Screw terminals

High CV product

Long life 8000 h @ 85°C

RoHS compliant
REACH compliant

Features

- All internal contact welded
- High capacitance
- High CV product
- Low inductance ESL

Applications

- Computer
- Inverter/drives
- Traction
- Welding

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

General specifications

Items		Characteristics
Rated capacitance range C_R		*390 … 3.300.000 µF*
Capacitance tolerance		*± 20%*
Rated voltage range U_R		*16 … 500 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 / ESL		*2 V / 20 nH*
Category temperature range		*- 40°C ... + 85°C*
Leakage current I_L after 5 min @ U_R		*≤ 0,008 * C_R [µF] * U_R [V] + 6 µA [µA]*
Useful life	*8000 h @ 85 °C ; U_R; $I_{R\sim}$*	*Requirements* *Δ C/C ≤ 30 % of initial value* *ESR ≤ 300 % of specified limit* *I_L ≤ specified limit*
Endurance test	*4000 h @ 85 °C , U_R*	*Requirements* *Δ C/C ≤ 20 % of initial value* *ESR ≤ 130 % of specified limit* *I_L ≤ specified limit*
Climatic category IEC 60068		*40/085/56*
Voltage proof of the external insulation		*≥ 2500 V AC*
Sectional specification		*IEC 60384-4*

Drawings for series GMA and GMB

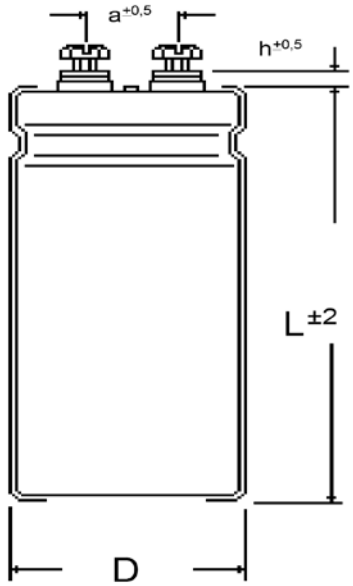


*Fig1: **GMA** for ring clamp mounting*

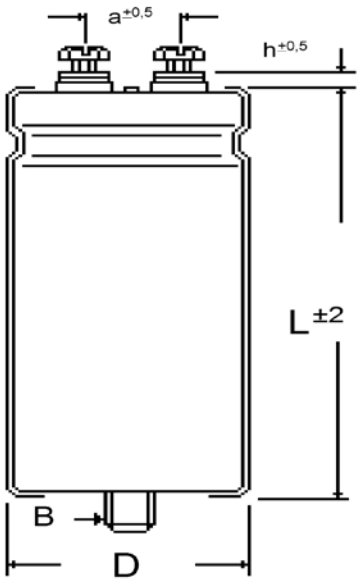


*Fig 2: **GMB** for stud mounting*

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	M 5	2,0	M 8 x 12	4,0
40	40 … 120	5	18	M 5	2,0	M 8 x 12	4,0
50	40 … 120	5	22	M 5	2,0	M 12 x 16	10,0
65	40 … 180	5	28,5	M 5	2,0	M 12 x 16	10,0
75	40 … 230	5	31,7	M 5, M 6	2,0 ; 2,5	M 12 x 16	10,0
90	40 … 230	5	31,7	M 6	2,5	M 12 x 16	10,0

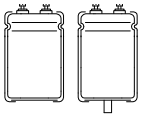
	GMA : connecting screws M 5 or M 6 *GMB : connecting screws M 5 or M 6 + mounting nut M 8 or M 12*
Remarks	*Further mounting accessories like clamps, nylon cup nuts and insulation disks on request, see "accessory equipment"*

