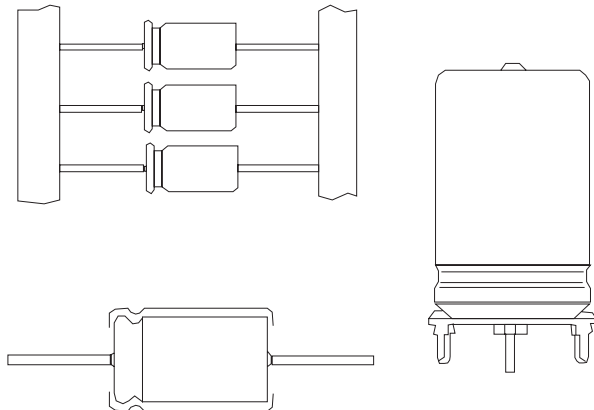


Aluminum Electrolytic Capacitors

Axial Miniature Capacitor Style ELM/EBM/EGM

Solder Ring Termination as EGM03



FEATURES

- Polarized aluminum electrolytic capacitor
- Miniature product
- High C·U product
- Charge/discharge proof
- High ripple current capability
- Solder ring available

APPLICATIONS

- General purpose, industrial electronics
- Audio/video systems
- Coupling, smoothing, filtering, buffering and timing
- Portable and mobile units
- Vibration and shock resistant

MAIN SPECIFICATIONS					
ITEM	UNIT	LOW VOLTAGE			HIGH VOLTAGE
Nominal Case Size (D x L)	mm	4.5 x 10	6 x 10 to 10 x 25	12 x 25 to 30 x 50	12 x 25 to 30 x 50
Rated Capacitance Range	μF	1 - 2200		330 - 47000	10 - 1000
Capacitance Tolerance	%	± 20			± 20
Rated Voltage Range	V	6.3 to 100			160 to 500
Category Temperature Range	$^{\circ}\text{C}$	- 40 to + 85		- 40 to + 105	- 40 to + 85
Endurance Test at upper category temperature	h	1000			2000
Useful Life at 105 $^{\circ}\text{C}$ and I_R applied	h	(500)	(750)	1500	
Useful Life at 85 $^{\circ}\text{C}$ and I_R applied	h	2500		5000	3000
Useful Life at 40 $^{\circ}\text{C}$ and I_R applied	h	70000		150000	80000
Shelf Life (0 V, upper category temperature)	h	500		100	100
Failure Rate (0,8 U_R , 40 $^{\circ}\text{C}$)	$10^{-9}/\text{h}$	≤ 130		≤ 65	≤ 115
Based on Sectional Specifications		IEC 60384-4 / EN 130300			
Detail Specifications		similar to CECC 30301-044, similar to DIN 45910, part 126 without quality assessment			
Climatic Category IEC 60 068		40/085/56 GPF		40/105/56 GMF	40/085/56 GPF

VALUES AND DIMENSIONS $U_R \leq 100V$

Nominal size (D x L) in mm

CAP [μF]	U_R [V]							
	6.3	10	16	25	40	50	63	100
1								4.5 x 11
2.2								4.5 x 11
4.7								4.5 x 11
10							4.5 x 11	6 x 10
22					4.5 x 11		6 x 10	6.5 x 18
33				4.5 x 11				
47				4.5 x 11	6 x 10		6.5 x 18	8 x 18
100		4.5 x 11		6 x 10	6.5 x 18		8 x 18	10 x 25
150								
220		6 x 10		6.5 x 18	10 x 18		10 x 25	12 x 30
330							12 x 25	16 x 30
470		6.5 x 18	8 x 18	10 x 18	10 x 25	12 x 25	12 x 25	16 x 40
680		8 x 18	10 x 18	10 x 25	12 x 25	12 x 30	16 x 30	18 x 40
1000	8 x 18	10 x 18	10 x 25	12 x 25	12 x 30	16 x 30	16 x 40	21 x 40
1500	10 x 18	10 x 25	12 x 25	12 x 25	16 x 30	16 x 40	18 x 40	25 x 40
2200	10 x 25	12 x 25	12 x 30	16 x 30	16 x 40	18 x 40	21 x 40	25 x 50
3300	12 x 25	12 x 30	16 x 30	16 x 40	18 x 40	21 x 40	25 x 40	30 x 50
4700	12 x 30	16 x 30	16 x 40	18 x 40	21 x 40	25 x 40	25 x 45	
6800	16 x 30	16 x 40	18 x 40	21 x 40	25 x 40	25 x 50	30 x 45	
10000	16 x 40	18 x 40	21 x 40	25 x 40	25 x 50	30 x 50		
15000	18 x 40	21 x 40	25 x 40	25 x 45	30 x 50			
22000	21 x 40	25 x 40	25 x 50	30 x 45				
33000	25 x 45	25 x 50	30 x 45					
47000	30 x 40	30 x 50						

VALUES AND DIMENSIONS $U_R > 100V$

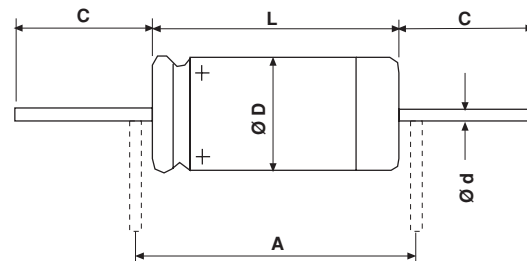
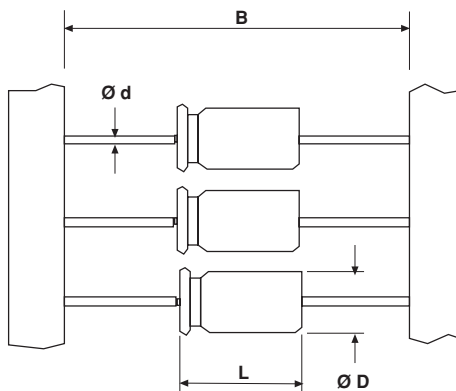
Nominal size (D x L) in mm

