

TBJ Series



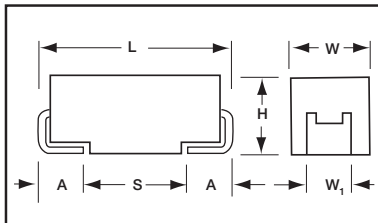
CWR11 - MIL-PRF-55365/8



Fully qualified to MIL-PRF-55365/8, the CWR11 is the military version of EIA-535BAAC, the commercial industry standard. It comprises four case sizes (A through D). This series also offers molded body/compliant termination construction, polarity, capacitance and JAN brand marking. The molded construction is compatible with a wide

range of SMT board assembly processes including wave or reflow solder, conductive epoxy or compression bonding techniques. There are three termination finishes available: fused solder plated ("K" per MIL-PRF-55365), hot solder dipped ("C") and gold plated ("B").

CASE DIMENSIONS: millimeters (inches)



Case Code	EIA Code	Length (L)	Width (W)	Height (H)	Term. Width (W ₁) ±0.10 (±0.004)	Term. Length A ±0.30(±0.012)	S min
A	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)	1.20 (0.047)	0.80 (0.031)	1.80 (0.071)
B	3528-21	3.50±0.20 (0.138±0.008)	2.80±0.20 (0.110±0.008)	1.90±0.20 (0.075±0.008)	2.20 (0.087)	0.80 (0.031)	1.40 (0.055)
C	6032-28	6.00±0.30 (0.236±0.012)	3.20±0.30 (0.126±0.012)	2.50±0.30 (0.098±0.012)	2.20 (0.087)	1.30 (0.051)	2.90 (0.114)
D	7343-31	7.30±0.30 (0.287±0.012)	4.30±0.30 (0.169±0.012)	2.80±0.30 (0.110±0.012)	2.40 (0.094)	1.30 (0.051)	4.40 (0.173)

MARKING

(Brown marking on gold body)



Polarity Stripe (+)

"J" for "JAN" Brand
Capacitance Code

Rated Voltage
Manufacturer's ID

HOW TO ORDER

CWR11	J	B	225	*	@	+	□
Type	Voltage Code	Termination Finish	Capacitance Code	Capacitance Tolerance	Reliability Grade	Surge Test Option	Packaging
	C = 4Vdc D = 6Vdc F = 10Vdc H = 16Vdc J = 20Vdc K = 25Vdc M = 35Vdc N = 50Vdc	K = Fused Solder Plated C = Hot Solder Dipped B = Gold Plated	pF code: 1st two digits represent significant figures 3rd digit represents multiplier (number of zeros to follow)	M = ±20% K = ±10% J = ±5%	Weibull: B = 0.1%/1000 Hrs. (90% C = 0.01%/1000 Hrs. conf.) Comm: Z = Non ER	A = 10 cycles, +25°C B = 10 cycles, -55°C & +85°C C = 10 cycles, -55°C & +85°C before Weibull Z = None (required for CWR19 & CWR29 only)	Bulk = Standard ∖TR = 7" T&R ∖TR13 = 13" T&R ∖W = Waffle

TECHNICAL SPECIFICATIONS

Technical Data:	Unless otherwise specified, all technical data relate to an ambient temperature of 25°C									
Capacitance Range:	0.1 µF to 100 µF									
Capacitance Tolerance:	±5%; ±10%; ±20%									
Rated Voltage: (V _R)	≤85°C:	4	6	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	
	125°C:	3.4	5	8	13	16	20	28	40	
Temperature Range:	-55°C to +125°C									



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

Capacitance		Rated voltage DC (V_R) to 85°C							
μF	Code	4V (C)	6V (D)	10V (F)	16V (H)	20V (J)	25V (K)	35V (M)	50V (N)
0.10	104							A	A
0.15	154							A	B
0.22	224							A	B
0.33	334						A	A	B
0.47	474					A	A	B	C
0.68	684				A	A	B	B	C
1.0	105			A	A	A	B	B	C
1.5	155		A	A	A	B	B	C	D
2.2	225	A	A	A	B	B	C	C	D
3.3	335		A	B	B	B	C	C	D
4.7	475	A	B	B	B	C	C	D	D
6.8	685	B	B	B		C	D	D	
10	106	B	B		C		D		
15	156	B	C	C		D	D		
22	226		C		D	D			
33	336	C		D	D				
47	476		D	D					
68	686	D	D						
100	107	D							
150	157								
220	227								
330	337								

