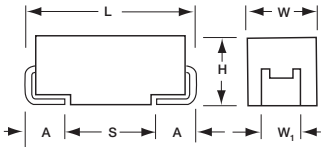
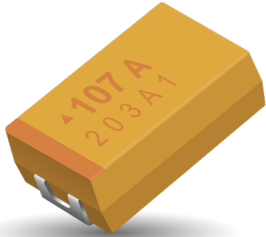


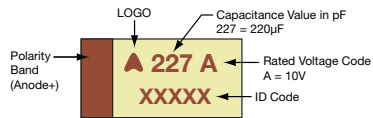
TBJ SERIES

COTS-Plus – Space Level



MARKING

A, B, C, D, E, V CASE



The TBJ COTS-Plus Space Level series has been refined to incorporate only those commercially up-screened ratings which have been deemed suitable for mission critical and space level applications.

These capacitors have a more conservative design approach when compared to other up-screened components utilizing established CV powders and higher dielectric formation ratios. The DCL is typically 25% lower while still offering aggressive ESR values.

Currently there are 6 case sizes available with a wide capacitance range available in a given voltage range.

These ratings are available with Weibull grading (B and C), surge current testing (A, B, C), optional screening Group A from MIL-PRF-55365, and additional screening for Low-Earth Orbit (SRC8000) and Space-level (SRC9000) applications.

For moisture sensitivity levels please refer to the High Reliability Tantalum MSL section located in the back of the High Reliability Tantalum Catalog.

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 ₁ ±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)

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

CAPACITANCE AND RATED VOLTAGE, V_R (VOLTAGE CODE) RANGE (LETTER DENOTES CASE SIZE)

Capacitance		Rated Voltage DC (V _R) at 85°C						
µF	Code	6V (J)	10V (A)	16V (C)	20V (D)	25V (E)	35V (V)	50V (T)
0.10	104						A (20000)	
0.15	154						A (6000, 16470)	
0.22	224						A (6000, 13710)	A (7000, 7500)
0.33	334						A (6000, 11280)	A (7000)
0.47	474					A (7000, 9530)	A (4000, 9530)	B (5000)
0.68	684					A (6000, 7980)	A (6000, 8000)	B (2000, 4000)
1.0	105				A (3000, 6630)	A (3000, 6630)	A (3000, 6630) B (2000, 3400)	B (2000, 3400) C (3000)
1.5	155		A (7000)		A (3000, 5640)	A (3000, 5640)	A (2000, 3100) B (2500, 5460)	C (1500, 2500)
2.2	225		A (7000)	A (3500, 4550)	A (3000, 4550)	A (1600, 2900) B (1200, 4550)	B (2000, 4550)	C (1000, 1700) D (1200, 2000)
3.3	335			A (3500, 3750) B (4500)	A (2500, 3750) B (1300, 3740)	B (2000, 3740)	B (1000, 3740) C (800, 1840) D (2000)	C (1000, 1400) D (800, 1100)
4.7	475		A (2000, 2900)	A (2000, 3160) B (1500, 3160)	A (1800, 2500) B (1000, 3160)	B (1000, 3160)	B (1500, 2200) C (600, 1410) D (1500)	D (600, 900)
6.8	685		A (1800, 4000) B (3000)	A (1500, 2000) B (1200, 2650) C (2500)	B (1000, 2650) C (2000)	B (1000, 1500) C (600, 1070)	C (600, 1070) D (1300)	D (700)
10	106	A (1500, 2000) B (3000)	A (1800, 2200) B (800, 2200)	B (800, 2200) C (2000)	B (1000, 2200) C (500, 800)	C (600, 800)	C (600, 800) D (250, 800)	E (300, 700)
15	156	A (1500, 2030) B (700, 2030)	A (1000, 1800) B (600, 2030)	B (800, 2000)	B (500, 1400) C (400, 750)	C (500, 720) D (300, 720)	D (225, 720)	U (500)
22	226	A (900, 1700) B (600, 1880) C (2000)	B (700, 1800)	B (600, 1100) C (350, 700) D (1100)	C (400, 650) D (150, 650)	D (300, 650)	D (200, 650)	U (500)
33	336	B (600, 1740) C (1800)	B (650, 1000) C (300, 590) D (1100)	C (300, 590)	C (300, 590) D (250, 590)	D (400, 590)	E (250, 590)	
47	476	B (500, 1620) C (250, 540)	C (300, 540) D (400)	C (350, 540) D (200, 340)	D (200, 540)	D (250, 540) E (150, 540)	U (200, 400)	
68	686	C (200, 490)	C (300, 490)	D (150, 490)	D (200, 490) E (125, 490)	U (500)		
100	107	C (300, 440)	C (200, 500) D (150, 440) E (100, 440)	D (150, 450) E (150, 450)	E (150, 300)	U (500)		
150	157	C (300, 500) D (150, 400)	D (150, 400) E (150, 400)	E (150, 300)	U (250, 500)			
220	227	D (150, 360)	D (500) E (150, 360)	U (200, 500)				
330	337	D (400) E (150, 330)	E (100, 300)	U (200, 400)				
470	477	E (200, 250)	U (200, 400)					
680	687	U (250, 500)						

