

# TMJ Tantalum SMD S1gma\*\* Series Capacitors



The AVX S1gma series is offering a next generation of statistical screening and process control enhancement of tantalum capacitors for professional applications with improved reliability and extremely low DCL needs.

## FEATURES

- -55 to +125°C operation temperature
- Basic reliability better than 0.5%/1000 hours
- (2x improvement over commercial series)
- improved DCL limits 0.001CV\* and 0.005CV

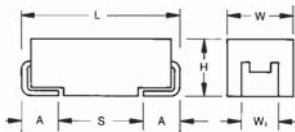
**S1gma Prime** – Utilises 3 S1gma electrical screening to remove possible maverick parts from the distribution.

**S1gma Premium** – S1gma Prime, with addition of capability statistical screening utilising the AVX patented Q-Process to effectively remove components that may experience excessive parametric shifts or instability in operational life.

**S1gma Pro Custom** – A custom option where specific parameter limits and screening methods can be agreed based on 3 S1gma and Q-Process statistical screening based on capability techniques.

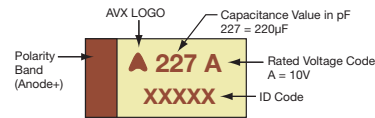
\*selected codes, 0.001CV limit is available with S1gma Premium and Pro Custom options only  
\*\*The S1gma mark has been filed for registration mark on December 6, 2013

## TMJ CONSTRUCTION



## MARKING

### A, B, C, D, E, U CASE



## APPLICATIONS

- Wireless battery operated sensors
- Avionics
- TPM
- Safety systems
- Automotive
- Energy harvesting

## CASE DIMENSIONS: 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.
A	1206	3216-18	3.20 (0.126)	1.60 (0.063)	1.60 (0.063)	1.20 (0.047)	0.80 (0.031)	1.10 (0.043)
B	1210	3528-21	3.50 (0.138)	2.80 (0.110)	1.90 (0.075)	2.20 (0.087)	0.80 (0.031)	1.40 (0.055)
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)
U	2924	7361-43	7.30 (0.287)	6.10 (0.240)	4.10 (0.162)	3.10 (0.120)	1.30 (0.051)	4.40 (0.173)

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

## HOW TO ORDER

<b>TMJ</b>	<b>U</b>	<b>108</b>	<b>K</b>	<b>006</b>	<b>#</b>	<b>C</b>	<b>^</b>	<b>A</b>
<b>Type</b>	<b>Case Size</b> See table above	<b>Capacitance Code</b> pF code: 1st two digits represent significant figures, 3rd digit represents multiplier (number of zeros to follow)	<b>Tolerance</b> K = ±10%	<b>Rated DC Voltage</b> 006 = 6.3Vdc 010 = 10Vdc 016 = 16Vdc 020 = 20Vdc 025 = 25Vdc 035 = 35Vdc 050 = 50Vdc	<b>Packaging</b> R = Pure Tin 7" Reel H = Tin Lead 7" Reel (Contact Manufacturer) Non RoHS	<b>ESR Range</b> C = Standard L = Low ESR	<b>Suffix</b> QX = S1gma Prime QY = S1gma Premium xx = S1gma Pro Custom	<b>DCL</b> A = 0.001CV* C = 0.005CV

## TECHNICAL SPECIFICATIONS

Technical Data:	All technical data relate to an ambient temperature of +25°C								
Capacitance Range:	0.22 µF to 680 µF								
Capacitance Tolerance:	±10%								
Leakage Current DCL:	(A) 0.001CV, (C) 0.005CV								
Rated Voltage (V <sub>R</sub> )	≤ +85°C:	6.3	10	16	20	25	35	50	
Category Voltage (V <sub>C</sub> )	≤ +125°C:	4	7	10	13	17	23	33	
Surge Voltage (V <sub>S</sub> )	≤ +85°C:	8	13	20	26	32	46	65	
Surge Voltage (V <sub>S</sub> )	≤ +125°C:	5	8	13	16	20	28	40	
Temperature Range:	-55°C to +125°C								
Reliability:	0.5% per 1000 hours								
	AEC-Q200 per request								



