



**THE DATASHEET OF
TACL4R7M10RTA**



Standard and Low Profile Tantalum Microchip Capacitors



FEATURES

- The world's smallest surface mount tantalum capacitor
- CV range: 0.10-150µF / 2-25V
- 11 case sizes available, standard and low profile

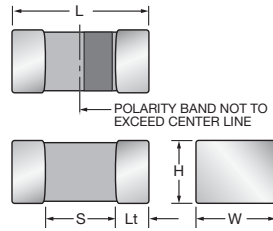


LEAD-FREE

LEAD-FREE COMPATIBLE COMPONENT

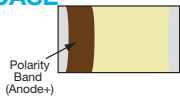
APPLICATIONS

- Hearing Aids, Non-life support medical, Long life miniature designs
- Industrial and hand-held and wearable applications



MARKING

A, B, H, I, J, K, L, R, T, U, V CASE



STANDARD CASE DIMENSIONS: millimeters (inches)

Code	EIA Code	EIA Metric	L+0.20 (0.008) -0.00 (0.000)	W+0.15 (0.006) -0.00 (0.000)	H+0.15 (0.006) -0.00 (0.000)	Termination Spacing(S)	Minimum Termination Length (Lt)
A	1206	3216-18	3.20 ± 0.20 (0.126 ± 0.008)	1.60 ± 0.20 (0.063 ± 0.008)	1.60 ± 0.20 (0.063 ± 0.008)	1.80 (0.071) min	0.15 (0.006)
B	1210	3528-15	3.50 ± 0.20 (0.138 ± 0.008)	2.80 +0.20 -0.10 +0.008 -0.004 (0.110)	1.50 (0.059) max	2.00 (0.079) min	0.15 (0.006)
K	0402	1005-07	1.00 (0.039)	0.50 +0.20 -0.00 +0.008 -0.000 (0.020)	0.50 +0.20 -0.00 +0.008 -0.000 (0.020)	0.40 (0.016) min	0.10 (0.004)
L	0603	1608-10	1.60 (0.063)	0.85 (0.033)	0.85 (0.033)	0.55 (0.022) min	0.15 (0.006)
R	0805	2012-15	2.00 (0.079)	1.35 (0.053)	1.35 (0.053)	0.70 (0.028) min	0.15 (0.006)

LOW PROFILE CASE DIMENSIONS: millimeters (inches)

Code	EIA Code	EIA Metric	L+0.20 (0.008) -0.00 (0.000)	W+0.15 (0.006) -0.00 (0.000)	H max	Termination Spacing(S)	Minimum Termination Length (Lt)
H	0805	2012-10	2.00 (0.079)	1.35 (0.053)	1.00 (0.039)	0.70 (0.028) min	0.15 (0.006)
I	1206	3216-05	3.20±0.20 (0.126±0.008)	1.60±0.20 (0.063±0.008)	0.50 (0.020)	1.80 (0.071) min.	0.15 (0.006)
J	0603	1608-08	1.60 (0.063)	0.85 (0.033)	0.75 (0.030)	0.55 (0.022) min	0.15 (0.006)
T	1210	3528-12	3.50 ± 0.20 (0.138 ± 0.008)	2.80 +0.20 -0.10 +0.008 -0.004 (0.110)	1.20 (0.047)	2.00 (0.079) min	0.15 (0.006)
U	0805	2012-06	2.00 (0.079)	1.35 (0.053)	0.60 (0.024)	0.70 (0.028) min	0.15 (0.006)
V	1206	3216-08	3.20 ± 0.20 (0.126 ± 0.008)	1.60 ± 0.20 (0.063 ± 0.008)	0.75 (0.030)	1.80 (0.071) min	0.15 (0.006)

HOW TO ORDER

TAC	L	226	*	004	R	TA
Type	Case Size	Capacitance Code	Tolerance	Rated DC Voltage	Packaging	Alternative characters may be used for special requirements
TACmicrochip®	See table above	pF code: 1st two digits represent significant figures, 3rd digit represents multiplier (number of zeros to follow)	K=±10% M=±20%	002=2Vdc 003=3Vdc 004=4Vdc 006=6.3Vdc 010=10Vdc 016=16Vdc 020=20Vdc 025=25Vdc	R, P = 7" Standard Tin Termination Plastic Tape X, Q = 4 1/4" Standard Tin Termination Plastic Tape A, M = 7" Gold Termination Plastic Tape F, N = 4 1/4" Gold Termination Plastic Tape	

