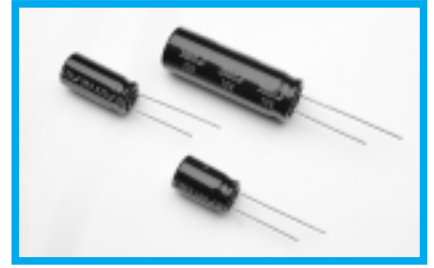
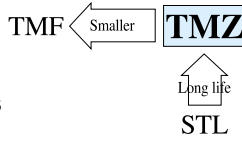


TMZ Radial Lead Type Series

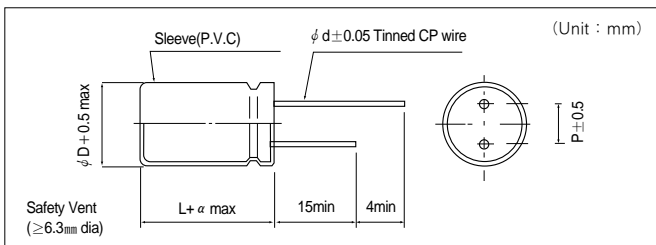
- Extremely low impedance at high frequency and high ripple current
- High reliability long life(2000 ~ 5000hours)
- Ideally suited for use in switching power supplies



Specifications

Item	Performance Characteristics						
Operating Voltage	-55 ~ +105°C						
Capacitance Range	6.3 ~ 50V						
Capacitance Tolerance	0.47 ~ 15000μF						
Leakage Current	±20% at 120Hz, 20°C						
tan δ	After 2minutes application of rated voltage, leakage current is not more than 0.01CV or 3(μA), whichever is greater						
	(20°C, 120Hz)						
	Rated voltage(V)	6.3	10	16	25	35	50
	tan δ (MAX.)	0.22	0.19	0.16	0.14	0.12	0.10
Add 0.02 per 1000μF for more than 1000μF items							
Stability at Low Temperature	(120Hz)						
	Rated voltage(V)	6.3~10		16~25		35~50	
	Z(-55°C)/Z(+20°C)	4		3		2	
Load Life	After an application of DC bias voltage plus the rated ac ripple current for 5000hours (φ 5,6.3:2000hours, φ 8:3000hours)at 105°C, the peak voltage shall not exceed the rated DC voltage.						
	The measurement shall meet following limits.						
	Measurements shall be performed after 2hours exposure at room temperature.						
Shelf Life	After 1000hours at 105°C without voltage application measurements shall meet the following limits.						
	Measurement shall be performed after exposure for 24hours at room temperature after application of DC rated voltage to the capacitors for 30minutes.						
	The measurement shall meet following limits.						
Marking	Printed with white color letter on dark brown sleeve						
Applicable Standards	JIS C - 5141, JIS C - 5102						

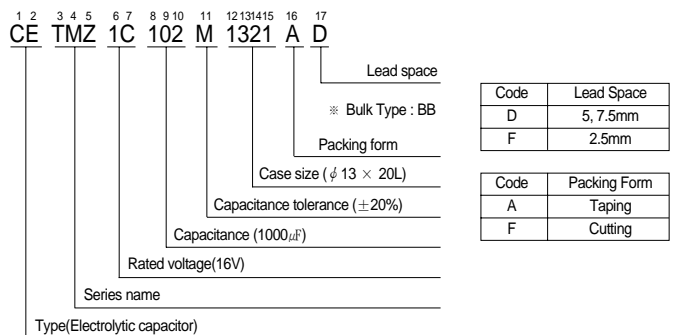
Dimensions



φ D	5	6.3	8	10	13	16	18
P	2.0	2.5	3.5	5.0	5.0	7.5	7.5
φ d	0.5	0.5	0.6	0.6	0.6	0.8	0.8
α	L ≤ 16 : 1.5, L > 16 : 2.0						

In case L > 25 for φ 13 case sizes, lead diameter φ d 0.8 will be applied.

