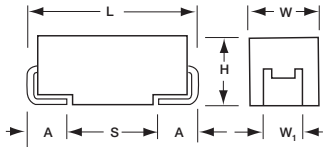
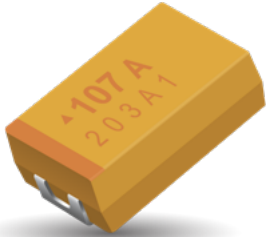


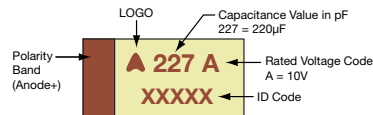
TBJ SERIES

COTS-Plus – Space Level



MARKING

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



The TBJ Space Level series have been refined to incorporate specially selected COTS-Plus products suitable for additional upscreened ratings deemed for mission critical and space level under LEO - Low Earth Orbit specification (SRC8000), or Space Level specification (SRC9000 and T Level).

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 optional with Weibull grading (B and C), surge current testing MIL-PRF-55365 (A, B, C), and additional screening for Space 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)
U	2924	7361-43	7.30 (0.287)	6.10 (0.240)	4.10 (0.162)	3.10 (0.122)	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)	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)	B (5000)
0.68	684					A (6000, 7980)	B (2000, 4000)
1.0	105				A (3000, 6630)	A (3000, 6630)	B (2000, 3400) C (3000)
1.5	155		A (7000)		A (3000, 5640)	A (3000, 5640)	C (1500, 2500)
2.2	225		A (7000)	A (3500, 4550)	A (3000, 4550)	A (1600, 2900) B (1200, 4550)	C (1000, 1700) D (1200, 2000)
3.3	335			A (3500, 3750) B (4500)	A (2500, 3750) B (1300, 3740)	B (2000, 3740)	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)	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)	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) D (250, 800)	E (300, 700)
15	156	A (1500, 2030) B (700, 2030)	A (1000, 1800) B (600, 2030) C (2000)	B (800, 2000)	B (500, 1400) C (400, 750)	C (500, 720) D (300, 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)	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)

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

COTS-PLUS OPTION

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

*Waffle packaging not available for the TBJ U case

*The product in this series is non-QPL. See Test Options chart for screening available.

*For Gold Plated Termination Finish, contact the factory for availability.



SRC8000 LOW EARTH ORBIT (LEO) OPTION

TBJ	D	227	*	035	R	B	S	B	0	A	++
Type	Case Size	Capacitance Code pF code: 1st two digits represent significant figures. 3rd digit represents multiplier (number of zeros to follow)	Capacitance Tolerance K = ±10% M = ±20%	Voltage Code 006 = 6Vdc 010 = 10Vdc 016 = 16Vdc 020 = 20Vdc 025 = 25Vdc 035 = 35Vdc 050 = 50Vdc	ESR R = Std ESR J = Low ESR	Packaging B = Bulk R = 7" T&R S = 13" T&R W = Waffle	Inspection Level L = Group A	Reliability Grade Weibull: B = 0.1%/1000 hrs. 90% conf. C = 0.01%/1000 hrs. 90% conf.	Qualification Level 8 = SRC8000	Termination Finish H = Solder Plated 0 = Fused Solder Plated 8 = Hot Solder Dipped 9 = Gold Plated	Surge Test Option 23 = 10 Cycles, +25°C 24 = 10 Cycles, -55°C & +85°C 45 = 10 Cycles, -55°C & +85°C Before Weibull

*Waffle packaging not available for the TBJ U case

*The product in this series is non-QPL. See Test Options chart for screening available.

*For Gold Plated Termination Finish, contact the factory for availability.



SPACE LEVEL OPTIONS (SRC9000 and T-LEVEL)

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

*Waffle packaging not available for the TBJ U case

*The product in this series is non-QPL. See Test Options chart for screening available.

*For Gold Plated Termination Finish, contact the factory for availability.



TECHNICAL SPECIFICATIONS

Technical Data:		All technical data relate to an ambient temperature of 25°C							
Capacitance Range:		0.10 µF to 680 µF							
Capacitance Tolerance:		±10%; ±20%							
Leakage Current DCL:		0.0075CV							
Rated Voltage (V _R)	≤ 85°C:	6	10	16	20	25	35	50	
Category Voltage (V _C)	≤ 125°C:	4	7	10	13	17	23	33	
Surge Voltage (V _S)	≤ 85°C:	8	13	20	26	32	46	65	
Surge Voltage (V _S)	≤ 125°C:	5	8	13	16	20	28	40	
Temperature Range:		-55°C to +125°C							



