Minebea Power Semiconductor Device Inc.

IGBT Status List

Date: May. 2024

Compliance status of RoHS directive

C:Compliant **S.C**:Compliant (Included RoHS exemption substance) **N**:Non compliant

Production Status

M:Mass production **W**:Working sample **U**:Under development **D**:Discontinued **N**:Not for new design

HV-IGBT Module

Connection	Type name	Absolute Max. Ratings		Electrical Characteristics						Outline	RoHS Status	Status
		V_{CES} (V)	I_C (A)	$V_{CE(sat)}$ (V) Typ.	V_F (V) Typ.	$t_{d(on)}$ (μs) Typ.	t_r (μs) Typ.	$t_{d(off)}$ (μs) Typ.	t_f (μs) Typ.			
1 in 1	MBN1600F17F	1,700	1,600	2.4	2.25	0.7	0.2	1.5	1.5	N-10	S.C	M
	MBN2400F17F	1,700	2,400	2.4	2.25	0.8	0.2	1.7	1.5	N-9	S.C	M
	MBN3600E17F	1,700	3,600	2.4	2.25	1.05	0.35	1.7	1.6	N-9	N	M
	MBN800E33E	3,300	800	3.5	2.5	0.4	2.1	2.0	2.2	N-10	N	M
	MBN1000E33E2	3,300	1,000	3.1	2.5	0.9	2.1	2.1	1.8	N-10	N	M
	MBN1200E33E	3,300	1,200	3.5	2.5	0.4	2.1	2.0	2.2	N-9	N	M
	MBN1200F33F	3,300	1,200	2.85	2.6	1.0	0.2	2.7	1.8	N-10	S.C	M
	MBN1500E33E2	3,300	1,500	3.1	2.6	1.0	2.0	2.7	1.7	N-9	N	M
	MBN1500E33E3	3,300	1,500	3.6	2.6	-	2.1	-	2.1	N-9	N	M
	MBN1800F33F	3,300	1,800	2.85	2.6	0.8	0.3	2.2	1.8	N-9	S.C	M
	MBN1800FH33F	3,300	1,800	2.85	2.6	0.8	0.3	2.2	1.8	N-12	S.C	M
	MBN800H45E2	4,500	800	3.7	2.9	-	2.2	-	3.0	N-13	N	M
	MBN800H45E2-H	4,500	800	4.2	3.7	-	2.1	-	2.4	N-13	N	M
	MBN1000FH45F	4,500	1,000	3.0	2.8	0.5	0.25	2.8	2.1	N-15	S.C	M
	MBN1000FH45F-H	4,500	1,000	4.35	2.8	0.5	0.3	2.5	0.7	N-15	S.C	M
	MBN1200H45E2	4,500	1,200	3.7	2.9	-	2.2	-	3.0	N-12	N	M
	MBN1200H45E2-H	4,500	1,200	4.2	3.7	-	2.1	-	2.4	N-12	N	M
	MBN1500FH45F	4,500	1,500	3.0	2.8	0.5	0.25	2.8	2.1	N-14	S.C	M
	MBN1500FH45F-H	4,500	1,500	4.35	2.8	0.5	0.3	2.6	2.7	N-14	S.C	M
	MBN500H65E2	6,500	500	4.3	3.9	0.7	3.2	3.3	3.1	N-13	N	M
	MBN750H65E2	6,500	750	4.3	3.9	0.7	3.2	3.3	3.1	N-12	N	M
	MBN500FH65E2	6,500	500	4.5	3.9	0.7	3.2	3.3	3.1	N-15	S.C	M
	MBN750FH65E2	6,500	750	4.5	3.9	0.7	3.2	3.3	3.1	N-14	S.C	M

HV-IGBT Module

Connection	Type name	Absolute Max. Ratings		Electrical Characteristics						Outline	RoHS Status	Status
		V_{CES} (V)	I_C (A)	$V_{CE(sat)}$ (V) Typ.	V_F (V) Typ.	$t_{d(on)}$ (µs) Typ.	t_r (µs) Typ.	$t_{d(off)}$ (µs) Typ.	t_f (µs) Typ.			
2 in 1	MBM1000FS17G	1,700	1,000	2.15	1.9	0.4	0.2	1.1	0.8	M-15	S.C	M
	MBM1200E17F	1,700	1,200	2.4	2.3	0.74	0.26	1.9	1.6	M-10	N	M
	MBM600E17F	1,700	600	2.3	1.8	1.0	0.15	1.3	1.7	M-10	N	U
	MBM250H33E3	3,300	250	3.6	2.8	3.4	2.9	2.1	1.9	M-13	N	M
	MBM450FS33F	3,300	450	3.05	2.45	0.48	0.12	1.1	1.3	M-15	S.C	M
	MBM500E33E2-R	3,300	500	3.1	2.5	0.4	1.3	2.1	1.7	M-14	N	M
	MBM200H45E2-H	4,500	200	4.2	3.9	-	2.1	-	2.4	M-13	N	M
Chopper	MBL1200E17F	1,700	1,200	2.4	2.3	0.74	0.26	1.9	1.6	N-10	N	M
	MBL1200F17F	1,700	1,200	2.3	2.3	0.78	0.25	1.7	1.3	N-10	S.C	M
	MBL1600E17F	1,700	1,600	2.4	2.4	0.6	0.4	1.8	1.4	N-9	N	M
	MBL400E33D	3,300	400	4.2	2.7	0.5	1.9	2.0	1.0	N-10	N	M
	MBL1000E33E2-B	3,300	1,000	2.95	2.9	0.7	1.6	2.1	1.8	N-9	N	M

