

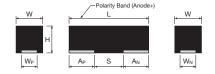
#### FEATURES

- Highest Energy per Volume
- Fast DCL Drop With Voltage Applied After Reflow
- Benign Failure Mode Under Recommended Use Conditions
- Low ESR
- Undertab Terminations Layout:
- High Volumetric Efficiency
- Low Profile Case Sizes
- High Capacitance in Smaller Dimensions
- Close Positioning of Several Parts for Efficient High Density PCB Layout
- 3x Reflow 260°C Compatible
- 100% Surge Current Tested

- **APPLICATIONS**
- Power Backup for SSDs (MLC, SLC, EFD, PCIe)
- Battery-Powered Portable EquipmentIndustrial Alarms
- Smart Power Meters
- Mobile Devices

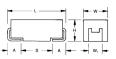






#### **CASE DIMENSIONS UNDERTAB millimeters (inches)**

Code	EIA Code	EIA Metric	L±0.20 (0.008)	W+0.20 (0.008) -0.10 (0.004)	H max.	WP±0.10 (0.004)	WN±0.10 (0.004)	AP±0.10 (0.004)	AN±0.10 (0.004)	S Min.
Т	1210	3528-12	3.50 (0.138)	2.80 (0.110)	1.20 (0.047)	2.50 (0.098)	2.10 (0.083)	1.15 (0.045)	1.35 (0.053)	1.00 (0.039)
Х	2917	7343-15	7.30 (0.287)	4.30 (0.169)	1.50 (0.059)	3.25 (0.128)	3.25 (0.128)	2.00 (0.079)	3.20 (0.126)	2.10 (0.083)
z	2917	7343-15	7.30±0.30 (0.287±0.012)	4.30±0.30 (0.169±0.012)	1.50 (0.059)	2.40 (0.094)	2.40 (0.094)	1.30±0.30 (0.051±0.012)	1.30±0.30 (0.051±0.012)	4.40 (0.173)
4	2924	7361-20	7.30 (0.287)	6.10 (0.240)	2.00 (0.079)	4.75 (0.187)	4.75 (0.187)	2.00 (0.079)	3.20 (0.126)	2.10 (0.083)
8	2924	7361-20	7.30±0.30 (0.287±0.012)	6.10 (0.240)	2.00 (0.079)	4.45 (0.175)	4.45 (0.175)	1.60±0.30 (0.063±0.012)	1.60±0.30 (0.063±0.012)	3.80 (0.150)



#### MAXIMUM ENERGY PER CASE SIZE

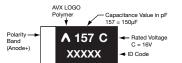
Case Size	H Max (mm)	Max Energy (mJ)
С	2.8	5.8
D	3.1	21.8
E	4.3	11.9
Н	1.5	3.3
Т	1.2	4.7
Х	1.5	18.2
Z	1.5	18.2
4	2.0	43.0
5	4.0	46.6
8	2.0	38.8

**CASE DIMENSIONS J-LEAD millimeters (inches)** 

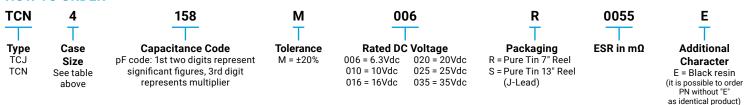
Code	EIA Code	EIA Metric	L±0.20 (0.008)	W+0.20 (0.008) -0.10 (0.004)	H+0.20 (0.008) -0.10 (0.004)	W <sub>1</sub> ±0.20 (0.008)	A+0.30 (0.012) -0.20 (0.008)	S Min.
С	2312	6032-28	6.00 (0.236)	3.20 (0.126)	2.60 (0.102)	2.20 (0.087)	1.30 (0.051)	2.90 (0.114)
D	2917	7343-31	7.30 (0.287)	4.30 (0.169)	2.90 (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)
Н	1210	3528-15	3.50 (0.138)	2.80 (0.110)	1.50 (0.059) max.	2.20 (0.087)	0.80 (0.031)	1.40 (0.055)
5	2917	7343-40	7.30 (0.287)	4.30 (0.169)	3.80 (0.150)	2.40 (0.094)	1.30 (0.051)	4.40 (0.173)

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

### MARKING C, D, E, H, T, X, Z, 5 CASE



#### **HOW TO ORDER**



Band

(Anode+)

4, 8 CASE

AVX LOGO Polymer

\Lambda 107 V

XXXXX

itance Value in pF 100μF

Rated Voltage
 V = 35V

ID Code



The Important Information/Disclaimer is incorporated in the catalog where these specifications came from or available online at www.avx.com/disclaimer/ by reference and should be reviewed in full before placing any order.