Electrical data and ordering code for series GM

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: GMA… / Stud mounting: GMB…
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	2	19,1	22401640100
	220000	50x70	2	17,7	22401650070
	270000	45x100	2	21,1	27401645100
	270000	50x80	2	20,6	27401650080
	390000	50x100	1	27,0	39401650100
	470000	65x80	1	35,6	47401665080
	560000	65x100	1	42,1	56401665100
	820000	65x130	1	56,5	82401665130
	820000	75x100	1	44,1	82401675100
	1000000	75x115	1	46,5	10501675115
	1200000	75x145	1	50,8	12501675145
	1500000	75x165	1	53,5	15501675165
	1800000	90x148	1	57,3	18501690148
	2200000	75x225	1	61,0	22501675225
	2200000	90x170	1	60,4	22501690170
	2700000	90x220	1	67,1	27501690220
	3300000	90x230	1	68,3	33501690230
25	33000	35x55	14	5,9	33302535055
	47000	35x70	9	7,8	47302535070
	47000	40x55	9	7,2	47302540055
	56000	35x80	8	9,0	56302535080
	68000	40x70	7	9,5	68302540070
	82000	35x100	5	11,9	82301635100
	68000	40x80	7	10,0	68302540080
	82000	45x70	5	10,5	82302545070
	68000	40x100	7	11,0	68302540100
	100000	50x70	4	12,3	10402550070
	120000	45x100	4	14,6	12402545100
	120000	50x80	4	14,2	12402550080
	150000	50x100	3	17,3	15402550100
	180000	65x80	3	22,4	18402565080
	270000	65x100	2	29,8	27402565100
	330000	75x100	1	28,5	33402575100
	330000	65x130	1	36,4	33402565130
	390000	75x115	1	32,6	39402575115
	560000	75x145	1	42,7	56402575145
	560000	75x165	1	45,0	56402575165
	820000	90x148	1	58,2	82402590148
	820000	75x225	1	62,0	82402575225

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: GMA… / Stud mounting: GMB…
25	820000	90x170	1	61,5	82402590170
	1200000	90x220	1	82,6	12502590220
	1500000	90x230	1	94,0	15502590230
40	18000	35x55	21	4,7	18304035055
	22000	40x55	17	5,3	22304040055
	27000	35x70	14	6,4	27304035070
	33000	35x80	12	7,4	33304035080
	33000	40x70	12	7,2	33304040070
	39000	35x100	10	8,9	39304035100
	39000	40x80	10	8,2	39304040080
	39000	45x70	10	7,8	39304045070
	56000	50x70	7	10,0	56304050070
	56000	40x100	7	10,8	56304040100
	68000	50x80	6	11,6	68304050080
	68000	45x100	6	11,8	68304045100
	82000	50x100	5	13,8	82304050100
	100000	65x80	4	18,3	10404065080
	150000	65x100	3	24,4	15404065100
	180000	75x100	2	23,1	18404075100
	180000	65x130	2	29,6	18404065130
	220000	75x115	2	26,9	22404075115
	270000	75x145	1	32,6	27404075145
	330000	75x165	1	38,0	33404075165
	470000	90x148	1	48,5	47404090148
	470000	75x225	1	51,6	47404075225
	560000	90x170	1	55,8	56404090170
	680000	90x220	1	68,3	68404090220
	680000	90x230	1	69,6	68404090230
63	8200	35x55	35	3,7	82206335055
	12000	40x55	24	4,6	12306340055
	15000	35x70	19	5,5	15306335070
	18000	35x80	16	6,3	18306335080
	18000	40x70	16	6,1	18306340070
	18000	35x100	16	6,9	18306335100
	22000	40x80	13	7,1	22306340080
	22000	45x70	13	6,8	22306345070
	27000	50x70	11	8,0	27306350070
	27000	40x100	11	8,6	27306340100
	33000	50x80	9	9,3	33306350080
	33000	45x100	9	9,5	33306345100
	39000	50x100	7	11,0	39306350100
	47000	65x80	6	14,5	47306365080
	68000	65x100	4	19,0	68306365100
	82000	75x100	3	18,0	82306375100
	100000	65x130	3	25,5	10406365130
	120000	75x115	2	22,9	12406375115
	150000	75x145	2	28,1	15406375145