HV-Diode Module

Connection	Type name	Absolute Max. Ratings		Electrical Characteristics						Outline	RoHS Status	Status
		V_{RRM} (V)	I_F (A)	V_F (V)Typ.					t_{rr} (µs) Typ.			
Diode	MDM900E17D	1,700	900	2.0					0.7	N-10	N	M
	MDM1200E17D	1,700	1,200	2.1					0.5	N-10	N	M
	MDM800E33D	3,300	800	2.5					0.6	N-10	N	M
	MDM1000E33E2	3,300	1,000	2.5					0.7	N-10	N	M
	MDM1200E33D	3,300	1,200	2.8					0.6	N-10	N	M
	MDM1200FH33F	3,300	1,200	3.3					0.9	N-13	S.C	M
	MDM400H45E2	4,500	400	3.4					0.8	N-13	N	M
	MDM800H45E2	4,500	800	3.4					0.8	N-13	N	M
	MDM800H45E2-H	4,500	800	4.2					0.9	N-13	N	M
	MDM1200H45E2	4,500	1,200	3.4					0.9	N-13	N	M
	MDM1200H45E2-H	4,500	1,200	4.2					09	N-13	N	M
	MDM250H65E2	6,500	250	4.1					0.6	N-13	N	M
	MDM500H65E2	6,500	500	4.1					0.8	N-13	N	M
	MDM750H65E2	6,500	750	4.15					0.8	N-13	N	M

IGBT Module

Connection	Type name	Absolute Max. Ratings		Electrical Characteristics						Outline	RoHS Status	Status
		V_{CES} (V)	I_C (A)	$V_{CE(sat)}$ (V) Typ.	V_F (V) Typ.	$t_{d(on)}$ (µs) Typ.	t_r (µs) Typ.	$t_{d(off)}$ (µs) Typ.	t_f (µs) Typ.			
6 in 1	MBB500TX7B	750	500	1.67	1.51	-	0.09	-	0.12	B-3	C	M
	MBB900TX7B	750	900	1.61	1.50	-	0.14	-	0.11	B-3	C	M
	MBB400TX12A	1,200	400	1.9	2.2	0.17	0.07	0.38	0.26	B-3	C	W

SiC (Full SiC)

Connection	Type name	Absolute Max. Ratings		Electrical Characteristics						Outline	RoHS Status	Status
		V_{DSS} (V)	I_D (A)	$V_{CE(sat)}$ (V) Typ.	V_F (V) Typ.	$t_{d(on)}$ (µs) Typ.	t_r (µs) Typ.	$t_{d(off)}$ (µs) Typ.	t_f (µs) Typ.			
2 in 1	MSM900GS17CLT	1,700	900	3.9	3.4					M-15	S.C	U
	MSM600GS33ALT	3,300	600	4.2	3.8	1.3	0.4	1.5	0.25	M-15	S.C	U
	MSM800GS33ALT	3,300	800	4.2	3.8	1.5	0.5	1.7	0.25	M-15	S.C	U

SiC Diode Module

Connection	Type name	Absolute Max. Ratings		Electrical Characteristics						Outline	RoHS Status	Status
		V_{RRM} (V)	I_F (A)	V_F (V)Typ.					t_{rr} (µs) Typ.			
2 in 1 SBD	MDM1200F33-C3	3,300	1,200	4.97					0.1	N-10	S.C	M

SiC (Hybrid SiC)

Connection	Type name	Absolute Max. Ratings		Electrical Characteristics						Outline	RoHS Status	Status
		V_{CES} (V)	I_C (A)	$V_{CE(sat)}$ (V) Typ.	V_F (V) Typ.	$t_{d(on)}$ (µs) Typ.	t_r (µs) Typ.	$t_{d(off)}$ (µs) Typ.	t_f (µs) Typ.			
1 in 1	MBN1200F33F-C3	3,300	1,200	2.85	4.6	-		-	-	N-10	S.C	M
	MBN1800F33F-C3	3,300	1,800	2.85	4.6	-		-	-	N-9	S.C	M
2 in 1	MBM1000FS17G2-C	1,700	1,000	2.15	2.7	-		-	-	M-15	S.C	M

