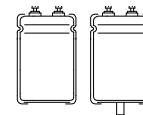


85°C



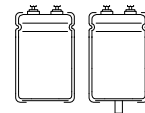
GMX

Rated voltage U_R [V]	Rated cap. C_R [μF]	Case size D x L [mm]	Typ. ESR 100 Hz, 20°C [mΩ]	Ripple current IR~ 100 Hz, 85°C [A]	Order code	
					Plain base: GMXA...	
					Stud mounting: GMXB...	
63	120000	75x165	2	26,4	12406375165	
	150000	90x148	2	31,6	15406390148	
	180000	75x225	2	36,9	18406375225	
	180000	90x170	2	36,6	18406390170	
	220000	90x220	1	44,9	22406390220	
	270000	90x230	1	50,6	27406390230	
	3900	35x55	82	2,4	39208035055	
	5600	35x70	57	3,2	56208035070	
80	6800	35x80	47	3,7	68208035080	
	6800	40x70	47	3,6	68208040070	
	8200	40x55	39	3,6	82208040055	
	8200	35x100	39	4,4	82208035100	
	8200	40x80	39	4,1	82208040080	
	10000	45x70	32	4,3	10308045070	
	12000	50x70	27	5,1	12308050070	
	12000	45x100	27	5,4	12308045100	
	15000	40x100	21	6,1	15308040100	
	15000	50x80	21	5,9	15308050080	
	18000	50x100	18	7,1	18308050100	
	22000	65x80	14	9,4	22308065080	
	27000	65x100	12	11,3	27308065100	
	39000	75x100	8	11,8	39308075100	
	39000	65x130	8	15,1	39308065130	
	47000	75x115	7	13,6	47308075115	
	68000	75x145	5	17,9	68308075145	
	68000	75x165	5	18,9	68308075165	
	100000	90x148	3	24,5	10408090148	
	120000	75x225	3	28,6	12408075225	
	120000	90x170	3	28,3	12408090170	
	150000	90x220	2	35,1	15408090220	
	150000	90x230	2	35,8	15408090230	
	3300	35x55	48	3,1	33210035055	
	4700	35x70	34	4,1	47210035070	
	100	4700	40x55	34	3,8	47210040055
		5600	35x80	28	4,7	56210035080
		5600	40x70	28	4,6	56210040070
6800		35x100	23	5,7	68210035100	
6800		40x80	23	5,3	68210040080	
8200		45x70	19	5,5	82210045070	
10000		50x70	16	6,5	10310050070	
10000		40x100	16	7,1	10310040100	
12000		45x100	13	7,7	12310045100	
12000		50x80	13	7,5	12310050080	
15000		50x100	11	9,2	15310050100	
18000		65x80	9	12,1	18310065080	
22000		65x100	7	14,5	22310065100	
27000		75x100	6	13,9	27310075100	
33000		65x130	5	19,6	33310065130	
39000		75x115	4	17,6	39310075115	

Rated voltage U_R [V]	Rated cap. C_R [μF]	Case size D x L [mm]	Typ. ESR 100 Hz, 20°C [mΩ]	Ripple current IR~ 100 Hz, 85°C [A]	Order code	
					Plain base: GMXA...	
					Stud mounting: GMXB...	
100	47000	75x145	3	21,1	47310075145	
	56000	75x165	3	24,2	56310075165	
	68000	90x148	2	28,6	68310090148	
	82000	75x225	2	33,4	82310075225	
	82000	90x170	2	33,1	82310090170	
	120000	90x220	1	44,5	12410090220	
	120000	90x230	1	45,3	12410090230	
	160	1800	35x55	62	2,8	18216035055
2200		35x70	51	3,4	22216035070	
2200		40x55	51	3,1	22216040055	
2700		35x80	41	3,9	27216035080	
2700		40x70	41	3,8	27216040070	
3900		35x100	29	5,2	39216035100	
3900		40x80	29	4,8	39216040080	
3900		45x70	29	4,6	39216045070	
4700		50x70	24	5,4	47216050070	
4700		40x100	24	5,8	47216040100	
5600		45x100	20	6,3	56216045100	
5600		50x80	20	6,1	56216050080	
6800		50x100	16	7,4	68216050100	
8200		65x80	14	9,7	82216065080	
12000		65x100	9	12,8	12316065100	
15000		75x100	7	12,4	15316075100	
18000		65x130	6	17,3	18316065130	
18000		75x115	6	14,3	18316075115	
27000		75x145	4	19,1	27316075145	
27000		75x165	4	20,1	27316075165	
39000		75x225	3	27,5	39316075225	
39000		90x148	3	25,9	39316090148	
47000		90x170	2	30,0	47316090170	
56000		90x220	2	36,3	56316090220	
56000		90x230	2	37,0	56316090230	
250		1000	35x55	96	2,2	10225035055
		1500	35x70	64	3,0	15225035070
		1500	40x55	64	2,8	15225040055
	1800	35x80	53	3,5	18225035080	
	1800	40x70	53	3,3	18225040070	
	2200	35x100	43	4,2	22225035100	
	2200	40x80	43	3,9	22225040080	
	2200	45x70	43	3,7	22225045070	
	2700	50x70	35	4,4	27225050070	
	3300	40x100	29	5,2	33225040100	
	3900	45x100	24	5,7	39225045100	
	3900	50x80	24	5,5	39225050080	
	4700	50x100	20	6,6	47225050100	
	5600	65x80	17	8,7	56225065080	
	8200	65x100	12	11,4	82225065100	
	10000	75x100	10	10,9	10325075100	
	12000	65x130	8	15,3	12325065130	

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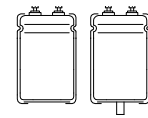
85°C



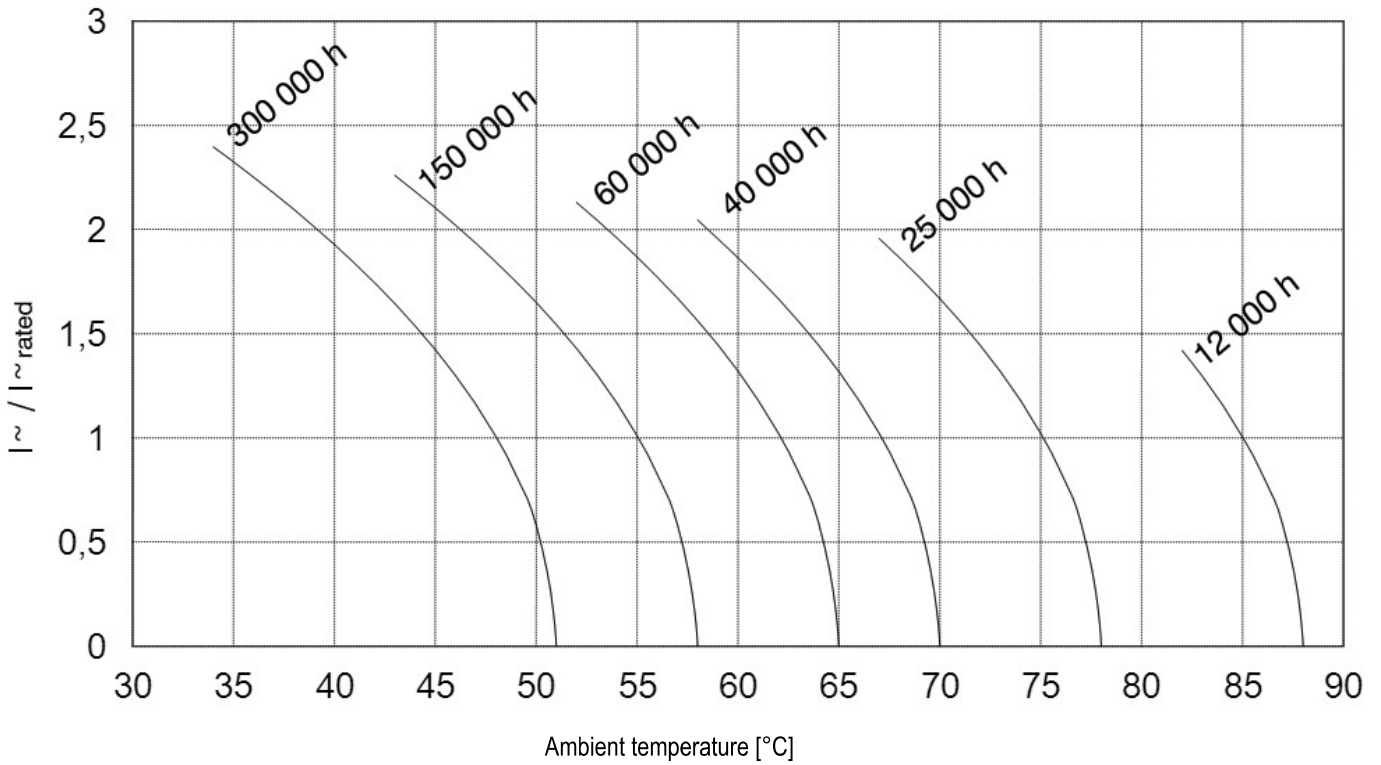
GMX

Rated voltage U_R [V]	Rated cap. C_R [μF]	Case size D x L [mm]	Typ. ESR 100 Hz, 20°C [mΩ]	Ripple current IR~ 100 Hz, 85°C [A]	Order code
					Plain base: GMXA...
					Stud mounting: GMXB...
250	12000	75x115	8	12,6	12325075115
	18000	75x145	5	16,8	18325075145
	18000	75x165	5	17,7	18325075165
	27000	75x225	4	24,7	27325075225
	27000	90x148	4	23,2	27325090148
	27000	90x170	4	24,5	27325090170
	39000	90x220	2	32,7	39325090220
	39000	90x230	2	33,3	39325090230
	350	560	35x55	171	1,7
680		40x55	141	1,9	68135040055
820		35x70	117	2,2	82135035070
1000		35x80	96	2,6	10235035080
1200		40x70	80	2,7	12235040070
1200		45x70	80	2,7	12235045070
1500		35x100	64	3,5	15235035100
1500		40x80	64	3,2	15235040080
1800		50x70	53	3,6	18235050070
1800		40x100	53	3,9	18235040100
1800		50x80	53	3,8	18235050080
2200		45x100	43	4,3	22235045100
2700		50x100	35	5,0	27235050100
3300		65x80	29	6,7	33235065080
3900		65x100	24	7,9	39235065100
4700		75x100	20	7,5	47235075100
5600		65x130	17	10,4	56235065130
5600		75x115	17	8,6	56235075115
8200		75x145	12	11,4	82235075145
8200		75x165	12	12,0	82235075165
12000		75x225	8	16,5	12335075225
12000		90x148	8	15,5	12335090148
15000		90x170	6	18,3	15335090170
18000		90x220	5	22,2	18335090220
18000	90x230	5	22,6	18335090230	
400	390	35x55	327	1,2	39140035055
	560	35x70	227	1,6	56140035070
	560	40x55	227	1,5	56140040055
	680	35x80	187	1,8	68140035080
	820	40x70	155	2,0	82140040070
	820	40x80	155	2,1	82140040080
	1000	35x100	127	2,5	10240035100
	1000	45x70	127	2,2	10240045070
	1200	50x70	106	2,5	12240050070
	1200	40x100	106	2,7	12240040100

