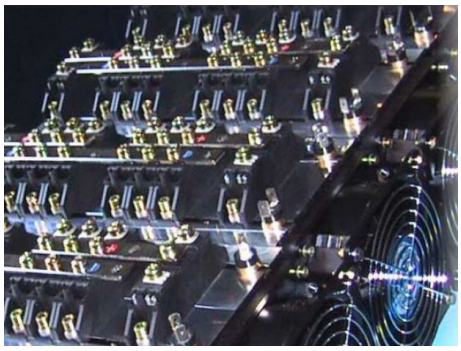
MC SERIES

STANDARD ASSEMBLIES WITH POWER MODULES

HIGHLIGHTS

- Compact design
- Wide power range
- Reliability
- Short delivery times
- Low cost
- Ready to use



non-contractual image

OVERVIEW

Standard power stack assemblies featuring isolated power modules (diodes and thyristors), supporting all common industry topologies. The MC series features a compact design covering a wide power range and ensuring high reliability.

Semiconductors
Power stack assemblies designed with isolated power semiconductor modules with voltage isolation of 3000 V_{RMS} (unless otherwise specified). All thyristor modules with dv/dt=1000 V/µs.
Power modules are assembled with a direct threaded hole mechanized on heatsink or using its mounting guides depending on the standard heatsink in use.

The normalized V_{RRM} voltage corresponds to the standard available ratings. For other voltage class, please refer to tspecific module characteristics.

Heatsinks
Black anodized heatsinks are used for natural cooling, while models designed for forced-air cooling have a natural aluminium finish. Contact surfaces are precision-machined to ensure optimal thermal transfer between heatsink and the module's baseplate.

Forced ventilation units
All forced air-cooling models (-F) include a fully assembled ventilation tunnel, separator, and fans. Fans operate at 230 V_{AC} with ball bearings for increased durability and performance.

Contact terminals
All standard terminal busbars are made of copper with a 10 µm nickel-plated finish.

Available options:

- Encapsulated RC protection network. (-RC option)
- Varistor protection. (-V option). Varistor is included within the RC capsule, with voltage ratings as follows:
  - 510 V for 460 V_{RMS} ±10% working voltage with 1600 V_{RRM} modules
  - 550 V for 500 V_{RMS} ±10% working voltage with 1800 V_{RRM} modules
- Thermal switch (-T option). Standard type: 90ºC, normally-closed (NC) thermal switch with 6.3 mm fast-on connection

Additional options as ultra-fast fuses and custom configurations are also available upon request.

MOUNTING RECOMMENDATIONS

The currents indicated in the tables correspond to the maximum nominal working current at the specified ambient temperature.
As a best practice, applying an appropriate safety margin for each application is recommended. In general, a 20% margin is suggested, while for critical applications (24-hour operation, extreme conditions, potential overloads, etc.), a margin between 30% and 50% is advisable. In any case, defining the appropriate margin is the responsibility of the application designer.

Rectificadores Guasch, S.A.U. reserves the right to make changes to product specifications at any time and without prior notice.

In case of natural cooling assemblies should be placed with the fins in vertical position, ensure that there is adequate ventilation.

For forced-air cooling, the mounting position is not critical as long as unobstructed air circulation is ensured.

Avoid placing heat sources near the assembly.

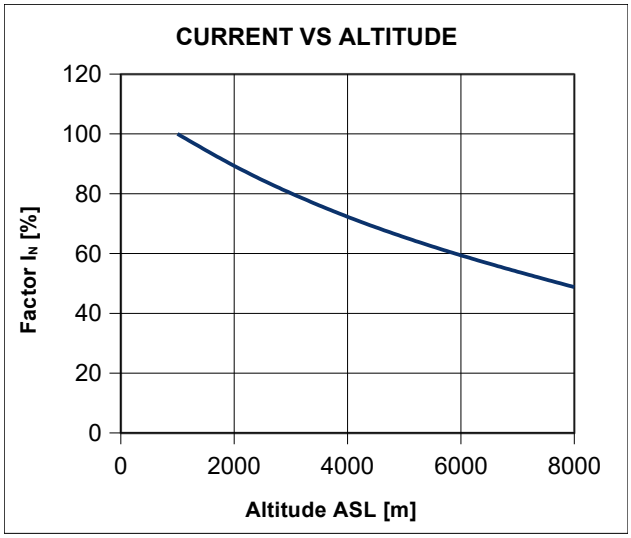
Direct welding of gate and cathode module terminals is prohibited. Use compatible fast-on terminals (2.8x0.8 mm) instead.

