


Tantalum Solid Electrolytic Chip Capacitors Undertab Series with Conductive Polymer Electrode

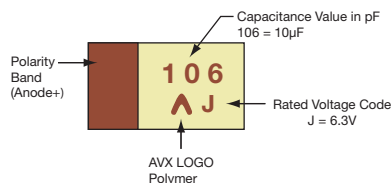


MARKING

L, S, T CASE



N CASE



HOW TO ORDER

TCN

Type

L

Case Size

See table above

157

Capacitance Code

pF code: 1st two digits represent significant figures, 3rd digit represents multiplier (number of zeros to follow)

M

Tolerance

M = ±20%

006

Rated DC Voltage

006 = 6.3Vdc
016 = 16Vdc
025 = 25Vdc
035 = 35Vdc

R

Packaging

R = Pure Tin 7" Reel
S = Pure Tin 13" Reel

0200

ESR in mΩ

FEATURES

- Conductive polymer electrode reduces ignition failure mode
- Lower ESR
- Undertab terminations layout:
 - High Volumetric Efficiency
 - High PCB assembly density
 - High capacitance in smaller dimensions
- 3x reflow 260°C compatible
- 3 case sizes available



LEAD-FREE
LEAD-FREE COMPATIBLE
COMPONENT



RoHS
COMPLIANT

APPLICATIONS

- Consumer applications (e.g. mobiles, MP3 etc.)

CASE DIMENSIONS: millimeters (inches)

Code	EIA Code	EIA Metric	L±0.20 (0.008)	W±0.20 (0.008) -0.10 (0.004)	H max.	W ₁ ±0.20 (0.008)	A±0.30 (0.012) -0.20 (0.008)
L	1210	3528-10	3.50 (0.138)	2.80 (0.110)	1.00 (0.039)	2.20 (0.087)	0.80 (0.031)
S	1206	3216-12	3.20 (0.126)	1.60 (0.063)	1.20 (0.047)	1.20 (0.047)	0.80 (0.031)
T	1210	3528-12	3.50 (0.138)	2.80 (0.110)	1.20 (0.047)	2.20 (0.087)	0.80 (0.031)

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

TECHNICAL SPECIFICATIONS

Technical Data:	All technical data relate to an ambient temperature of +25°C							
Capacitance Range:	1.0 µF to 1000 µF							
Capacitance Tolerance:	±20%							
Leakage Current DCL:	0.1CV							
Rated Voltage (V _R)	≤ +85°C:	4	6.3	10	16	25	35	
Category Voltage (V _C)	≤ +105°C:	3.2	5	8	13	20	28	
Surge Voltage (V _S)	≤ +85°C:	5.2	8	13	21	33	46	
Surge Voltage (V _S)	≤ +105°C:	4	6	10	16	25	35	
Temperature Range:	-55°C to +105°C							
Reliability:	1% per 1000 hours at 85°C, V _R with 0.1Ω/V series impedance 60% confidence level							

TCN Series



Tantalum Solid Electrolytic Chip Capacitors Undertab Series with Conductive Polymer Electrode

CAPACITANCE AND RATED VOLTAGE RANGE (LETTER DENOTES CASE SIZE)

Capacitance		Rated Voltage DC to 85°C / 0.66DC to 105°C					
µF	Code	4V (G)	6.3V (J)	10V (A)	16V (C)	25V (E)	35V (V)
1.0	105						O*
4.7	475						T(200)
10	106						T(200)
15	156			N(500)*			
22	226			N(500)*		T(200)*X*	X(100)*
33	336	N(500)*	K(500)*N(500)*	K(500)*N(500)*	L(200)/T(200)		
47	476	N(500)*	K(500)*M(200)* N(500)*	K(500)*S(500)*	T(200)	X(100)	X(100)*
68	686	K(500)*N(500)*	K(500)*S(500)*	G(150)*L(150)* S(500)*			
100	107	K(500)*S(500)*	G(200)*K(250) L(200)/S(250)	G(150)*L(150)* S(150)*T(150)*			
150	157	G(200)*L(200)* S(500)*	K(200)*L(200) S(200)*T(200)	G(150)*H(150)* T(150)*	X(70)		
220	227	G(200)*L(150)* S(200)*T(150)*	H(100,200)* T(200)*	H(150)*			
330	337	H(150)*T(150)*	H(200)*				
470	477	H(150)*	X(50)				
1000	108		X(200)				

