

EAG

Downsized, Endurance 1.500h to 2.500h at 105°C
 Rated voltage range: 6,3V to 100V, Nominal capacitance range: 3,3µF to 12.000µF
 Size range: Ø 8,5 x 16,0mm to Ø 14,0 x 30,5mm
 RoHS compliant
 Special types on request


Specifications

	Characteristics									
Temperature range	- 40°C to +105°C									
Rated voltage range	6,3V to 100V									
Capacitance tolerance	±20%, other on request (at 20°C, 100Hz)									
Leakage current I_{ra}	$I_{ra}=0,0015 \cdot C_R \cdot V_R + 2\mu A$ or 5µA, whichever is greater, (I_{ra} [µA], C_R : Rated capacitance [µF], V_R : Rated voltage [V]) (at 20°C, after 5 minutes)									
Dissipation factor $\tan \delta$ (D.F.)	Rated voltage (V_R)	6,3V	10V	16V	25V	40V	50V	63V	100V	
	$\tan \delta_{max}$	0,25	0,20	0,16	0,14	0,12	0,10	0,08	0,07	(at 20°C, 100Hz)
	When nominal capacitance exceeds 1.000µF, add 0,02 to the value above for each 1.000µF increase									
Equivalent resistance (R_{ESR})	Rated voltage (V_R)	6,3V	10V	16V	25V	40V	50V	63V	100V	
	factor R [$\Omega \cdot \mu F$]	400	320	260	220	190	160	130	120	
	$R_{ESR} = \frac{\text{factor R}}{C_R}$ (at 20°C, 100Hz)									
Low temperature characteristics Z_{max}-factor	Rated voltage (V_R)	6,3V	10V	16V	25V	40V	50V	63V	100V	
	Z(-40°C)/(20°C)	2	2	2	2	2	2	2	2	(100Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage is applied for 1.500 hours to 2.500 hours at 105°C.									
	Capacitance change	$\Delta C/C0 \leq \pm 30\%$								
	D.F. ($\tan \delta$)	$\Delta \tan \delta \leq +200\%$								
	Leakage current (I_{ra})	$I_{ra} \leq$ the initial specified value								
Shelf life	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 1.000 hours at 105°C without voltage applied									
	Capacitance change	$\Delta C/C0 \leq \pm 30\%$								
	D.F. ($\tan \delta$)	$\Delta \tan \delta \leq +200\%$								
	Leakage current (I_{ra})	$I_{ra} \leq +200\%$ of the initial specification value								
Surge voltage test	The capacitors shall be subjected to 1.000 cycles each consisting of charging with the specified surge voltage for 30±5 seconds through a protective resistor ($R=0,1/C_R$) and open-circuiting for 330 seconds at 105°C. The following specifications shall be satisfied when the capacitors are restored to 20°C.									
	Rated voltage (V_R)		6,3V	10V	16V	25V	40V	50V	63V	100V
	Surge voltage (V_S)		7,2V	11,5V	18,4V	28,8V	46V	57,5V	72,5V	115V
	Appearance	No significant damage								
	Capacitance change	$\Delta C/C0 \leq \pm 10\%$								
	D.F. ($\tan \delta$)	$\Delta \tan \delta \leq$ the initial specified value								
	Leakage current (I_{ra})	$I_{ra} \leq$ the initial specified value								

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Aluminum-electrolytic capacitors, axial, downsized, insulated, polarized, pulse proof
Endurance at least 1.500h to 2.500h at +105°C

EAG

The EAG series is universally applicable for horizontal mounting in printed boards.

The application is designed for industrial electronics, automotive electronics, audio and video systems and switching power supplies.

Generic specification:
DIN EN 60384-1

Sectional specification:
DIN 45910 part 126
without quality assessment

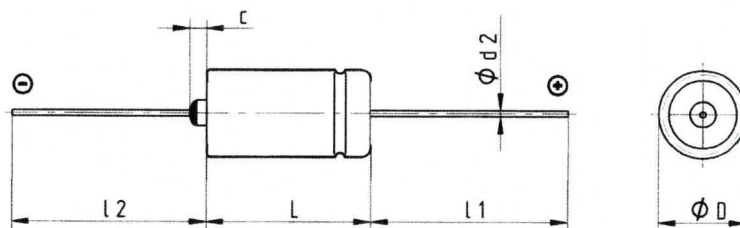
Operating temperature range:
- 40°C to +105°C

