● RoHS Compliance(2011/65/EU)

■SPECIFICATIONS

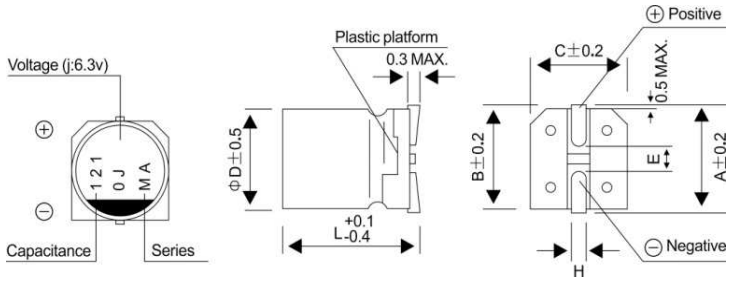
Item	Performance Characteristics		
Category Temperature Range	-55 ~ +105℃		
Rated Voltage Range	2.5 ~ 25V		
Rated Capacitance Range	3.3 to 1500μF		
Capacitance Tolerance	± 20 % (at 120Hz , 20℃)		
Tangent of loss angle (tan δ)	Less than or equal to the specified value at 120Hz, 20℃		
ESR(※1)	Less than or equal to the specified value at 100KHz, 20℃		
Leakage Current(※2)	Less than or equal to the specified value. After 2 minutes' application of rated voltage at 20℃		
Temperature Characteristics (Max. Impedance Ratio)	Z+105℃ / Z+20℃ ≤1.25 (100kHz) Z- 55℃ / Z+20℃ ≤1.25		
Endurance	The specifications listed at right shall be met when the capacitors are restored to 20 ℃ after the rated voltage is applied for 2000 hours at 105 ℃	Capacitance change	Within ±20% of the initial capacitance value(※3)
		tan δ	150% or less than the initial specified value
		ESR(※1)	150% or less than the initial specified value
		Leakage current(※2)	less than or equal to the initial specified value
Damp Heat (Steady State)	The specifications listed at right shall be met when the capacitors are restored to 20 ℃ after the rated voltage is applied for 1000 hours at 60 ℃, 90% RH.	Capacitance change	Within ±20% of the initial capacitance value(※3)
		tan δ	150% or less than the initial specified value
		ESR(※1)	150% or less than the initial specified value
		Leakage current(※2)	less than or equal to the initial specified value
Resistance to Soldering Heat	After soldering the capacitor shall meet the specifcations listed at right. Pre-heating shall be done at 150 to 200 ℃ and for 60 to 180 sec. The duration for over +230 ℃ at capacitor surface shall not exceed 60 seconds. In case peak terperature is 250 ℃ or less, reflow soldering shall be two times maximum. In case peak termperature is 260 ℃ or less, reflow soldering shall be once. Meraurement for solder temperature profiles shall be made at the capacitor top and the terminal	Capacitance change	Within ±10% of the initial capacitance value(※3)
		tan δ	130% or less than the initial specified value
		ESR(※1)	130% or less than the initial specified value
		Leakage current(※2)	less than or equal to the initial specified value
Marking	Red print on the case top		

※1 ESR should be measured at both of the terminal ends closest where the terminals protrude through the plastic platform

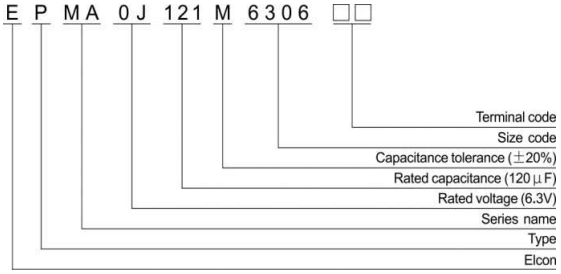
※2 Conditioning: If any doubt arises, measure the leakage current after the voltage treatment of applying DC rated voltage continuously to the capacitor for 120 minuters at 105 ℃

※3 Initial value: The value before test of examination of resistance to soldering.