Part number system



Code	Lead Space
D	5, 7.5mm
F	2.5mm

Code	Packing Form
A	Taping
F	Cutting

■ Frequency compensation coefficient of permissible ripple current

Frequency	120Hz	300Hz	1KHz	10KHz ~
~15 μ F	0.50	0.65	0.83	1.0
22 μ F ~ 100 μ F	0.65	0.73	0.89	1.0
150 μ F ~ 470 μ F	0.75	0.83	0.93	1.0
560 μ F ~ 1000 μ F	0.80	0.90	0.95	1.0
1500 μ F ~	0.90	0.94	0.97	1.0

■ Case size table

(ϕ D \times Lmm)

W.V(Vdc) Cap(μ F)	6.3 (0J)	10 (1A)	16 (1C)	25 (1E)	35 (1V)	50 (1H)
0.47						5 \times 11
0.68						5 \times 11
1						5 \times 11
1.5						5 \times 11
2.2						5 \times 11
3.3						5 \times 11
4.7						5 \times 11
6.8						5 \times 11
10						5 \times 11
12						5 \times 11
15						5 \times 11
18						5 \times 11
22					5 \times 11	6.3 \times 11
27					5 \times 11	6.3 \times 11
33				5 \times 11	6.3 \times 11	6.3 \times 11
39				5 \times 11	6.3 \times 11	6.3 \times 11
47			5 \times 11	6.3 \times 11	6.3 \times 11	8 \times 11.5
56			5 \times 11	6.3 \times 11	6.3 \times 11	8 \times 11.5
68		5 \times 11	6.3 \times 11	6.3 \times 11	8 \times 11.5	8 \times 11.5
82		5 \times 11	6.3 \times 11	6.3 \times 11	8 \times 11.5	10 \times 12.5
100	5 \times 11	6.3 \times 11	6.3 \times 11	8 \times 11.5	8 \times 11.5	10 \times 16
120	5 \times 11	6.3 \times 11	6.3 \times 11	8 \times 11.5	10 \times 12.5	10 \times 16
150	6.3 \times 11	6.3 \times 11	8 \times 11.5	8 \times 11.5	10 \times 12.5	10 \times 20
180	6.3 \times 11	6.3 \times 11	8 \times 11.5	10 \times 12.5	10 \times 16	10 \times 20
220	6.3 \times 11	8 \times 11.5	8 \times 11.5	10 \times 12.5	10 \times 16	10 \times 25
270	8 \times 11.5	8 \times 11.5	10 \times 12.5	10 \times 16	10 \times 20	13 \times 20
330	8 \times 11.5	8 \times 11.5	10 \times 12.5	10 \times 16	10 \times 20	13 \times 20
390	8 \times 11.5	10 \times 12.5	10 \times 16	10 \times 20	10 \times 25	13 \times 25
470	10 \times 12.5	10 \times 12.5	10 \times 16	10 \times 20	13 \times 20	13 \times 25
560	10 \times 12.5	10 \times 16	10 \times 20	10 \times 25	13 \times 20	13 \times 31.5
680	10 \times 16	10 \times 16	10 \times 20	13 \times 20	13 \times 25	13 \times 35.5
820	10 \times 16	10 \times 20	10 \times 25	13 \times 20	13 \times 25	13 \times 40.0
1000	10 \times 20	10 \times 20	13 \times 20	13 \times 25	13 \times 31.5	16 \times 31.5
1200	10 \times 20	10 \times 25	13 \times 20	13 \times 25	13 \times 35.5	16 \times 35.5
1500	10 \times 25	13 \times 20	13 \times 25	13 \times 31.5	13 \times 40.0	18 \times 35.5
1800	13 \times 20	13 \times 20	13 \times 25	13 \times 35.5	16 \times 31.5	18 \times 35.5
2200	13 \times 20	13 \times 25	13 \times 31.5	13 \times 40.0	16 \times 35.5	18 \times 40.0
2700	13 \times 25	13 \times 31.5	13 \times 35.5	16 \times 31.5	18 \times 35.5	
3300	13 \times 25	13 \times 35.5	13 \times 40.0	16 \times 35.5	18 \times 40.0	
3900	13 \times 31.5	13 \times 40.0	16 \times 31.5	18 \times 35.5		
4700	13 \times 35.5	16 \times 31.5	16 \times 35.5	18 \times 40.0		
5600	13 \times 40.0	16 \times 35.5	18 \times 35.5			
6800	16 \times 31.5	16 \times 35.5	18 \times 35.5			
8200	16 \times 35.5	18 \times 35.5	18 \times 40.0			
10000	18 \times 35.5	18 \times 40.0				
12000	18 \times 35.5					
15000	18 \times 40.0					