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

TDS-HIRELTANT-0022 | Rev 3

– HIGH RELIABILITY TANTALUM CAPACITORS –

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	+85°C	+125°C	+25°C	+(85/125) °C	-55°C							
P/N	Space Level P/N	Case				(µA)	(µA)	(µA)	(%)	(%)	(%)							
TBJA106 *006 R □ # @ 0 ^ ++	TBJA106 *006 R □ L C # ^ ++	A	10	6	2200	0.45	4.5	9	6	9	10	0.075	185	166	74	406	366	162
TBJA106 *006 J □ # @ 0 ^ ++	TBJA106 *006 J □ L C # ^ ++	A	10	6	1500	0.45	4.5	9	6	9	10	0.075	224	201	89	335	302	134
TBJB106 *006 R □ # @ 0 ^ ++	TBJB106 *006 R □ L C # ^ ++	B	10	6	3000	0.45	4.5	9	6	9	10	0.085	168	151	67	505	454	202
TBJA156 *006 R □ # @ 0 ^ ++	TBJA156 *006 R □ L C # ^ ++	A	15	6	2030	0.68	6.8	13.6	6	9	10	0.075	192	173	77	390	351	156
TBJA156 *006 J □ # @ 0 ^ ++	TBJA156 *006 J □ L C # ^ ++	A	15	6	1500	0.68	6.8	13.6	6	9	10	0.075	224	201	89	335	302	134
TBJB156 *006 R □ # @ 0 ^ ++	TBJB156 *006 R □ L C # ^ ++	B	15	6	2030	0.68	6.8	13.6	6	9	10	0.085	205	184	82	415	374	166
TBJB156 *006 J □ # @ 0 ^ ++	TBJB156 *006 J □ L C # ^ ++	B	15	6	700	0.68	6.8	13.6	6	9	10	0.085	348	314	139	244	220	98
TBJA226 *006 R □ # @ 0 ^ ++	TBJA226 *006 R □ L C # ^ ++	A	22	6	1700	0.99	9.9	19.8	6	9	10	0.075	210	189	84	357	321	143
TBJA226 *006 J □ # @ 0 ^ ++	TBJA226 *006 J □ L C # ^ ++	A	22	6	900	0.99	9.9	19.8	6	9	10	0.075	289	260	115	260	234	104
TBJB226 *006 R □ # @ 0 ^ ++	TBJB226 *006 R □ L C # ^ ++	B	22	6	1880	0.99	9.9	19.8	6	9	10	0.085	213	191	85	400	360	160
TBJB226 *006 J □ # @ 0 ^ ++	TBJB226 *006 J □ L C # ^ ++	B	22	6	600	0.99	9.9	19.8	6	9	10	0.085	376	339	151	226	203	90
TBJC226 *006 R □ # @ 0 ^ ++	TBJC226 *006 R □ L C # ^ ++	C	22	6	2000	0.99	9.9	19.8	6	9	10	0.110	235	211	94	469	422	188
TBJB336 *006 R □ # @ 0 ^ ++	TBJB336 *006 R □ L C # ^ ++	B	33	6	1740	1.5	15	30	6	9	10	0.085	221	199	88	385	346	154
TBJB336 *006 J □ # @ 0 ^ ++	TBJB336 *006 J □ L C # ^ ++	B	33	6	600	1.5	15	30	6	9	10	0.085	376	339	151	226	203	90
TBJC336 *006 R □ # @ 0 ^ ++	TBJC336 *006 R □ L C # ^ ++	C	33	6	1800	1.5	15	30	6	9	10	0.110	247	222	99	445	400	178
TBJB476 *006 R □ # @ 0 ^ ++	TBJB476 *006 R □ L C # ^ ++	B	47	6	1620	2.1	21	42	6	9	10	0.085	229	206	92	371	334	148
TBJB476 *006 J □ # @ 0 ^ ++	TBJB476 *006 J □ L C # ^ ++	B	47	6	500	2.1	21	42	6	9	10	0.085	412	371	165	206	186	82
TBJC476 *006 R □ # @ 0 ^ ++	TBJC476 *006 R □ L C # ^ ++	C	47	6	540	2.1	21	42	6	9	10	0.110	451	406	181	244	219	97
TBJC476 *006 J □ # @ 0 ^ ++	TBJC476 *006 J □ L C # ^ ++	C	47	6	250	2.1	21	42	6	9	10	0.110	663	597	265	166	149	66
TBJC686 *006 R □ # @ 0 ^ ++	TBJC686 *006 R □ L C # ^ ++	C	68	6	490	3.1	31	62	6	9	10	0.110	474	426	190	232	209	93
TBJC686 *006 J □ # @ 0 ^ ++	TBJC686 *006 J □ L C # ^ ++	C	68	6	200	3.1	31	62	6	9	10	0.110	742	667	297	148	133	59
TBJC107 *006 R □ # @ 0 ^ ++	TBJC107 *006 R □ L C # ^ ++	C	100	6	440	4.5	45	90	6	9	10	0.110	500	450	200	220	198	88
TBJC107 *006 J □ # @ 0 ^ ++	TBJC107 *006 J □ L C # ^ ++	C	100	6	300	4.5	45	90	6	9	10	0.110	606	545	242	182	163	73
TBJC157 *006 R □ # @ 0 ^ ++	TBJC157 *006 R □ L C # ^ ++	C	150	6	500	6.8	68	136	8	10	12	0.110	469	422	188	235	211	94
TBJC157 *006 J □ # @ 0 ^ ++	TBJC157 *006 J □ L C # ^ ++	C	150	6	300	6.8	68	136	8	10	12	0.110	606	545	242	182	163	73
TBJD157 *006 R □ # @ 0 ^ ++	TBJD157 *006 R □ L C # ^ ++	D	150	6	400	6.8	68	136	6	9	10	0.150	612	551	245	245	220	98
TBJD157 *006 J □ # @ 0 ^ ++	TBJD157 *006 J □ L C # ^ ++	D	150	6	150	6.8	68	136	6	9	10	0.150	1000	900	400	150	135	60
TBJD227 *006 R □ # @ 0 ^ ++	TBJD227 *006 R □ L C # ^ ++	D	220	6	360	9.9	99	198	8	10	12	0.150	645	581	258	232	209	93
TBJD227 *006 J □ # @ 0 ^ ++	TBJD227 *006 J □ L C # ^ ++	D	220	6	150	9.9	99	198	8	10	12	0.150	1000	900	400	150	135	60
TBJD337 *006 R □ # @ 0 ^ ++	TBJD337 *006 R □ L C # ^ ++	D	330	6	400	14	140	280	8	10	12	0.150	612	551	245	245	220	98
TBJE337 *006 R □ # @ 0 ^ ++	TBJE337 *006 R □ L C # ^ ++	E	330	6	330	14	140	280	8	10	12	0.165	707	636	283	233	210	93
TBJE337 *006 J □ # @ 0 ^ ++	TBJE337 *006 J □ L C # ^ ++	E	330	6	150	14	140	280	8	10	12	0.165	1049	944	420	157	142	63
TBJE477 *006 R □ # @ 0 ^ ++	TBJE477 *006 R □ L C # ^ ++	E	470	6	250	21	210	420	8	10	12	0.165	812	731	325	203	183	81
TBJE477 *006 J □ # @ 0 ^ ++	TBJE477 *006 J □ L C # ^ ++	E	470	6	200	21	210	420	8	10	12	0.165	908	817	363	182	163	73
TBJU687 *006 R □ # @ 0 ^ ++	TBJU687 *006 R □ L C # ^ ++	U	680	6	500	30	300	600	30	45	45	0.165	574	517	230	287	259	115
TBJU687 *006 J □ # @ 0 ^ ++	TBJU687 *006 J □ L C # ^ ++	U	680	6	250	30	300	600	30	45	45	0.165	812	731	325	203	183	81
TBJA155 *010 R □ # @ 0 ^ ++	TBJA155 *010 R □ L C # ^ ++	A	1.5	10	7000	0.3	3	6	6	9	10	0.075	104	93	41	725	652	290
TBJA225 *010 R □ # @ 0 ^ ++	TBJA225 *010 R □ L C # ^ ++	A	2.2	10	7000	0.3	3	6	6	9	10	0.075	104	93	41	725	652	290
TBJA475 *010 R □ # @ 0 ^ ++	TBJA475 *010 R □ L C # ^ ++	A	4.7	10	2900	0.35	3.5	7	6	9	10	0.075	161	145	64	466	420	187
TBJA475 *010 J □ # @ 0 ^ ++	TBJA475 *010 J □ L C # ^ ++	A	4.7	10	2000	0.35	3.5	7	6	9	10	0.075	194	174	77	387	349	155
TBJA685 *010 R □ # @ 0 ^ ++	TBJA685 *010 R □ L C # ^ ++	A	6.8	10	2650	0.51	5.1	10.2	6	9	10	0.075	168	151	67	446	401	178
TBJA685 *010 J □ # @ 0 ^ ++	TBJA685 *010 J □ L C # ^ ++	A	6.8	10	1800	0.51	5.1	10.2	6	9	10	0.075	204	184	82	367	331	147
TBJB685 *010 R □ # @ 0 ^ ++	TBJB685 *010 R □ L C # ^ ++	B	6.8	10	3000	0.51	5.1	10.2	6	9	10	0.085	168	151	67	505	454	202
TBJA106 *010 R □ # @ 0 ^ ++	TBJA106 *010 R □ L C # ^ ++	A	10	10	2200	0.75	7.5	15	6	9	10	0.075	185	166	74	406	366	162
TBJA106 *010 J □ # @ 0 ^ ++	TBJA106 *010 J □ L C # ^ ++	A	10	10	1800	0.75	7.5	15	6	9	10	0.075	204	184	82	367	331	147
TBJB106 *010 R □ # @ 0 ^ ++	TBJB106 *010 R □ L C # ^ ++	B	10	10	2200	0.75	7.5	15	6	9	10	0.085	197	177	79	432	389	173
TBJB106 *010 J □ # @ 0 ^ ++	TBJB106 *010 J □ L C # ^ ++	B	10	10	800	0.75	7.5	15	6	9	10	0.085	326	293	130	261	235	104
TBJA156 *010 R □ # @ 0 ^ ++	TBJA156 *010 R □ L C # ^ ++	A	15	10	1800	1.1	11	22	6	9	10	0.075	204	184	82	367	331	147
TBJA156 *010 J □ # @ 0 ^ ++	TBJA156 *010 J □ L C # ^ ++	A	15	10	1000	1.1	11	22	6	9	10	0.075	274	246	110	274	246	110
TBJB156 *010 R □ # @ 0 ^ ++	TBJB156 *010 R □ L C # ^ ++	B	15	10	2030	1.1	11	22	6	9	10	0.085	205	184	82	415	374	166
TBJB156 *010 J □ # @ 0 ^ ++	TBJB156 *010 J □ L C # ^ ++	B	15	10	600	1.1	11	22	6	9	10	0.085	376	339	151	226	203	90
TBJC156 *010 R □ # @ 0 ^ ++	TBJC156 *010 R □ L C # ^ ++	C	15	10	2000	1.1	11	22	6	9	10	0.110	235	211	94	469	422	188
TBJB226 *010 R □ # @ 0 ^ ++	TBJB226 *010 R □ L C # ^ ++	B	22	10	1880	1.7	17	34	6	9	10	0.085	213	191	85	400	360	160
TBJB226 *010 J □ # @ 0 ^ ++	TBJB226 *010 J □ L C # ^ ++	B	22	10	700	1.7	17	34	6	9	10	0.085	348	314	139	244	220	98
TBJB336 *010 R □ # @ 0 ^ ++	TBJB336 *010 R □ L C # ^ ++	B	33	10	1000	2.5	25	50	6	9	10	0.085	292	262	117	292	262	117
TBJB336 *010 J □ # @ 0 ^ ++	TBJB336 *010 J □ L C # ^ ++	B	33	10	650	2.5	25	50	6	9	10	0.085	362	325	145	235	212	94
TBJC336 *010 R □ # @ 0 ^ ++	TBJC336 *010 R □ L C # ^ ++	C	33	10	590	2.5	25	50	6	9	10	0.110	432	389	173	255	229	102
TBJC336 *010 J □ # @ 0 ^ ++	TBJC336 *010 J □ L C # ^ ++	C	33	10	300	2.5	25	50	6	9	10	0.110	606	545	242	182	163	73

