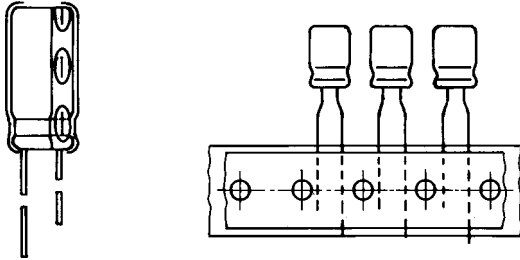


# Aluminum Electrolytic Capacitors, Radial Style



## FEATURES

- Polarized Al electrolytic capacitor
- High C·U product
- Small dimensions
- Long lifetime
- Extended temperature range: 105°C

## APPLICATIONS

- Industrial electronics, automotive electronics, telecommunication systems, audio / video systems
- Smoothing, filtering, timing elements
- Small space requirement
- Portable and mobile units

<b>MAIN SPECIFICATIONS</b>				
Nominal Case Size (D x L)	[mm]	5 x 11 to 8 x 11.5	10 x 12.5 to 18 x 40	
Rated Capacitance Range	[μF]	0.47 to 10000		
Capacitance Tolerance	[%]	± 20		
Rated Voltage Range	[V]	6.3 to 450		
Category Temperature Range	[°C]	6.3 to 100V -55 to 105	160 to 350V -40 to 105	400, 450V -25 to 105
Endurance test at Upper Category Temperature	[h]	1000		2000
Lifetime at 105°C and I <sub>R</sub>	[h]	1500		2500
Lifetime at 85°C and I <sub>R</sub>	[h]	6000		10000
Lifetime at 40°C and I <sub>R</sub>	[h]	140000		230000
Sectional Specifications		IEC 384-4, CECC 30300, GP grade		
Detail Specifications		Similar to CECC 30301-037, similar to DIN 45910 Part 124 without quality assessment		
Climatic Category IEC 68 DIN 40040		55 / 105 / 56 FMF	40 / 105 / 56 GMF	25 / 105 / 56 HMF
Failure Rate	[10 <sup>-9</sup> /h]	≤ 45		

DIMENSIONS												
Nominal size D x L [in millimeters]												
CAP. [μF]	RATED VOLTAGE [V]											
	10	16	25	35	50	63	100	160	250	350	400	450
0.47					5 x 11		5 x 11		6.3 x 11			
1.0					5 x 11		5 x 11		6.3 x 11	8 x 11.5	8 x 11.5	8 x 11.5
2.2					5 x 11		5 x 11	6.3 x 11	8 x 11.5	10 x 12.5	10 x 12.5	10 x 12.5
3.3					5 x 11		5 x 11	8 x 11.5	10 x 12.5	10 x 16	10 x 16	10 x 16
4.7					5 x 11		5 x 11	8 x 11.5	10 x 12.5	10 x 16	10 x 16	10 x 20
10					5 x 11	5 x 11	6.3 x 11	10 x 16	10 x 16	10 x 20	13 x 20	13 x 20
22					5 x 11	6.3 x 11	8 x 11.5	10 x 20	13 x 20	13 x 25	13 x 25	16 x 25
33				5 x 11	6.3 x 11	6.3 x 11	10 x 12.5	13 x 20	13 x 20	16 x 25	16 x 25	16 x 31.5
47			5 x 11	6.3 x 11	6.3 x 11	8 x 11.5	10 x 16	13 x 20	13 x 25	16 x 31.5	16 x 35.5	18 x 40
100	5 x 11	6.3 x 11	6.3 x 11	8 x 11.5	8 x 11.5	10 x 12.5	13 x 20	16 x 25	16 x 35.5	18 x 40		
220	6.3 x 11	8 x 11.5	8 x 11.5	10 x 12.5	10 x 16	13 x 16	16 x 25	16 x 40				
330	8 x 11.5	8 x 11.5	10 x 12.5	10 x 16	13 x 16	13 x 20	16 x 25	18 x 40				
470	8 x 11.5	10 x 12.5	10 x 16	10 x 20	13 x 20	13 x 25	16 x 31.5					
1000	10 x 16	10 x 20	13 x 20	13 x 25	16 x 25	16 x 31.5						
2200	13 x 20	13 x 25	16 x 25	16 x 31.5	18 x 35.5							
3300	13 x 25	16 x 25	16 x 31.5	18 x 35.5								
4700	16 x 25	16 x 31.5	18 x 35.5									
6800	16 x 31.5	16 x 40										
10000	18 x 35.5											