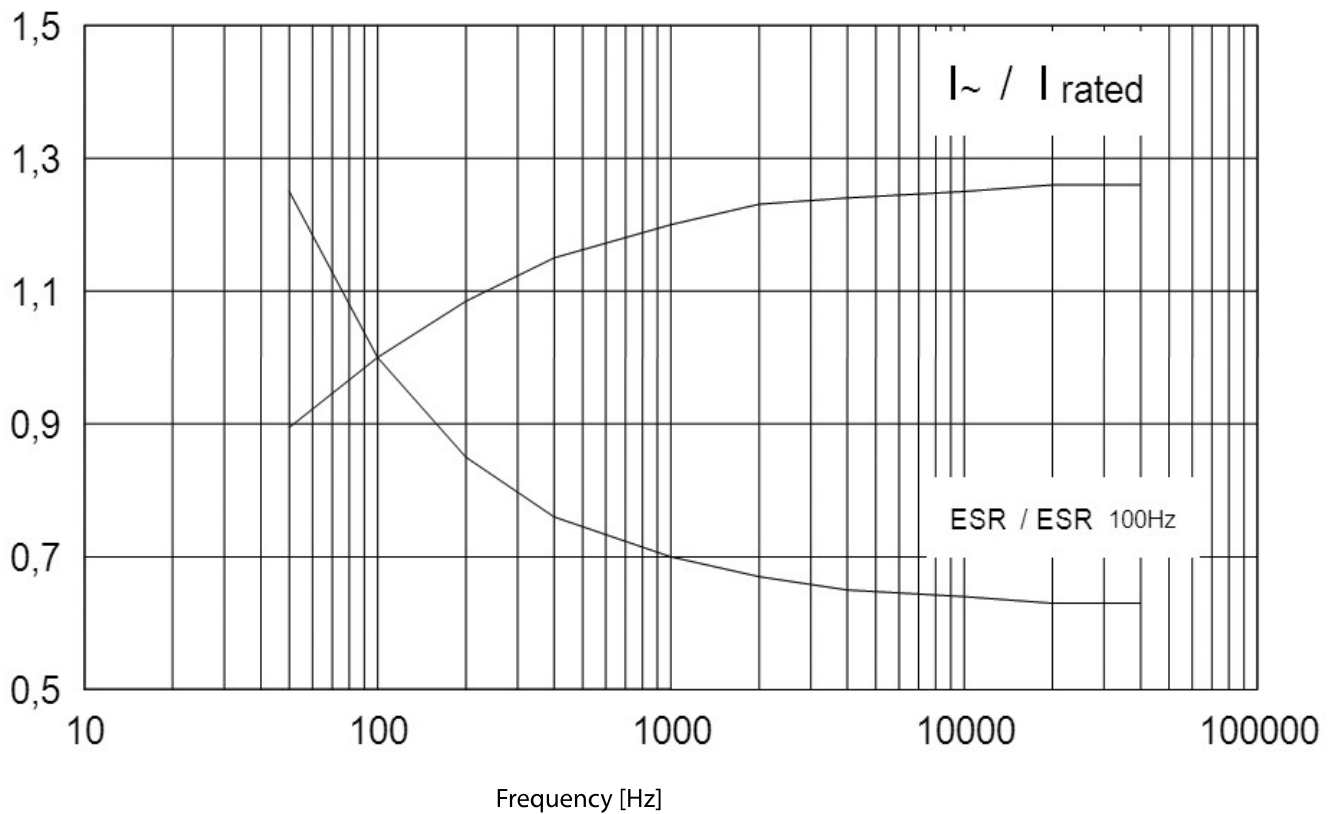
Rated voltage U_R [V]	Rated cap. C_R [μF]	Case size D x L [mm]	Typ. ESR 100 Hz, 20°C [mΩ]	Ripple current IR~ 100 Hz, 85°C [A]	Order code	
					Plain base: GMXA...	
					Stud mounting: GMXB...	
400	1500	45x100	85	3,0	15240045100	
	1500	50x80	85	3,0	15240050080	
	1800	50x100	71	3,6	18240050100	
	2200	65x80	58	4,7	22240065080	
	2700	65x100	47	5,7	27240065100	
	3300	65x100	40	5,8	33240065100	
	3900	75x100	33	5,9	39240075100	
	3900	65x130	33	7,5	39240065130	
	4700	75x115	27	6,8	47240075115	
	6800	75x145	19	9,0	68240075145	
	6800	75x165	19	9,4	68240075165	
	10000	90x148	13	12,2	10340090148	
	12000	75x225	11	14,3	12340075225	
	12000	90x170	11	14,2	12340090170	
	15000	90x220	8	17,6	15340090220	
	18000	90x230	7	19,6	18340090230	
	450	390	35x55	286	1,3	39145035055
		470	35x70	237	1,6	47145035070
560		35x80	199	1,8	56145035080	
560		35x100	199	2,0	56145035100	
680		40x55	164	1,7	68145040055	
820		40x70	136	2,1	82145040070	
820		40x80	136	2,2	82145040080	
1000		45x70	111	2,3	10245045070	
1000		40x100	111	2,7	10245040100	
1200		50x70	93	2,7	12245050070	
1200		45x100	93	2,9	12245045100	
1200		50x80	93	2,8	12245050080	
1800		50x100	62	3,8	18245050100	
1800		65x80	62	4,6	18245065080	
2700		65x100	41	6,1	27245065100	
3300		65x130	34	7,4	33245065130	
3900		75x100	29	6,3	39245075100	
3900		75x115	29	6,6	39245075115	
4700		75x145	26	7,6	47245075145	
5600		75x145	20	8,7	56245075145	
6800		75x165	16	10,1	68245075165	
8200		75x225	14	12,6	82245075225	
10000		90x148	11	13,1	10345090148	
10000		90x170	11	13,8	10345090170	
15000	90x220	7	18,8	15345090220		
15000	90x230	7	19,1	15345090230		
12000	90x220	7	17,9	12345090220		



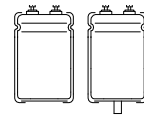
■ USEFUL LIFE AS A FUNCTION OF AMBIENT TEMPERATURE AND ACTUAL RIPPLE CURRENT



■ RIPPLE CURRENT AND ESR AS A FUNCTION OF FREQUENCY F



105°C



G



SCREW TERMINALS

HIGH CV PRODUCT

LONG LIFE 8000 H @ 105 °C

FEATURES

- All internal contacts welded
- High performance
- High ripple current
- Long useful life

APPLICATIONS

- Computer
- Industrial
- Inverter/drives
- Laser

RoHS compliant
REACH compliant

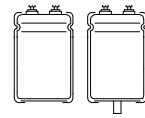
GENERAL SPECIFICATIONS

Items	Characteristics
Rated capacitance range C_R	390... 3.300.000 μ F
Capacitance tolerance	\pm 20%
Rated voltage range U	16 ... 450 V
Surge voltage U_S	$U_R \leq 315$ V: $U_S = 1,15 U_R$; $U_R > 315$ V: $U_S = 1,10 U_R$
Max. reverse voltage	2 V / 20 nH
Category temperature range	- 40°C ... + 105 °C
Leakage current I_L after 5 min @ U_R	$\leq 0,008 * C_R [\mu F] * U_R [V] + 6 \mu A [\mu A]$
Useful life 12000 h @ 85 °C ; U_R ; I_R	Requirements $\Delta C/C \leq 30$ % of initial value ; ESR ≤ 300 % of specified ; limit $I_L \leq$ specified limit
Endurance test 4000 h @ 85 °C , U_R	Requirements $\Delta C/C \leq 20$ % of initial value ; ESR ≤ 130 % of specified ; limit $I_L \leq$ specified limit
Climatic category IEC 60068	40/105/56
Voltage proof of the external insulation	≥ 2500 V AC
Sectional specification	IEC 60384-4

Different voltages and capacitance combinations are available on request. Also in small lots.

Stand: 12/2019





■ DRAWINGS FOR SERIES GA AND GB

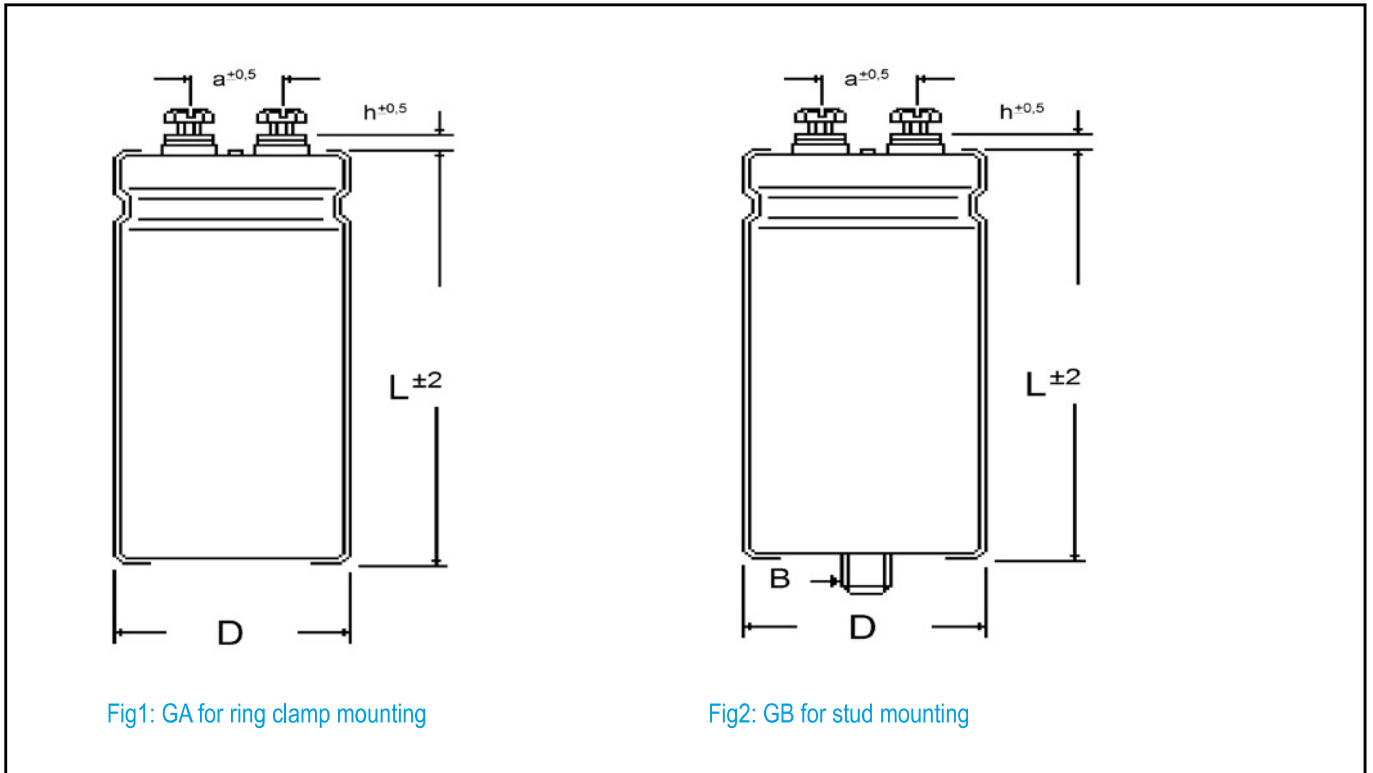


Fig1: GA for ring clamp mounting

Fig2: GB for stud mounting

■ DIMENSIONS AND MECHANICAL DATA

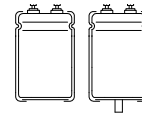
Dimensions, case with insulation sleeve				Connecting terminals		Mounting stud, GMB only	
D [mm]	Case length L available in 5 mm [mm]	h [mm]	a [mm]	Thread	Max. torque [Nm]	B	Max. torque [Nm]
35	40 ... 120	6	13	M5	2,0	M8 x 12	4,0
40	40 ... 120	5	18	M5	2,0	M8 x 12	4,0
50	40 ... 120	5	22	M5	2,0	M12 x 16	10,0
65	40 ... 180	5	28,5	M5	2,0	M12 x 16	10,0
75	40 ... 230	5	31,7	M5 ; M6	2,0 ; 2,5	M12 x 16	10,0
90	40 ... 230	5	31,7	M6	2,5	M12 x 16	10,0

GMA: connecting screws M5 or M6

GMB: connecting screws M5 or M6 + mounting nut M8 or M12

Remarks: Further mounting accessoires like clamps, nylon cup nuts and insulation disks on request, see "accessory equipment".

105°C



G

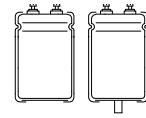
ELECTRICAL DATA AND ORDERING CODE FOR SERIES G

Rated voltage U_R [V]	Rated cap. C_R [μF]	Case size D x L [mm]	Typ. ESR 100 Hz, 20°C [mΩ]	Ripple current IR~ 100 Hz, 105°C [A]	Order code	
					Plain base: GA...	
					Stud mounting: GB...	
16	82000	35x55	6	9,0	82301635055	
	120000	35x70	4	12,0	12401635070	
	120000	40x55	4	11,1	12401640055	
	150000	35x80	3	14,2	15401635080	
	150000	40x70	3	13,7	15401640070	
	180000	35x100	3	17,0	18401635100	
	180000	40x80	3	15,8	18401640080	
	180000	45x70	3	15,0	18401645070	
	220000	40x100	3	19,1	22401640100	
	220000	50x70	3	17,7	22401650070	
	270000	45x100	3	21,1	27401645100	
	270000	50x80	3	20,6	27401650080	
	390000	50x100	3	27,0	39401650100	
	470000	65x80	3	35,6	47401665080	
	560000	65x100	2	42,1	56401665100	
	820000	65x130	2	56,5	82401665130	
	820000	75x100	1	44,1	82401675100	
	1000000	75x115	1	51,3	10501675115	
	1200000	75x145	1	61,5	12501675145	
	1500000	75x165	1	72,4	15501675165	
	1800000	90x148	1	84,8	18501690148	
	2200000	75x225	1	99,8	22501675225	
	2200000	90x170	1	99,0	22501690170	
	2700000	90x220	1	121,7	27501690220	
	3300000	90x230	1	137,1	33501690230	
	25	22000	35x55	20	4,8	22302535055
		33000	35x70	14	6,5	33302535070
		33000	40x55	14	6,1	33302540055
39000		35x80	11	7,5	39302535080	
47000		40x70	9	7,9	47302540070	
56000		35x100	8	9,8	56302535100	
56000		40x80	8	9,1	56302540080	
56000		45x70	8	8,6	56302545070	
68000		40x100	7	11,0	68302540100	
68000		50x70	7	10,2	68302550070	
68000		45x100	7	11,0	68302545100	
82000		50x80	5	11,7	82302550080	
120000		50x100	4	15,5	12402550100	
120000		65x80	4	18,3	12402565080	
180000		65x100	3	24,3	18402565100	
220000		75x100	2	23,2	22402575100	
270000		65x130	2	33,0	27402565130	
270000		75x115	2	27,1	27402575115	
390000		75x145	1	35,7	39402575145	
470000		75x165	1	41,2	47402575165	
560000		90x148	1	48,1	56402590148	
680000		75x225	1	56,5	68402575225	