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

Capacitance		Rated voltage ( $V_R$ ) to 85°C (Voltage Code)						
$\mu\text{F}$	Code	6.3V (J)	10V (A)	16V (C)	20V (D)	25V (E)	35V (V)	50V (T)
0.22	224							A
0.33	334						A	A
0.47	474						A	B
0.68	684						A	B
1.0	105					A	B	C
1.5	155				A	A	B	C
2.2	225			A	A	B	B	C
3.3	335			A	A	B	B	C
4.7	475		A	A	B	B	C	D
6.8	685		A	B	B	C	C	D
10	106	A	A	B	C	C	C	E
15	156	A	B	B	C	C	D	U
22	226	B	B	C	C	D	D	
33	336	B	C	C	D	D	E	
47	476	C	C	D	D	D	U	
68	686	C	C	D	E	U		
100	107	C	D	E	E			
150	157	D	D	E	U			
220	227	D	E	U				
330	337	E	E					
470	477	E	U					
680	687	U						

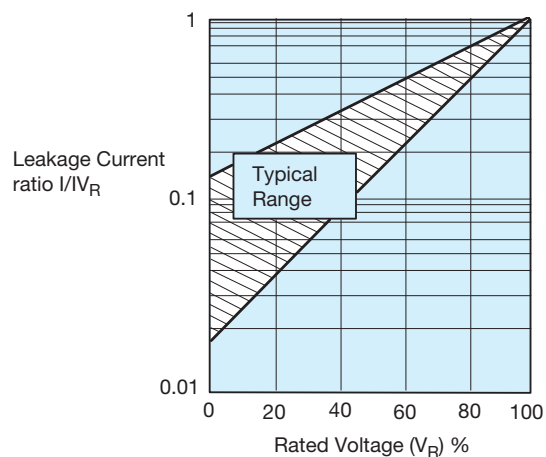
Available Ratings

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.