85 °C

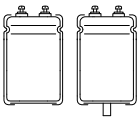


GM

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: GMA… / Stud mounting: GMB…
63	180000	75x165	2	32,4	18406375165
	220000	90x148	1	38,3	22406390148
	220000	75x225	1	40,8	22406375225
	270000	90x170	1	44,8	27406390170
	330000	90x220	1	54,9	33406390220
	390000	90x230	1	60,9	39406390230
80	6800	35x55	47	3,2	68208035055
	8200	40x55	39	3,8	82208040055
	10000	35x70	32	4,2	10308035070
	12000	35x80	27	4,6	12308035080
	12000	40x70	27	4,7	12308040070
	15000	35x100	21	6,0	15308035100
	15000	40x80	21	5,6	15308040080
	15000	45x70	21	5,3	15308045070
	18000	40x100	18	6,2	18308040100
	18000	50x70	18	6,2	18308050070
	22000	45x100	14	7,9	22308045100
	22000	50x80	14	7,2	22308050080
	27000	50x100	12	8,7	27308050100
	39000	65x80	8	12,6	39308065080
	47000	65x100	7	15,0	47308065100
	68000	65x130	5	15,7	68308065130
	68000	75x100	5	19,7	68308075100
	82000	75x115	4	18,0	82308075115
	100000	75x145	3	21,7	10408075145
	120000	75x165	3	25,1	12408075165
	150000	90x148	2	30,0	15408090148
	180000	75x225	2	35,0	18408075225
	180000	90x170	2	34,7	18408090170
	220000	90x220	1	42,6	22408090220
	270000	90x230	1	48,0	27408090230
100	3300	35x55	48	3,1	33210035055
	4700	35x70	34	4,1	47210035070
	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: GMA… / Stud mounting: GMB…
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
	3300	40x70	34	4,2	33216040070
	3900	35x100	29	5,2	39216035100
	3900	40x80	29	4,8	39216040080
	3900	45x70	29	4,6	39216045070
	4700	40x100	24	5,4	47216040100
	4700	50x70	24	5,7	47216050070
	5600	50x80	20	6,1	56201605080
	6800	45x100	16	6,9	68216045100
	8200	50x100	14	8,1	82216050100
	8200	65x80	14	9,7	82216065080
	12000	65x100	9	12,8	12316065100
	18000	65x130	6	13,7	18316065130
	18000	75x100	6	17,1	18316075100
	18000	75x115	6	14,3	18316075115
	27000	75x145	4	19,1	27316075145
	27000	75x165	4	20,1	27316075165
	39000	90x148	3	25,9	39316090148
	47000	75x225	2	30,2	47316075225
	47000	90x170	2	30,0	47316090170
	56000	90x220	2	36,3	56316090220
	68000	90x230	2	40,7	68316090230
250	1200	35x55	80	2,4	12225035055
	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	40x80	43	4,1	22225040080
	2700	35x100	35	4,4	27225035100
	2700	45x70	35	4,1	27225045070
	3300	40x100	29	4,9	33225040100
	3300	50x70	29	5,2	33225050070
	3900	50x80	24	5,5	39225050080
	3900	45x100	24	5,7	39225045100
	5600	50x100	17	7,2	56225050100
	5600	65x80	17	8,7	56225065080
	8200	65x100	12	11,4	82225065100
	12000	65x130	8	12,1	12325065130
	12000	75x100	8	15,1	12325075100