± 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 ( $U_R > 100V$ )]

$$I_{L2} [\mu A] \leq 0.01 \cdot C_R [\mu F] \cdot U_R [V] \quad \text{or } 3\mu A \quad \text{for } U_R \leq 100V \quad (\text{whichever is greater})$$

$$I_{L5} [\mu A] \leq 0.02 \cdot C_R [\mu F] \cdot U_R [V] \quad +15\mu A \quad \text{for } U_R > 100V$$

## LOW TEMPERATURE BEHAVIOR

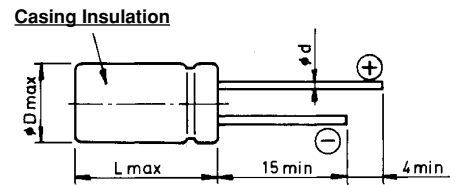
Impedance Ratio  $Z(T2) / Z(T1)$  at 120Hz

T2 / T1	RATED VOLTAGE [V]						
	10	16	25-100	160	250	350	400 450
-25°C / +20°C	3	2	2	3	3	3	8
-40°C / +20°C	6	4	3	4	4	4	-

**DIMENSIONS AND LEAD CONFIGURATION**
 $5 \leq \text{ØD} \leq 18$ 

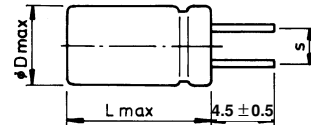
Long leads

EKS 00...


 $5 \leq \text{ØD} \leq 18$ 

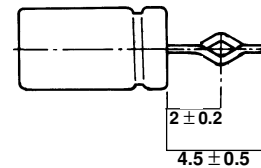
 Shortened leads  
 (S = 2 / 2.5 / 3.5 / 5 / 7.5mm)

EKS 05...


 $10 \leq \text{ØD} \leq 18$ 

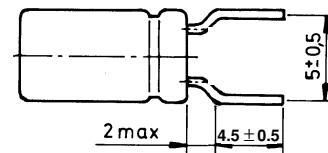
 Leads shortened and formed  
 (S = 5mm / 7.5mm)

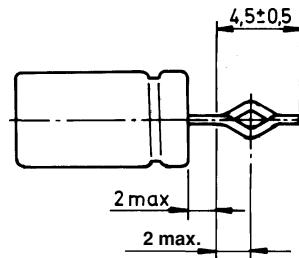
EKS 06...


 $5 \leq \text{ØD} \leq 8$ 

 Leads bent open, shortened  
 (S = 5mm)

EKS 09...


 $5 \leq \text{ØD} \leq 8$ 

 Leads bent open, shortened and formed EKS 06...  
 (S = 5mm)

 Leads are solder-coated steel  
 safety vent for  $\text{ØD} \geq 8\text{mm}$ 

<b>DIMENSIONS</b> [in millimeters]			
NOMINAL SIZE	MAXIMUM SIZE	LEAD	LEAD SPACING
D x L	D <sub>max.</sub> x L <sub>max.</sub>	Ød ± 0.05	S ± 0.5
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 16	13.5 x 18.0	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
18 x 35.5	16.5 x 37.5	0.8	7.5
16 x 40	16.5 x 42.0	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:

$T_a = 20^\circ\text{C}$ ,  $p = 80\text{-}120\text{ kPa}$ ,  $\text{RH} = 45\text{-}75\%$

- $C_R$  Rated Capacitance at 120Hz
- $U_R$  Rated Voltage
- tan d 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:**

EKS 100 $\mu\text{F}$  / 25V,  $\pm 20\%$ , size: 6.3mm x 11mm

Leads: Long

Ordering code: EKS 00BA422310E00

Leads: Short (4.5mm  $\pm$  0.5mm)

Ordering code: EKS 05...

Leads: Bent open, shortened

Ordering code: EKS 09...

Leads: Bent open, shortened and formed

Ordering code: EKS 06...