■ Dimensions



Type numbering system(Exp: 6.3V 120μF)



Φ x L(mm)

Size	4x5.5	5x6	6.3x5.5	6.3x6	8x7	8x12	10x8	10x10	10x12.7
ΦD	4.0	5.0	6.3	6.3	8.0	8.0	10.0	10.0	10.0
L	5.4	5.9	5.4	5.9	6.9	11.9	7.9	9.9	12.6
A	5.0	6.0	7.3	7.3	9.0	9.0	11.0	11.0	11.0
B	4.3	5.3	6.6	6.6	8.3	8.3	10.3	10.3	10.3
C	4.3	5.3	6.6	6.6	8.3	8.3	10.3	10.3	10.3
E	1.0	1.6	2.1	2.1	3.2	3.2	4.6	4.6	4.6
H	0.5-0.8	0.5-0.8	0.5-0.8	0.5-0.8	0.8-1.1	0.8-1.1	0.8-1.1	0.8-1.1	0.8-1.1

Voltage

V	2.5	4	6.3	10	16	20	25
Code	0E	0G	0J	1A	1C	1D	1E

MA Series

■STANDARD RATINGS

Rated voltage (V)(code)	Surge Voltage (V)	Rated Cpacitance (μF)	Case Size ΦD x L(mm)	tan δ	Leakage Current (μA)	ESR(mΩ) (at 100kHz 20℃)	Rated Ripple (mArms)	Part Number
2.5 (0E)	2.8	100	6.3 x 6	0.12	100	22	2600	EPMA0E101M6306TR
		220	6.3 x 5.5	0.12	110	20	2800	EPMA0E221M6355TR
		220	6.3 x 6	0.12	110	20	2800	EPMA0E221M6306TR
		470	8 x 7	0.12	235	20	3300	EPMA0E471M0807TR
		820	10 x 8	0.12	410	17	4400	EPMA0E821M1008TR
		1500	10 x 10	0.12	750	13	4700	EPMA0E152M1010TR
		1500	10 x 12.7	0.12	750	12	5440	EPMA0E152M1012TR
4 (0G)	4.6	33	4 x 5.5	0.12	100	200	700	EPMA0G330M0455TR
		100	6.3 x 5.5	0.12	100	22	2600	EPMA0G101M6355TR
		100	6.3 x 6	0.12	80	22	2600	EPMA0G101M6306TR
		150	6.3 x 5.5	0.12	120	22	2800	EPMA0G151M6355TR
		150	5 x 6	0.12	300	30	2000	EPMA0G151M0506TR
		150	6.3 x 6	0.12	120	22	2800	EPMA0G151M6306TR
		220	8 x 7	0.12	176	21	3200	EPMA0G221M0807TR
		330	8 x 7	0.12	264	21	3400	EPMA0G331M0807TR
		470	10 x 8	0.12	376	17	4200	EPMA0G471M1008TR
		560	8 x 12	0.12	448	13	4520	EPMA0G561M0812TR
		680	10 x 8	0.12	544	17	4400	EPMA0G681M1008TR
		820	10 x 10	0.12	656	13	4800	EPMA0G821M1010TR
		1200	10 x 12.7	0.12	960	10	5500	EPMA0G122M1012TR
6.3 (0J)	7.2	22	4 x 5.5	0.12	100	200	700	EPMA0J220M0455TR
		47	5 x 6	0.12	148	35	1600	EPMA0J470M0506TR
		82	6.3 x 5.5	0.12	103	23	2600	EPMA0J820M6355TR
		82	6.3 x 6	0.12	103	23	2600	EPMA0J820M6306TR
		100	6.3 x 5.5	0.12	126	23	2800	EPMA0J101M6355TR
		100	5 x 6	0.12	315	25	2200	EPMA0J101M0506TR
		100	6.3 x 6	0.12	126	23	2800	EPMA0J101M6306TR
		120	6.3 x 6	0.12	151	23	3000	EPMA0J121M6306TR
		150	8 x 7	0.12	189	22	3200	EPMA0J151M0807TR
		220	8 x 7	0.12	277	22	3400	EPMA0J221M0807TR
		330	10 x 8	0.12	416	18	4200	EPMA0J331M1008TR
		470	8 x 12	0.12	592	12	5300	EPMA0J471M0812TR
		470	10 x 8	0.12	592	18	4300	EPMA0J471M1008TR
		470	10 x 10	0.12	592	16	4600	EPMA0J471M1010TR
		680	10 x 10	0.12	857	14	5000	EPMA0J681M1010TR
		680	10 x 12.7	0.12	857	10	5500	EPMA0J681M1012TR
		820	10 x 12.7	0.12	1033	10	5800	EPMA0J821M1012TR
10 (1A)	11.5	4.7	4 x 5.5	0.12	100	240	670	EPMA1A4R7M0455TR
		6.8	4 x 5.5	0.12	100	240	670	EPMA1A6R8M0455TR
		10	4 x 5.5	0.12	100	220	700	EPMA1A100M0455TR
		15	4 x 5.5	0.12	100	200	700	EPMA1A150M0455TR
		33	5 x 6	0.12	165	35	1500	EPMA1A330M0506TR
		47	5 x 6	0.12	235	26	2600	EPMA1A470M0506TR
		47	6.3 x 6	0.12	94	26	2600	EPMA1A470M6306TR
		56	6.3 x 5.5	0.12	112	25	2500	EPMA1A560M6355TR
		56	6.3 x 6	0.12	112	25	2500	EPMA1A560M6306TR
		120	8 x 7	0.12	240	23	3000	EPMA1A121M0807TR
		150	8 x 7	0.12	300	23	3200	EPMA1A151M0807TR
		150	10 x 8	0.12	300	21	3300	EPMA1A151M1008TR
		270	8 x 12	0.12	540	13	4500	EPMA1A271M0812TR
		270	10 x 8	0.12	540	20	3600	EPMA1A271M1008TR
		330	8 x 12	0.12	660	14	4000	EPMA1A331M0812TR
		330	10 x 8	0.12	660	20	3700	EPMA1A331M1008TR
		470	10 x 10	0.12	940	16	4600	EPMA1A471M1010TR
		470	10 x 12.7	0.12	940	12	5300	EPMA1A471M1012TR
		560	10 x 10	0.12	1120	15	4800	EPMA1A561M1010TR