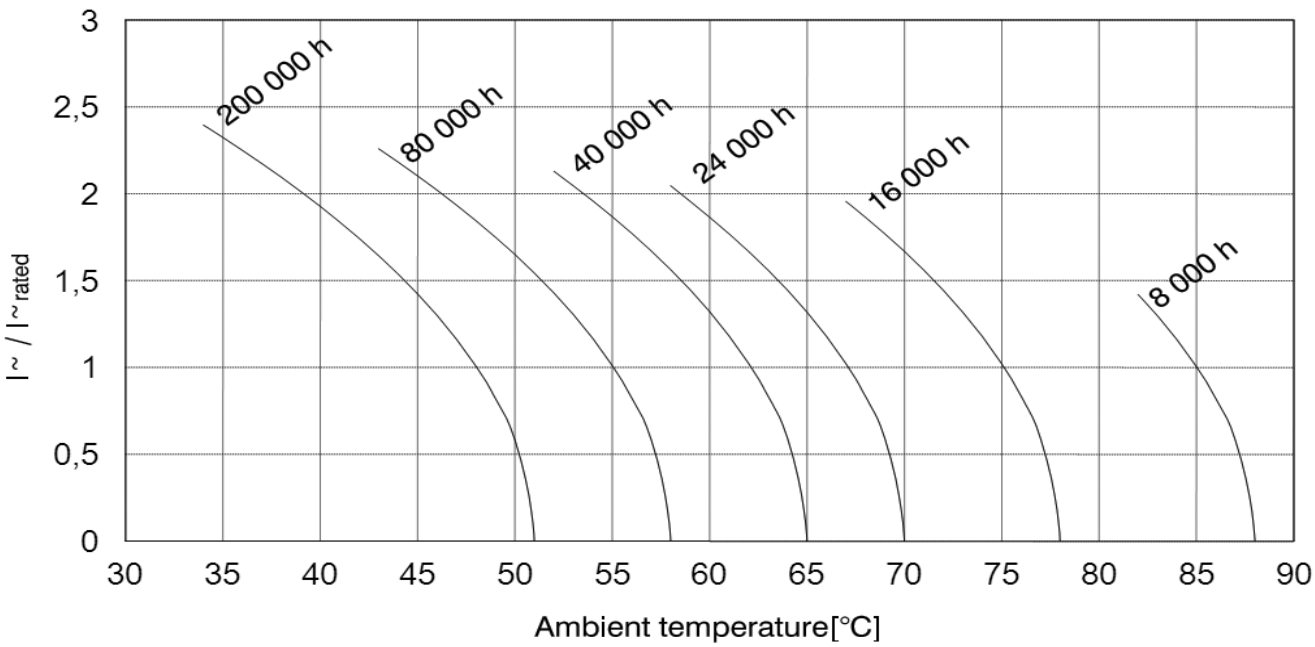
85 °C



GM

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: GMA… / Stud mounting: GMB…
250	15000	75x115	6	14,1	15325075115
	18000	75x145	5	16,8	18325075145
	18000	75x165	5	17,7	18325075165
	27000	90x148	4	23,2	27325090148
	27000	75x225	4	24,7	27325075225
	27000	90x170	4	24,5	27325090170
	39000	90x220	2	32,7	39325090220
	39000	90x230	2	33,3	39325090230
350	680	35x55	141	1,8	68135035055
	1000	35x70	96	2,3	10235035070
	1000	40x55	96	2,4	10235040055
	1200	35x80	80	2,8	12235035080
	1200	40x70	80	2,7	12235040070
	1500	35x100	64	3,0	15235035100
	1500	40x80	64	3,4	15235040080
	1500	45x70	64	3,3	15235045070
	1800	40x100	53	3,6	18235040100
	1800	50x70	53	3,8	18235050070
	2200	50x80	43	4,2	22235050080
	2200	45x100	43	4,3	22235045100
	2700	50x100	35	5,0	27235050100
	3900	65x80	24	7,2	39235065080
	4700	65x100	20	8,6	47235065100
	5600	75x100	17	8,2	56235075100
	6800	65x130	14	11,5	68235065130
	6800	75x115	14	9,5	68235075115
	8200	75x145	12	11,4	82235075145
	10000	75x165	10	13,2	10335075165
	12000	90x148	8	15,5	12335090148
	15000	75x225	6	18,4	15335075225
	15000	90x170	6	18,3	15335090170
	18000	90x220	5	22,2	18335090220
	18000	90x230	5	22,6	18335090230
400	560	35x55	227	1,4	56140035055
	680	40x55	187	1,7	68140040055
	820	35x70	155	1,8	82140035070
	1000	35x80	127	2,2	10240035080
	1000	40x70	127	2,2	10240040070
	1200	35x100	106	2,5	12240035100
	1200	40x80	106	2,7	12240040080
	1200	45x70	106	2,4	12240045070
	1500	40x100	85	2,8	15240040100
	1500	50x70	85	3,0	15240050070
	1800	50x80	71	3,3	18240050080
	1800	45x100	71	3,3	18240045100
	2200	50x100	58	3,9	22240050100
	3300	65x80	39	5,8	33240065080
	3900	65x100	33	6,8	39240065100
	5600	65x130	23	7,1	56240065130

