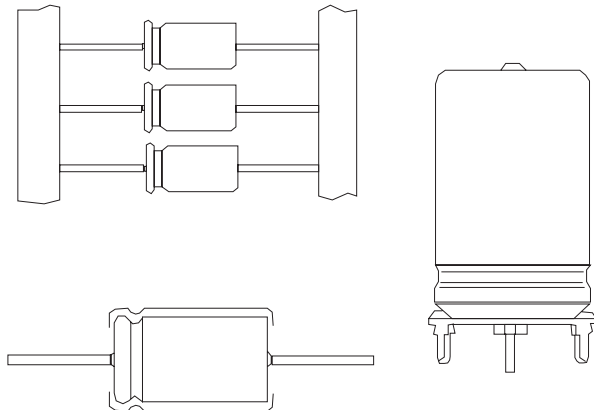


Aluminum Electrolytic Capacitors Axial Standard Capacitor Style EL/EB/EG Solder Ring Termination as EG 03


FEATURES

- Polarized aluminum electrolytic capacitor
- Standard dimensions
- Long lifetime
- Charge/discharge proof
- High ripple current capability
- Solder ring available

APPLICATIONS

- General purpose, industrial and automotive 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	3.3 x 8 to 3.3 x 11	4.5 x 11	6 x 10 to 10 x 25	12 x 25 to 30 x 50	6.5 x 18 to 10 x 25	12 x 25 to 30 x 50
Rated Capacitance Range	μF	0.47 - 10	0.47 - 47	4.7 - 1000	100 - 33000	1 - 22	10 - 680
Capacitance Tolerance	%	- 10 / +50					
Rated Voltage Range	V	6.3 to 63	10 to 100	6.3 to 100		160 to 385	160 to 500
Category Temperature Range	°C	- 40 to + 85			- 40 to + 105		-40 to +85
Endurance Test at Upper Category Temp.	h	1000				2000	
Useful Life at 105°C and I _R applied	h		(750)	(1000)	2000		
Useful Life at 85°C and I _R applied	h	1500	3000		7000	5000	
Useful Life at 40°C and I _R applied	h	40000	85000		200000	130000	
Shelf Life (0 V, Upper Category Temp.)	h	500			100	500	100
Failure Rate (0,8 U _R , 40°C)	10 ⁻⁹ /h	≤ 550	≤ 105		≤ 45	≤ 70	
Based on Sectional Specifications		IEC 384-4, CECC 30300					
Detail Specifications		similar to CECC 30301-044, similar to DIN 45910 Part 126, without quality assessment					
Climatic Category	IEC 60 068 DIN 40040	40/085/56 GPF			40/105/56 GMF	40/085/56 GPF	



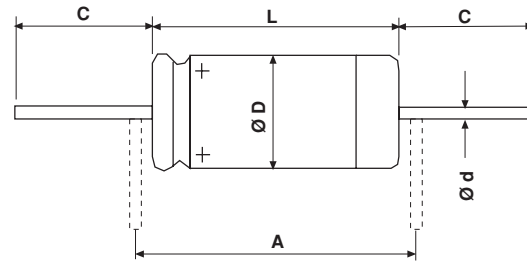
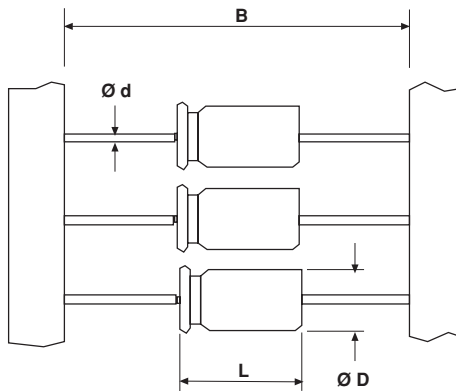
VALUES AND DIMENSIONS $U_R \leq 100V$								
Nominal size (D x L) in mm								
CAP [μF]	RATED VOLTAGE U_R [V]							
	6.3	10	16	25	40	50	63	100
0.47							3.3 x 8 3.3 x 11	4.5 x 11
1					3.3 x 11		3.3 x 8 4.5 x 11	4.5 x 11
2.2					3.3 x 8 3.3 x 11		3.3 x 11 4.5 x 11	4.5 x 11
4.7			3.3 x 8 3.3 x 11		3.3 x 11		4.5 x 11	6 x 10
10	3.3 x 8 3.3 x 11		3.3 x 11	4.5 x 11	4.5 x 11		6 x 10	6.5 x 18
22		4.5 x 11		4.5 x 11	6 x 10		6.5 x 18	8 x 18
33								
47		4.5 x 11		6 x 10	6.5 x 18		8 x 18	10 x 18
68								
100		6 x 10		6.5 x 18	8 x 18	10 x 18	10 x 25	12 x 25
150								12 x 25
220		6.5 x 18	8 x 18	10 x 18	10 x 18	12 x 25	12 x 25	16 x 30
330						12 x 25	12 x 30	16 x 40
470	8 x 18	10 x 18	10 x 18	10 x 25	12 x 25	12 x 30	16 x 30	18 x 40
680				12 x 25	12 x 30	16 x 30	16 x 40	21 x 40
1000	10 x 25	10 x 25	10 x 25	12 x 30	16 x 30	16 x 40	18 x 40	25 x 40
1500	12 x 25	12 x 25	10 x 30	16 x 30	16 x 40	18 x 40	21 x 40	25 x 50
2200	12 x 25	12 x 30	16 x 30	16 x 40	18 x 40	21 x 40	25 x 40	30 x 50
3300	12 x 30	16 x 40	16 x 40	18 x 40	21 x 40	25 x 40	25 x 50 30 x 45	
4700	16 x 40	16 x 40	18 x 40	21 x 40	25 x 40	25 x 50 30 x 45	30 x 50	
6800	18 x 40	21 x 40	21 x 40	25 x 40	25 x 50 30 x 40	30 x 50		
10000	21 x 40	25 x 40	25 x 40	25 x 50 30 x 40	30 x 50			
15000	25 x 40	25 x 45	30 x 40	30 x 50				
22000	25 x 50	30 x 45	30 x 50					
33000	30 x 50							