Part Number	Case Size	Cap (nom) (μF)	DC rated voltage (85°C) (volts)	ESR (max) 100 kHz +25°C (ohms)	DC Leakage (max)			Dissipation Factor (max)		
					+25°C (μA)	+85°C (μA)	+125°C (μA)	+25°C (%)	+85/125°C (%)	-55°C (%)
CWR11CK225*@+□	A	2.2	4	8	0.5	5	6	6	9	9
CWR11CK475*@+□	A	4.7	4	8	0.5	5	6	6	9	9
CWR11CK685*@+□	B	6.8	4	5.5	0.5	5	6	6	9	9
CWR11CK106*@+□	B	10	4	4	0.5	5	6	6	9	9
CWR11CK156*@+□	B	15	4	3.5	0.6	6	7.2	6	9	9
CWR11CK336*@+□	C	33	4	2.2	1.3	13	15.6	6	9	9
CWR11CK686*@+□	D	68	4	1.1	2.7	27	32.4	6	9	9
CWR11CK107*@+□	D	100	4	0.9	4	40	48	8	12	12
CWR11DK155*@+□	A	1.5	6	8	0.5	5	6	6	9	9
CWR11DK225*@+□	A	2.2	6	8	0.5	5	6	6	6	9
CWR11DK335*@+□	A	3.3	6	8	0.5	5	6	6	9	9
CWR11DK475*@+□	B	4.7	6	5.5	0.5	5	6	6	9	9
CWR11DK685*@+□	B	6.8	6	4.5	0.5	5	6	6	9	9
CWR11DK106*@+□	B	10	6	3.5	0.6	6	7.2	6	9	9
CWR11DK156*@+□	C	15	6	3	0.9	9	10.8	6	9	9
CWR11DK226*@+□	C	22	6	2.2	1.4	14	16.8	6	9	9
CWR11DK476*@+□	D	47	6	1.1	2.8	28	33.6	6	9	9
CWR11DK686*@+□	D	68	6	0.9	4.3	43	86	6	9	9
CWR11FK105*@+□	A	1	10	10	0.5	5	6	4	6	6
CWR11FK155*@+□	A	1.5	10	8	0.5	5	6	6	6	9
CWR11FK225*@+□	A	2.2	10	8	0.5	5	6	6	9	9
CWR11FK335*@+□	B	3.3	10	5.5	0.5	5	6	6	9	9
CWR11FK475*@+□	B	4.7	10	4.5	0.5	5	6	6	9	9
CWR11FK685*@+□	B	6.8	10	3.5	0.7	7	8.4	6	9	9
CWR11FK156*@+□	C	15	10	2.5	1.5	15	18	6	6	9
CWR11FK336*@+□	D	33	10	1.1	3.3	33	39.6	6	9	9
CWR11FK476*@+□	D	47	10	0.9	4.7	47	56.4	6	9	9
CWR11HK684*@+□	A	0.68	16	12	0.5	5	6	4	6	6
CWR11HK105*@+□	A	1	16	10	0.5	5	6	4	6	6
CWR11HK155*@+□	A	1.5	16	8	0.5	5	6	6	9	9
CWR11HK225*@+□	B	2.2	16	5	0.5	5	6	6	9	9
CWR11HK335*@+□	B	3.3	16	5	0.5	5	6	6	8	9
CWR11HK475*@+□	B	4.7	16	4	0.7	7	8.4	6	9	9
CWR11HK106*@+□	C	10	16	2.5	1.6	16	19.2	6	8	9
CWR11HK226*@+□	D	22	16	1.1	3.3	33	39.6	6	8	9
CWR11HK336*@+□	D	33	16	0.9	5.3	53	106	6	9	9
CWR11JK474*@+□	A	0.47	20	14	0.5	5	6	4	6	6
CWR11JK684*@+□	A	0.68	20	12	0.5	5	6	4	6	6
CWR11JK105*@+□	A	1	20	10	0.5	5	6	4	6	6
CWR11JK155*@+□	B	1.5	20	6	0.5	5	6	6	9	9
CWR11JK225*@+□	B	2.2	20	5	0.5	5	6	6	8	9
CWR11JK335*@+□	B	3.3	20	4	0.7	7	8.4	6	9	9
CWR11JK475*@+□	C	4.7	20	3	1	10	12	6	8	9

TBJ Series



CWR11 - MIL-PRF-55365/8

Part Number	Case Size	Cap (nom) (μF)	DC rated voltage (85°C) (volts)	ESR (max) 100 kHz +25°C (ohms)	DC Leakage (max)			Dissipation Factor (max)		
					+25°C (μA)	+85°C (μA)	+125°C (μA)	+25°C (%)	+85/125°C (%)	-55°C (%)
CWR11JK685*@+□	C	6.8	20	2.4	1.4	14	16.8	6	9	9
CWR11JK156*@+□	D	15	20	1.1	3	30	36	6	8	9
CWR11JK226*@+□	D	22	20	0.9	4.4	44	52.8	6	9	9
CWR11KK334*@+□	A	0.33	25	15	0.5	5	6	4	6	6
CWR11KK474*@+□	A	0.47	25	14	0.5	5	6	4	6	6
CWR11KK684*@+□	B	0.68	25	7.5	0.5	5	6	4	6	6
CWR11KK105*@+□	B	1	25	6.5	0.5	5	6	4	6	6
CWR11KK155*@+□	B	1.5	25	6.5	0.5	5	6	6	8	9
CWR11KK225*@+□	C	2.2	25	3.5	0.6	6	7.2	6	9	9
CWR11KK335*@+□	C	3.3	25	3.5	0.9	9	10.8	6	8	9
CWR11KK475*@+□	C	4.7	25	2.5	1.2	12	14.4	6	9	9
CWR11KK685*@+□	D	6.8	25	1.4	1.7	17	20.4	6	9	9
CWR11KK106*@+□	D	10	25	1.2	2.5	25	30	6	8	9
CWR11KK156*@+□	D	15	25	1	3.8	38	45.6	6	9	9
CWR11MK104*@+□	A	0.1	35	24	0.5	5	6	4	6	6
CWR11MK154*@+□	A	0.15	35	21	0.5	5	6	4	6	6
CWR11MK224*@+□	A	0.22	35	18	0.5	5	6	4	6	6
CWR11MK334*@+□	A	0.33	35	15	0.5	5	6	4	6	6
CWR11MK474*@+□	B	0.47	35	10	0.5	5	6	4	6	6
CWR11MK684*@+□	B	0.68	35	8	0.5	5	6	4	6	6
CWR11MK105*@+□	B	1	35	6.5	0.5	5	6	4	6	6
CWR11MK155*@+□	C	1.5	35	4.5	0.5	5	6	6	8	9
CWR11MK225*@+□	C	2.2	35	3.5	0.8	8	9.6	6	8	9
CWR11MK335*@+□	C	3.3	35	2.5	1.2	12	14.4	6	8	9
CWR11MK475*@+□	D	4.7	35	1.5	1.7	17	20.4	6	8	9
CWR11MK685*@+□	D	6.8	35	1.3	2.4	24	28.8	6	9	9
CWR11NK104*@+□	A	0.1	50	22	0.5	5	12	6	8	8
CWR11NK154*@+□	B	0.15	50	17	0.5	5	6	4	6	6
CWR11NK224*@+□	B	0.22	50	14	0.5	5	6	4	6	6
CWR11NK334*@+□	B	0.33	50	12	0.5	5	6	4	6	6
CWR11NK474*@+□	C	0.47	50	8	0.5	5	6	4	6	6
CWR11NK684*@+□	C	0.68	50	7	0.5	5	6	4	6	6
CWR11NK105*@+□	C	1	50	6	0.5	5	6	4	6	6
CWR11NK155*@+□	D	1.5	50	4	0.8	8	9.6	6	8	9
CWR11NK225*@+□	D	2.2	50	2.5	1.1	11	13.2	6	8	9
CWR11NK335*@+□	D	3.3	50	2	1.7	17	20.4	6	9	9
CWR11NK475*@+□	D	4.7	50	1.5	2.4	24	28.8	6	9	9