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	+85°C	+125°C	+25°C	+(85/125) °C	-55°C							
P/N	Space Level P/N	Case				(µA)	(µA)	(µA)	(%)	(%)	(%)							
TBJD336*010 R □ # @ 0^++	TBJD336*010 R □ L C #^++	D	33	10	1100	2.5	25	50	6	9	10	0.150	369	332	148	406	366	162
TBJC476*010 R □ # @ 0^++	TBJC476*010 R □ L C #^++	C	47	10	540	3.5	35	70	6	9	10	0.110	451	406	181	244	219	97
TBJC476*010 J □ # @ 0^++	TBJC476*010 J □ L C #^++	C	47	10	300	3.5	35	70	6	9	10	0.110	606	545	242	182	163	73
TBJD476*010 R □ # @ 0^++	TBJD476*010 R □ L C #^++	D	47	10	400	3.5	35	70	6	9	10	0.150	612	551	245	245	220	98
TBJC686*010 R □ # @ 0^++	TBJC686*010 R □ L C #^++	C	68	10	490	5.1	51	102	6	9	10	0.110	474	426	190	232	209	93
TBJC686*010 J □ # @ 0^++	TBJC686*010 J □ L C #^++	C	68	10	300	5.1	51	102	6	9	10	0.110	606	545	242	182	163	73
TBJC107*010 R □ # @ 0^++	TBJC107*010 R □ L C #^++	C	100	10	500	7.5	75	150	8	10	12	0.110	469	422	188	235	211	94
TBJC107*010 J □ # @ 0^++	TBJC107*010 J □ L C #^++	C	100	10	200	7.5	75	150	8	10	12	0.110	742	667	297	148	133	59
TBJD107*010 R □ # @ 0^++	TBJD107*010 R □ L C #^++	D	100	10	440	7.5	75	150	6	9	10	0.150	584	525	234	257	231	103
TBJD107*010 J □ # @ 0^++	TBJD107*010 J □ L C #^++	D	100	10	150	7.5	75	150	6	9	10	0.150	1000	900	400	150	135	60
TBJE107*010 R □ # @ 0^++	TBJE107*010 R □ L C #^++	E	100	10	440	7.5	75	150	6	9	10	0.165	612	551	245	269	242	108
TBJE107*010 J □ # @ 0^++	TBJE107*010 J □ L C #^++	E	100	10	100	7.5	75	150	6	9	10	0.165	1285	1156	514	128	116	51
TBJD157*010 R □ # @ 0^++	TBJD157*010 R □ L C #^++	D	150	10	400	11	110	220	8	10	12	0.150	612	551	245	245	220	98
TBJD157*010 J □ # @ 0^++	TBJD157*010 J □ L C #^++	D	150	10	150	11	110	220	8	10	12	0.150	1000	900	400	150	135	60
TBJE157*010 R □ # @ 0^++	TBJE157*010 R □ L C #^++	E	150	10	400	11	110	220	8	10	12	0.165	642	578	257	257	231	103
TBJE157*010 J □ # @ 0^++	TBJE157*010 J □ L C #^++	E	150	10	150	11	110	220	8	10	12	0.165	1049	944	420	157	142	63
TBJD227*010 R □ # @ 0^++	TBJD227*010 R □ L C #^++	D	220	10	500	17	170	340	8	10	12	0.150	548	493	219	274	246	110
TBJE227*010 R □ # @ 0^++	TBJE227*010 R □ L C #^++	E	220	10	360	17	170	340	8	10	12	0.165	677	609	271	244	219	97
TBJE227*010 J □ # @ 0^++	TBJE227*010 J □ L C #^++	E	220	10	150	17	170	340	8	10	12	0.165	1049	944	420	157	142	63
TBJE337*010 R □ # @ 0^++	TBJE337*010 R □ L C #^++	E	330	10	300	25	250	500	8	10	12	0.165	742	667	297	222	200	89
TBJE337*010 J □ # @ 0^++	TBJE337*010 J □ L C #^++	E	330	10	100	25	250	500	8	10	12	0.165	1285	1156	514	128	116	51
TBJU477*010 R □ # @ 0^++	TBJU477*010 R □ L C #^++	U	470	10	400	35	350	700	30	45	45	0.165	642	578	257	257	231	103
TBJU477*010 J □ # @ 0^++	TBJU477*010 J □ L C #^++	U	470	10	200	35	350	700	30	45	45	0.165	908	817	363	182	163	73
TBJA105*016 R □ # @ 0^++	TBJA105*016 R □ L C #^++	A	1	16	10000	0.3	3	6	6	9	10	0.075	87	78	35	866	779	346
TBJA225*016 R □ # @ 0^++	TBJA225*016 R □ L C #^++	A	2.2	16	4550	0.3	3	6	6	9	10	0.075	128	116	51	584	526	234
TBJA225*016 J □ # @ 0^++	TBJA225*016 J □ L C #^++	A	2.2	16	3500	0.3	3	6	6	9	10	0.075	146	132	59	512	461	205
TBJA335*016 R □ # @ 0^++	TBJA335*016 R □ L C #^++	A	3.3	16	3740	0.4	4	8	6	9	10	0.075	142	127	57	530	477	212
TBJA335*016 J □ # @ 0^++	TBJA335*016 J □ L C #^++	A	3.3	16	3500	0.4	4	8	6	9	10	0.075	146	132	59	512	461	205
TBJB335*016 R □ # @ 0^++	TBJB335*016 R □ L C #^++	B	3.3	16	4500	0.4	4	8	6	9	10	0.085	137	124	55	618	557	247
TBJA475*016 R □ # @ 0^++	TBJA475*016 R □ L C #^++	A	4.7	16	3160	0.56	5.6	11.2	6	9	10	0.075	154	139	62	487	438	195
TBJA475*016 J □ # @ 0^++	TBJA475*016 J □ L C #^++	A	4.7	16	2000	0.56	5.6	11.2	6	9	10	0.075	194	174	77	387	349	155
TBJB475*016 R □ # @ 0^++	TBJB475*016 R □ L C #^++	B	4.7	16	3160	0.56	5.6	11.2	6	9	10	0.085	164	148	66	518	466	207
TBJB475*016 J □ # @ 0^++	TBJB475*016 J □ L C #^++	B	4.7	16	1500	0.56	5.6	11.2	6	9	10	0.085	238	214	95	357	321	143
TBJA685*016 R □ # @ 0^++	TBJA685*016 R □ L C #^++	A	6.8	16	2000	0.82	8.2	16.4	4	6	8	0.075	194	174	77	387	349	155
TBJA685*016 J □ # @ 0^++	TBJA685*016 J □ L C #^++	A	6.8	16	1500	0.82	8.2	16.4	4	6	8	0.075	224	201	89	335	302	134
TBJB685*016 R □ # @ 0^++	TBJB685*016 R □ L C #^++	B	6.8	16	2650	0.82	8.2	16.4	6	9	10	0.085	179	161	72	475	427	190
TBJB685*016 J □ # @ 0^++	TBJB685*016 J □ L C #^++	B	6.8	16	1200	0.82	8.2	16.4	6	9	10	0.085	266	240	106	319	287	128
TBJC685*016 R □ # @ 0^++	TBJC685*016 R □ L C #^++	C	6.8	16	2500	0.82	8.2	16.4	6	9	10	0.110	210	189	84	524	472	210
TBJB106*016 R □ # @ 0^++	TBJB106*016 R □ L C #^++	B	10	16	2200	1.2	12	24	6	9	10	0.085	197	177	79	432	389	173
TBJB106*016 J □ # @ 0^++	TBJB106*016 J □ L C #^++	B	10	16	800	1.2	12	24	6	9	10	0.085	326	293	130	261	235	104
TBJC106*016 R □ # @ 0^++	TBJC106*016 R □ L C #^++	C	10	16	2000	1.2	12	24	6	9	10	0.110	235	211	94	469	422	188
TBJB156*016 R □ # @ 0^++	TBJB156*016 R □ L C #^++	B	15	16	2030	1.8	18	36	6	9	10	0.085	205	184	82	415	374	166
TBJB156*016 J □ # @ 0^++	TBJB156*016 J □ L C #^++	B	15	16	800	1.8	18	36	6	9	10	0.085	326	293	130	261	235	104
TBJB226*016 R □ # @ 0^++	TBJB226*016 R □ L C #^++	B	22	16	1100	2.6	26	52	6	9	10	0.085	278	250	111	306	275	122
TBJB226*016 J □ # @ 0^++	TBJB226*016 J □ L C #^++	B	22	16	600	2.6	26	52	6	9	10	0.085	376	339	151	226	203	90
TBJC226*016 R □ # @ 0^++	TBJC226*016 R □ L C #^++	C	22	16	700	2.6	26	52	6	9	10	0.110	396	357	159	277	250	111
TBJC226*016 J □ # @ 0^++	TBJC226*016 J □ L C #^++	C	22	16	350	2.6	26	52	6	9	10	0.110	561	505	224	196	177	78
TBJD226*016 R □ # @ 0^++	TBJD226*016 R □ L C #^++	D	22	16	1100	2.6	26	52	6	9	10	0.150	369	332	148	406	366	162
TBJC336*016 R □ # @ 0^++	TBJC336*016 R □ L C #^++	C	33	16	590	4	40	80	6	9	10	0.110	432	389	173	255	229	102
TBJC336*016 J □ # @ 0^++	TBJC336*016 J □ L C #^++	C	33	16	300	4	40	80	6	9	10	0.110	606	545	242	182	163	73
TBJC476*016 R □ # @ 0^++	TBJC476*016 R □ L C #^++	C	47	16	540	5.6	56	112	6	9	10	0.110	451	406	181	244	219	97
TBJC476*016 J □ # @ 0^++	TBJC476*016 J □ L C #^++	C	47	16	350	5.6	56	112	6	9	10	0.110	561	505	224	196	177	78
TBJD476*016 R □ # @ 0^++	TBJD476*016 R □ L C #^++	D	47	16	540	5.6	56	112	6	9	10	0.150	527	474	211	285	256	114
TBJD476*016 J □ # @ 0^++	TBJD476*016 J □ L C #^++	D	47	16	200	5.6	56	112	6	9	10	0.150	866	779	346	173	156	69
TBJD686*016 R □ # @ 0^++	TBJD686*016 R □ L C #^++	D	68	16	490	8.2	82	164	6	9	10	0.150	553	498	221	271	244	108
TBJD686*016 J □ # @ 0^++	TBJD686*016 J □ L C #^++	D	68	16	150	8.2	82	164	6	9	10	0.150	1000	900	400	150	135	60
TBJD107*016 R □ # @ 0^++	TBJD107*016 R □ L C #^++	D	100	16	440	12	120	240	6	9	10	0.150	584	525	234	257	231	103
TBJD107*016 J □ # @ 0^++	TBJD107*016 J □ L C #^++	D	100	16	150	12	120	240	6	9	10	0.150	1000	900	400	150	135	60