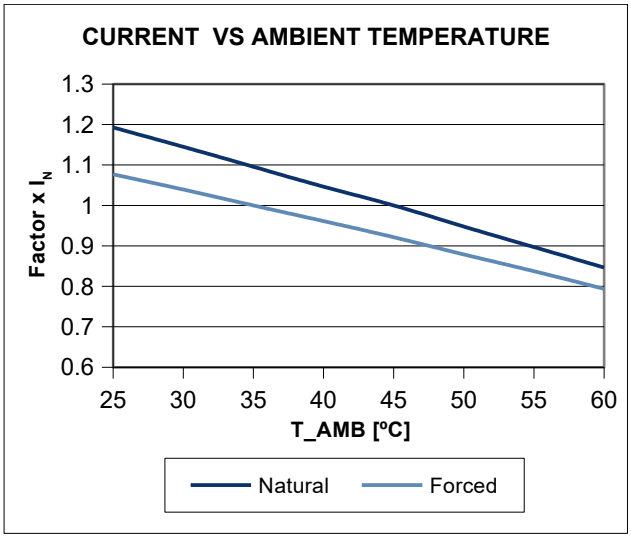
General mounting torque

Thread size	Mounting torque
M5	2.5 – 4.0 Nm
M6	4.5 – 5.0 Nm
M8	12.0 – 13.0 Nm
M10	12.0 – 13.0 Nm