TBJ Series

COTS-Plus

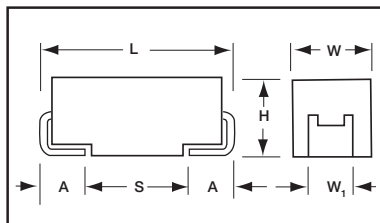


This series features:

- CWR11 form factor in Standard and Extended ratings.
- Low ESR Ratings (Cases A through E).
- Extended Case size (E) for ratings to 470 μ F.
- Weibull Reliability Grading and Surge Test options.

All ratings in this series offer the advantages of molded body/compliant termination construction, polarity, capacitance and voltage marking. The molded construction is compatible with a wide range of SMT board assembly processes including wave or reflow solder, conductive epoxy or compression bonding techniques.

CASE DIMENSIONS: millimeters (inches)



Code	EIA Code	L \pm 0.20 (0.008)	W \pm 0.20 (0.008) -0.10 (0.004)	H \pm 0.20 (0.008) -0.10 (0.004)	W ₁ \pm 0.20 (0.008)	A \pm 0.30 (0.012) -0.20 (0.008)	S Min.
A	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	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	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	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	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)
V	7361-38	7.30 (0.287)	6.10 (0.240)	3.45 \pm 0.30 (0.136 \pm 0.012)	3.10 (0.120)	1.40 (0.055)	4.40 (0.173)

MARKING (Military)
(Brown marking on gold body)

MARKING
(Brown marking on gold body)



Polarity stripe (+)
"J" for "JAN" Brand
Capacitance Code
Rated Voltage
Manufacturer's ID



Polarity Stripe (+)
Capacitance Code
Rated Voltage
Manufacturer's ID
Lot Number

HOW TO ORDER

TBJ	D	227	*	006	C	□	#@	00	++
Type	Case Size	Capacitance Code	Capacitance Tolerance	Voltage Code	Standard or Low ESR Range	Packaging	Qualification/Reliability	Termination Finish	Surge Test Option
		pF code: 1st two digits represent significant figures 3rd digit represents multiplier (number of zeros to follow)	M = \pm 20% K = \pm 10% J = \pm 5%	004 = 4Vdc 006 = 6Vdc 010 = 10Vdc 016 = 16Vdc 020 = 20Vdc 025 = 25Vdc 035 = 35Vdc 050 = 50Vdc	C = Std ESR L = Low ESR	B = Bulk R = 7" T&R S = 13" T&R	# = Inspection Level S = Std. Conformance L = Group A @ = Failure Level Weibull: B = 0.1%/1000 hrs. C = 0.01%/ 1000 hrs. (90% conf.) Comm: Z = Non ER	09 = Gold Plated 08 = Hot Solder Dipped 07 = 100% Tin 00 = Solder Fused	00 = None 23 = 10 cycles, +25°C 24 = 10 cycles, -55°C & +85°C 45 = 10 cycles, -55°C & +85°C before Weibull

TECHNICAL SPECIFICATIONS

Technical Data:	Unless otherwise specified, all technical data relate to an ambient temperature of 25°C									
Capacitance Range:	0.1 μ F to 1000 μ F									
Capacitance Tolerance:	\pm 5%; \pm 10%; \pm 20%									
Rated Voltage: (V _R)	\leq 85°C:	4	6	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)	\leq 85°C:	5.2	8	13	20	26	32	46	65	
	125°C:	3.4	5	8	12	16	20	28	40	
Temperature Range:	-55°C to +125°C									