Discontinued or Not for new design

◆**HV-IGBT module**

Connection	Type name	Absolute Max. Ratings		Electrical Characteristics						Outline	RoHS Status	Status
		V_{CES} (V)	I_C (A)	$V_{CE(sat)}$ (V) Typ.	V_F (V) Typ.	$t_{d(on)}$ (µs) Typ.	t_r (µs) Typ.	$t_{d(off)}$ (µs) Typ.	t_f (µs) Typ.			
1 in 1	MBN1200E17D	1,700	1,200	2.7	1.9	0.3	0.6	1.1	0.3	N-10	N	D
	MBN1200E17E	1,700	1,200	2.2	1.9	0.9	1.1	1.1	1.0	N-10	N	D
	MBN1600E17D	1,700	1,600	2.7	1.9	0.5	0.7	1.7	0.2	N-10	N	D
	MBN1600EB17D	1,700	1,600	2.7	1.9	0.5	0.7	1.7	0.2	N-11	N	D
	MBN1600E17F	1,700	1,600	2.4	2.0	0.2	0.4	0.4	1.4	N-10	N	D
	MBN1800E17E	1,700	1,800	2.2	1.9	1.1	1.1	1.3	0.9	N-9	N	D
	MBN1800E17D	1,700	1,800	2.7	1.9	0.5	0.7	1.3	0.2	N-9	N	D
	MBN1800E17DD	1,700	1,800	2.7	1.7	0.5	0.8	1.3	0.2	N-9	N	D
	MBN2400E17D	1,700	2,400	2.6	1.8	0.7	1.2	2.0	0.2	N-9	N	D
	MBN2400ES17D	1,700	2,400	2.7	2.1	0.5	0.9	1.5	0.3	N-10	N	D
	MBN2400E17F	1,700	2,400	2.4	2.0	0.7	0.2	1.8	1.4	N-9	N	D
	MBN3600E17E	1,700	3,600	2.2	2.1	0.9	0.9	2.0	0.8	N-9	N	D
	MBN400C20	2,000	400	4.2	-	-	-	-	-	N-4	N	D
	MBN400D20	2,000	400	4.2	2.4	0.3	1.4	2.2	1.8	N-4	N	D
	MBN600C20	2,000	600	4.8	2.3	1.0	0.4	2.4	2.0	N-3	N	D
	MBN600D20	2,000	600	4.4	2.2	0.3	1.3	2.0	2.0	N-3	N	D
	MBN1200E25C	2,500	1,200	3.0	2.0	1.0	3.2	1.5	1.9	N-9	N	D
	MBN1200D33C	3,300	1,200	4.8	2.5	0.9	2.0	1.8	1.7	N-1	N	D
	MBN400C33A	3,300	400	4.5	-	-	-	-	-	N-3	N	D
	MBN400D33A	3,300	400	4.5	3.0	0.7	1.6	1.3	2.1	N-3	N	D
	MBN600C33A	3,300	600	4.5	-	-	-	-	-	N-2	N	D
	MBN800E33D	3,300	800	4.2	2.5	0.5	1.9	2.0	1.0	N-10	N	D
	MBN800E33D-AX	3,300	800	4.2	3.0	0.5	2.1	2.1	1.1	N-10	N	D
	MBN1200D33A	3,300	1,200	4.1	2.8	0.7	1.6	1.5	2.4	N-1	N	D
	MBN1200D33C	3,300	1,200	4.8	2.5	0.9	2.0	1.8	1.7	N-1	N	D
	MBN1200E33C	3,300	1,200	4.8	2.3	0.9	2.0	1.8	1.7	N-9	N	D
	MBN1200E33D	3,300	1,200	4.2	2.5	0.5	1.9	2.0	1.0	N-9	N	D
	MBN1200H33D	3,300	1,200	4.2	2.5	0.5	1.9	2.0	1.0	N-12	N	D
	MBN600E45A	4,500	600	5.5	4.2	0.6	1.6	1.7	1.9	N-10	N	D
	MBN900D45A	4,500	900	5.5	4.2	0.6	1.6	1.7	1.9	N-1	N	D
2 in 1	MBM600E17D	1,700	600	2.6	1.9	0.3	0.5	1.0	0.5	M-10	N	D
	MBM600F17D	1,700	600	3.0	2.4	0.4	0.6	2.1	0.5	M-12	C	D
	MBM800E17D	1,700	800	2.7	1.9	0.5	0.7	1.4	0.3	M-10	N	D
	MBM800E17F	1,700	800	2.4	2.3	0.7	0.7	0.9	1.4	M-10	N	N
	MBM1200E17D	1,700	1,200	2.7	1.9	0.4	0.5	1.3	0.3	M-10	N	N
	MBM400E25E	2,500	400	2.3	2.2	1.1	1.5	2.4	1.4	M-11	N	D
	MBM400E33D-MFR	3,300	400	5.0	3.6	0.4	1.5	1.6	0.8	M-14	N	D
	MBM500E33E2	3,300	500	3.1	2.5	0.6	1.6	2.1	1.7	M-11	N	D