TECHNICAL SPECIFICATIONS

Technical Data:	All technical data relate to an ambient temperature of +25°C								
Capacitance Range:	0.10 µF to 150 µF								
Capacitance Tolerance:	±10%; ±20%								
Leakage Current DCL:	0.01CV or 0.5µA whichever is the greater								
Rated Voltage (V _R)	≤ +85°C:	2	3	4	6.3	10	16	20	25
Category Voltage (V _C)	≤ +125°C:	1.3	2	2.7	4	7	10	13	17
Surge Voltage (V _S)	≤ +85°C:	2.7	3.9	5.2	8	13	20	26	32
Surge Voltage (V _S)	≤ +125°C:	1.7	2.6	3.2	5	8	12	16	20
Temperature Range:	-55°C to +125°C								
Reliability:	1% per 1000 hours at 85°C, V _R with 0.1Ω/V series impedance, 60% confidence level								
Termination Finish:	Tin Plating over Nickel (standard), Gold Plating over Nickel option available upon request								

Standard and Low Profile Tantalum Microchip Capacitors

STANDARD MICROCHIP CAPACITANCE AND RATED VOLTAGE RANGE (LETTER DENOTES CASE SIZE)

Capacitance		Voltage Rating DC (V _R) at 85°C							
µF	Code	2.0V	3.0V	4.0V	6.3V	10V	16V	20V	25V
0.10	104						K		
0.15	154					K	K		
0.22	224					K	K	K	
0.33	334					K	K		
0.47	474					K/L	L		
0.68	684					K/L	L		
1.0	105				K/L	K/L/R	L		R
1.5	155			L	L	L	L		
2.2	225		K/L	L	K/L	L	L		
3.3	335	K/L	K/L	L	L	L/R		R	
4.7	475	K/L	K/L	L	L	L/R		R	
6.8	685	K/L	L	L	L/R	L/R		R	
10	106	K/L	L	L/R	L/R	L/R	R		
15	156		R	L/R	L/R	R			
22	226	R	L/R	L/R	R	R			
33	336	R	R	R	R	A/R			
47	476	R	R	R	A/R	B			
68	686	R	A/R	A					
100	107		A/R	A/R	A				
150	157	A							
220	227								

LOW PROFILE MICROCHIP CAPACITANCE AND RATED VOLTAGE RANGE (LETTER DENOTES CASE SIZE)

Capacitance		Voltage Rating DC (V _R) at 85°C					
µF	Code	2.0V	3.0V	4.0V	6.3V	10V	16V
1.0	105						U
1.5	155						
2.2	225					U	
3.3	335				U		
4.7	475			U			
6.8	685						
10	106	U		J	^(M) H	H/V	
15	156				H	V	
22	226				H		
33	336			H			
47	476		H			T	
68	686					T	
100	107					T	

Released ratings ^(M tolerance only)

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.