Climatic category:
40/105/56

Capacitance range:
±20% (other on request)

Surge voltage V_S :
 $V_S = 1,15 \cdot V_R$

Leakage current I_{ra} :
measured at V_R at +20°C
 $I_{ra} \leq 0,0015 \cdot C_R \cdot V_R + 2\mu A$
or 5µA
whichever is greater
(after 5 minutes)



The identification of polarity is carried out by the stamp image.
Taping specifications on request

Dimensions (mm)					
D x L	8,5 x 16,0	8,5 x 20,0	14,0 x 25,5	14,0 x 30,5	tolerance
D	8,5	8,5	14,0	14,0	+0,5
L	16,0	20,0	25,5	30,5	+1,5
c	1,5	1,5	1,5	1,5	±0,3
d 2	0,6	0,6	0,8(*)	0,8(*)	±0,05
l 1	38,0	38,0	38,0	38,0	±3,0
l 2	45,0	45,0	45,0	45,0	±3,0

Endurance at least		
Ambient temperature	Ø 8,5 mm	Ø 14,0 mm
≤ +40°C	150.000h	250.000h
+85°C	6.000h	10.000h
+105°C	1.500h	2.500h

(*) 1,0 mm on request

Dimensions Overview D x L								
Capacitance C_R [µF]	Rated voltage V_R [V]							
	6,3	10	16	25	40	50	63	100
3,3							8,5 x 16,0	8,5 x 16,0
4,7						8,5 x 16,0	8,5 x 16,0	8,5 x 16,0
10					8,5 x 16,0	8,5 x 16,0	8,5 x 16,0	8,5 x 16,0
22				8,5 x 16,0	8,5 x 16,0	8,5 x 16,0	8,5 x 16,0	8,5 x 20,0
33			8,5 x 16,0	8,5 x 16,0	8,5 x 16,0	8,5 x 16,0	8,5 x 16,0	8,5 x 20,0
47		8,5 x 16,0	8,5 x 16,0	8,5 x 16,0	8,5 x 16,0	8,5 x 16,0	8,5 x 16,0	8,5 x 20,0
100	8,5 x 16,0	8,5 x 16,0	8,5 x 16,0	8,5 x 16,0	8,5 x 20,0	8,5 x 20,0	8,5 x 20,0	14,0 x 25,5
150	8,5 x 16,0	8,5 x 16,0	8,5 x 16,0	8,5 x 16,0	8,5 x 20,0	8,5 x 20,0	8,5 x 20,0	14,0 x 25,5
220	8,5 x 16,0	8,5 x 16,0	8,5 x 16,0	8,5 x 16,0	8,5 x 20,0	8,5 x 20,0	14,0 x 25,5	14,0 x 25,5
330	8,5 x 16,0	8,5 x 16,0	8,5 x 16,0	8,5 x 16,0	14,0 x 25,5	14,0 x 25,5	14,0 x 25,5	14,0 x 25,5
390	8,5 x 16,0	8,5 x 16,0	8,5 x 16,0	8,5 x 16,0	14,0 x 25,5	14,0 x 25,5	14,0 x 25,5	14,0 x 30,5
470	8,5 x 16,0	8,5 x 16,0	8,5 x 20,0	8,5 x 20,0	14,0 x 25,5	14,0 x 25,5	14,0 x 25,5	14,0 x 30,5
560	8,5 x 16,0	8,5 x 16,0	8,5 x 20,0	8,5 x 20,0	14,0 x 25,5	14,0 x 25,5	14,0 x 25,5	
820	8,5 x 16,0	8,5 x 16,0	8,5 x 20,0	14,0 x 25,5	14,0 x 25,5	14,0 x 25,5	14,0 x 25,5	
1 000	8,5 x 16,0	8,5 x 20,0	14,0 x 25,5	14,0 x 25,5	14,0 x 25,5	14,0 x 25,5	14,0 x 30,5	
1 200	8,5 x 20,0	8,5 x 20,0	14,0 x 25,5	14,0 x 25,5	14,0 x 25,5	14,0 x 25,5	14,0 x 30,5	
1 500	8,5 x 20,0	14,0 x 25,5	14,0 x 25,5	14,0 x 25,5	14,0 x 25,5	14,0 x 30,5		
1 800	14,0 x 25,5	14,0 x 25,5	14,0 x 25,5	14,0 x 25,5	14,0 x 30,5			
2 200	14,0 x 25,5	14,0 x 25,5	14,0 x 25,5	14,0 x 25,5				
3 300	14,0 x 25,5	14,0 x 25,5	14,0 x 25,5	14,0 x 25,5				
4 700	14,0 x 25,5	14,0 x 25,5	14,0 x 25,5	14,0 x 30,5				
5 600	14,0 x 25,5	14,0 x 25,5	14,0 x 25,5					
6 800	14,0 x 25,5	14,0 x 25,5	14,0 x 30,5					
8 200	14,0 x 25,5	14,0 x 30,5						
10 000	14,0 x 30,5	14,0 x 30,5						
12 000	14,0 x 30,5							

