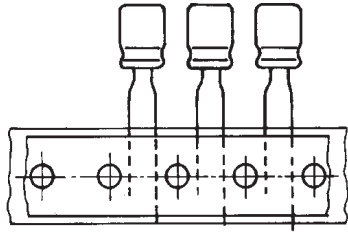


## Aluminum Electrolytic Capacitors, Radial Style



### FEATURES

- Polarized Al electrolytic capacitor
- High C·U product with miniature dimensions
- Particularly low height, 5mm and 7mm

### APPLICATIONS

- General uses, audio/video systems, automotive electronics
- Filtering, smoothing, coupling, decoupling
- Small space requirement, high component density
- Portable and mobile units

### MAIN SPECIFICATIONS

Nominal Case Size (D x L)	[mm]	4 x 5 / 4 x 7 to 6.3 x 7 / 8 x 5
Rated Capacitance Range	[ $\mu$ F]	0.1 to 220
Capacitance Tolerance	[%]	$\pm 20$
Rated Voltage Range	[V]	6.3 to 63
Category Temperature Range	[ $^{\circ}$ C]	-40 to 85
Endurance Test at UCT	[h]	2000
Lifetime at 85 $^{\circ}$ C and $I_R$	[h]	3000
Lifetime at 40 $^{\circ}$ C and $I_R$	[h]	70000
Sectional Specifications		IEC 384-4, CECC 30300, GP grade
Climatic category IEC 68 DIN 40040		40 / 85 / 56 GPF
Failure Rate	[10 $^{-9}$ /h]	$\leq 130$

<b>DIMENSIONS</b>														
Nominal size D x L [in millimeters]														
$C_R$ [ $\mu$ F]	RATED VOLTAGE [V]													
	6.3		10		16		25		35		50		63	
0.1												4 x 5	4 x 7	
0.15												4 x 5	4 x 7	
0.22												4 x 5	4 x 7	
0.33												4 x 5	4 x 7	
0.47												4 x 5	4 x 7	
0.68												4 x 5	4 x 7	
1.0												4 x 5	4 x 7	
1.5												4 x 5	4 x 7	
2.2												4 x 5	4 x 7	
3.3											4 x 5	4 x 7	5 x 5	
4.7									4 x 5			4 x 7	5 x 5	
6.8							4 x 5				4 x 7	5 x 5	5 x 7	6.3 x 5
10						4 x 5			4 x 7	5 x 5			5 x 7	6.3 x 5
15			4 x 5				4 x 7	5 x 5	5 x 7		6.3 x 5		6.3 x 7	8 x 5
22	4 x 5				4 x 7	5 x 5			5 x 7	6.3 x 5	6.3 x 7		8 x 5	
33	4 x 7	5 x 5	4 x 7	5 x 5			5 x 7	6.3 x 7	6.3 x 7		8 x 5			
47	4 x 7	5 x 5			5 x 7	6.3 x 5	6.3 x 7		8 x 5					
68			5 x 7		6.3 x 5	6.3 x 7	8 x 5							
100	5 x 7	6.3 x 5			6.3 x 7		8 x 5							
150			6.3 x 7		8 x 5									
220	6.3 x 7		8 x 5											

\*10% capacitance tolerance on request

### LEAKAGE CURRENT

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

(Test conditions:  $C_R$ , 20°C, 2 minutes)

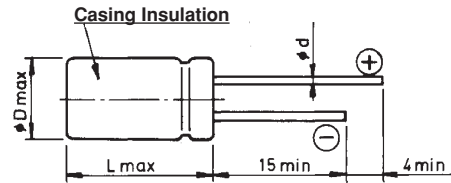
$$I_{L2} [\mu A] \leq 0.01 \cdot C_R [\mu F] \cdot U_R [V] \quad \text{or} \quad 3 \mu A \quad (\text{whichever is greater})$$

<b>LOW TEMPERATURE BEHAVIOR</b>							
Impedance Ratio $Z(T_2) / Z(T_1)$ at 120Hz							
$T_2 / T_1$	RATED VOLTAGE [V]						
	6.3	10	16	35	35	50	63
-25°C / +20°C	4	3	2	2	2	2	2
-40°C / +20°C	8	6	4	4	3	3	3

**DIMENSIONS AND LEAD CONFIGURATION**

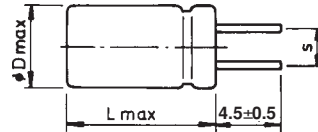
Long leads

EKF 00...