Connection	Type name	Absolute Max. Ratings		Electrical Characteristics						Outline	RoHS Status	Status
		V_{CES} (V)	I_C (A)	$V_{CE(sat)}$ (V) Typ.	V_F (V) Typ.	$t_{d(on)}$ (µs) Typ.	t_r (µs) Typ.	$t_{d(off)}$ (µs) Typ.	t_f (µs) Typ.			
Chopper	MBL1200E17D	1,700	1,200	2.7	2.4	0.7	0.9	1.5	0.2	N-10	N	D
	MBL800D33B	3,300	800	4.1	-	-	-	-	-	N-1	N	D
	MBL800D33C	3,300	800	4.8	2.7	0.9	2.0	1.8	1.7	N-1	N	D
	MBL800E33C	3,300	800	4.8	2.7	0.9	2.0	1.8	1.7	N-9	N	D
	MBL800E33D	3,300	800	4.2	2.9	0.5	1.9	2.0	1.0	N-9	N	D
	MBL800E33D-R	3,300	800	4.2	2.9	0.5	1.9	2.0	1.0	N-9	N	D
	MBL800E33E	3,300	800	3.5	2.7	0.4	2.1	2.0	2.2	N-9	N	D

Connection	Type name	Absolute Max. Ratings		Electrical Characteristics						Outline	RoHS Status	Status
		V_{RRM} (V)	I_F (A)	V_F (V)Typ.	- -	- -	- -	- -	t_{rr} (us)Typ.			
Diode	MDM400E33D	3,300	400	2.5	-	-	-	-	0.4	N-10	N	D
	MDN1200D33	3,300	1,200	3.2	-	-	-	-	0.8	N-3	N	D
	MDM300E45A	4,500	300	4.5	-	-	-	-	0.6	N-10	N	D
	MDM600E45A	4,500	600	4.5	-	-	-	-	0.6	N-10	N	D
	MDM900E45A	4,500	900	4.5	-	-	-	-	0.6	N-10	N	D