CAP [μF]	U_R [V]							
	160	200	250	350	385	400	450	500
10								12 X 25
22				12 X 25	12 X 25	12 X 30	12 X 30	16 X 30
33				12 X 30	16 X 30	16 X 30	18 X 30	16 X 40
47			12 X 25	16 X 30	18 X 30	16 X 40	16 X 40	18 X 40
100	12 X 30	12 X 30	16 X 40	18 X 40	21 X 40	21 X 40	21 X 40	25 X 40
150	16 X 30	16 X 40	18 X 40	21 X 40	25 X 40	25 X 40	25 X 50	25 X 50
220	16 X 40	18 X 40	21 X 40	25 X 40	25 X 45	25 X 50	30 X 45	30 X 50
330	18 X 40	21 X 40	25 X 45	30 X 40	30 X 45	30 X 50		
470	21 X 40	25 X 40	30 X 45					
680	25 X 40	25 X 50						
1000	30 X 40	30 X 50						

AXIAL STYLE: DIMENSIONS, WEIGHT, PACKAGING QUANTITIES AND ORDERING CODE															
NOMINAL CASE SIZE Ø D x L mm x mm			Ø d mm	C mm	Ø D MAX. mm	L MAX. mm	A MIN. mm	B mm	WEIGHT APPROX. g	PACKAGING, ENDING OF ORDERING CODE, QUANTITIES					
										BULK IN BOX		TAPED ON REEL		TAPED AMMO	
										CODE	pcs.	CODE	pcs.	CODE	pcs.
4.5	x	11	0.6		5	11.0	15	63.5 ± 1.5	0.5	n.a.		..A0V	3000	..B0V	1000
6	x	10	0.6		6.3	10.5	15	63.5 ± 1.5	0.7	n.a.		..A0V	1000	..B0V	1000
6.5	x	18	0.8		6.9	18.5	25	73 ± 1.6	1.3	n.a.		..A0V	1000	..B0V	1000
8	x	18	0.8		8.5	18.5	25	73 ± 1.6	1.7	n.a.		..A0V	500	..B0V	500
10	x	18	0.8		10.5	18.5	25	73 ± 1.6	2.5	n.a.		..A0V	500	..B0V	500
10	x	25	0.8		10.5	25.0	30	73 ± 1.6	3.3	n.a.		..A0V	500	..B0V	500
12	x	25	0.8	40 _{-.5}	12.5	26.5	30	73 ± 1.6	4	..00B	800	..A0B	450	..B0B	700
12	x	30	0.8	40 _{-.5}	12.5	31.5	35	73 ± 1.6	6	..00B	800	..A0B	450	..B0B	700
16	x	30	0.8	40 _{-.5}	16.5	30.0	35	73 ± 1.6	8	..00B	150	..A0B	250	..B0B	400
16	x	40	0.8	40 _{-.5}	16.5	40.0	45		11	..00B	150	n.a.		n.a.	
18	x	30	0.8	40 _{-.5}	18.5	30.5	35		10	..00B	150	n.a.		n.a.	
18	x	40	0.8	40 _{-.5}	18.5	40.5	45		15	..00B	100	n.a.		n.a.	
21	x	40	0.8	40 _{-.5}	21.5	41.0	45		21	..00B	100	n.a.		n.a.	
25	x	40	0.8	40 _{-.5}	25.5	41.0	45		31	..00B	60	n.a.		n.a.	
25	x	45	0.8	40 _{-.5}	25.5	47.0	51		38	..00B	60	n.a.		n.a.	
25	x	50	0.8	40 _{-.5}	25.5	51.0	55		44	..00B	50	n.a.		n.a.	
30	x	40	1.0	40 _{-.5}	30.5	41.0	45		46	..00B	40	n.a.		n.a.	
30	x	45	1.0	40 _{-.5}	30.5	47.0	51		54	..00B	30	n.a.		n.a.	
30	x	50	1.0	40 _{-.5}	30.5	51.0	55		64	..00B	30	n.a.		n.a.	

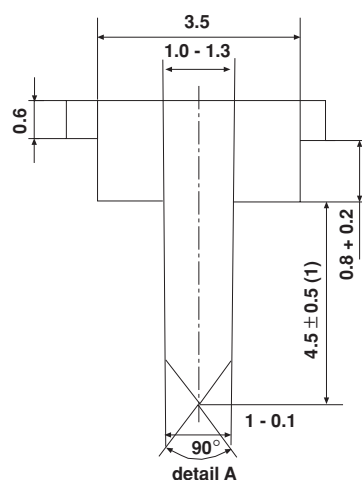
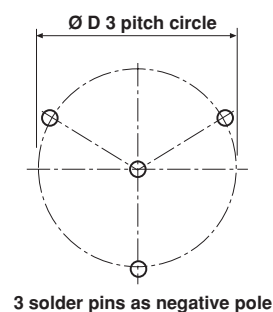
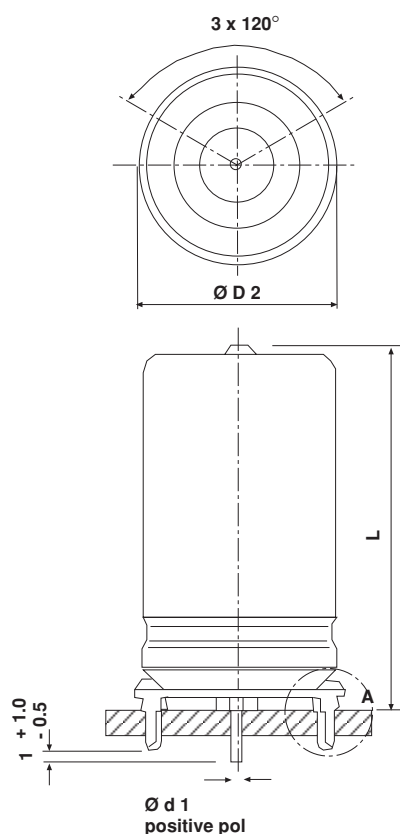
Axial style capacitors are insulated.