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.



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TDS-HIRELTANT-0022 | Rev 3

– HIGH RELIABILITY TANTALUM CAPACITORS –

TBJ SERIES

COTS-Plus – Space Level



RATING & PART NUMBER REFERENCE			Parametric Specifications by Rating									Typical RMS Ripple Data by Rating						
			Cap @ 120Hz µF	DC Rated Voltage V	ESR @ 100kHz mOhms	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	+(85/125) °C	-55°C							
P/N	Space Level P/N	Case	µF @ 25°C	V @ +85°C	mOhms @ +25°C	(µA)	(µA)	(µA)	(%)	(%)	(%)	W	mA (100kHz)	mA (100kHz)	mA (100kHz)	mV (100kHz)	mV (100kHz)	mV (100kHz)
TBJE107 *016 R □ # @ 0 ^ ++	TBJE107 *016 R □ LC # ^ ++	E	100	16	440	12	120	240	6	9	10	0.165	612	551	245	269	242	108
TBJE107 *016 J □ # @ 0 ^ ++	TBJE107 *016 J □ LC # ^ ++	E	100	16	150	12	120	240	6	9	10	0.165	1049	944	420	157	142	63
TBJE157 *016 R □ # @ 0 ^ ++	TBJE157 *016 R □ LC # ^ ++	E	150	16	300	16	160	320	6	9	10	0.165	742	667	297	222	200	89
TBJE157 *016 J □ # @ 0 ^ ++	TBJE157 *016 J □ LC # ^ ++	E	150	16	150	16	160	320	6	9	10	0.165	1049	944	420	157	142	63
TBJU227 *016 R □ # @ 0 ^ ++	TBJU227 *016 R □ LC # ^ ++	U	220	16	500	26.4	264	528	12	15	15	0.165	574	517	230	287	259	115
TBJU227 *016 J □ # @ 0 ^ ++	TBJU227 *016 J □ LC # ^ ++	U	220	16	200	26.4	264	528	12	15	15	0.165	908	817	363	182	163	73
TBJU337 *016 R □ # @ 0 ^ ++	TBJU337 *016 R □ LC # ^ ++	U	330	16	400	39	390	780	30	45	45	0.165	642	578	257	257	231	103
TBJU337 *016 J □ # @ 0 ^ ++	TBJU337 *016 J □ LC # ^ ++	U	330	16	200	39	390	780	30	45	45	0.165	908	817	363	182	163	73
TBJA105 *020 R □ # @ 0 ^ ++	TBJA105 *020 R □ LC # ^ ++	A	1	20	6630	0.3	3	6	4	6	8	0.075	106	96	43	705	635	282
TBJA105 *020 J □ # @ 0 ^ ++	TBJA105 *020 J □ LC # ^ ++	A	1	20	3000	0.3	3	6	4	6	8	0.075	158	142	63	474	427	190
TBJA155 *020 R □ # @ 0 ^ ++	TBJA155 *020 R □ LC # ^ ++	A	1.5	20	5460	0.3	3	6	6	9	10	0.075	117	105	47	640	576	256
TBJA155 *020 J □ # @ 0 ^ ++	TBJA155 *020 J □ LC # ^ ++	A	1.5	20	3000	0.3	3	6	6	9	10	0.075	158	142	63	474	427	190
TBJA225 *020 R □ # @ 0 ^ ++	TBJA225 *020 R □ LC # ^ ++	A	2.2	20	4550	0.33	3.3	6.6	6	9	10	0.075	128	116	51	584	526	234
TBJA225 *020 J □ # @ 0 ^ ++	TBJA225 *020 J □ LC # ^ ++	A	2.2	20	3000	0.33	3.3	6.6	6	9	10	0.075	158	142	63	474	427	190
TBJA335 *020 R □ # @ 0 ^ ++	TBJA335 *020 R □ LC # ^ ++	A	3.3	20	3740	0.5	5	10	6	9	10	0.075	142	127	57	530	477	212
TBJA335 *020 J □ # @ 0 ^ ++	TBJA335 *020 J □ LC # ^ ++	A	3.3	20	2500	0.5	5	10	6	9	10	0.075	173	156	69	433	390	173
TBJB335 *020 R □ # @ 0 ^ ++	TBJB335 *020 R □ LC # ^ ++	B	3.3	20	3740	0.5	5	10	6	9	10	0.085	151	136	60	564	507	226
TBJB335 *020 J □ # @ 0 ^ ++	TBJB335 *020 J □ LC # ^ ++	B	3.3	20	1300	0.5	5	10	6	9	10	0.085	256	230	102	332	299	133
TBJA475 *020 R □ # @ 0 ^ ++	TBJA475 *020 R □ LC # ^ ++	A	4.7	20	2500	0.71	7.1	14.2	5	8	10	0.075	173	156	69	433	390	173
TBJA475 *020 J □ # @ 0 ^ ++	TBJA475 *020 J □ LC # ^ ++	A	4.7	20	1800	0.71	7.1	14.2	5	8	10	0.075	204	184	82	367	331	147
TBJB475 *020 R □ # @ 0 ^ ++	TBJB475 *020 R □ LC # ^ ++	B	4.7	20	3160	0.71	7.1	14.2	6	9	10	0.085	164	148	66	518	466	207
TBJB475 *020 J □ # @ 0 ^ ++	TBJB475 *020 J □ LC # ^ ++	B	4.7	20	1000	0.71	7.1	14.2	6	9	10	0.085	292	262	117	292	262	117
TBJB685 *020 R □ # @ 0 ^ ++	TBJB685 *020 R □ LC # ^ ++	B	6.8	20	2650	1	10	20	6	9	10	0.085	179	161	72	475	427	190
TBJB685 *020 J □ # @ 0 ^ ++	TBJB685 *020 J □ LC # ^ ++	B	6.8	20	1000	1	10	20	6	9	10	0.085	292	262	117	292	262	117
TBJC685 *020 R □ # @ 0 ^ ++	TBJC685 *020 R □ LC # ^ ++	C	6.8	20	2000	1	10	20	6	9	10	0.110	235	211	94	469	422	188
TBJB106 *020 R □ # @ 0 ^ ++	TBJB106 *020 R □ LC # ^ ++	B	10	20	2200	1.5	15	30	6	9	10	0.085	197	177	79	432	389	173