Discontinued or Not for new design

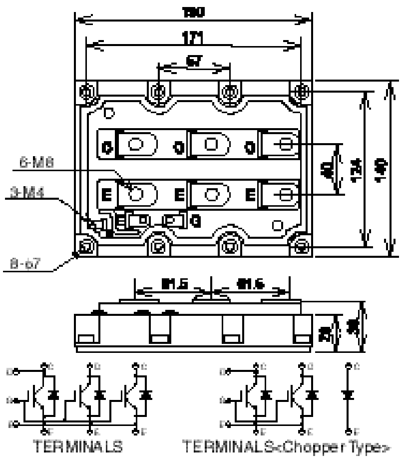
◆IGBT module

Connection	Type name	Absolute Max. Ratings		Electrical Characteristics						Outline	RoHS Status	Status
		V_{CES} (V)	I_C (A)	VCE(sat) (V) Typ.	VF (V) Typ.	td(on) (µs) Typ.	tr (µs) Typ.	td(off) (µs) Typ.	tf (µs) Typ.			
1 in 1	MBN600GR12	1,200	600	2.2	-	-	-	-	-	N-6	N	D
	MBN400GR12	1,200	400	2.2	-	-	-	-	-	N-5	N	D
	MBN1200GS12AW	1,200	1,200	2.9	-	-	-	-	-	N-7	N	D
	MBN600GS12AW	1,200	600	2.7	-	-	-	-	-	N-6	N	D
	MBN400GS12AW	1,200	400	2.7	-	-	-	-	-	N-5	N	D
	MBN400GS12BW	1,200	400	2.7	-	-	-	-	-	N-5	N	D
	MBN300GS12AW	1,200	300	2.7	-	-	-	-	-	N-5	N	D
	MBN1200GR12A	1,200	1,200	2.4	2.5	0.2	0.6	1.2	0.2	N-7	N	D
	MBN600GR12A	1,200	600	2.2	2.5	0.15	0.2	0.6	0.15	N-6	N	D
	MBN400GR12A	1,200	400	2.2	2.5	0.15	0.2	0.55	0.15	N-5	N	D
2 in 1	MBM300GR12	1,200	300	2.2	-	-	-	-	-	M-9	N	D
	MBM200GR12	1,200	200	2.2	-	-	-	-	-	M-8	N	D
	MBM150GR12	1,200	150	2.2	-	-	-	-	-	M-8	N	D
	MBM100GR12	1,200	100	2.2	-	-	-	-	-	M-8	N	D
	MBM400GR6	600	400	2.1	-	-	-	-	-	M-3	N	D
	MBM300GR6	600	300	2.1	-	-	-	-	-	M-8	N	D
	MBM200GR6	600	200	2.1	-	-	-	-	-	M-8	N	D
	MBM150GR6	600	150	2.1	-	-	-	-	-	M-8	N	D
	MBM300GS12AW	1,200	300	2.7	-	-	-	-	-	M-4	N	D
	MBM200GS12AW	1,200	200	2.7	-	-	-	-	-	M-1	N	D
	MBM200JS12AW	1,200	200	2.7	2.5	0.15	0.2	0.3	0.25	M-3	N	D
	MBM200JS12EW	1,200	200	2.7	-	-	-	-	-	M-2	N	D
	MBM150GS12AW	1,200	150	2.7	-	-	-	-	-	M-1	N	D
	MBM100GS12AW	1,200	100	2.7	-	-	-	-	-	M-6	N	D
	MBM75GS12AW	1,200	75	2.7	-	-	-	-	-	M-6	N	D
	MBM600GS6CW	600	600	1.9	-	-	-	-	-	M-7	N	D
	MBM400GS6AW	600	400	1.9	-	-	-	-	-	M-1	N	D
	MBM400JS6AW	600	400	1.9	-	-	-	-	-	M-3	N	D
	MBM300GS6AW	600	300	1.9	-	-	-	-	-	M-1	N	D
	MBM200GS6AW	600	200	1.9	-	-	-	-	-	M-6	N	D
	MBM150GS6AW	600	150	1.9	-	-	-	-	-	M-6	N	D
	MBM300GR12A	1,200	300	2.2	2.5	0.15	0.2	0.6	0.1	M-9	N	D
	MBM200GR12A	1,200	200	2.2	2.5	0.15	0.15	0.4	0.1	M-8	N	D
	MBM150GR12A	1,200	150	2.2	2.5	0.15	0.15	0.4	0.1	M-8	N	D
	MBM100GR12A	1,200	100	2.2	2.5	0.15	0.15	0.4	0.1	M-8	N	D
6 in 1	MBB200GS6AW	600	200	1.9	-	-	-	-	-	B-1	N	D
	MBB100GS12AW	1,200	100	2.7	-	-	-	-	-	B-1	N	D
	MBB75GS12AW	1,200	75	2.7	-	-	-	-	-	B-1	N	D
	MBB600TV6A	650	600	1.9	1.5	0.35	0.15	0.85	0.35	B-2	C	D
	MBB800TV7A	700	800	1.8	1.35	0.4	0.2	1.0	0.3	B-2	C	D

Outline

[Dimensions in mm]

N - 1



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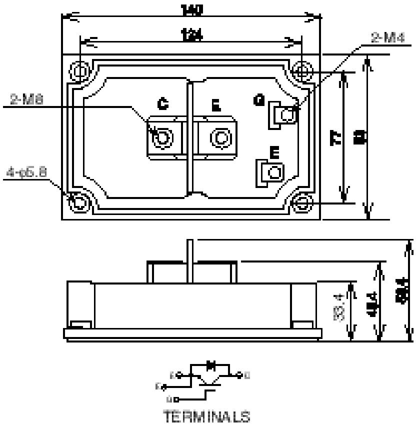
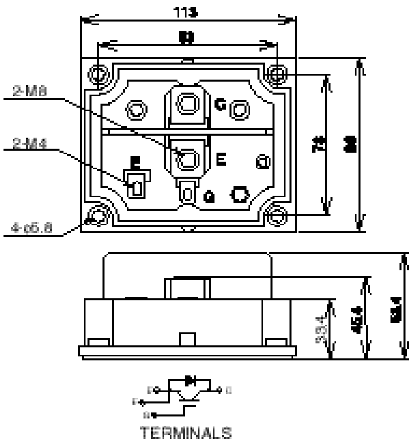
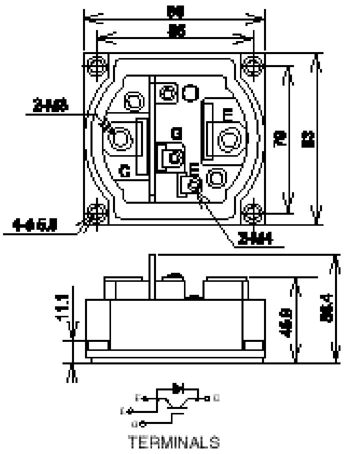


