

ESC Aluminium Electrolytic Capacitors

SINGLE-ENDED LEADS - Low Impedance 105°C / 2000 to 3000 h

Description

Capacitors for high frequency applications.

Applications

High frequency switching mode circuits.

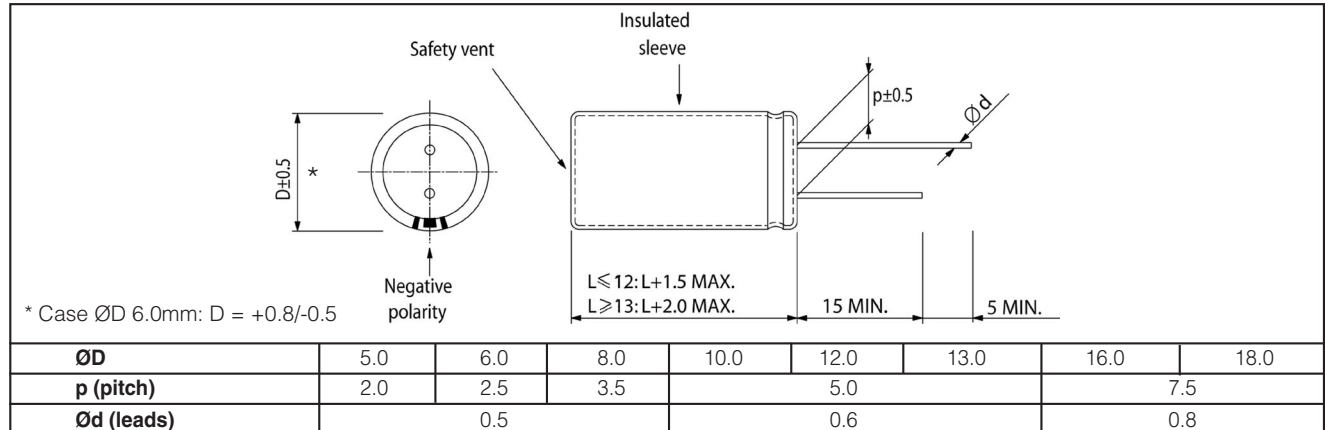
Features

Case with $\varnothing D \geq 6.0$ mm has the safety vent at the bottom.

Marking

Series: (ESC), Operating temperature: (105°C)
Rated capacitance (μF), Rated voltage: (Vdc),
Negative polarity: (gold line), Date code

Diagram of dimensions (Units=mm)



Electrical characteristics

Rated voltage	6.3 to 100 Vdc
Operating temperature	-40 to +105°C
Capacitance range	1.0 μF to 15000 μF
Capacitance tolerance	$\pm 20\%$ at 120Hz / 20°C
Endurance test	2000 to 3000 h (see conditions in Test method and performance)
Leakage current	$I = 0.01 CV (\mu\text{A})$ or $3\mu\text{A}$ whichever is greater C = rated capacitance (μF); V = rated voltage (Vdc) (after than D.C. rated working voltage at 20°C has been applied for 2 min)

Impedance Z characteristics at 120 Hz

Rated voltage (Vdc)	6.3	10	16	25	35	50	63	100
Z (-40°C) / Z (20°C)	10	8	5	4	4	4	4	4

Compensation factor of ripple current (R.C.) vs. frequency

Capacitance range	50 Hz	120 Hz	300 Hz	1 kHz	10 kHz	100 kHz
1.0 to 4.7 μF	0.30	0.40	0.50	0.70	0.80	1.00
5.6 to 33 μF	0.40	0.50	0.60	0.80	0.90	1.00
47 to 330 μF	0.60	0.70	0.80	0.90	0.95	1.00
470 to 1000 μF	0.65	0.80	0.90	0.98	1.00	1.00
1200 to 15000 μF	0.85	0.90	0.95	0.98	1.00	1.00

