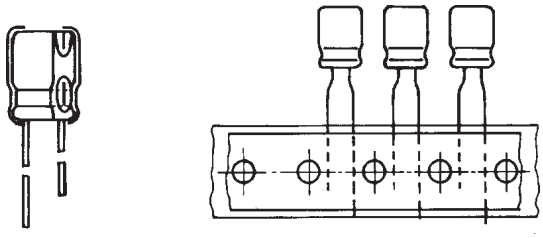
Aluminum Electrolytic Capacitors, Radial Style



CHARACTERISTICS

- Polarized Al electrolytic capacitor
- High C·U product
- Very small dimensions

APPLICATIONS

- General uses, industrial electronics, automotive electronics, audio / video systems
- Smoothing, filtering, coupling, decoupling, timing elements
- Little space requirement
- Portable and mobile units

MAIN SPECIFICATIONS			
Nominal Case Size (D x L)	[mm]	5 x 11 to 18 x 40	
Rated Capacitance Range	[µF]	1 to 22000	
Capacitance Tolerance	[%]	± 20	
Rated Voltage Range	[V]	6.3 to 350	400, 450
Category Temperature Range	[°C]	-40 to 85	-25 to 85
Endurance Test at Upper Category Temperature	[h]	2000	
Lifetime at 85°C and I_R	[h]	3000	
Lifetime at 40°C and I_R	[h]	70000	
Sectional Specifications		IEC 384-4, CECC 30300, GP grade	
Detail Specifications		CECC 30301-037, similar to DIN 45 910 Part 124 without quality assessment	
Climatic Category IEC 68 DIN 40040		40 / 085 / 56 GPF	25 / 085 / 56 HPF
Failure Rate	[10^{-9} / h]	≤ 90	

DIMENSIONS

Nominal size D x L [in millimeters]

C_R [µF]	U_R [V]													
	6.3	10	16	25	35	50	63	100	160	200	250	350	400	450
1.0														8 x 11.5
2.2													8 x 11.5	10 x 12.5
3.3										6.3 x 11	8 x 11.5	8 x 11.5	10 x 12.5	10 x 12.5
4.7									6.3 x 11	8 x 11.5	8 x 11.5	10 x 12.5	10 x 12.5	10 x 16
10								5 x 11	10 x 12.5	10 x 12.5	10 x 12.5	10 x 16	10 x 20	10 x 20
22								6.3 x 11	10 x 16	10 x 16	10 x 20	13 x 20	13 x 25	13 x 25
33							5 x 11	8 x 11.5	10 x 20	10 x 20	13 x 20	13 x 25	16 x 25	16 x 25
47					5 x 11		6.3 x 11	10 x 12.5	13 x 20	13 x 20	13 x 25	16 x 25	16 x 31.5	16 x 31.5
100			5 x 11		6.3 x 11		8 x 11.5	10 x 20	13 x 25	16 x 25	16 x 31.5	16 x 35.5	18 x 40	
220		5 x 11	6.3 x 11		8 x 11.5	10 x 12.5	10 x 16	13 x 25	16 x 31.5	18 x 35.5	18 x 40			
330		6.3 x 11	8 x 11.5	8 x 11.5	10 x 12.5	10 x 16	10 x 20	16 x 25	18 x 35.5					
470		6.3 x 11	8 x 11.5	10 x 12.5	10 x 16	10 x 20	13 x 20	16 x 25						
1000	8 x 11.5	10 x 12.5	10 x 16	10 x 20	13 x 20	13 x 25	16 x 25							
2200	10 x 20	10 x 20	13 x 20	13 x 25	16 x 25	16 x 35.5								
3300	10 x 20	13 x 20	13 x 25	16 x 25	16 x 35.5	18 x 35.5								
4700	13 x 20	13 x 25	16 x 25	16 x 31.5	18 x 35.5									
6800	13 x 25	16 x 25	16 x 31.5	18 x 35.5										
10000	16 x 25	16 x 35.5	18 x 35.5											
15000	16 x 35.5	18 x 35.5												
22000	18 x 40													

