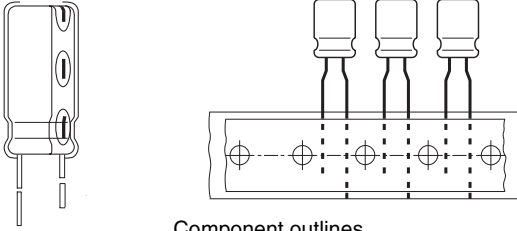


Aluminum Capacitors Radial Style non-polar



Component outlines.

FEATURES

- Non-polarized (bipolar) Aluminum electrolytic capacitor
- Small size
- High temperature range

APPLICATIONS

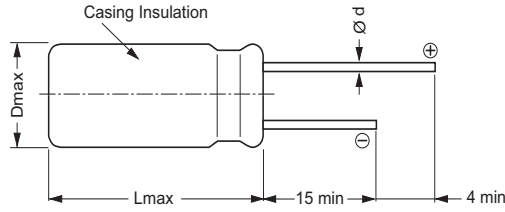
- Circuits with changing or unknown polarity

QUICK REFERENCE DATA		
DESCRIPTION	UNIT	VALUE
Nominal case size (ØD × L)	mm	5 x 11 to 18 x 40
Rated capacitance range C _R	µF	0.1 to 4700
Capacitance tolerance	%	± 20
Rated voltage range	V	6.3 to 100
Category temperature range	°C	- 40 to + 105
Endurance test at upper category temperature	h	1000
Useful life at 105 °C and I _R applied	h	1500
Useful life at 85 °C and I _R applied	h	6000
Useful life at 40 °C and I _R applied	h	140000
Failure rate	10 ⁻⁹ /h	≤ 45
Based on sectional specification		IEC 60384-4 / EN 130 300
Climatic category IEC 60 068		40/105/56

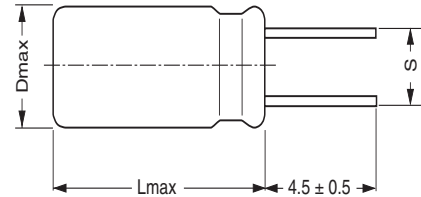
SELECTION CHART FOR C _R , U _R AND RELEVANT NOMINAL CASE SIZES (ØD x L in mm)								
C _R (µF)	RATED VOLTAGE [V]							
	6.3	10	16	25	35	50	63	100
0.1	-	-	-	-	-	-	-	5 x 11
0.15	-	-	-	-	-	-	-	5 x 11
0.22	-	-	-	-	-	-	-	5 x 11
0.33	-	-	-	-	-	-	-	5 x 11
0.47	-	-	-	-	-	-	-	5 x 11
0.68	-	-	-	-	-	-	-	5 x 11
1	-	-	-	-	-	-	-	5 x 11
1.5	-	-	-	-	-	-	-	5 x 11
2.2	-	-	-	-	-	-	-	5 x 11
3.3	-	-	-	-	-	-	5 x 11	5 x 11
4.7	-	-	-	-	-	5 x 11	6.3 x 11	6.3 x 11
6.8	-	-	-	-	5 x 11	-	6.3 x 11	8 x 11.5
10	-	-	-	5 x 11	6.3 x 11	6.3 x 11	8 x 11.5	10 x 12.5
15	-	-	5 x 11	6.3 x 11	8 x 11.5	8 x 11.5	10 x 12.5	10 x 12.5
22	-	5 x 11	6.3 x 11	8 x 11.5	8 x 11.5	10 x 12.5	10 x 16	10 x 16
33	5 x 11	6.3 x 11	8 x 11.5	8 x 11.5	10 x 12.5	10 x 16	10 x 16	-
47	-	6.3 x 11	8 x 11.5	10 x 12.5	10 x 16	10 x 20	10 x 20	-
68	6.3 x 11	8 x 11.5	10 x 12.5	10 x 16	10 x 20	10 x 20	12.5 x 20	-
100	8 x 11.5	10 x 12.5	10 x 16	10 x 20	10 x 20	12.5 x 20	12.5 x 25	-
150	10 x 12.5	10 x 16	10 x 20	12.5 x 20	12.5 x 20	12.5 x 25	16 x 25	-
220	10 x 12.5	10 x 20	12.5 x 20	12.5 x 20	12.5 x 25	16 x 25	16 x 35.5	-
330	10 x 16	12.5 x 20	12.5 x 20	12.5 x 25	16 x 25	16 x 35.5	18 x 35.5	-
470	10 x 20	12.5 x 20	12.5 x 25	16 x 25	16 x 35.5	18 x 35.5	18 x 40	-
680	12.5 x 20	13 x 25	16 x 25	16 x 35.5	18 x 35.5	18 x 40	-	-
1000	12.5 x 25	16 x 25	16 x 35.5	18 x 35.5	18 x 40	-	-	-
1500	16 x 25	16 x 35.5	18 x 35.5	18 x 40	-	-	-	-
2200	16 x 35.5	18 x 35.5	18 x 40	-	-	-	-	-
3300	18 x 35.5	18 x 40	-	-	-	-	-	-
4700	18 x 40	-	-	-	-	-	-	-