■ Standard products table

W.V. (S.V.)	CAP. (μ F)	PART NO.	SIZE(mm)		MAX. Impedance(Ω)		MAX. Ripple Current(mA)rms	
			ϕ D	L	100KHz/20 $^{\circ}$ C	100KHz/-10 $^{\circ}$ C	100KHz/105 $^{\circ}$ C	120KHz/105 $^{\circ}$ C
6.3 (8)	100	TMZ0J101M	5	11	0.850	1.7	150	98
	120	TMZ0J121M	5	11	0.650	1.3	175	131
	150	TMZ0J151M	6.3	11	0.490	0.98	225	169
	180	TMZ0J181M	6.3	11	0.390	0.78	250	188
	220	TMZ0J221M	6.3	11	0.300	0.6	285	214
	270	TMZ0J271M	8	11.5	0.240	0.48	370	278
	330	TMZ0J331M	8	11.5	0.200	0.4	405	304
	390	TMZ0J391M	8	11.5	0.170	0.34	445	334
	470	TMZ0J471M	10	12.5	0.140	0.28	550	413
	560	TMZ0J561M	10	12.5	0.120	0.24	595	476
	680	TMZ0J681M	10	16	0.100	0.2	730	584
	820	TMZ0J821M	10	16	0.085	0.17	795	636
	1000	TMZ0J102M	10	20	0.075	0.15	950	760
	1200	TMZ0J122M	10	20	0.065	0.13	1020	918
	1500	TMZ0J152M	10	25	0.055	0.11	1220	1098
	1800	TMZ0J182M	13	20	0.050	0.1	1370	1233
	2200	TMZ0J222M	13	20	0.043	0.086	1470	1323
	2700	TMZ0J272M	13	25	0.038	0.076	1590	1431
	3300	TMZ0J332M	13	25	0.034	0.068	1710	1539
	3900	TMZ0J392M	13	31.5	0.031	0.062	1910	1719
4700	TMZ0J472M	13	35.5	0.028	0.056	2100	1890	
5600	TMZ0J562M	13	40	0.026	0.052	2270	2043	
6800	TMZ0J682M	16	31.5	0.024	0.048	2370	2133	
8200	TMZ0J822M	16	35.5	0.022	0.044	2550	2295	
10000	TMZ0J103M	18	35.5	0.020	0.04	2750	2475	
12000	TMZ0J123M	18	35.5	0.019	0.038	2820	2538	
15000	TMZ0J153M	18	40	0.018	0.036	2960	2664	
10 (13)	68	TMZ1A680M	5	11	0.800	1.6	155	101
	82	TMZ1A820M	5	11	0.650	1.3	175	114
	100	TMZ1A101M	6.3	11	0.550	1.1	210	137
	120	TMZ1A121M	6.3	11	0.440	0.88	235	176
	150	TMZ1A151M	6.3	11	0.350	0.7	265	199
	180	TMZ1A181M	6.3	11	0.290	0.58	290	218
	220	TMZ1A221M	8	11.5	0.240	0.48	370	278
	270	TMZ1A271M	8	11.5	0.200	0.40	405	304
	330	TMZ1A331M	8	11.5	0.160	0.32	460	345
	390	TMZ1A391M	10	12.5	0.140	0.28	550	413
	470	TMZ1A471M	10	12.5	0.120	0.24	595	446
	560	TMZ1A561M	10	16	0.100	0.2	730	584
	680	TMZ1A681M	10	16	0.085	0.17	795	636
	820	TMZ1A821M	10	20	0.070	0.14	985	788
	1000	TMZ1A102M	10	20	0.060	0.12	1060	848
	1200	TMZ1A122M	10	25	0.050	0.1	1280	1152
	1500	TMZ1A152M	13	20	0.045	0.09	1440	1296
	1800	TMZ1A182M	13	20	0.039	0.079	1470	1323
	2200	TMZ1A222M	13	25	0.034	0.068	1710	1539
	2700	TMZ1A272M	13	31.5	0.030	0.06	1940	1746
3300	TMZ1A332M	13	35.5	0.026	0.052	2180	1962	
3900	TMZ1A392M	13	40	0.024	0.048	2360	2124	
4700	TMZ1A472M	16	31.5	0.023	0.046	2420	2178	
5600	TMZ1A562M	16	35.5	0.021	0.042	2610	2349	
6800	TMZ1A682M	16	35.5	0.020	0.04	2680	2412	
8200	TMZ1A822M	18	35.5	0.019	0.038	2820	2538	
10000	TMZ1A103M	18	40	0.017	0.034	3040	2736	