n.a. = not available



MOUNTING RING STYLE: DIMENSIONS, WEIGHT, PACKAGING QUANTITIES AND ORDERING CODE

NOMINAL CASE SIZE			Ø D1	Ø D2	Ø D3	L	WEIGHT	STARTING OF	PACKAGING
Ø D	x	L		MAX.	± 0.2	MAX.	APPROX.	ORDERING CODE	QUANTITY
mm	x	mm	mm	mm	mm	mm	g		pcs.
16	x	30	1.0	17.2	16.5	32	12	EGM03..	504
16	x	40	1.0	17.2	16.5	42	13	EGM03..	336
18	x	30	1.0	19.2	18.5	32	13	EGM03..	429
18	x	40	1.0	19.2	18.5	42	19	EGM03..	286
21	x	40	1.0	22.2	21.5	42	24	EGM03..	220
25	x	40	1.0	26.2	25.5	42	28	EGM03..	144
25	x	45	1.0	26.2	25.5	48	33	EGM03..	144
25	x	50	1.0	26.2	25.5	53	40	EGM03..	144
30	x	40	1.0	31.2	30.5	42	42	EGM03..	112
30	x	45	1.0	31.2	30.5	48	46	EGM03..	112
30	x	50	1.0	31.2	30.5	53	50	EGM03..	112



specification of bore fit according to DIN 40810 (ø 1.3 + 0.1)

(1) pin length for mounting rings
Ø 21, 25 and 30 is 3.1 ± 0.2

EGM03..

Cases of mounting ring style capacitors are not insulated.
Insulation on request.

**ORDERING INFORMATION AND EXAMPLE**

The following table gives the ordering number for standard version = axial leads, in bulk.

The 5th place of ordering code refers to termination style:

EGM00.. $\underline{Q}$ = axial leads

EGM03.. $\underline{3}$ = mounting ring with solder pins

The 12th place of ordering code refers to packaging for axial lead capacitors:

EBM00HD442C... = EBM 2200 μ F 10V 12 x 25

EBM00HD442C**Q**0B $\underline{Q}$ = in bulk (box)

EBM00HD442C**A**0B $\underline{A}$ = taped on reel

EBM00HD442C**B**0B $\underline{B}$ = taped ammo

Please see tables "Axial Style" and "Mounting Ring Style" for available versions.

MEASURING CONDITIONS AND FORMULA LEGEND

$T_a = 20^\circ\text{C}$, $p = 80\text{--}106\text{ kPa}$, $RH = 45\text{--}75\%$