Rated voltage U_R [V]	Rated cap. C_R [μF]	Case size D x L [mm]	Typ. ESR 100 Hz, 20°C [mΩ]	Ripple current IR~ 100 Hz, 105°C [A]	Order code	
					Plain base: GA...	
					Stud mounting: GB...	
25	680000	90x170	1	56,0	68402590170	
	820000	90x220	1	68,2	82402590220	
	1000000	90x230	1	76,8	10502590230	
	40	15000	35x55	25	4,3	15304035055
		18000	40x55	21	4,8	18304040055
		22000	35x70	17	5,7	22304035070
		27000	35x80	14	6,7	27304035080
		27000	40x70	14	6,5	27304040070
		33000	35x100	12	8,1	33304035100
		33000	40x80	12	7,5	33304040080
		33000	45x70	12	7,2	33304045070
		39000	50x70	10	8,3	39304050070
47000		40x100	8	9,9	47304040100	
47000		50x80	8	9,6	47304050080	
56000		45x100	7	10,7	56304045100	
68000		50x100	6	12,6	68304050100	
82000		65x80	5	16,6	82304065080	
120000		65x100	3	21,8	12404065100	
150000		75x100	3	21,1	15404075100	
150000		65x130	3	27,0	15404065130	
180000		75x115	2	24,3	18404075115	
220000	75x145	2	29,4	22404075145		
270000	75x165	1	34,3	27404075165		
330000	90x148	1	40,6	33404090148		
390000	75x225	1	47,0	39404075225		
390000	90x170	1	46,6	39404090170		
560000	90x220	1	62,0	56404090220		
560000	90x230	1	63,1	56404090230		
63	6800	35x55	42	3,4	68206335055	
	8200	40x55	35	3,8	82206340055	
	10000	35x70	29	4,5	10306335070	
	12000	35x80	24	5,2	12306335080	
	12000	40x70	24	5,0	12306340070	
	15000	35x100	19	6,3	15306335100	
	15000	40x80	19	5,9	15306340080	
	15000	45x70	19	5,6	15306345070	
	18000	50x70	16	6,5	18306350070	
	18000	40x100	16	7,1	18306340100	
	22000	50x80	13	7,6	22306350080	
	22000	45x100	13	7,8	22306345100	
	27000	50x100	11	9,2	27306350100	
	39000	65x80	7	13,2	39306365080	
	47000	65x100	6	15,8	47306365100	
	68000	75x100	4	16,4	68306375100	
	68000	65x130	4	21,0	68306365130	
	82000	75x115	3	19,0	82306375115	
	100000	75x145	3	22,9	10406375145	

Stand: 12/2019

105°C



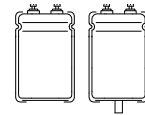
G

Rated voltage U_R [V]	Rated cap. C_R [μF]	Case size D x L [mm]	Typ. ESR 100 Hz, 20°C [mΩ]	Ripple current IR~ 100 Hz, 105°C [A]	Order code	
					Plain base: GA...	
					Stud mounting: GB...	
63	120000	75x165	2	26,4	12406375165	
	150000	90x148	2	31,6	15406390148	
	180000	75x225	2	36,9	18406375225	
	180000	90x170	2	36,6	18406390170	
	220000	90x220	1	44,9	22406390220	
	270000	90x230	1	50,6	27406390230	
	3900	35x55	82	2,4	39208035055	
	5600	35x70	57	3,2	56208035070	
80	6800	35x80	47	3,7	68208035080	
	6800	40x70	47	3,6	68208040070	
	8200	40x55	39	3,6	82208040055	
	8200	35x100	39	4,4	82208035100	
	8200	40x80	39	4,1	82208040080	
	10000	45x70	32	4,3	10308045070	
	12000	50x70	27	5,1	12308050070	
	12000	45x100	27	5,4	12308045100	
	15000	40x100	21	6,1	15308040100	
	15000	50x80	21	5,9	15308050080	
	18000	50x100	18	7,1	18308050100	
	22000	65x80	14	9,4	22308065080	
	27000	65x100	12	11,3	27308065100	
	39000	75x100	8	11,8	39308075100	
	39000	65x130	8	15,1	39308065130	
	47000	75x115	7	13,6	47308075115	
	68000	75x145	5	17,9	68308075145	
	68000	75x165	5	18,9	68308075165	
	100000	90x148	3	24,5	10408090148	
	120000	75x225	3	28,6	12408075225	
	120000	90x170	3	28,3	12408090170	
	150000	90x220	2	35,1	15408090220	
	150000	90x230	2	35,8	15408090230	
	3300	35x55	48	3,1	33210035055	
	4700	35x70	34	4,1	47210035070	
	100	4700	40x55	34	3,8	47210040055
		5600	35x80	28	4,7	56210035080
		5600	40x70	28	4,6	56210040070
6800		35x100	23	5,7	68210035100	
6800		40x80	23	5,3	68210040080	
8200		45x70	19	5,5	82210045070	
10000		50x70	16	6,5	10310050070	
10000		40x100	16	7,1	10310040100	
12000		45x100	13	7,7	12310045100	
12000		50x80	13	7,5	12310050080	
15000		50x100	11	9,2	15310050100	
18000		65x80	9	12,1	18310065080	
22000		65x100	7	14,5	22310065100	
27000		75x100	6	13,9	27310075100	
33000		65x130	5	19,6	33310065130	
39000		75x115	4	17,6	39310075115	

Rated voltage U_R [V]	Rated cap. C_R [μF]	Case size D x L [mm]	Typ. ESR 100 Hz, 20°C [mΩ]	Ripple current IR~ 100 Hz, 105°C [A]	Order code	
					Plain base: GA...	
					Stud mounting: GB...	
100	47000	75x145	3	21,1	47310075145	
	56000	75x165	3	24,2	56310075165	
	68000	90x148	2	28,6	68310090148	
	82000	75x225	2	33,4	82310075225	
	82000	90x170	2	33,1	82310090170	
	120000	90x220	1	44,5	12410090220	
	120000	90x230	1	45,3	12410090230	
	160	1800	35x55	62	2,8	18216035055
2200		35x70	51	3,4	22216035070	
2200		40x55	51	3,1	22216040055	
2700		35x80	41	3,9	27216035080	
2700		40x70	41	3,8	27216040070	
3900		35x100	29	5,2	39216035100	
3900		40x80	29	4,8	39216040080	
3900		45x70	29	4,6	39216045070	
4700		50x70	24	5,4	47216050070	
4700		40x100	24	5,8	47216040100	
5600		45x100	20	6,3	56216045100	
5600		50x80	20	6,1	56216050080	
6800		50x100	16	7,4	68216050100	
8200		65x80	14	9,7	82216065080	
12000		65x100	9	12,8	12316065100	
15000		75x100	7	12,4	15316075100	
18000		65x130	6	17,3	18316065130	
18000		75x115	6	14,3	18316075115	
27000		75x145	4	19,1	27316075145	
27000		75x165	4	20,1	27316075165	
39000		75x225	3	27,5	39316075225	
39000		90x148	3	25,9	39316090148	
47000		90x170	2	30,0	47316090170	
56000		90x220	2	36,3	56316090220	
56000		90x230	2	37,0	56316090230	
250		1000	35x55	96	2,2	10225035055
		1500	35x70	64	3,0	15225035070
		1500	40x55	64	2,8	15225040055
	1800	35x80	53	3,5	18225035080	
	1800	40x70	53	3,3	18225040070	
	2200	35x100	43	4,2	22225035100	
	2200	40x80	43	3,9	22225040080	
	2200	45x70	43	3,7	22225045070	
	2700	50x70	35	4,4	27225050070	
	3300	40x100	29	5,2	33225040100	
	3900	45x100	24	5,7	39225045100	
	3900	50x80	24	5,5	39225050080	
	4700	50x100	20	6,6	47225050100	
	5600	65x80	17	8,7	56225065080	
	8200	65x100	12	11,4	82225065100	
	10000	75x100	10	10,9	10325075100	
	12000	65x130	8	15,3	12325065130	

Stand: 12/2019

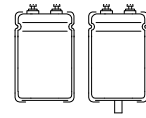
105°C



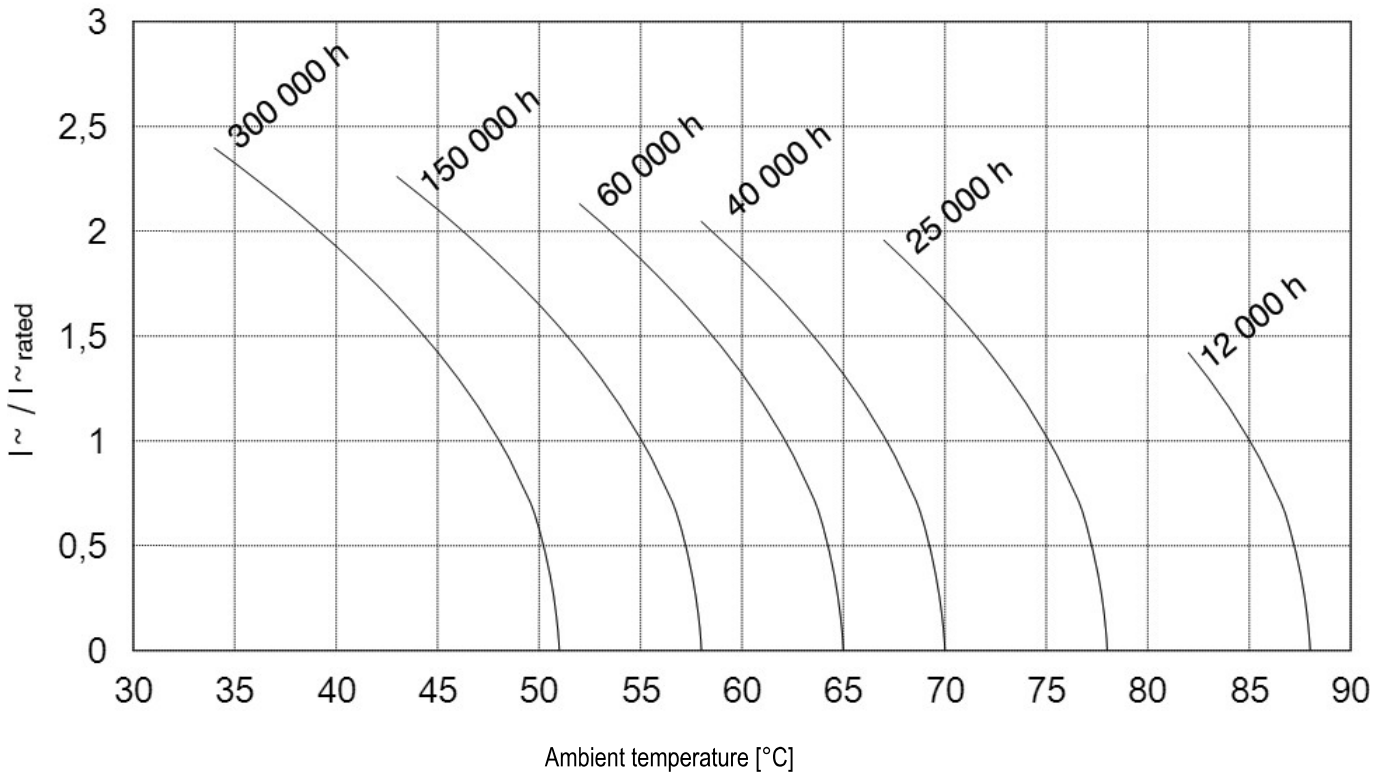
G

Rated voltage U_R [V]	Rated cap. C_R [μF]	Case size D x L [mm]	Typ. ESR 100 Hz, 20°C [mΩ]	Ripple current IR~ 100 Hz, 105°C [A]	Order code
					Plain base: GA...
					Stud mounting: GB...
250	12000	75x115	8	12,6	12325075115
	18000	75x145	5	16,8	18325075145
	18000	75x165	5	17,7	18325075165
	27000	75x225	4	24,7	27325075225
	27000	90x148	4	23,2	27325090148
	27000	90x170	4	24,5	27325090170
	39000	90x220	2	32,7	39325090220
	39000	90x230	2	33,3	39325090230
350	560	35x55	171	1,7	56135035055
	680	40x55	141	1,9	68135040055
	820	35x70	117	2,2	82135035070
	1000	35x80	96	2,6	10235035080
	1200	40x70	80	2,7	12235040070
	1200	45x70	80	2,7	12235045070
	1500	35x100	64	3,5	15235035100
	1500	40x80	64	3,2	15235040080
	1800	50x70	53	3,6	18235050070
	1800	40x100	53	3,9	18235040100
	1800	50x80	53	3,8	18235050080
	2200	45x100	43	4,3	22235045100
	2700	50x100	35	5,0	27235050100
	3300	65x80	29	6,7	33235065080
	3900	65x100	24	7,9	39235065100
	4700	75x100	20	7,5	47235075100
	5600	65x130	17	10,4	56235065130
	5600	75x115	17	8,6	56235075115
	8200	75x145	12	11,4	82235075145
	8200	75x165	12	12,0	82235075165
	12000	75x225	8	16,5	12335075225
	12000	90x148	8	15,5	12335090148
	15000	90x170	6	18,3	15335090170
	18000	90x220	5	22,2	18335090220
18000	90x230	5	22,6	18335090230	
400	390	35x55	327	1,2	39140035055
	560	35x70	227	1,6	56140035070
	560	40x55	227	1,5	56140040055
	680	35x80	187	1,8	68140035080
	820	40x70	155	2,0	82140040070
	820	40x80	155	2,1	82140040080
	1000	35x100	127	2,5	10240035100
	1000	45x70	127	2,2	10240045070
	1200	50x70	106	2,5	12240050070
	1200	40x100	106	2,7	12240040100