RATINGS & PART NUMBER REFERENCE

AVX Part No.	Case Size	Capacitance (µF)	Rated Voltage (V)	Rated Temperature (°C)	Category Voltage (V)	Category Temperature (°C)	DCL Max. (µA)	DF Max. (%)	ESR Max. @ 100kHz (Ω)	100kHz RMS Current (mA)			Product Category	MSL
										25°C	85°C	125°C		
2 Volt @ 85°C														
TACK335*002#TA	K	3.3	2	85	1.3	125	0.5	8	15	32	28	13	3	1
TACL335*002#TA	L	3.3	2	85	1.3	125	0.5	6	7.5	58	52	23	2	1
TACK475*002#TA	K	4.7	2	85	1.3	125	0.5	12	15	32	28	13	3	1
TACL475*002#TA	L	4.7	2	85	1.3	125	0.5	6	7.5	58	52	23	1	1
TACK685*002#TA	K	6.8	2	85	1.3	125	0.5	20	15	32	28	13	3	1
TACL685*002#TA	L	6.8	2	85	1.3	125	0.5	6	7.5	58	52	23	2	1
TACK106*002#TA	K	10	2	85	1.3	125	0.5	15	15	32	28	13	3	1
TACL106*002#TA	L	10	2	85	1.3	125	0.5	10	7.5	58	52	23	3	1
TACU106*002#TA	U	10	2	85	1.3	125	0.5	8	5	84	75	33	1	1
TACR226*002#TA	R	22	2	85	1.3	125	0.5	8	5	95	85	38	1	1
TACR336*002#TA	R	33	2	85	1.3	125	0.7	10	5	95	85	38	2	1
TACR476*002#TA	R	47	2	85	1.3	125	0.9	10	5	95	85	38	2	1
TACR686*002#TA	R	68	2	85	1.3	125	1.4	14	5	95	85	38	2	1
TACA157*002#TA	A	150	2	85	1.3	125	3	20	1	200	180	80	2	1
3 Volt @ 85°C														
TACK225*003#TA	K	2.2	3	85	2	125	0.5	6	15	32	28	13	2	1
TACL225*003#TA	L	2.2	3	85	2	125	0.5	6	7.5	58	52	23	1	1
TACK335*003#TA	K	3.3	3	85	2	125	0.5	8	15	32	28	13	3	1
TACL335*003#TA	L	3.3	3	85	2	125	0.5	6	7.5	58	52	23	2	1
TACK475*003#TA	K	4.7	3	85	2	125	0.5	12	15	32	28	13	3	1
TACL475*003#TA	L	4.7	3	85	2	125	0.5	6	7.5	58	52	23	1	1
TACL685*003#TA	L	6.8	3	85	2	125	0.5	6	7.5	58	52	23	2	1
TACL106*003#TA	L	10	3	85	2	125	0.5	10	7.5	58	52	23	3	1
TACR156*003#TA	R	15	3	85	2	125	0.5	8	5	95	85	38	1	1
TACL226*003#TA	L	22	3	85	2	125	0.7	20	7.5	58	52	23	3	1
TACR226*003#TA	R	22	3	85	2	125	0.7	8	5	95	85	38	1	1
TACR336*003#TA	R	33	3	85	2	125	1	10	5	95	85	38	2	1
TACH476*003#TA	H	47	3	85	2	125	1.4	20	5	89	80	36	3	1
TACR476*003#TA	R	47	3	85	2	125	1.5	10	5	95	85	38	2	1
TACA686*003#TA	A	68	3	85	2	125	2	15	2	141	127	57	1	1
TACR686*003#TA	R	68	3	85	2	125	2	14	5	95	85	38	3	1
TACA107*003#TA	A	100	3	85	2	125	3	15	1	200	180	80	2	1