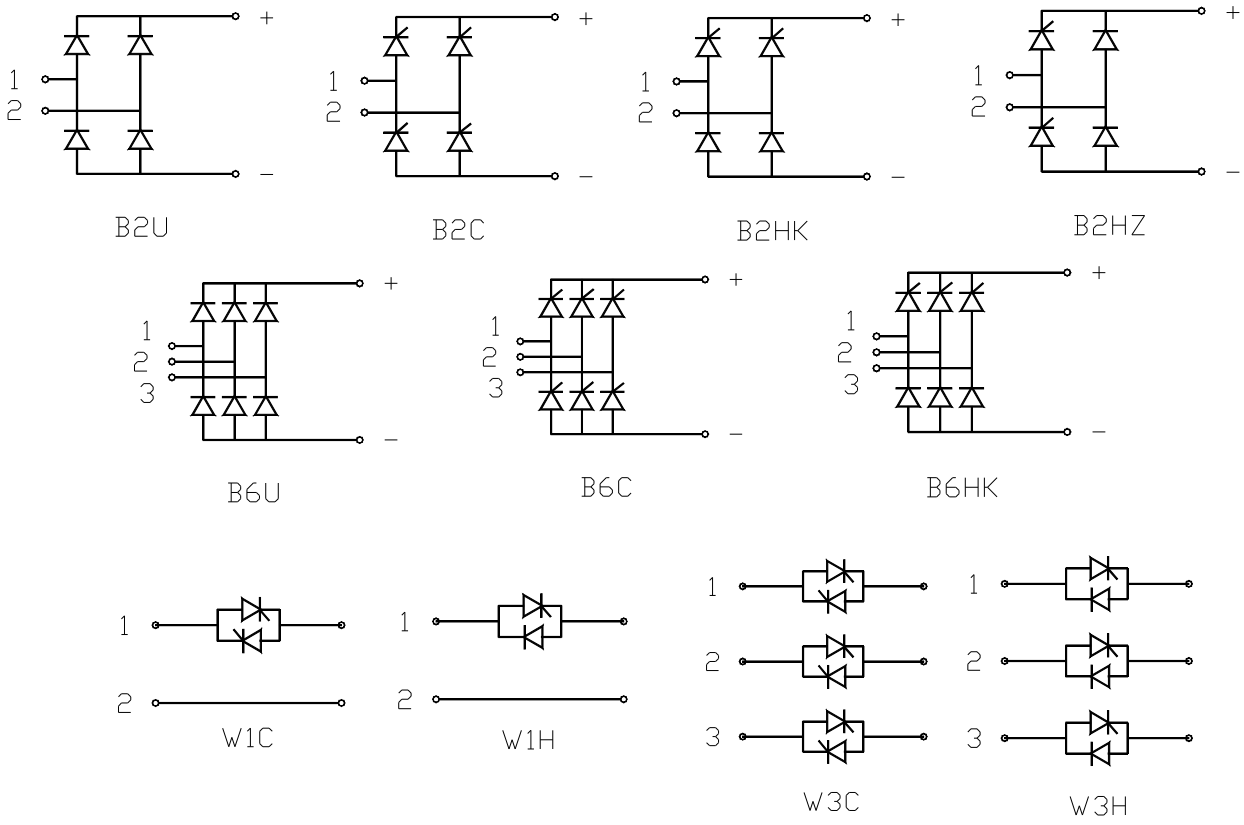
CORRECTION FACTORS

Starting at approximately 1,000 meters above sea level, the variation in air density negatively affects both natural and forced cooling performance. In such cases, it is recommended to apply a correction factor according to the following chart. For ambient temperatures different from those specified, correction factors can also be found in the next chart.





APPLICATION CIRCUITS ACCORDING DIN41761



GENERAL ORDER CODES

MC- xxx xxx x xx xxx
1 2 3 4 5 6

1- MC, product series identifier
2- Circuit type according DIN41761
3- Maximum current
4- Cooling type (N:Natural, F:Forced)
5- Voltage V_{RRM} (V_{RRM}/100)
6- Additional options (RC: RC network, V: Varistor, T: Thermal switch)

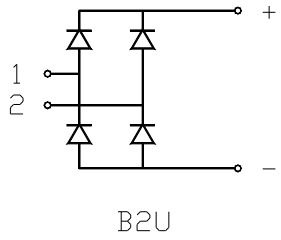
Example:

MC-W3C063N16RCVT

Three-phase antiparallel thyristor assembly with maximum phase current of 63 A_{RMS} @ 45ºC T_A (Natural cooling), 1600 V_{RRM}, with RC network, varistor, thermal switch and ultra rapid fuses included.

Rectificadores Guasch, S.A.U. reserves the right to make changes to product specifications at any time and without prior notice.

B2U CIRCUIT



NATURAL COOLING

TYPE	Max I_{DC} [A] (1)			I_{FSM} [A] (2)	I^2t [A^2s] (2)	Sem. (3)	Dim. [mm]			Fig.
	25ºC	35ºC	45ºC				w	h	d	
MC-B2U038N16...	44	41	38	580	1700	MDD26	197	120	60	a
MC-B2U055N16...	64	60	55	2500	31200	MDD95				
MC-B2U054N16...	62	58	54	580	1700	MDD26	125	120	180	b
MC-B2U088N16...	101	95	88	2500	31200	MDD95				
MC-B2U100N16...	115	108	100	2500	31200	MDD95				
MC-B2U116N16...	135	125	116	5600	157000	MDD172				
MC-B2U130N16...	151	140	130	5600	157000	MDD172		300		
MC-B2U153N18...	179	166	153	9600	460000	MDD310				

FORCED COOLING

TYPE	Max I_{DC} [A] (1)			I_{FSM} [A] (2)	I^2t [A^2s] (2)	Sem. (3)	Dim. [mm]			Fig.
	25ºC	35ºC	45ºC				w	h	d	
MC-B2U174F16...	185	174	163	2500	31200	MDD95	125	168	180	c
MC-B2U190F16...	201	190	177	2500	31200	MDD95		228		
MC-B2U250F16...	267	250	232	5600	157000	MDD172				
MC-B2U292F16...	312	292	272	5600	157000	MDD172		300		
MC-B2U384F18...	433	384	358	9600	460000	MDD310				

(1) Maximum continuous current with $T_J=T_{Jmax}$.
(2) Typical values.
(3) Standard semiconductor reference.