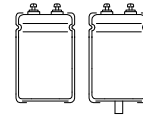
Rated voltage U_R [V]	Rated cap. C_R [μF]	Case size D x L [mm]	Typ. ESR 100 Hz, 20°C [mΩ]	Ripple current IR~ 100 Hz, 105°C [A]	Order code	
					Plain base: GA...	
					Stud mounting: GB...	
400	1500	45x100	85	3,0	15240045100	
	1500	50x80	85	3,0	15240050080	
	1800	50x100	71	3,6	18240050100	
	2200	65x80	58	4,7	22240065080	
	2700	65x100	47	5,7	27240065100	
	3300	65x100	40	5,8	33240065100	
	3900	75x100	33	5,9	39240075100	
	3900	65x130	33	7,5	39240065130	
	4700	75x115	27	6,8	47240075115	
	6800	75x145	19	9,0	68240075145	
	6800	75x165	19	9,4	68240075165	
	10000	90x148	13	12,2	10340090148	
	12000	75x225	11	14,3	12340075225	
	12000	90x170	11	14,2	12340090170	
	15000	90x220	8	17,6	15340090220	
	18000	90x230	7	19,6	18340090230	
	450	390	35x55	286	1,3	39145035055
		470	35x70	237	1,6	47145035070
560		35x80	199	1,8	56145035080	
560		35x100	199	2,0	56145035100	
680		40x60	164	1,8	68145040060	
820		40x70	136	2,1	82145040070	
820		40x80	136	2,2	82145040080	
1000		45x70	111	2,3	10245045070	
1000		40x100	111	2,7	10245040100	
1200		50x70	93	2,7	12245050070	
1200		45x100	93	2,9	12245045100	
1200		50x80	93	2,8	12245050080	
1800		50x100	62	3,8	18245050100	
1800		65x80	62	4,6	18245065080	
2700		65x100	41	6,1	27245065100	
3300		65x130	34	7,4	33245065130	
3900		75x100	29	6,3	39245075100	
3900		75x115	29	6,6	39245075115	
4700		75x145	25	7,6	47245075145	
5600		75x145	20	8,7	56245075145	
6800		75x165	16	10,1	68245075165	
8200		75x225	14	12,6	82245075225	
10000		90x148	11	13,1	10345090148	
10000		90x170	11	13,8	10345090170	
15000		90x220	7	18,8	15345090220	
15000		90x230	7	19,1	15345090230	
15000		90x230	7	19,1	15345090230	



■ USEFUL LIFE AS A FUNCTION OF AMBIENT TEMPERATURE AND ACTUAL RIPPLE CURRENT



125°C



GG



SCREW TERMINALS

VERY LONG LIFETIME

HIGH CV PRODUCT

HIGH-TEMP 125 °C

LOW INDUCTANCE ESL

■ FEATURES

- All internal contacts welded
- High temp 125°C
- Long useful life
- Low inductance ESL

■ APPLICATIONS

- Computer
- Industrial
- Inverter/drives
- Welding

RoHS compliant
REACH compliant

■ GENERAL SPECIFICATIONS

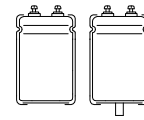
Items	Characteristics
Rated capacitance range C_R	3.900... 3.300.000 μF
Capacitance tolerance	$\pm 20\%$
Rated voltage range U	16 ... 63 V
Surge voltage U_s	$U_s = 1,15 U_R$
Max. reverse voltage	2 V / 13 nH
Category temperature range	- 55°C ... + 125 °C
Leakage current I_L after 5 min @ U_R	$\leq 0,008 * C_R [\mu\text{F}] * U_R [\text{V}] + 6 \mu\text{A} [\mu\text{A}]$
Useful life 2000 h @ 125 °C ; U_R ; I_R	Requirements $\Delta C/C \leq 30\%$ of initial value ; ESR $\leq 300\%$ of specified ; limit $I_L \leq$ specified limit
Endurance test 1000 h @ 125 °C , U_R	Requirements $\Delta C/C \leq 20\%$ of initial value ; ESR $\leq 130\%$ of specified ; limit $I_L \leq$ specified limit
Climatic category IEC 60068	55/125/56
Voltage proof of the external insulation	≥ 2500 V AC
Sectional specification	IEC 60384-4

Different voltages and capacitance combinations are available on request. Also in small lots.

Stand-12/2019



125°C



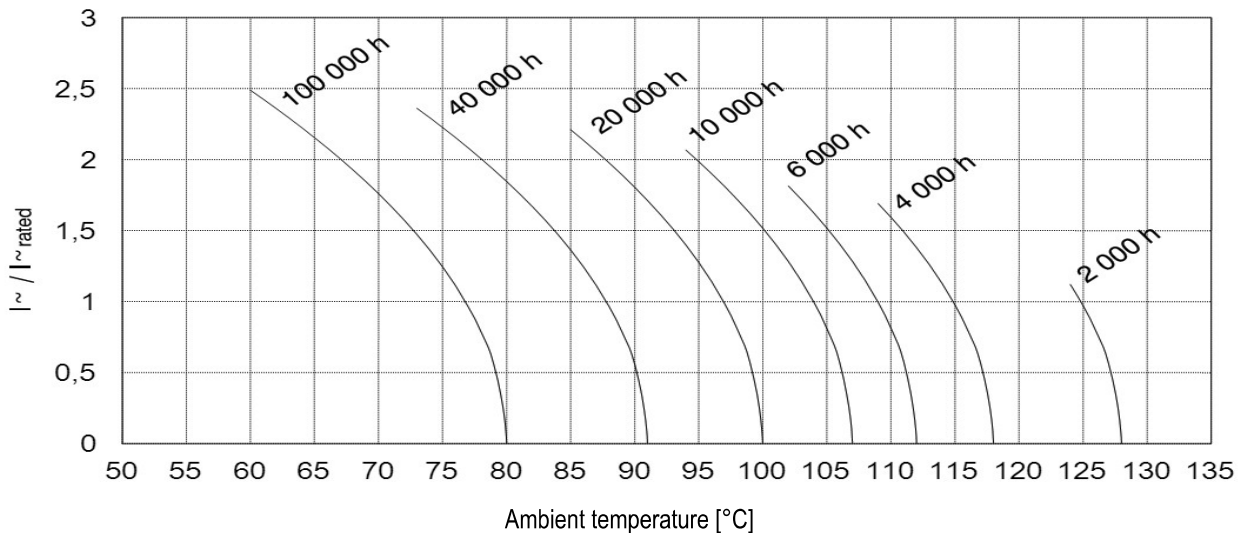
GG

ELECTRICAL DATA AND ORDERING CODE FOR SERIES GG

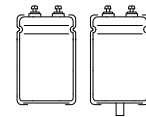
Rated voltage U_R [V]	Rated cap. C_R [μ F]	Case size D x L [mm]	Typ. ESR 100 Hz, 20°C [m Ω]	Ripple current IR~ 100 Hz, 125°C [A]	Order code
					Plain base: GGA...
					Stud mounting: GGB...
16	27000	35x55	17	5,4	27301635055
	39000	40x55	11	6,6	39301640055
	47000	35x70	9	7,8	47301635070
	56000	35x80	8	9,0	56301635080
	56000	40x70	8	8,6	56301640070
	68000	35x100	7	10,8	68301635100
	68000	40x80	7	10,0	68301640080
	68000	45x70	7	9,5	68301645070
	68000	45x100	7	11,0	68301645100
	82000	50x70	5	11,2	82301650070
	100000	50x80	4	13,0	10401650080
	120000	40x100	4	14,6	12401640100
	150000	50x100	3	17,3	15401650100
	25	18000	35x55	25	4,4
22000		35x70	20	5,3	22302535070
22000		40x55	20	4,9	22302540055
27000		35x80	17	6,2	27302535080
33000		40x70	14	6,6	33302540070
39000		35x100	11	8,2	39302535100
39000		40x80	11	7,6	39302540080
39000		45x70	11	7,2	39302545070
47000		40x100	9	9,1	47302540100
47000		50x70	9	8,5	47302550070
56000		45x100	8	9,9	56302545100
56000		50x80	8	9,7	56302550080
82000		50x100	5	12,8	82302550100

Rated voltage U_R [V]	Rated cap. C_R [μ F]	Case size D x L [mm]	Typ. ESR 100 Hz, 20°C [m Ω]	Ripple current IR~ 100 Hz, 125°C [A]	Order code	
					Plain base: GGA...	
					Stud mounting: GGB...	
40	8200	35x55	47	3,2	82204035055	
	12000	40x55	32	3,9	12304040055	
	12000	35x70	32	4,2	12304035070	
	15000	35x80	25	5,0	15304035080	
	15000	40x70	25	4,8	15304040070	
	18000	35x100	21	6,0	18304035100	
	18000	40x80	21	5,6	18304040080	
	18000	45x70	21	5,3	18304045070	
	22000	50x70	17	6,3	22304050070	
	27000	40x100	14	7,5	27304040100	
	27000	50x80	14	7,3	27304050080	
	33000	45x100	12	8,2	33304045100	
	39000	50x100	10	9,5	39304050100	
	63	3900	35x55	73	2,5	39206335055
		4700	40x55	61	2,8	47206340055
		5600	35x70	51	3,3	56206335070
6800		35x80	42	3,9	68206335080	
6800		40x70	42	3,8	68206340070	
8200		35x100	35	4,7	82206335100	
8200		40x80	35	4,3	82206340080	
8200		45x70	35	4,1	82206345070	
10000		50x70	29	4,9	10306350070	
12000		40x100	24	5,8	12306340100	
12000		50x80	24	5,6	12306350080	
12000		45x100	24	5,7	12306345100	
18000		50x100	16	7,5	18306350100	

USEFUL LIFE AS A FUNCTION OF AMBIENT TEMPERATURE AND ACTUAL RIPPLE CURRENT



Stand: 12/2019



NON FLAMMABLE ELECTROLYTE

SCREW TERMINALS

HIGH CV PRODUCT

LONG LIFE 8000 H @ 85 °C

FEATURES

- All internal contacts welded
- Self distinguishing electrolyte
- High capacitance
- High reliability

APPLICATIONS

- Industrial
- Inverter/drives
- Professional photoflash
- Welding

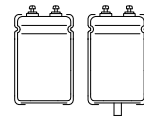
RoHS compliant
REACH compliant

GENERAL SPECIFICATIONS

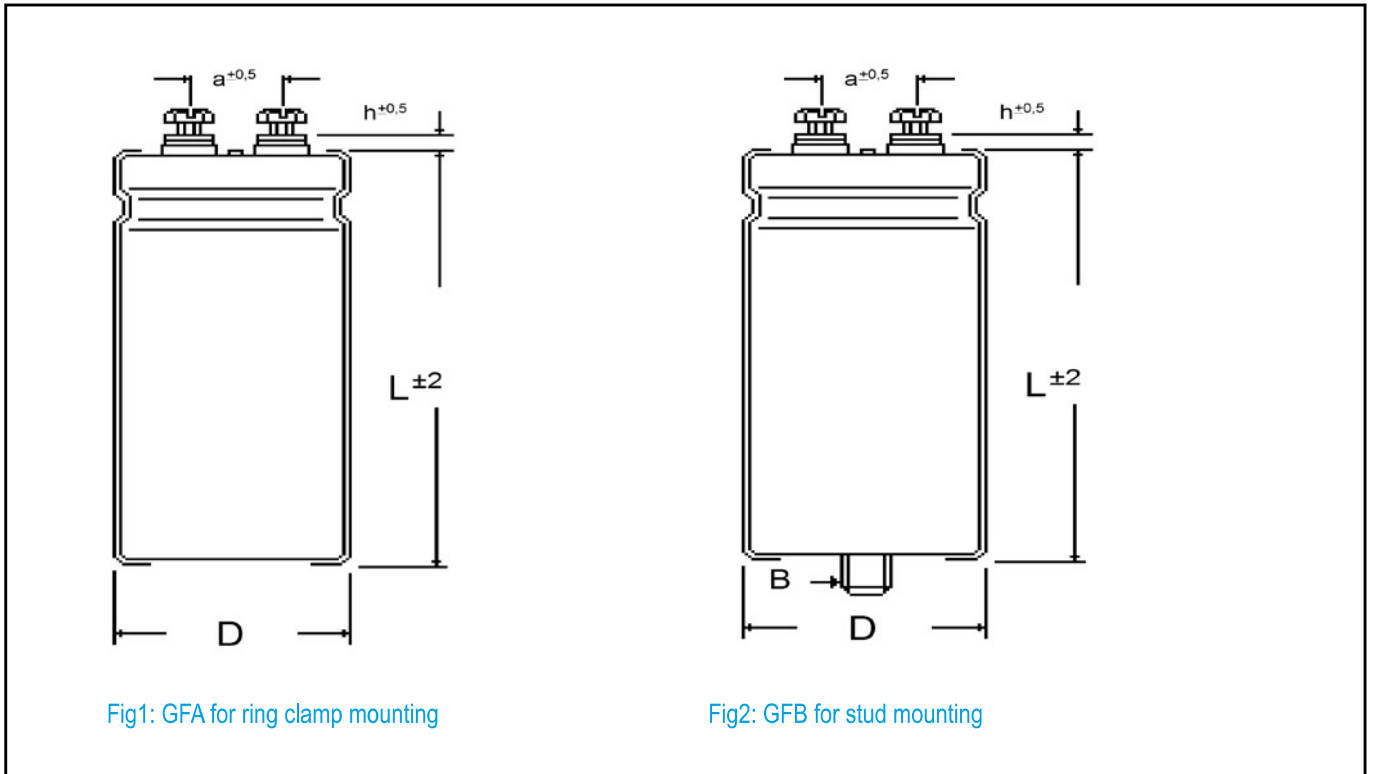
Items	Characteristics
Rated capacitance range C_R	3.900... 18.000 μF
Capacitance tolerance	$\pm 20\%$
Rated voltage range U	350 ... 450 V
Surge voltage U_s	$U_s = 1,10 U_R$
Max. reverse voltage	2 V / 20 nH
Category temperature range	- 25°C ... + 85 °C
Leakage current I_L after 5 min @ U_R	$\leq 0,008 * C_R [\mu\text{F}] * U_R [\text{V}] + 6 \mu\text{A} [\mu\text{A}]$
Useful life 8000 h @ 85 °C ; U_R ; I_R	Requirements $\Delta C/C \leq 30\%$ of initial value ; ESR $\leq 300\%$ of specified ; limit $I_L \leq$ specified limit
Endurance test 2000 h @ 85 °C , U_R	Requirements $\Delta C/C \leq 20\%$ of initial value ; ESR $\leq 130\%$ of specified ; limit $I_L \leq$ specified limit
Climatic category IEC 60068	25/085/56
Voltage proof of the external insulation	≥ 2500 V AC
Sectional specification	IEC 60384-4

Different voltages and capacitance combinations are available on request. Also in small lots.