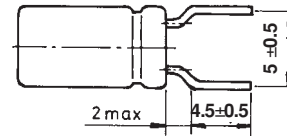
Shortened leads  
S = 1.5 / 2 / 2.5mm

EKF 05...



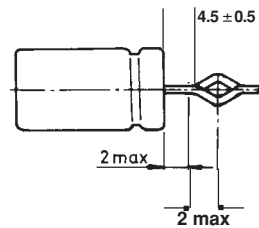
Leads bent open, shortened  
(S = 5mm)

EKF 09...



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

EKF 06...



Leads are solder-coated steel

<b>DIMENSIONS</b> [in millimeters]			
NOMINAL SIZE	MAXIMUM SIZE $D_{max.} \times L_{max.}$	LEAD $\varnothing d \pm 0.05$	LEAD SPACING $S \pm 0.05$
4 x 7	4.5 x 8.0	0.45	1.5
5 x 7	5.5 x 8.0	0.45	2.0
6.3 x 7	6.8 x 8.0	0.45	2.5
4 x 5	4.5 x 6	0.45	1.5
5 x 5	5.5 x 6	0.45	2.0
6.3 x 5	6.8 x 6	0.45	2.5
8 x 5	8.5 x 6.5	0.45	2.5



**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
- $\tan \delta$     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:**

EKF 47 $\mu\text{F}$ /25V,  $\pm 20\%$ , Size: 6.3mm x 7mm

Leads: Long  
Ordering code: EKF 00BM247E00

Leads: Short (4.5  $\pm$  0.5mm)  
Ordering code: EKF 05...

Leads: Bent open, shortened (S = 5mm)  
Ordering code: EKF 09...

Leads: Bent open, shortened and formed (S = 5mm)  
Ordering code: EKF 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, 85<math>^{\circ}\text{C}</math> [mA]</b>	<b>ORDERING CODE</b>
22	6.3	4.0 x 5.0	0.24	17	37	EKF00MP222B00
33	6.3	4.0 x 7.0	0.24	12	52	EKF00MM233B00
33	6.3	5.0 x 5.0	0.24	12	52	EKF00AP233B00
47	6.3	4.0 x 7.0	0.24	8	62	EKF00MM247B00
47	6.3	5.0 x 5.0	0.24	8	62	EKF00AP247B00
100	6.3	5.0 x 7.0	0.24	4	106	EKF00AM310B00
100	6.3	6.3 x 5.0	0.24	4	106	EKF00BP310B00
220	6.3	6.3 x 7.0	0.24	1.7	179	EKF00BM322B00
15	10	4.0 x 5.0	0.20	18	34	EKF00MP215C00
33	10	4.0 x 7.0	0.20	10	58	EKF00MM233C00
33	10	5.0 x 5.0	0.20	10	58	EKF00AP233C00
68	10	5.0 x 7.0	0.20	3.9	94	EKF00AM268C00
150	10	6.3 x 7.0	0.20	1.8	162	EKF00BM315C00
220	10	8.0 x 5.0	0.20	1.2	208	EKF00PP322C00
10	16	4.0 x 5.0	0.16	25	31	EKF00MP210D00
22	16	4.0 x 7.0	0.16	12	52	EKF00MM222D00
22	16	5.0 x 5.0	0.16	12	52	EKF00AP222D00
47	16	5.0 x 7.0	0.16	6	87	EKF00AM247D00
47	16	6.3 x 5.0	0.16	6	87	EKF00BP247D00
68	16	6.3 x 5.0	0.16	3.2	109	EKF00BP268D00
68	16	6.3 x 7.0	0.16	3.2	122	EKF00BM268D00
100	16	6.3 x 7.0	0.16	2.5	148	EKF00BM310D00
150	16	8.0 x 5.0	0.16	1.5	192	EKF00PP315D00
6.8	25	4.0 x 5.0	0.14	28	25	EKF00MP168E00
15	25	4.0 x 7.0	0.14	13	46	EKF00MM215E00
15	25	5.0 x 5.0	0.14	13	46	EKF00AP215E00
33	25	5.0 x 7.0	0.14	6.8	78	EKF00AM233E00
33	25	6.3 x 5.0	0.14	6.8	79	EKF00BP233E00
47	25	6.3 x 7.0	0.14	5	108	EKF00BM247E00
68	25	8.0 x 5.0	0.14	2.8	143	EKF00PP268E00
100	25	8.0 x 5.0	0.14	1.9	174	EKF00PP310E00