W.V. (S.V.)	CAP. (μ F)	PART NO.	SIZE(mm)		MAX. Impedance(Ω)		MAX. Ripple Current(mA)rms	
			ϕ D	L	100KHz/20 $^{\circ}$ C	100KHz/-10 $^{\circ}$ C	100KHz/105 $^{\circ}$ C	120KHz/105 $^{\circ}$ C
16 (20)	47	TMZ1C470M	5	11	0.800	1.600	155	101
	56	TMZ1C560M	5	11	0.650	1.300	175	114
	68	TMZ1C680M	6.3	11	0.500	1.000	220	143
	82	TMZ1C820M	6.3	11	0.420	0.840	240	156
	100	TMZ1C101M	6.3	11	0.350	0.700	265	172
	120	TMZ1C121M	6.3	11	0.290	0.580	290	218
	150	TMZ1C151M	8	11.5	0.230	0.460	375	281
	180	TMZ1C181M	8	11.5	0.200	0.400	405	304
	220	TMZ1C221M	8	11.5	0.160	0.320	460	345
	270	TMZ1C271M	10	12.5	0.140	0.280	550	413
	330	TMZ1C331M	10	12.5	0.120	0.240	595	446
	390	TMZ1C391M	10	16	0.100	0.200	730	548
	470	TMZ1C471M	10	16	0.090	0.180	770	578
	560	TMZ1C561M	10	20	0.075	0.150	950	760
	680	TMZ1C681M	10	20	0.065	0.130	1020	816
	820	TMZ1C821M	13	20	0.055	0.110	1220	976
	1000	TMZ1C102M	13	20	0.047	0.094	1410	1128
	1200	TMZ1C122M	13	20	0.041	0.082	1430	1287
	1500	TMZ1C152M	13	25	0.036	0.072	1660	1494
	1800	TMZ1C182M	13	31.5	0.032	0.064	1880	1692
2200	TMZ1C222M	13	31.5	0.028	0.056	2010	1809	
2700	TMZ1C272M	13	35.5	0.025	0.050	2220	1998	
3300	TMZ1C332M	13	40	0.023	0.046	2410	2169	
3900	TMZ1C392M	16	31.5	0.022	0.044	2470	2223	
4700	TMZ1C472M	16	35.5	0.020	0.040	2680	2412	
5600	TMZ1C562M	18	35.5	0.019	0.038	2820	2538	
6800	TMZ1C682M	18	35.5	0.018	0.036	2900	2610	
8200	THZ1C822M	18	40	0.017	0.034	3040	2736	
25 (32)	33	TMZ1E330M	5	11	0.800	1.600	155	101
	39	TMZ1E390M	5	11	0.650	1.300	175	114
	47	TMZ1E470M	6.3	11	0.550	1.100	210	137
	56	TMZ1E560M	6.3	11	0.440	0.880	235	153
	68	TMZ1E680M	6.3	11	0.360	0.720	260	169
	82	TMZ1E820M	6.3	11	0.300	0.600	285	185
	100	TMZ1E101M	8	11.5	0.240	0.480	370	241
	120	TMZ1E121M	8	11.5	0.200	0.400	405	304
	150	TMZ1E151M	8	11.5	0.160	0.320	460	345
	180	TMZ1E181M	10	12.5	0.140	0.280	550	413
	220	TMZ1E221M	10	12.5	0.110	0.220	625	469
	270	TMZ1E271M	10	16	0.095	0.190	750	563
	330	TMZ1E331M	10	16	0.085	0.170	795	596
	390	TMZ1E391M	10	20	0.070	0.140	985	739
	470	TMZ1E471M	10	20	0.065	0.130	1020	765
	560	TMZ1E561M	10	25	0.055	0.110	1220	976
	680	TMZ1E681M	13	20	0.046	0.092	1420	1136
	820	TMZ1E821M	13	20	0.041	0.082	1430	1144
	1000	TMZ1E102M	13	25	0.036	0.072	1660	1328
	1200	TMZ1E122M	13	25	0.032	0.064	1760	1584
1500	TMZ1E152M	13	31.5	0.029	0.058	1980	1782	
1800	TMZ1E182M	13	35.5	0.026	0.052	2180	1962	
2200	TMZ1E222M	13	40	0.024	0.048	2360	2124	
2700	TMZ1E272M	16	31.5	0.022	0.044	2470	2223	
3300	TMZ1E332M	16	35.5	0.020	0.040	2680	2412	
3900	TMZ1E392M	18	35.5	0.019	0.038	2820	2538	
4700	TMZ1E472M	18	40	0.018	0.036	2960	2664	