### **TECHNICAL SPECIFICATIONS**

Technical Data:		All technical	data relate to	an ambient tei	mperature of +	-25°C		-
Capacitance Range:		4.7µF to 150	0µF		•			
Capacitance Tolerance:		±20%	-					
Leakage Current DCL:		0.1CV						
Rated Voltage DC (VR)	≤ +85°C:	6.3	10	16	20	25	35	50
Surge Voltage (VS)	≤ +85°C:	8	13	21	26	33	46	65
Temperature Range:		-55°C up to +	+125°C					

NOTE: Conductive Polymer Capacitors are designed to operate within the limits of the environmental conditions specified for each series. If operated continuously at their maximum temperature and / or humidity limit, or beyond these limits, capacitors may exhibit a parametric shift in capacitance and increases in ESR. These changes may occur earlier if the specified environmental conditions are exceeded. Similarly, their normal operational time period will be significantly extended if their general duty cycle includes operation below maximum temperature within humidity controlled environments. Careful attention should be paid to maximum temperature within humidity environments as well as voltage derating, ripple current and current surges. Please reference the AVX Conductive Polymer Capacitor Guidelines for more information or contact factory for application assistance.

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

Capac	itance						Rated V	oltage DC	(VR) to 85						
μF	Code	6.3	/ (J)	10V	(A)	16V	(C)	20\	′(D)	25V	' (E)	35V	(V)	50V	(T)
4.7	475											T(200)	[1.8]		
6.8	685													C(200)	[5.4]
10	106											T( <mark>150</mark> , 200)	[3.9]	D(120)	[8.0]
15	456											C(200)	[5.8]	E(70)	[11.9]
22	226									T(200)	[4.3]	D(100)	[8.5]		
33	336					H(150)/ T(200)	[3.3]					D(70)	[12.8]		
47	476			C(100)/ H(100)	[1.7]	T(150)	[4.7]			X(100)	[9.2]	X(150)/ Z(150)	[18.2]		
68	686	H(100)	[0.8]	D(45)	[2.5]	D(50)	[6.7]	D(55)	[8.4]	D(70)	[13.3]				
100	107			D(45)	[3.6]	D(50)	[9.9]	D(55)	[12.4]	D(70) 4(100)	[19.6]	4(100)/ 8(100)	[38.8]		
150	157	T(200)	[1.7]	D(45)	[5.4]	X(100)	[14.9]			4(70)/ 8(70)	[29.3]				
220	227	H(170)	[2.6]	D(40)	[7.9]	D(50) 4(70)	[21.8]	4(100)	[27.2]	4(100)	[43.0]				
330	337	D(40)	[3.8]	5(100)	[11.9]	4(70) 5(100)	[32.7]								
470	477	X(50)	[5.4]			5(100)	[46.6]								
1000	108	4(55)	[11.6]												
1500	158	4(55)	[17.4]												

Released ratings (ESR ratings in mOhms in parentheses) [Energy in mJ]