Stand-12/2019



DRAWINGS FOR SERIES GFA AND GFB



DIMENSIONS AND MECHANICAL DATA

Dimensions, case with insulation sleeve				Connecting terminals		Mounting stud, GMB only	
D [mm]	Case length L available in 5 mm [mm]	h [mm]	a [mm]	Thread	Max. torque [Nm]	B	Max. torque [Nm]
35	40 ... 120	6	13	M5	2,0	M8 x 12	4,0
40	40 ... 120	5	18	M5	2,0	M8 x 12	4,0
50	40 ... 120	5	22	M5	2,0	M12 x 16	10,0
65	40 ... 180	5	28,5	M5	2,0	M12 x 16	10,0
75	40 ... 230	5	31,7	M5 ; M6	2,0 ; 2,5	M12 x 16	10,0
90	40 ... 230	5	31,7	M6	2,5	M12 x 16	10,0

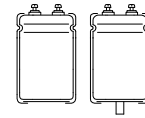
GMA: connecting screws M5 or M6

GMB: connecting screws M5 or M6 + mounting nut M8 or M12

Remarks: Further mounting accessories like clamps, nylon cup nuts and insulation disks on request, see "accessory equipment".

Stand: 12/2019

Special electrolyte 85°C

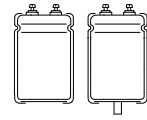


GF

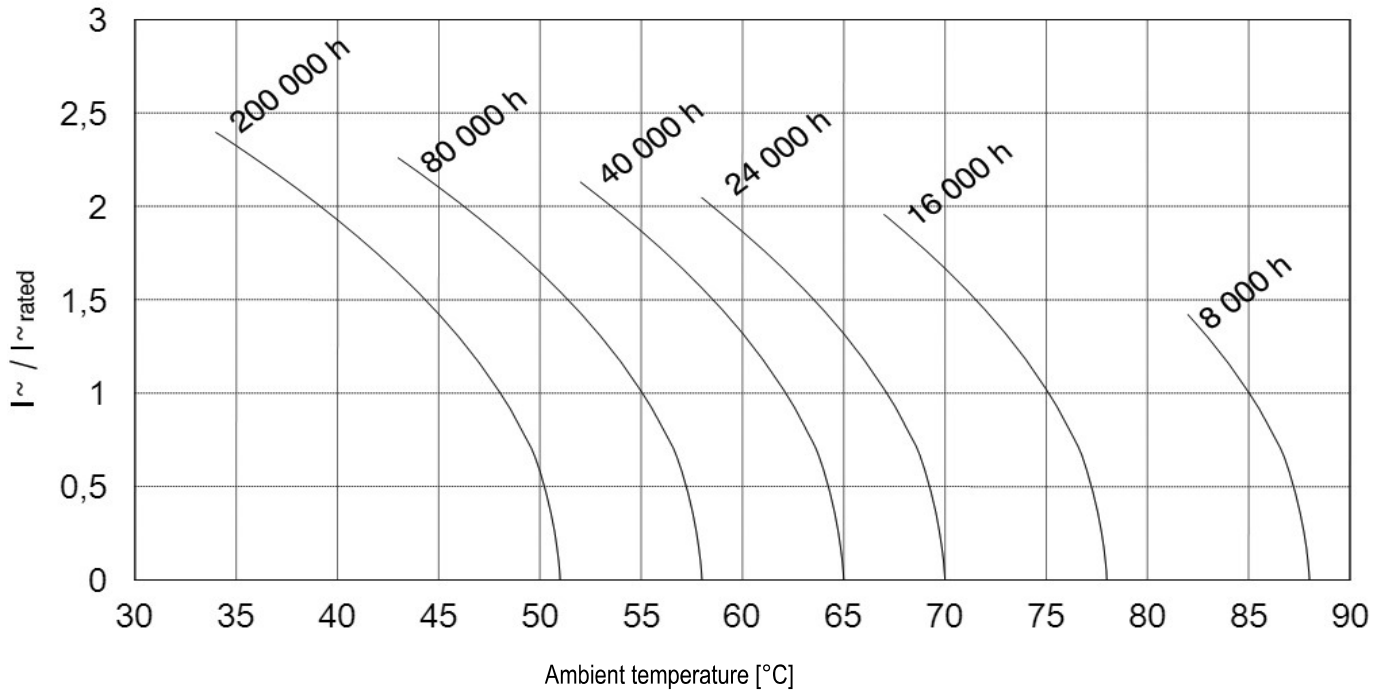
ELECTRICAL DATA AND ORDERING CODE FOR SERIES GF

Rated voltage U_R [V]	Rated cap. C_R [μ F]	Case size D x L [mm]	Typ. ESR 100 Hz, 20°C [m Ω]	Ripple current IR~ 100 Hz, 85°C [A]	Order code
					Plain base: GFA...
					Stud mounting: GFB...
350	560	35x55	199	1,8	56135035055
	680	40x55	164	2,1	68135040055
	1200	45x70	93	3,0	12235045070
	1500	35x100	74	3,7	15235035100
	1800	40x100	62	4,3	18235040100
	1800	50x70	62	4,0	18235050070
	2200	45x100	51	4,7	22235045100
	2700	50x100	41	5,6	27235050100
	3300	65x80	34	6,4	33235065080
	4700	75x100	24	8,3	47235075100
	5600	65x130	20	10,0	56235065130
	8200	75x145	14	12,6	82235075145
	12000	75x225	9	18,3	12335075225
	12000	90x148	9	17,1	12335090148
18000	90x230	6	25,1	18335090230	
400	390	35x55	286	1,5	39140035055
	560	40x55	199	1,9	56140040055
	1000	45x70	111	2,8	10240045070
	1000	35x100	111	3,0	10240035100
	1200	40x100	93	3,5	12240040100
	1200	50x70	93	3,2	12240050070
	1500	45x100	74	3,9	15240045100
	1800	50x100	62	4,5	18240050100

Rated voltage U_R [V]	Rated cap. C_R [μ F]	Case size D x L [mm]	Typ. ESR 100 Hz, 20°C [m Ω]	Ripple current IR~ 100 Hz, 85°C [A]	Order code
					Plain base: GFA...
					Stud mounting: GFB...
400	2200	65x80	51	5,2	22240065080
	3900	75x100	29	7,5	39240075100
	3900	65x130	29	8,3	39240065130
	6800	75x145	16	11,5	68240075145
	10000	90x148	11	15,6	10340090148
	12000	75x225	9	18,3	12340075225
	18000	90x230	6	25,1	18340090230
	390	35x55	286	1,5	39145035055
	560	35x100	199	0,9	56145035000
	680	40x55	164	2,1	68145040055
	820	40x60	136	2,4	82145040060
	1000	45x70	111	3,2	10245045100
	1200	40x100	93	3,5	12245040100
	1200	50x70	93	3,2	12245050070
	1200	45x100	93	3,5	12245045100
	450	1800	50x100	62	4,5
1800		65x80	62	4,7	18245065080
3900		75x100	29	7,5	39245075100
3300		65x130	34	7,7	33245065130
5600		75x145	20	10,4	56245075145
8200		75x225	14	15,1	82245075225
10000		90x148	11	15,6	10345090148
15000		90x230	7	22,9	15345090230



■ USEFUL LIFE AS A FUNCTION OF AMBIENT TEMPERATURE AND ACTUAL RIPPLE CURRENT



105°C



GW



SCREW TERMINALS

HIGH PERFORMANCE

ULTRA LOW

HEAT SINK MOUNTING!

VERY HIGH RIPPLE CURRENT

■ FEATURES

- All contacts welded
- High ripple current
- Thermal conducting pad
- Best suited for heatsink mounting

■ APPLICATIONS

- Inverter/drives
- Traction
- Industrial
- Welding

RoHS compliant
REACH compliant

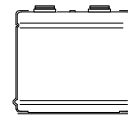
■ GENERAL SPECIFICATIONS

Items	Characteristics
Rated capacitance range C_R	1.000... 22.000 μF
Capacitance tolerance	$\pm 20\%$
Rated voltage range U	40 ... 450 V
Surge voltage U_S	$U_R \leq 315 \text{ V}: U_S = 1,15 U_R$; $U_R > 315 \text{ V}: U_S = 1,10 U_R$
Max. reverse voltage	2 V / 13 nH
Category temperature range	- 40°C ... + 105 °C
Leakage current I_L after 5 min @ U_R	$\leq 0,008 * C_R [\mu\text{F}] * U_R [\text{V}] + 6 \mu\text{A} [\mu\text{A}]$
Useful life 5000 h @ 105 °C ; U_R ; I_R	Requirements $\Delta C/C \leq 30 \%$ of initial value ; ESR $\leq 300 \%$ of specified ; limit $I_L \leq$ specified limit
Endurance test 2000 h @ 105 °C , U_R	Requirements $\Delta C/C \leq 20 \%$ of initial value ; ESR $\leq 130 \%$ of specified ; limit $I_L \leq$ specified limit
Climatic category IEC 60068	40/105/56
Voltage proof of the external insulation	$\geq 2500 \text{ V AC}$
Sectional specification	IEC 60384-4

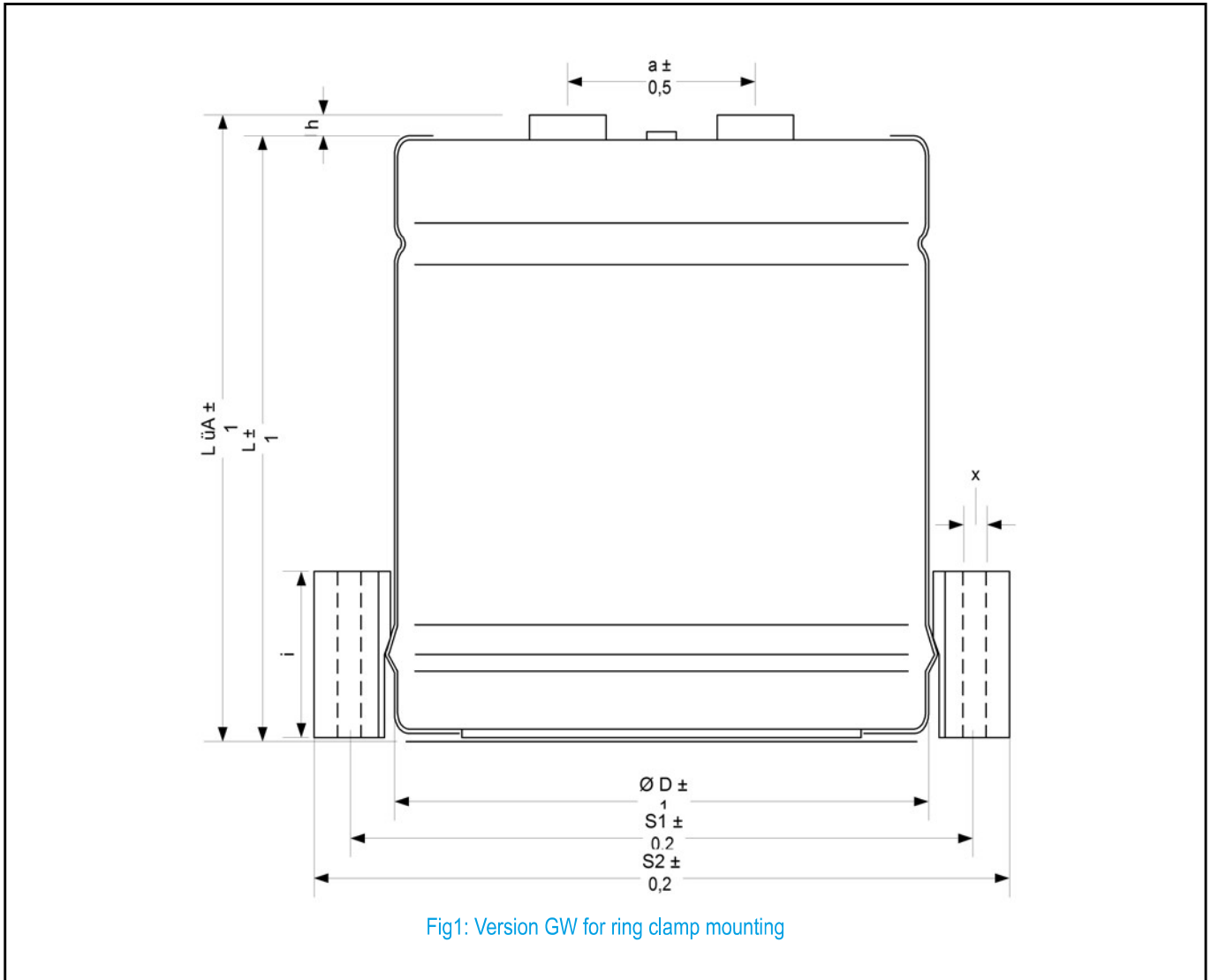
Different voltages and capacitance combinations are available on request. Also in small lots.

Stand: 12/2019





■ DRAWINGS FOR SERIES GW



■ DIMENSIONS AND MECHANICAL DATA

D [mm]	h [mm]	a [mm]	x [mm]	i [mm]	Thread	Max. torque [Nm]	S ₁	S ₂
50	5	22	4,5	20	M5	2,0	63	75
75	5	31,7	4,5	20	M5 ; M6	2,0 ; 2,5	90	101
90	5	31,7	4,5	20	M5	2,0	105	116

GW: connecting screws M5 or M6

Remarks: Further mounting accessoires like clamps, nylon cup nuts and insulation disks on request, see "accessory equipment".