TACR107*003#TA	R	100	3	85	2	125	3	30	5	95	85	38	3	1
4 Volt @ 85°C														
TACL155*004#TA	L	1.5	4	85	2.7	125	0.5	6	7.5	58	52	23	1	1
TACL225*004#TA	L	2.2	4	85	2.7	125	0.5	6	7.5	58	52	23	1	1
TACL335*004#TA	L	3.3	4	85	2.7	125	0.5	6	7.5	58	52	23	2	1
TACL475*004#TA	L	4.7	4	85	2.7	125	0.5	6	7.5	58	52	23	1	1
TACU475*004#TA	U	4.7	4	85	2.7	125	0.5	8	5	84	75	33	1	1
TACL685*004#TA	L	6.8	4	85	2.7	125	0.5	8	7.5	58	52	23	2	1
TACJ106*004#TA	J	10	4	85	2.7	125	0.5	20	7.5	52	46	21	3	1
TACL106*004#TA	L	10	4	85	2.7	125	0.5	10	7.5	58	52	23	2	1
TACR106*004#TA	R	10	4	85	2.7	125	0.5	8	5	95	85	38	1	1
TACL156*004#TA	L	15	4	85	2.7	125	0.6	20	7.5	58	52	23	3	1
TACR156*004#TA	R	15	4	85	2.7	125	0.6	8	5	95	85	38	1	1
TACL226*004#TA	L	22	4	85	2.7	125	0.9	20	7.5	58	52	23	3	1
TACR226*004#TA	R	22	4	85	2.7	125	0.9	8	5	95	85	38	1	1
TACH336*004#TA	H	33	4	85	2.7	125	1.3	14	5	89	80	36	2	1
TACR336*004#TA	R	33	4	85	2.7	125	1.3	10	5	95	85	38	2	1
TACR476*004#TA	R	47	4	85	2.7	125	1.9	14	5	95	85	38	3	1
TACA686*004#TA	A	68	4	85	2.7	125	2.7	15	1	200	180	80	1	1
TACA107*004#TA	A	100	4	85	2.7	125	4	20	1	200	180	80	2	1
TACR107*004#TA	R	100	4	85	2.7	125	4	30	5	95	85	38	3	1
6.3 Volt @ 85°C														
TACK105*006#TA	K	1	6.3	85	4	125	0.5	6	15	32	28	13	2	1
TACL105*006#TA	L	1	6.3	85	4	125	0.5	6	7.5	58	52	23	1	1
TACL155*006#TA	L	1.5	6.3	85	4	125	0.5	6	7.5	58	52	23	1	1
TACK225*006#TA	K	2.2	6.3	85	4	125	0.5	8	15	32	28	13	3	1
TACL225*006#TA	L	2.2	6.3	85	4	125	0.5	6	7.5	58	52	23	1	1
TACL335*006#TA	L	3.3	6.3	85	4	125	0.5	6	7.5	58	52	23	2	1
TACU335*006#TA	U	3.3	6.3	85	4	125	0.5	8	5	84	75	33	1	1
TACL475*006#TA	L	4.7	6.3	85	4	125	0.5	8	7.5	58	52	23	2	1
TACL685*006#TA	L	6.8	6.3	85	4	125	0.5	10	7.5	58	52	23	2	1
TACR685*006#TA	R	6.8	6.3	85	4	125	0.5	8	5	95	85	38	1	1
TACL106M006#TA	I	10	6.3	85	4	125	0.6	20	5	84	75	33	2	1
TACL106*006#TA	L	10	6.3	85	4	125	0.6	10	6	65	58	26	2	1
TACR106*006#TA	R	10	6.3	85	4	125	0.6	8	5	95	85	38	1	1
TACH156*006#TA	H	15	6.3	85	4	125	0.9	8	5	89	80	36	3	1
TACL156*006#TA	L	15	6.3	85	4	125	0.9	20	7.5	58	52	23	3	1
TACR156*006#TA	R	15	6.3	85	4	125	0.9	8	5	95	85	38	1	1