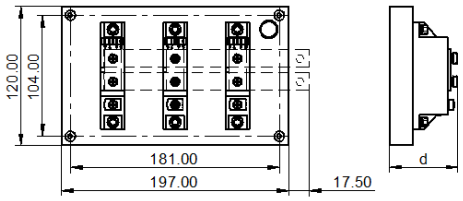
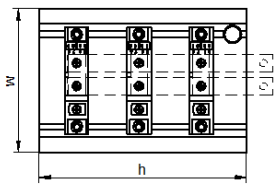


Fig. a



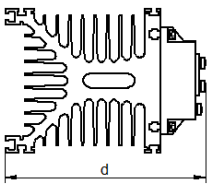
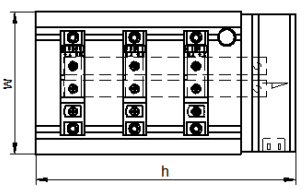


Fig. b



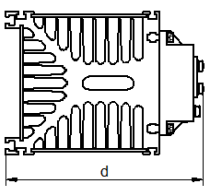
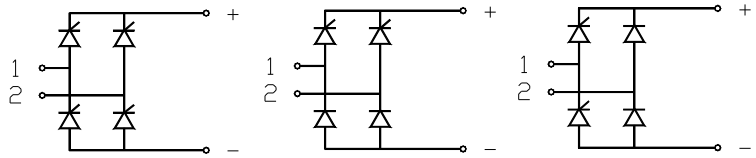


Fig. c

B2C CIRCUIT

Same specification for B2HZ and B2HK circuit with MCD, MDD and MCC modules.



NATURAL COOLING

TYPE	Max. I_{DC} [A] (1)			I_{FSM} [A] (2)	I^2t [A^2s] (2)	Sem. (3)	Dim. [mm]			Fig.
	25ºC	35ºC	45ºC				w	h	d	
MC-B2C027N16...	32	29	27	460	1050	MCC26	197	120	60	a
MC-B2C041N16...	50	45	41	2000	20000	MCC95				
MC-B2C038N16...	44	41	38	460	1050	MCC26	125	180	180	b
MC-B2C066N16...	80	73	66	2000	20000	MCC95				
MC-B2C075N16...	91	83	75	2000	20000	MCC95				
MC-B2C085N16...	104	95	85	5250	137000	MCC162				
MC-B2C096N16...	117	107	96	5250	137000	MCC162		300		
MC-B2C129N18...	153	141	129	8000	320000	MCC310				

FORCED COOLING

TYPE	Max I_{DC} [A] (1)			I_{FSM} [A] (2)	I^2t [A^2s] (2)	Sem. (3)	Dim. [mm]			Fig.
	25ºC	35ºC	45ºC				w	h	d	
MC-B2C136F16...	143	136	125	2000	20000	MCC95	125	168	180	c
MC-B2C157F16...	169	157	144	2000	20000	MCC95		228		
MC-B2C213F16...	231	213	193	5250	137000	MCC162				
MC-B2C233F16...	253	233	212	5250	137000	MCC162		300		
MC-B2C323F18...	346	232	299	8000	320000	MCC310				

(1) Maximum continuous current with $T_J=T_{Jmax}$.
(2) Typical values.
(3) Standard semiconductor reference.

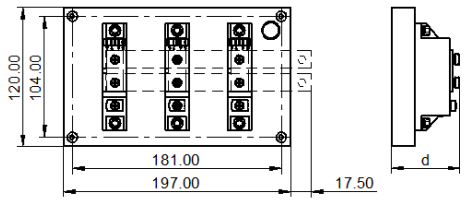
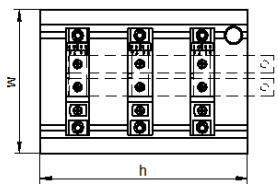


Fig. a



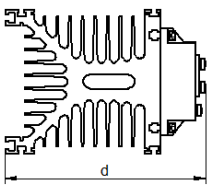
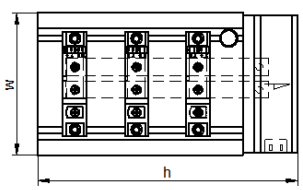


Fig. b



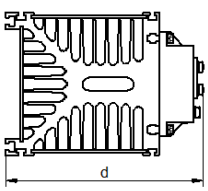
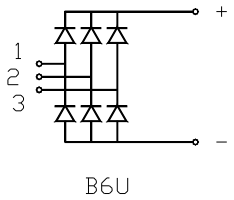