VALUES AND DIMENSIONS $U_R > 100V$								
Nominal size (D x L) in mm								
CAP [μF]	RATED VOLTAGE U_R [V]							
	160	250	350	385	400	450	500	
1				6.5 x 18				
2.2		6.5 x 18		8 x 18				
4.7	6.5 x 18	8 x 18	10 x 18	10 x 25				
10	8 x 18	10 x 25	12 x 25	12 x 25			12 x 25	12 x 30
15			12 x 25	12 x 25	12 x 25	12 x 30		16 x 30
22	10 x 25	12 x 25	12 x 30	12 x 30	16 x 30	16 x 30		16 x 40
33	12 x 25	12 x 25	16 x 30	16 x 30	16 x 30	18 x 30		18 x 40
47	12 x 25	16 x 30	18 x 30	16 x 40	16 x 40	18 x 40		21 x 40
68	12 x 30	18 x 30	18 x 40	18 x 40	18 x 40	21 x 40		25 x 40
100	18 x 30	18 x 40	21 x 40	21 x 40	21 x 40	25 x 40		25 x 45
150	18 x 40	21 x 40	25 x 40	25 x 45	25 x 40	30 x 40		30 x 45
220	21 x 40	25 x 40	30 x 40	30 x 40	30 x 40	30 x 50		
330	25 x 40	25 x 50	30 x 50					
470	25 x 45	30 x 45						
680	30 x 45							

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.
3.3	x	8	0.6		3.5	9.0	12.5	63.5 ± 1.5	0.3			..A0V	4000	..B0V	1000
3.3	x	11	0.6		3.5	12.0	15	63.5 ± 1.5	0.35			..A0V	3000	..B0V	1000
4.5	x	11	0.6		5.0	11.0	15	63.5 ± 1.5	0.5			..A0V	3000	..B0V	1000
6	x	10	0.6		6.3	10.5	15	63.5 ± 1.5	0.7			..A0V	1000	..B0V	1000
6.5	x	18	0.8		6.9	18.5	25	73.0 ± 1.6	1.3			..A0V	1000	..B0V	1000
8	x	18	0.8		8.5	18.5	25	73.0 ± 1.6	1.7			..A0V	500	..B0V	500
10	x	18	0.8		10.5	18.5	25	73.0 ± 1.6	2.5			..A0V	500	..B0V	500
10	x	25	0.8		10.5	25.0	30	73.0 ± 1.6	3.3			..A0V	500	..B0V	500
12	x	25	0.8	40 ^{-0.5}	12.5	26.5	30	73.0 ± 1.6	4	..00B	800	..A0B	450	..B0B	700
12	x	30	0.8	40 ^{-0.5}	12.5	31.5	35	73.0 ± 1.6	6	..00B	800	..A0B	450	..B0B	700
16	x	30	0.8	40 ^{-0.5}	16.5	30.0	35	73.0 ± 1.6	8	..00B	150	..A0B	250	..B0B	400
16	x	40	0.8	40 ^{-0.5}	16.5	40.0	45		11	..00B	150	n.a.		n.a.	
18	x	30	0.8	40 ^{-0.5}	18.5	30.5	35		10	..00B	150	n.a.		n.a.	
18	x	40	0.8	40 ^{-0.5}	18.5	40.5	45		15	..00B	100	n.a.		n.a.	
21	x	40	0.8	40 ^{-0.5}	21.5	41.0	45		21	..00B	100	n.a.		n.a.	
25	x	40	0.8	40 ^{-0.5}	25.5	41.0	45		31	..00B	60	n.a.		n.a.	
25	x	45	0.8	40 ^{-0.5}	25.5	47.0	51		38	..00B	60	n.a.		n.a.	
25	x	50	0.8	40 ^{-0.5}	25.5	51.0	55		44	..00B	50	n.a.		n.a.	
30	x	40	1.0	40 ^{-0.5}	30.5	41.0	45		46	..00B	40	n.a.		n.a.	
30	x	45	1.0	40 ^{-0.5}	30.5	47.0	51		54	..00B	30	n.a.		n.a.	
30	x	50	1.0	40 ^{-0.5}	30.5	51.0	55		64	..00B	30	n.a.		n.a.	

