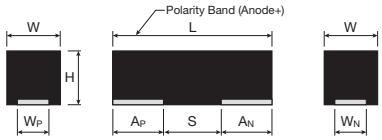
J-CAP™ Series

Highest Joules/cc Conductive Polymer Solid Electrolytic Chip Capacitors



FEATURES

- Highest Energy per volume
- Fast DCL Drop after mounting
- Low ESR
- Standard Undertab or J-lead termination
- High Volumetric Efficiency
- Low profile case sizes
- 3x reflow cycles according to J-STD-020
- 100% Surge Current Tested



APPLICATIONS

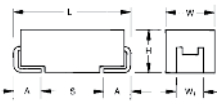
- Power Backup for SSDs (MLC, SLC, EFD, PCIe)
- Battery-Powered Portable Equipment
- Industrial Alarms
  Smart Power Meters
- Mobile Devices

RoHS COMPLIANT

LEAD-FREE
LEAD-FREE COMPATIBLE COMPONENT

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.	W_P±0.10 (0.004)	W_N±0.10 (0.004)	A_P±0.10 (0.004)	A_N±0.10 (0.004)	S Min.
H	1210	3528-15	3.50 (0.138)	2.80 (0.110)	1.50 (0.059)	2.50 (0.098)	2.10 (0.083)	1.15 (0.045)	1.35 (0.053)	1.00 (0.039)
T	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)
X	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)
Y	2917	7343-20	7.30±0.30 (0.287±0.012)	4.30±0.30 (0.169±0.012)	2.00 (0.079)	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)
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	7360-20	7.30 ± 0.30 (0.287 ± 0.012)	6.00 ± 0.30 (0.236 ± 0.012)	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)



CASE DIMENSIONS J-LEAD millimeters (inches)

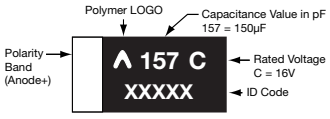
Code	EIA Code	EIA Metric	L±0.20 (0.008)	W+0.20 (0.008) -0.10 (0.004)	H+0.20 (0.008) -0.10 (0.004)	W_1±0.20 (0.008)	A+0.30 (0.012) -0.20 (0.008)	S Min.
C	2312	6032-28	6.00 (0.236)	3.20 (0.126)	2.60 (0.102)	2.20 (0.087)	1.30 (0.051)	2.90 (0.114)
D	2917	7343-31	7.30 (0.287)	4.30 (0.169)	2.90 (0.114)	2.40 (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)
H	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)

W_1 dimension applies to the termination width for A dimensional area only.

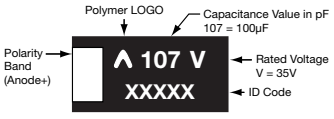
MAXIMUM ENERGY PER CASE SIZE

Case Size	H Max (mm)	Max Energy (mJ)
C	2.8	5.8
D	3.1	21.8
E	4.3	11.9
H	1.5	6.5
T	1.2	4.7
X	1.5	18.2
Y	2.0	26.4
Z	1.5	23.9
4	2.0	43.0
5	4.0	46.6
8	2.0	50.8

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



4, 8 CASE



HOW TO ORDER

TCN	4	158	M	006	R	0055	E
Type TCJ TCN	Case Size See table above	Capacitance Code pF code: 1st two digits represent significant figures, 3rd digit represents multiplier	**Tolerance** M = ±20%	Rated DC Voltage 006 = 6.3Vdc 010 = 10Vdc 016 = 16Vdc 020 = 20Vdc 025 = 25Vdc 035 = 35Vdc 040 = 40Vdc 050 = 50Vdc	Packaging R = Lead Free 7" Reel S = Lead Free 13" Reel	ESR in mΩ	Additional Character E = Black resin (it is possible to order PN without "E" as identical product)

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J-CAP™ Series

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TECHNICAL SPECIFICATIONS

Technical Data:		All technical data relate to an ambient temperature of +25°C							
Capacitance Range:		4.7µF to 1500µF							
Capacitance Tolerance:		±20%							
Leakage Current DCL:		0.1CV							
Rated Voltage DC (VR)	≤ +85°C:	6.3	10	16	20	25	35	40	50
Surge Voltage (VS)	≤ +85°C:	8	13	21	26	33	46	52	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 with associated high humidity environments as well as voltage derating, ripple current and current surges. Please reference the KYOCERA AVX Conductive Polymer Capacitor Guidelines for more information or contact factory for application assistance.