Fig. c

B6U CIRCUIT



NATURAL COOLING

TYPE	Max I_{DC} [A] (1)			I_{FSM} [A] (2)	I^2t [A^2s] (2)	Sem. (3)	Dim. [mm]			Fig.
	25ºC	35ºC	45ºC				w	h	d	
MC-B6U042N16...	49	46	42	580	1700	MDD26	197	120	60	a
MC-B6U058N16...	68	63	58	2500	31200	MDD95				
MC-B6U070N16...	79	74	70	580	1700	MDD26	125	180	180	b
MC-B6U111N16...	127	119	111	2500	31200	MDD95				
MC-B6U124N16...	141	132	124	2500	31200	MDD95		300		
MC-B6U141N16...	165	154	141	5600	157000	MDD172				
MC-B6U163N18...	190	176	163	9600	460000	MDD310				

FORCED COOLING

TYPE	Max I_{DC} [A] (1)			I_{FSM} [A] (2)	I^2t [A^2s] (2)	Sem. (3)	Dim. [mm]			Fig.
	25ºC	35ºC	45ºC				w	h	d	
MC-B6U117F16...	123	117	109	580	1700	MDD26	125	228	180	c
MC-B6U226F16...	240	226	211	2500	31200	MDD95				
MC-B6U243F16...	258	243	227	2500	31200	MDD95		348		
MC-B6U344F16...	367	344	320	5600	157000	MDD172				
MC-B6U436F18...	465	436	406	9600	460000	MDD310				

(1) Maximum continuous current with Tj=Tj_{max}
(2) Typical values
(3) Standard semiconductor reference

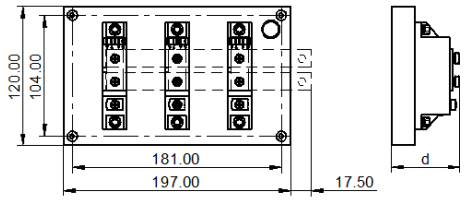
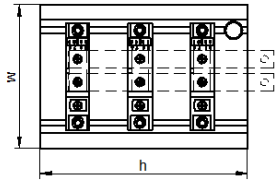


Fig. a



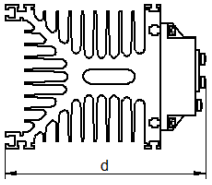
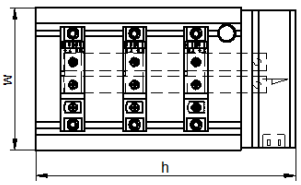


Fig. b



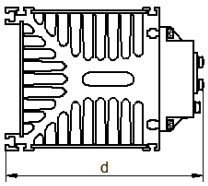
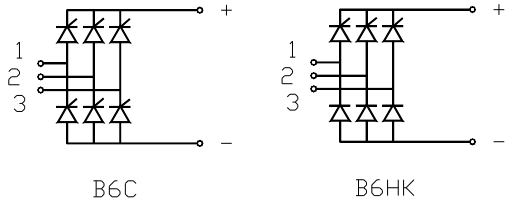


Fig. c

B6C CIRCUIT

Same specification for B6HK circuit with MCD modules.



NATURAL COOLING

TYPE	Max I_{DC} [A] (1)			I_{FSM} [A] (2)	I^2t [A^2s] (2)	Sem. (3)	Dim. [mm]			Fig.
	25ºC	35ºC	45ºC				w	h	d	
MC-B6C029N16...	35	32	29	460	1050	MCC26	197	120	60	a
MC-B6C043N16...	46	42	43	2000	20000	MCC95				
MC-B6C048N16...	56	52	48	460	1050	MCC26	125	180	180	b
MC-B6C083N16...	99	91	83	2000	20000	MCC95				
MC-B6C092N16...	110	101	92	2000	20000	MCC95		300		
MC-B6C103N16...	125	114	103	5250	137000	MCC162				
MC-B6C136N18...	161	148	136	8000	320000	MCC310				

FORCED COOLING

TYPE	Max I_{DC} [A] (1)			I_{FSM} [A] (2)	I^2t [A^2s] (2)	Sem. (3)	Dim. [mm]			Fig.
	25ºC	35ºC	45ºC				w	h	d	
MC-B6C136F16...	88	82	76	460	1050	MCC26	125	228	180	c
MC-B6C157F16...	217	178	163	2000	20000	MCC95				
MC-B6C233F16...	281	258	234	5250	137000	MCC162		300		
MC-B6C323F18...	385	359	331	8000	320000	MCC310				

(1) Maximum continuous current with $T_J=T_{Jmax}$.
(2) Typical values.
(3) Standard semiconductor reference.