RATINGS & PART NUMBER REFERENCE

AVX Part No.	Case Size	Capacitance (µF)	Rated Voltage (V)	Rated Temperature (°C)	Category Voltage (V)	Category Temperature (°C)	DCL Max. (µA)	DF Max. (%)	ESR Max. @ 100kHz (Ω)	100kHz RMS Current (mA)			Product Category	MSL
										25°C	85°C	125°C		
TACH226*006#TA	H	22	6.3	85	4	125	1.4	10	5	89	80	36	2	1
TACR226*006#TA	R	22	6.3	85	4	125	1.4	10	5	95	85	38	1	1
TACR336*006#TA	R	33	6.3	85	4	125	2.1	12	5	95	85	38	2	1
TACA476*006#TA	A	47	6.3	85	4	125	3	15	1	200	180	80	1	1
TACR476*006#TA	R	47	6.3	85	4	125	3	20	5	95	85	38	3	1
TACT686*006#TA	T	68	6.3	85	4	125	4.3	15	1	200	180	80	2	1
TACA107*006#TA	A	100	6.3	85	4	125	6.3	20	1	200	180	80	2	1
TACT107*006#TA	T	100	6.3	85	4	125	6.3	12	1	200	180	80	2	1
10 Volt @ 85°C														
TACK154*010#TA	K	0.15	10	85	7	125	0.5	6	40	19	17	8	1	1
TACK224*010#TA	K	0.22	10	85	7	125	0.5	6	30	22	20	9	1	1
TACK334*010#TA	K	0.33	10	85	7	125	0.5	6	20	27	25	11	1	1
TACK474*010#TA	K	0.47	10	85	7	125	0.5	6	15	32	28	13	1	1
TACL474*010#TA	L	0.47	10	85	7	125	0.5	6	7.5	58	52	23	1	1
TACK684*010#TA	K	0.68	10	85	7	125	0.5	8	15	32	28	13	2	1
TACL684*010#TA	L	0.68	10	85	7	125	0.5	6	7.5	58	52	23	1	1
TACK105*010#TA	K	1	10	85	7	125	0.5	6	15	32	28	13	2	1
TACL105*010#TA	L	1	10	85	7	125	0.5	6	7.5	58	52	23	1	1
TACR105*010#TA	R	1	10	85	7	125	0.5	6	7	80	72	32	1	1
TACL155*010#TA	L	1.5	10	85	7	125	0.5	6	7.5	58	52	23	1	1
TACL225*010#TA	L	2.2	10	85	7	125	0.5	6	7.5	58	52	23	1	1
TACU225*010#TA	U	2.2	10	85	7	125	0.5	8	5	84	75	33	1	1
TACL335*010#TA	L	3.3	10	85	7	125	0.5	8	7.5	58	52	23	2	1
TACR335*010#TA	R	3.3	10	85	7	125	0.5	8	5	95	85	38	1	1
TACL475*010#TA	L	4.7	10	85	7	125	0.5	10	6	65	58	26	2	1
TACR475*010#TA	R	4.7	10	85	7	125	0.5	8	6	87	78	35	1	1
TACL685*010#TA	L	6.8	10	85	7	125	0.7	20	7.5	58	52	23	3	1
TACR685*010#TA	R	6.8	10	85	7	125	0.7	8	5	95	85	38	1	1
TACH106*010#TA	H	10	10	85	7	125	1.0	8	5	89	80	36	2	1
TACL106*010#TA	L	10	10	85	7	125	1	20	7.5	58	52	23	3	1
TACR106*010#TA	R	10	10	85	7	125	1	8	5	95	85	38	1	1
TACV106*010#TA	V	10	10	85	7	125	1.0	10	2	132	119	53	2	1
TACR156*010#TA	R	15	10	85	7	125	1.5	10	5	95	85	38	1	1
TACV156*010#TA	V	15	10	85	7	125	1.5	10	2	132	119	53	2	1
TACR226*010#TA	R	22	10	85	7	125	2.2	14	5	95	85	38	2	1
TACA336*010#TA	A	33	10	85	7	125	3.3	12	1	200	180	80	1	1
TACR336*010#TA	R	33	10	85	7	125	3.3	20	5	95	85	38	3	1
TACB476*010#TA	B	47	10	85	7	125	4.7	15	1	200	180	80	1	1
TACT476*010#TA	T	47	10	85	7	125	4.7	12	1	200	180	80	1	1
16 Volt @ 85°C														
TACK104*016#TA	K	0.1	16	85	10	125	0.5	6	40	19	17	8	1	1
TACK154*016#TA	K	0.15	16	85	10	125	0.5	6	30	22	20	9	1	1
TACK224*016#TA	K	0.22	16	85	10	125	0.5	6	20	27	25	11	1	1
TACK334*016#TA	K	0.33	16	85	10	125	0.5	6	20	27	25	11	1	1
TACK474*016#TA	L	0.47	16	85	10	125	0.5	6	7.5	58	52	23	1	1
TACL684*016#TA	L	0.68	16	85	10	125	0.5	6	7.5	58	52	23	1	1
TACL105*016#TA	L	1	16	85	10	125	0.5	6	7.5	58	52	23	1	1
TACU105*016#TA	U	1	16	85	10	125	0.5	8	5	84	75	33	1	1
TACL225*016#TA	L	2.2	16	85	10	125	0.5	10	7.5	58	52	23	1	1
TACR106*016#TA	R	10	16	85	10	125	1.6	10	5	95	85	38	2	1
20 Volt @ 85°C														
TACK224*020#TA	K	0.22	20	85	13	125	0.5	6	20	27	25	11	1	1
TACR335*020#TA	R	3.3	20	85	13	125	0.7	8	5	95	85	38	1	1
TACR475*020#TA	R	4.7	20	85	13	125	0.9	8	5	95	85	38	1	1
25 Volt @ 85°C														
TACR105*025#TA	R	1	25	85	17	125	0.5	8	5	95	85	38	1	1

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.

For typical weight and composition see page 274.