Stand: 12/2019

105°C



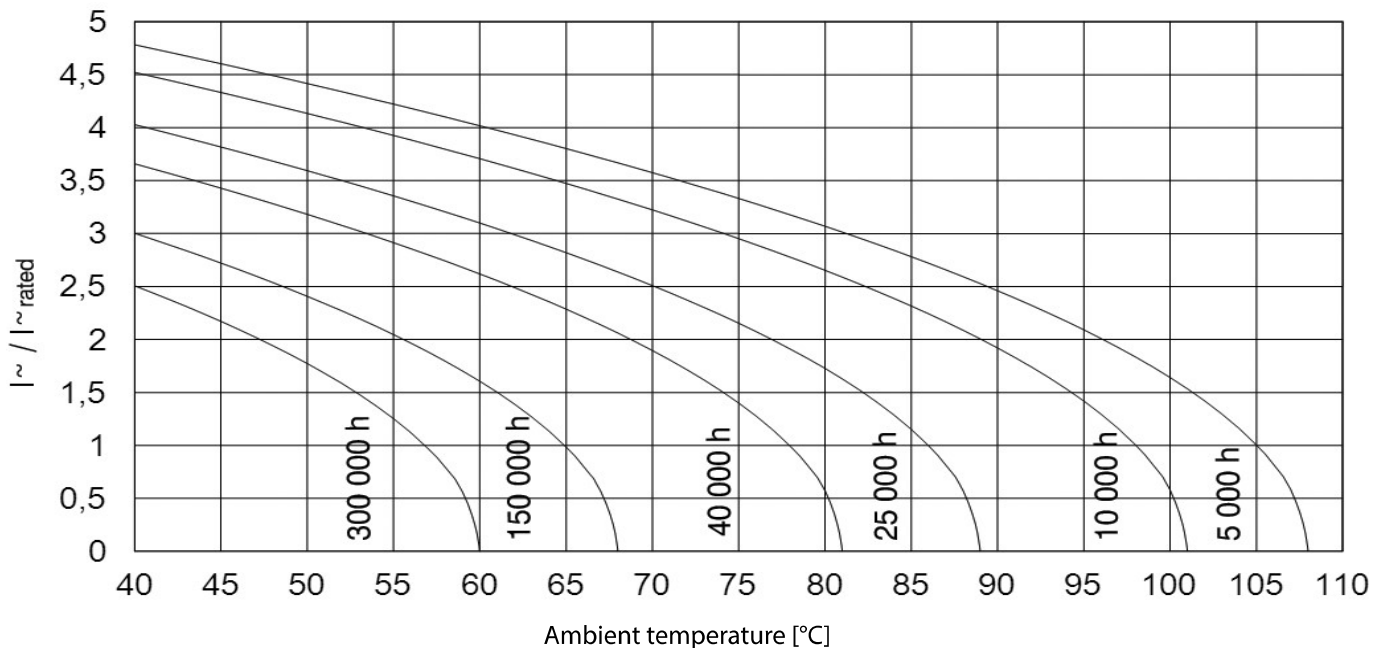
GW

ELECTRICAL DATA AND ORDERING CODE FOR SERIES GW

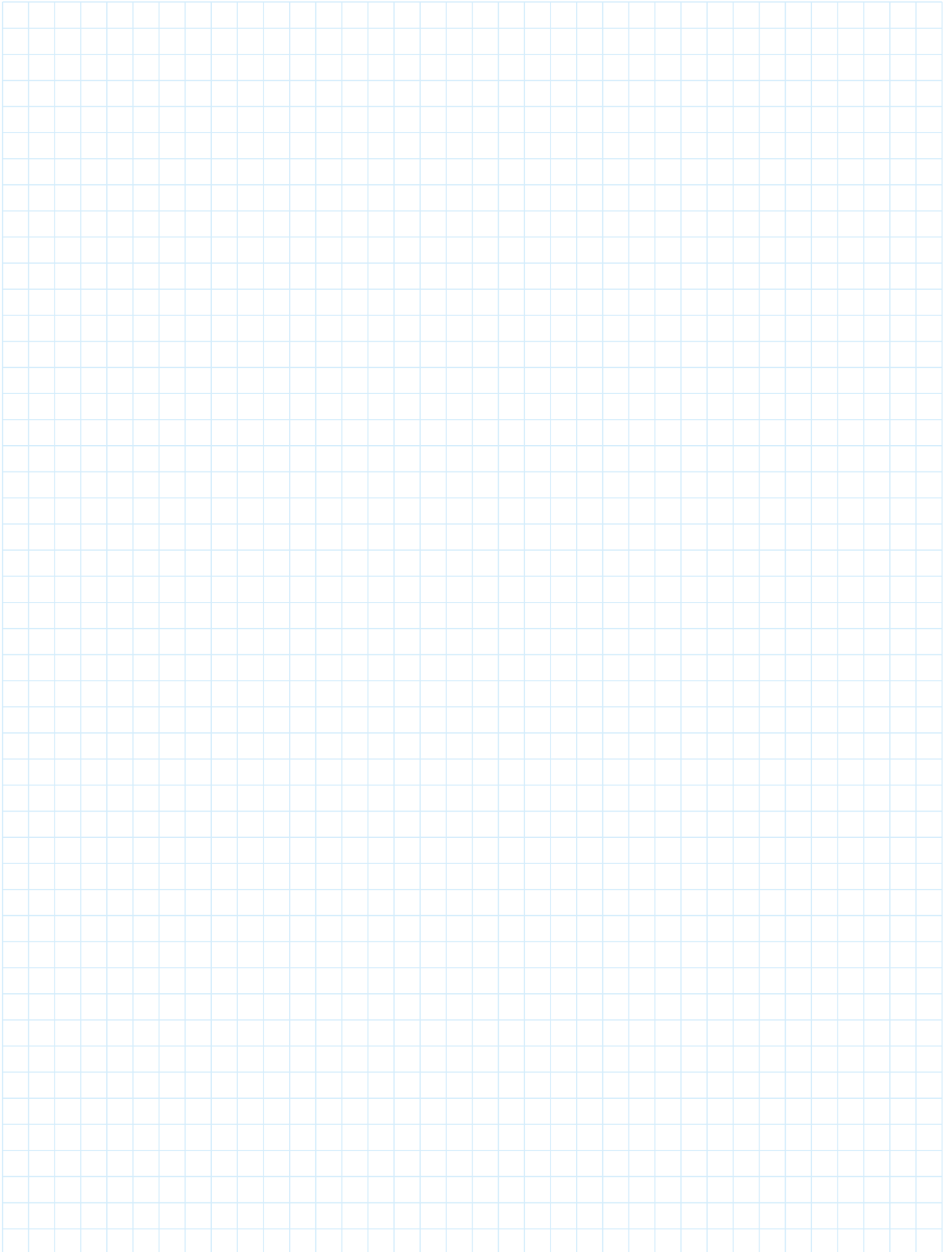
Rated voltage U_R [V]	Rated cap. C_R [μ F]	Case size D x L [mm]	Typ. ESR 100 Hz, 20°C [m Ω]	Ripple current IR~ 100 Hz, 105°C [A]	Order code GW...
40	56000	50x80	7	12,3	56304050080
	100000	75x69	5	16,2	10404075069
	180000	75x100	3	22,9	18404075100
	150000	90x69	4	20,8	15404090069
	220000	90x98	3	28,3	22404090098
63	27000	50x80	8	11,4	27306350080
	47000	75x69	5	16,3	47306375069
	82000	75x100	4	20,4	82306375100
	82000	90x69	4	20,4	82306390069
	120000	90x98	3	25,2	12406390098
100	12000	50x80	13	9,0	12310050080
	22000	75x69	7	13,2	22310075069
	39000	75x100	4	19,9	39310075100
	39000	90x69	4	19,9	39310090069
	47000	90x98	3	26,7	47310090098
	56000	90x98	3	26,7	56310090098
160	4700	50x80	27	6,3	47216050080
	8200	75x69	16	9,0	82216075069
	15000	75x100	8	13,8	15316075100
	15000	90x69	8	13,8	15316090069
	22000	90x98	6	18,7	22316090098

Rated voltage U_R [V]	Rated cap. C_R [μ F]	Case size D x L [mm]	Typ. ESR 100 Hz, 20°C [m Ω]	Ripple current IR~ 100 Hz, 105°C [A]	Oder code GW...
250	3300	50x80	34	8,0	33225050080
	5600	75x69	20	11,2	56225075069
	8200	90x69	14	15,4	82225090069
	10000	75x100	11	17,1	10325075100
	15000	90x98	7	23,3	15325090098
350	1500	50x80	74	5,4	15235050080
	2700	75x69	41	7,8	27235075069
	3900	90x69	29	10,6	39235090069
	4700	75x100	24	11,7	47235075100
	6800	90x98	16	15,7	68235090098
	400	1000	50x80	111	4,4
1800		75x69	62	6,4	18240075069
3300		75x100	34	9,8	33240075100
3300		90x69	34	9,8	33240090069
4700		90x98	24	13,1	47240090098
1000		50x80	111	4,4	10245050080
450		1500	75x69	74	5,8
	2200	90x69	51	8,0	22245090069
	3300	75x100	34	9,8	33245075100
	3300	90x98	34	10,9	33245090098
	4700	90x98	20	14,2	47245090098

USEFUL LIFE AS A FUNCTION OF AMBIENT TEMPERATURE AND ACTUAL RIPPLE CURRENT



Stand: 12/2019



85°C



SI



STANDARD SERIES

SI: SNAP IN, 2 PINS

SI4P: SNAP IN, 4 PINS

FEATURES

- All internal contacts welded
- High CV product
- High reliability
- Long useful life

APPLICATIONS

- HiFi
- Computer
- Inverter/drives

RoHS compliant
REACH compliant

GENERAL SPECIFICATIONS

Items	Characteristics
Rated capacitance range C_R	56... 330.000 μF
Capacitance tolerance	$\pm 20\%$
Rated voltage range U	16 ... 500 V
Surge voltage U_S	$U_R \leq 315 \text{ V}: U_S = 1,15 U_R$; $U_R > 315 \text{ V}: U_S = 1,10 U_R$
Max. reverse voltage	2 V
Category temperature range	- 40°C ... + 85 °C
Leakage current I_L after 5 min @ U_R	$\leq 0,008 * C_R [\mu\text{F}] * U_R [\text{V}] + 6 \mu\text{A} [\mu\text{A}]$
Useful life 5000 h @ 85 °C ; U_R ; I_R	Requirements $\Delta C/C \leq 30 \%$ of initial value ; ESR $\leq 300 \%$ of specified ; limit $I_L \leq$ specified limit
Endurance test 2000 h @ 85 °C , U_R	Requirements $\Delta C/C \leq 20 \%$ of initial value ; ESR $\leq 130 \%$ of specified ; limit $I_L \leq$ specified limit
Climatic category IEC 60068	40/085/56
Voltage proof of the external insulation	$\geq 2500 \text{ V AC}$
Sectional specification	IEC 60384-4

Different voltages and capacitance combinations are available on request. Also in small lots.

Stand: 12/2019





■ DRAWINGS FOR SERIES SI AND SI4P

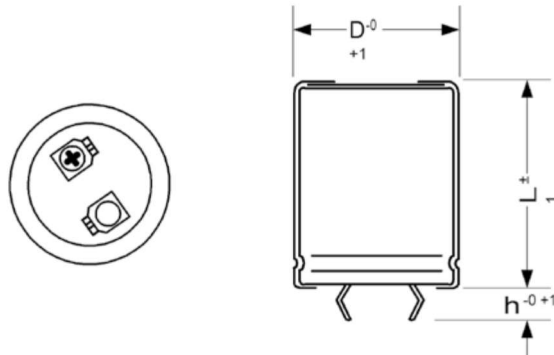
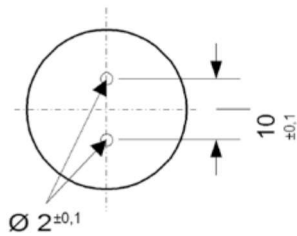


Fig1: SI - Standard 2 pin snap in version and mounting hole dimensions (mm)

Case diameter 25 to 45 mm only

Piercing diagram



$h = 6,3 / 4,5 \text{ mm}$

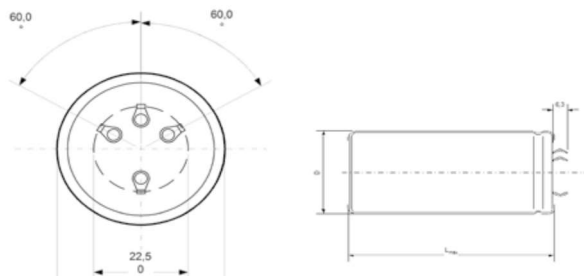
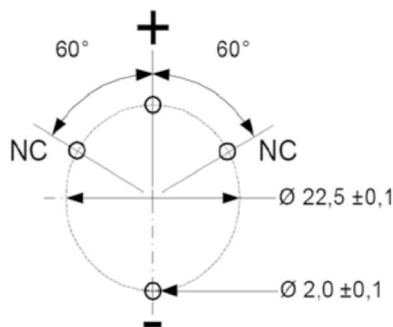


Fig2: SI4P - Keyed polarity 4 pin snap in version (here with 6,3 mm claw. The 4,5 mm claw is also available) and mounting hole dimensions (mm)

Case diameter 35, 40, 45 mm only



NC terminals must be soldered to isolated pads or pads connected to the minus potential