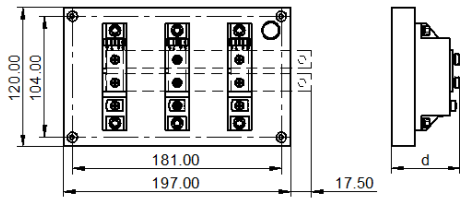


Fig. a

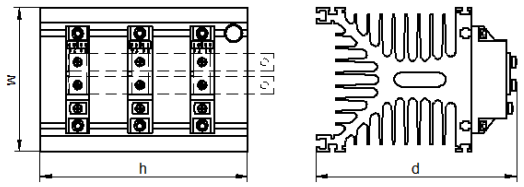


Fig. b

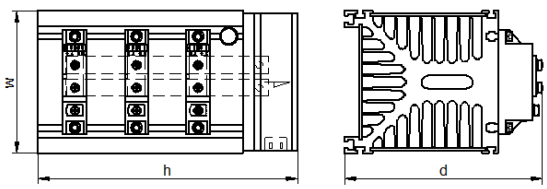
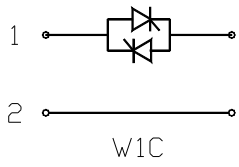
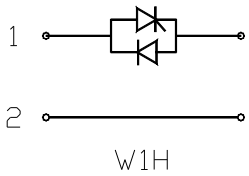


Fig. c

W1C CIRCUIT

Same specifications for W1H circuit with MCD modules.





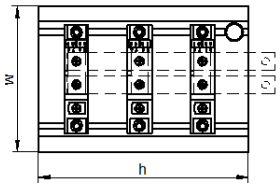
NATURAL COOLING

TYPE	Max I_{AC} [A] (1)			I_{FSM} [A] (2)	I_2t [A_2s] (2)	Sem. (3)	Dim. [mm]			Fig.
	25ºC	35ºC	45ºC				w	h	d	
MC-W1C055N16...	64	60	55	460	1050	MCC26	197	120	60	a
MC-W1C113N16...	124	134	113	2000	20000	MCC95				
MC-W1C125N16...	149	137	125	2000	20000	MCC95	125	180	180	b
MC-W1C156N16...	188	172	156	5250	137000	MCC162				
MC-W1C213N18...	249	231	213	8000	320000	MCC310				
MC-W1C237N18...	277	257	237	8000	320000	MCC310		300		

FORCED COOLING

TYPE	Max, I_{DC} [A] (1)			I_{FSM} [A] (2)	I_2t [A_2s] (2)	Sem. (3)	Dim. [mm]			Fig.
	25ºC	35ºC	45ºC				w	h	d	
MC-W1C140F16...	142	140	128	460	1050	MCC26	125	168	180	c
MC-W1C197F16...	213	197	152	2000	20000	MCC95				
MC-W1C217F16...	233	217	199	2000	20000	MCC95		228		
MC-W1C315F16...	341	315	287	5250	137000	MCC162				
MC-W1C456F18...	488	456	420	8000	320000	MCC310				
MC-W1C491F18...	524	491	456	8000	320000	MCC310		348		

(1) Maximum continuous current with $T_J=T_{Jmax}$.
(2) Typical values.
(3) Standard semiconductor reference.



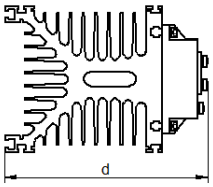
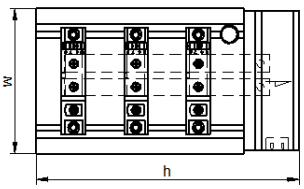


Fig. a



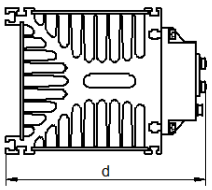
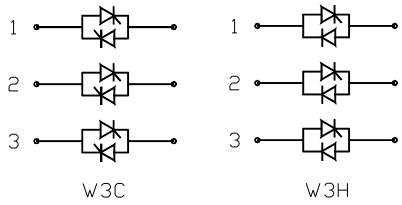


Fig. b

W3C CIRCUIT

Same specifications for W3H circuit with MCD modules.