Compensation factor of ripple current (R.C.) vs. temperature

Temperature	65°C	85°C	105°C
Multiplier factors	1.90	1.60	1.00

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Test method and performance

Conditions	Load life test	Shelf life test
Temperature: Test duration: Ripple current: Voltage:	105°C Ø D 5x11 to 10x12 mm: 2000 h Ø D ≥10x15 mm: 3000 h max ripple current at 100KHz 105°C specified in the table. the sum of D.C. voltage and the peak A.C. voltage must not exceed the rated voltage of capacitor.	105°C 1000 hours no ripple current applied. no voltage applied.
Performance	The following specifications will be satisfied when the capacitors are restored at 20°C	
Capacitance change: Dissipation factor: Leakage current:	within 20% of initial value. not exceed 200% of the initial requirement. not exceed initial requirement.	within 20% of initial value. not exceed 200% of the initial requirement. not exceed initial requirement.

Technical data and ordering codes

Rated cap. 120 Hz 20°C (µF)	Case size DxL (mm)	6.3 Vdc Rated voltage - 8 Vdc Surge voltage			L.C. 20°C 2 min. (µA)	P/N
		D.F. 120 Hz 25°C (tgδ %)	Z 100 kHz 25°C (Ω)	R.C. 100kHz 105°C (mA _{rms})		
150	5 x 11	15	0.420	200	9	ESC157M6R3AC3AA
220	6 x 11	15	0.320	250	14	ESC227M6R3AE3AA
330	8 x 11	15	0.180	400	21	ESC337M6R3AG3AA
470	8 x 11	15	0.140	550	30	ESC477M6R3AG3AA
680	8 x 15	15	0.100	700	43	ESC687M6R3AG4AA
820	8 x 20	15	0.085	750	52	ESC827M6R3AG6AA
1000	8 x 20	15	0.069	800	63	ESC108M6R3AG6AA
1200	10 x 15	15	0.064	1000	76	ESC128M6R3AH2AA
1500	10 x 19	15	0.044	1250	94	ESC158M6R3AH4AA
2200	13 x 20	15	0.043	1450	139	ESC228M6R3AL3AA
3300	13 x 25	15	0.035	1700	208	ESC338M6R3AL4AA
4700	16 x 25	15	0.028	1800	296	ESC478M6R3AM7AA
6800	16 x 32	15	0.024	2000	428	ESC688M6R3AM2AA
8200	16 x 32	15	0.019	2350	517	ESC828M6R3AM2AA
10000	16 x 36	15	0.019	2550	630	ESC109M6R3AM3AA
15000	18 x 36	15	0.019	3000	945	ESC159M6R3AN2AA

For capacitor whose capacitance exceeds 1000 µF the value of D.F. (%) is increased by 2% for every addition of 1000 µF

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Rated cap. 120 Hz 20°C (μF)	Case size DxL (mm)	10 Vdc Rated voltage - 13 Vdc Surge voltage			L.C. 20°C 2 min. (μA)	P/N
		D.F. 120 Hz 25°C ($\text{tg}\delta$ %)	Z 100 kHz 25°C (Ω)	R.C. 100kHz 105°C (mA_{rms})		
100	5 x 11	14	0.420	150	10	ESC107M010AC3AA
120	5 x 11	14	0.370	200	12	ESC127M010AC3AA
150	6 x 11	14	0.320	250	15	ESC157M010AE3AA
220	6 x 11	14	0.220	300	22	ESC227M010AE3AA
330	8 x 11	14	0.140	550	33	ESC337M010AG3AA
470	8 x 15	14	0.100	750	47	ESC477M010AG4AA
470	10 x 12	14	0.120	630	47	ESC477M010AH1AA
680	10 x 12	14	0.085	800	68	ESC687M010AH1AA
820	10 x 15	14	0.064	1050	82	ESC827M010AH2AA
1000	8 x 20	14	0.065	1080	100	ESC108M010AG6AA
1200	10 x 19	14	0.044	1250	120	ESC128M010AH4AA
1500	10 x 19	14	0.039	1450	150	ESC158M010AH4AA
2200	13 x 20	14	0.038	1600	220	ESC228M010AL3AA
3300	13 x 25	14	0.028	2000	330	ESC338M010AL4AA
4700	16 x 25	14	0.024	2200	470	ESC478M010AM7AA
6800	16 x 36	14	0.019	2550	680	ESC688M010AM3AA
8200	18 x 36	14	0.019	2800	820	ESC828M010AN2AA