Engineering samples - please contact AVX

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



# A KYOCERA GROUP CO

#### **RATINGS & PART NUMBER REFERENCE**

			Rated	Maximum	DCL	DF	ESR	1000kHz				ENERGY	
AVX Part No.	Case Size	Capacitance (µF)	Voltage (V)	Operating Temperature (°C)	Max. (µA)	Max. (%)	Max. @ 100kHz (mΩ)	RMS Current (mA) 45°C	Product Category	MSL	Energy (mJ)	Energy/volume (mJ/cm <sup>3</sup> )	Energy/area (mJ/cm²)
				6.3 Volt @ 85	°C				•			6.3 Volt @ 85°C	;
TCJH686M006#0100E	Н	68	6.3	105	40.8	6	100	1000	3	3	0.8	54	8.0
TCNT157M006#0200E	Т	150	6.3	105	90	10	200	700	3	4	1.7	147	17.7
TCJH227M006#0170E	Н	220	6.3	105	132	10	170	800	3	3	2.6	173	26.0
TCJD337M006#0040E	D	330	6.3	105	198	6	40	2400	2	3	3.8	42	12.2
TCNX477M006#0050E	X	470	6.3	85	282 600	10 20	50	1900	5	5	5.4	115 130	17.3 26.0
TCN4108M006#0055E TCN4158M006#0055E	4	1500	6.3 6.3	85 85	900	20	55 55	1860 1860	5	4	11.6 17.4	130	26.0 39.0
1 CIN4 1 36IVI000#0033E	4	1 1300	0.3	10 Volt @ 85		20	55	1800	5	4	17.4	10 Volt @ 85°C	
TCJH476M010#0100E	н	47	10	105	47	6	100	1000	3	3	1.7	115	17.3
TCJC476M010#0100E	С	47	10	125	47	6	100	1300	1	3	1.7	34	8.8
TCJD686M010#0045E	D	68	10	105	68	6	45	2200	3	3	2.5	27	7.8
TCJD107M010#0045E	D	100	10	105	100	6	45	2200	3	3	3.6	40	11.5
TCJD157M010#0045E	D	150	10	105	150	6	45	2200	3	3	5.4	59	17.2
TCJD227M010#0040E	D	220	10	105	220	6	40	2400	3	3	7.9	87	25.2
TCJ5337M010#0100E	5	330	10	105	330	10	100	1300	2	3	11.9	100	37.8
				16 Volt @ 85				~				16 Volt @ 85°C	
TCJH336M016#0150E	Н	33	16	105	52.8	6	150	800	3	3	3.3	223	33.4
TCNT336M016#0200E	Т	33	16	105	52.8	6	200	700	3	4	3.3	277	33.4
TCNT476M016#0150E	T	47	16	105	75.2	6	150	800	3	4	4.7	395	47.6
TCJD686M016#0050E	D	68	16	105	108.8	6	50	2100	2	3	6.7	74	21.5
TCJD107M016#0050E TCNX157M016#0100E	D	100	16	105	160	6	50	2100	2	3	9.9	109	31.6
TCJD227M016#0100E	X D	150 220	16 16	105 105	240 352	6 10	100 50	1300 2100	3	4	14.9 21.8	316 240	47.4 69.5
TCN4227M016#0030E	4	220	16	105	352	20	70	1650	2	3	21.8	240	49.0
TCN4337M016#0070E	4	330	16	105	528	20	70	1650	3	4	32.7	367	73.5
TCJ5337M016#0100E	5	330	16	105	528	10	100	1300	2	3	32.7	274	104.2
TCJ5477M016#0100E	5	470	16	105	752	10	100	1300	3	3	46.6	391	148.5
				20 Volt @ 85	°C	,	,		•			20 Volt @ 85°C	
TCJD686M020#0055E	D	68	20	105	136	6	55	2000	3	3	8.4	92	26.7
TCJD107M020#0055E	D	100	20	105	200	6	55	2000	3	3	12.4	136	39.3
TCN4227M020#0100E	4	220	20	85	440	10	100	1380	5	4	27.2	305	61.1
				25 Volt @ 85								25 Volt @ 85°C	
TCNT226M025#0200E	Т	22	25	105	55	6	200	700	3	4	4.3	364	43.9
TCNX476M025#0100E	Х	47	25	105	117.5	6	100	1300	2	5	9.2	195	29.3
TCJD686M025#0070E	D	68	25	105	170	6	70	1800	2	3	13.3	146	42.3
TCJD107M025#0070E	D	100	25	105	250	6	70	1800	2	3	19.6	215	62.3
TCN4107M025#0100E TCN4157M025#0070E	4	100 150	25 25	105 105	250 375	6 6	100 70	1380 1650	2	4	19.6 29.3	219 329	43.9 65.9
TCN8157M025#0070E	8	150	25	105	375	8	70	1650	2	4	29.3	329	65.9
TCN4227M025#0100E	4	220	25	105	550	10	100	1380	3	4	43.0	483	96.7
101422710020#01002	-	220	20	35 Volt @ 85		10	100	1000	<u> </u>		40.0	35 Volt @ 85°C	
TCNT475M035#0200E	Т	4.7	35	105	16.5	10	200	700	3	4	1.8	154	18.6
TCNT106M035#0150E	Т	10	35	105	35	10	150	800	3	4	3.9	328	39.5
TCNT106M035#0200E	Т	10	35	105	35	10	200	700	3	4	3.9	328	39.5
TCJC156M035#0200E	С	15	35	105	52.5	6	200	900	3	3	5.8	116	30.3
TCJD226M035#0100E	D	22	35	105	77	6	100	1500	2	3	8.5	94	27.1
TCJD336M035#0070E	D	33	35	105	115.5	6	70	1800	2	3	12.8	141	40.7
TCNX476M035#0150E	Х	47	35	105	165	10	150	1100	3	4	18.2	387	58.0
TCNZ476M035#0150E	Z	47	35	105	165	10	150	1100	3	4	18.2	387	58.0
TCN4107M035#0100E	4	100	35	105	350	10	100	1380	2	3	38.8	435	87.1
TCN8107M035#0100E	8	100	35	105	350	10	100	1380	2	3	38.8	435	87.1
		6.0	50	50 Volt @ 85			000	000	<u> </u>		<b>F</b> 4	50 Volt @ 85°C	
TCJC685M050#0200E TCJD106M050#0120E	C D	6.8 10	50 50	105 105	34 50	8 10	200 120	900 1400	3	3	5.4 8.0	108 87	28.2 25.3
TCJE156M050#0120E	E	10	50	105	50 75	6	70	1400	3	3	8.0	93	25.3
103E130W030#0070E	C	15	50	105	/5	0	/0	1900	3	3	11.9	93	30.0