NATURAL COOLING

TYPE	Max I_{AC} [A] (1)			I_{FSM} [A] (2)	I^2t [A^2s] (2)	Sem. (3)	Dim. [mm]			Fig.
	25ºC	35ºC	45ºC				w	h	d	
MC-W3C022N16...	26	24	22	460	1050	MCC26	197	120	60	a
MC-W3C031N16...	38	34	31	2000	20000	MCC95				
MC-W3C038N16...	44	41	38	2000	20000	MCC26	125	180	180	b
MC-W3C063N16...	76	70	63	2000	20000	MCC95				
MC-W3C071N16...	85	78	71	2000	20000	MCC95		300		
MC-W3C078N16...	95	87	78	5250	137000	MCC162				
MC-W3C083N18...	101	92	83	8000	320000	MCC310				

FORCED COOLING

TYPE	Max I_{DC} [A] (1)			I_{FSM} [A] (2)	I^2t [A^2s] (2)	Sem. (3)	Dim. [mm]			Fig.
	25ºC	35ºC	45ºC				w	h	d	
MC-W3C060F16...	60	60	59	460	1050	MCC26	125	228	200	c
MC-W3C138F16...	150	138	126	2000	20000	MCC95				
MC-W3C159F16...	161	159	136	2000	20000	MCC95		348		
MC-W3C199F16...	217	199	181	5250	137000	MCC162				
MC-W3C265F18...	286	265	244	8000	320000	MCC310				

(1) Maximum continuous current with $T_J=T_{Jmax}$.
(2) Typical values.
(3) Standard semiconductor reference.

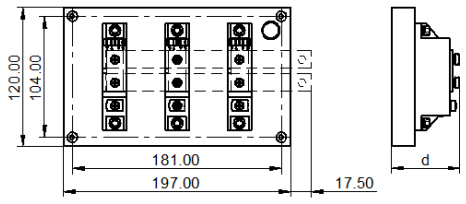


Fig. a

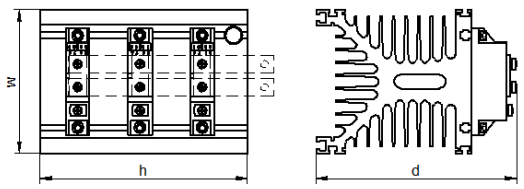


Fig. b

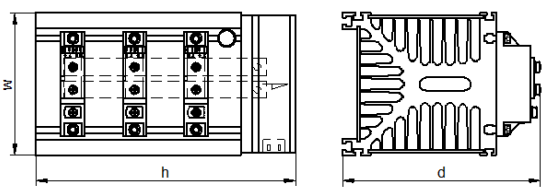
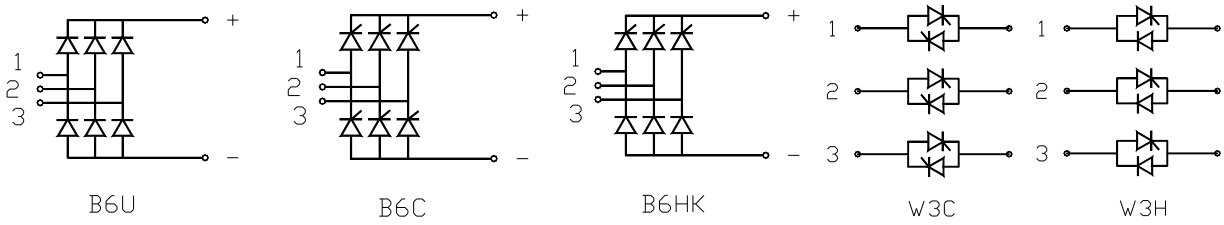


Fig. c

SPECIAL (LARGE) TYPES

Same specifications for B6HK and W3H circuit with MCD modules.