10% capacitance tolerance on request

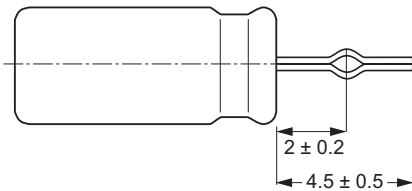
DIMENSIONS in millimeters **AND AVAILABLE FORMS**



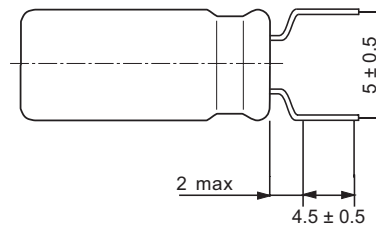
5 ≤ ØD ≤ 18 Long leads EKSU 20...



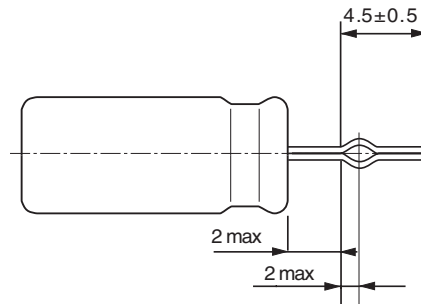
5 ≤ ØD ≤ 18 Shortened leads EKSU 25...
(S = 2 / 2.5 / 3.5 / 5 / 7.5 mm)



10 ≤ ØD ≤ 18 Leads shortened and formed EKSU 26...



5 ≤ ØD ≤ 8 Leads bent open, shortened EKSU 29...
(S = 5 mm)



5 ≤ ØD ≤ 8 Leads bent open, shortened and formed EKSU 26...
(S = 5 mm)

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

RADIAL STYLE: DIMENSIONS in millimeters			
NOMINAL CASE SIZE ØD 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	0.5	2.0
6.3 x 11	6.8 x 12	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	0.6	5.0
10 x 20	10.5 x 22	0.6	5.0
12.5 x 20	13.0 x 22	0.6	5.0
12.5 x 25	13.0 x 27	0.6	5.0
16 x 25	16.5 x 27	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	0.8	7.5



ELECTRICAL DATA	
SYMBOL	DESCRIPTION
C _R	rated capacitance at 120 Hz
U _R	rated voltage
tan δ	max. dissipation factor at 120 Hz
R _{ESR}	max. equivalent series resistance at 120 Hz
I _R	rated alternating current (rms) at 120 Hz and upper category temperature

Note

1. Unless otherwise specified, all electrical values at T_a = 20 °C, P = 80 to 120 kPa, RH = 45 to 75 %.

ORDERING EXAMPLE

EKL 1000 μF / 10 V, ± 20 %, size: 16 mm x 25 mm

Leads: Long - Ordering code: EKS20JG410C00

Leads: Short - Ordering code: EKS 25...

Leads: Bent open, shortened - Ordering code: EKS 29....

Leads: Bent open, shortened and formed - Ordering code:

EKS 26...

The 14th place (□), not indicated in the following table, is an inter-company code and is not relevant to your order.