## LEAKAGE CURRENT vs. RATED VOLTAGE



# TMJ Tantalum SMD S1gma\*\* Series Capacitors



## RATINGS & PART NUMBER REFERENCE

AVX Part No.	Case Size	Capacitance (µF)	Rated Voltage (V)	Rated Temperature (°C)	Category Voltage (V)	Category Temperature (°C)	DCL (µA) Max.	DF % Max.	ESR Max. (mΩ) @ 100kHz	MSL	100kHz RMS Current (mA)		
											25°C	85°C	125°C
<b>6.3 Volt @ 85°C</b>													
TMJA106*006#CQYA	A	10	6.3	85	4	125	0.06	6	1500	3	224	201	89
TMJA106*006#C^C	A	10	6.3	85	4	125	0.3	6	1500	3	224	201	89
TMJA156*006#CQYA	A	15	6.3	85	4	125	0.09	6	1500	3	224	201	89
TMJA156*006#C^C	A	15	6.3	85	4	125	0.45	6	1500	3	224	201	89
TMJB226*006#CQYA	B	22	6.3	85	4	125	0.13	6	600	3	376	339	151
TMJB226*006#C^C	B	22	6.3	85	4	125	0.66	6	600	3	376	339	151
TMJB336*006#CQYA	B	33	6.3	85	4	125	0.20	6	600	3	376	339	151
TMJB336*006#C^C	B	33	6.3	85	4	125	0.99	6	600	3	376	339	151
TMJC476*006#CQYA	C	47	6.3	85	4	125	0.28	6	300	3	606	545	242
TMJC476*006#C^C	C	47	6.3	85	4	125	1.41	6	300	3	606	545	242
TMJC686*006#CQYA	C	68	6.3	85	4	125	0.41	6	300	3	606	545	242
TMJC686*006#C^C	C	68	6.3	85	4	125	2.04	6	300	3	606	545	242
TMJC107*006#CQYA	C	100	6.3	85	4	125	0.60	6	300	3	606	545	242
TMJC107*006#C^C	C	100	6.3	85	4	125	3	6	300	3	606	545	242
TMJD157*006#CQYA	D	150	6.3	85	4	125	0.90	6	200	3	866	779	346
TMJD157*006#C^C	D	150	6.3	85	4	125	4.5	6	200	3	866	779	346
TMJD227*006#CQYA	D	220	6.3	85	4	125	1.32	8	200	3	866	779	346
TMJD227*006#C^C	D	220	6.3	85	4	125	6.6	8	200	3	866	779	346
TMJE337*006#C^C	E	330	6.3	85	4	125	9.9	8	200	3	908	817	363
TMJE477*006#C^C	E	470	6.3	85	4	125	14.1	8	200	3	908	817	363
TMJU687*006#C^C	U	680	6.3	85	4	125	20.4	12	250	3	812	731	325
<b>10 Volt @ 85°C</b>													
TMJA475*010#CQXC	A	4.7	10	85	7	125	0.24	6	2000	3	194	174	77
TMJA685*010#CQYA	A	6.8	10	85	7	125	0.07	6	2000	3	194	174	77
TMJA685*010#C^C	A	6.8	10	85	7	125	0.34	6	2000	3	194	174	77
TMJA106*010#CQYA	A	10	10	85	7	125	0.10	6	2000	3	194	174	77
TMJA106*010#C^C	A	10	10	85	7	125	0.5	6	2000	3	194	174	77
TMJB156*010#CQYA	B	15	10	85	7	125	0.15	6	700	3	348	314	139
TMJB156*010#C^C	B	15	10	85	7	125	0.75	6	700	3	348	314	139
TMJB226*010#CQYA	B	22	10	85	7	125	0.22	6	700	3	348	314	139
TMJB226*010#C^C	B	22	10	85	7	125	1.1	6	700	3	348	314	139