MA Series

■STANDARD RATINGS

Rated voltage (V)(code)	Surge Voltage (V)	Rated Cpacitance (μF)	Case Size ΦD x L(mm)	tan δ	Leakage Current (μA)	ESR(mΩ) (at 100kHz 20℃)	Rated Ripple (mArms)	Part Number
10(1A)	11.5	560	10 x 12.7	0.12	1120	13	5230	EPMA1A561M1012TR
16 (1C)	18.4	3.3	4 x 5.5	0.12	100	260	660	EPMA1C3R3M0455TR
		22	5 x 6	0.12	176	45	1210	EPMA1C220M0506TR
		33	6.3 x 6	0.12	106	31	2400	EPMA1C330M6306TR
		39	6.3 x 5.5	0.12	125	31	2400	EPMA1C390M6355TR
		39	6.3 x 6	0.12	125	31	2400	EPMA1C390M6306TR
		56	8 x 7	0.12	179	30	2900	EPMA1C560M0807TR
		82	8 x 7	0.12	262	28	3200	EPMA1C820M0807TR
		100	10 x 8	0.12	320	27	3300	EPMA1C101M1008TR
		150	10 x 8	0.12	480	25	3500	EPMA1C151M1008TR
		180	8 x 12	0.12	576	16	4400	EPMA1C181M0812TR
		180	10 x 8	0.12	576	25	3600	EPMA1C181M1008TR
		220	10 x 10	0.12	704	20	3900	EPMA1C221M1010TR
		220	10 x 12.7	0.12	704	14	5050	EPMA1C221M1012TR
		330	10 x 12.7	0.12	1056	14	5000	EPMA1C331M1012TR
20 (1D)	23	10	5 x 6	0.12	100	120	900	EPMA1D100M0506TR
		22	6.3 x 5.5	0.12	100	50	1700	EPMA1D220M6355TR
		22	6.3 x 6	0.12	88	50	1700	EPMA1D220M6306TR
		39	8 x 7	0.12	156	45	2000	EPMA1D390M0807TR
		47	8 x 7	0.12	188	45	2000	EPMA1D470M0807TR
		56	10 x 8	0.12	224	40	2400	EPMA1D560M1008TR
		68	10 x 8	0.12	272	40	2600	EPMA1D680M1008TR
		82	10 x 8	0.12	328	40	2600	EPMA1D820M1008TR
		100	8 x 12	0.12	400	22	3200	EPMA1D101M0812TR
		120	10 x 10	0.12	480	35	2800	EPMA1D121M1010TR
		150	10 x 12.7	0.12	600	20	4320	EPMA1D151M1012TR
25 (1E)	28.7	6.8	6.3 x 6	0.12	85	80	1200	EPMA1E6R8M6306TR
		10	8 x 7	0.12	125	60	1600	EPMA1E100M0807TR
		22	10 x 8	0.12	275	50	2200	EPMA1E220M1008TR
		33	8 x 12	0.12	413	30	2800	EPMA1E330M0812TR
		47	8 x 12	0.12	588	30	3000	EPMA1E470M0812TR
		47	10 x 10	0.12	588	45	2400	EPMA1E470M1010TR
		56	10 x 12.7	0.12	700	28	3800	EPMA1E560M1012TR