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

Capacitance		Rated voltage DC (V_R) to 85°C							
μF	Code	4V (G)	6V (J)	10V (A)	16V (C)	20V (D)	25V (E)	35V (V)	50V (T)
0.10	104							A	A
0.15	154							A	A ^(M) /B
0.22	224							A	A ^(M) /B
0.33	334						A	A	B
0.47	474					A	A	A ^(M) /B	A/C
0.68	684				A	A	A/B	A ^(M) /B	A/C
1.0	105			A	A	A	A/B	A/B	A ^(M) /C
1.5	155		A	A	A	A/B	A/B	A/B/C	C/D
2.2	225	A	A	A	A/B	B	A/B/C	B/C	D
3.3	335		A	A/B	A/B	B	B/C	B/C	D
4.7	475	A	A/B	A/B	A/B	A/B/C	A/B/C	B/C/D	D
6.8	685	A/B	A/B	A/B	A/B/C	B/C	B/C/D	C/D	D
10	106	A/B	A/B	A/B/C	B/C	B/C	C/D	C/D	
15	156	A/B	A/B/C	A/B/C	B/C	B/C/D	D	C/D	D
22	226	A	A/B/C	B/C	B/C/D	C/D	C/D	D/E	V*
33	336	A/B/C	B/C	A/B/C/D	C/D	C/D	D/E	D ^(M) /V*	
47	476	B	C/D	C/D	C/D	D	D ^(M)	V*	
68	686	A/C/D	B/C/D	C/D	D	D/E	V*		
100	107	A/B/C/D	C/D	C/D	D/E	V*	V*		
150	157		D	D	D ^(M) /V*	V*			
220	227	D	C/D	D ^(M) /E	V*				
330	337	E	E	D ^(M) /E/V*					
470	477		E ^(M) /V	E ^(M) /V*					
680	687		V*						
1000	108	D/V*							
1500	158								
2200	228								

Released codes ^(M tolerance only)

*Parts are not available on C level

Part Number	Case Size	DC rated voltage (85°C) (volts)	Cap (nom) (µF)	ESR (max) 100 kHz +25°C (ohms)	DC Leakage (max)			Dissipation Factor (max)		
					+25°C (µA)	+85°C (µA)	+125°C (µA)	+25°C (%)	+85/125°C (%)	-55°C (%)
TBJA225*004C□#@00++	A	4	2.2	8	0.5	5	6	6	9	9
TBJA475*004C□#@00++	A	4	4.7	8	0.5	5	6	6	9	9
TBJA685*004C□#@00++	A	4	6.8	6.5	0.5	5	10	6	9	10
TBJB685*004C□#@00++	B	4	6.8	5.5	0.5	5	6	6	9	9
TBJA106*004C□#@00++	A	4	10	6	0.5	5	10	6	9	10
TBJB106*004C□#@00++	B	4	10	4	0.5	5	6	6	9	9
TBJA156*004C□#@00++	A	4	15	4	0.6	6	12	6	9	10
TBJB156*004C□#@00++	B	4	15	3.5	0.6	6	7.2	6	9	9
TBJA226*004C□#@00++	A	4	22	3.5	0.9	9	18	6	9	10
TBJA336*004C□#@00++	A	4	33	3	1.4	14	28	6	9	9
TBJB336*004C□#@00++	B	4	33	2.8	1.4	14	28	6	9	10
TBJC336*004C□#@00++	C	4	33	2.2	1.3	13	15.6	6	9	9
TBJB476*004C□#@00++	B	4	47	2.4	1.9	19	38	6	9	10
TBJA686*004C□#@00++	A	4	68	1.5	2.7	27	32.4	10	12	14
TBJC686*004C□#@00++	C	4	68	1.6	2.7	27	54	6	9	10
TBJD686*004C□#@00++	D	4	68	1.1	2.7	27	32.4	6	9	9
TBJA107*004C□#@00++	A	4	100	1.4	4	40	48	30	36	42
TBJB107*004C□#@00++	B	4	100	1.6	4	40	80	8	10	12
TBJC107*004C□#@00++	C	4	100	1.3	4	40	80	6	9	10
TBJD107*004C□#@00++	D	4	100	0.9	4	40	48	8	12	12
TBJD227*004C□#@00++	D	4	220	0.9	8.8	88	176	8	10	12
TBJE337*004C□#@00++	E	4	330	0.9	13.2	132	264	8	10	12
TBJD108*004C□#@00++	D	4	1000	0.2	40	400	480	60	90	90
TBJA155*006C□#@00++	A	6	1.5	8	0.5	5	6	6	9	9
TBJA225*006C□#@00++	A	6	2.2	8	0.5	5	6	6	6	9
TBJA335*006C□#@00++	A	6	3.3	8	0.5	5	6	6	9	9
TBJA475*006C□#@00++	A	6	4.7	6	0.5	5	10	6	9	10
TBJB475*006C□#@00++	B	6	4.7	5.5	0.5	5	6	6	9	9
TBJA685*006C□#@00++	A	6	6.8	5	0.5	5	10	6	9	10
TBJB685*006C□#@00++	B	6	6.8	4.5	0.5	5	6	6	9	9
TBJA106*006C□#@00++	A	6	10	4	1	10	20	6	9	10
TBJB106*006C□#@00++	B	6	10	3.5	0.6	6	7.2	6	9	9
TBJA156*006C□#@00++	A	6	15	3.5	1	10	20	6	9	10
TBJA156*006L□#@00++	A	6	15	1.5	1	10	20	6	9	10
TBJB156*006C□#@00++	B	6	15	3.5	1	10	20	6	9	10
TBJC156*006C□#@00++	C	6	15	3	0.9	9	10.8	6	9	9
TBJA226*006C□#@00++	A	6	22	3	1.4	14	28	6	9	10
TBJB226*006C□#@00++	B	6	22	2.5	1.4	14	28	6	9	10
TBJC226*006C□#@00++	C	6	22	2.2	1.4	14	16.8	6	9	9
TBJB336*006C□#@00++	B	6	33	2.2	2.1	21	42	6	9	10
TBJB336*006L□#@00++	B	6	33	0.6	2.1	21	42	6	9	10
TBJC336*006C□#@00++	C	6	33	1.8	2.1	21	42	6	9	10
TBJC476*006C□#@00++	C	6	47	1.6	3	30	60	6	9	10
TBJD476*006C□#@00++	D	6	47	1.1	2.8	28	33.6	6	9	9
TBJB686*006C□#@00++	B	6	68	1.8	4.3	43	86	8	10	12
TBJC686*006C□#@00++	C	6	68	1.6	4.3	43	86	6	9	10
TBJD686*006C□#@00++	D	6	68	0.9	4.3	43	86	6	9	9
TBJC107*006C□#@00++	C	6	100	0.9	6.3	63	126	6	9	10