**ELECTRICAL CHARACTERISTICS, WEIGHT AND ORDERING CODE**

CAPACITANCE 120Hz CR [ $\mu$ F]	RATED VOLTAGE UR [V]	DIMENSIONS D x L [mm]	DISSIPATION FACTOR 120Hz	EQUIVALENT SERIES RESISTANCE 120Hz [ $\Omega$ ]	RATED CURRENT IR 120Hz, 85°C [mA]	ORDERING CODE
4.7	35	4.0 x 5.0	0.12	41	24	EKF00MP147F00
10	35	4.0 x 7.0	0.12	19	41	EKF00MM210F00
10	35	5.0 x 5.0	0.12	19	41	EKF00AP210F00
15	35	5.0 x 7.0	0.12	11	57	EKF00AM215F00
22	35	5.0 x 7.0	0.12	9	70	EKF00AM222F00
22	35	6.3 x 5.0	0.12	9	70	EKF00BP222F00
33	35	6.3 x 7.0	0.12	5	98	EKF00BM233F00
47	35	8.0 x 5.0	0.12	3.5	124	EKF00PP247F00
3.3	50	4.0 x 5.0	0.10	40	24	EKF00MP133H00
6.8	50	4.0 x 7.0	0.10	23	37	EKF00MM168H00
6.8	50	5.0 x 5.0	0.10	23	37	EKF00AP168H00
15	50	6.3 x 5.0	0.10	9	68	EKF00BP215H00
22	50	6.3 x 7.0	0.10	6	88	EKF00BM222H00
33	50	8.0 x 5.0	0.10	4	120	EKF00PP233H00
0.1	63	4.0 x 5.0	0.10	1325	4.1	EKF00MP010J00
0.1	63	4.0 x 7.0	0.10	1325	4.4	EKF00MM010J00
0.15	63	4.0 x 5.0	0.10	885	5.0	EKF00MP015J00
0.15	63	4.0 x 7.0	0.10	885	5.4	EKF00MM015J00
0.22	63	4.0 x 5.0	0.10	603	6.1	EKF00MP022J00
0.22	63	4.0 x 7.0	0.10	603	6.6	EKF00MM022J00
0.33	63	4.0 x 5.0	0.10	402	7.5	EKF00MP033J00
0.33	63	4.0 x 7.0	0.10	402	8.0	EKF00MM033J00
0.47	63	4.0 x 5.0	0.10	282	8.9	EKF00MP047J00
0.47	63	4.0 x 7.0	0.10	282	10	EKF00MM047J00
0.68	63	4.0 x 5.0	0.10	195	11	EKF00MP068J00
0.68	63	4.0 x 7.0	0.10	195	12	EKF00MM068J00
1	63	4.0 x 5.0	0.10	133	13	EKF00MP110J00
1	63	4.0 x 7.0	0.10	133	14	EKF00MM110J00
1.5	63	4.0 x 5.0	0.10	88	16	EKF00MP115J00
1.5	63	4.0 x 7.0	0.10	88	17	EKF00MM115J00
2.2	63	4.0 x 5.0	0.10	60	19	EKF00MP122J00
2.2	63	4.0 x 7.0	0.10	60	21	EKF00MM122J00
3.3	63	4.0 x 7.0	0.10	40	25	EKF00MM133J00
3.3	63	5.0 x 5.0	0.10	40	27	EKF00MP133J00
4.7	63	4.0 x 7.0	0.10	28	30	EKF00MM147J00
4.7	63	5.0 x 5.0	0.10	28	33	EKF00AP147J00
6.8	63	5.0 x 7.0	0.10	20	42	EKF00AM168J00
6.8	63	6.3 x 5.0	0.10	20	46	EKF00BP168J00
10	63	5.0 x 7.0	0.10	14	51	EKF00AM210J00
10	63	6.3 x 5.0	0.10	14	56	EKF00BP210J00
15	63	6.3 x 7.0	0.10	9	72	EKF00BM215J00
15	66	8.0 x 5.0	0.10	9	81	EKF00PP215J00
22	63	8.0 x 5.0	0.10	6	98	EKF00PP222J00