

ERH

High voltage, Long life
 Endurance 2.500h to 5.000h at 105°C
 Rated voltage range: 160V to 450V, Nominal capacitance range: 1,5µF to 470µF
 Size range: Ø 10,0 x 12,7mm to Ø 18,0 x 36,5mm
 RoHS compliant
 Special types on request



Specifications

	Characteristics							
Temperature range	- 40°C to +105°C							
Rated voltage range	160V to 450V							
Capacitance tolerance	±20%, other on request (at 20°C, 100Hz)							
Leakage current I_{ra}	I _{ra} =0,015·C _R ·V _R + 10µA (I _{ra} [µA], C _R : Rated capacitance [µF], V _R : Rated voltage [V]) (at 20°C, 5 minutes)							
Dissipation factor (tan δ)	Rated voltage (V _R)	160V	200V	250V	350V	400V	450V	(20°C, 100Hz)
	tan δ _{max}	0,10	0,10	0,10	0,14	0,17	0,17	
Low temperature - characteristics Z_{max}-faktor	Rated voltage (V _R)	160V	200V	250V	350V	400V	450V	(100Hz)
	Z(-40°C)/(20°C)	8	8	8	8	8	8	
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20°C after the rated voltage is applied for 2.500 hours to 5.000 hours at 105°C.							
	Capacitance change	ΔC/C0 ≤ ±20%						
	D.F. (tan δ)	Δtan δ ≤ +200% of the initial specification value						
	Leakage current (I _{ra})	I _{ra} ≤ 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	ΔC/C0 ≤ ±20%						
	D.F. (tan δ)	Δtan δ ≤ +200% of the initial specification value						
	Leakage current (I _{ra})	I _{ra} ≤ +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)	160V	200V	250V	350V	400V	450V	
	Surge voltage (V _s)	184V	230V	288V	385V	440V	495V	
	Appearance	No significant damage						
	Capacitance change	ΔC/C0 ≤ ±10%						
	D.F. (tan δ)	Δtan δ ≤ the initial specified value						
	Leakage current (I _{ra})	I _{ra} ≤ the initial specified value						

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ISO 9001

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Aluminium-electrolytic capacitors, High voltage, Insulated, Polarized, Pulse proof
Endurance at least 2.500h to 5.000h at +105°C

ERH

Generic specification:
 DIN EN 60384-1

Sectional specification:
 DIN EN 60384-4
 without quality assessment

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

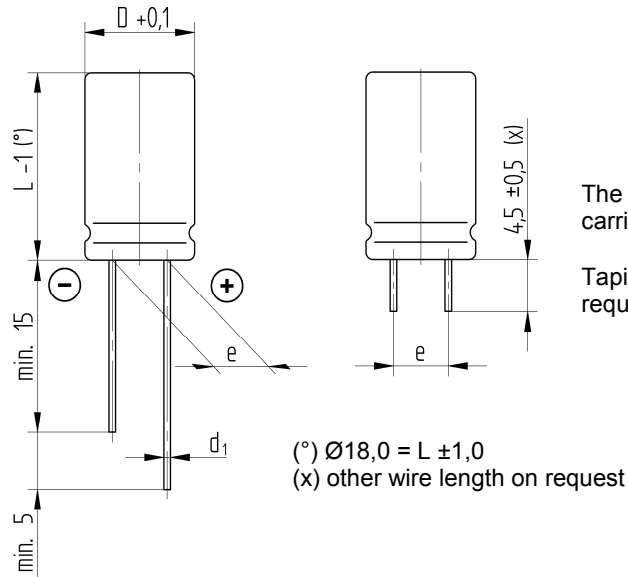
Climatic category:
 40/105/56

Capacitance range:
 ±20%, other on request

Surge voltage V_S :
 $V_S = 1,15 \cdot V_R$ ($V_R \leq 315V$)
 $V_S = 1,10 \cdot V_R$ ($V_R \geq 315V$)

Leakage current I_{ra} :
 measured at V_R at +20°C
 $I_{ra} \leq 0,030 \cdot C_R \cdot V_R + 10\mu A$
 (after 2 minutes)

$I_{ra} \leq 0,015 \cdot C_R \cdot V_R + 10\mu A$
 (after 5 minutes)
 C_R : Rated capacitance (μF)
 V_R : Rated voltage (V)



The identification of polarity is carried out by the stamp image.