Following the voltage code, C designates Standard, L designates Low ESR Ratings

TBJ Series

COTS-Plus



Part Number	Case Size	DC rated voltage (85°C) (volts)	Cap (nom) (µF)	ESR (max) 100 kHz +25°C (ohms)	DC Leakage (max)			Dissipation Factor (max)		
					+25°C (µA)	+85°C (µA)	+125°C (µA)	+25°C (%)	+85/125°C (%)	-55°C (%)
TBJC107*006L□#@00++	C	6	100	0.15	6.3	63	126	6	9	10
TBJD107*006C□#@00++	D	6	100	0.9	6.3	63	126	6	9	10
TBJD157*006C□#@00++	D	6	150	0.9	9.5	95	190	6	9	10
TBJC227*006C□#@00++	C	6	220	1.2	13.9	139	278	10	12	14
TBJD227*006C□#@00++	D	6	220	0.9	13.9	139	278	8	10	12
TBJD227*006L□#@00++	D	6	220	0.1	13.9	139	278	8	10	12
TBJE337*006C□#@00++	E	6	330	0.9	19.8	198	396	8	10	12
TBJE337*006L□#@00++	E	6	330	0.1	20.8	208	416	8	10	12
TBJE477M006C□#@00++	E	6	470	0.9	29.6	296	592	10	12	14
TBJE477M006L□#@00++	E	6	470	0.05	29.6	296	592	10	12	14
TBJV477*006L□#@00++	V	6	470	0.1	29.6	296	592	10	12	12
TBJA105*010C□#@00++	A	10	1	10	0.5	5	6	4	6	6
TBJA155*010C□#@00++	A	10	1.5	8	0.5	5	6	6	6	9
TBJA225*010C□#@00++	A	10	2.2	8	0.5	5	6	6	9	9
TBJA335*010C□#@00++	A	10	3.3	5.5	0.5	5	10	6	9	10
TBJB335*010C□#@00++	B	10	3.3	5.5	0.5	5	6	6	9	9
TBJA475*010C□#@00++	A	10	4.7	5	0.5	5	10	6	9	10
TBJB475*010C□#@00++	B	10	4.7	4.5	0.5	5	6	6	9	9
TBJA685*010C□#@00++	A	10	6.8	4	0.7	7	14	6	9	10
TBJB685*010C□#@00++	B	10	6.8	3.5	0.7	7	8.4	6	9	9
TBJA106*010C□#@00++	A	10	10	3	1	10	20	6	9	10
TBJA106*010L□#@00++	A	10	10	1.8	1	10	20	6	9	10
TBJB106*010C□#@00++	B	10	10	2.5	1	10	20	6	9	10
TBJC106*010C□#@00++	C	10	10	2.5	1	10	20	6	9	10
TBJA156*010C□#@00++	A	10	15	3.2	1.6	16	32	6	9	10
TBJB156*010C□#@00++	B	10	15	2.8	1.6	16	32	6	9	10
TBJC156*010C□#@00++	C	10	15	2.5	1.5	15	18	6	6	9
TBJB226*010C□#@00++	B	10	22	2.4	2.2	22	44	6	9	10
TBJB226*010L□#@00++	B	10	22	0.7	2.2	22	44	6	9	10
TBJC226*010C□#@00++	C	10	22	1	2.2	22	44	6	9	10
TBJA336*010C□#@00++	A	10	33	1.7	3.3	33	39.6	8	10	12
TBJB336*010C□#@00++	B	10	33	1.8	3.3	33	66	6	9	10
TBJC336*010C□#@00++	C	10	33	1.6	3.3	33	66	6	9	10
TBJD336*010C□#@00++	D	10	33	1.1	3.3	33	39.6	6	9	9
TBJC476*010C□#@00++	C	10	47	1.2	4.7	47	94	6	9	10
TBJD476*010C□#@00++	D	10	47	0.9	4.7	47	56.4	6	9	9
TBJC686*010C□#@00++	C	10	68	1.2	6.8	68	136	8	10	12
TBJD686*010C□#@00++	D	10	68	0.9	6.8	68	136	6	9	10
TBJC107*010C□#@00++	C	10	100	1.2	10	100	200	8	10	12
TBJC107*010L□#@00++	C	10	100	0.2	10	100	200	8	10	12
TBJD107*010C□#@00++	D	10	100	0.9	10	100	200	6	9	10
TBJD107*010L□#@00++	D	10	100	0.1	10	100	200	6	9	10
TBJD157*010C□#@00++	D	10	150	0.9	15	150	300	8	10	12
TBJD157*010L□#@00++	D	10	150	0.1	15	150	300	8	10	12
TBJD227M010C□#@00++	D	10	220	0.9	22	220	440	8	10	12
TBJD227M010L□#@00++	D	10	220	0.15	22	220	440	8	10	12