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

Standard and Low Profile Tantalum Microchip Capacitors

QUALIFICATION TABLE – CATEGORY 1

TEST	TAC series (Temperature range -55°C to +125°C)										
	Condition			Characteristics							
Endurance	Apply rated voltage (Ur) at 85°C and / or category voltage (Uc) at 125°C for 2000 hours through a circuit impedance of $\leq 0.1\Omega/V$. Stabilize at room temperature for 1-2 hours before measuring.			Visual examination	no visible damage						
				DCL	1.25 x initial limit						
				$\Delta C/C$	within $\pm 10\%$ of initial value						
				DF	1.5 x initial limit						
				ESR	1.5 x initial limit						
Humidity	Store at 40°C and 90-95% relative humidity for 1344 hours, with no applied voltage. Stabilize at room temperature and humidity for 1-2 hours before measuring.			Visual examination	no visible damage						
				DCL	initial limit						
				$\Delta C/C$	within $\pm 5\%$ of initial value						
				DF	1.2 x initial limit						
				ESR	1.2 x initial limit						
Temperature Stability	Step	Temperature°C	Duration(min)		+20°C	-55°C	+20°C	+85°C	+125°C	+20°C	
	1	+20	15	DCL	IL*	n/a	IL*	10 x IL*	12.5 x IL*	IL*	
	2	-55	15		$\Delta C/C$	n/a	+0/-10%	$\pm 5\%$	+10/-0%	+15/-0%	$\pm 5\%$
	3	+20	15	DF		IL*	1.5 x IL*	IL*	1.5 x IL*	2 x IL*	IL*
	4	+85	15		ESR	IL*	1.25 x IL*	IL*	1.25 x IL*	2 x IL*	IL*
	5	+125	15								
	6	+20	15								
Surge Voltage	Apply 1.3x rated voltage (Ur) at 85°C for 1000 cycles of duration 6 min (30 sec charge, 5 min 30 sec discharge) through a charge / discharge resistance of 1000 Ω .			Visual examination	no visible damage						
				DCL	initial limit						
				$\Delta C/C$	within $\pm 10\%$ of initial value						
				DF	initial limit						
				ESR	initial limit						

*Initial Limit

QUALIFICATION TABLE – CATEGORY 2

TEST	TAC series (Temperature range -55°C to +125°C)										
	Condition			Characteristics							
Endurance	Apply rated voltage (Ur) at 85°C and / or category voltage (Uc) at 125°C for 2000 hours through a circuit impedance of $\leq 0.1\Omega/V$. Stabilize at room temperature for 1-2 hours before measuring.			Visual examination	no visible damage						
				DCL	1.25 x initial limit						
				$\Delta C/C$	within $\pm 15\%$ of initial value						
				DF	1.5 x initial limit						
				ESR	1.5 x initial limit						
Humidity	Store at 40°C and 90-95% relative humidity for 1344 hours, with no applied voltage. Stabilize at room temperature and humidity for 1-2 hours before measuring.			Visual examination	no visible damage						
				DCL	initial limit						
				$\Delta C/C$	within $\pm 10\%$ of initial value						
				DF	1.2 x initial limit						
				ESR	1.2 x initial limit						
Temperature Stability	Step	Temperature°C	Duration(min)		+20°C	-55°C	+20°C	+85°C	+125°C	+20°C	
	1	+20	15	DCL	IL*	n/a	IL*	10 x IL*	12.5 x IL*	IL*	
	2	-55	15		$\Delta C/C$	n/a	+0/-15%	$\pm 5\%$	+15/-0%	+20/-0%	$\pm 5\%$
	3	+20	15	DF		IL*	1.5 x IL*	IL*	1.5 x IL*	2 x IL*	IL*
	4	+85	15		ESR	IL*	1.25 x IL*	IL*	1.25 x IL*	2 x IL*	IL*
	5	+125	15								
	6	+20	15								
Surge Voltage	Apply 1.3x rated voltage (Ur) at 85°C for 1000 cycles of duration 6 min (30 sec charge, 5 min 30 sec discharge) through a charge / discharge resistance of 1000 Ω .			Visual examination	no visible damage						
				DCL	1.5 x initial limit						
				$\Delta C/C$	within $\pm 15\%$ of initial value						
				DF	1.5 x initial limit						
				ESR	1.5 x initial limit						