85°C



SI

ELECTRICAL DATA AND ORDERING CODE FOR SERIES SI

Rated voltage U_R [V]	Rated cap. C_R [µF]	Case size D x L [mm]	Typ. ESR 100 Hz, 20°C [mΩ]	Ripple current IR~ 100 Hz, 85°C [A]	Order code
					2 Pins: SI...
					4 Pins: SI4P...
16	15000	22x25	32	2,6	15301622025
	18000	22x30	27	3,0	18301622030
	22000	22x35	22	3,5	22301622035
	22000	25x30	22	3,6	22301625030
	27000	22x40	18	4,1	27301622040
	27000	25x35	18	4,2	27301625035
	39000	25x40	12	5,3	39301625040
	33000	30x30	14	4,8	33301630030
	39000	25x45	12	5,6	39301625045
	47000	25x50	10	6,4	47301625050
	39000	30x35	12	5,5	39301630035
	47000	35x30	10	6,4	47301635030
	56000	30x40	9	7,0	56301630040
	56000	35x35	9	7,4	56301635035
	56000	30x45	9	7,3	56301630045
	68000	30x50	7	8,4	68301630050
	68000	35x40	7	8,5	68301635040
	82000	35x45	6	9,7	82301635045
	82000	35x50	6	10,1	82301635050
	100000	30x70	5	11,6	10401630070
	120000	40x50	4	12,9	12401640050
	150000	35x80	3	16,4	15401635080
	120000	40x50	4	12,9	12401640050
	150000	40x60	3	15,4	15401640060
	180000	35x100	3	19,7	18401635100
	220000	40x80	2	20,8	22401640080
	180000	45x60	3	16,9	18401645060
	270000	45x80	2	23,1	27401645080
270000	40x100	2	25,3	27401640100	
330000	45x100	1	27,9	33401645100	
25	5600	22x25	80	1,6	56202522025
	6800	22x30	66	1,9	68202522030
	10000	22x35	45	2,5	10302522035
	10000	25x30	45	2,5	10302525030
	12000	22x40	37	2,8	12302522040
	12000	25x35	37	2,9	12302525035
	15000	25x40	30	3,4	15302525040
	15000	30x30	30	3,4	15302530030
	18000	25x45	25	3,9	18302525045
	18000	30x35	25	3,9	18302530035
	18000	25x50	25	4,1	18302525050
	22000	30x40	20	4,5	22302530040
	18000	35x30	25	4,1	18302535030
	27000	30x45	17	5,1	27302530045
	27000	30x50	17	5,4	27302530050

Rated voltage U_R [V]	Rated cap. C_R [µF]	Case size D x L [mm]	Typ. ESR 100 Hz, 20°C [mΩ]	Ripple current IR~ 100 Hz, 85°C [A]	Order code	
					2 Pins: SI...	
					4 Pins: SI4P...	
25	22000	35x35	21	4,7	22302535035	
	27000	35x40	17	5,4	27302535040	
	33000	35x45	14	6,3	33302535045	
	39000	30x70	12	7,4	39302530070	
	39000	35x50	12	7,1	39302535050	
	47000	35x60	10	8,3	47302535060	
	56000	40x50	8	8,9	56302540050	
	56000	35x80	8	10,2	56302535080	
	68000	40x60	7	10,5	68302540060	
	82000	35x100	6	13,5	82302535100	
	82000	45x60	6	11,6	82302545060	
	120000	40x80	4	15,6	12402540080	
	120000	40x100	4	17,1	12402540100	
	120000	45x80	4	15,6	12402545080	
	150000	45x100	3	19,1	15402545100	
	40	3300	22x25	116	1,4	33204022025
		3900	22x30	98	1,6	39204022030
		5600	22x35	68	2,0	56204022035
5600		25x30	68	2,0	56204025030	
5600		22x40	68	2,1	56204022040	
6800		25x35	56	2,4	68204025035	
8200		25x40	47	2,7	82204025040	
8200		30x30	47	2,7	82204030030	
10000		25x45	38	3,2	10304025045	
10000		30x35	38	3,1	10304030035	
10000		25x50	38	3,3	10304025050	
12000		30x40	32	3,6	12304030040	
10000		35x30	38	3,3	10304035030	
15000		30x45	25	4,2	15304030045	
12000		35x35	32	3,8	12304035035	
15000		30x50	25	4,4	15304030050	
15000		35x40	25	4,5	15304035040	
18000		35x45	21	5,1	18304035045	
22000		35x50	17	5,8	22304035050	
22000		30x70	17	6,1	22304030070	
27000		35x60	14	6,9	27304035060	
27000		40x50	14	6,8	27304040050	
33000		35x80	12	8,6	33304035080	
33000		40x60	12	8,1	33304040060	
47000		35x100	8	11,3	47304035100	
47000		40x80	8	10,8	47304040080	
39000		45x60	10	8,8	39304045060	
56000		40x100	7	12,9	56304040100	
56000	45x80	7	11,7	56304045080		
82000	45x100	5	15,5	82304045100		

Stand: 12/2019

85°C



SI

Rated voltage U_R [V]	Rated cap. C_R [μF]	Case size D x L [mm]	Typ. ESR 100 Hz, 20°C [mΩ]	Ripple current IR~ 100 Hz, 85°C [A]	Order code
					2 Pins: SI...
					4 Pins: SI4P...
63	1500	22x25	191	1,1	15206322025
	2200	22x30	130	1,4	22206322030
	2700	22x35	106	1,6	27206322035
	2700	25x30	106	1,6	27206325030
	3300	22x40	87	1,9	33206322040
	3300	25x35	87	1,9	33206325035
	3900	25x40	73	2,2	39206325040
	3900	30x30	73	2,1	39206330030
	4700	25x45	61	2,5	47206325045
	4700	30x35	61	2,5	47206330035
	5600	25x50	51	0,0	56206325050
	5600	30x40	51	2,8	56206330040
	5600	35x30	51	2,9	56206335030
	6800	30x45	42	3,3	68206330045
	6800	35x35	42	3,3	68206335035
	8200	30x50	35	3,7	82206330050
	8200	35x45	35	4,0	82206335045
	12000	30x70	24	5,2	12306330070
	12000	35x60	24	5,3	12306335060
	15000	40x50	19	5,9	15306340050
	18000	35x80	16	7,3	18306335080
	18000	40x60	16	6,9	18306340060
	22000	45x60	13	7,6	22306345060
	22000	35x100	13	8,9	22306335100
22000	40x80	13	8,5	22306340080	
27000	40x100	11	10,3	27306340100	
27000	45x80	11	9,4	27306345080	
39000	45x100	7	12,4	39306345100	
80	1200	22x25	265	0,9	12208022025
	1500	22x30	212	1,1	15208022030
	1800	22x35	177	1,2	18208022035
	1800	25x30	177	1,3	18208025030
	2200	22x40	145	1,4	22208022040
	1800	25x35	177	1,3	18208025035
	2700	25x40	118	1,7	27208025040
	2700	30x30	118	1,7	27208030030
	3300	25x45	97	2,0	33208025045
	3900	25x50	82	2,3	39208025050
	3300	30x35	97	2,0	33208030035
	3900	35x30	82	2,3	39208035030
	3900	30x40	82	2,3	39208030040
	4700	30x45	68	2,6	47208030045
	4700	35x35	68	2,6	47208035035
	5600	30x50	57	2,9	56208030050
	5600	35x40	57	3,0	56208035040
	6800	35x45	47	3,4	68208035045
	6800	35x50	47	3,6	68208035050
	8200	30x70	39	4,1	82208030070
	10000	35x60	32	4,6	10308035060
	10000	40x50	32	4,6	10308040050

Rated voltage U_R [V]	Rated cap. C_R [μF]	Case size D x L [mm]	Typ. ESR 100 Hz, 20°C [mΩ]	Ripple current IR~ 100 Hz, 85°C [A]	Order code
					2 Pins: SI...
					4 Pins: SI4P...
80	12000	35x80	27	5,7	12308035080
	12000	40x60	27	5,3	12308040060
	18000	35x100	18	7,6	18308035100
	15000	45x60	21	6,0	15308045060
	18000	40x80	18	7,3	18308040080
	22000	45x80	14	8,1	22308045080
	22000	40x100	14	8,8	22308040100
	27000	45x100	12	9,8	27308045100
	680	22x25	234	1,0	68110022025
	820	22x30	194	1,1	82110022030
100	1200	22x35	133	1,4	12210022035
	1200	25x30	133	1,5	12210025030
	1500	22x40	106	1,7	15210022040
	1500	25x35	106	1,7	15210025035
	1800	25x40	88	2,0	18210025040
	1800	30x30	88	2,0	18210030030
	2200	25x45	72	2,3	22210025045
	2200	25x50	72	2,4	22210025050
	2200	35x30	72	2,4	22210035030
	2700	30x40	59	2,7	27210030040
	2700	30x45	59	2,8	27210030045
	2700	35x35	59	2,8	27210035035
	3300	30x50	48	3,2	33210030050
	3300	35x40	48	3,2	33210035040
	3900	35x45	41	3,7	39210035045
	5600	30x70	28	4,7	56210030070
	4700	35x50	34	4,2	47210035050
	5600	35x60	28	4,9	56210035060
	5600	40x50	28	4,8	56210040050
	6800	35x80	23	6,1	68210035080
	6800	40x60	23	5,7	68210040060
	10000	35x100	16	8,1	10310035100
	12000	40x80	13	8,4	12310040080
	10000	45x60	16	6,9	10310045060
12000	45x80	13	8,4	12310045080	
15000	40x100	11	10,3	15310040100	
18000	45x100	9	11,3	18310045100	
160	270	22x25	413	0,7	27116022025
	390	22x30	286	0,9	39116022030
	470	22x35	237	1,1	47116022035
	470	25x30	237	1,1	47116025030
	560	22x40	199	1,2	56116022040
	560	25x35	199	1,3	56116025035
	680	25x40	164	1,5	68116025040
	680	30x30	164	1,4	68116030030
	820	25x45	136	1,7	82116025045
	820	30x35	136	1,7	82116030035
	1000	25x50	111	1,9	10216025050
	1000	30x40	111	1,9	10216030040
	1000	35x30	111	1,9	10216035030

Stand: 12/2019

85°C



SI

Rated voltage U_R [V]	Rated cap. C_R [µF]	Case size D x L [mm]	Typ. ESR 100 Hz, 20°C [mΩ]	Ripple current IR~ 100 Hz, 85°C [A]	Order code
					2 Pins: SI...
					4 Pins: SI4P...
160	1200	30x45	93	2,2	12216030045
	1200	35x35	93	2,2	12216035035
	1500	30x50	74	2,6	15216030050
	1500	35x40	74	2,6	15216035040
	1800	35x45	62	3,0	18216035045
	1800	35x50	62	3,1	18216035050
	2200	30x70	51	3,6	22216030070
	2200	35x60	51	3,7	22216035060
	2700	40x50	41	4,0	27216040050
	3300	35x80	34	5,0	33216035080
	3300	40x60	34	4,7	33216040060
	3900	35x100	29	6,0	39216035100
	3900	45x60	29	5,2	39216045060
	4700	40x80	24	6,3	47216040080
	5600	40x100	20	7,5	56216040100
	5600	45x80	20	6,9	56216045080
6800	45x100	16	8,3	68216045100	
200	270	22x25	354	0,8	27120022025
	390	22x30	245	1,0	39120022030
	470	22x35	203	1,2	47120022035
	470	25x30	203	1,2	47120025030
	560	22x40	171	1,3	56120022040
	560	25x35	171	1,4	56120025035
	680	25x40	141	1,6	68120025040
	680	30x30	141	1,6	68120030030
	820	25x45	117	1,8	82120025045
	820	30x35	117	1,8	82120030035
	1000	35x30	96	2,1	10220035030
	1000	25x50	96	2,1	10220025050
	1000	30x40	96	2,1	10220030040
	1200	30x45	80	2,4	12220030045
	1500	30x50	64	2,8	15220030050
	1200	35x35	80	2,4	12220035035
	1500	35x40	64	2,8	15220035040
	1800	35x45	53	3,2	18220035045
	1800	35x50	53	3,3	18220035050
	2200	30x70	43	3,8	22220030070
2200	35x60	43	4,0	22220035060	
3300	35x80	29	5,4	33220035080	
2700	40x50	35	4,3	27220040050	
3300	40x60	29	5,1	33220040060	
3900	35x100	24	6,5	39220035100	
4700	40x80	20	6,8	47220040080	
3900	45x60	24	5,6	39220045060	
5600	40x100	17	8,1	56220040100	
5600	45x80	17	7,4	56220045080	
6800	45x100	14	9,0	68220045100	