<b>ELECTRICAL CHARACTERISTICS, WEIGHT AND ORDERING CODE</b>							
<b>CAPACITANCE 120Hz <math>C_R</math> [<math>\mu\text{F}</math>]</b>	<b>RATED VOLTAGE <math>U_R</math> [V]</b>	<b>DIMENSIONS D x L [mm]</b>	<b>DISSIPATION FACTOR 120Hz</b>	<b>EQUIVALENT SERIES RESISTANCE 120Hz [<math>\Omega</math>]</b>	<b>RATED CURRENT <math>I_R</math> 120Hz, 105<math>^\circ\text{C}</math> [mA]</b>	<b>WEIGHT [g]</b>	<b>ORDERING CODE</b>
100	10	5.0 x 11.0	0.19	2.52	105	0.5	EKS00AA310C00
220	10	6.3 x 11.0	0.19	1.15	180	0.8	EKS00BA322C00
330	10	8.0 x 11.5	0.19	0.76	259	1.1	EKS00PB333C00
470	10	8.0 x 11.5	0.19	0.54	310	1.1	EKS00PB347C00
1000	10	10.0 x 16.0	0.19	0.25	575	2.0	EKS00DD410C00
2200	10	13.0 x 20.0	0.21	0.13	891	3.8	EKS00GE422C00
3300	10	13.0 x 25.0	0.24	0.10	1137	4.5	EKS00GG433C00
4700	10	16.0 x 25.0	0.26	0.07	1444	7.0	EKS00JG447C00
6800	10	16.0 x 31.5	0.31	0.06	1765	9.0	EKS00JS468C00
10000	10	18.0 x 35.5	0.37	0.05	2193	13.0	EKS00KL510C00
100	16	6.3 x 11.0	0.16	2.12	131	0.8	EKS00BA310D00
220	16	8.0 x 11.5	0.16	0.97	229	1.1	EKS00PB322D00
330	16	8.0 x 11.5	0.16	0.65	280	1.1	EKS00PB333D00
470	16	10.0 x 12.5	0.16	0.45	388	1.5	EKS00DC347D00
1000	16	10.0 x 20.0	0.16	0.21	677	2.5	EKS00DE410D00
2200	16	13.0 x 25.0	0.18	0.11	1050	4.5	EKS00GG422D00
3300	16	16.0 x 25.0	0.20	0.08	1353	7.0	EKS00JG433D00
4700	16	16.0 x 31.5	0.23	0.06	1685	9.0	EKS00JS447D00
6800	16	16.0 x 40.0	0.28	0.05	2055	15.0	EKS00KL468D00
47	25	5.0 x 11.0	0.14	3.95	81	0.5	EKS00AA247E00
100	25	6.3 x 11.0	0.14	1.86	137	0.8	EKS00BA310E00
220	25	8.0 x 11.5	0.14	0.85	239	1.1	EKS00PB322E00
330	25	10.0 x 12.5	0.14	0.56	340	1.5	EKS00DC333E00
470	25	10.0 x 16.0	0.14	0.40	444	2.0	EKS00DD347E00
1000	25	13.0 x 20.0	0.14	0.19	830	3.8	EKS00GE410E00
2200	25	16.0 x 25.0	0.16	0.10	1198	7.0	EKS00JG422E00
3300	25	16.0 x 31.5	0.21	0.085	1519	9.0	EKS00JS433E00
4700	25	18.0 x 35.5	0.23	0.07	1914	13.0	EKS00KL447E00