Rated cap. 120 Hz 20°C (μF)	Case size DxL (mm)	16 Vdc Rated voltage - 20 Vdc Surge voltage			L.C. 20°C 2 min. (μA)	P/N
		D.F. 120 Hz 25°C ($\text{tg}\delta$ %)	Z 100 kHz 25°C (Ω)	R.C. 100kHz 105°C (mA_{rms})		
68	5 x 11	12	0.420	150	11	ESC686M016AC3AA
100	5 x 11	12	0.370	200	16	ESC107M016AC3AA
120	6 x 11	12	0.320	250	19	ESC127M016AE3AA
150	6 x 11	12	0.220	300	24	ESC157M016AE3AA
220	8 x 11	12	0.140	550	35	ESC227M016AG3AA
330	8 x 15	12	0.100	750	53	ESC337M016AG4AA
470	10 x 12	12	0.085	800	75	ESC477M016AH1AA
680	10 x 15	12	0.064	1050	109	ESC687M016AH2AA
820	10 x 19	12	0.044	1100	131	ESC827M016AH4AA
1000	10 x 19	12	0.039	1250	160	ESC108M016AH4AA
1200	13 x 20	12	0.038	1450	192	ESC128M016AL3AA
1500	13 x 20	12	0.034	1600	240	ESC158M016AL3AA
2200	13 x 25	12	0.028	2000	352	ESC228M016AL4AA
3300	16 x 25	12	0.024	2200	528	ESC338M016AM7AA
4700	16 x 36	12	0.019	2550	752	ESC478M016AM3AA
6800	18 x 36	12	0.019	2800	1088	ESC688M016AN2AA

For capacitor whose capacitance exceeds 1000 μF the value of D.F. (%) is increased by 2% for every addition of 1000 μF

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Rated cap. 120 Hz 20°C (μF)	Case size DxL (mm)	25 Vdc Rated voltage - 32 Vdc Surge voltage			L.C. 20°C 2 min. (μA)	P/N
		D.F. 120 Hz 25°C ($\text{tg}\delta$ %)	Z 100 kHz 25°C (Ω)	R.C. 100kHz 105°C (mA_{rms})		
47	5 x 11	10	0.420	150	12	ESC476M025AC3AA
68	6 x 11	10	0.370	200	17	ESC686M025AE3AA
100	6 x 11	10	0.220	250	25	ESC107M025AE3AA
120	8 x 11	10	0.200	300	30	ESC127M025AG3AA
150	8 x 11	10	0.140	550	37	ESC157M025AG3AA
220	8 x 15	10	0.100	750	55	ESC227M025AG4AA
330	8 x 20	10	0.069	800	82	ESC337M025AG6AA
470	10 x 15	10	0.064	1050	117	ESC477M025AH2AA
680	10 x 19	10	0.039	1100	170	ESC687M025AH4AA
820	10 x 19	10	0.039	1250	205	ESC827M025AH4AA
1000	13 x 20	10	0.038	1450	250	ESC108M025AL3AA
1200	13 x 25	10	0.029	1600	300	ESC128M025AL4AA
1500	16 x 25	10	0.028	2000	375	ESC158M025AM7AA
2200	16 x 32	10	0.024	2200	550	ESC228M025AM2AA
3300	16 x 36	10	0.019	2550	825	ESC338M025AM3AA
4700	18 x 36	10	0.019	2800	1175	ESC478M025AN2AA