ELECTRICAL DATA AND ORDERING INFORMATION							
U _R (V)	C _R 120 Hz (μF)	NOMINAL CASE SIZE ØD x L (mm)	Tan δ 120 Hz	R _{ESR} 120 Hz (Ω)	I _R 120 Hz/105 °C (mA)	WEIGHT (g)	CATALOG NUMBER
6.3	33	5.0 x 11.0	0.24	9.65	46	0.5	EKS20AA233B00□
	68	6.3 x 11.0	0.24	4.69	76	0.8	EKS20BA268B00□
	100	8.0 x 11.5	0.24	3.19	109	1.1	EKS20PB310B00□
	150	10.0 x 12.5	0.24	2.13	155	1.5	EKS20DC315B00□
	220	10.0 x 12.5	0.24	1.45	188	1.5	EKS20DC322B00□
	330	10.0 x 16.0	0.24	0.97	252	2.0	EKS20DD333B00□
	470	10.0 x 20.0	0.24	0.68	328	2.5	EKS20DE347B00□
	680	12.5 x 20.0	0.24	0.47	464	3.8	EKS20GE368B00□
	1000	12.5 x 25.0	0.24	0.32	613	4.5	EKS20GG410B00□
	1500	16.0 x 25.0	0.25	0.23	800	7.0	EKS20JG415B00□
	2200	16.0 x 35.5	0.26	0.16	1072	11.0	EKS20JL422B00□
	3300	18.0 x 35.5	0.29	0.12	1361	13.0	EKS20KL433B00□
	4700	18.0 x 40.0	0.31	0.09	1650	16.0	EKS20KK447B00□
10	22	5.0 x 11.0	0.20	12.07	41	0.5	EKS20AA222C00□
	33	6.3 x 11.0	0.20	8.05	58	0.8	EKS20BA233C00□
	47	6.3 x 11.0	0.20	5.65	69	0.8	EKS20BA247C00□
	68	8.0 x 11.5	0.20	3.90	98	1.1	EKS20PB268C00□
	100	10.0 x 12.5	0.20	2.66	139	1.5	EKS20DC310C00□
	150	10.0 x 16.0	0.20	1.77	186	2.0	EKS20DD315C00□
	220	10.0 x 20.0	0.20	1.21	246	2.5	EKS20DE322C00□
	330	12.5 x 20.0	0.20	0.81	354	3.8	EKS20GE333C00□
	470	12.5 x 20.0	0.20	0.57	422	3.8	EKS20GE347C00□
	680	12.5 x 25.0	0.20	0.39	554	4.5	EKS20GG368C00□
	1000	16.0 x 25.0	0.20	0.27	745	7.0	EKS20JG410C00□
	1500	16.0 x 35.5	0.21	0.19	999	11.0	EKS20JL415C00□
	2200	18.0 x 35.5	0.22	0.14	1242	13.0	EKS20KL422C00□
16	15	5.0 x 11.0	0.16	14.16	38	0.5	EKS20AA215D00□
	22	6.3 x 11.0	0.16	9.65	53	0.8	EKS20BA222D00□
	33	8.0 x 11.5	0.16	6.44	77	1.1	EKS20PB233D00□
	47	8.0 x 11.5	0.16	4.52	92	1.1	EKS20PB247D00□
	68	10.0 x 12.5	0.16	3.13	128	1.5	EKS20DC268D00□
	100	10.0 x 16.0	0.16	2.13	170	2.0	EKS20DD310D00□
	150	10.0 x 20.0	0.16	1.42	227	2.5	EKS20DE315D00□
	220	12.5 x 20.0	0.16	0.97	323	3.8	EKS20GE322D00□
	330	12.5 x 20.0	0.16	0.65	396	3.8	EKS20GE333D00□
	470	12.5 x 25.0	0.16	0.46	515	4.5	EKS20GG347D00□
	680	16.0 x 25.0	0.16	0.32	687	7.0	EKS20JG368D00□
	1000	16.0 x 35.5	0.16	0.22	956	11.0	EKS20JL410D00□
	1500	18.0 x 35.5	0.17	0.16	1184	13.0	EKS20KL415D00□
2200	18.0 x 40.0	0.18	0.11	1428	16.0	EKS20KK422D00□	