TBJB106 *020 J □ # @ 0 ^ ++	TBJB106 *020 J □ LC # ^ ++	B	10	20	1000	1.5	15	30	6	9	10	0.085	292	262	117	292	262	117
TBJC106 *020 R □ # @ 0 ^ ++	TBJC106 *020 R □ LC # ^ ++	C	10	20	800	1.5	15	30	6	9	10	0.110	371	334	148	297	267	119
TBJC106 *020 J □ # @ 0 ^ ++	TBJC106 *020 J □ LC # ^ ++	C	10	20	500	1.5	15	30	6	9	10	0.110	469	422	188	235	211	94
TBJB156 *020 R □ # @ 0 ^ ++	TBJB156 *020 R □ LC # ^ ++	B	15	20	1400	2.3	23	46	6	9	10	0.085	246	222	99	345	310	138
TBJB156 *020 J □ # @ 0 ^ ++	TBJB156 *020 J □ LC # ^ ++	B	15	20	500	2.3	23	46	6	9	10	0.085	412	371	165	206	186	82
TBJC156 *020 R □ # @ 0 ^ ++	TBJC156 *020 R □ LC # ^ ++	C	15	20	720	2.3	23	46	6	9	10	0.110	391	352	156	281	253	113
TBJC156 *020 J □ # @ 0 ^ ++	TBJC156 *020 J □ LC # ^ ++	C	15	20	400	2.3	23	46	6	9	10	0.110	524	472	210	210	189	84
TBJD156 *020 R □ # @ 0 ^ ++	TBJD156 *020 R □ LC # ^ ++	D	15	20	1100	2.3	23	46	6	9	10	0.150	369	332	148	406	366	162
TBJC226 *020 R □ # @ 0 ^ ++	TBJC226 *020 R □ LC # ^ ++	C	22	20	650	3.3	33	66	6	9	10	0.110	411	370	165	267	241	107
TBJC226 *020 J □ # @ 0 ^ ++	TBJC226 *020 J □ LC # ^ ++	C	22	20	400	3.3	33	66	6	9	10	0.110	524	472	210	210	189	84
TBJD226 *020 R □ # @ 0 ^ ++	TBJD226 *020 R □ LC # ^ ++	D	22	20	650	3.3	33	66	6	9	10	0.150	480	432	192	312	281	125
TBJD226 *020 J □ # @ 0 ^ ++	TBJD226 *020 J □ LC # ^ ++	D	22	20	150	3.3	33	66	6	9	10	0.150	1000	900	400	150	135	60
TBJC336 *020 R □ # @ 0 ^ ++	TBJC336 *020 R □ LC # ^ ++	C	33	20	590	5	50	100	6	9	10	0.110	432	389	173	255	229	102
TBJC336 *020 J □ # @ 0 ^ ++	TBJC336 *020 J □ LC # ^ ++	C	33	20	300	5	50	100	6	9	10	0.110	606	545	242	182	163	73
TBJD336 *020 R □ # @ 0 ^ ++	TBJD336 *020 R □ LC # ^ ++	D	33	20	590	5	50	100	6	9	10	0.150	504	454	202	297	268	119
TBJD336 *020 J □ # @ 0 ^ ++	TBJD336 *020 J □ LC # ^ ++	D	33	20	250	5	50	100	6	9	10	0.150	775	697	310	194	174	77
TBJD476 *020 R □ # @ 0 ^ ++	TBJD476 *020 R □ LC # ^ ++	D	47	20	540	7.1	71	142	6	9	10	0.150	527	474	211	285	256	114
TBJD476 *020 J □ # @ 0 ^ ++	TBJD476 *020 J □ LC # ^ ++	D	47	20	200	7.1	71	142	6	9	10	0.150	866	779	346	173	156	69
TBJD686 *020 R □ # @ 0 ^ ++	TBJD686 *020 R □ LC # ^ ++	D	68	20	490	10	100	200	6	9	10	0.150	553	498	221	271	244	108
TBJD686 *020 J □ # @ 0 ^ ++	TBJD686 *020 J □ LC # ^ ++	D	68	20	200	10	100	200	6	9	10	0.150	866	779	346	173	156	69
TBJE686 *020 R □ # @ 0 ^ ++	TBJE686 *020 R □ LC # ^ ++	E	68	20	490	10	100	200	6	9	10	0.165	580	522	232	284	256	114
TBJE686 *020 J □ # @ 0 ^ ++	TBJE686 *020 J □ LC # ^ ++	E	68	20	120	10	100	200	6	9	10	0.165	1173	1055	469	141	127	56
TBJE107 *020 R □ # @ 0 ^ ++	TBJE107 *020 R □ LC # ^ ++	E	100	20	300	15	150	300	6	9	10	0.165	742	667	297	222	200	89
TBJE107 *020 J □ # @ 0 ^ ++	TBJE107 *020 J □ LC # ^ ++	E	100	20	150	15	150	300	6	9	10	0.165	1049	944	420	157	142	63
TBJU157 *020 R □ # @ 0 ^ ++	TBJU157 *020 R □ LC # ^ ++	U	150	20	500	22	220	440	30	45	45	0.165	574	517	230	287	259	115
TBJU157 *020 J □ # @ 0 ^ ++	TBJU157 *020 J □ LC # ^ ++	U	150	20	250	22	220	440	30	45	45	0.165	812	731	325	203	183	81
TBJA474 *025 R □ # @ 0 ^ ++	TBJA474 *025 R □ LC # ^ ++	A	0.47	25	9530	0.3	3	6	4	6	8	0.075	89	80	35	845	761	338
TBJA474 *025 J □ # @ 0 ^ ++	TBJA474 *025 J □ LC # ^ ++	A	0.47	25	7000	0.3	3	6	4	6	8	0.075	104	93	41	725	652	290
TBJA684 *025 R □ # @ 0 ^ ++	TBJA684 *025 R □ LC # ^ ++	A	0.68	25	7980	0.3	3	6	4	6	8	0.075	97	87	39	774	696	309
TBJA684 *025 J □ # @ 0 ^ ++	TBJA684 *025 J □ LC # ^ ++	A	0.68	25	6000	0.3	3	6	4	6	8	0.075	112	101	45	671	604	268
TBJA105 *025 R □ # @ 0 ^ ++	TBJA105 *025 R □ LC # ^ ++	A	1	25	6630	0.3	3	6	4	6	8	0.075	106	96	43	705	635	282
TBJA105 *025 J □ # @ 0 ^ ++	TBJA105 *025 J □ LC # ^ ++	A	1	25	3000	0.3	3	6	4	6	8	0.075	158	142	63	474	427	190
TBJA155 *025 R □ # @ 0 ^ ++	TBJA155 *025 R □ LC # ^ ++	A	1.5	25	5460	0.3	3	6	6	9	10	0.075	117	105	47	640	576	256