Axial style capacitors are insulated.

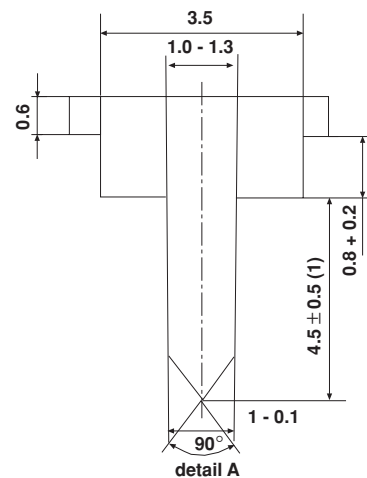
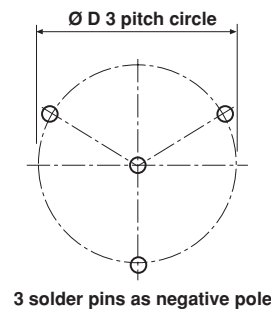
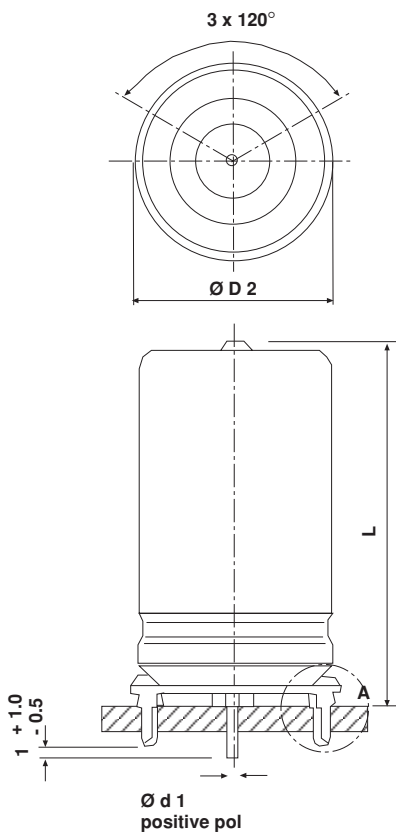
n.a. = not available



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

NOMINAL CASE SIZE			Ø D1 mm	Ø D2 MAX. mm	ØD3 ± 0.2 mm	L MAX. mm	WEIGHT APPROX. g	STARTING OF ORDERING CODE	PACKAGING QUANTITY pcs.
Ø D mm	x x mm	L mm							
16	x	30	1.0	17.2	16.5	32	12	EG 03..	504
16	x	40	1.0	17.2	16.5	42	13	EG 03..	336
18	x	30	1.0	19.2	18.5	32	13	EG 03..	429
18	x	40	1.0	19.2	18.5	42	19	EG 03..	286
21	x	40	1.0	22.2	21.5	42	24	EG 03..	220
25	x	40	1.0	26.2	25.5	42	28	EG 03..	144
25	x	45	1.0	26.2	25.5	48	33	EG 03..	144
25	x	50	1.0	26.2	25.5	53	40	EG 03..	144
30	x	40	1.0	31.2	30.5	42	42	EG 03..	112
30	x	45	1.0	31.2	30.5	48	46	EG 03..	112
30	x	50	1.0	31.2	30.5	53	50	EG 03..	112

Packaging in styrofoam pallets



specification of bore fit according to DIN 40810 ($\varnothing 1.3 + 0.1$)

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

EG 03..