ELECTRICAL DATA AND ORDERING INFORMATION

U_R (V)	C_R 120 Hz (μ F)	NOMINAL CASE SIZE $\varnothing D \times L$ (mm)	$\tan \delta$ 120 Hz	R_{ESR} 120 Hz (Ω)	I_R 120 Hz/105 °C (mA)	WEIGHT (g)	CATALOG NUMBER
25	10	5.0 x 11.0	0.16	21.24	31	0.5	EKS20AA210E00□
	15	6.3 x 11.0	0.16	14.16	44	0.8	EKS20BA215E00□
	22	8.0 x 11.5	0.16	9.65	63	1.1	EKS20PB222E00□
	33	8.0 x 11.5	0.16	6.44	77	1.1	EKS20PB233E00□
	47	10.0 x 12.5	0.16	4.52	106	1.5	EKS20DC247E00□
	68	10.0 x 16.0	0.16	3.13	140	2.0	EKS20DD268E00□
	100	10.0 x 20.0	0.16	2.13	185	2.5	EKS20DE310E00□
	150	12.5 x 20.0	0.16	1.47	267	3.8	EKS20GE315E00□
	220	12.5 x 20.0	0.16	0.97	323	3.8	EKS20GE322E00□
	330	12.5 x 25.0	0.16	0.65	431	4.5	EKS20GG333E00□
	470	16.0 x 25.0	0.16	0.46	571	7.0	EKS20JG347E00□
	680	16.0 x 35.5	0.16	0.32	781	11.0	EKS20JL368E00□
	1000	18.0 x 35.5	0.16	0.22	1026	13.0	EKS20KL410E00□
	1500	18.0 x 40.0	0.17	0.16	1243	16.0	EKS20KK415E00□
35	6.8	5.0 x 11.0	0.14	27.32	27	0.5	EKS20AA168F00□
	10	6.3 x 11.0	0.14	18.58	38	0.8	EKS20BA210F00□
	15	8.0 x 11.5	0.14	12.39	55	1.1	EKS20PB215F00□
	22	8.0 x 11.5	0.14	8.45	67	1.1	EKS20PB222F00□
	33	10.0 x 12.5	0.14	5.63	95	1.5	EKS20DC233F00□
	47	10.0 x 16.0	0.14	3.96	125	2.0	EKS20DD247F00□
	68	10.0 x 20.0	0.14	2.74	164	2.5	EKS20DE310F00□
	100	10.0 x 20.0	0.14	1.86	198	2.5	EKS20DE268F00□
	150	12.5 x 20.0	0.14	1.24	285	3.8	EKS20GE315F00□
	220	12.5 x 25.0	0.14	0.85	376	4.5	EKS20GG322F00□
	330	16.0 x 25.0	0.14	0.57	511	7.0	EKS20JG333F00□
	470	16.0 x 35.5	0.14	0.40	701	11.0	EKS20JL347F00□
	680	18.0 x 35.5	0.14	0.28	904	13.0	EKS20KL368F00□
	1000	18.0 x 40.0	0.14	0.19	1151	16.0	EKS20KK410F00□
50	4.7	5.0 x 11.0	0.12	34.0	25	0.5	EKS20AA147H00□
	10	6.3 x 11.0	0.12	15.93	41	0.8	EKS20BA210H00□
	15	8.0 x 11.5	0.12	10.62	60	1.1	EKS20PB215H00□
	22	10.0 x 12.5	0.12	7.24	84	1.5	EKS20DC222H00□
	33	10.0 x 16.0	0.12	4.83	113	2.0	EKS20DD233H00□
	47	10.0 x 20.0	0.12	3.39	147	2.5	EKS20DE247H00□
	68	10.0 x 20.0	0.12	2.35	177	2.5	EKS20DE268H00□
	100	12.5 x 20.0	0.12	1.60	251	3.8	EKS20GE310H00□
	150	12.5 x 25.0	0.12	1.07	336	4.5	EKS20GG315H00□
	220	16.0 x 25.0	0.12	0.73	451	7.0	EKS20JG322H00□
	330	18.0 x 35.5	0.12	0.49	634	11.0	EKS20JL333H00□
	470	18.0 x 35.5	0.12	0.34	812	13.0	EKS20KL347H00□
	680	18.0 x 40.0	0.12	0.24	1025	16.0	EKS20KK368H00□
	63	3.3	5.0 x 11.0	0.10	10.21	23	0.5
4.7		6.3 x 11.0	0.10	28.24	31	0.8	EKS20BA147J00□
6.8		6.3 x 11.0	0.10	19.52	37	0.8	EKS20BA168J00□
10		8.0 x 11.5	0.10	13.27	53	1.1	EKS20PB210J00□
15		10.0 x 12.5	0.10	8.85	76	1.5	EKS20DC215J00□
22		10.0 x 16.0	0.10	6.04	101	2.0	EKS20DD222J00□
33		10.0 x 16.0	0.10	4.02	124	2.0	EKS20DD233J00□
47		10.0 x 20.0	0.10	2.83	161	2.5	EKS20DE247J00□
68		12.5 x 20.0	0.10	1.96	227	3.8	EKS20GE268J00□
100		12.5 x 25.0	0.10	1.33	300	4.5	EKS20GG310J00□
150		16.0 x 25.0	0.10	0.89	408	7.0	EKS20JG315J00□
220		16.0 x 35.5	0.10	0.61	567	11.0	EKS20JL322J00□
330		18.0 x 35.5	0.10	0.41	745	13.0	EKS20KL333J00□
470		18.0 x 40.0	0.10	0.29	933	16.0	EKS20KK347J00□