*Initial Limit

QUALIFICATION TABLE – CATEGORY 3

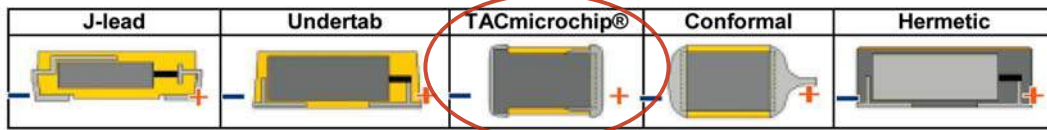
TEST	TAC series (Temperature range -55°C to +125°C)										
	Condition			Characteristics							
Endurance	Apply rated voltage (Ur) at 85°C and / or category voltage (Uc) at 125°C for 2000 hours through a circuit impedance of $\leq 0.1\Omega/V$. Stabilize at room temperature for 1-2 hours before measuring.			Visual examination	no visible damage						
				DCL	1.25 x initial limit						
				$\Delta C/C$	within $\pm 30\%$ of initial value						
				DF	1.5 x initial limit						
				ESR	1.5 x initial limit						
Humidity	Store at 40°C and 90-95% relative humidity for 1344 hours, with no applied voltage. Stabilize at room temperature and humidity for 1-2 hours before measuring.			Visual examination	no visible damage						
				DCL	2 x initial limit						
				$\Delta C/C$	within $\pm 30\%$ of initial value						
				DF	1.5 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	15	DCL	IL*	n/a	IL*	10 x IL*	12.5 x IL*	IL*	
	2	-55	15		$\Delta C/C$	n/a	+0/-25%	$\pm 5\%$	+20/-0%	+25/-0%	$\pm 20\%$
	3	+20	15	DF		IL*	1.5 x IL*	IL*	1.5 x IL*	2 x IL*	1.5 x IL*
	4	+85	15		ESR	IL*	1.25 x IL*	IL*	1.25 x IL*	2 x IL*	1.5 x IL*
	5	+125	15								
	6	+20	15								
Surge Voltage	Apply 1.3x rated voltage (Ur) at 85°C for 1000 cycles of duration 6 min (30 sec charge, 5 min 30 sec discharge) through a charge / discharge resistance of 1000 Ω .			Visual examination	no visible damage						
				DCL	2 x initial limit						
				$\Delta C/C$	within $\pm 30\%$ of initial value						
				DF	2 x initial limit						
				ESR	2 x initial limit						

*Initial Limit

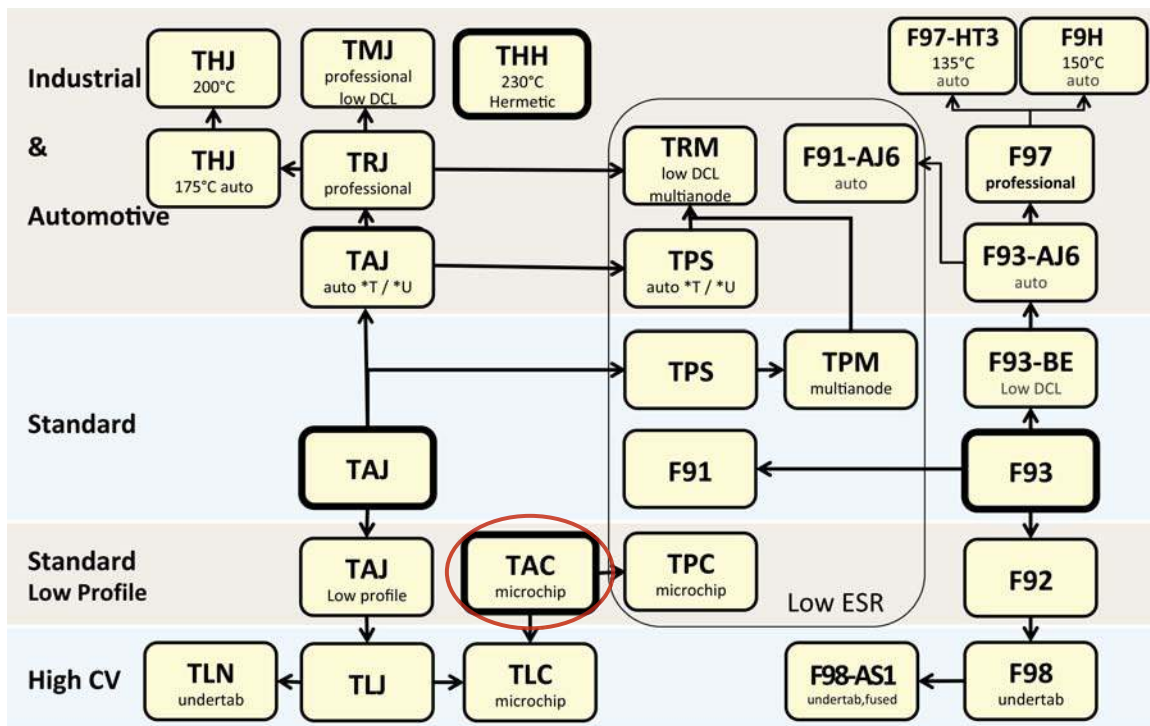
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