T_a Ambient temperature

T_{UC} Upper category temperature

RH Relative humidity

P Ambient pressure

C_R Rated capacitance at 100Hz

U_R Rated voltage

$\tan \delta$ Dissipation factor at 100Hz

R_{ESR} Equivalent series resistance at 100Hz

Z Impedance at 10kHz

I_R Rated alternating current (rms),
100Hz, upper category temperature

ELECTRICAL CHARACTERISTICS AND ORDERING CODE							
CAP 100 Hz C_R [μ F]	RATED VOLTAGE U_R [V]	DIMENSION D x L [mm]	TAN δ 100Hz MAX.	R_{ESR} 100Hz MAX. [Ω]	Z 10kHz MAX. [Ω]	I_R 100Hz T_{UC} [A]	ORDERING NO.
1000	6.3	8 x 18	0.25	0.400	0.500	0.44	EBM00FL410B00V
1500	6.3	10 x 18	0.25	0.270	0.320	0.56	EBM00GL415B00V
2200	6.3	10 x 25	0.29	0.210	0.160	0.71	EBM00GD422B00V
3300	6.3	12 x 25	0.33	0.170	0.120	1.13	EBM00HD433B00B
4700	6.3	12 x 30	0.33	0.120	0.085	1.39	EBM00HE447B00B
6800	6.3	16 x 30	0.36	0.095	0.065	1.69	EGM00KE468B00B
10000	6.3	16 x 40	0.36	0.065	< 0.050	2.21	EGM00KG510B00B
15000	6.3	18 x 40	0.42	0.050	< 0.050	2.38	EGM00LG515B00B
22000	6.3	21 x 40	0.53	0.045	< 0.050	2.44	EGM00MG522B00B
33000	6.3	25 x 45	0.65	0.035	< 0.050	2.84	EGM00NH533B00B
47000	6.3	30 x 40	0.75	0.030	< 0.050	3.20	EGM00PG547B00B
100	10	4.5 x 11	0.20	3.200	2.000	0.10	ELM00BA310C00V
220	10	6 x 10	0.20	1.500	0.910	0.16	EBM00CK322C00V
470	10	6.5 x 18	0.20	0.680	0.430	0.31	EBM00DL347C00V
680	10	8 x 18	0.20	0.470	0.290	0.40	EBM00FL368C00V
1000	10	10 x 18	0.20	0.320	0.200	0.55	EBM00GL410C00V
1500	10	10 x 25	0.23	0.250	0.180	0.69	EBM00GD415C00V
2200	10	12 x 25	0.26	0.205	0.140	1.02	EBM00HD422C00B
3300	10	12 x 30	0.27	0.140	0.095	1.29	EBM00HE433C00B
4700	10	16 x 30	0.28	0.105	0.070	1.61	EGM00KE447C00B
6800	10	16 x 40	0.28	0.070	0.050	2.08	EGM00KG468C00B
10000	10	18 x 40	0.31	0.055	< 0.050	2.34	EGM00LG510C00B
15000	10	21 x 40	0.38	0.045	< 0.050	2.47	EGM00MG515C00B
22000	10	25 x 40	0.53	0.045	< 0.050	2.50	EGM00NG522C00B
33000	10	25 x 50	0.60	0.035	< 0.050	2.95	EGM00NJ533C00B
47000	10	30 x 50	0.72	0.030	< 0.050	3.20	EGM00PJ547C00B
470	16	8 x 18	0.16	0.550	0.340	0.38	EBM00FL347D00V
680	16	10 x 18	0.16	0.380	0.240	0.50	EBM00GL368D00V
1000	16	10 x 25	0.16	0.260	0.180	0.66	EBM00GD410D00V
2200	16	12 x 30	0.21	0.160	0.105	1.09	EBM00HE422D00B
3300	16	16 x 30	0.21	0.110	0.075	1.53	EGM00KE433D00B
4700	16	16 x 40	0.21	0.080	0.050	1.95	EGM00KG447D00B
6800	16	18 x 40	0.23	0.060	< 0.050	2.24	EGM00LG468D00B

ELECTRICAL CHARACTERISTICS AND ORDERING CODE							
CAP 100 Hz C_R [μ F]	RATED VOLTAGE U_R [V]	DIMENSION D x L [mm]	TAN δ 100Hz MAX.	R_{ESR} 100Hz MAX. [Ω]	Z 10kHz MAX. [Ω]	I_R 100Hz T_{UC} [A]	ORDERING NO.
10000	16	21 x 40	0.27	0.050	< 0.050	2.44	EGM00MG510D00B
15000	16	25 x 40	0.37	0.045	< 0.050	2.51	EGM00NG515D00B
22000	16	25 x 50	0.41	0.035	< 0.050	2.98	EGM00NJ522D00B
33000	16	30 x 45	0.49	0.030	< 0.050	3.30	EGM00PH533D00B
33	25	4.5 x 11	0.14	6.700	3.500	0.07	ELM00BA233E00V
47	25	4.5 x 11	0.14	4.800	2.600	0.08	ELM00BA247E00V
100	25	6 x 10	0.14	2.300	1.200	0.15	EBM00CK310E00V
220	25	6.5 x 18	0.14	1.000	0.550	0.25	EBM00DL322E00V
470	25	10 x 18	0.14	0.480	0.260	0.45	EBM00GL347E00V
680	25	10 x 25	0.14	0.330	0.180	0.56	EBM00GD368E00V
1000	25	12 x 25	0.14	0.220	0.130	0.65	EBM00HD410E00B
1500	25	12 x 25	0.16	0.180	0.110	0.98	EBM00HD415E00B
2200	25	16 x 30	0.16	0.125	0.075	1.23	EGM00KE422E00B
3300	25	16 x 40	0.16	0.085	0.055	1.79	EGM00KG433E00B
4700	25	18 x 40	0.17	0.065	< 0.050	2.09	EGM00LG447E00B
6800	25	21 x 40	0.20	0.050	< 0.050	2.35	EGM00MG468E00B
10000	25	25 x 40	0.26	0.045	< 0.050	2.48	EGM00NG510E00B
15000	25	25 x 45	0.32	0.040	< 0.050	2.68	EGM00NH515E00B
22000	25	30 x 45	0.40	0.035	< 0.050	2.90	EGM00PH522E00B
22	40	4.5 x 11	0.11	8.000	3.200	0.06	ELM00BA222G00V
47	40	6 x 10	0.11	3.800	1.500	0.11	EBM00CK247G00V
100	40	6.5 x 18	0.11	1.800	0.700	0.19	EBM00DL310G00V
220	40	10 x 18	0.11	0.800	0.320	0.33	EBM00GL322G00V
470	40	10 x 25	0.11	0.370	0.180	0.52	EBM00GD347G00V
680	40	12 x 25	0.12	0.280	0.120	0.50	EBM00HD368G00B
1000	40	12 x 30	0.12	0.195	0.105	0.86	EBM00HE410G00B
1500	40	16 x 30	0.12	0.135	0.075	1.23	EGM00KE415G00B
2200	40	16 x 40	0.12	0.090	0.050	1.58	EGM00KG422G00B
3300	40	18 x 40	0.13	0.065	< 0.050	1.91	EGM00LG433G00B
4700	40	21 x 40	0.15	0.055	< 0.050	2.17	EGM00MG447G00B
6800	40	25 x 40	0.19	0.050	< 0.050	2.33	EGM00NG468G00B
10000	40	25 x 50	0.21	0.035	< 0.050	2.80	EGM00NJ510G00B
15000	40	30 x 50	0.33	0.040	< 0.050	2.81	EGM00PJ515G00B
680	50	12 x 30	0.11	0.270	0.150	0.74	EBM00HE368H00B
1000	50	16 x 30	0.11	0.185	0.105	1.06	EGM00KE410H00B
1500	50	16 x 40	0.11	0.125	0.070	1.37	EGM00KG415H00B
2200	50	18 x 40	0.12	0.090	0.055	1.70	EGM00LG422H00B
3300	50	21 x 40	0.13	0.070	< 0.050	2.03	EGM00MG433H00B
4700	50	25 x 40	0.16	0.060	< 0.050	2.26	EGM00NG447H00B
6800	50	25 x 50	0.17	0.045	< 0.050	2.74	EGM00NJ468H00B
10000	50	30 x 50	0.24	0.045	< 0.050	2.85	EGM00PJ510H00B
10	63	4.5 x 11	0.08	13.000	5.500	0.05	ELM00BA210J00V
22	63	6 x 10	0.08	5.800	2.500	0.09	EBM00CK222J00V
47	63	6.5 x 8	0.08	2.700	1.200	0.15	EBM00DL247J00V
100	63	8 x 18	0.08	1.300	0.550	0.25	EBM00FL310J00V
220	63	10 x 25	0.08	0.600	0.250	0.43	EBM00GD322J00V
330	63	12 x 25	0.08	0.390	0.180	0.39	EBM00HD333J00B
470	63	12 x 25	0.10	0.340	0.160	0.60	EBM00HD347J00B
680	63	16 x 30	0.10	0.235	0.115	0.76	EGM00KE368J00B
1000	63	16 x 40	0.10	0.165	0.080	1.10	EGM00KG410J00B
1500	63	18 x 40	0.10	0.115	0.055	1.42	EGM00LG415J00B
2200	63	21 x 40	0.11	0.085	< 0.050	1.76	EGM00MG422J00B
3300	63	25 x 40	0.13	0.065	< 0.050	2.09	EGM00NG433J00B
4700	63	25 x 45	0.14	0.055	< 0.050	2.37	EGM00NH447J00B
6800	63	30 x 45	0.20	0.050	< 0.050	2.53	EGM00PH468J00B