CAPACITANCE AND RATED VOLTAGE RANGE (LETTER DENOTES CASE SIZE)

Capacitance		Rated Voltage DC (VR) to 85°C, [mJ]							
µF	Code	6.3V (J)	10V (A)	16V (C)	20V(D)	25V (E)	35V (V)	40V (G)	50V (T)
4.7	475						T(200) [1.8]		
6.8	685								C(200) [5.4]
10	106						T(150, 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]		H(250) [6.5]	D(70) [12.8]		
47	476		C(100)/ H(100) [1.7]	T(150) [4.7]		X(100) [9.2]	X(100,150)/ Z(100,150) [18.2]	Z(100, 150) [23.9]	
56	566						Z(100,150) [21.7]		
68	686	H(100) [0.8]	D(45) [2.5]	D(50) [6.7]	D(55) [8.4]	D(70) [13.3]	Y(100,150) [26.4]		
100	107		D(45) [3.6]	D(50) [9.9]	D(55) Z(100) [12.4]	D(70) 4(100) [19.6]	4(100)/ 8(100) [38.8]	8(100) [50.8]	
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) 8(70) [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 KYOCERA AVX
Note: Voltage ratings are minimum values. KYOCERA AVX reserves the right to supply higher voltage ratings in the same case size, to the same reliability standards.

J-CAP™ Series

Highest Joules/cc Conductive Polymer Solid Electrolytic Chip Capacitors

RATINGS & PART NUMBER REFERENCE

Part Number	Case Size	Capacitance (µF)	Rated Voltage (V)	Maximum Operating Temperature (°C)	DCL Max. (µA)	DF Max. (%)	ESR Max. @ 100kHz (mΩ)	1000kHz RMS Current (mA) 45°C	Product Category	MSL	ENERGY		
											Energy (mJ)	Energy/volume (mJ/cm³)	Energy/area (mJ/cm²)
6.3 Volt											**6.3 Volt**		
TCJH686M006#0100E	H	68	6.3	105	40.8	6	100	1000	3	3	0.8	54	8.0
TCNT157M006#0200E	T	150	6.3	105	90	10	200	700	3	4	1.7	147	17.7
TCJH227M006#0170E	H	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	10	50	1900	5	5	5.4	115	17.3
TCN4108M006#0055E	4	1000	6.3	85	600	20	55	1860	5	4	11.6	130	26.0
TCN4158M006#0055E	4	1500	6.3	85	900	20	55	1860	5	4	17.4	195	39.0
10 Volt											**10 Volt**		
TCJH476M010#0100E	H	47	10	105	47	6	100	1000	3	3	1.7	115	17.3
TCJC476M010#0100E	C	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											**16 Volt**		
TCJH336M016#0150E	H	33	16	105	52.8	6	150	800	3	3	3.3	223	33.4
TCNT336M016#0200E	T	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	D	100	16	105	160	6	50	2100	2	3	9.9	109	31.6
TCNX157M016#0100E	X	150	16	105	240	6	100	1300	3	4	14.9	316	47.4
TCJD227M016#0050E	D	220	16	105	352	10	50	2100	2	3	21.8	240	69.5
TCN4227M016#0070E	4	220	16	105	352	20	70	1650	2	4	21.8	245	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
TCN8337M016#0070E	8	330	16	105	528	20	70	1650	3	4	32.7	374	74.7
TCJ5477M016#0100E	5	470	16	105	752	10	100	1300	3	3	46.6	391	148.5
20 Volt											**20 Volt**		
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
TCNZ107M020#0100E	Z	100	20	105	200	8	100	1300	3	4	12.4	262	39.3
TCN4227M020#0100E	4	220	20	85	440	10	100	1380	5	4	27.2	305	61.1
25 Volt											**25 Volt**		
TCNT226M025#0200E	T	22	25	105	55	6	200	700	3	4	4.3	364	43.9
TCNH336M025#0250E	H	33	25	105	82.5	10	250	600	3	4	6.5	439	65.8
TCNX476M025#0100E	X	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	4	100	25	105	250	6	100	1380	2	4	19.6	219	43.9
TCN4157M025#0070E	4	150	25	105	375	6	70	1650	2	4	29.3	329	65.9
TCN8157M025#0070E	8	150	25	105	375	8	70	1650	2	3	29.3	329	65.9
TCN4227M025#0100E	4	220	25	105	550	10	100	1380	3	4	43.0	483	96.7
35 Volt											**35 Volt**		
TCNT475M035#0200E	T	4.7	35	105	16.5	10	200	700	3	4	1.8	154	18.6
TCNT106M035#0150E	T	10	35	105	35	10	150	800	3	4	3.9	328	39.5
TCNT106M035#0200E	T	10	35	105	35	10	200	700	3	4	3.9	328	39.5
TCJC156M035#0200E	C	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#0100E	X	47	35	105	165	10	100	1300	3	4	18.2	387	58.0
TCNX476M035#0150E	X	47	35	105	165	10	150	1100	3	4	18.2	387	58.0
TCNZ476M035#0100E	Z	47	35	105	165	10	100	1300	3	4	18.2	387	58.0
TCNZ476M035#0150E	Z	47	35	105	165	10	150	1100	3	4	18.2	387	58.0
TCNZ566M035#0100E	Z	56	35	105	196	10	100	1300	3	4	21.7	461	69.1
TCNZ566M035#0150E	Z	56	35	105	196	10	150	1100	3	4	21.7	461	69.1
TCNY686M035#0100E	Y	68	35	105	238	10	100	1400	3	4	26.4	420	83.9
TCNY686M035#0150E	Y	68	35	105	238	10	150	1100	3	4	26.4	420	83.9
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
40 Volt											**40 Volt**		
TCNZ476M040#0100E	Z	47	40	105	188	10	100	1300	3	4	23.9	506	76
TCNZ476M040#0150E	Z	47	40	105	188	10	150	1100	3	4	23.9	506	76
TCN8107M040#0100E	8	100	40	105	400	10	100	1380	2	4	50.8	579	115.9
50 Volt											**50 Volt**		
TCJC685M050#0200E	C	6.8	50	105	34	8	200	900	3	3	5.4	108	28.2
TCJD106M050#0120E	D	10	50	105	50	10	120	1400	3	3	8.0	87	25.3
TCJE156M050#0070E	E	15	50	105	75	6	70	1900	3	3	11.9	93	38.0