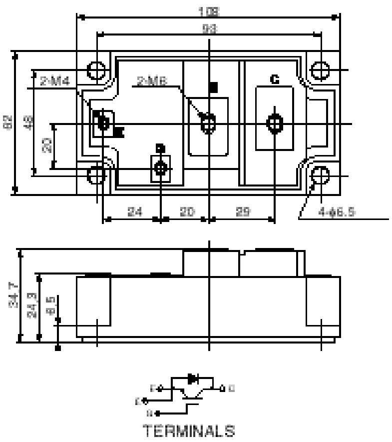
N - 3



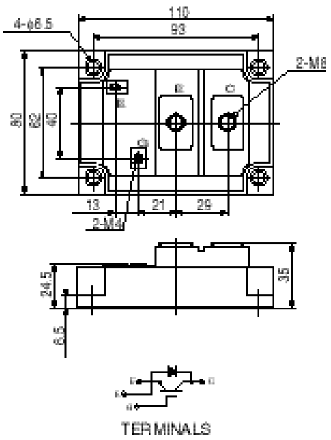
N - 4



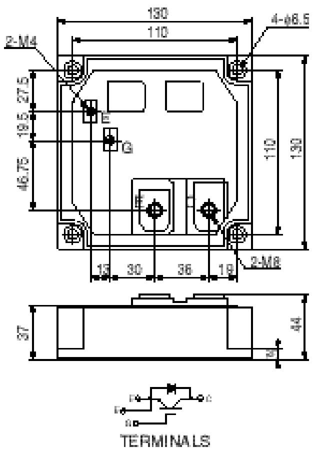
N - 5



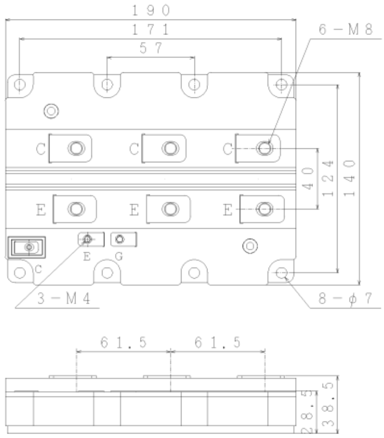
N - 6



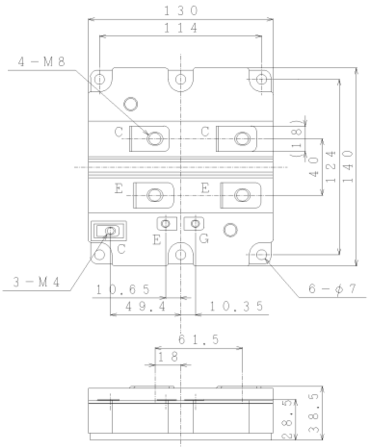
N - 7



N - 9



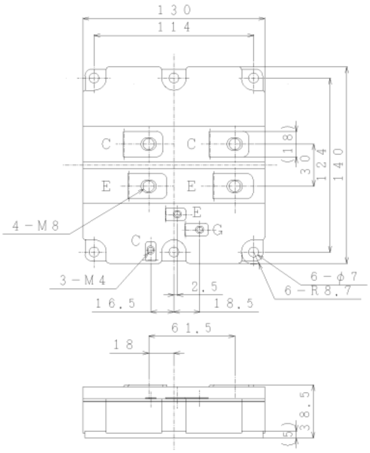
N - 10



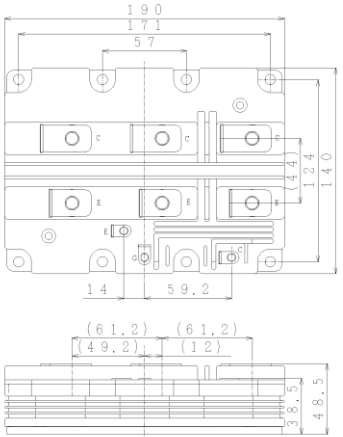
Outline

[Dimensions in mm]