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 3rd place of the ordering number is always a blank sign which is essential for ordering code

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

EG 00.. 0 = axial leads
EG 03.. 3 = mounting ring with solder pins

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

EB 00HD415C... = EB 1500µF 10V 12 x 25

EB 00HD415C00B 0 = in bulk (box)

EB 00HD415CA0B A = taped on reel

EB 00HD415CB0B B = taped ammo

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

MEASURING CONDITIONS AND FORMULA LEGEND

T_a = 20°C, p = 86-106 kPa, RH = 45-75%

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 δ 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 [µF]	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.*
10	6.3	3.3 x 8	0.30	47.7	20.0	0.011	EL 00AN210B00V
10	6.3	3.3 x 11	0.30	47.7	20.0	0.015	EL 00AA210B00V
470	6.3	8 x 18	0.25	0.847	0.430	0.33	EB 00FL347B00V
1000	6.3	10 x 25	0.25	0.398	0.200	0.56	EB 00GD410B00V
1500	6.3	12 x 25	0.26	0.276	0.170	0.54	EB 00HD415B00B
2200	6.3	12 x 25	0.24	0.200	0.100	1.0	EB 00HD422B00B
3300	6.3	12 x 30	0.26	0.150	0.070	1.6	EB 00HE433B00B
4700	6.3	16 x 40	0.28	0.110	0.050	1.8	EG 00KG447B00B
6800	6.3	18 x 40	0.30	0.066	< 0.050	2.1	EG 00LG468B00B
10000	6.3	21 x 40	0.34	0.055	< 0.050	2.4	EG 00MG510B00B
15000	6.3	25 x 40	0.45	0.050	< 0.050	2.5	EG 00NG515B00B
22000	6.3	25 x 50	0.50	< 0.050	< 0.050	3.0	EG 00NJ522B00B
33000	6.3	30 x 50	0.80	< 0.050	< 0.050	3.0	EG 00PJ533B00B
22	10	4.5 x 11	0.20	14.5	7.30	0.045	EL 00BA222C00V
47	10	4.5 x 11	0.20	6.78	3.40	0.070	EL 00BA247C00V
100	10	6 x 10	0.20	3.19	1.60	0.11	EB 00CK310C00V
220	10	6.5 x 18	0.20	1.45	0.730	0.21	EB 00DL322C00V
470	10	10 x 18	0.20	0.680	0.340	0.41	EB 00GL347C00V
1000	10	10 x 25	0.20	0.320	0.160	0.56	EB 00GD410C00V
1500	10	12 x 25	0.21	0.220	0.110	1.0	EB 00HD415C00B
2200	10	12 x 30	0.22	0.160	0.080	1.3	EB 00HE422C00B
3300	10	16 x 40	0.25	0.120	0.050	1.9	EG 00KG433C00B
4700	10	16 x 40	0.26	0.090	< 0.050	2.2	EG 00KG447C00B
6800	10	21 x 40	0.32	0.070	< 0.050	2.6	EG 00MG468C00B
10000	10	25 x 40	0.36	0.060	< 0.050	2.7	EG 00NG510C00B
15000	10	25 x 45	0.48	0.050	< 0.050	2.9	EG 00NH515C00B
22000	10	30 x 45	0.62	< 0.050	< 0.050	2.9	EG 00PH522C00B
4.7	16	3.3 x 11	0.20	67.8	26.0	0.015	EL 00AA147D00V
4.7	16	3.3 x 8	0.20	68.0	26.0	0.009	EL 00AN147D00V
10	16	3.3 x 11	0.20	32.0	12.0	0.016	EL 00AA210D00V
220	16	8 x 18	0.16	1.16	0.550	0.27	EB 00FL322D00V
470	16	10 x 18	0.16	0.540	0.280	0.41	EB 00GL347D00V
1000	16	10 x 25	0.16	0.260	0.130	0.55	EB 00GD410D00V
1500	16	12 x 30	0.17	0.180	0.090	1.2	EB 00HE415D00B