Energy is calculated by this formula (consider derating factor):
Energy = ½ C x $((Vr \times X)^2 - Vx^2)$
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, refer to the *Product Safety Information Datasheet* at the end of the Polymer, Tantalum and Niobium Oxide Capacitors catalog.

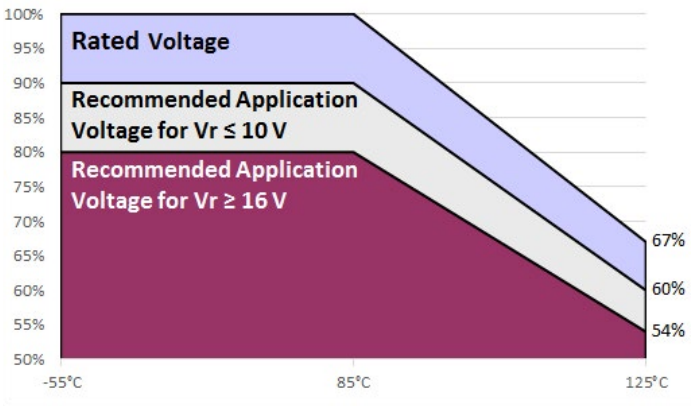
NOTE: KYOCERA AVX reserves the right to supply higher voltage ratings in the same case size, to the same reliability standards.

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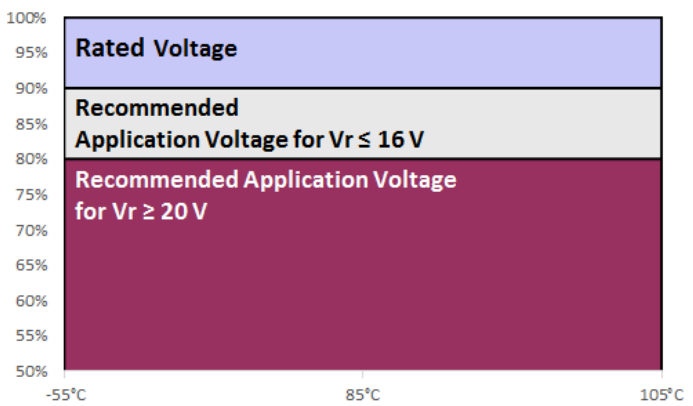
RECOMMENDED DERATING FACTOR