Taping specifications on request

Dimensions (mm)				
D	10,0	12,5	16,5	18,0
d ₁ wire \varnothing	0,6	0,8 (*)	0,8	0,8
e $\pm 0,5$	5,0	5,0	7,5	7,5
Endurance at least				
Ambient temperature	\varnothing 10,0 mm	\varnothing 12,5 mm	\varnothing 16,5 mm	$\varnothing \geq 18,0$ mm
$\leq +40^\circ C$	250.000 h	500.000 h	500.000 h	500.000 h
+85°C	10.000 h	20.000 h	20.000 h	20.000 h
+105°C	2.500 h	5.000 h	5.000 h	5.000 h

(*) 0,6 mm on request

Dimensions Overview D x L

Cap. C_R [μF]	Rated voltage V_R [V]					
	160	200	250	350	400	450
1,5				10,0 x 12,7	10,0 x 12,7	10,0 x 12,7
2,2			10,0 x 12,7	10,0 x 12,7	10,0 x 12,7	10,0 x 12,7
3,3		10,0 x 12,7	10,0 x 12,7	10,0 x 12,7	10,0 x 16,5	10,0 x 16,5
4,7	10,0 x 12,7	10,0 x 12,7	10,0 x 12,7	10,0 x 16,5	10,0 x 16,5	10,0 x 21,0
6,8	10,0 x 12,7	10,0 x 12,7	10,0 x 16,5	10,0 x 16,5	10,0 x 21,0	12,5 x 21,0
10	10,0 x 12,7	10,0 x 12,7	10,0 x 16,5	10,0 x 21,0	12,5 x 21,0	12,5 x 25,0
15	10,0 x 12,7	10,0 x 16,5	10,0 x 21,0	12,5 x 21,0	12,5 x 25,0	12,5 x 30,0
22	10,0 x 16,5	10,0 x 21,0	12,5 x 21,0	12,5 x 30,0	16,5 x 26,0	16,5 x 30,0
33	10,0 x 21,0	12,5 x 21,0	12,5 x 25,0	16,5 x 26,0	16,5 x 30,0	16,5 x 30,0
47	12,5 x 21,0	12,5 x 25,0	16,5 x 22,0	16,5 x 30,0	16,5 x 30,0	16,5 x 36,5
68	12,5 x 30,0	12,5 x 30,0	16,5 x 30,0	16,5 x 30,0	16,5 x 36,5	18,0 x 36,5
100	16,5 x 26,0	16,5 x 30,0	16,5 x 30,0	16,5 x 36,5	18,0 x 36,5	
150	16,5 x 26,0	16,5 x 30,0	16,5 x 36,5	18,0 x 36,5		
220	16,5 x 30,0	16,5 x 36,5	18,0 x 36,5			
330	16,5 x 36,5	18,0 x 36,5				
470	18,0 x 36,5					

Technical specifications

Rated cap. 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 (typical)	Z [Ω] 100kHz		I~ [mA]* 100Hz +105°C	I~ [mA]* 100kHz +105°C
					+20°C (max)	- 25°C (max)		
4,7	160	10,0 x 12,7	0,10	13,50	15,00	225,00	64	96
6,8	160	10,0 x 12,7	0,10	11,50	12,00	180,00	82	122
10	160	10,0 x 12,7	0,10	8,10	9,00	135,00	96	144
15	160	10,0 x 12,7	0,10	4,20	6,00	90,00	120	180
22	160	10,0 x 16,5	0,10	2,90	4,00	60,00	154	231
33	160	10,0 x 21,0	0,10	1,90	2,50	38,00	189	284
47	160	12,5 x 21,0	0,10	1,40	1,50	23,00	242	363
68	160	12,5 x 30,0	0,10	0,95	1,20	18,00	312	468
100	160	16,5 x 26,0	0,10	0,65	0,42	7,00	402	603
150	160	16,5 x 26,0	0,10	0,52	0,39	5,85	501	752
220	160	16,5 x 30,0	0,10	0,37	0,36	5,40	612	918
330	160	16,5 x 36,5	0,10	0,25	0,33	4,95	801	1 201
470	160	18,0 x 36,5	0,10	0,18	0,30	4,50	983	1 474
3,3	200	10,0 x 12,7	0,10	19,60	12,50	187,50	58	87
4,7	200	10,0 x 12,7	0,10	13,40	10,50	157,50	69	104
6,8	200	10,0 x 12,7	0,10	9,50	8,50	128,00	81	122
10	200	10,0 x 12,7	0,10	6,50	6,50	98,00	98	147
15	200	10,0 x 16,5	0,10	4,20	4,50	68,00	127	191
22	200	10,0 x 21,0	0,10	2,90	2,50	38,00	153	230
33	200	12,5 x 21,0	0,10	1,90	1,50	23,00	202	303
47	200	12,5 x 25,0	0,10	1,40	1,00	15,00	252	378
68	200	12,5 x 30,0	0,10	0,95	0,70	11,00	312	468
100	200	16,5 x 30,0	0,10	0,65	0,45	7,00	402	603
150	200	16,5 x 30,0	0,10	0,52	0,40	6,00	505	758
220	200	16,5 x 36,5	0,10	0,37	0,35	5,25	654	981
330	200	18,0 x 36,5	0,10	0,25	0,30	4,50	983	1 474
2,2	250	10,0 x 12,7	0,10	29,40	12,50	187,50	44	66
3,3	250	10,0 x 12,7	0,10	19,00	10,50	158,00	56	84
4,7	250	10,0 x 12,7	0,10	13,50	8,50	128,00	67	101
6,8	250	10,0 x 16,5	0,10	9,50	6,50	98,00	86	129
10	250	10,0 x 16,5	0,10	6,50	4,50	68,00	104	156
15	250	10,0 x 21,0	0,10	4,20	3,00	45,00	127	191
22	250	12,5 x 21,0	0,10	2,90	2,00	30,00	165	248
33	250	12,5 x 25,0	0,10	1,90	1,50	23,00	210	315
47	250	16,5 x 22,0	0,10	1,40	0,80	12,00	260	390
68	250	16,5 x 30,0	0,10	0,95	0,65	10,00	332	498
100	250	16,5 x 30,0	0,10	0,65	0,50	8,00	402	603
150	250	16,5 x 36,5	0,10	0,52	0,45	6,75	540	811
220	250	18,0 x 36,5	0,10	0,37	0,40	6,00	672	1 008
1,5	350	10,0 x 12,7	0,14	42,00	16,00	240,00	32	48
2,2	350	10,0 x 12,7	0,14	36,00	13,50	203,00	36	54
3,3	350	10,0 x 12,7	0,14	24,00	10,50	158,00	44	66
4,7	350	10,0 x 16,5	0,14	17,00	7,00	105,00	55	83
6,8	350	10,0 x 16,5	0,14	11,70	6,50	98,00	66	99
10	350	10,0 x 21,0	0,14	8,00	4,80	72,00	80	120
15	350	12,5 x 21,0	0,14	5,30	3,50	53,00	106	159
22	350	12,5 x 30,0	0,14	3,60	2,50	38,00	137	206
33	350	16,5 x 26,0	0,14	2,40	2,00	30,00	179	269
47	350	16,5 x 30,0	0,14	1,70	1,40	21,00	214	321
68	350	16,5 x 30,0	0,14	1,50	1,20	18,00	287	431
100	350	16,5 x 36,5	0,14	1,40	1,00	15,00	372	559
150	350	18,0 x 36,5	0,14	1,30	0,85	12,75	469	704