TMJC336*010#CQYA	C	33	10	85	7	125	0.33	6	300	3	606	545	242
TMJC336*010#C^C	C	33	10	85	7	125	1.65	6	300	3	606	545	242
TMJC476*010#CQYA	C	47	10	85	7	125	0.47	6	300	3	606	545	242
TMJC476*010#C^C	C	47	10	85	7	125	2.35	6	300	3	606	545	242
TMJC686*010#CQYA	C	68	10	85	7	125	0.68	6	300	3	606	545	242
TMJC686*010#C^C	C	68	10	85	7	125	3.4	6	300	3	606	545	242
TMJD107*010#CQYA	D	100	10	85	7	125	1.00	6	150	3	1000	900	400
TMJD107*010#C^C	D	100	10	85	7	125	5.00	6	150	3	1000	900	400
TMJD157*010#CQYA	D	150	10	85	7	125	1.50	8	150	3	1000	900	400
TMJD157*010#C^C	D	150	10	85	7	125	7.50	8	150	3	1000	900	400
TMJE227*010#CQYA	E	220	10	85	7	125	2.20	8	150	3	1049	944	420
TMJE227*010#C^C	E	220	10	85	7	125	11	8	150	3	1049	944	420
TMJE337*010#C^C	E	330	10	85	7	125	16.5	8	150	3	1049	944	420
TMJU477*010#C^C	U	470	10	85	7	125	23.5	12	200	3	908	817	363
<b>16 Volt @ 85°C</b>													
TMJA225*016#CQXC	A	2.2	16	85	10	125	0.18	6	3500	3	146	132	59
TMJA335*016#CQXC	A	3.3	16	85	10	125	0.26	6	3500	3	146	132	59
TMJA475*016#CQYA	A	4.7	16	85	10	125	0.08	6	3500	3	146	132	59
TMJA475*016#C^C	A	4.7	16	85	10	125	0.38	6	3500	3	146	132	59
TMJB685*016#CQYA	B	6.8	16	85	10	125	0.11	6	1200	3	266	240	106
TMJB685*016#C^C	B	6.8	16	85	10	125	0.54	6	1200	3	266	240	106
TMJB106*016#CQYA	B	10	16	85	10	125	0.16	6	1200	3	266	240	106
TMJB106*016#C^C	B	10	16	85	10	125	0.80	6	1200	3	266	240	106
TMJB156*016#CQYA	B	15	16	85	10	125	0.24	6	1200	3	266	240	106
TMJB156*016#C^C	B	15	16	85	10	125	1.20	6	1200	3	266	240	106
TMJC226*016#CQYA	C	22	16	85	10	125	0.35	6	350	3	561	505	224
TMJC226*016#C^C	C	22	16	85	10	125	1.76	6	350	3	561	505	224
TMJC336*016#CQYA	C	33	16	85	10	125	0.53	6	350	3	561	505	224
TMJC336*016#C^C	C	33	16	85	10	125	2.64	6	350	3	561	505	224
TMJD476*016#CQYA	D	47	16	85	10	125	0.75	6	200	3	866	779	346
TMJD476*016#C^C	D	47	16	85	10	125	3.76	6	200	3	866	779	346
TMJD686*016#CQYA	D	68	16	85	10	125	1.09	6	200	3	866	779	346
TMJD686*016#C^C	D	68	16	85	10	125	5.44	6	200	3	866	779	346
TMJE107*016#CQYA	E	100	16	85	10	125	1.60	6	150	3	1049	944	420
TMJE107*016#C^C	E	100	16	85	10	125	8.00	6	150	3	1049	944	420
TMJE157*016#CQYA	E	150	16	85	10	125	2.40	6	150	3	1049	944	420
TMJE157*016#C^C	E	150	16	85	10	125	12	6	150	3	1049	944	420
TMJU227*016#C^C	U	220	16	85	10	125	17.6	1	200	3	908	817	363