Technical specifications

Rated capacitance C_R [μ F]	Rated voltage V_R [V]	Size D x L [mm]	$\tan \delta$ 100Hz +20°C (max)	ESR [Ω] 100Hz +20°C (max)	Z [Ω] 10kHz +20°C (max)	I~ [mA]* 100Hz +85°C (max)
100	6,3	8,5 x 16,0	0,25	3,98	1,65	138
150	6,3	8,5 x 16,0	0,25	2,65	1,31	169
220	6,3	8,5 x 16,0	0,25	1,81	0,98	204
330	6,3	8,5 x 16,0	0,25	1,21	0,76	250
390	6,3	8,5 x 16,0	0,25	1,02	0,60	272
470	6,3	8,5 x 16,0	0,25	0,85	0,53	299
560	6,3	8,5 x 16,0	0,25	0,71	0,49	326
820	6,3	8,5 x 16,0	0,25	0,49	0,45	394
1 000	6,3	8,5 x 16,0	0,25	0,40	0,40	436
1 200	6,3	8,5 x 20,0	0,25	0,33	0,40	490
1 500	6,3	8,5 x 20,0	0,25	0,27	0,36	548
1 800	6,3	14,0 x 25,5	0,28	0,25	0,36	652
2 200	6,3	14,0 x 25,5	0,28	0,20	0,31	720
3 300	6,3	14,0 x 25,5	0,28	0,14	0,29	882
4 700	6,3	14,0 x 25,5	0,28	0,09	0,27	1 053
5 600	6,3	14,0 x 25,5	0,28	0,08	0,24	1 149
6 800	6,3	14,0 x 25,5	0,28	0,07	0,22	1 266
8 200	6,3	14,0 x 25,5	0,28	0,05	0,20	1 391
10 000	6,3	14,0 x 30,5	0,28	0,04	0,15	1 691
12 000	6,3	14,0 x 30,5	0,28	0,04	0,09	1 853
47	10	8,5 x 16,0	0,20	6,77	2,64	106
100	10	8,5 x 16,0	0,20	3,18	1,50	154
150	10	8,5 x 16,0	0,20	2,12	1,15	189
220	10	8,5 x 16,0	0,20	1,45	0,88	228
330	10	8,5 x 16,0	0,20	0,96	0,67	280
390	10	8,5 x 16,0	0,20	0,82	0,48	304
470	10	8,5 x 16,0	0,20	0,68	0,38	334
560	10	8,5 x 16,0	0,20	0,57	0,37	364
820	10	8,5 x 16,0	0,20	0,39	0,36	441
1 000	10	8,5 x 20,0	0,20	0,32	0,35	501
1 200	10	8,5 x 20,0	0,20	0,27	0,35	548
1 500	10	14,0 x 25,5	0,24	0,25	0,34	642
1 800	10	14,0 x 25,5	0,24	0,21	0,34	704
2 200	10	14,0 x 25,5	0,24	0,17	0,29	778
3 300	10	14,0 x 25,5	0,24	0,12	0,27	953
4 700	10	14,0 x 25,5	0,24	0,08	0,25	1 137
5 600	10	14,0 x 25,5	0,24	0,07	0,22	1 241
6 800	10	14,0 x 25,5	0,24	0,06	0,20	1 368
8 200	10	14,0 x 30,5	0,24	0,05	0,18	1 654
10 000	10	14,0 x 30,5	0,24	0,04	0,16	1 827
33	16	8,5 x 16,0	0,16	7,72	1,66	99
47	16	8,5 x 16,0	0,16	5,42	1,53	118
100	16	8,5 x 16,0	0,16	2,55	1,45	172
150	16	8,5 x 16,0	0,16	1,70	1,00	211
220	16	8,5 x 16,0	0,16	1,16	0,66	255
330	16	8,5 x 16,0	0,16	0,77	0,44	313
390	16	8,5 x 16,0	0,16	0,65	0,39	340
470	16	8,5 x 20,0	0,16	0,54	0,31	384
560	16	8,5 x 20,0	0,16	0,45	0,30	419
820	16	8,5 x 20,0	0,16	0,31	0,29	507
1 000	16	14,0 x 25,5	0,19	0,30	0,28	590
1 200	16	14,0 x 25,5	0,19	0,25	0,27	646
1 500	16	14,0 x 25,5	0,19	0,20	0,26	722
1 800	16	14,0 x 25,5	0,19	0,17	0,25	791
2 200	16	14,0 x 25,5	0,19	0,14	0,24	874
3 300	16	14,0 x 25,5	0,19	0,09	0,23	1 071
4 700	16	14,0 x 25,5	0,19	0,06	0,21	1 278
5 600	16	14,0 x 25,5	0,19	0,05	0,20	1 395
6 800	16	14,0 x 30,5	0,19	0,04	0,18	1 693