Available Ratings, (ESR ratings in mOhms in brackets)

Engineering samples - please contact manufacturer

*Codes under development - subject to change

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

RATINGS & PART NUMBER REFERENCE

AVX Part No.	Case Size	Cap (µF)	Rated Voltage (V)	Rated Temp. (°C)	Category Voltage (V)	Category Temp. (°C)	DCL (µA) Max.	DF % Max.	ESR Max. (mΩ) @ 100kHz	MSL	100kHz RMS Current (mA)			Product Category
											25°C	85°C	105°C	
6.3 Volt @ 85°C														
TCNN476M006#0500	N	47	6.3	85	5	105	28.2	10	500	3	400	300	200	105°C
TCNK107M006#0250	K	100	6.3	85	6.3	85	60	10	250	3	600	400	-	85°C
TCNL107M006#0200	L	100	6.3	85	5	105	60	10	200	3	700	500	300	105°C
TCNS107M006#0250	S	100	6.3	85	6.3	85	60	10	250	3	600	400	-	85°C
TCNL157M006#0200	L	150	6.3	85	5	105	90	10	200	3	700	500	300	105°C
TCNS157M006#0200	S	150	6.3	85	5	105	90	10	200	3	700	500	300	105°C
TCNT157M006#0200	T	150	6.3	85	5	105	90	10	200	3	700	500	300	105°C
TCNT227M006#0200	T	220	6.3	85	5	105	132	10	200	3	700	500	300	105°C
TCNX477M006#0050	X	470	6.3	85	6.3	85	282	6	50	3	1900	1300	-	85°C
TCNX108M006#0200	X	1000	6.3	85	6.3	85	600	30	200	3	900	600	-	85°C
16 Volt @ 85°C														
TCNL336M016#0200	L	33	16	85	16	85	52.8	6	200	3	700	500	-	85°C
TCNT336M016#0200	T	33	16	85	16	85	52.8	6	200	3	700	500	-	85°C
TCNT476M016#0200	T	47	16	85	16	85	75.2	6	200	3	700	500	-	85°C
TCNX157M016#0070	X	150	16	85	16	85	240	6	70	3	1600	1100	-	85°C
25 Volt @ 85°C														
TCNX476M025#0100	X	47	25	105	25	105	117.5	6	100	3	1300	900	600	105°C
35 Volt @ 85°C														
TCNT475M035#0200	T	4.7	35	85	35	85	16.5	10	200	3	700	500	-	85°C
TCNT106M035#0200	T	10	35	85	35	85	35	10	200	3	700	500	-	85°C

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

All technical data relates to an ambient temperature of +25°C. Capacitance and DF are measured at 120Hz, 0.5RMS with DC bias of 2.2 volts. DCL is measured at rated voltage after 5 minutes.

ESR allowed to move up to 1.25 times catalog limit post mounting.

For typical weight and composition see page 214.

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.



Tantalum Solid Electrolytic Chip Capacitors Undertab Series with Conductive Polymer Electrode