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## RATINGS & PART NUMBER REFERENCE

AVX Part No.	Case Size	Capacitance (µF)	Rated Voltage (V)	Rated Temperature (°C)	Category Voltage (V)	Category Temperature (°C)	DCL (µA) Max.	DF % Max.	ESR Max. (mΩ) @ 100kHz	MSL	100kHz RMS Current (mA)		
											25°C	85°C	125°C
<b>20 Volt @ 85°C</b>													
TMJA155*020#CQXC	A	1.5	20	85	13	125	0.15	6	3000	3	158	142	63
TMJA225*020#CQXC	A	2.2	20	85	13	125	0.22	6	3000	3	158	142	63
TMJA335*020#CQYA	A	3.3	20	85	13	125	0.07	6	3000	3	158	142	63
TMJA335*020#C^C	A	3.3	20	85	13	125	0.33	6	3000	3	158	142	63
TMJB475*020#CQYA	B	4.7	20	85	13	125	0.09	6	1000	3	292	262	117
TMJB475*020#C^C	B	4.7	20	85	13	125	0.47	6	1000	3	292	262	117
TMJB685*020#CQYA	B	6.8	20	85	13	125	0.14	6	1000	3	292	262	117
TMJB685*020#C^C	B	6.8	20	85	13	125	0.68	6	1000	3	292	262	117
TMJC106*020#CQYA	C	10	20	85	13	125	0.20	6	500	3	469	422	188
TMJC106*020#C^C	C	10	20	85	13	125	1	6	500	3	469	422	188
TMJC156*020#CQYA	C	15	20	85	13	125	0.30	6	500	3	469	422	188
TMJC156*020#C^C	C	15	20	85	13	125	1.5	6	500	3	469	422	188
TMJC226*020#CQYA	C	22	20	85	13	125	0.44	6	500	3	469	422	188
TMJC226*020#C^C	C	22	20	85	13	125	2.2	6	500	3	469	422	188
TMJD336*020#CQYA	D	33	20	85	13	125	0.6	6	250	3	775	697	310
TMJD336*020#C^C	D	33	20	85	13	125	3.3	6	250	3	775	697	310
TMJD476*020#CQYA	D	47	20	85	13	125	0.94	6	250	3	775	697	310
TMJD476*020#C^C	D	47	20	85	13	125	4.70	6	250	3	775	697	310
TMJE686*020#C^C	E	68	20	85	13	125	6.8	6	200	3	908	817	363
TMJE107*020#C^C	E	100	20	85	13	125	10	6	200	3	908	817	363
TMJU157*020#CQXC	U	150	20	85	13	125	15	12	250	3	812	731	325
<b>25 Volt @ 85°C</b>													
TMJA105*025#CQXC	A	1	25	85	17	125	0.13	4	3000	3	158	142	63
TMJA155*025#CQXC	A	1.5	25	85	17	125	0.19	6	3000	3	158	142	63
TMJB225*025#CQYA	B	2.2	25	85	17	125	0.06	6	2000	3	206	186	82
TMJB225*025#C^C	B	2.2	25	85	17	125	0.28	6	2000	3	206	186	82
TMJB335*025#CQYA	B	3.3	25	85	17	125	0.08	6	2000	3	206	186	82
TMJB335*025#C^C	B	3.3	25	85	17	125	0.41	6	2000	3	206	186	82
TMJB475*025#CQYA	B	4.7	25	85	17	125	0.12	6	2000	3	206	186	82
TMJB475*025#C^C	B	4.7	25	85	17	125	0.59	6	2000	3	206	186	82
TMJC685*025#CQYA	C	6.8	25	85	17	125	0.17	6	600	3	428	385	171
TMJC685*025#C^C	C	6.8	25	85	17	125	0.85	6	600	3	428	385	171
TMJC106*025#CQYA	C	10	25	85	17	125	0.25	6	600	3	428	385	171
TMJC106*025#C^C	C	10	25	85	17	125	1.25	6	600	3	428	385	171
TMJC156*025#CQYA	C	15	25	85	17	125	0.38	6	600	3	428	385	171
TMJC156*025#C^C	C	15	25	85	17	125	1.88	6	600	3	428	385	171
TMJD226*025#CQYA	D	22	25	85	17	125	0.55	6	400	3	612	551	245
TMJD226*025#C^C	D	22	25	85	17	125	2.75	6	400	3	612	551	245
TMJD336*025#CQYA	D	33	25	85	17	125	0.83	6	400	3	612	551	245
TMJD336*025#C^C	D	33	25	85	17	125	4.13	6	400	3	612	551	245
TMJD476*025#CQYA	D	47	25	85	17	125	1.18	6	400	3	612	551	245
TMJD476*025#C^C	D	47	25	85	17	125	5.88	6	400	3	612	551	245
TMJU686*025#CQXC	U	68	25	85	17	125	8.5	12	450	3	606	545	242
TMJU107*025#CQXC	U	100	25	85	17	125	12.5	12	450	3	606	545	242
<b>35 Volt @ 85°C</b>													
TMJA334*035#CQXC	A	0.33	35	85	23	125	0.06	4	6000	3	112	101	45
TMJA474*035#CQXC	A	0.47	35	85	23	125	0.08	4	6000	3	112	101	45
TMJA684*035#CQXC	A	0.68	35	85	23	125	0.12	4	6000	3	112	101	45
TMJB105*035#CQXC	B	1	35	85	23	125	0.18	4	2500	3	184	166	74
TMJB155*035#C^C	B	1.5	35	85	23	125	0.26	6	2500	3	184	166	74
TMJB225*035#C^C	B	2.2	35	85	23	125	0.39	6	2500	3	184	166	74
TMJB335*035#CQYA	B	3.3	35	85	23	125	0.12	6	2500	3	184	166	74
TMJB335*035#C^C	B	3.3	35	85	23	125	0.58	6	2500	3	184	166	74
TMJC475*035#CQYA	C	4.7	35	85	23	125	0.16	6	600	3	428	385	171
TMJC475*035#C^C	C	4.7	35	85	23	125	0.82	6	600	3	428	385	171
TMJC685*035#CQYA	C	6.8	35	85	23	125	0.24	6	600	3	428	385	171
TMJC685*035#C^C	C	6.8	35	85	23	125	1.19	6	600	3	428	385	171
TMJC106*035#CQYA	C	10	35	85	23	125	0.35	6	600	3	428	385	171
TMJC106*035#C^C	C	10	35	85	23	125	1.75	6	600	3	428	385	171
TMJD156*035#CQYA	D	15	35	85	23	125	0.53	6	400	3	612	551	245
TMJD156*035#C^C	D	15	35	85	23	125	2.63	6	400	3	612	551	245
TMJD226*035#CQYA	D	22	35	85	23	125	0.77	6	400	3	612	551	245
TMJD226*035#C^C	D	22	35	85	23	125	3.85	6	400	3	612	551	245
TMJE336*035#C^C	E	33	35	85	23	125	5.78	6	250	3	812	731	325
TMJU476*035#CQXC	U	47	35	85	23	125	8.23	12	300	3	742	667	297
<b>50 Volt @ 85°C</b>													
TMJA224*050#CQXC	A	0.22	50	85	33	125	0.06	4	7000	3	104	93	41
TMJA334*050#CQXC	A	0.33	50	85	33	125	0.08	4	7000	3	104	93	41
TMJB474*050#CQXC	B	0.47	50	85	33	125	0.12	4	2000	3	206	186	82
TMJB684*050#CQXC	B	0.68	50	85	33	125	0.17	4	2000	3	206	186	82