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	+85°C	+125°C	+25°C	+(85/125) °C	-55°C							
P/N	Space Level P/N	Case				(µA)	(µA)	(µA)	(%)	(%)	(%)							
TBJA155 *025 J □ # @ 0 ° ++	TBJA155 *025 J □ L C # ^ ++	A	1.5	25	3000	0.3	3	6	6	9	10	0.075	158	142	63	474	427	190
TBJB155 *025 R □ # @ 0 ° ++	TBJB155 *025 R □ L C # ^ ++	B	1.5	25	5000	0.3	3	6	6	9	10	0.085	130	117	52	652	587	261
TBJA225 *025 R □ # @ 0 ° ++	TBJA225 *025 R □ L C # ^ ++	A	2.2	25	2900	0.41	4.1	8.2	6	9	10	0.075	161	145	64	466	420	187
TBJA225 *025 J □ # @ 0 ° ++	TBJA225 *025 J □ L C # ^ ++	A	2.2	25	1600	0.41	4.1	8.2	6	9	10	0.075	217	195	87	346	312	139
TBJB225 *025 R □ # @ 0 ° ++	TBJB225 *025 R □ L C # ^ ++	B	2.2	25	4550	0.41	4.1	8.2	6	9	10	0.085	137	123	55	622	560	249
TBJB225 *025 J □ # @ 0 ° ++	TBJB225 *025 J □ L C # ^ ++	B	2.2	25	1200	0.41	4.1	8.2	6	9	10	0.085	266	240	106	319	287	128
TBJB335 *025 R □ # @ 0 ° ++	TBJB335 *025 R □ L C # ^ ++	B	3.3	25	3740	0.62	6.2	12.4	6	9	10	0.085	151	136	60	564	507	226
TBJB335 *025 J □ # @ 0 ° ++	TBJB335 *025 J □ L C # ^ ++	B	3.3	25	2000	0.62	6.2	12.4	6	9	10	0.085	206	186	82	412	371	165
TBJB475 *025 R □ # @ 0 ° ++	TBJB475 *025 R □ L C # ^ ++	B	4.7	25	3160	0.88	8.8	17.6	6	9	10	0.085	164	148	66	518	466	207
TBJB475 *025 J □ # @ 0 ° ++	TBJB475 *025 J □ L C # ^ ++	B	4.7	25	1000	0.88	8.8	17.6	6	9	10	0.085	292	262	117	292	262	117
TBJB685 *025 R □ # @ 0 ° ++	TBJB685 *025 R □ L C # ^ ++	B	6.8	25	1500	1.3	13	26	6	9	10	0.085	238	214	95	357	321	143
TBJB685 *025 J □ # @ 0 ° ++	TBJB685 *025 J □ L C # ^ ++	B	6.8	25	1000	1.3	13	26	6	9	10	0.085	292	262	117	292	262	117
TBJC685 *025 R □ # @ 0 ° ++	TBJC685 *025 R □ L C # ^ ++	C	6.8	25	1070	1.3	13	26	6	9	10	0.110	321	289	128	343	309	137
TBJC685 *025 J □ # @ 0 ° ++	TBJC685 *025 J □ L C # ^ ++	C	6.8	25	600	1.3	13	26	6	9	10	0.110	428	385	171	257	231	103
TBJC106 *025 R □ # @ 0 ° ++	TBJC106 *025 R □ L C # ^ ++	C	10	25	800	1.9	19	38	6	9	10	0.110	371	334	148	297	267	119
TBJC106 *025 J □ # @ 0 ° ++	TBJC106 *025 J □ L C # ^ ++	C	10	25	600	1.9	19	38	6	9	10	0.110	428	385	171	257	231	103
TBJD106 *025 R □ # @ 0 ° ++	TBJD106 *025 R □ L C # ^ ++	D	10	25	1200	1.9	19	38	6	9	10	0.150	354	318	141	424	382	170
TBJC156 *025 R □ # @ 0 ° ++	TBJC156 *025 R □ L C # ^ ++	C	15	25	720	2.8	28	56	6	9	10	0.110	391	352	156	281	253	113
TBJC156 *025 J □ # @ 0 ° ++	TBJC156 *025 J □ L C # ^ ++	C	15	25	500	2.8	28	56	6	9	10	0.110	469	422	188	235	211	94
TBJD156 *025 R □ # @ 0 ° ++	TBJD156 *025 R □ L C # ^ ++	D	15	25	720	2.8	28	56	6	9	10	0.150	456	411	183	329	296	131
TBJD156 *025 J □ # @ 0 ° ++	TBJD156 *025 J □ L C # ^ ++	D	15	25	300	2.8	28	56	6	9	10	0.150	707	636	283	212	191	85
TBJD226 *025 R □ # @ 0 ° ++	TBJD226 *025 R □ L C # ^ ++	D	22	25	650	4.1	41	82	6	9	10	0.150	480	432	192	312	281	125
TBJD226 *025 J □ # @ 0 ° ++	TBJD226 *025 J □ L C # ^ ++	D	22	25	300	4.1	41	82	6	9	10	0.150	707	636	283	212	191	85
TBJD336 *025 R □ # @ 0 ° ++	TBJD336 *025 R □ L C # ^ ++	D	33	25	590	6.2	62	124	6	9	10	0.150	504	454	202	297	268	119
TBJD336 *025 J □ # @ 0 ° ++	TBJD336 *025 J □ L C # ^ ++	D	33	25	400	6.2	62	124	6	9	10	0.150	612	551	245	245	220	98
TBJD476 *025 R □ # @ 0 ° ++	TBJD476 *025 R □ L C # ^ ++	D	47	25	540	8.8	88	176	6	9	10	0.150	527	474	211	285	256	114
TBJD476 *025 J □ # @ 0 ° ++	TBJD476 *025 J □ L C # ^ ++	D	47	25	250	8.8	88	176	6	9	10	0.150	775	697	310	194	174	77
TBJE476 *025 R □ # @ 0 ° ++	TBJE476 *025 R □ L C # ^ ++	E	47	25	540	8.8	88	176	6	9	10	0.165	553	497	221	298	269	119
TBJE476 *025 J □ # @ 0 ° ++	TBJE476 *025 J □ L C # ^ ++	E	47	25	150	8.8	88	176	6	9	10	0.165	1049	944	420	157	142	63