PRODUCT CATEGORY 105°C

TEST	105°C series (Temperature range -55°C to +105°C)									
	Condition			Characteristics						
Endurance	Determine after application of rated voltage for 2000 +48/-0 hours at 85±2°C and then leaving 1-2 hours at room temperature. Also determine after application of 105°C temperature, category voltage for 2000 +48/-0 hours and then leaving 1-2 hours at room temperature. Power supply impedance to be ≤0.1Ω/V.			Visual examination	no visible damage					
				DCL	1.25 x initial limit					
				ΔC/C	within +20/-30% of initial value					
				DF	1.5 x initial limit					
				ESR	2 x initial limit					
Storage Life	105°C, 0V, 2000h			Visual examination	no visible damage					
				DCL (V _R ≤ 75V)	1.25 x initial limit					
				DCL (V _R > 75V)	2 x initial limit					
				ΔC/C	within ±20% of initial value					
				DF	1.5 x initial limit					
				ESR	2 x initial limit					
Humidity	Determine after storage without applied voltage at 65±2°C and 95±2% relative humidity for 500 hours and then recovery 1-2 hours at room temperature.			Visual examination	no visible damage					
				DCL	3 x initial limit					
				ΔC/C	within +30/-20% of initial value					
				DF	1.5 x initial limit					
				ESR	2 x initial limit					
Temperature Stability	Step	Temperature°C	Duration(min)							
	1	+20±2	15	+20°C	-55°C	+20°C	+85°C	+105°C	+20°C	
	2	-55+0/-3	15	DCL	IL*	n/a	IL*	10 x IL*	12.5 x IL*	IL*
	3	+20±2	15	ΔC/C	n/a	+0/-20%	±5%	+20/-0%	+30/-0%	±5%
	4	+85+3/-0	15	DF	IL*	1.5 x IL*	IL*	1.5 x IL*	2 x IL*	IL*
	5	+105+3/-0	15							
6	+20±2	15								
Surge Voltage	Test temperature: 105°C+3/0°C Test voltage: Category voltage at 105°C Surge voltage: 1.3 x category voltage at 105°C Series protection resistance 1000±100Ω Discharge resistance: 1000Ω Number of cycles: 1000x Cycle duration: 6 min; 30 sec charge, 5 min 30 sec discharge			Visual examination	no visible damage					
				DCL	initial limit					
				ΔC/C	within +20/-30% of initial value					
				DF	1.25 x initial limit					

*Initial Limit

PRODUCT CATEGORY 85°C

TEST	85°C series (Temperature range -55°C to +85°C)								
	Condition			Characteristics					
Endurance	Determine after application of rated voltage for 2000 +48/-0 hours at 85±2°C and then leaving 1-2 hours at room temperature. Power supply impedance to be ≤0.1Ω/V.			Visual examination	no visible damage				
				DCL	1.25 x initial limit				
				ΔC/C	within +20/-30% of initial value				
				DF	1.5 x initial limit				
				ESR	2 x initial limit				
Storage Life	85°C, 0V, 2000h			Visual examination	no visible damage				
				DCL	1.25 x initial limit				
				ΔC/C	within ±20% of initial value				
				DF	1.5 x initial limit				
				ESR	2 x initial limit				
Humidity	Determine after storage without applied voltage at 65±2°C and 95±2% relative humidity for 500 hours and then recovery 1-2 hours at room temperature.			Visual examination	no visible damage				
				DCL	5 x initial limit				
				ΔC/C	within +40/-20% of initial value				
				DF	1.5 x initial limit				
				ESR	2 x initial limit				
Temperature Stability	Step	Temperature°C	Duration(min)						
	1	+20±2	15	+20°C	-55°C	+20°C	+85°C	+20°C	
	2	-55+0/-3	15	DCL	IL*	n/a	IL*	10 x IL*	IL*
	3	+20±2	15	ΔC/C	n/a	+0/-20%	±5%	+20/-0%	±5%
	4	+85+3/-0	15	DF	IL*	1.5 x IL*	IL*	1.5 x IL*	IL*
	5	+20±2	15						
Surge Voltage	Test temperature: 85+3/0°C Test voltage: Rated voltage Surge voltage: 1.3 x rated voltage Series protection resistance 1000±100Ω Discharge resistance: 1000Ω Number of cycles: 1000x Cycle duration: 6 min; 30 sec charge, 5 min 30 sec discharge			Visual examination	no visible damage				
				DCL	initial limit				
				ΔC/C	within +20/-30% of initial value				
				DF	1.25 x initial limit				

*Initial Limit



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Телефон: +7 812 627 14 35

Электронная почта: sales@st-electron.ru

Адрес: 198099, Санкт-Петербург,
Промышленная ул, дом № 19, литера Н,
помещение 100-Н Офис 331