ELECTRICAL CHARACTERISTICS AND ORDERING CODE							
CAP 100 Hz C _R [μF]	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.*
2200	16	16 x 30	0.18	0.130	0.060	1.6	EG 00KE422D00B
3300	16	16 x 40	0.21	0.100	< 0.050	2.1	EG 00KG433D00B
4700	16	18 x 40	0.24	0.080	< 0.050	2.4	EG 00LG447D00B
6800	16	21 x 40	0.28	0.070	< 0.050	2.5	EG 00MG468D00B
10000	16	25 x 40	0.34	0.050	< 0.050	2.6	EG 00NG510D00B
15000	16	30 x 40	0.44	< 0.050	< 0.050	2.5	EG 00PG515D00B
22000	16	30 x 50	0.58	< 0.050	< 0.050	3.0	EG 00PJ522D00B
10	25	4.5 x 11	0.14	22.3	9.00	0.050	EL 00BA210E00V
22	25	4.5 x 11	0.14	10.2	4.10	0.060	EL 00BA222E00V
47	25	6 x 10	0.14	4.80	1.90	0.10	EB 00CK247E00V
100	25	6.5 x 18	0.14	2.23	0.900	0.16	EB 00DL310E00V
220	25	10 x 18	0.14	1.02	0.410	0.35	EB 00GL322E00V
470	25	10 x 25	0.14	0.470	0.190	0.50	EB 00GD347E00V
680	25	12 x 25	0.14	0.320	0.130	0.87	EB 00HD368E00B
1000	25	12 x 30	0.14	0.220	0.090	1.1	EB 00HE410E00B
1500	25	16 x 30	0.15	0.160	0.060	1.5	EG 00KE415E00B
2200	25	16 x 40	0.16	0.120	< 0.050	1.9	EG 00KG422E00B
3300	25	18 x 40	0.19	0.090	< 0.050	2.2	EG 00LG433E00B
4700	25	21 x 40	0.21	0.070	< 0.050	2.4	EG 00MG447E00B
6800	25	25 x 40	0.26	0.060	< 0.050	2.5	EG 00NG468E00B
10000	25	30 x 40	0.32	0.050	< 0.050	2.8	EG 00PG510E00B
10000	25	25 x 40	0.32	0.050	< 0.050	2.9	EG 00NG510E00B
15000	25	30 x 50	0.36	< 0.050	< 0.050	3.0	EG 00PJ515E00B
1	40	3.3 x 11	0.16	239	75.0	0.008	EL 00AA110G00V
2.2	40	3.3 x 11	0.15	109	32.0	0.015	EL 00AA122G00V
2.2	40	3.3 x 8	0.16	120	32.0	0.007	EL 00AN122G00V
4.7	40	3.3 x 11	0.16	54.0	15.0	0.013	EL 00AA147G00V
10	40	4.5 x 11	0.11	17.6	7.00	0.050	EL 00BA210G00V
22	40	6 x 10	0.11	8.00	3.20	0.075	EB 00CK222G00V
47	40	6.5 x 18	0.11	3.73	1.50	0.045	EB 00DL247G00V
100	40	8 x 18	0.11	1.75	0.700	0.22	EB 00FL310G00V
220	40	10 x 18	0.12	0.870	0.340	0.36	EB 00GL322G00V
470	40	12 x 25	0.10	0.410	0.150	0.75	EB 00HD347G00B
680	40	12 x 30	0.10	0.280	0.120	0.94	EB 00HE368G00B
1000	40	16 x 30	0.10	0.190	0.080	1.3	EG 00KE410G00B
1500	40	16 x 40	0.13	0.140	0.060	1.6	EG 00KG415G00B
2200	40	18 x 40	0.14	0.100	< 0.050	2.0	EG 00LG422G00B
3300	40	21 x 40	0.17	0.080	< 0.050	2.2	EG 00MG433G00B
4700	40	25 x 40	0.18	0.070	< 0.050	2.4	EG 00NG447G00B
6800	40	30 x 40	0.24	0.060	< 0.050	2.4	EG 00PG468G00B
6800	40	25 x 50	0.24	0.060	< 0.050	2.8	EG 00NJ468G00B
10000	40	30 x 50	0.32	< 0.050	< 0.050	2.9	EG 00PJ510G00B
100	50	10 x 18	0.10	1.60	0.650	0.25	EB 00GL310H00V
220	50	12 x 25	0.10	0.720	0.300	0.31	EB 00HD322H00B
330	50	12 x 25	0.10	0.480	0.200	0.63	EB 00HD333H00B
470	50	12 x 30	0.10	0.340	0.140	0.78	EB 00HE347H00B
680	50	16 x 30	0.10	0.240	0.100	1.1	EG 00KE368H00B
1000	50	16 x 40	0.10	0.160	0.070	1.4	EG 00KG410H00B
1500	50	18 x 40	0.11	0.120	0.050	1.7	EG 00LG415H00B
2200	50	21 x 40	0.12	0.090	< 0.050	2.1	EG 00MG422H00B
3300	50	25 x 40	0.15	0.070	< 0.050	2.3	EG 00NG433H00B
4700	50	25 x 50	0.18	0.060	< 0.050	2.8	EG 00NJ447H00B
4700	50	30 x 45	0.18	0.060	< 0.050	2.8	EG 00PH447H00B
6800	50	30 x 50	0.22	0.050	< 0.050	3.0	EG 00PJ468H00B
0.47	63	3.3 x 11	0.10	339	117	0.008	EL 00AA047J00V
0.47	63	3.3 x 8	0.10	340	120	0.004	EL 00AN047J00V
1	63	4.5 x 11	0.09	143	55.0	0.013	EL 00BA110J00V
1	63	3.3 x 8	0.12	190	55.0	0.006	EL 00AN110J00V
2.2	63	4.5 x 11	0.09	65.2	25.0	0.025	EL 00BA122J00V
2.2	63	3.3 x 11	0.14	87.0	25.0	0.011	EL 00AA122J00V
4.7	63	4.5 x 11	0.09	30.5	12.0	0.040	EL 00BA147J00V
10	63	6 x 10	0.08	12.8	5.50	0.070	EB 00CK210J00V