Voltage and temperature derating as percentage of Vr

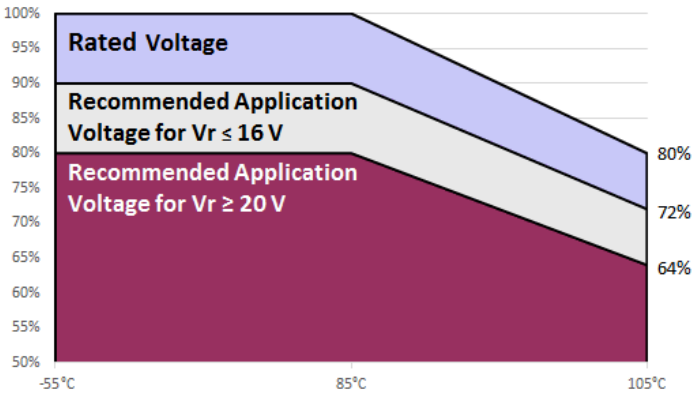
Product Category 1



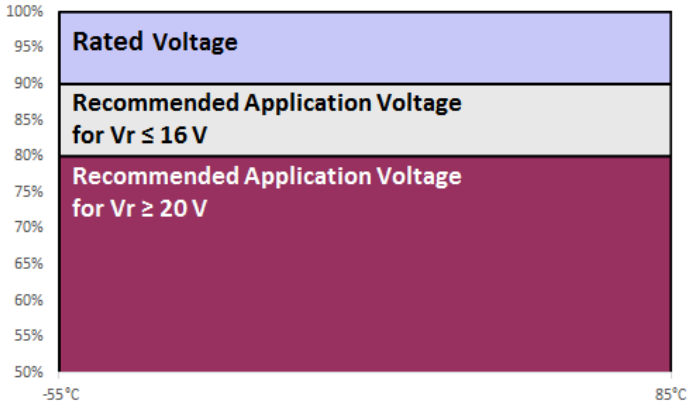
Product Category 2



Product Category 3



Product Category 5



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

TEST	Condition	Characteristics						
Endurance	Apply rated voltage (Ur) at 85ºC and /or 2/3 rated voltage (Ur) at 125ºC for 2000 hours through a circuit impedance of ≤0.1Ω/V.	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					
Storage Life	Store at 125ºC, no voltage applied, for 2000 hours.	Visual examination	no visible damage					
		DCL	2 x initial limit					
		ΔC/C	within ±20% of initial value					
		DF	1.5 x initial limit					
		ESR	2 x initial limit					
Humidity	Store at 65ºC and 95% relative humidity for 500 hours, with no applied voltage.	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 1: +20, 15 min Step 2: -55, 15 min Step 3: +20, 15 min Step 4: +85, 15 min Step 5: +125, 15 min Step 6: +20, 15 min		+20ºC	-55ºC	+20ºC	+85ºC	+125ºC	+20ºC
		DCL	IL*	n/a	IL*	10 x IL*	12.5 x IL*	IL*
		ΔC/C	n/a	+0/-20%	±5%	+20/-0%	+30/-0%	±5%
		DF	IL*	1.5 x IL*	IL*	1.5 x IL*	2 x IL*	IL*
Surge Voltage	Apply 1.3x 0.67x rated voltage (Ur) at 125ºC for 1000 cycles of duration 6 min (30 sec charge, 5 min 30 sec discharge) through a charge / discharge resistance of 1000Ω	Visual examination	no visible damage					
		DCL	initial limit					
		ΔC/C	within +10/-20% of initial value for Vr ≤ 10V within +20/-30% of initial value for Vr ≥ 16V					
		DF	1.25 x initial limit					
Mechanical Shock	MIL-STD-202, Method 213, Condition C	Visual examination	no visible damage					
		DCL	initial limit					
		ΔC/C	within ±5% of initial value					
		DF	initial limit					
		ESR	1.25 x initial limit					
Vibration	MIL-STD-202, Method 204, Condition D	Visual examination	no visible damage					
		DCL	initial limit					
		ΔC/C	within ±5% of initial value					
		DF	initial limit					
		ESR	1.25 x initial limit					