* I~ (Rated ripple current) refers to an increase in temperature of 3K, special requirements or special types on request
 Rated ripple current at 105°C: temperature multipliers 0,6

Technical specifications

Rated capacitance C_R [μ F]	Rated voltage V_R [V]	Size D x L [mm]	$\tan \delta$ 100Hz +20°C (max)	ESR [Ω] 100Hz +20°C (max)	Z [Ω] 10kHz +20°C (max)	I_{\sim} [mA]* 100Hz +85°C (max)
22	25	8,5 x 16,0	0,14	10,13	1,79	86
33	25	8,5 x 16,0	0,14	6,75	1,42	106
47	25	8,5 x 16,0	0,14	4,74	1,13	126
100	25	8,5 x 16,0	0,14	2,23	1,00	184
150	25	8,5 x 16,0	0,14	1,49	0,66	225
220	25	8,5 x 16,0	0,14	1,01	0,45	273
330	25	8,5 x 16,0	0,14	0,68	0,40	334
390	25	8,5 x 16,0	0,14	0,57	0,35	364
470	25	8,5 x 20,0	0,14	0,47	0,30	410
560	25	8,5 x 20,0	0,14	0,40	0,25	448
820	25	14,0 x 25,5	0,18	0,35	0,19	548
1 000	25	14,0 x 25,5	0,18	0,29	0,15	606
1 200	25	14,0 x 25,5	0,18	0,24	0,12	663
1 500	25	14,0 x 25,5	0,18	0,19	0,10	742
1 800	25	14,0 x 25,5	0,18	0,16	0,09	813
2 200	25	14,0 x 25,5	0,18	0,13	0,08	898
3 300	25	14,0 x 25,5	0,18	0,09	0,07	1 100
4 700	25	14,0 x 30,5	0,18	0,06	0,06	1 446
10	40	8,5 x 16,0	0,12	19,10	9,90	63
22	40	8,5 x 16,0	0,12	8,68	1,60	93
33	40	8,5 x 16,0	0,12	5,79	1,30	114
47	40	8,5 x 16,0	0,12	4,06	1,60	136
100	40	8,5 x 20,0	0,12	1,91	0,75	204
150	40	8,5 x 20,0	0,12	1,27	0,60	250
220	40	8,5 x 20,0	0,12	0,87	0,34	303
330	40	14,0 x 25,5	0,16	0,77	0,30	369
390	40	14,0 x 25,5	0,16	0,65	0,26	401
470	40	14,0 x 25,5	0,16	0,54	0,24	440
560	40	14,0 x 25,5	0,16	0,45	0,18	481
820	40	14,0 x 25,5	0,16	0,31	0,13	582
1 000	40	14,0 x 25,5	0,16	0,25	0,08	642
1 200	40	14,0 x 25,5	0,16	0,21	0,06	704
1 500	40	14,0 x 25,5	0,16	0,17	0,05	787
1 800	40	14,0 x 30,5	0,16	0,14	0,04	949
4,7	50	8,5 x 16,0	0,10	33,86	9,00	47
10	50	8,5 x 16,0	0,10	15,92	8,00	69
22	50	8,5 x 16,0	0,10	7,23	2,95	102
33	50	8,5 x 16,0	0,10	4,82	1,97	125
47	50	8,5 x 16,0	0,10	3,39	1,38	149
100	50	8,5 x 20,0	0,10	1,59	0,65	224
150	50	8,5 x 20,0	0,10	1,06	0,55	274
220	50	8,5 x 20,0	0,10	0,72	0,29	332
330	50	14,0 x 25,5	0,14	0,68	0,26	395
390	50	14,0 x 25,5	0,14	0,57	0,22	429
470	50	14,0 x 25,5	0,14	0,47	0,20	471
560	50	14,0 x 25,5	0,14	0,40	0,17	514
820	50	14,0 x 25,5	0,14	0,27	0,11	622
1 000	50	14,0 x 25,5	0,14	0,22	0,06	687
1 200	50	14,0 x 25,5	0,14	0,19	0,05	752
1 500	50	14,0 x 30,5	0,14	0,15	0,04	926
1 800	50	14,0 x 30,5	0,14	0,12	0,04	1 015