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	63	6.5 x 18	0.08	5.79	2.50	0.11	EB 00DL222J00V
47	63	8 x 18	0.08	2.71	1.20	0.19	EB 00FL247J00V
100	63	10 x 25	0.08	1.28	0.550	0.30	EB 00GD310J00V
220	63	12 x 25	0.08	0.580	0.250	0.52	EB 00HD322J00B
330	63	12 x 30	0.08	0.380	0.170	0.67	EB 00HE333J00B
470	63	16 x 30	0.08	0.270	0.120	0.92	EG 00KE347J00B
680	63	16 x 40	0.08	0.200	0.090	1.2	EG 00KG368J00B
1000	63	18 x 40	0.08	0.130	0.060	1.5	EG 00LG410J00B
1500	63	21 x 40	0.09	0.100	0.050	1.9	EG 00MG415J00B
2200	63	25 x 40	0.10	0.070	< 0.050	2.2	EG 00NG422J00B
3300	63	25 x 50	0.13	0.060	< 0.050	2.6	EG 00NJ433J00B
3300	63	30 x 45	0.13	0.060	< 0.050	2.6	EG 00PH433J00B
4700	63	30 x 50	0.15	0.050	< 0.050	2.8	EG 00PJ447J00B
0.47	100	4.5 x 11	0.08	271	96.0	0.009	EL 00BA047L00V
1	100	4.5 x 11	0.08	128	45.0	0.020	EL 00BA110L00V
2.2	100	4.5 x 11	0.08	57.9	21.0	0.030	EL 00BA122L00V
4.7	100	6 x 10	0.07	23.7	9.60	0.050	EB 00CK147L00V
10	100	6.5 x 18	0.07	11.2	4.50	0.090	EB 00DL210L00V
22	100	8 x 18	0.07	5.07	2.10	0.12	EB 00FL222L00V
47	100	10 x 18	0.07	2.37	0.900	0.15	EB 00GL247L00V
100	100	12 x 25	0.07	1.11	0.500	0.31	EB 00HD310L00B
150	100	12 x 25	0.07	0.740	0.330	0.37	EB 00HD315L00B
220	100	16 x 30	0.07	0.510	0.200	0.54	EG 00KE322L00B
330	100	16 x 40	0.07	0.340	0.130	0.70	EG 00KG333L00B
470	100	18 x 40	0.07	0.240	0.090	0.90	EG 00LG347L00B
680	100	21 x 40	0.07	0.160	0.070	1.2	EG 00MG368L00B
1000	100	25 x 40	0.07	0.110	0.050	1.5	EG 00NG410L00B
1500	100	25 x 50	0.08	0.090	< 0.050	1.9	EG 00NJ415L00B
2200	100	30 x 50	0.10	0.070	< 0.050	2.3	EG 00PJ422L00B
4.7	160	6.5 x 18	0.15	51.0	26.0	0.050	EB 00DL147M00V
10	160	8 x 18	0.15	24.0	12.0	0.070	EB 00FL210M00V
22	160	10 x 25	0.15	11.0	5.50	0.19	EB 00GD222M00V
33	160	12 x 25	0.07	3.38	1.04	0.23	EB 00HD233M00B
47	160	12 x 25	0.07	2.37	0.730	0.29	EB 00HD247M00B
68	160	12 x 30	0.07	1.64	0.505	0.37	EB 00HE268M00B
100	160	18 x 30	0.07	1.12	0.350	0.56	EG 00LE310M00B
150	160	18 x 40	0.07	0.745	0.235	0.73	EG 00LG315M00B
220	160	21 x 40	0.07	0.505	0.165	0.97	EG 00MG322M00B
330	160	25 x 40	0.07	0.340	0.115	1.3	EG 00NG333M00B
470	160	25 x 45	0.07	0.235	0.085	1.6	EG 00NH347M00B
680	160	30 x 45	0.07	0.165	0.065	2.0	EG 00PH368M00B
2.2	250	6.5 x 18	0.10	72.0	50.0	0.035	EB 00DL122N00V
4.7	250	8 x 18	0.10	34.0	23.0	0.055	EB 00FL147N00V
10	250	10 x 25	0.10	16.0	11.0	0.090	EB 00GD210N00V
22	250	12 x 25	0.07	5.07	1.84	0.20	EB 00HD222N00B
33	250	12 x 25	0.07	3.38	1.23	0.26	EB 00HD233N00B
47	250	16 x 30	0.07	2.37	0.865	0.38	EG 00KE247N00B
68	250	18 x 30	0.07	1.64	0.600	0.49	EG 00LE268N00B
100	250	18 x 40	0.07	1.12	0.410	0.63	EG 00LG310N00B
150	250	21 x 40	0.07	0.745	0.280	0.86	EG 00MG315N00B
220	250	25 x 40	0.07	0.505	0.195	1.1	EG 00NG322N00B
330	250	25 x 50	0.07	0.340	0.135	1.5	EG 00NJ333N00B
470	250	30 x 45	0.07	0.235	0.105	1.8	EG 00PH347N00B
4.7	350	10 x 18	0.10	34.0	22.0	0.060	EB 00GL147O00V
10	350	12 x 25	0.09	12.5	7.56	0.13	EB 00HD210O00B
15	350	12 x 25	0.09	8.32	5.04	0.16	EB 00HD215O00B
22	350	12 x 30	0.09	5.68	3.44	0.21	EB 00HE222O00B
33	350	16 x 30	0.09	3.79	2.30	0.31	EG 00KE233O00B
47	350	18 x 30	0.09	2.67	1.62	0.41	EG 00LE247O00B
68	350	18 x 40	0.09	1.85	1.12	0.52	EG 00LG268O00B
100	350	21 x 40	0.09	1.26	0.765	0.69	EG 00MG310O00B
150	350	25 x 40	0.09	0.850	0.520	0.95	EG 00NG315O00B