*Initial Limit

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

<table>
<tr><th>TEST</th><th>Condition</th><th colspan="7">Characteristics</th></tr>
<tr><td rowspan="4">Endurance</td><td rowspan="4">Apply rated voltage (Ur) at 85ºC for 2000 hours through a circuit impedance of ≤0.1Ω/V (all CATEGORIES). And / or apply rated voltage (Ur) (CATEGORY 2) or 0.8x rated voltage (CATEGORY 3) at 105°C for 2000 hours through a circuit impedance of ≤0.1Ω/V.</td><td colspan="2">Visual examination</td><td colspan="5">no visible damage</td></tr>
<tr><td colspan="2">DCL</td><td colspan="5">1.25 x initial limit</td></tr>
<tr><td colspan="2">ΔC/C</td><td colspan="5">within +10/-20% of initial value for Vr ≤ 16V
within ±20% of initial value for Vr ≥ 20V</td></tr>
<tr><td colspan="2">DF</td><td colspan="5">1.5 x initial limit</td></tr>
<tr><td colspan="2">ESR</td><td colspan="5">2 x initial limit</td></tr>
<tr><td rowspan="5">Storage Life</td><td rowspan="5">Store at 105ºC, no voltage applied, for 2000 hours.</td><td colspan="2">Visual examination</td><td colspan="5">no visible damage</td></tr>
<tr><td colspan="2">DCL</td><td colspan="5">1.25 x initial limit</td></tr>
<tr><td colspan="2">ΔC/C</td><td colspan="5">within +10/-20% of initial value for Vr ≤ 16V
within ±20% of initial value for Vr ≥ 20V</td></tr>
<tr><td colspan="2">DF</td><td colspan="5">1.5 x initial limit</td></tr>
<tr><td colspan="2">ESR</td><td colspan="5">2 x initial limit</td></tr>
<tr><td rowspan="5">Humidity</td><td rowspan="5">Store at 65ºC and 95% relative humidity for 500 hours, with no applied voltage.</td><td colspan="2">Visual examination</td><td colspan="5">no visible damage</td></tr>
<tr><td colspan="2">DCL</td><td colspan="5">3 x initial limit</td></tr>
<tr><td colspan="2">ΔC/C</td><td colspan="5">within +30/-20% of initial value</td></tr>
<tr><td colspan="2">DF</td><td colspan="5">1.5 x initial limit</td></tr>
<tr><td colspan="2">ESR</td><td colspan="5">2 x initial limit</td></tr>
<tr><td rowspan="8">Temperature Stability</td><td colspan="3"><table><tr><th>Step</th><th>Temperature°C</th><th>Duration(min)</th></tr><tr><td>1</td><td>+20</td><td>15</td></tr><tr><td>2</td><td>-55</td><td>15</td></tr><tr><td>3</td><td>+20</td><td>15</td></tr><tr><td>4</td><td>+85</td><td>15</td></tr><tr><td>5</td><td>+105</td><td>15</td></tr><tr><td>6</td><td>+20</td><td>15</td></tr></table></td><td></td><td>+20ºC</td><td>-55ºC</td><td>+20ºC</td><td>+85ºC</td><td>+105ºC</td><td>+20ºC</td></tr>
<tr><td colspan="2">DCL</td><td>IL*</td><td>n/a</td><td>IL*</td><td>10 x IL*</td><td>12.5 x IL*</td><td>IL*</td></tr>
<tr><td colspan="2">ΔC/C</td><td>n/a</td><td>+0/-20%</td><td>±5%</td><td>+20/-0%</td><td>+30/-0%</td><td>±5%</td></tr>
<tr><td colspan="2">DF</td><td>IL*</td><td>1.5 x IL*</td><td>IL*</td><td>1.5 x IL*</td><td>2 x IL*</td><td>IL*</td></tr>
<tr><td rowspan="4">Surge Voltage</td><td rowspan="4">Apply 1.3x rated voltage (Ur) at 105ºC for CATEGORY 2, or apply 1.3x 0.8x rated voltage (Ur) at 105ºC for CATEGORY 3 for 1000 cycles of duration 6 min (30 sec charge, 5 min 30 sec discharge) through a charge / discharge resistance of 1000Ω</td><td colspan="2">Visual examination</td><td colspan="5">no visible damage</td></tr>
<tr><td colspan="2">DCL</td><td colspan="5">initial limit</td></tr>
<tr><td colspan="2">ΔC/C</td><td colspan="5">within +10/-20% of initial value for Vr ≤ 16V
within +20/-30% of initial value for Vr ≥ 20V</td></tr>
<tr><td colspan="2">DF</td><td colspan="5">1.25 x initial limit</td></tr>
<tr><td rowspan="5">Mechanical Shock</td><td rowspan="5">MIL-STD-202, Method 213, Condition C</td><td colspan="2">Visual examination</td><td colspan="5">no visible damage</td></tr>
<tr><td colspan="2">DCL</td><td colspan="5">initial limit</td></tr>
<tr><td colspan="2">ΔC/C</td><td colspan="5">within ±5% of initial value</td></tr>
<tr><td colspan="2">DF</td><td colspan="5">initial limit</td></tr>
<tr><td colspan="2">ESR</td><td colspan="5">1.25 x initial limit</td></tr>
<tr><td rowspan="5">Vibration</td><td rowspan="5">MIL-STD-202, Method 204, Condition D</td><td colspan="2">Visual examination</td><td colspan="5">no visible damage</td></tr>
<tr><td colspan="2">DCL</td><td colspan="5">initial limit</td></tr>
<tr><td colspan="2">ΔC/C</td><td colspan="5">within ±5% of initial value</td></tr>
<tr><td colspan="2">DF</td><td colspan="5">initial limit</td></tr>
<tr><td colspan="2">ESR</td><td colspan="5">1.25 x initial limit</td></tr>
</table>