TBJU686 *025 R □ # @ 0 ° ++	TBJU686 *025 R □ L C # ^ ++	U	68	25	500	12	120	240	30	45	45	0.165	574	517	230	287	259	115
TBJU107 *025 R □ # @ 0 ° ++	TBJU107 *025 R □ L C # ^ ++	U	100	25	500	18	180	360	30	45	45	0.165	574	517	230	287	259	115
TBJA104 *035 R □ # @ 0 ° ++	TBJA104 *035 R □ L C # ^ ++	A	0.1	35	20000	0.3	3	6	4	6	8	0.075	61	55	24	1225	1102	490
TBJA154 *035 R □ # @ 0 ° ++	TBJA154 *035 R □ L C # ^ ++	A	0.15	35	16470	0.3	3	6	4	6	8	0.075	67	61	27	1111	1000	445
TBJA154 *035 J □ # @ 0 ° ++	TBJA154 *035 J □ L C # ^ ++	A	0.15	35	6000	0.3	3	6	4	6	8	0.075	112	101	45	671	604	268
TBJA224 *035 R □ # @ 0 ° ++	TBJA224 *035 R □ L C # ^ ++	A	0.22	35	13710	0.3	3	6	4	6	8	0.075	74	67	30	1014	913	406
TBJA224 *035 J □ # @ 0 ° ++	TBJA224 *035 J □ L C # ^ ++	A	0.22	35	6000	0.3	3	6	4	6	8	0.075	112	101	45	671	604	268
TBJA334 *035 R □ # @ 0 ° ++	TBJA334 *035 R □ L C # ^ ++	A	0.33	35	11280	0.3	3	6	4	6	8	0.075	82	73	33	920	828	368
TBJA334 *035 J □ # @ 0 ° ++	TBJA334 *035 J □ L C # ^ ++	A	0.33	35	6000	0.3	3	6	4	6	8	0.075	112	101	45	671	604	268
TBJA474 *035 R □ # @ 0 ° ++	TBJA474 *035 R □ L C # ^ ++	A	0.47	35	9530	0.3	3	6	4	6	8	0.075	89	80	35	845	761	338
TBJA474 *035 J □ # @ 0 ° ++	TBJA474 *035 J □ L C # ^ ++	A	0.47	35	4000	0.3	3	6	4	6	8	0.075	137	123	55	548	493	219
TBJA684 *035 R □ # @ 0 ° ++	TBJA684 *035 R □ L C # ^ ++	A	0.68	35	7980	0.3	3	6	4	6	8	0.075	97	87	39	774	696	309
TBJA684 *035 J □ # @ 0 ° ++	TBJA684 *035 J □ L C # ^ ++	A	0.68	35	6000	0.3	3	6	4	6	8	0.075	112	101	45	671	604	268
TBJA105 *035 R □ # @ 0 ° ++	TBJA105 *035 R □ L C # ^ ++	A	1	35	6630	0.3	3	6	4	6	8	0.075	106	96	43	705	635	282
TBJA105 *035 J □ # @ 0 ° ++	TBJA105 *035 J □ L C # ^ ++	A	1	35	3000	0.3	3	6	4	6	8	0.075	158	142	63	474	427	190
TBJB105 *035 R □ # @ 0 ° ++	TBJB105 *035 R □ L C # ^ ++	B	1	35	3400	0.3	3	6	4	6	8	0.085	158	142	63	538	484	215
TBJB105 *035 J □ # @ 0 ° ++	TBJB105 *035 J □ L C # ^ ++	B	1	35	2000	0.3	3	6	4	6	8	0.085	206	186	82	412	371	165
TBJA155 *035 R □ # @ 0 ° ++	TBJA155 *035 R □ L C # ^ ++	A	1.5	35	3100	0.39	3.9	7.8	6	9	10	0.075	156	140	62	482	434	193
TBJA155 *035 J □ # @ 0 ° ++	TBJA155 *035 J □ L C # ^ ++	A	1.5	35	2000	0.39	3.9	7.8	6	9	10	0.075	194	174	77	387	349	155
TBJB155 *035 R □ # @ 0 ° ++	TBJB155 *035 R □ L C # ^ ++	B	1.5	35	5460	0.39	3.9	7.8	6	9	10	0.085	125	112	50	681	613	272
TBJB155 *035 J □ # @ 0 ° ++	TBJB155 *035 J □ L C # ^ ++	B	1.5	35	2500	0.39	3.9	7.8	6	9	10	0.085	184	166	74	461	415	184
TBJB225 *035 R □ # @ 0 ° ++	TBJB225 *035 R □ L C # ^ ++	B	2.2	35	4550	0.58	5.8	11.6	6	9	10	0.085	137	123	55	622	560	249
TBJB225 *035 J □ # @ 0 ° ++	TBJB225 *035 J □ L C # ^ ++	B	2.2	35	2000	0.58	5.8	11.6	6	9	10	0.085	206	186	82	412	371	165
TBJB335 *035 R □ # @ 0 ° ++	TBJB335 *035 R □ L C # ^ ++	B	3.3	35	3740	0.87	8.7	17.4	6	9	10	0.085	151	136	60	564	507	226
TBJB335 *035 J □ # @ 0 ° ++	TBJB335 *035 J □ L C # ^ ++	B	3.3	35	1000	0.87	8.7	17.4	6	9	10	0.085	292	262	117	292	262	117
TBJC335 *035 R □ # @ 0 ° ++	TBJC335 *035 R □ L C # ^ ++	C	3.3	35	1840	0.87	8.7	17.4	6	9	10	0.110	245	220	98	450	405	180
TBJC335 *035 J □ # @ 0 ° ++	TBJC335 *035 J □ L C # ^ ++	C	3.3	35	800	0.87	8.7	17.4	6	9	10	0.110	371	334	148	297	267	119
TBJD335 *035 R □ # @ 0 ° ++	TBJD335 *035 R □ L C # ^ ++	D	3.3	35	2000	0.87	8.7	17.4	6	9	10	0.150	274	246	110	548	493	219
TBJB475 *035 R □ # @ 0 ° ++	TBJB475 *035 R □ L C # ^ ++	B	4.7	35	2200	1.2	12	24	6	9	10	0.085	197	177	79	432	389	173
TBJB475 *035 J □ # @ 0 ° ++	TBJB475 *035 J □ L C # ^ ++	B	4.7	35	1500	1.2	12	24	6	9	10	0.085	238	214	95	357	321	143