ELECTRICAL CHARACTERISTICS AND ORDERING CODE							
CAP 100 Hz C_R [μ F]	RATED VOLTAGE U_R [V]	DIMENSION D x L [mm]	TAN δ 100Hz MAX.	R_{ESR} 100Hz MAX. [Ω]	Z 10kHz MAX. [Ω]	I_R 100Hz T_{UC} [A]	ORDERING NO.
1	100	4.5 x 11	0.08	130.000	90.000	0.01	ELM00BA110L00V
2.2	100	4.5 x 11	0.08	58.000	41.000	0.02	ELM00BA122L00V
4.7	100	4.5 x 11	0.08	27.000	19.000	0.03	ELM00BA147L00V
10	100	6 x 10	0.08	13.000	9.000	0.07	EBM00CK210L00V
22	100	6.5 x 18	0.08	5.800	4.100	0.10	EBM00DL222L00V
47	100	8 x 18	0.08	2.700	1.900	0.16	EBM00FL247L00V
100	100	10 x 25	0.08	1.300	0.900	0.30	EBM00GD310L00V
220	100	12 x 30	0.09	0.655	0.205	0.37	EBM00HE322L00B
330	100	16 x 30	0.09	0.440	0.140	0.56	EGM00KE333L00B
470	100	16 x 40	0.09	0.310	0.100	0.70	EGM00KG347L00B
680	100	18 x 40	0.09	0.220	0.070	0.91	EGM00LG368L00B
1000	100	21 x 40	0.09	0.155	0.055	1.19	EGM00MG410L00B
1500	100	25 x 40	0.10	0.115	< 0.050	1.52	EGM00NG415L00B
2200	100	25 x 50	0.11	0.080	< 0.050	1.90	EGM00NJ422L00B
3300	100	30 x 50	0.13	0.065	< 0.050	2.27	EGM00PJ433L00B
100	160	12 x 30	0.07	1.115	0.485	0.42	EBM00HE310M00B
150	160	16 x 30	0.07	0.745	0.330	0.61	EGM00KE315M00B
220	160	16 x 40	0.07	0.505	0.225	0.77	EGM00KG322M00B
330	160	18 x 40	0.08	0.385	0.155	1.03	EGM00LG333M00B
470	160	21 x 40	0.08	0.270	0.115	1.33	EGM00MG347M00B
680	160	25 x 40	0.08	0.185	0.090	1.70	EGM00NG368M00B
1000	160	30 x 40	0.09	0.145	0.075	2.10	EGM00PG410M00B
100	200	16 x 30	0.09	1.435	0.725	0.50	EGM00KE310S00B
150	200	16 x 40	0.09	0.955	0.485	0.65	EGM00KG315S00B
220	200	18 x 40	0.09	0.650	0.335	0.86	EGM00LG322S00B
330	200	21 x 40	0.09	0.435	0.230	1.15	EGM00MG333S00B
470	200	25 x 40	0.09	0.305	0.170	1.49	EGM00NG347S00B
680	200	25 x 50	0.09	0.210	0.120	1.86	EGM00NJ368S00B
1000	200	30 x 50	0.10	0.160	0.095	2.35	EGM00PJ410S00B
47	250	12 x 25	0.09	3.050	1.230	0.29	EBM00HD247N00B
100	250	16 x 40	0.09	1.435	0.580	0.53	EGM00KG310N00B
150	250	18 x 40	0.09	0.955	0.390	0.72	EGM00LG315N00B
220	250	21 x 40	0.09	0.650	0.270	0.97	EGM00MG322N00B
330	250	25 x 40	0.09	0.435	0.190	1.30	EGM00NG333N00B
470	250	25 x 45	0.09	0.305	0.140	1.58	EGM00NH347N00B
680	250	30 x 45	0.09	0.210	0.105	2.01	EGM00PH368N00B
33	350	12 x 30	0.10	4.825	3.050	0.24	EBM00HE233O00B
47	350	16 x 30	0.10	3.390	2.150	0.35	EGM00KE247O00B
100	350	18 x 40	0.10	1.590	1.015	0.59	EGM00LG310O00B
150	350	21 x 40	0.10	1.060	0.685	0.80	EGM00MG315O00B
220	350	25 x 40	0.10	0.725	0.475	1.06	EGM00NG322O00B
330	350	30 x 40	0.10	0.485	0.335	1.42	EGM00PG333O00B
22	385	12 x 25	0.09	6.515	4.000	0.19	EBM00HD222R00B
47	385	18 x 30	0.09	3.050	1.880	0.38	EGM00LE247R00B
100	385	21 x 40	0.09	1.435	0.890	0.64	EGM00MG310R00B
150	385	25 x 40	0.09	0.955	0.600	0.88	EGM00NG315R00B
220	385	25 x 45	0.09	0.650	0.415	1.09	EGM00NH322R00B
330	385	30 x 45	0.09	0.435	0.290	1.47	EGM00PH333R00B
22	400	12 x 30	0.12	8.685	6.105	0.19	EBM00HE222X00B
33	400	16 x 30	0.12	5.790	4.075	0.28	EGM00KE233X00B
47	400	16 x 40	0.12	4.065	2.860	0.35	EGM00KG247X00B
100	400	21 x 40	0.12	1.910	1.355	0.63	EGM00MG310X00B
150	400	25 x 40	0.12	1.275	0.910	0.86	EGM00NG315X00B
220	400	25 x 50	0.12	0.870	0.625	1.09	EGM00NJ322X00B
330	400	30 x 50	0.12	0.580	0.430	1.48	EGM00PJ333X00B