Rated cap. 120 Hz 20°C (μF)	Case size DxL (mm)	35 Vdc Rated voltage - 44 Vdc Surge voltage			L.C. 20°C 2 min. (μA)	P/N
		D.F. 120 Hz 25°C ($\text{tg}\delta$ %)	Z 100 kHz 25°C (Ω)	R.C. 100kHz 105°C (mA_{rms})		
4.7	5 x 11	10	1.200	115	3	ESC475M035AC3AA
6.8	5 x 11	10	1.000	120	3	ESC685M035AC3AA
10	5 x 11	10	0.900	140	3	ESC106M035AC3AA
15	5 x 11	10	0.690	170	5	ESC156M035AC3AA
22	5 x 11	10	0.420	190	8	ESC226M035AC3AA
33	5 x 11	10	0.420	200	11	ESC336M035AC3AA
47	6 x 11	10	0.370	250	16	ESC476M035AE3AA
68	6 x 11	10	0.220	300	24	ESC686M035AE3AA
100	8 x 11	10	0.140	450	35	ESC107M035AG3AA
120	8 x 11	10	0.130	550	42	ESC127M035AG3AA
150	8 x 15	10	0.100	650	52	ESC157M035AG4AA
220	8 x 20	10	0.085	780	77	ESC227M035AG6AA
220	10 x 12	10	0.069	800	77	ESC227M035AH1AA
330	10 x 19	10	0.044	1050	115	ESC337M035AH4AA
470	10 x 19	10	0.039	1300	164	ESC477M035AH4AA
680	13 x 20	10	0.038	1400	238	ESC687M035AL3AA
820	13 x 20	10	0.034	1550	287	ESC827M035AL3AA
1000	13 x 25	10	0.029	1700	350	ESC108M035AL4AA
1200	16 x 25	10	0.028	1900	420	ESC128M035AM7AA
1500	16 x 25	10	0.024	2100	525	ESC158M035AM7AA
2200	16 x 32	10	0.021	2500	770	ESC228M035AM2AA
2200	16 x 36	10	0.019	2550	770	ESC228M035AM3AA
3300	18 x 36	10	0.019	2800	1155	ESC338M035AN2AA

For capacitor whose capacitance exceeds 1000 μF the value of D.F. (%) is increased by 2% for every addition of 1000 μF

SINGLE-ENDED LEADS - Low Impedance 105°C / 2000 to 3000 h

Rated cap. 120 Hz 20°C (μ F)	Case size DxL (mm)	50 Vdc Rated voltage - 63 Vdc Surge voltage				L.C. 20°C 2 min. (μ A)	P/N
		D.F. 120 Hz 25°C (tg δ %)	Z 100 kHz 25°C (Ω)	R.C. 100kHz 105°C (mA _{rms})			
1.0	5 x 11	8	2.400	40	3	ESC105M050AC3AA	
4.7	5 x 11	8	2.000	115	3	ESC475M050AC3AA	
6.8	5 x 11	8	1.850	120	3	ESC685M050AC3AA	
10	5 x 11	8	1.700	140	5	ESC106M050AC3AA	
15	5 x 11	8	1.200	180	7	ESC156M050AC3AA	
22	5 x 11	8	0.700	200	11	ESC226M050AC3AA	
33	6 x 11	8	0.600	250	16	ESC336M050AE3AA	
47	6 x 11	8	0.520	300	23	ESC476M050AE3AA	
68	8 x 11	8	0.350	450	34	ESC686M050AG3AA	
100	8 x 15	8	0.250	550	50	ESC107M050AG4AA	
120	8 x 20	8	0.210	650	60	ESC127M050AG6AA	
150	10 x 12	8	0.160	800	75	ESC157M050AH1AA	
220	10 x 15	8	0.100	1050	110	ESC227M050AH2AA	
330	10 x 19	8	0.072	1300	165	ESC337M050AH4AA	
470	13 x 20	8	0.060	1400	235	ESC477M050AL3AA	
680	13 x 25	8	0.050	1550	340	ESC687M050AL4AA	
820	16 x 25	8	0.040	1700	410	ESC827M050AM7AA	
1000	16 x 25	8	0.039	1900	500	ESC108M050AM7AA	
1200	16 x 32	8	0.025	2100	600	ESC128M050AM2AA	
1500	16 x 36	8	0.025	2550	750	ESC158M050AM3AA	
2200	18 x 40	8	0.025	2800	1100	ESC228M050AN3AA	