* I~ (Rated ripple current) refers to an increase in temperature of 3K, special requirements or special types on request

Technical specifications

Rated cap. 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 (typical)	Z [Ω] 100kHz		I_{\sim} [mA]* 100Hz +105°C	I_{\sim} [mA]* 100kHz +105°C
					+20°C (max)	-25°C (max)		
1,5	400	10,0 x 12,7	0,17	63,60	18,50	278,00	26	39
2,2	400	10,0 x 12,7	0,17	43,40	13,50	203,00	31	47
3,3	400	10,0 x 16,5	0,17	29,00	9,50	143,00	41	62
4,7	400	10,0 x 16,5	0,17	20,30	7,00	105,00	48	72
6,8	400	10,0 x 21,0	0,17	14,00	5,00	75,00	58	87
10	400	12,5 x 21,0	0,17	9,50	3,70	56,00	76	114
15	400	12,5 x 25,0	0,17	6,30	3,00	45,00	97	146
22	400	16,5 x 26,0	0,17	4,30	2,50	38,00	128	192
33	400	16,5 x 30,0	0,17	2,90	1,80	27,00	157	236
47	400	16,5 x 30,0	0,17	2,00	1,40	21,00	187	281
68	400	16,5 x 36,5	0,17	1,70	1,30	19,50	279	418
100	400	18,0 x 36,5	0,17	1,55	1,20	18,00	347	521
1,5	450	10,0 x 12,7	0,17	63,60	34,00	510,00	26	39
2,2	450	10,0 x 12,7	0,17	43,40	27,00	405,00	31	47
3,3	450	10,0 x 16,5	0,17	29,00	15,00	225,00	41	62
4,7	450	10,0 x 21,0	0,17	20,30	9,00	135,00	48	72
6,8	450	12,5 x 21,0	0,17	14,00	6,00	90,00	62	93
10	450	12,5 x 25,0	0,17	9,50	4,50	68,00	79	119
15	450	12,5 x 30,0	0,17	6,30	3,50	53,00	100	150
22	450	16,5 x 30,0	0,17	4,30	2,50	38,00	128	192
33	450	16,5 x 30,0	0,17	2,90	2,00	30,00	157	236
47	450	16,5 x 36,5	0,17	2,00	1,80	27,00	232	349
68	450	18,0 x 36,5	0,17	1,70	1,60	24,00	287	431

* I_{\sim} (Rated ripple current) refers to an increase in temperature of 3K, special requirements or special types on request

Ordering information for FROLYT electrolytic capacitors

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

Ordering example: ERH 47 μ F 200V \pm 20%, 12,5 x 25,0mm, cut 4,5mm

Special types or requirements on request

All information provided in printed form needs for her legal obligation for the purposes of §§463 and 480 II Civil Code of the explicit written confirmation. Hence, the given data imply exclusively a product description and are not to be understood as assured qualities.