Rated voltage U_R [V]	Rated cap. C_R [µF]	Case size D x L [mm]	Typ. ESR 100 Hz, 20°C [mΩ]	Ripple current IR~ 100 Hz, 85°C [A]	Order code
					2 Pins: SI...
					4 Pins: SI4P...
350	100	22x25	955	0,5	10135022025
	150	22x30	637	0,6	15135022030
	180	22x35	531	0,7	18135022035
	180	22x40	531	0,8	18135022040
	180	25x30	531	0,7	18135025030
	220	25x35	434	0,9	22135025035
	270	25x40	354	1,0	27135025040
	270	30x30	354	1,0	27135030030
	330	25x45	290	1,2	33135025045
	330	30x35	290	1,1	33135030035
	390	35x30	245	1,3	39135035030
	390	25x50	245	1,3	39135025050
	390	30x40	245	1,3	39135030040
	470	30x45	203	1,5	47135030045
	470	35x35	203	1,5	47135035035
	560	30x50	171	1,7	56135030050
	560	35x40	171	1,7	56135035040
	560	35x45	171	1,8	56135035045
	680	35x50	141	2,1	68135035050
	820	30x70	117	2,3	82135030070
	820	35x60	117	2,4	82135035060
	1000	40x50	96	2,6	10235040050
	1200	35x80	80	3,3	12235035080
	1200	40x60	80	3,1	12235040060
	1500	35x100	64	4,0	15235035100
	1500	45x60	64	3,4	15235045060
1800	40x80	53	4,2	18235040080	
1800	40x100	53	4,6	18235040100	
2200	45x80	43	4,7	22235045080	
2700	45x100	35	5,6	27235045100	
400	100	22x25	1274	0,4	10140022025
	120	22x30	1062	0,5	12140022030
	180	22x35	708	0,6	18140022035
	180	25x30	708	0,6	18140025030
	180	22x40	708	0,7	18140022040
	220	25x35	579	0,7	22140025035
	270	25x40	472	0,9	27140025040
	270	30x30	472	0,8	27140030030
	330	25x45	386	1,0	33140025045
	330	25x50	386	1,0	33140025050
	330	30x35	386	1,0	33140030035
	390	35x30	327	1,1	39140035030
	390	30x40	327	1,1	39140030040
	470	35x35	271	1,3	47140035035
	470	30x45	271	1,3	47140030045
	560	30x50	227	1,5	56140030050
	560	35x40	227	1,5	56140035040

Stand: 12/2019

85°C



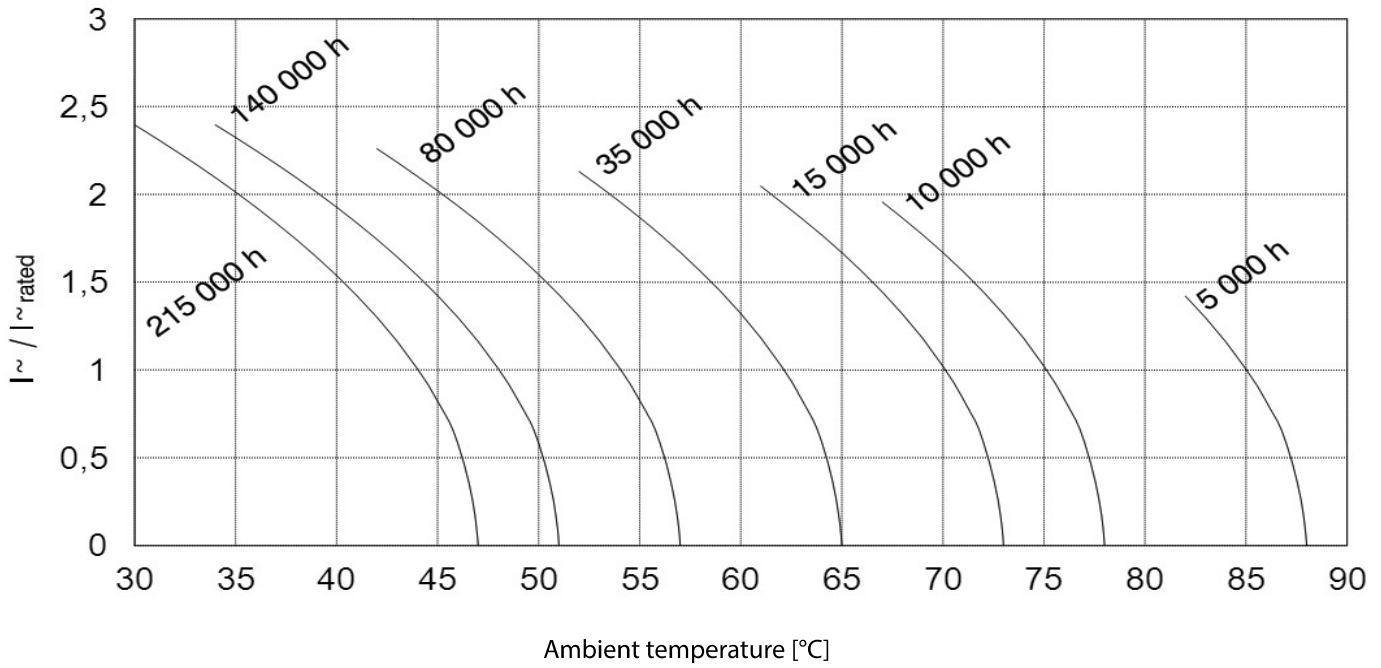
SI

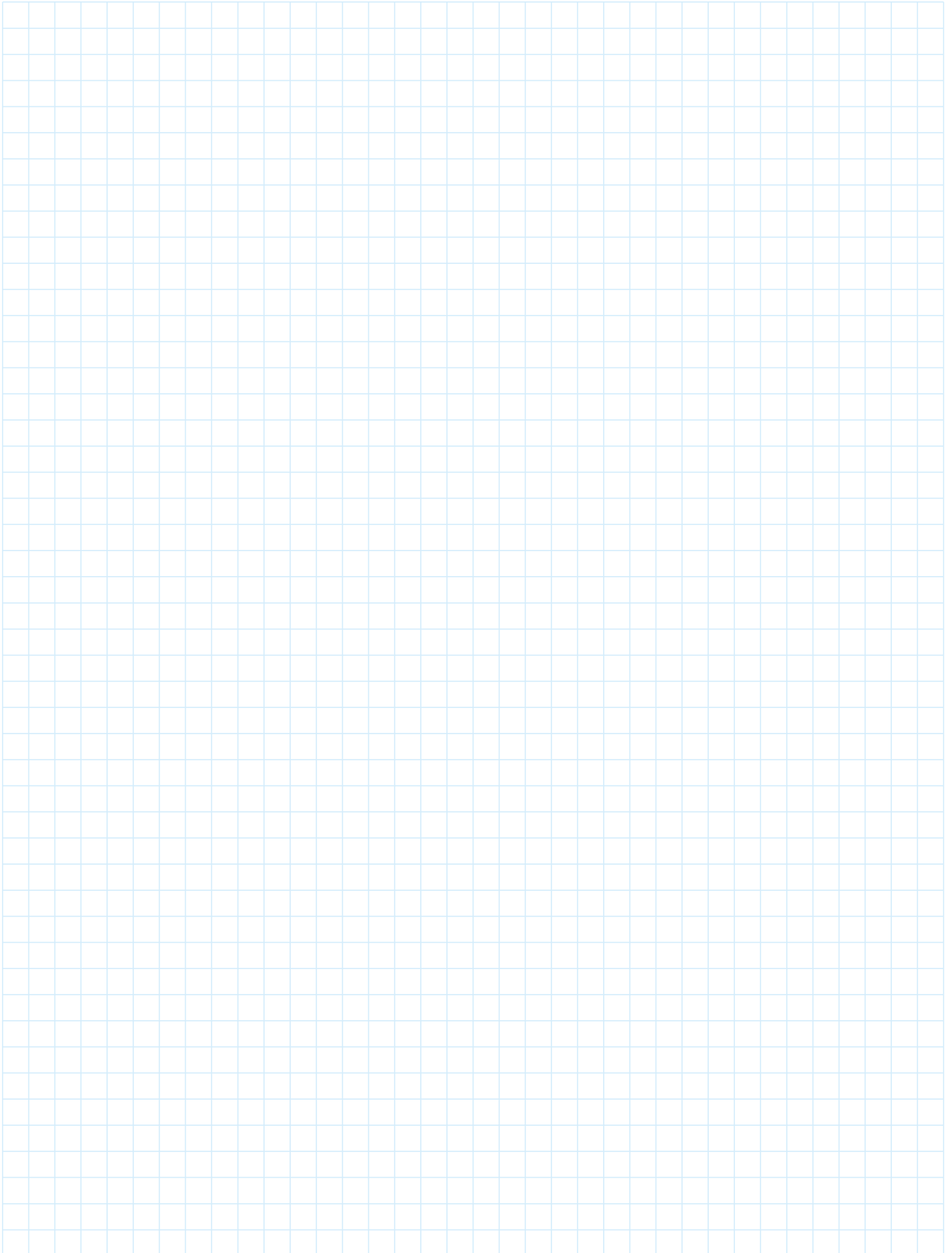
Rated voltage U_R [V]	Rated cap. C_R [μF]	Case size D x L [mm]	Typ. ESR 100 Hz, 20°C [mΩ]	Ripple current IR~ 100 Hz, 85°C [A]	Order code
					2 Pins: SI...
					4 Pins: SI4P...
400	560	35x45	227	1,6	56140035045
	680	30x70	187	1,8	68140030070
	820	35x50	155	2,0	82140035050
	820	35x60	155	2,1	82140035060
	820	40x50	155	2,1	82140040050
	1200	35x80	106	2,8	12240035080
	1200	40x60	106	2,7	12240040060
	1500	35x100	85	3,5	15240035100
	1500	40x80	85	3,3	15240040080
	1800	45x60	71	3,3	18240045060
	1800	40x100	71	4,0	18240040100
	1800	45x80	71	3,6	18240045080
	2700	45x100	47	4,9	27240045100
	450	68	22x25	1639	0,4
100		22x30	1115	0,5	10145022030
120		22x35	929	0,5	12145022035
150		22x40	743	0,6	15145022040
120		25x30	929	0,6	12145025030
150		25x35	743	0,7	15145025035
180		25x40	619	0,8	18145025040
220		25x45	507	0,9	22145025045
180		30x30	619	0,7	18145030030
220		30x35	507	0,9	22145030035
220		25x50	507	0,9	22145025050
270		30x40	413	1,0	27145030040
220		35x30	507	0,9	22145035030
270		30x45	413	1,0	27145030045
270		35x35	413	1,1	27145035035
330		30x50	338	1,2	33145030050
390		35x40	286	1,3	39145035040
390		35x45	286	1,4	39145035045
560		30x70	199	1,8	56145030070
470		35x50	237	1,6	47145035050
560		35x60	199	1,9	56145035060
560		40x50	199	1,8	56145040050
820		35x80	136	2,5	82145035080
1200		40x60	93	2,8	12245040060

Rated voltage U_R [V]	Rated cap. C_R [μF]	Case size D x L [mm]	Typ. ESR 100 Hz, 20°C [mΩ]	Ripple current IR~ 100 Hz, 85°C [A]	Order code
					2 Pins: SI...
					4 Pins: SI4P...
450	1000	35x100	111	3,0	10245035100
	1000	45x60	111	2,6	10245045060
	1200	40x80	93	3,3	12245040080
	1500	40x100	74	4,0	15245040100
	1200	45x80	93	3,2	12245045080
	1800	45x100	62	4,3	18245045100
	56	22x25	1706	0,4	56050022025
	82	22x30	1165	0,5	82050022030
500	100	22x35	955	0,5	10150022035
	100	22x40	955	0,6	10150022040
	120	25x30	796	0,6	12150025030
	120	25x35	796	0,6	12150025035
	150	25x40	637	0,7	15150025040
	180	25x45	531	0,9	18150025045
	150	30x30	637	0,7	15150030030
	180	30x35	531	0,8	18150030035
	220	25x50	434	1,0	22150025050
	220	30x40	434	1,0	22150030040
	180	35x30	531	0,9	18150035030
	270	30x45	354	1,1	27150030045
	270	35x35	354	1,1	27150035035
	270	30x50	354	1,2	27150030050
	270	35x40	354	1,2	27150035040
	390	35x45	245	1,5	39150035045
	470	30x70	203	1,8	47150030070
	390	35x50	245	1,6	39150035050
	560	35x60	171	2,0	56150035060
	560	40x50	171	2,0	56150040050
	680	35x80	141	2,5	68150035080
	680	40x60	141	2,3	68150040060
	820	35x100	117	3,0	82150035100
	820	45x60	117	2,6	82150045060
	1200	40x80	80	3,4	12250040080
	820	40x100	117	3,1	82150040100
	1200	45x80	80	3,4	12250045080
	1500	45x100	64	4,2	15250045100



■ USEFUL LIFE AS A FUNCTION OF AMBIENT TEMPERATURE AND ACTUAL RIPPLE CURRENT





105°C



SIH



ULTRA COMPACT DESIGN

LONG LIFE TIME

SIH: SNAP IN, 2 PINS

SI4PH: SNAP IN, 4 PINS

FEATURES

- All internal contacts welded
- High CV product
- High reliability
- Ultra compact

APPLICATIONS

- HiFi
- Computer
- Industrial
- Tube amplifier

RoHS compliant
REACH compliant

GENERAL SPECIFICATIONS

Items	Characteristics
Rated capacitance range C_R	68... 150.000 μF
Capacitance tolerance	$\pm 20\%$
Rated voltage range U	16 ... 450 V
Surge voltage U_S	$U_R \leq 315 \text{ V}: U_S = 1,15 U_R$; $U_R > 315 \text{ V}: U_S = 1,10 U_R$
Max. reverse voltage	2 V
Category temperature range	- 40°C ... + 105 °C
Leakage current I_L after 5 min @ U_R	$\leq 0,008 * C_R [\mu\text{F}] * U_R [\text{V}] + 6 \mu\text{A} [\mu\text{A}]$
Useful life 5000 h @ 105 °C ; U_R ; I_R	Requirements $\Delta C/C \leq 30 \%$ of initial value ; ESR $\leq 300 \%$ of specified ; limit $I_L \leq$ specified limit
Endurance test 2000 h @ 105 °C , U_R	Requirements $\Delta C/C \leq 20 \%$ of initial value ; ESR $\leq 130 \%$ of specified ; limit $I_L \leq$ specified limit
Climatic category IEC 60068	40/105/56
Voltage proof of the external insulation	$\geq 2500 \text{ V AC}$
Sectional specification	IEC 60384-4

Different voltages and capacitance combinations are available on request. Also in small lots.

Stand: 12/2019