*Initial Limit

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

<table>
<tr><th>TEST</th><th>Condition</th><th colspan="6">Characteristics</th></tr>
<tr><td rowspan="5">Endurance</td><td rowspan="5">Apply rated voltage (Ur) at 85ºC for 2000 hours through a circuit impedance of ≤0.1Ω/V.</td><td>Visual examination</td><td colspan="5">no visible damage</td></tr>
<tr><td>DCL</td><td colspan="5">1.25 x initial limit</td></tr>
<tr><td>ΔC/C</td><td colspan="5">within +10/-20% of initial value for Vr ≤ 16V
within ±20% of initial value for Vr ≥ 20V</td></tr>
<tr><td>DF</td><td colspan="5">1.5 x initial limit</td></tr>
<tr><td>ESR</td><td colspan="5">2 x initial limit</td></tr>
<tr><td rowspan="5">Storage Life</td><td rowspan="5">Store at 85ºC, no voltage applied, for 2000 hours.</td><td>Visual examination</td><td colspan="5">no visible damage</td></tr>
<tr><td>DCL</td><td colspan="5">1.25 x initial limit</td></tr>
<tr><td>ΔC/C</td><td colspan="5">within +10/-20% of initial value for Vr ≤ 16V
within ±20% of initial value for Vr ≥ 20V</td></tr>
<tr><td>DF</td><td colspan="5">1.5 x initial limit</td></tr>
<tr><td>ESR</td><td colspan="5">2 x initial limit</td></tr>
<tr><td rowspan="5">Humidity</td><td rowspan="5">Store at 65ºC and 95% relative humidity for 500 hours, with no applied voltage.</td><td>Visual examination</td><td colspan="5">no visible damage</td></tr>
<tr><td>DCL</td><td colspan="5">5 x initial limit</td></tr>
<tr><td>ΔC/C</td><td colspan="5">within +40/-20% of initial value</td></tr>
<tr><td>DF</td><td colspan="5">1.5 x initial limit</td></tr>
<tr><td>ESR</td><td colspan="5">2 x initial limit</td></tr>
<tr><td rowspan="6">Temperature Stability</td><td colspan="3"><table><tr><th>Step</th><th>Temperature°C</th><th>Duration(min)</th></tr><tr><td>1</td><td>+20</td><td>15</td></tr><tr><td>2</td><td>-55</td><td>15</td></tr><tr><td>3</td><td>+20</td><td>15</td></tr><tr><td>4</td><td>+85</td><td>15</td></tr><tr><td>5</td><td>+20</td><td>15</td></tr></table></td><td></td><td>+20ºC</td><td>-55ºC</td><td>+20ºC</td><td>+85ºC</td><td>+20ºC</td></tr>
<tr><td>DCL</td><td>IL*</td><td>n/a</td><td>IL*</td><td>10 x IL*</td><td>IL*</td></tr>
<tr><td>ΔC/C</td><td>n/a</td><td>+0/-20%</td><td>±5%</td><td>+20/-0%</td><td>±5%</td></tr>
<tr><td>DF</td><td>IL*</td><td>1.5 x IL*</td><td>IL*</td><td>1.5 x IL*</td><td>IL*</td></tr>
<tr><td colspan="5"></td></tr>
<tr><td colspan="5"></td></tr>
<tr><td rowspan="4">Surge Voltage</td><td rowspan="4">Apply 1.3x rated voltage (Ur) at 85ºC for 1000 cycles of duration 6 min (30 sec charge, 5 min 30 sec discharge) through a charge / discharge resistance of 1000Ω</td><td>Visual examination</td><td colspan="5">no visible damage</td></tr>
<tr><td>DCL</td><td colspan="5">initial limit</td></tr>
<tr><td>ΔC/C</td><td colspan="5">within +10/-20% of initial value for Vr ≤ 16V
within +20/-30% of initial value for Vr ≥ 20V</td></tr>
<tr><td>DF</td><td colspan="5">1.25 x initial limit</td></tr>
<tr><td rowspan="5">Mechanical Shock</td><td rowspan="5">MIL-STD-202, Method 213, Condition C</td><td>Visual examination</td><td colspan="5">no visible damage</td></tr>
<tr><td>DCL</td><td colspan="5">initial limit</td></tr>
<tr><td>ΔC/C</td><td colspan="5">within ±5% of initial value</td></tr>
<tr><td>DF</td><td colspan="5">initial limit</td></tr>
<tr><td>ESR</td><td colspan="5">1.25 x initial limit</td></tr>
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<tr><td>DCL</td><td colspan="5">initial limit</td></tr>
<tr><td>ΔC/C</td><td colspan="5">within ±5% of initial value</td></tr>
<tr><td>DF</td><td colspan="5">initial limit</td></tr>
<tr><td>ESR</td><td colspan="5">1.25 x initial limit</td></tr>
</table>