Following the voltage code, C designates Standard, L designates Low ESR Ratings

TBJ Series



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Part Number	Case Size	DC rated voltage (85°C) (volts)	Cap (nom) (µF)	ESR (max) 100 kHz +25°C (ohms)	DC Leakage (max)			Dissipation Factor (max)		
					+25°C (µA)	+85°C (µA)	+125°C (µA)	+25°C (%)	+85/125°C (%)	-55°C (%)
TBJE227*010C□#@00++	E	10	220	0.9	22	220	440	8	10	12
TBJE227*010L□#@00++	E	10	220	0.1	22	220	440	8	10	12
TBJD337M010C□#@00++	D	10	330	0.9	33	330	660	8	10	12
TBJD337M010L□#@00++	D	10	330	0.15	33	330	660	8	10	12
TBJE337*010C□#@00++	E	10	330	0.9	33	330	660	8	10	12
TBJE337*010L□#@00++	E	10	330	0.06	33	330	660	8	10	12
TBJV337*010L□#@00++	V	10	330	0.1	33	330	660	8	10	12
TBJE477M010C□#@00++	E	10	470	0.9	47	470	940	10	12	14
TBJE477M010L□#@00++	E	10	470	0.05	47	470	940	10	12	14
TBJV477*010L□#@00++	V	10	470	0.1	47	470	940	10	12	14
TBJA684*015C□#@00++	A	16	0.68	12	0.5	5	6	4	6	6
TBJA105*015C□#@00++	A	16	1	10	0.5	5	6	4	6	6
TBJA155*015C□#@00++	A	16	1.5	8	0.5	5	6	6	9	9
TBJA225*015C□#@00++	A	16	2.2	5.5	0.5	5	10	6	9	10
TBJB225*015C□#@00++	B	16	2.2	5	0.5	5	6	6	9	9
TBJA335*015C□#@00++	A	16	3.3	5	0.5	5	10	6	9	10
TBJA335*015L□#@00++	A	16	3.3	3.5	0.5	5	10	6	9	10
TBJB335*015C□#@00++	B	16	3.3	5	0.5	5	6	6	8	9
TBJA475*015C□#@00++	A	16	4.7	4	0.8	8	16	6	9	10
TBJB475*015C□#@00++	B	16	4.7	4	0.7	7	8.4	6	9	9
TBJA685*015C□#@00++	A	16	6.8	2.5	1.1	11	22	6	9	10
TBJB685*015C□#@00++	B	16	6.8	2.5	1.1	11	22	6	9	10
TBJC685*015C□#@00++	C	16	6.8	2.5	1.1	11	22	6	9	10
TBJB106*015C□#@00++	B	16	10	2.8	1.6	16	32	6	9	10
TBJC106*015C□#@00++	C	16	10	2.5	1.6	16	19.2	6	8	9
TBJB156*015C□#@00++	B	16	15	2.5	2.4	24	48	6	9	10
TBJB156*015L□#@00++	B	16	15	0.8	2.4	24	48	6	9	10
TBJC156*015C□#@00++	C	16	15	1.8	2.4	24	48	6	9	10
TBJB226*015C□#@00++	B	16	22	2.3	3.6	36	72	6	9	10
TBJC226*015C□#@00++	C	16	22	1.6	3.6	36	72	6	9	10
TBJC226*015L□#@00++	C	16	22	0.375	3.6	36	72	6	9	10
TBJD226*015C□#@00++	D	16	22	1.1	3.3	33	39.6	6	8	9
TBJC336*015C□#@00++	C	16	33	1.5	5.3	53	106	6	9	10
TBJC336*015L□#@00++	C	16	33	0.3	5.3	53	106	6	9	10
TBJD336*015C□#@00++	D	16	33	0.9	5.3	53	106	6	9	9
TBJC476*015C□#@00++	C	16	47	1.5	7.6	76	152	6	9	10
TBJC476*015L□#@00++	C	16	47	0.35	7.6	76	152	6	9	10
TBJD476*015C□#@00++	D	16	47	0.9	7.6	76	152	6	9	10
TBJD476*015L□#@00++	D	16	47	0.15	7.6	76	152	6	9	10
TBJD686*015C□#@00++	D	16	68	0.9	10.9	109	218	6	9	10
TBJD107*015C□#@00++	D	16	100	0.9	16	160	320	6	9	10
TBJD107*015L□#@00++	D	16	100	0.125	16	160	320	6	9	10
TBJE107*015C□#@00++	E	16	100	0.9	16	160	320	6	9	10
TBJE107*015L□#@00++	E	16	100	0.1	16	160	320	6	9	10
TBJD157M015C□#@00++	D	16	150	0.9	24	240	480	6	9	10