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## RATINGS & PART NUMBER REFERENCE

AVX Part No.	Case Size	Capacitance (µF)	Rated Voltage (V)	Rated Temperature (°C)	Category Voltage (V)	Category Temperature (°C)	DCL (µA) Max.	DF % Max.	ESR Max. (mΩ) @ 100kHz	MSL	100kHz RMS Current (mA)		
											25°C	85°C	125°C
TMJC105*050#C^C	C	1	50	85	33	125	0.25	4	1500	3	271	244	108
TMJC155*050#C^C	C	1.5	50	85	33	125	0.38	6	1500	3	271	244	108
TMJC225*050#C^C	C	2.2	50	85	33	125	0.55	6	1500	3	271	244	108
TMJC335*050#CQYA	C	3.3	50	85	33	125	0.17	6	1500	3	271	244	108
TMJC335*050#C^C	C	3.3	50	85	33	125	0.83	6	1500	3	271	244	108
TMJD475*050#CQYA	D	4.7	50	85	33	125	0.24	4.5	600	3	500	450	200
TMJD475*050#C^C	D	4.7	50	85	33	125	1.18	4.5	600	3	500	450	200
TMJD685*050#CQYA	D	6.8	50	85	33	125	0.34	4.5	600	3	500	450	200
TMJD685*050#C^C	D	6.8	50	85	33	125	1.7	4.5	600	3	500	450	200
TMJE106*050#C^C	E	10	50	85	33	125	2.5	4.5	400	3	642	578	257
TMJU156*050#CQXC	U	15	50	85	33	125	3.75	12	450	3	606	545	242
TMJU226*050#CQXC	U	22	50	85	33	125	5.5	12	450	3	606	545	242

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, 0.5V RMS with a maximum DC bias of 2.2 volts. DCL is measured at rated voltage after 5 minutes.

The EIA & CECC standards for low ESR Solid Tantalum Capacitors allow an ESR movement to 1.25 times catalogue limit post mounting.

**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.**

## QUALIFICATION TABLE

TEST	TMJ S1gma series (Temperature range -55°C to +125°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 of 125°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 ±10% of initial value						
				DF	initial limit						
				ESR	1.25 x initial limit						
Storage Life	125°C, 0V, 2000h			Visual examination	no visible damage						
				DCL	1.25 x initial limit						
				ΔC/C	within ±10% of initial value						
				DF	initial limit						
				ESR	1.25 x initial limit						
Humidity	Determine after storage without applied voltage at 65±2°C and 90-95% relative humidity for 500 hours and then recovery 1-2 hours at room temperature.			Visual examination	no visible damage						
				DCL	1.5 x initial limit						
				ΔC/C	within ±10% of initial value						
				DF	1.2 x initial limit						
				ESR	1.25 x initial limit						
Biased Humidity	Determine after leaving for 1000 hours at 85±2°C, 85% relative humidity and rated voltage and then recovery 1-2 hours at room temperature.			Visual examination	no visible damage						
				DCL	2 x initial limit						
				ΔC/C	within ±10% of initial value						
				DF	1.2 x initial limit						
				ESR	1.25 x initial limit						
Temperature Stability	Step	Temperature°C	Duration(min)		+20°C	-55°C	+20°C	+85°C	+125°C	+20°C	
	1	+20±2	15	DCL	IL*	n/a	IL*	10 x IL*	12.5 x IL*	IL*	
	2	-55+0/-3	15	ΔC/C	n/a	+0/-10%	±5%	+10/-0%	+12/-0%	±5%	
	3	+20±2	15	DF	IL*	1.5 x IL*	IL*	1.5 x IL*	2 x IL*	IL*	
	4	+85+3/-0	15								
	5	+125+3/-0	15	ESR	1.25 x IL*	2.5 x IL*	1.25 x IL*	1.25 x IL*	1.25 x IL*	1.25 x IL*	
6	+20±2	15									
Surge Voltage	Test temperature: 125°C+3/0°C Test voltage: Category voltage at 125°C Surge voltage: 1.3 x category voltage at 125°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 ±5% of initial value						
				DF	initial limit						
				ESR	1.25 x initial limit						

\*Initial Limit