Energy is calculated by this formula (consider derating factor):

where C = Capacitance Vr = Rated Voltage

X = Recommended derating factor

Vx= 3V (invariable)

Moisture Sensitivity Level (MSL) is defined according to J-STD-020. All technical data relates to an ambient temperature of +25°C. Capacitance is 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 259.

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



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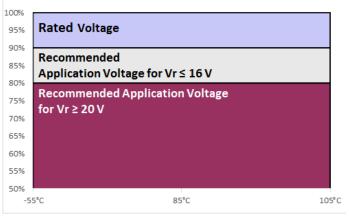
Energy =  $\frac{1}{2}$  C x ((Vr x X)<sup>2</sup> - Vx<sup>2</sup>)

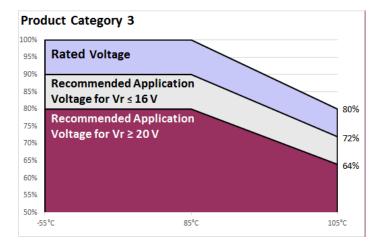


### **RECOMMENDED DERATING FACTOR**

Voltage and temperature derating as percentage of Vr

#### Product Category 2





### Product Category 5

00%		1
95%	Rated Voltage	
0%	· · · · · · · · · · · · · · · · · · ·	
5%	Recommended Application Voltage	L
0%	for Vr ≤ 16 V	
5%	Recommended Application Voltage	
	for Vr ≥ 20 V	
)%		
5%		
0%		
5%		
0%		
	5°C 85	5°C





### PRODUCT CATEGORY 1 (TEMPERATURE RANGE -55°C TO +125°C)

TEST		Condition Characteristics									
				Visual examination	no visibl	e damage					
		ed voltage (Ur) at 85°C		DCL	1.25 x in	itial limit					
TEST Endurance Storage Life Humidity Temperature Stability Surge Voltage Mechanical Shock Vibration		Jr) at 125°C for 2000 h ce of ≤0.1Ω/V. Stabilize		ΔC/C	within ±2	within ±20% of initial value					
		burs before measuring.	at room temperature	DF	1.5 x init	ial limit					
		5		ESR	2 x initia	l limit					
Endurance Storage Life Humidity Temperature Stability Surge				Visual examination	no visible damage						
Endurance Storage Life Humidity Temperature Stability Surge Voltage Mechanical	Store at 1	25°C, no voltage appli	ed for 2000 hours	DCL	2 x initia	l limit					
		at room temperature fo		ΔC/C	within ±2	20% of initia	l value				
	measurin	g.		DF	1.5 x init	ial limit					
				ESR	2 x initia	l limit					
				Visual examination	no visib	no visible damage					
		5°C and 95% relative h		DCL	3 x initia	al limit					
Temperature		th no applied voltage. S ure and humidity for 1-		ΔC/C	within +	within +30/-20% of initial value					
	measurin	,	2 nouis before	DF	1.5 x ini	1.5 x initial limit					
		5		ESR	2 x initia	2 x initial limit					
Stability	Step 1	Temperature°C +20	Duration(min) 15	-	+20°C	-55°C	+20°C	+85°C	+125°C	+20°	
	2	-55	15	DCL	IL*	n/a	IL*	10 x IL*	12.5 x IL*	IL*	
	3	+20 +85	15 15	ΔC/C	n/a	+0/-20%	±5%	+20/-0%	+30/-0%	±5%	
	5	+125 +20	15	DF	IL*	1.5 x IL*	IL*	1.5 x IL*	2 x IL*	IL*	
	, in the second se		1 10	Visual examination	no visible damage						
		0.67x rated voltage (Ur)		DCL	initial limit						
		duration 6 min (30 sec cl ) through a charge / disc		ΔC/C		within +10/-20% of initial value for Vr ≤ 10V within +20/-30% of initial value for Vr ≥ 16V					
Stability	100012			DF	1.25 x in	itial limit					
				Visual examination	no visib	le damage					
				DCL	initial lir	nit				-	
	MIL-STD-	202, Method 213, Cond	dition C	ΔC/C	within ±	5% of initia	l value				
SNOCK				DF	initial lir	nit					
				ESR	initial lir	nit					
				Visual examination	no visib	le damage					
				DCL	initial lir	nit					
Vibration	MIL-STD-	202, Method 204, Cond	dition D	ΔC/C	within ±	5% of initia	l value				
				DF	initial lir	nit					
				ESR	initial lin	nit					

\*Initial Limit

Initial measurement max. 1hr after the removal from dry pack or after pretreatment at 85°C for 24 hours.