ELECTRICAL CHARACTERISTICS AND ORDERING CODE							
CAP 100 Hz C _R [μF]	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.*
220	350	30 x 40	0.09	0.595	0.370	1.3	EG 00PG322O00B
330	350	30 x 50	0.09	0.400	0.250	1.6	EG 00PJ333O00B
1	385	6.5 x 18	0.10	160	100	0.020	EB 00DL110R00V
2.2	385	8 x 18	0.10	72.0	45.0	0.040	EB 00FL122R00V
4.7	385	10 x 25	0.10	34.0	22.0	0.070	EB 00GD147R00V
10	385	12 x 25	0.10	16.0	6.85	0.13	EB 00HD210R00B
15	385	12 x 25	0.10	11.0	4.57	0.16	EB 00HD215R00B
22	385	12 x 30	0.10	7.24	3.12	0.21	EB 00HE222R00B
33	385	16 x 30	0.10	4.83	2.09	0.31	EG 00KE233R00B
47	385	16 x 40	0.10	3.39	1.73	0.39	EG 00KG247R00B
68	385	18 x 40	0.10	2.34	1.02	0.52	EG 00LG268R00B
100	385	21 x 40	0.10	1.59	0.825	0.70	EG 00MG310R00B
150	385	25 x 45	0.10	1.06	0.520	0.96	EG 00NH315R00B
220	385	30 x 40	0.10	0.725	0.340	1.3	EG 00PG322R00B
15	400	12 x 25	0.06	5.64	3.13	0.18	EB 00HD215X00B
22	400	16 x 30	0.06	3.74	2.08	0.28	EG 00KE222X00B
33	400	16 x 30	0.06	2.51	1.39	0.35	EG 00KE233X00B
47	400	16 x 40	0.06	1.76	0.975	0.45	EG 00KG247X00B
68	400	18 x 40	0.06	1.22	0.680	0.59	EG 00LG268X00B
100	400	21 x 40	0.06	0.840	0.470	0.78	EG 00NG310X00B
150	400	25 x 40	0.06	0.575	0.325	1.0	EG 00NG315X00B
220	400	30 x 40	0.07	0.410	0.235	1.4	EG 00PG322X00B
10	450	12 x 25	0.15	24.0	6.21	0.13	EB 00HD210P00B
15	450	12 x 30	0.15	16.0	4.14	0.17	EB 00HE215P00B
22	450	16 x 30	0.15	11.0	2.83	0.24	EG 00KE222P00B
33	450	18 x 30	0.15	7.24	1.89	0.33	EG 00LE233P00B
47	450	18 x 40	0.15	5.08	1.33	0.42	EG 00LG247P00B
68	450	21 x 40	0.15	3.52	0.920	0.56	EG 00MG268P00B
100	450	25 x 40	0.15	2.39	0.635	0.76	EG 00NG310P00B
150	450	30 x 40	0.15	1.59	0.435	1.0	EG 00PG315P00B
220	450	30 x 45	0.15	1.09	0.300	1.3	EG 00PH322P00B
6.8	500	12 x 25	0.08	15.9	9.78	0.12	EB 00HD168Y00B
10	500	12 x 30	0.08	10.8	6.65	0.15	EB 00HE210Y00B
15	500	16 x 30	0.08	7.04	4.32	0.23	EG 00KE215Y00B
22	500	16 x 40	0.08	4.80	2.95	0.30	EG 00KG222Y00B
33	500	18 x 40	0.08	3.21	1.97	0.40	EG 00LG233Y00B
47	500	21 x 40	0.08	2.26	1.39	0.52	EG 00MG247Y00B
68	500	25 x 40	0.08	1.57	0.970	0.70	EG 00NG268Y00B
100	500	25 x 45	0.08	1.08	0.665	0.88	EG 00NH310Y00B
150	500	30 x 45	0.08	0.730	0.455	1.2	EG 00PH315Y00B