Available Ratings: (ESR ratings in mOhms in brackets) Engineering samples: Please contact manufacturer

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



TBJ SERIES

COTS-Plus – Space Level



HOW TO ORDER



TBJ	D	227	*	035	R	B	S	Z	0	^	++
Type	Case Size	Capacitance Code	Capacitance Tolerance	Voltage Code	ESR	Packaging	Inspection Level	Reliability Grade	Qualification Level	Termination Finish	Surge Test Option
		pF code: 1st two digits represent significant figures. 3rd digit represents multiplier (number of zeros to follow)	K = ±10% M = ±20%	006 = 6Vdc 010 = 10Vdc 016 = 16Vdc 020 = 20Vdc 025 = 25Vdc 035 = 35Vdc 050 = 50Vdc	R = Std ESR J = Low ESR	B = Bulk R = 7" T&R S = 13" T&R W = Waffle	S = Std.Conformance L = Group A	Weibull: B = 0.1%/1000 hrs. 90% conf. C = 0.01%/1000 hrs. 90% conf. Z = Non-ER	0 = N/A 8 = SRC8000 9 = SRC9000 T = T Level	H = Solder Plated 0 = Fused Solder Plated 8 = Hot Solder Dipped 9 = Gold Plated 7 = Matte Sn (COTS-Plus only)	00 = None 23 = 10 Cycles, +25°C 24 = 10 Cycles, -55°C & +85°C 45 = 10 Cycles, -55°C & +85°C Before Weibull

For RoHS compliant products, please select correct termination style.

SPACE LEVEL OPTIONS TO SRC9000*:

TBJ	D	227	*	035	R	B	L	Z	9	0	45
Type	Case Size	Capacitance Code	Capacitance Tolerance	Voltage Code	ESR	Packaging	Inspection Level	Reliability Grade	Qualification Level	Termination Finish	Surge Test Option
		pF code: 1st two digits represent significant figures 3rd digit represents multiplier (number of zeros to follow)	K = ±10% M = ±20%		R = Std ESR J = Low ESR	B = Bulk R = 7" T&R S = 13" T&R W = Waffle	L = Group A	C = 0.01%/1000 hrs. 90% conf.	9 = SRC9000 T = T Level	H = Solder Plated 0 = Fused Solder Plated 8 = Hot Solder Dipped 9 = Gold Plated	45 = 10 cycles, -55°C & +85°C

For RoHS compliant products, please select correct termination style.

* Contact factory for KYOCERA AVX SRC9000 Space Level SCD details.