070621



### PRODUCT CATEGORY 2, 3 (TEMPERATURE RANGE -55°C TO +105°C)

TEST		Condition			Characteristics         no visible damage $1.25 \times$ initial limit         within +10/-20% of initial value for Vr ≤ 16V         within ±20% of initial value for Vr ≥ 20V $1.5 \times$ initial limit $2 \times$ initial limit         no visible damage $1.25 \times$ initial limit         no visible damage $1.25 \times$ initial limit         within +10/-20% of initial value for Vr ≤ 16V         within +10/-20% of initial value for Vr ≤ 16V         within ±20% of initial value for Vr ≤ 20V $1.5 \times$ initial limit $2 \times$ initial limit         no visible damage $3 \times$ initial limit         within ±30/-20% of initial value						
	A	Apply rated voltage (Ur) at 85°C for 2000 hour through a circuit impedance of ≤0.10/V (all CATEGORIES). And / or apply rated voltage (U (CATEGORY 2) or 0.8x rated voltage (CATEGO 3) at 105°C for 2000 hours through a circuit impedance of ≤0.10/V. Always stabilize at roo temperature for 1-2 hours before measuring.         Store at 105°C, no voltage applied, for 2000 hours. Stabilize at room temperature for 1-2 hours before measuring.         Store at 65°C and 95% relative humidity for 50 hours, with no applied voltage. Stabilize at roo temperature and humidity for 1-2 hours before measuring.         Step       Temperature*C       Duration(m 1         1       +20       15         2       -55       15         3       +20       15         4       +85       15         5       +105       15         6       +20       15         Apply 1.3x rated voltage (Ur) at 105°C for CATEGORY 3 for 1000 cycles of duration 6 min (3	f 0000 h	Visual examination	no visibl	e damage					
	through a	circuit impedance of <	:0.10/V (all	DCL	1.25 x in	itial limit					
TEST Endurance Storage Life Humidity Temperature Stability Surge Voltage Mechanical Shock	CATEGOR (CATEGO	RIES). And / or apply rat RY 2) or 0.8x rated volt	ted voltage (Ur) age (CATEGORY	ΔC/C	-						
	impedanc	ce of ≤0.1Ω/V. Alwavs s	tabilize at room	DF	1.5 x init	1.5 x initial limit					
	temperati	ure for 1-2 nours before	Visual examinationno visible damageLarge (Ur) at 85°C for 2000 hours it impedance of \$0.10/V (all And / or apply rated voltage (Ur) 2000 hours through a circuit 50.10/V. Always stabilize at room or 1-2 hours before measuring.DCL $1.25 \times initial limitDCL1.5 \times initial limit\Delta C/Cwithin \pm 20\% of initial value for Vr \ge 20VDF1.5 \times initial limitDF1.5 \times initial limitc, no voltage applied, for 2000e at room temperature for 1-2 hoursVisual examinationno visible damageDCL1.25 \times initial limitC/CWithin \pm 10/-20\% of initial value for Vr \le 16Vand 95% relative humidity for 500applied voltage. Stabilize at roomnd humidity for 1-2 hours beforeVisual examinationno visible damageDCL3 \times initial limitC/Cwithin \pm 30/-20\% of initial value for Vr \ge 10VVisual examinationno visible damageDCL3 \times initial limit\Delta C/Cwithin \pm 30/-20\% of initial valueDCL3 \times initial limit\Delta C/Cwithin \pm 30/-20\% of initial valueDCL3 \times initial limit\Delta C/Cwithin \pm 30/-20\% of initial valueDL + 10 \times 1L^*\Delta C/Cn/a+0/-20\%\pm 5\%\pm 3015DF1L^*1.5 \times 1L^*\pm 3015DF1L^*1.5 \times 1L^*20 \times cocc55 \times 15DF1L^*1.5 \times 1L^*20 \times cocc55 \times 15DF1L^*1.5 \times 1L^*20 \times cocc50 \times 10000DF$								
				Visual examination	no visibl	e damage					
				DCL	1.25 x in	itial limit					
Storage Life	hours. Sta	abilize at room tempera	•	ΔC/C	-				5V		