Rated cap. 120 Hz 20°C (μ F)	Case size DxL (mm)	63 Vdc Rated voltage - 79 Vdc Surge voltage				L.C. 20°C 2 min. (μ A)	P/N
		D.F. 120 Hz 25°C (tg δ %)	Z 100 kHz 25°C (Ω)	R.C. 100kHz 105°C (mA _{rms})			
4.7	5 x 11	8	2.200	115	3	ESC475M063AC3AA	
6.8	5 x 11	8	2.000	120	4	ESC685M063AC3AA	
10	5 x 11	8	1.850	140	6	ESC106M063AC3AA	
15	5 x 11	8	1.700	200	9	ESC156M063AC3AA	
22	6 x 11	8	1.200	250	14	ESC226M063AE3AA	
33	6 x 11	8	0.900	300	21	ESC336M063AE3AA	
47	8 x 11	8	0.700	450	30	ESC476M063AG3AA	
68	8 x 11	8	0.520	550	43	ESC686M063AG3AA	
100	8 x 20	8	0.350	650	63	ESC107M063AG6AA	
120	10 x 15	8	0.300	800	76	ESC127M063AH2AA	
150	10 x 15	8	0.200	1050	94	ESC157M063AH2AA	
220	10 x 19	8	0.150	1300	139	ESC227M063AH4AA	
330	13 x 20	8	0.100	1400	208	ESC337M063AL3AA	
470	13 x 25	8	0.064	1550	296	ESC477M063AL4AA	
680	16 x 25	8	0.052	1700	428	ESC687M063AM7AA	
820	16 x 32	8	0.048	1900	517	ESC827M063AM2AA	
1000	16 x 32	8	0.042	2100	630	ESC108M063AM2AA	
1200	16 x 36	8	0.036	2550	756	ESC128M063AM3AA	
1500	18 x 36	8	0.033	2800	945	ESC158M063AN2AA	

For capacitor whose capacitance exceeds 1000 μ F the value of D.F. (%) is increased by 2% for every addition of 1000 μ F

SINGLE-ENDED LEADS - Low Impedance 105°C / 2000 to 3000 h

Rated cap. 120 Hz 20°C (μ F)	Case size DxL (mm)	100 Vdc Rated voltage - 125 Vdc Surge voltage				L.C. 20°C 2 min. (μ A)	P/N
		D.F. 120 Hz 25°C (tg δ %)	Z 100 kHz 25°C (Ω)	R.C. 100kHz 105°C (mA _{rms})			
4.7	5 x 11	7	2.000	120	5	ESC475M100AC3AA	
6.8	5 x 11	7	1.850	140	7	ESC685M100AC3AA	
10	6 x 11	7	1.500	200	10	ESC106M100AE3AA	
15	6 x 11	7	1.200	250	15	ESC156M100AE3AA	
22	8 x 11	7	0.790	300	22	ESC226M100AG3AA	
33	8 x 15	7	0.590	450	33	ESC336M100AG4AA	
47	10 x 15	7	0.350	550	47	ESC476M100AH2AA	
68	10 x 19	7	0.240	650	68	ESC686M100AH4AA	
100	13 x 20	7	0.180	800	100	ESC107M100AL3AA	
120	13 x 25	7	0.150	1050	120	ESC127M100AL4AA	
150	13 x 25	7	0.110	1300	150	ESC157M100AL4AA	
220	16 x 25	7	0.071	1400	220	ESC227M100AM7AA	
330	16 x 32	7	0.049	1550	330	ESC337M100AM2AA	
470	18 x 36	7	0.038	1700	470	ESC477M100AN2AA	