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: GMA… / Stud mounting: GMB…
400	5600	75x100	23	8,9	56240075100
	6800	75x115	19	8,2	68240075115
	8200	75x145	16	9,8	82240075145
	10000	75x165	13	11,4	10340075165
	12000	90x148	11	13,4	12340090148
	15000	75x225	8	16,0	15340075225
	15000	90x170	8	15,8	15340090170
	18000	90x220	7	19,2	18340090220
	18000	90x230	7	19,6	18340090230
450	470	35x55	237	1,4	47145035055
	560	35x70	199	1,7	56145035070
	560	40x55	199	1,7	56145040055
	680	35x80	164	2,0	68145035080
	820	40x70	136	2,1	82145040070
	820	35x100	136	2,2	82145035100
	1000	40x80	111	2,4	10245040080
	1000	45x70	111	2,3	10245045070
	1200	40x100	93	2,9	12245040100
	1200	50x70	93	2,7	12245050070
	1500	50x80	74	3,2	15245050080
	1500	45x100	74	3,3	15245045100
	1800	50x100	62	3,8	18245050100
	2200	65x80	51	5,0	22245065080
	2700	65x100	41	6,1	27245065100
	3900	65x130	29	8,1	39245065130
	3900	75x100	29	6,3	39245075100
	4700	75x115	24	7,3	47245075115
	5600	75x145	20	8,7	56245075145
	6800	75x165	16	10,1	68245075165
	8200	90x148	14	11,9	82245090148
	10000	75x225	11	13,9	10345075225
	12000	90x170	9	15,1	12345090170
	15000	90x220	7	18,8	15345090220
	15000	90x230	7	19,1	15345090230
500	390	35x55	286	1,3	39150035055
	470	40x55	237	1,5	47150040055
	560	35x70	199	1,7	56150035070
	680	35x80	164	2,0	68150035080
	680	40x70	164	1,9	68150040070
	820	35x100	136	2,2	82150035100
	820	40x80	136	2,2	82150040080
	820	45x70	136	2,1	82150045070
	1000	50x70	111	2,7	10250050070
	1200	40x100	93	2,7	12250040100
	1200	50x80	93	2,8	12250050080
	1200	45x100	93	2,9	12250045100
	1800	50x100	62	3,8	18250050100
	2200	65x80	51	5,0	22250065080
	2700	65x100	41	6,1	27250065100

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: GMA… Stud mounting: GMB…
500	3300	75x100	34	7,3	33250075100
	3900	65x130	29	6,4	39250065130
	4700	75x115	24	7,3	47250075115
	5600	75x145	20	8,7	56250075145
	6800	75x165	16	10,1	68250075165
	8200	90x148	14	11,9	82250090148
	10000	75x225	11	13,9	10350075225
	10000	90x170	11	13,8	10350090170
	15000	90x220	7	18,8	15350090220
	15000	90x230	7	19,1	15350090230

Useful life
as a function of ambient temperature and actual ripple current