■ Standard products table

W.V. (S.V.)	CAP. (μ F)	PART NO.	SIZE(mm)		MAX. Impedance(Ω)		MAX. Ripple Current(mA)rms	
			ϕ D	L	100KHz/20 $^{\circ}$ C	100KHz/-10 $^{\circ}$ C	100KHz/105 $^{\circ}$ C	120KHz/105 $^{\circ}$ C
35 (44)	22	TMZ1V220M	5	11	0.750	1.500	160	104
	27	TMZ1V270M	5	11	0.600	1.200	180	117
	33	TMZ1V330M	6.3	11	0.490	0.980	225	146
	39	TMZ1V390M	6.3	11	0.410	0.820	245	159
	47	TMZ1V470M	6.3	11	0.340	0.680	270	176
	56	TMZ1V560M	6.3	11	0.280	0.560	295	192
	68	TMZ1V680M	8	11.5	0.240	0.480	370	241
	82	TMZ1V820M	8	11.5	0.190	0.380	415	270
	100	TMZ1V101M	8	11.5	0.160	0.320	460	299
	120	TMZ1V121M	10	12.5	0.140	0.280	550	413
	150	TMZ1V151M	10	12.5	0.120	0.240	595	446
	180	TMZ1V181M	10	16	0.100	0.200	730	548
	220	TMZ1V221M	10	16	0.085	0.170	795	596
	270	TMZ1V271M	10	20	0.070	0.140	985	739
	330	TMZ1V331M	10	20	0.060	0.120	1060	795
	390	TMZ1V391M	10	25	0.055	0.110	1220	915
	470	TMZ1V471M	13	20	0.046	0.092	1420	1065
	560	TMZ1V561M	13	20	0.041	0.082	1430	1144
	680	TMZ1V681M	13	25	0.036	0.072	1660	1328
	820	TMZ1V821M	13	25	0.032	0.064	1760	1408
	1000	TMZ1V102M	13	31.5	0.029	0.058	1980	1584
	1200	TMZ1V122M	13	35.5	0.026	0.052	2180	1962
	1500	TMZ1V152M	13	40	0.024	0.048	2360	2124
1800	TMZ1V182M	16	31.5	0.022	0.044	2470	2223	
2200	TMZ1V222M	16	35.5	0.020	0.040	2680	2412	
2700	TMZ1V472M	18	35.5	0.018	0.036	2900	2610	
3300	TMZ1V562M	18	40	0.017	0.034	3040	2736	
50 (63)	0.47	TMZ1HR47M	5	11	23.000	46.000	22	11
	0.68	TMZ1HR68M	5	11	16.000	32.000	28	14
	1	TMZ1H010M	5	11	11.000	22.000	36	18
	1.5	TMZ1H1R5M	5	11	7.500	15.000	45	23
	2.2	TMZ1H2R2M	5	11	5.000	10.000	54	27
	3.3	TMZ1H3R3M	5	11	3.300	6.600	66	33
	4.7	TMZ1H4R7M	5	11	2.200	4.400	81	41
	6.8	TMZ1H6R8M	5	11	1.800	3.600	91	46
	10	TMZ1H100M	5	11	1.400	2.800	115	58
	12	TMZ1H120M	5	11	1.200	2.400	125	63
	15	TMZ1H150M	5	11	0.930	1.860	145	73
	18	TMZ1H180M	5	11	0.800	1.600	155	101
	22	TMZ1H220M	6.3	11	0.650	1.300	195	127
	27	TMZ1H270M	6.3	11	0.530	1.060	215	140
	33	TMZ1H330M	6.3	11	0.430	0.860	240	156
	39	TMZ1H390M	6.3	11	0.360	0.720	260	169
	47	TMZ1H470M	8	11.5	0.300	0.600	330	215
	56	TMZ1H560M	8	11.5	0.270	0.540	360	234
	68	TMZ1H680M	8	11.5	0.220	0.440	410	267
	82	TMZ1H820M	10	12.5	0.170	0.340	500	325
100	TMZ1H101M	10	16	0.140	0.280	620	403	
120	TMZ1H121M	10	16	0.120	0.240	670	503	
150	TMZ1H151M	10	20	0.100	0.200	820	615	
180	TMZ1H181M	10	20	0.085	0.170	890	668	
220	TMZ1H221M	10	25	0.075	0.150	1040	780	
270	TMZ1H271M	13	20	0.065	0.130	1200	900	