ELECTRICAL CHARACTERISTICS AND ORDERING CODE

CAP 100 Hz C_R [μ F]	RATED VOLTAGE U_R [V]	DIMENSION D x L [mm]	TAN δ 100Hz MAX.	R_{ESR} 100Hz MAX. [Ω]	Z 10kHz MAX. [Ω]	I_R 100Hz T_{UC} [A]	ORDERING NO.
22	450	12 x 30	0.10	7.240	3.505	0.20	EBM00HE222P00B
33	450	18 x 30	0.10	4.825	2.340	0.30	EGM00LE233P00B
47	450	16 x 40	0.10	3.390	1.645	0.37	EGM00KG247P00B
100	450	21 x 40	0.10	1.590	0.785	0.65	EGM00MG310P00B
150	450	25 x 50	0.10	1.060	0.525	0.91	EGM00NJ315P00B
220	450	30 x 45	0.10	0.725	0.370	1.20	EGM00PH322P00B
10	500	12 x 25	0.09	14.080	9.305	0.14	EBM00HD210Y00B
22	500	16 x 30	0.09	6.210	4.105	0.26	EGM00KE222Y00B
33	500	16 x 40	0.09	4.140	2.740	0.35	EGM00KG233Y00B
47	500	18 x 40	0.09	2.915	1.925	0.45	EGM00LG247Y00B
100	500	25 x 40	0.09	1.385	0.920	0.81	EGM00NG310Y00B
150	500	25 x 50	0.09	0.925	0.615	1.04	EGM00NJ315Y00B
220	500	30 x 50	0.09	0.645	0.435	1.39	EGM00PJ322Y00B

Table for the calculation of the maximum 10 kHz impedance at low temperatures.

LOW TEMPERATURE BEHAVIOR

Z (10kHz) [Ω] = TABULAR VALUE / C_R [μ F]

T_a [°C]	RATED VOLTAGE U_R [V]															
	6.3	10	16	25	40	50	63	100	160	200	250	350	385	400	450	500
-25	2100	1600	1250	680	390	375	240	200	1000	1000	1000	1500	1800	2000	5000	5000
-40	7600	5700	3500	1870	1150	1100	650	500	4600	4600	4600	5000	6000	8000	10000	10000

The lower limit of the series resistance and impedance is determined by the ohmic part of the contact points and the foil resistance values. Therefore it will not always be possible to achieve calculated values below 0.05 Ω .

ADDITIONAL ELECTRICAL DATA

PARAMETER	CONDITIONS	SPECIFICATION
Leakage current I_L	$U_R \leq 100V$; U_R , 300s $U_R > 100V$; $U_R >$, 300s	$I_L/\mu A \leq 0.002 \times C_R/\mu F \times U_R/V + 3$ $I_L/\mu A \leq 0.015 \times C_R/\mu F \times U_R/V + 10$
Surge voltage U_S	$U_R \leq 100V$ $U_R \geq 160V$	$U_S = 1.15 \times U_R$ $U_S = 1.10 \times U_R$
Reverse voltage U_{REV}		$U_{REV} \leq 1V$