	Delote In	Apply rated voltage (Ur) at 85°C for 2000 hours through a circuit impedance of $\le 0.10$ /V (all CATEGORY 2) or 0.8x rated voltage (CATEGORY 3) at 105°C for 2000 hours through a circuit impedance of $\le 0.10$ /V. Always stabilize at room temperature for 1-2 hours before measuring.Visual examin DCLStore at 105°C, no voltage applied, for 2000 hours. Stabilize at room temperature for 1-2 hours before measuring.Visual examin DCLStore at 65°C and 95% relative humidity for 500 hours, with no applied voltage. Stabilize at room temperature and humidity for 1-2 hours before measuring.Visual examin DCLStepTemperature°CDuration(min)1 $\pm 20$ 152 $-55$ 153 $\pm 20$ 154 $\pm 85$ 154 $\pm 85$ 155 $\pm 105$ 156 $\pm 20$ 15Apply 1.3x rated voltage (Ur) at 105°C for CATEGORY 2, or apply 1.3x 0.8x rated voltage (Ur) at 105°C for CATEGORY 3 for 1000 cycles of duration 6 min (30 sec charge, 5 min 30 sec discharge) through a charge / discharge resistance of 10000DFMIL-STD-202, Method 213, Condition CDCL AC/CMIL-STD-202, Method 204, Condition DDCL AC/CMIL-STD-202, Method 204, Condition DDCL AC/C	DF	1.5 x init	ial limit						
				ESR	2 x initia	l limit					
			Visual examination	no visib	le damage						
			DCL	3 x initia	al limit						
Humidity				ΔC/C	within +	30/-20% of	f initial va	lue			
	Apply rated voltage (Ur) at 85°C for 2 through a circuit impedance of ≤0.10 CATEGORIES). And / or apply rated v (CATEGORY 2) or 0.8x rated voltage (3) at 105°C for 2000 hours through a impedance of ≤0.10/V. Always statistic temperature for 1-2 hours before me solution. Stabilize at room temperature before measuring.         Store at 105°C, no voltage applied, for hours. Stabilize at room temperature before measuring.         Store at 65°C and 95% relative humid hours, with no applied voltage. Stabilit temperature and humidity for 1-2 hour measuring.         Step       Temperature*C       I         1       +20         2       -55         3       +20         4       +85         5       +105         6       +20         Apply 1.3x rated voltage (Ur) at 105°C fn 2, or apply 1.3x 0.8x rated voltage (Ur) at CATEGORY 3 for 1000 cycles of duratio sec charge, 5 min 30 sec discharge) thr / discharge resistance of 10000         MIL-STD-202, Method 213, Condition	2 nours before	DF	1.5 x ini	1.5 x initial limit						
		hours, with no applied voltage. Stabilize temperature and humidity for 1-2 hours I measuring. <u>Step Temperature*C Durat</u> 1 +20 <u>2 -55 <u>3</u> 3 +20 <u>4 +85 <u>5</u> 5 +105 <u>6</u> 6 +20 <u>4</u> Apply 1.3x rated voltage (Ur) at 105°C for C 2, or apply 1.3x 0.8x rated voltage (Ur) at 10</u></u>		ESR	2 x initia	2 x initial limit					
				-	+20°C	-55°C	+20°C	+85°C	+105°C	+20°C	
Temperature	Step         Temperature°C           1         +20           2         -55           3         +20           4         +85	-55	15	DCL	IL*	n/a	IL*	10 x IL*	12.5 x IL*	IL*	
		hours, with no applied voltage. Statemperature and humidity for 1-2 measuring.           Step         Temperature*C           1         +20         2         -55         3         +20         4         +85         5         +105         6         +20         2         -55         3         +20         4         +85         5         +105         6         +20         2         -55         2         -7         5         +105         6         +20         2         -5         2         -7         5         +105         6         +20         2         -5         -10         6         +20         2         -10         2	15	ΔC/C	n/a	+0/-20%	+20/-0%	+30/-0%	±5%		
				DF	IL*	1.5 x IL*	al value for Vr $\ge 20V$ f initial value $+20^{\circ}C$ $+85^{\circ}C$ $+$ $IL^*$ $10 \times IL^*$ $12$ $\pm 5\%$ $+20/-0\%$ $+$ $IL^*$ $1.5 \times IL^*$ $2$ initial value for Vr $\le 16V$ initial value for Vr $\ge 20V$ e al value	2 x IL*	IL*		
				Visual examination	no visibl	e damage	20%         ±5%         +20/-0%         +30/-0%           x IL*         IL*         1.5 x IL*         2 x IL*				
				DCL							
Surge Voltage	CATEGOR	3         +20           4         +85           5         +105           6         +20   Apply 1.3x rated voltage (Ur) at 105°C for C/ 2, or apply 1.3x 0.8x rated voltage (Ur) at 100 CATEGORY 3 for 1000 cycles of duration 6 r	uration 6 min (30	10/0	within +	10/-20% of i	nitial valu	e for Vr ≤ 16	V		
	2         -55           3         +20           4         +85           5         +105           6         +20           Apply 1.3x rated voltage (Ur) at 105°C           2, or apply 1.3x 0.8x rated voltage (Ur)           CATEGORY 3 for 1000 cycles of dura sec charge, 5 min 30 sec discharge) 1	e) through a charge		within +2	20/-30% of i	nitial valu	e for Vr ≥ 20	V			