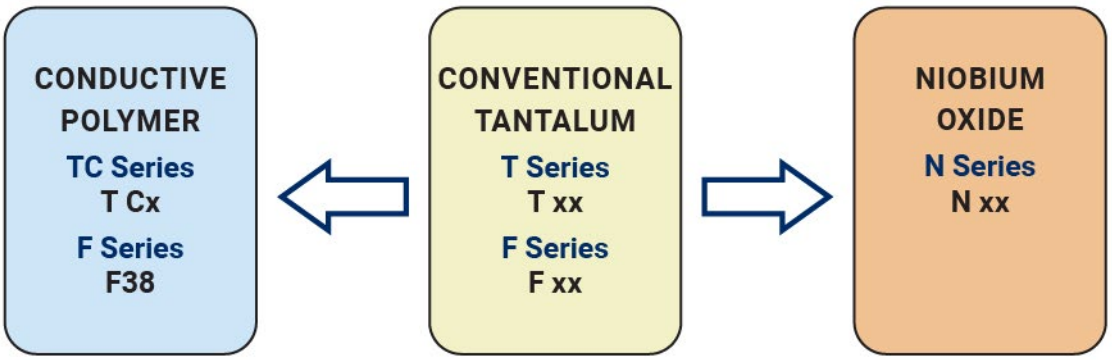
*Initial Limit

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J-CAP™ Series

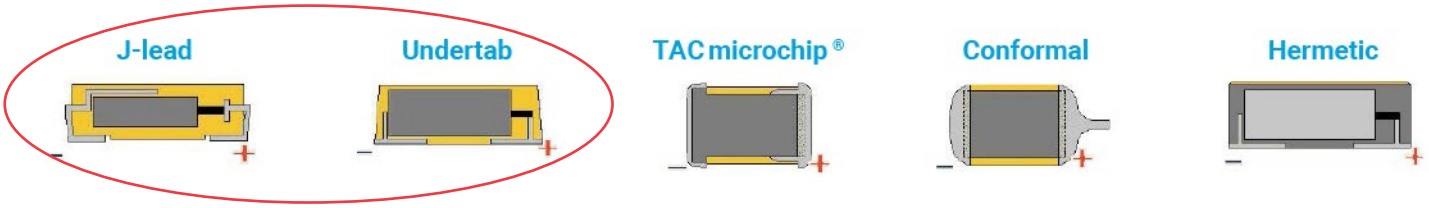
Highest Joules/cc Conductive Polymer Solid Electrolytic Chip Capacitors