<b>ELECTRICAL CHARACTERISTICS, WEIGHT AND ORDERING CODE</b>							
<b>CAPACITANCE 120Hz CR [μF]</b>	<b>RATED VOLTAGE UR [V]</b>	<b>DIMENSIONS D x L [mm]</b>	<b>DISSIPATION FACTOR 120Hz</b>	<b>EQUIVALENT SERIES RESISTANCE 120Hz [Ω]</b>	<b>RATED CURRENT IR 120Hz, 105°C [mA]</b>	<b>WEIGHT [g]</b>	<b>ORDERING CODE</b>
33	35	5.0 x 11.0	0.12	4.83	75	0.5	EKS00AA233F00
47	35	6.3 x 11.0	0.12	3.39	104	0.8	EKS00BA247F00
100	35	8.0 x 11.5	0.12	1.58	178	1.1	EKS00PB310F00
220	35	10.0 x 12.5	0.12	0.73	307	1.5	EKS00DC322F00
330	35	10.0 x 16.0	0.12	0.48	412	2.0	EKS00DD333F00
470	35	10.0 x 20.0	0.12	0.34	536	2.5	EKS00DE347F00
1000	35	13.0 x 25.0	0.12	0.16	1001	4.5	EKS00GG410F00
2200	35	16.0 x 31.5	0.14	0.09	1351	9.0	EKS00JS422F00
3300	35	18.0 x 35.5	0.17	0.08	1757	13.0	EKS00KL433F00
0.47	50	5.0 x 11.0	0.10	283.0	10	0.5	EKS00AA047H00
1	50	5.0 x 11.0	0.10	133.0	15	0.5	EKS00AA110H00
2.2	50	5.0 x 11.0	0.10	61.0	22	0.5	EKS00AA122H00
3.3	50	5.0 x 11.0	0.10	41.0	27	0.5	EKS00AA133H00
4.7	50	5.0 x 11.0	0.10	29.0	32	0.5	EKS00AA147H00
10	50	5.0 x 11.0	0.10	13.30	47	0.5	EKS00AA210H00
22	50	5.0 x 11.0	0.10	6.03	70	0.5	EKS00AA222H00
33	50	6.3 x 11.0	0.10	4.02	98	0.8	EKS00BA233H00
47	50	6.3 x 11.0	0.10	2.83	117	0.8	EKS00BA247H00
100	50	8 x 11.5	0.10	1.33	202	1.1	EKS00PB310H00
220	50	10.0 x 16.0	0.10	0.61	381	2.0	EKS00DD322H00
330	50	13 x 16.0	0.10	0.41	551	2.5	EKS00GD333H00
470	50	13 x 20.0	0.10	0.29	704	3.8	EKS00GE347H00
1000	50	16.0 x 25.0	0.10	0.14	1259	7.0	EKS00JG410H00
2200	50	18.0 x 35.5	0.12	0.08	1626	13.0	EKS00KL422H00
10	63	5.0 x 11.0	0.09	11.95	47	0.5	EKS00AA210J00
22	63	6.3 x 11.0	0.09	5.43	80	0.8	EKS00BA222J00
33	63	6.3 x 11.0	0.09	3.62	98	0.8	EKS00BA233J00
47	63	8.0 x 11.5	0.09	2.54	138	1.1	EKS00PB247J00
100	63	10.0 x 12.5	0.09	1.20	235	2.5	EKS00DC310J00
220	63	13.0 x 16.0	0.09	0.55	450	2.5	EKS00GD322J00
330	63	13.0 x 20.0	0.09	0.37	598	3.8	EKS00GE333J00
470	63	13.0 x 25.0	0.09	0.26	779	4.5	EKS00GG347J00
1000	63	16.0 x 31.5	0.09	0.12	1377	9.0	EKS00JS410J00
0.47	100	5.0 x 11.0	0.08	226.0	11	0.5	EKS00AA047L00
1	100	5.0 x 11.0	0.08	107.0	16	0.5	EKS00AA110L00
2.2	100	5.0 x 11.0	0.08	49.0	24	0.5	EKS00AA122L00
3.3	100	5.0 x 11.0	0.08	32.2	29	0.5	EKS00AA133L00
4.7	100	5.0 x 11.0	0.08	22.6	35	0.5	EKS00AA147L00
10	100	6.3 x 11.0	0.08	10.7	58	0.8	EKS00BA210L00
22	100	8.0 x 11.5	0.08	4.83	102	1.1	EKS00PB222L00
33	100	10.0 x 12.5	0.08	3.22	146	1.5	EKS00DC233L00
47	100	10.0 x 16.0	0.08	2.26	190	2.0	EKS00DD247L00
100	100	13.0 x 20.0	0.08	1.07	356	3.8	EKS00GE310L00
220	100	16.0 x 25.0	0.08	0.49	638	7.0	EKS00JG322L00
330	100	16.0 x 25.0	0.08	0.33	781	7.0	EKS00JG333L00
470	100	16.0 x 31.5	0.08	0.23	1020	9.0	EKS00JS347L00