	/ discharg	e resistance of 10000		DF	1.25 x in	itial limit					
				Visual examination	no visib	.5 x initial limit         2 x initial limit         initial limit         visible damage         .25 x initial limit         visible damage         .25 x initial limit         visible damage         .25 x initial limit         2 x initial limit         +20°C       -55°C         +20°L       -55°C         +20°L       -55°C         +20°L       -55°C         +20°L       +30/-0%         IL*       n/a         +0/-20%       ±5%         +20/-0%       +30/-0%         IL*       1.5 x IL*       IL*         1.5 x IL*       IL*       1.5 x IL*         2.5 x initial limit       vithin +20/-30% of initial value for Vr ≥ 16V         vithin ±5% of initial value					
Maghanigal				DCL	within ±20% of initial value for Vr $\ge 20V$ 1.5 x initial limit2 x initial limitnno visible damage3 x initial limitwithin +30/-20% of initial value1.5 x initial limit2 x initial limit2 x initial limit2 x initial limit2 x initial limit1.5 x initial limit2 x initial limit2 x initial limit1.5 x initial limit2 x initial limit1.5 x initial limit2 x initial limit1.5 x initial limit1.2 x initial limit1.2 x initial limit1.2 x initial limitno visible damageinitial limitwithin +10/-20% of initial value for Vr ≤ 16Vwithin +20/-30% of initial value for Vr ≤ 20V1.25 x initial limitno visible damageinitial limitwithin ±5% of initial valueinitial limitinitial limitno visible damageinitial limitwithin ±5% of initial valueinitial limitwithin ±5% of initial valueinitial limitinitial limitinitial limitinitial limitinitial limit						
	MIL-STD-:	hours, with no applied voltage. Stabiliz temperature and humidity for 1-2 hour measuring. <u>Step Temperature*C Du</u> 1 +20 D 2 -55 D 3 +20 D 4 +85 D 5 +1105 D 6 +20 D Apply 1.3x rated voltage (Ur) at 105°C for 2, or apply 1.3x 0.8x rated voltage (Ur) at CATEGORY 3 for 1000 cycles of duration sec charge, 5 min 30 sec discharge) thro / discharge resistance of 1000Ω MIL-STD-202, Method 213, Condition (	lition C	ΔC/C	within ±	5% of initia	ıl value				
SHOCK				DF	initial lir	nit					
				ESR	1.25 x initial limit         within +10/-20% of initial value for Vr ≤ 16V         within ±20% of initial value for Vr ≥ 20V         1.5 x initial limit         2 x initial limit         no visible damage         3 x initial limit         within +30/-20% of initial value         1.5 x initial limit         2 x initial limit         within +30/-20% of initial value         1.5 x initial limit         2 x initial limit         1.5 x initial limit         2 x initial limit         1.5 x initial limit         +20°C       -55°C       +20°C       +85°C       +105°C         IL*       n/a       IL*       10 x IL*       12.5 x IL*         n/a       +0/-20%       ±5%       +20/-0%       +30/-0%         IL*       1.5 x IL*       IL*       1.5 x IL*       2 x IL*         no visible damage       initial limit       1.25 x initial limit         within +10/-20% of initial value for Vr ≥ 20V       1.25 x initial limit         no visible damage       initial limit         initial limit       initial value						
		ours. Stabilize at room temperature for efore measuring. tore at 65°C and 95% relative humidity ours, with no applied voltage. Stabilize emperature and humidity for 1-2 hours heasuring. <u>Step Temperature°C Dur</u> 1 +20		Visual examination	no visib	le damage					
	life     hours. Stabilize at root before measuring.       ty     Store at 65°C and 95° hours, with no applied temperature and hum measuring.       ture     Step     Temperature and hum measuring.       ture     Step     Temperature and hum measuring.       ture     Apply 1.3x rated voltag 2, or apply 1.3x rated voltag 2, or apply 1.3x of 1000 sec charge, 5 min 30 se / discharge resistance       cal     MIL-STD-202, Method			DCL	initial lir	nit					
Vibration	MIL-STD-	202, Method 204, Conc	lition D		within ±	5% of initia	I value				
					initial lir	nit					
				ESR	initial lir	nit					