SOLID ELECTROLYTIC CAPACITOR ROADMAP

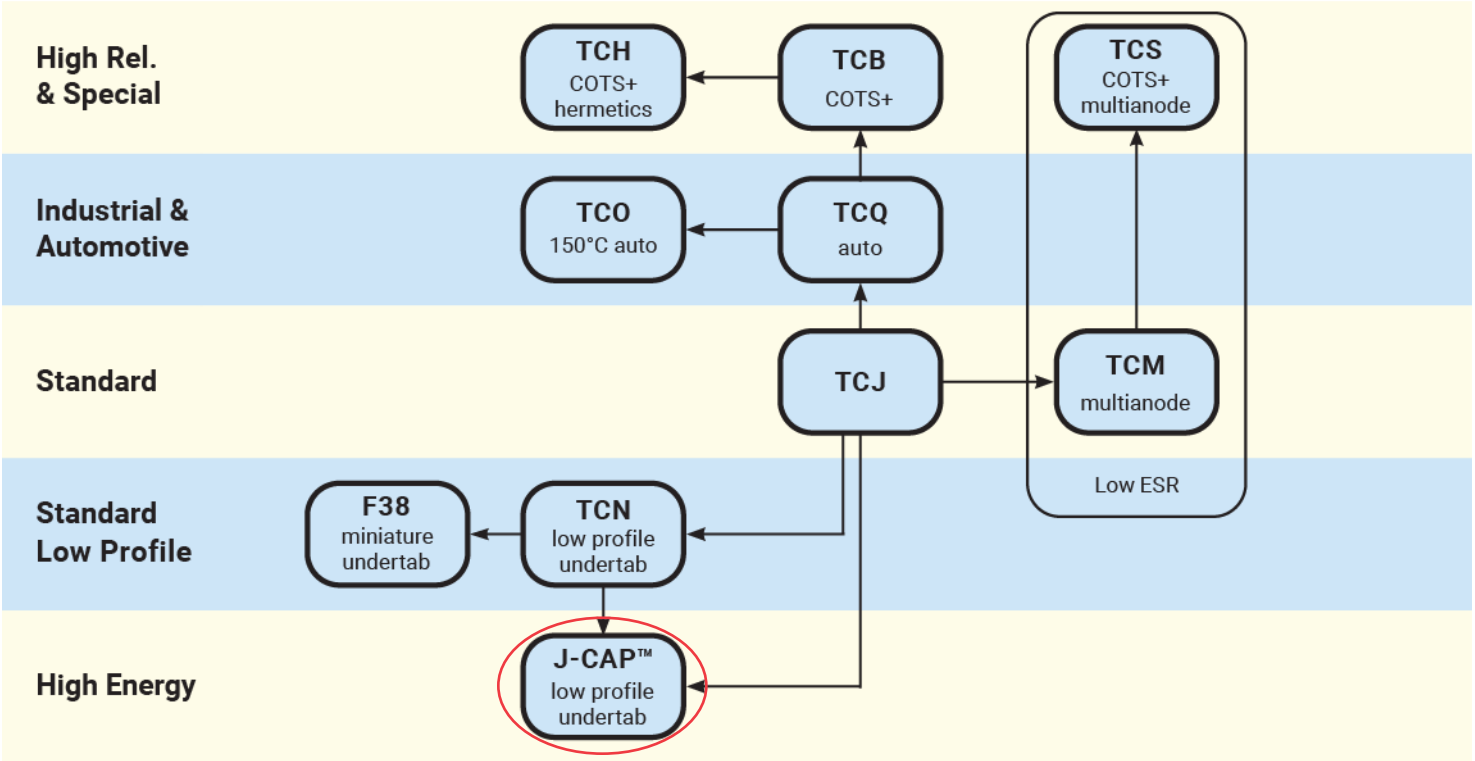




FIVE CAPACITOR CONSTRUCTION STYLES



SERIES LINE UP : Conductive Polymer



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