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.



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

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	+85°C	+125°C	+25°C	+(85/125) °C	-55°C							
P/N	Space Level P/N	Case				(µA)	(µA)	(µA)	(%)	(%)	(%)							
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.

Mouser Electronics

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KYOCERA AVX:

TBJD336M035LRSB0000	TBJE226K035LRSB0023	TBJE336K025LRSB0023	TBJC107K010LRLB0024
TBJC475K035LRSB0023	TBJD476K016LRSB0000	TBJD476M025CSLC0024	TBJC106K025LRSB0023
TBJC475K035LRSB0000	TBJD107K016LRSB0024	TBJD336M035LRSB0023	TBJD685K035CRSB0023
TBJE686K020LBLC9000	TBJA106K010LRSB0023	TBJD476K016LRSB0023	TBJA156J010CBSZ0000
TBJE226M035LRSB0023	TBJE337K010LBLC9801	TBJA105K020CBLB9812	TBJA106K010LBSB0024
TBJB105K035CRSB0000	TBJB106K016CBSB0024	TBJB106M020LRSB0000	TBJB225K020CBLB9812
TBJB335K010CBSB0900	TBJB336K010CBSB0024	TBJC106K025LBSB0024	TBJC106K035CBLB0024
TBJC107K010LBSB0024	TBJC226K025CBSB0000	TBJC226M025CBSB0000	TBJC475K035LBSB0000
TBJC476M010CRSB0000	TBJD106K025CBLB9812	TBJD106K025CBSB0000	TBJD106K035CBSB0023
TBJD106K035LRSB0023	TBJD107K010LRSB0023	TBJD156K025CBSB0000	TBJD336K010CBSB0023
TBJD336K010CRSB0000	TBJD336K035CBSB0024	TBJD336K035LBSZ0180	TBJD336M035LBLC0024
TBJD337M010LBSC0000	TBJD476K020CBSB0000	TBJD685K050CBSB0000	TBJE107K016LBLC9000
TBJE107K016LBSB0023	TBJE226K035LBSB0024	TBJE336K025LBSB0024	TBJE337K010LBLC0024
TBJE337K010LBSB0000	TBJE337M010LBSC0005	TBJE477M010LBSB0000	TBJE477M010LBSB0023
TBJC107K010CRSB0000	TBJD226K035LRSB0023	TBJD337M010LRSC0000	TBJD106K035LRSB0000
TBJC475K035LRSB0024	TBJB685K020CRSB0024	TBJD336K020CRSB0024	TBJA106K010LRLC0024
TBJA475K016LRSB0042	TBJB106K016LBSZ0000	TBJB224K050CBSB0000	TBJC105K050CBSB0823
TBJC106K020CBSB0024	TBJC107K006LRSB0024	TBJC107M010LRSB0024	TBJC336K016LBSB0023
TBJC476K016CBSB0024	TBJD106K035CBLB0023	TBJD107K016LBSB0000	TBJD107K016LRSB0012
TBJD157K010LBSB0000	TBJD336K025LRSZ0024	TBJD476K016LBSB0024	TBJD476M025LBSB0024
TBJD685K050CBSB0023	TBJE106K035LBSB0000	TBJE156M050LRSB0060	TBJE336K035LRSZ0024
TBJE337M010LRSB0024	TBJA224K035CBSB0000	TBJE107K015LBLC9000	TBJE227K010LRSZ0000
TBJE106K050CBSB0012	TBJA106K010CBSZ0800	TBJE477M010LRSZ0000	TBJB156K016LBSZ0000
TBJC106K016CRSB0023	TBJC107M010LBSB0024	TBJE336K025LRSB0823	TBJD336K016CBSB0824
TBJD337M010CRSB0000	TBJA106K016CRLC0000	TBJB106K020LBLC9801	TBJC106K025LRSB0000