•10% capacitance tolerance on request

LEAKAGE CURRENT

Formula for the calculation of the maximum leakage current for acceptance tests I_L:
[Test conditions: U_R, 20°C, 2 minutes ($U_R \leq 100V$) / 5 minutes ($U_R > 100V$)]

I_{L2} [µA] ≤ 0.01 • C_R [µF] • U_R [V] or 3µA for $U_R \leq 100V$ whichever is greater
I_{L5} [µA] ≤ 0.02 • C_R [µF] • U_R [V] +15 for $U_R > 100V$

LOW TEMPERATURE BEHAVIOR

Impedance Ratio Z(T2) / Z(T1) at 120Hz

T2 / T1	RATED VOLTAGE [V]								
	6.3	10	16	25	35	50 - 100	160	200 - 350	400, 450
-25°C / +20°C	5	4	3	2	2	2	4	6	12
-40°C / +20°C	12	10	8	5	4	3	6	8	-

For technical questions contact aluminumcaps3@vishay.com
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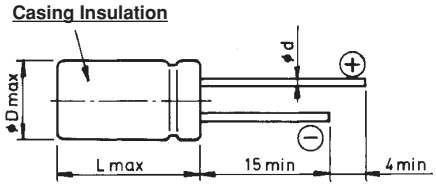
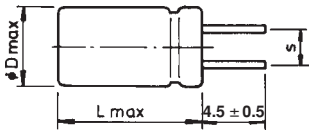
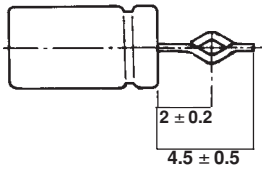
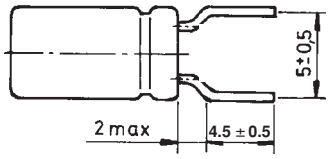
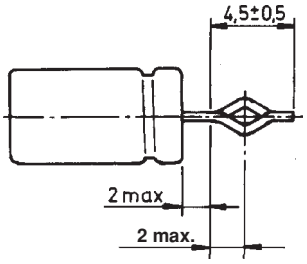
DIMENSIONS AND LEAD CONFIGURATION

5 ≤ ØD ≤ 18	**Long leads**	**EKA 00...**	
5 ≤ ØD ≤ 18	**Shortened leads (S = 2 / 2.5 / 3.5 / 5 / 7.5mm)**	**EKA 05...**	
10 ≤ ØD ≤ 18	**Leads shortened and formed (S = 5 / 7.5mm)**	**EKA 06...**	
5 ≤ ØD ≤ 8	**Leads bent open, shortened (S = 5mm)**	**EKA 09...**	
5 ≤ ØD ≤ 8	**Leads bent open, shortened and formed (S = 5mm)**	**EKA 06...**	

Leads are solder-coated steel
Safety vent for ØD ≥ 8mm

DIMENSIONS [in millimeters]			
NOMINAL SIZE D X L	**MAXIMUM SIZE $D_{max.}$ X $L_{max.}$**	**LEAD ød ± 0.05**	**LEAD SPACING S ± 0.05**
5 x 11	5.5 x 12.0	0.5	2.0
6.3 x 11	6.8 x 12.0	0.5	2.5
8 x 11.5	8.5 x 12.5	0.6	3.5
10 x 12.5	10.5 x 14.5	0.6	5.0
10 x 16	10.5 x 18.0	0.6	5.0
10 x 20	10.5 x 22.0	0.6	5.0
13 x 20	13.5 x 22.0	0.6	5.0
13 x 25	13.5 x 27.0	0.6	5.0
16 x 25	16.5 x 27.0	0.8	7.5
16 x 31.5	16.5 x 33.5	0.8	7.5
16 x 35.5	16.5 x 37.5	0.8	7.5
18 x 35.5	18.5 x 37.5	0.8	7.5
18 x 40	18.5 x 42.0	0.8	7.5

TECHNICAL AND ORDERING INFORMATION

If not indicated otherwise the following test conditions apply to all electrical parameters:

T_a = 20°C, p = 80-120 kPa, RH = 45-75%

C_R	Rated Capacitance at 120Hz
U_R	Rated Voltage
tan δ	Max. Dissipation Factor at 120Hz
R_{ESR}	Max. Equivalent Series Resistance at 120Hz
I_R	Rated Alternating Current at 120Hz and Upper Category Temperature

Ordering example:

EKA 2200µF / 25V, ±20%, size: 16mm x 25mm
Leads: Long - Ordering code: EKA 00JG422E00

Leads: Short (4.5mm ± 0.5) - Ordering code: EKA 05...