Following the voltage code, C designates Standard, L designates Low ESR Ratings

TBJ Series



COTS-Plus

Part Number	Case Size	DC rated voltage (85°C) (volts)	Cap (nom) (µF)	ESR (max) 100 kHz +25°C (ohms)	DC Leakage (max)			Dissipation Factor (max)		
					+25°C (µA)	+85°C (µA)	+125°C (µA)	+25°C (%)	+85/125°C (%)	-55°C (%)
TBJD157M015L□#@00++	D	16	150	0.15	24	240	480	6	9	10
TBJV157*015L□#@00++	V	16	150	0.045	24	480	960	6	8	10
TBJV227*015L□#@00++	V	16	220	0.15	35.2	352	704	8	10	12
TBJA474*020C□#@00++	A	20	0.47	14	0.5	5	6	4	6	6
TBJA684*020C□#@00++	A	20	0.68	12	0.5	5	6	4	6	6
TBJA105*020C□#@00++	A	20	1	10	0.5	5	6	4	6	6
TBJA155*020C□#@00++	A	20	1.5	6.5	0.5	5	10	6	8	10
TBJB155*020C□#@00++	B	20	1.5	6	0.5	5	6	6	9	9
TBJB225*020C□#@00++	B	20	2.2	5	0.5	5	6	6	8	9
TBJB335*020C□#@00++	B	20	3.3	4	0.7	7	8.4	6	9	9
TBJA475*020C□#@00++	A	20	4.7	4	1	10	20	6	8	10
TBJA475*020L□#@00++	A	20	4.7	1.8	1	10	20	6	8	10
TBJB475*020C□#@00++	B	20	4.7	3	2	20	40	6	8	10
TBJC475*020C□#@00++	C	20	4.7	3	1	10	12	6	8	9
TBJB685*020C□#@00++	B	20	6.8	2.5	1.4	14	28	6	8	10
TBJC685*020C□#@00++	C	20	6.8	2.4	1.4	14	16.8	6	9	9
TBJB106*020C□#@00++	B	20	10	2.1	0.7	7	14	6	8	10
TBJB106*020L□#@00++	B	20	10	1	0.7	7	14	6	8	10
TBJC106*020C□#@00++	C	20	10	1.9	1.4	14	28	6	8	10
TBJB156*020C□#@00++	B	20	15	2	3	30	60	6	8	10
TBJC156*020C□#@00++	C	20	15	1.7	3	30	60	6	8	10
TBJD156*020C□#@00++	D	20	15	1.1	3	30	36	6	8	9
TBJC226*020C□#@00++	C	20	22	1.6	4.4	44	88	6	8	10
TBJD226*020C□#@00++	D	20	22	0.9	4.4	44	52.8	6	9	9
TBJC336*020C□#@00++	C	20	33	1.5	6.6	66	132	6	8	10
TBJD336*020C□#@00++	D	20	33	0.9	6.6	66	132	6	8	10
TBJD336*020L□#@00++	D	20	33	0.2	6.6	66	132	6	8	10
TBJD476*020C□#@00++	D	20	47	0.9	9.4	94	188	6	8	10
TBJD686*020C□#@00++	D	20	68	0.9	13.6	136	272	6	8	10
TBJE686*020C□#@00++	E	20	68	0.9	13.6	136	272	6	8	10
TBJE686*020L□#@00++	E	20	68	0.15	13.6	136	272	6	8	10
TBJV107*020L□#@00++	V	20	100	0.2	20	200	400	8	10	12
TBJA334*025C□#@00++	A	25	0.33	15	0.5	5	6	4	6	6
TBJA474*025C□#@00++	A	25	0.47	14	0.5	5	6	4	6	6
TBJA684M025C□#@00++	A	25	0.68	10	0.5	5	10	4	6	8
TBJB684*025C□#@00++	B	25	0.68	7.5	0.5	5	6	4	6	6
TBJA105*025C□#@00++	A	25	1	8	0.5	5	10	4	6	8
TBJB105*025C□#@00++	B	25	1	6.5	0.5	5	6	4	6	6
TBJA155*025C□#@00++	A	25	1.5	7.5	0.5	5	10	6	8	10
TBJA155*025L□#@00++	A	25	1.5	3	0.5	5	10	6	8	10
TBJB155*025C□#@00++	B	25	1.5	6.5	0.5	5	6	6	8	9
TBJA225*025C□#@00++	A	25	2.2	7	0.5	5	10	6	8	10
TBJB225*025C□#@00++	B	25	2.2	4.5	0.5	5	10	6	8	10
TBJC225*025C□#@00++	C	25	2.2	3.5	0.6	6	7.2	6	9	9
TBJB335*025C□#@00++	B	25	3.3	3.5	0.5	5	10	6	8	10

Following the voltage code, C designates Standard, L designates Low ESR Ratings

Part Number	Case Size	DC rated voltage (85°C) (volts)	Cap (nom) (µF)	ESR (max) 100 kHz +25°C (ohms)	DC Leakage (max)			Dissipation Factor (max)		
					+25°C (µA)	+85°C (µA)	+125°C (µA)	+25°C (%)	+85/125°C (%)	-55°C (%)
TBJC335*025C□#@00++	C	25	3.3	3.5	0.9	9	10.8	6	8	9
TBJA475*025C□#@00++	A	25	4.7	3.1	1.2	12	14.4	6	9	10
TBJB475*025C□#@00++	B	25	4.7	2.8	1.2	12	24	6	8	10
TBJB475*025L□#@00++	B	25	4.7	1.5	1.2	12	24	6	8	10
TBJC475*025C□#@00++	C	25	4.7	2.5	1.2	12	14.4	6	9	9
TBJB685*025C□#@00++	B	25	6.8	2.8	1.7	17	34	6	8	10
TBJC685*025C□#@00++	C	25	6.8	2	1.7	17	34	6	8	10
TBJD685*025C□#@00++	D	25	6.8	1.4	1.7	17	20.4	6	9	9
TBJC106*025C□#@00++	C	25	10	1.8	2.5	25	50	6	8	10
TBJC106*025L□#@00++	C	25	10	0.5	2.5	25	50	6	8	10
TBJD106*025C□#@00++	D	25	10	1.2	2.5	25	30	6	8	9
TBJD156*025C□#@00++	D	25	15	1	3.8	38	45.6	6	9	9
TBJC226*025C□#@00++	C	25	22	1.4	5.5	55	110	6	8	10
TBJD226*025C□#@00++	D	25	22	0.9	5.5	55	110	6	8	10
TBJD226*025L□#@00++	D	25	22	0.2	5.5	55	110	6	8	10
TBJD336*025C□#@00++	D	25	33	0.9	8.3	83	166	6	8	10
TBJE336*025C□#@00++	E	25	33	0.9	8.3	83	166	6	8	10
TBJE336*025L□#@00++	E	25	33	0.3	8.3	83	166	6	8	10
TBJD476M025C□#@00++	D	25	47	0.9	11.8	118	236	6	8	10
TBJD476M025L□#@00++	D	25	47	0.25	11.8	118	236	6	8	10
TBJV686*025L□#@00++	V	25	68	0.15	17	170	340	8	10	12
TBJA104*035C□#@00++	A	35	0.1	24	0.5	5	6	4	6	6
TBJA154*035C□#@00++	A	35	0.15	21	0.5	5	6	4	6	6
TBJA224*035C□#@00++	A	35	0.22	18	0.5	5	6	4	6	6
TBJA334*035C□#@00++	A	35	0.33	15	0.5	5	6	4	6	6
TBJA474M035C□#@00++	A	35	0.47	12	0.5	5	10	4	6	8
TBJB474*035C□#@00++	B	35	0.47	10	0.5	5	6	4	6	6
TBJA684M035C□#@00++	A	35	0.68	8	0.5	5	10	4	6	8
TBJB684*035C□#@00++	B	35	0.68	8	0.5	5	6	4	6	6
TBJA105*035C□#@00++	A	35	1	7.5	0.5	5	10	4	6	6
TBJB105*035C□#@00++	B	35	1	6.5	0.5	5	6	4	6	6
TBJA155*035C□#@00++	A	35	1.5	7.5	0.5	5	10	6	8	9
TBJB155*035C□#@00++	B	35	1.5	5.2	0.5	5	10	6	8	9
TBJC155*035C□#@00++	C	35	1.5	4.5	0.5	5	6	6	8	9
TBJB225*035C□#@00++	B	35	2.2	4.2	0.8	8	16	6	8	9
TBJC225*035C□#@00++	C	35	2.2	3.5	0.8	8	9.6	6	8	9
TBJB335*035C□#@00++	B	35	3.3	3.5	1.2	12	24	6	8	9
TBJC335*035C□#@00++	C	35	3.3	2.5	1.2	12	14.4	6	8	9
TBJB475*035C□#@00++	B	35	4.7	3.1	1.6	16	32	6	8	9
TBJC475*035C□#@00++	C	35	4.7	2.2	1.6	16	32	6	8	9
TBJC475*035L□#@00++	C	35	4.7	0.6	1.6	16	32	6	8	9
TBJD475*035C□#@00++	D	35	4.7	1.5	1.7	17	20.4	6	8	9
TBJC685*035C□#@00++	C	35	6.8	1.8	2.4	24	48	6	9	9
TBJD685*035C□#@00++	D	35	6.8	1.3	2.4	24	28.8	6	9	9
TBJC106*035C□#@00++	C	35	10	1.6	3.5	35	70	6	9	9
TBJD106*035C□#@00++	D	35	10	1	3.5	35	70	6	9	9