NATURAL COOLING

TYPE	Max, I_{AC} [A] (1)			I_{FSM} [A] (2)	I^2t [A^2s] (2)	Sem. (3)	Dim. [mm]			Fig.
	25ºC	35ºC	45ºC				w	h	d	
MC-B6U236N16...	268	252	236	2500	31200	MDD95				
MC-B6U320N16...	367	344	320	5600	157000	MDD172	300	300	130	a
MC-B6U406N18...	466	436	406	9600	460000	MDD310				
MC-B6C184N16...	217	201	184	2000	20000	MCC95				
MC-B6C244N16...	292	268	244	5250	137000	MCC162	300	300	130	a
MC-B6C331N18...	385	359	331	8000	320000	MCC310				
MC-W3C145N16...	171	159	145	2000	20000	MCC95				
MC-W3C189N16...	227	208	189	5250	137000	MCC162	300	300	130	a
MC-W3C261N18...	305	283	261	8000	320000	MCC310				

FORCED COOLING

TYPE	Max I_{AC} [A] (1)			I_{FSM} [A] (2)	I^2t [A^2s] (2)	Sem. (3)	Dim. [mm]			Fig.
	25ºC	35ºC	45ºC				w	h	d	
MC-B6U339F16...	340	339	318	2500	31200	MDD95				
MC-B6U530F16...	530	501	480	5600	157000	MDD172	340	400	200	b
MC-B6U725F18...	770	725	679	9600	460000	MDD310				
MC-B6C275F16...	296	275	254	2000	20000	MCC95				
MC-B6C422F16...	456	422	387	5250	137000	MCC162	340	400	200	b
MC-B6C581F18...	620	581	540	8000	320000	MCC310				
MC-W3C221F16...	238	221	203	2000	20000	MCC95				
MC-W3C334F16...	361	334	305	5250	137000	MCC162	340	400	200	b
MC-W3C474F18...	506	474	440	8000	320000	MCC310				

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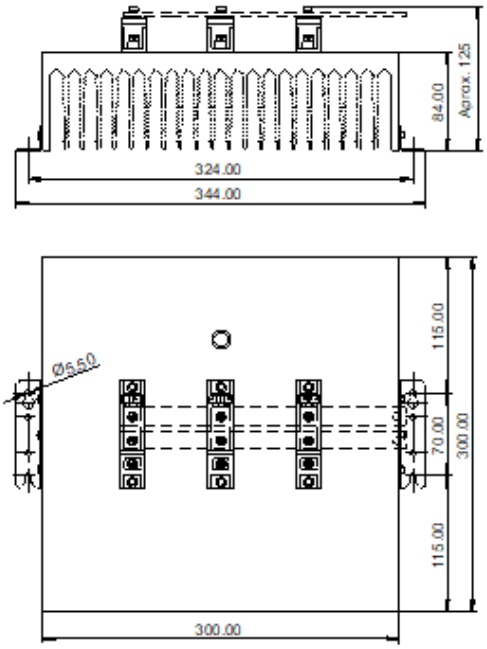

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344.00
Ø6.50
115.00
70.00
300.00
115.00
300.00

Fig. a

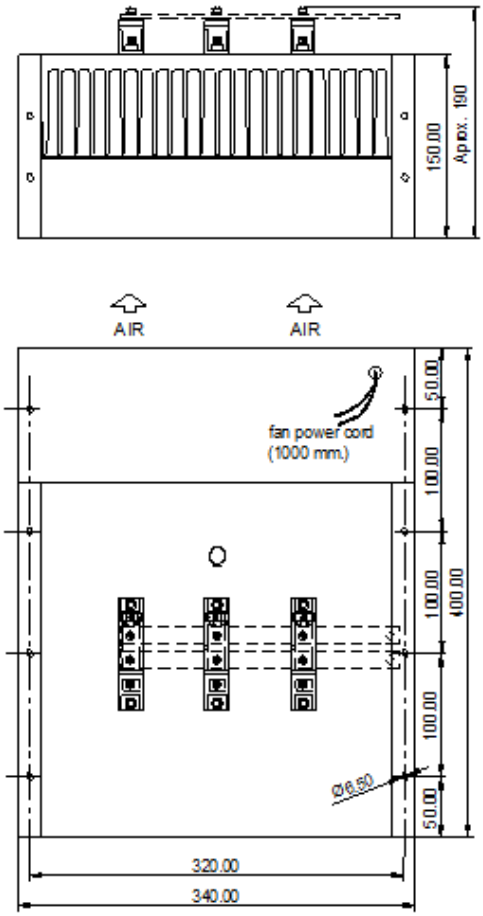

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Aprox. 190
AIR
AIR
fan power cord
(1000 mm.)
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100.00
100.00
100.00
50.00
400.00
Ø6.50
320.00
340.00

Fig. b

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