Leads: Bent open, shortened - Ordering code: EKA 09...

Leads: Bent open, shortened and formed
Ordering code: EKA 06...

ELECTRICAL CHARACTERISTICS, WEIGHT AND ORDERING CODE

CAPACITANCE 120Hz CR [µF]	RATED VOLTAGE UR [V]	DIMENSIONS D x L [mm]	DISSIPATION FACTOR 120Hz	EQUIVALENT SERIES RESISTANCE 120Hz [Ω]	RATED CURRENT IR 120Hz, 85°C [mA]	WEIGHT [g]	ORDERING CODE
1000	6.3	8 x 11.5	0.28	0.45	567	1.1	EKA00PB410B00
2200	6.3	10 x 20	0.30	0.22	1012	2.5	EKA00DE422B00
3300	6.3	10 x 20	0.33	0.16	1197	2.5	EKA00DE433B00
4700	6.3	13 x 20	0.35	0.12	1624	3.8	EKA00GE447B00
6800	6.3	13 x 25	0.40	0.09	2001	4.5	EKA00GG468B00
10000	6.3	16 x 25	0.46	0.07	2501	7.0	EKA00JG510B00
15000	6.3	16 x 35.5	0.56	0.06	3160	11.0	EKA00JL515B00
22000	6.3	18 x 40	0.70	0.05	3821	16.0	EKA00KK522B00
220	10	5 x 11	0.24	1.74	212	0.5	EKA00AA322C00
330	10	6.3 x 11	0.24	1.16	298	0.8	EKA00BA333C00
470	10	6.3 x 11	0.24	0.81	356	0.8	EKA00BA347C00
1000	10	10 x 12.5	0.24	0.38	712	1.5	EKA00DC410C00
2200	10	10 x 20	0.26	0.19	1023	2.5	EKA00DE422C00
3300	10	13 x 20	0.29	0.14	1509	3.8	EKA00GE433C00
4700	10	13 x 25	0.31	0.11	1893	4.5	EKA00GG447C00
6800	10	16 x 25	0.36	0.08	2362	7.0	EKA00JG468C00
10000	10	16 x 35.5	0.42	0.07	3018	11.0	EKA00JL510C00
15000	10	18 x 35.5	0.52	0.06	3529	13.0	EKA00KL515C00
100	16	5 x 11	0.20	3.18	157	0.5	EKA00AA310D00
220	16	6.3 x 11	0.20	1.45	267	0.8	EKA00BA322D00
330	16	8 x 11.5	0.20	0.97	386	1.1	EKA00PB333D00
470	16	8 x 11.5	0.20	0.68	460	1.1	EKA00DC347D00
1000	16	10 x 16	0.20	0.32	854	2.0	EKA00DD410D00
2200	16	13 x 20	0.22	0.16	1271	3.8	EKA00GE422D00
3300	16	13 x 25	0.25	0.12	1750	4.5	EKA00GG433D00
4700	16	16 x 25	0.27	0.09	2222	7.0	EKA00JG447D00
6800	16	16 x 31.5	0.32	0.07	2715	9.0	EKA00JS468D00
10000	16	18 x 35.5	0.38	0.06	3374	13.0	EKA00KL510D00