ELECTRICAL DATA AND ORDERING INFORMATION							
U _R (V)	C _R 120 Hz (μF)	NOMINAL CASE SIZE ∅D x L (mm)	Tan δ 120 Hz	R _{ESR} 120 Hz (Ω)	I _R 120 Hz/105 °C (mA)	WEIGHT (g)	CATALOG NUMBER
100	0.1	5.0 x 11.0	0.09	1195	4	0.5	EKS20AA010L00□
	0.15	5.0 x 11.0	0.09	797	5	0.5	EKS20AA015L00□
	0.22	5.0 x 11.0	0.09	543	6	0.5	EKS20AA022L00□
	0.33	5.0 x 11.0	0.09	362	8	0.5	EKS20A0033L00□
	0.47	5.0 x 11.0	0.09	255	9	0.5	EKS20AA047L00□
	0.68	5.0 x 11.0	0.09	176	11	0.5	EKS20AA068L00□
	1	5.0 x 11.0	0.09	120	13	0.5	EKS20AA110L00□
	1.5	5.0 x 11.0	0.09	80	16	0.5	EKS20AA115L00□
	2.2	5.0 x 11.0	0.09	55	19	0.5	EKS20AA122L00□
	3.3	6.3 x 11.0	0.09	36.20	27	0.8	EKS20BA133L00□
	4.7	8.0 x 11.5	0.09	25.41	39	1.1	EKS20PB147L00□
	6.8	10.0 x 12.5	0.09	17.57	54	1.5	EKS20DC168L00□
	10	10.0 x 12.5	0.09	11.95	65	1.5	EKS20DC210L00□
15	10.0 x 16.0	0.09	7.97	88	2.0	EKS20DD215L00□	

LOW TEMPERATURE BEHAVIOUR					
FREQUENCY μF	50 Hz	120 Hz	300 Hz	1 kHz	≤ 10 kHz
≤ 47	0.75	1	1.35	1.55	2.00
68 - 680	0.80	1	1.25	1.34	1.50
≥ 1000	0.85	1	1.10	1.13	1.15

LEAKAGE CURRENT

Formula for calculation of the maximum leakage current for acceptance tests I_L:

(Test conditions: C_R, 20 °C, 5 minutes)

$$I_{L5} [\mu A] \leq 0.03 \cdot C_R [\mu F] \cdot U_R [V] \quad \text{or } 3 \mu A \quad (\text{whichever is greater}).$$