* I_{\sim} (Rated ripple current) refers to an increase in temperature of 3K, special requirements or special types on request
 Rated ripple current at 105°C: temperature multipliers 0,6

Technical specifications

Rated capacitance C_R [μ F]	Rated voltage V_R [V]	Size D x L [mm]	$\tan \delta$ 100Hz +20°C (max)	ESR [Ω] 100Hz +20°C (max)	Z [Ω] 10kHz +20°C (max)	I_{\sim} [mA]* 100Hz +85°C (max)
3,3	63	8,5 x 16,0	0,08	38,58	9,80	44
4,7	63	8,5 x 16,0	0,08	27,09	8,50	53
10	63	8,5 x 16,0	0,08	12,73	6,00	77
22	63	8,5 x 16,0	0,08	5,79	2,73	114
33	63	8,5 x 16,0	0,08	3,86	1,82	140
47	63	8,5 x 16,0	0,08	2,71	1,28	167
100	63	8,5 x 20,0	0,08	1,27	0,60	250
150	63	8,5 x 20,0	0,08	0,85	0,53	307
220	63	14,0 x 25,5	0,08	0,58	0,25	426
330	63	14,0 x 25,5	0,08	0,39	0,22	522
390	63	14,0 x 25,5	0,08	0,33	0,19	567
470	63	14,0 x 25,5	0,08	0,27	0,17	623
560	63	14,0 x 25,5	0,08	0,23	0,15	680
820	63	14,0 x 25,5	0,08	0,16	0,10	823
1 000	63	14,0 x 30,5	0,08	0,13	0,05	1 001
1 200	63	14,0 x 30,5	0,08	0,11	0,04	1 096
3,3	100	8,5 x 16,0	0,07	33,76	9,00	47
4,7	100	8,5 x 16,0	0,07	23,70	8,00	56
10	100	8,5 x 16,0	0,07	11,14	4,00	82
22	100	8,5 x 20,0	0,07	5,06	1,80	126
33	100	8,5 x 20,0	0,07	3,38	1,20	154
47	100	8,5 x 20,0	0,07	2,37	0,85	183
100	100	14,0 x 25,5	0,07	1,11	0,55	307
150	100	14,0 x 25,5	0,07	0,74	0,50	376
220	100	14,0 x 25,5	0,07	0,51	0,23	456
330	100	14,0 x 25,5	0,07	0,34	0,21	558
390	100	14,0 x 30,5	0,07	0,29	0,18	668
470	100	14,0 x 30,5	0,07	0,24	0,16	733

* I_{\sim} (Rated ripple current) refers to an increase in temperature of 3K, special requirements or special types on request
 Rated ripple current at 105°C: temperature multipliers 0,6

Ordering information for FROLYT electrolytic capacitors

- Series
- Rated capacitance / Rated voltage
- Capacitance tolerance
- Dimensions (Diameter x Length)
- Additional requirements

Ordering example: EAG 100 μ F 40V \pm 20%, 8,5 x 20,0mm

Special requirements or special types on request

All information provided in printed form requires a written confirmation in order to be legally binding within the meaning of §§463 and 480 II BGB (German Civil Code). Hence, the given data imply exclusively a product description and are not to be understood as assured qualities.