<b>ELECTRICAL CHARACTERISTICS, WEIGHT AND ORDERING CODE</b>							
<b>CAPACITANCE 120Hz CR [<math>\mu</math>F]</b>	<b>RATED VOLTAGE UR [V]</b>	<b>DIMENSIONS D x L [mm]</b>	<b>DISSIPATION FACTOR 120Hz</b>	<b>EQUIVALENT SERIES RESISTANCE 120Hz [<math>\Omega</math>]</b>	<b>RATED CURRENT IR 120Hz, 105°C [mA]</b>	<b>WEIGHT [g]</b>	<b>ORDERING CODE</b>
2.2	160	6.3 x 11.0	0.15	91.0	20	0.8	EKS00BA122M00
3.3	160	8.0 x 11.5	0.15	61.0	28	1.1	EKS00PB133M00
4.7	160	8.0 x 11.5	0.15	43.0	34	1.1	EKS00PB147M00
10	160	10.0 x 16.0	0.15	20.0	63	2.0	EKS00DD210M00
22	160	10.0 x 20.0	0.15	9.10	102	2.5	EKS00DE222M00
33	160	13.0 x 20.0	0.15	6.10	146	3.8	EKS00GE233M00
47	160	13.0 x 20.0	0.15	4.24	174	3.8	EKS00GE247M00
100	160	16.0 x 25.0	0.15	2.00	307	7.0	EKS00JG310M00
220	160	16.0 x 40.0	0.15	0.91	550	15.0	EKS00JK322M00
330	160	18.0 x 40.0	0.15	0.61	722	16.0	EKS00KK333M00
0.47	250	6.3 x 11.5	0.15	424.0	9	0.8	EKS00BA047N00
2	250	6.3 x 11.0	0.15	200.0	13	0.8	EKS00BA110N00
2.2	250	8.0 x 11.5	0.15	91.0	23	1.1	EKS00PB122N00
3.3	250	10.0 x 12.5	0.15	61.0	33	1.5	EKS00DC133N00
4.7	250	10.0 x 12.5	0.15	43.0	39	1.5	EKS00DC147N00
10	250	10.0 x 16.0	0.15	20.0	63	2.0	EKS00DD210N00
22	250	13.0 x 20.0	0.15	9.10	119	3.8	EKS00GE222N00
33	250	13.0 x 20.0	0.15	6.10	146	3.8	EKS00GE233N00
47	250	13.0 x 25.0	0.15	4.24	190	4.5	EKS00GG247N00
100	250	16.0 x 35.5	0.15	2.00	353	11.0	EKS00JL310N00
1	350	8.0 x 11.5	0.20	266.0	16	1.1	EKS00PB110O00
2.2	350	10.0 x 12.5	0.20	121.0	28	1.5	EKS00DC122O00
3.3	350	10.0 x 16.0	0.20	81.0	38	2.0	EKS00DD133O00
4.7	350	10.0 x 16.0	0.20	57.0	45	2.0	EKS00DD147O00
10	350	10.0 x 20.0	0.20	26.54	72	2.5	EKS00DE210O00
22	350	13.0 x 25.0	0.20	12.10	137	4.5	EKS00GG222O00
33	350	16.0 x 25.0	0.20	8.05	186	7.0	EKS00JG233O00
47	350	16.0 x 31.5	0.20	5.65	243	9.0	EKS00JS247O00
100	350	18.0 x 40.0	0.20	2.66	419	16.0	EKS00KK310O00
1	400	8.0 x 11.5	0.20	266.0	16	1.1	EKS00PB110X00
2.2	400	10.0 x 12.5	0.20	121.0	28	1.5	EKS00DC122X00
3.3	400	10.0 x 16.0	0.20	81.0	38	2.0	EKS00DD133X00
4.7	400	10.0 x 16.0	0.20	57.0	45	2.5	EKS00DD147X00
10	400	13.0 x 20.0	0.20	26.54	85	3.8	EKS00GE210X00
22	400	13.0 x 25.0	0.20	12.10	137	4.5	EKS00GG222X00
33	400	16.0 x 25.5	0.20	8.05	186	7.0	EKS00JG233X00
47	400	16.0 x 35.5	0.20	5.65	255	11.0	EKS00JL247X00
1	450	8.0 x 11.5	0.20	266.0	15	1.1	EKS00PB110P00
2.2	450	10.0 x 12.5	0.20	121.0	26	1.5	EKS00DC122P00
3.3	450	10.0 x 16.0	0.20	81.0	34	2.5	EKS00DD133P00
4.7	450	10.0 x 20.0	0.20	57.0	45	2.5	EKS00DE147P00
10	450	13.0 x 25.0	0.20	26.54	77	4.5	EKS00GG210P00
22	450	16.0 x 31.5	0.20	12.10	138	9.0	EKS00JS222P00
33	450	16.0 x 40.0	0.20	8.05	184	15.0	EKS00JK233P00
47	450	18.0 x 40.0	0.20	5.65	260	16.0	EKS00KK247P00