TEST PROCEDURES AND CRITERIA

TEST	REFERENCE	PROCEDURE	CRITERION
Endurance	IEC 60384-4/ EN 1300300 subclause 4.13	T_A = upper cat. temp.; U_R applied; $6.3V \leq U_R \leq 100V$: 1000h $T_A = 85^\circ C$; U_R applied; $160V \leq U_R \leq 500V$: 2000 h	$U_R = 6.3V$: - 40% $\leq$ DC/C $\leq$ 25% $U_R > 6.3V$: - 30% $\leq$ DC/C $\leq$ 30% $\tan \delta \leq 1.5 \times$ spec. limit $Z \leq 3 \times$ spec. limit $I_L(300s) \leq$ spec. limit
Useful life	CECC 30301 subclause 1.8.1	$T_A = 105^\circ C$; U_R and I_R applied; $6.3V \leq U_R \leq 100V$ case 4.5 x 11: 500h cases 6 x 10 to 10 x 25: 750h cases 12 x 25 to 30 x 50: 1500h $T_A = 85^\circ C$; U_R and I_R applied; $160V \leq U_R \leq 500V$: 3000h	$U_R = 6.3V$: - 50% $\leq$ DC/C $\leq$ 45% $U_R > 6.3V$: - 45% $\leq$ DC/C $\leq$ 45% $\tan \delta \leq 3 \times$ spec. limit $Z \leq 3 \times$ spec. limit $I_L(300s) \leq$ spec. limit no short circuit, no open circuit total failure percentage $\leq 1\%$
Shelf life (storage at high temperature)	IEC 60348-4/ EN 130300 subclause 4.17	T_A = upper cat. temp.; no voltage applied; $6.3V \leq U_R \leq 100V$ cases 4.5 x 11 to 10 x 25: 500 h cases 12 x 25 to 30 x 50: 100 h $160V \leq U_R \leq 500V$: 100h After test: U_R to be applied for 30 minutes 24h to 48h before measurement	$U_R = 6.3V$: - 40% $\leq$ DC/C $\leq$ 25% $U_R > 6.3V$: - 30% $\leq$ DC/C $\leq$ 30% $\tan \delta \leq 1.5 \times$ spec. limit $Z \leq 3 \times$ spec. limit $I_L(300s) \leq 2 \times$ spec. limit

**OPERATING LIFE TABLE**

Interrelation between alternating current load, ambient temperature and useful life

 $U_R \leq 100V$ and $\varnothing \leq 10mm$

Current ratio I/I_R (depending on frequency)							Multiplier L for useful life (depending on I/I_R and T_a)												
3.42	3.80	4.18	4.37	4.56	4.75	4.94	0.32												
3.24	3.60	3.96	4.14	4.32	4.50	4.68	0.46	0.37											
3.06	3.40	3.74	3.91	4.08	4.25	4.42	0.66	0.53	0.42	0.34									
2.88	3.20	3.52	3.68	3.84	4.00	4.16	0.95	0.75	0.59	0.46	0.36	0.28							
2.70	3.00	3.30	3.45	3.60	3.75	3.90	1.4	1.1	0.82	0.64	0.49	0.38	0.30						
2.52	2.80	3.08	3.22	3.36	3.50	3.64	1.9	1.5	1.1	0.87	0.67	0.51	0.39	0.30					
2.34	2.60	2.86	2.99	3.12	3.25	3.38	2.7	2.1	1.6	1.2	0.89	0.67	0.51	0.39	0.29				
2.16	2.40	2.64	2.76	2.88	3.00	3.12	3.8	2.8	2.1	1.6	1.2	0.89	0.66	0.50	0.37	0.28			
1.98	2.20	2.42	2.53	2.64	2.75	2.86	5.3	3.9	2.9	2.1	1.6	1.2	0.85	0.63	0.47	0.35			
1.80	2.00	2.20	2.30	2.40	2.50	2.60	7.3	5.3	3.8	2.8	2.0	1.5	1.1	0.80	0.59	0.43	0.32		
1.62	1.80	1.98	2.07	2.16	2.25	2.34	10	7.1	5.1	3.6	2.6	1.9	1.4	1.0	0.72	0.53	0.39	0.29	
1.44	1.60	1.76	1.84	1.92	2.00	2.08	13	9.4	6.6	4.7	3.3	2.3	1.7	1.2	0.87	0.64	0.47	0.34	
1.26	1.40	1.54	1.61	1.68	1.75	1.82	18	12	8.5	5.9	4.1	2.9	2.0	1.5	1.0	0.75	0.55	0.40	0.29
1.08	1.20	1.32	1.38	1.44	1.50	1.56	23	16	11	7.3	5.0	3.5	2.4	1.7	1.2	0.88	0.63	0.46	0.34
0.90	1.00	1.10	1.15	1.20	1.25	1.30	29	19	13	8.8	6.0	4.1	2.9	2.0	1.4	1.00	0.72	0.52	0.38
0.72	0.80	0.88	0.92	0.96	1.00	1.04	36	24	16	10	7.0	4.8	3.3	2.3	1.6	1.13	0.80	0.58	0.42
0.54	0.60	0.66	0.69	0.72	0.75	0.78	43	28	18	12	8.0	5.4	3.7	2.5	1.8	1.24	0.88	0.63	0.45
0.36	0.40	0.44	0.46	0.48	0.50	0.52	49	31	20	13	8.8	5.9	4.0	2.7	1.9	1.33	0.94	0.67	0.48
0.18	0.20	0.22	0.23	0.24	0.25	0.26	54	34	22	14	9.4	6.3	4.2	2.9	2.0	1.40	0.98	0.70	0.50
0	0	0	0	0	0	0	56	35	23	15	9.7	6.4	4.3	3.0	2.0	1.42	1.00	0.71	0.51
50	100	250	500	1000	2500	10 K	40	45	50	55	60	65	70	75	80	85	90	95	100
Frequency [Hz]							Ambient temperature T_a [°C]												