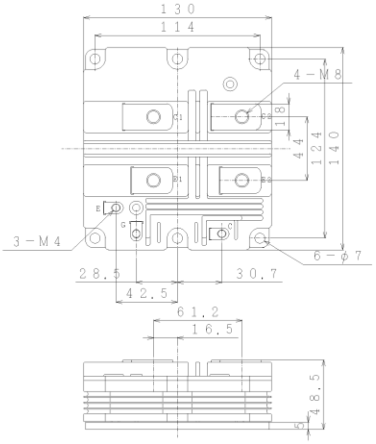
N - 11



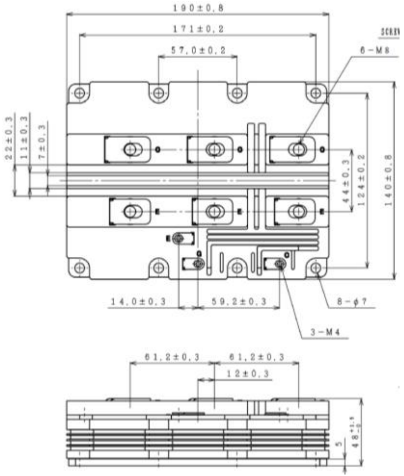
N - 12



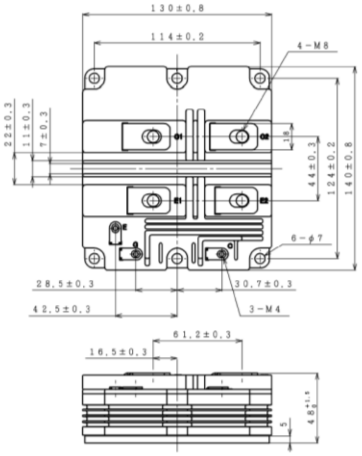
N - 13



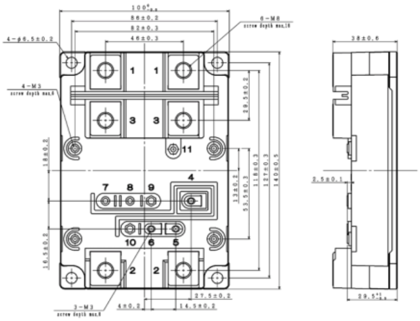
N - 14



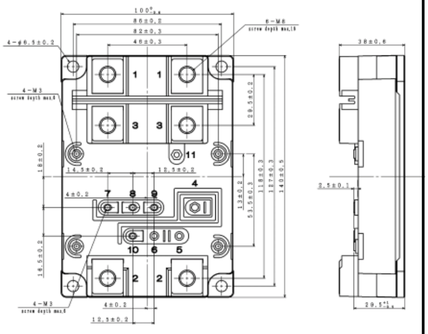
N - 15



N - 16



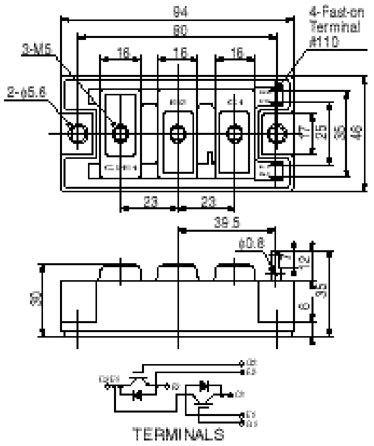
N - 17



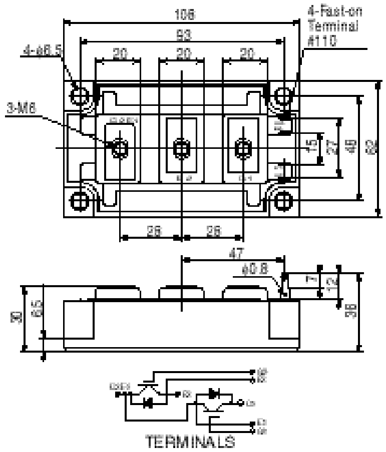
Outline

[Dimensions in mm]