ELECTRICAL CHARACTERISTICS, WEIGHT AND ORDERING CODE

CAPACITANCE 120Hz CR [μF]	RATED VOLTAGE UR [V]	DIMENSIONS D x L [mm]	DISSIPATION FACTOR 120Hz	EQUIVALENT SERIES RESISTANCE 120Hz [Ω]	RATED CURRENT IR 120Hz, 85°C [mA]	WEIGHT [g]	ORDERING CODE
330	25	8 x 11.5	0.16	0.77	431	1.1	EKA00PB333E00
470	25	10 x 12.5	0.16	0.54	598	1.5	EKA00DC347E00
1000	25	10 x 20	0.16	0.25	1042	2.5	EKA00DE410E00
2200	25	13 x 25	0.18	0.13	1615	4.5	EKA00GG422E00
3300	25	16 x 25	0.21	0.10	2082	7.0	EKA00JG433E00
4700	25	16 x 31.5	0.23	0.08	2592	9.0	EKA00JS447E00
6800	25	18 x 35.5	0.28	0.07	3228	13	EKA00KL468E00
47	35	5 x 11	0.14	4.74	131	0.5	EKA00AA247F00
100	35	6.3 x 11	0.14	2.23	220	0.8	EKA00BA310F00
220	35	8 x 11.5	0.14	1.01	386	1.1	EKA00PB322F00
330	35	10 x 12.5	0.14	0.68	549	1.5	EKA00DC333F00
470	35	10 x 16	0.14	0.47	717	2.0	EKA00DD347F00
1000	35	13 x 20	0.14	0.22	1340	3.8	EKA00GE410F00
2200	35	16 x 25	0.16	0.12	1900	7.0	EKA00JG422F00
3300	35	16 x 35.5	0.19	0.09	2519	11.0	EKA00JL433F00
4700	35	18 x 35.5	0.21	0.07	3060	13.0	EKA00KL447F00
220	50	10 x 12.5	0.12	0.87	472	1.5	EKA00DC322H00
330	50	10 x 16	0.12	0.58	633	2.0	EKA00DD333H00
470	50	10 x 20	0.12	0.41	825	2.5	EKA00DE347H00
1000	50	13 x 25	0.12	0.19	1540	4.5	EKA00GG410H00
2200	50	16 x 35.5	0.14	0.10	2253	11.0	EKA00JL422H00
3300	50	18 x 35.5	0.17	0.08	2721	13.0	EKA00KL433H00
33	63	5 x 11	0.10	4.83	142	0.5	EKA00AA233J00
47	63	6.3 x 11	0.10	3.39	169	0.8	EKA00BA247J00
100	63	8 x 11.5	0.10	1.59	291	1.1	EKA00PB310J00
220	63	10 x 16	0.10	0.72	549	2.0	EKA00DD322J00
330	63	10 x 20	0.10	0.48	733	2.5	EKA00DE333J00
470	63	13 x 20	0.10	0.34	1027	3.8	EKA00GE347J00
1000	63	16 x 25	0.10	0.16	1812	7.0	EKA00JG410J00
10	100	5 x 11	0.08	13.0	72	0.5	EKA00AA210L00
22	100	6.3 x 11	0.08	5.79	124	0.8	EKA00BA222L00
33	100	8 x 11.5	0.08	3.86	178	1.1	EKA00PB233L00
47	100	10 x 12.5	0.08	2.71	247	1.5	EKA00DC247L00
100	100	10 x 20	0.08	1.27	431	2.5	EKA00DE310L00
220	100	13 x 25	0.08	0.58	819	4.5	EKA00GG322L00
330	100	16 x 25	0.08	0.39	1113	7.0	EKA00JG333L00
470	100	16 x 25	0.08	0.27	1328	7.00	EKA00JG347L00
4.7	160	6.3 x 11	0.15	51.0	48	0.8	EKA00BA147M00
10	160	10 x 12.5	0.15	24.0	95	1.5	EKA00DC210M00
22	160	10 x 16	0.15	11.0	155	2.0	EKA00DD222M00
33	160	10 x 20	0.15	7.24	207	2.5	EKA00DE233M00
47	160	13 x 20	0.15	5.08	290	3.8	EKA00GE247M00
100	160	13 x 25	0.15	2.39	462	4.5	EKA00GG310M00
220	160	16 x 31.5	0.15	1.09	832	9.0	EKA00JS322M00
330	160	18 x 35.5	0.15	0.72	1147	13.0	EKA00KL333M00