 $U_R \leq 100V$ and $\varnothing \geq 12mm$

Current ratio I/I_R (depending on frequency)							Multiplier L for useful life (depending on I/I_R and T_a)												
3.42	3.80	4.18	4.37	4.56	4.75	4.94	1.2												
3.24	3.60	3.96	4.14	4.32	4.50	4.68	1.7	1.3	1.1										
3.06	3.40	3.74	3.91	4.08	4.25	4.42	2.4	1.9	1.5	1.2									
2.88	3.20	3.52	3.68	3.84	4.00	4.16	3.4	2.7	2.1	1.7	1.3	1.0							
2.70	3.00	3.30	3.45	3.60	3.75	3.90	4.9	3.8	3.0	2.3	1.8	1.4	1.1						
2.52	2.80	3.08	3.22	3.36	3.50	3.64	6.9	5.3	4.1	3.1	2.4	1.8	1.4	1.1					
2.34	2.60	2.86	2.99	3.12	3.25	3.38	9.7	7.4	5.6	4.2	3.2	2.4	1.8	1.4	1.1				
2.16	2.40	2.64	2.76	2.88	3.00	3.12	14	10	7.6	5.7	4.3	3.2	2.4	1.8	1.3	1.0			
1.98	2.20	2.42	2.53	2.64	2.75	2.86	19	14	10	7.6	5.6	4.1	3.1	2.3	1.7	1.3			
1.80	2.00	2.20	2.30	2.40	2.50	2.60	26	19	14	10	7.3	5.3	3.9	2.9	2.1	1.6			
1.62	1.80	1.98	2.07	2.16	2.25	2.34	36	26	18	13	9.4	6.8	4.9	3.6	2.6	1.9	1.4	1.0	
1.44	1.60	1.76	1.84	1.92	2.00	2.08	49	34	24	17	12	8.4	6.0	4.3	3.1	2.3	1.7	1.2	
1.26	1.40	1.54	1.61	1.68	1.75	1.82	64	44	30	21	15	10	7.3	5.2	3.8	2.7	2.0	1.4	1.06
1.08	1.20	1.32	1.38	1.44	1.50	1.56	83	56	38	26	18	13	8.8	6.2	4.4	3.2	2.3	1.7	1.21
0.90	1.00	1.10	1.15	1.20	1.25	1.30	105	70	47	32	22	15	10	7.2	5.1	3.6	2.6	1.9	1.36
0.72	0.80	0.88	0.92	0.96	1.00	1.04	129	85	56	37	25	17	12	8.2	5.7	4.1	2.9	2.1	1.50
0.54	0.60	0.66	0.69	0.72	0.75	0.78	155	100	65	43	29	19	13	9.1	6.3	4.5	3.2	2.3	1.63
0.36	0.40	0.44	0.46	0.48	0.50	0.52	176	113	73	48	32	21	14	9.9	6.9	4.8	3.4	2.4	1.73
0.18	0.20	0.22	0.23	0.24	0.25	0.26	194	123	79	51	34	23	15	10	7.2	5.0	3.5	2.5	1.81
0	0	0	0	0	0	0	200	127	81	53	35	23	16	11	7.4	5.1	3.6	2.6	1.84
50	100	250	500	1000	2500	10 K	40	45	50	55	60	65	70	75	80	85	90	95	100
Frequency [Hz]							Ambient temperature T_a [°C]												

 $U_R > 100V$

Current ratio I/I_R (depending on frequency)							Multiplier L for useful life (depending on I/I_R and T_a)												
2.21	2.60	3.02	3.22	3.38	3.48	3.64	1.1												
2.04	2.40	2.78	2.98	3.12	3.22	3.36	1.7	1.3	1.0										
1.87	2.20	2.55	2.73	2.86	2.95	3.08	2.6	2.0	1.5	1.1									
1.70	2.00	2.32	2.48	2.60	2.68	2.80	3.9	3.0	2.2	1.7	1.2								
1.53	1.80	2.09	2.23	2.34	2.41	2.52	5.9	4.4	3.2	2.4	1.8	1.3							
1.36	1.60	1.86	1.98	2.08	2.14	2.24	8.8	6.4	4.7	3.4	2.5	1.8	1.3						
1.19	1.40	1.62	1.74	1.82	1.88	1.96	13	9.2	6.5	4.7	3.3	2.4	1.7	1.2					
1.02	1.20	1.39	1.49	1.56	1.61	1.68	18	13	9.0	6.3	4.4	3.1	2.2	1.6	1.14				
0.85	1.00	1.16	1.24	1.30	1.34	1.40	26	17	12	8.3	5.7	4.0	2.8	2.0	1.40	1.00			
0.68	0.80	0.93	0.99	1.04	1.07	1.12	35	23	16	11	7.2	4.9	3.4	2.4	1.68	1.19			
0.51	0.60	0.70	0.74	0.78	0.80	0.84	44	29	19	13	8.7	5.9	4.0	2.8	1.95	1.37			
0.34	0.40	0.46	0.50	0.52	0.54	0.56	54	35	23	15	10	6.7	4.6	3.1	2.18	1.53			
0.17	0.20	0.23	0.25	0.26	0.27	0.28	63	40	26	17	11	7	5.0	3.4	2.35	1.64			
0	0	0	0	0	0	0	66	42	27	17	11	8	5.1	3.5	2.42	1.69			
50	100	250	500	1000	2500	10 K	40	45	50	55	60	65	70	75	80	85	90	95	100
Frequency [Hz]							Ambient temperature T_a [°C]												

 I_R [A] Rated ripple current (100Hz, rms) at upper category temperature, taken from data sheet I [A] User ripple current T_a [°C] Ambient temperature of capacitor L Useful life multiplierRegard L as a function of ambient temperature (x-axis) and of current (y-axis); use the current-axis according to the frequency



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