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

LOW TEMPERATURE BEHAVIOR															
Z (10kHz) [Ω] = TABULAR VALUE / C _R [μF]															
T _a [°C]	RATED VOLTAGE U _R [V]														
	6.3	10	16	25	40	50	63	100	160	250	350	385	400	450	500
-25	1300	1000	860	440	330	270	200	160	1000	940	860	1800	1800	5000	5000
-40	4800	3500	2400	1200	1000	800	550	500	5000	4600	4200	6000	6000	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 0.05Ω.

ADDITIONAL ELECTRICAL DATA		
PARAMETER	CONDITIONS	SPECIFICATION
Leakage current I_L	$U_R \leq 100V$; $U_{R'} 300s$ $U_R \geq 160V$; $U_{R'} 300s$	$I_L/\mu A \leq 0.0015 \times C_R/\mu F \times U_R/V + 3$ $I_L/\mu A \leq 0.0150 \times C_R/\mu F \times U_R/V + 10$
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; $160V \leq U_R \leq 500V$: 2000h	$U_R = 6.3V$: - 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: 750h cases 6 x 10 to 10 x 25: 1000h cases 12 x 25 to 30 x 50: 2000h	$U_R = 6.3V$: - 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 $\leq 1\%$
		$T_A = 85^\circ C$; U_R and I_R applied; $160V \leq U_R \leq 500V$: 5000h	
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 3.3 x 8 to 10 x 25: 500h cases 12 x 25 to 30 x 50: 100h $160V \leq U_R \leq 500V$: 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 ≤ 100V and Ø ≤ 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	0.28
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	0.31
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	0.33
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	0.35
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	0.36
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	0.37
50	100	250	500	1000	2500	10 K	40	45	50	55	60	65	70	75	80	85	90	95	100	105
Frequency [Hz]							Ambient temperature T _a [°C]													
U _R ≤ 100V and Ø ≥ 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	1.2			
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	1.00
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	1.10
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	1.19
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	1.26
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	1.31
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	1.33
50	100	250	500	1000	2500	10 K	40	45	50	55	60	65	70	75	80	85	90	95	100	105
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	105
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 multiplier

Regard L as a function of ambient temperature (x-axis) and of current (y-axis); use the current-axis according to the frequency



Specifications are subject to change without notice.

All details in printed form are legally binding especially with respect to the provisions of §§463 and 480 II of the German Code of Civil Law after written confirmation only. The data indicated herein described the type of component and shall not be considered as assured characteristics.

The products listed in this catalog are not generally recommended for use in life support systems where a failure or malfunction of the component may directly threaten life or cause injury.

The user of products in such applications assumes all risks of such use and will agree to hold Vishay Intertechnology, Inc. and all the companies whose products are represented in this catalog, harmless against all damages.

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