TECHNICAL SPECIFICATIONS

Technical Data:	All technical data relate to an ambient temperature of 25°C									
Capacitance Range:	0.10 µF to 470 µF									
Capacitance Tolerance:	±10%; ±20%									
Leakage Current DCL:	0.0075CV									
Rated Voltage (V_R)	≤ 85°C:	4	6.3	10	16	20	25	35	50	
Category Voltage (V_C)	≤125°C:	2.7	4	7	10	13	17	23	33	
Surge Voltage (V_S)	≤ 85°C:	5.2	8	13	20	26	32	46	65	
Surge Voltage (V_S)	≤125°C:	3.4	5	8	13	16	20	28	40	
Temperature Range:	-55°C to +125°C									

TBJ SERIES

COTS-Plus – Space Level



RATING & PART NUMBER REFERENCE			Parametric Specifications by Rating							Typical RMS Ripple Data by Rating								
			Cap @ 120Hz µF @ 25°C	DC Rated Voltage V @ +85°C	ESR @ 100kHz mΩ @ +25°C	DCL max			DF Max			Power Dissipation W	25°C Ripple mA (100kHz)	85°C Ripple mA (100kHz)	125°C Ripple mA (100kHz)	25°C Ripple mV (100kHz)	85°C Ripple mV (100kHz)	125°C Ripple mV (100kHz)
						+25°C	+85°C	+125°C	+25°C	+55°C	+125°C							
						(µA)	(µA)	(µA)	(%)	(%)	(%)							
P/N	Space Level P/N	Case																

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.