\*Initial Limit

Initial measurement max. 1hr after the removal from dry pack or after pretreatment at 85°C for 24 hours.



# **J-CAP<sup>™</sup> Series**

# Highest Joules/cc Conductive Polymer Solid Electrolytic Chip Capacitors



### PRODUCT CATEGORY 5 (TEMPERATURE RANGE -55°C TO +85°C)

TEST					acteristics						
				Visual examination	no visible d	amage					
Endurance	A	(U) -+ 0500 f	0000 h	DCL	1.25 x initia	1.25 x initial limit					
Endurance	at room tempera	age (Ur) at 85°C f t impedance of ≤0 ature for 1-2 hour	or 2000 nours ).1Ω/V. Stabilize s before	ΔC/C		within +10/-20% of initial value for Vr $\leq$ 16V within ±20% of initial value for Vr $\geq$ 20V					
	measuring.			DF	1.5 x initial limit						
				ESR	2 x initial lir	nit					
				Visual examination	no visible damage						
				DCL	1.25 x initia	ıl limit					
Storage Life		o voltage applied, n temperature for		ΔC/C	,	/-20% of initia % of initial val					
	before measurin	ig.		DF	1.5 x initial	limit					
				ESR	2 x initial lir	nit					
				Visual examination	no visible	damage					
		nd 95% relative hu		DCL	5 x initial l	imit					
Humidity		pplied voltage. St d humidity for 1-2		ΔC/C	within +40	within +40/-20% of initial value					
	measuring.		nours before	DF	1.5 x initia	l limit					
	incuburing.			ESR	2 x initial l	2 x initial limit					
	Step	Temperature°C	Duration(min)		+20°C	-55°C	+20°C	+85°C	+209		
	1	+20 -55	15 15	DCL	IL*	n/a	IL*	10 x IL*	IL*		
	3	+20	15 15	ΔC/C	n/a	+0/-20%	±5%	+20/-0%	±5%		
	4 5	+85 +20	15	DF	IL*	1.5 x IL*	IL*	1.5 x IL*	IL*		
		•	•	Visual examination	no visible d	no visible damage					
-	Apply 1.3x rated	voltage (Ur) at 85°	C for 1000 cycles	DCL	initial limit						
		(30 sec charge, 5) gh a charge / disch		40/0	within +10/	-20% of initia	l value for Vr	≤16V			
Stability	of 1000Ω			ΔC/C	within +20/	-30% of initia	l value for Vr	≥20V			
				DF	1.25 x initia	l limit					
				Visual examination	no visible	damage					
Maghaniaal				DCL	initial limit						
	MIL-STD-202, M	ethod 213, Condi	tion C	ΔC/C	within ±5%	of initial va	lue				
SHOCK				DF	initial limit						
				ESR	initial limit						
				Visual examination	no visible	damage					
				DCL	initial limit						
Vibration	MIL-STD-202, M	ethod 204, Condi	tion D	ΔC/C	within ±5%	of initial va	lue				
				DF	initial limit						
				ESR	initial limit						

\*Initial Limit

Initial measurement max. 1hr after the removal from dry pack or after pretreatment at 85°C for 24 hours.



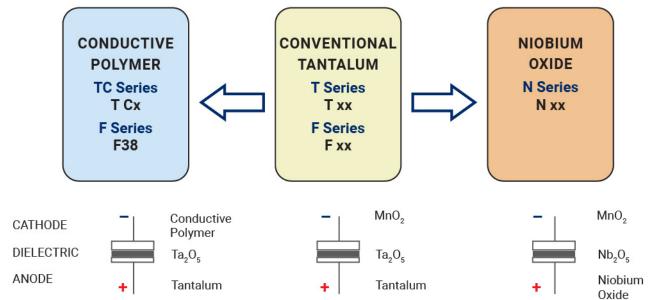
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# **J-CAP<sup>™</sup> Series**

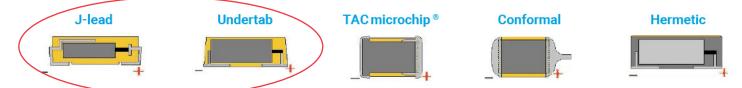
# Highest Joules/cc Conductive Polymer Solid Electrolytic Chip Capacitors



SOLID ELECTROLYTIC CAPACITOR ROADMAP



## **FIVE CAPACITOR CONSTRUCTION STYLES**



### **SERIES LINE UP** : Conductive Polymer