Following the voltage code, C designates Standard, L designates Low ESR Ratings

TBJ Series



COTS-Plus

Part Number	Case Size	DC rated voltage (85°C) (volts)	Cap (nom) (µF)	ESR (max) 100 kHz +25°C (ohms)	DC Leakage (max)			Dissipation Factor (max)		
					+25°C (µA)	+85°C (µA)	+125°C (µA)	+25°C (%)	+85/125°C (%)	-55°C (%)
TBJD106*035L□#@00++	D	35	10	0.3	3.5	35	70	6	9	9
TBJC156*035C□#@00++	C	35	15	1.4	5.3	53	106	6	9	9
TBJD156*035C□#@00++	D	35	15	0.9	5.3	53	106	6	9	9
TBJD156*035L□#@00++	D	35	15	0.3	5.3	53	106	6	9	9
TBJD226*035C□#@00++	D	35	22	0.9	7.7	77	154	6	9	9
TBJD226*035L□#@00++	D	35	22	0.4	7.7	77	154	6	9	9
TBJE226*035C□#@00++	E	35	22	0.9	7.7	77	154	6	9	9
TBJE226*035L□#@00++	E	35	22	0.3	7.7	77	154	6	9	9
TBJD336M035C□#@00++	D	35	33	0.9	11.6	116	232	6	9	9
TBJD336M035L□#@00++	D	35	33	0.3	11.6	116	232	6	9	9
TBJA104*050C□#@00++	A	50	0.1	22	0.5	5	12	6	8	8
TBJA154M050C□#@00++	A	50	0.15	21	0.5	5	10	4	6	6
TBJB154*050C□#@00++	B	50	0.15	17	0.5	5	6	4	6	6
TBJA224M050C□#@00++	A	50	0.22	18	0.5	5	10	4	6	6
TBJB224*050C□#@00++	B	50	0.22	14	0.5	5	6	4	6	6
TBJB334*050C□#@00++	B	50	0.33	12	0.5	5	6	4	6	6
TBJA474*050C□#@00++	A	50	0.47	9.5	0.5	5	6	4	6	6
TBJC474*050C□#@00++	C	50	0.47	8	0.5	5	6	4	6	6
TBJA684*050C□#@00++	A	50	0.68	7.9	0.5	5	6	4	6	6
TBJC684*050C□#@00++	C	50	0.68	7	0.5	5	6	4	6	6
TBJA105M050C□#@00++	A	50	1	6.6	0.5	5	6	4	6	6
TBJC105*050C□#@00++	C	50	1	6	0.5	5	6	4	6	6
TBJC155*050C□#@00++	C	50	1.5	5	0.8	8	16	6	8	9
TBJD155*050C□#@00++	D	50	1.5	4	0.8	8	9.6	6	8	9
TBJD225*050C□#@00++	D	50	2.2	2.5	1.1	11	13.2	6	8	9
TBJD335*050C□#@00++	D	50	3.3	2	1.7	17	20.4	6	9	9
TBJD475*050C□#@00++	D	50	4.7	1.5	2.4	24	28.8	6	9	9
TBJD685*050C□#@00++	D	50	6.8	1	3.4	34	68	6	6	6
TBJD156*050C□#@00++	D	50	15	0.6	7.5	75	90	4	6	6

Following the voltage code, C designates Standard, L designates Low ESR Ratings