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

TBJ SERIES

COTS-Plus – Space Level



RATING & PART NUMBER REFERENCE			Parametric Specifications by Rating								Typical RMS Ripple Data by Rating							
			Cap @ 120Hz µF @ 25°C	DC Rated Voltage V @ +85°C	ESR @ 100kHz mOhms @ +25°C	DCL max			DF Max		Power Dissipation W	25°C Ripple mA (100kHz)	85°C Ripple mA (100kHz)	125°C Ripple mA (100kHz)	25°C Ripple mV (100kHz)	85°C Ripple mV (100kHz)	125°C Ripple mV (100kHz)	
						+25°C (µA)	+85°C (µA)	+125°C (µA)	+25°C (%)	+85/125°C (%)								-55°C (%)
P/N	Space Level P/N	Case																
TBJC475 *035 R □ # @ 0 ^ ++	TBJC475*035 R □ L C # ^ ++	C	4.7	35	1410	1.2	12	24	6	9	10	0.110	279	251	112	394	354	158
TBJC475 *035 J □ # @ 0 ^ ++	TBJC475*035 J □ L C # ^ ++	C	4.7	35	600	1.2	12	24	6	9	10	0.110	428	385	171	257	231	103
TBJD475 *035 R □ # @ 0 ^ ++	TBJD475*035 R □ L C # ^ ++	D	4.7	35	1500	1.2	12	24	6	9	10	0.150	316	285	126	474	427	190
TBJC685 *035 R □ # @ 0 ^ ++	TBJC685*035 R □ L C # ^ ++	C	6.8	35	1070	1.8	18	36	6	9	10	0.110	321	289	128	343	309	137
TBJC685 *035 J □ # @ 0 ^ ++	TBJC685*035 J □ L C # ^ ++	C	6.8	35	600	1.8	18	36	6	9	10	0.110	428	385	171	257	231	103
TBJD685 *035 R □ # @ 0 ^ ++	TBJD685*035 R □ L C # ^ ++	D	6.8	35	1300	1.8	18	36	6	9	10	0.150	340	306	136	442	397	177
TBJC106 *035 R □ # @ 0 ^ ++	TBJC106*035 R □ L C # ^ ++	C	10	35	800	2.6	26	52	6	9	10	0.110	371	334	148	297	267	119
TBJC106 *035 J □ # @ 0 ^ ++	TBJC106*035 J □ L C # ^ ++	C	10	35	600	2.6	26	52	6	9	10	0.110	428	385	171	257	231	103
TBJD106 *035 R □ # @ 0 ^ ++	TBJD106*035 R □ L C # ^ ++	D	10	35	800	2.6	26	52	6	9	10	0.150	433	390	173	346	312	139
TBJD106 *035 J □ # @ 0 ^ ++	TBJD106*035 J □ L C # ^ ++	D	10	35	250	2.6	26	52	6	9	10	0.150	775	697	310	194	174	77
TBJD156 *035 R □ # @ 0 ^ ++	TBJD156*035 R □ L C # ^ ++	D	15	35	720	3.9	39	78	6	9	10	0.150	456	411	183	329	296	131
TBJD156 *035 J □ # @ 0 ^ ++	TBJD156*035 J □ L C # ^ ++	D	15	35	225	3.9	39	78	6	9	10	0.150	816	735	327	184	165	73
TBJD226 *035 R □ # @ 0 ^ ++	TBJD226*035 R □ L C # ^ ++	D	22	35	650	5.8	58	116	6	9	10	0.150	480	432	192	312	281	125
TBJD226 *035 J □ # @ 0 ^ ++	TBJD226*035 J □ L C # ^ ++	D	22	35	200	5.8	58	116	6	9	10	0.150	866	779	346	173	156	69
TBJE336 *035 R □ # @ 0 ^ ++	TBJE336 *035 R □ L C # ^ ++	E	33	35	590	8.7	87	174	6	9	10	0.165	529	476	212	312	281	125
TBJE336 *035 J □ # @ 0 ^ ++	TBJE336 *035 J □ L C # ^ ++	E	33	35	250	8.7	87	174	6	9	10	0.165	812	731	325	203	183	81
TBJU476 *035 R □ # @ 0 ^ ++	TBJU476*035 R □ L C # ^ ++	U	47	35	400	12.3	123	246	10	12	12	0.165	642	578	257	257	231	103
TBJU476 *035 J □ # @ 0 ^ ++	TBJU476*035 J □ L C # ^ ++	U	47	35	200	12.3	123	246	10	12	12	0.165	908	817	363	182	163	73
TBJA224 *050 R □ # @ 0 ^ ++	TBJA224 *050 R □ L C # ^ ++	A	0.22	50	7500	0.3	3	6	4	6	8	0.075	100	90	40	750	675	300
TBJA224 *050 J □ # @ 0 ^ ++	TBJA224 *050 J □ L C # ^ ++	A	0.22	50	7000	0.3	3	6	4	6	8	0.075	104	93	41	725	652	290