ELECTRICAL CHARACTERISTICS, WEIGHT AND ORDERING CODE

CAPACITANCE 120Hz CR [μF]	RATED VOLTAGE UR [V]	DIMENSIONS D x L [mm]	DISSIPATION FACTOR 120Hz	EQUIVALENT SERIES RESISTANCE 120Hz [Ω]	RATED CURRENT IR 120Hz, 85°C [mA]	WEIGHT [g]	ORDERING CODE
3.3	200	6.3 x 11	0.15	72.0	40	0.8	EKA00BA133S00
4.7	200	8 x 11.5	0.15	51.0	56	1.1	EKA00PB147S00
10	200	10 x 12.5	0.15	24.0	95	1.5	EKA00DC210S00
22	200	10 x 16	0.15	11.0	155	2.0	EKA00DD222S00
33	200	10 x 20	0.15	7.24	207	2.5	EKA00DE233S00
47	200	13 x 20	0.15	5.08	290	3.8	EKA00GE247S00
100	200	16 x 25	0.15	2.39	512	7.0	EKA00JG310S00
220	200	18 x 35.5	0.15	1.09	936	13.0	EKA00KL322S00
3.3	250	8 x 11.5	0.15	72.0	47	1.1	EKA00PB133N00
4.7	250	8 x 11.5	0.15	51.0	56	1.1	EKA00PB147N00
10	250	10 x 12.5	0.15	24.0	95	1.5	EKA00DC210N00
22	250	10 x 20	0.15	11.0	169	2.5	EKA00DE222N00
33	250	13 x 20	0.15	7.24	243	3.8	EKA00GE233N00
47	250	13 x 25	0.15	5.08	317	4.5	EKA00GG247N00
100	250	16 x 31.5	0.15	2.39	561	9.0	EKA00JS310N00
220	250	18 x 40	0.15	1.09	982	16.0	EKA00KK322N00
3.3	350	8 x 11.5	0.20	97.0	47	1.1	EKA00PB133O00
4.7	350	10 x 12.5	0.20	68.0	65	1.5	EKA00DC147O00
10	350	10 x 16	0.20	32.0	105	2.0	EKA00DD210O00
22	350	13 x 20	0.20	15.0	199	3.8	EKA00GE222O00
33	350	13 x 25	0.20	9.65	265	4.5	EKA00GG233O00
47	350	16 x 25	0.20	6.78	351	7.0	EKA00JG247O00
100	350	16. x 35.5	0.20	3.18	588	11.0	EKA00JL310O00
2.2	400	8 x 11.5	0.20	145.0	39	1.1	EKA00PB122X00
3.3	400	10 x 12.5	0.20	97.0	55	1.5	EKA00DC133X00
4.7	400	10 x 12.5	0.20	68.0	65	1.5	EKA00DC147X00
10	400	10 x 20	0.20	32.0	114	2.5	EKA00DE210X00
22	400	13 x 25	0.20	15.0	217	4.5	EKA00GG222X00
33	400	16 x 25	0.20	9.65	294	7.0	EKA00JG233X00
47	400	16 x 31.5	0.20	6.78	384	9.0	EKA00JG247X00
100	400	18 x 40	0.20	3.18	662	16.0	EKA00KK310X00
1.0	450	8 x 11.5	0.20	318.0	24	1.1	EKA00PB110P00
2.2	450	10 x 12.5	0.20	145.0	41	1.5	EKA00DC122P00
3.3	450	10 x 12.5	0.20	97.0	50	1.5	EKA00DC133P00
4.7	450	10 x 16	0.20	68.0	65	2.0	EKA00DD147P00
10	450	10 x 20	0.20	32.0	104	2.5	EKA00DE210P00
22	450	13 x 25	0.20	15.0	198	4.5	EKA00GG210P00
33	450	16 x 25	0.20	9.65	269	7.0	EKA00JG233P00
47	450	16 x 31.5	0.20	6.78	351	9.0	EKA00JS247P00