TBJA334 *050 R □ # @ 0 ^ ++	TBJA334 *050 R □ L C # ^ ++	A	0.33	50	7000	0.3	3	6	4	6	8	0.075	104	93	41	725	652	290
TBJB474 *050 R □ # @ 0 ^ ++	TBJB474*050 R □ L C # ^ ++	B	0.47	50	5000	0.3	3	6	4	6	8	0.085	130	117	52	652	587	261
TBJB684 *050 R □ # @ 0 ^ ++	TBJB684*050 R □ L C # ^ ++	B	0.68	50	4000	0.3	3	6	4	6	8	0.085	146	131	58	583	525	233
TBJB684 *050 J □ # @ 0 ^ ++	TBJB684*050 J □ L C # ^ ++	B	0.68	50	2000	0.3	3	6	4	6	8	0.085	206	186	82	412	371	165
TBJB105 *050 R □ # @ 0 ^ ++	TBJB105*050 R □ L C # ^ ++	B	1	50	3400	0.4	4	8	4	6	8	0.085	158	142	63	538	484	215
TBJB105 *050 J □ # @ 0 ^ ++	TBJB105*050 J □ L C # ^ ++	B	1	50	2000	0.4	4	8	4	6	8	0.085	206	186	82	412	371	165
TBJC105 *050 R □ # @ 0 ^ ++	TBJC105*050 R □ L C # ^ ++	C	1	50	3000	0.4	4	8	4	6	8	0.110	191	172	77	574	517	230
TBJC155 *050 R □ # @ 0 ^ ++	TBJC155*050 R □ L C # ^ ++	C	1.5	50	2500	0.6	6	12	6	9	10	0.110	210	189	84	524	472	210
TBJC155 *050 J □ # @ 0 ^ ++	TBJC155*050 J □ L C # ^ ++	C	1.5	50	1500	0.6	6	12	6	9	10	0.110	271	244	108	406	366	162
TBJC225 *050 R □ # @ 0 ^ ++	TBJC225*050 R □ L C # ^ ++	C	2.2	50	1700	0.8	8	16	6	9	10	0.110	254	229	102	432	389	173
TBJC225 *050 J □ # @ 0 ^ ++	TBJC225*050 J □ L C # ^ ++	C	2.2	50	1000	0.8	8	16	6	9	10	0.110	332	298	133	332	298	133
TBJD225 *050 R □ # @ 0 ^ ++	TBJD225*050 R □ L C # ^ ++	D	2.2	50	2000	0.8	8	16	4.5	7	9	0.150	274	246	110	548	493	219
TBJD225 *050 J □ # @ 0 ^ ++	TBJD225*050 J □ L C # ^ ++	D	2.2	50	1200	0.8	8	16	4.5	7	9	0.150	354	318	141	424	382	170
TBJC335 *050 R □ # @ 0 ^ ++	TBJC335*050 R □ L C # ^ ++	C	3.3	50	1400	1.2	12	24	6	9	10	0.110	280	252	112	392	353	157
TBJC335 *050 J □ # @ 0 ^ ++	TBJC335*050 J □ L C # ^ ++	C	3.3	50	1000	1.2	12	24	6	9	10	0.110	332	298	133	332	298	133
TBJD335 *050 R □ # @ 0 ^ ++	TBJD335*050 R □ L C # ^ ++	D	3.3	50	1100	1.2	12	24	4.5	7	9	0.150	369	332	148	406	366	162
TBJD335 *050 J □ # @ 0 ^ ++	TBJD335*050 J □ L C # ^ ++	D	3.3	50	800	1.2	12	24	4.5	7	9	0.150	433	390	173	346	312	139
TBJD475 *050 R □ # @ 0 ^ ++	TBJD475*050 R □ L C # ^ ++	D	4.7	50	900	1.8	18	36	4.5	7	9	0.150	408	367	163	367	331	147
TBJD475 *050 J □ # @ 0 ^ ++	TBJD475*050 J □ L C # ^ ++	D	4.7	50	600	1.8	18	36	4.5	7	9	0.150	500	450	200	300	270	120
TBJD685 *050 R □ # @ 0 ^ ++	TBJD685*050 R □ L C # ^ ++	D	6.8	50	700	2.6	26	52	4.5	7	9	0.150	463	417	185	324	292	130
TBJE106 *050 R □ # @ 0 ^ ++	TBJE106 *050 R □ L C # ^ ++	E	10	50	700	3.8	38	76	4.5	7	9	0.165	486	437	194	340	306	136
TBJE106 *050 J □ # @ 0 ^ ++	TBJE106 *050 J □ L C # ^ ++	E	10	50	300	3.8	38	76	4.5	7	9	0.165	742	667	297	222	200	89
TBJU156 *050 R □ # @ 0 ^ ++	TBJU156*050 R □ L C # ^ ++	U	15	50	500	5.6	56	112	30	45	45	0.165	574	517	230	287	259	115
TBJU226 *050R □ # @ 0 ^ ++	TBJU226*050 R □ L C # ^ ++	U	22	50	500	8.2	82	164	30	45	45	0.165	574	517	230	287	259	115

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.

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