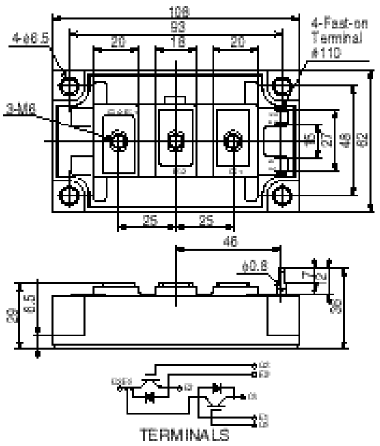
M - 1



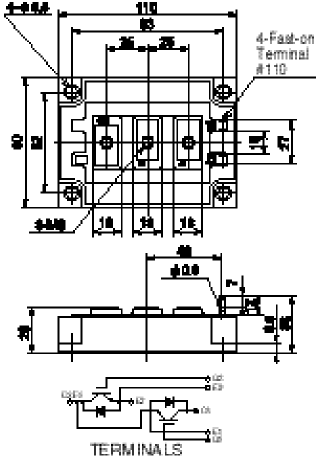
M - 2



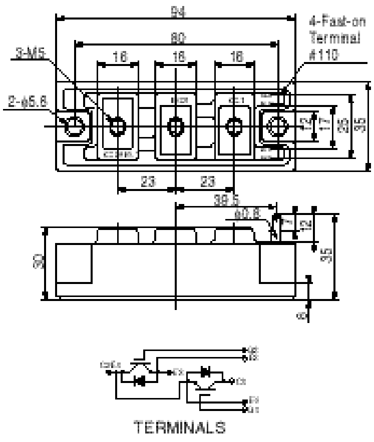
M - 3



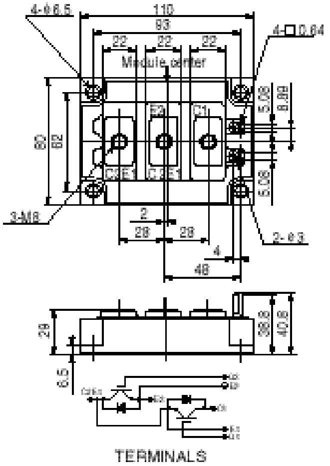
M - 4



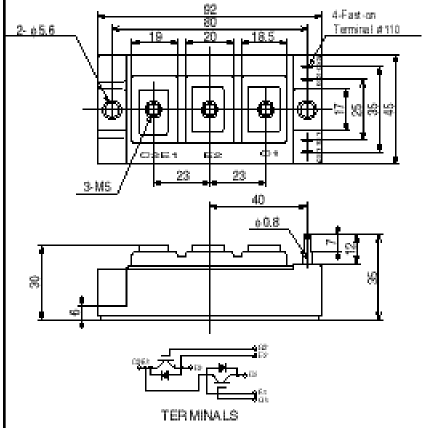
M - 6



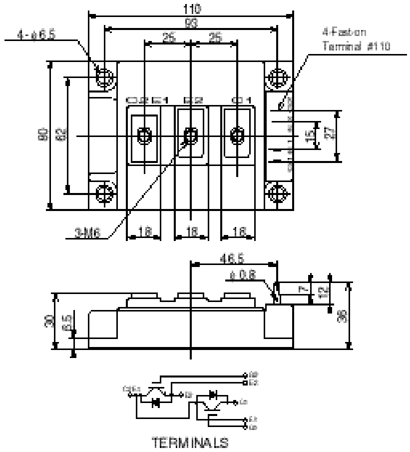
M - 7



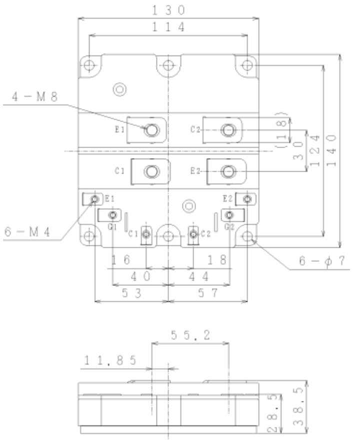
M - 8



M - 9



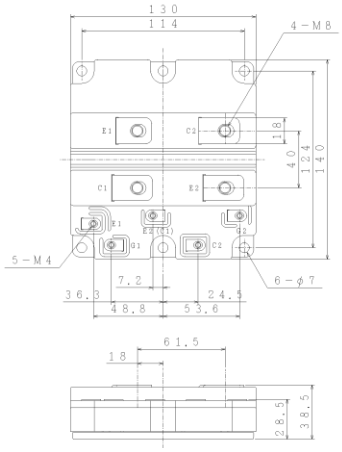
M - 10



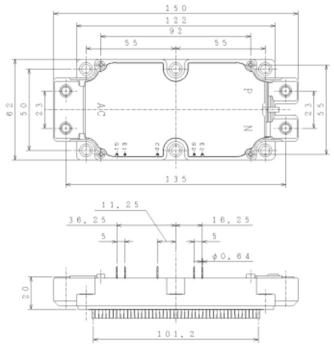
Outline

[Dimensions in mm]

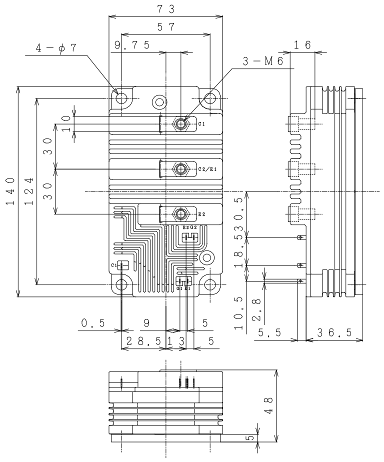
M - 11



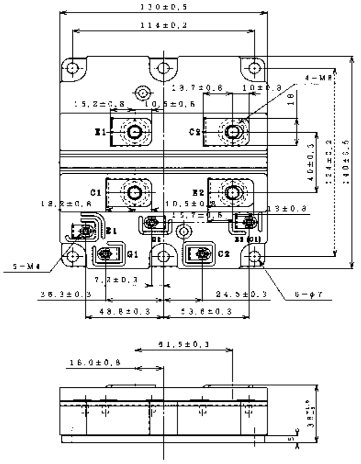
M - 12



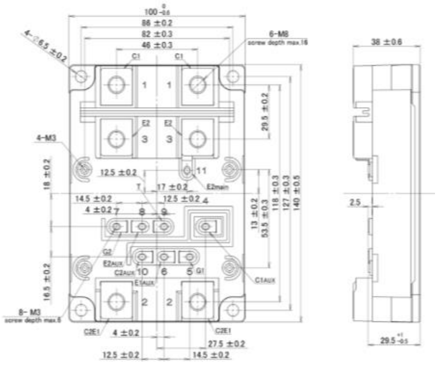
M - 13



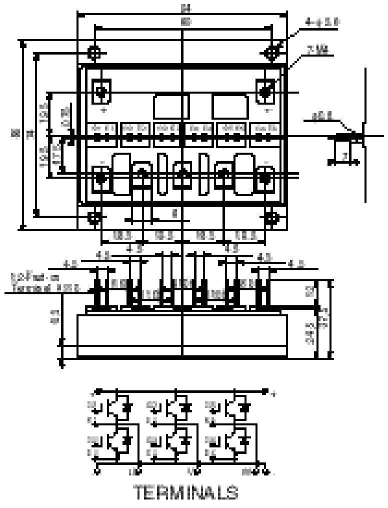
M- 14



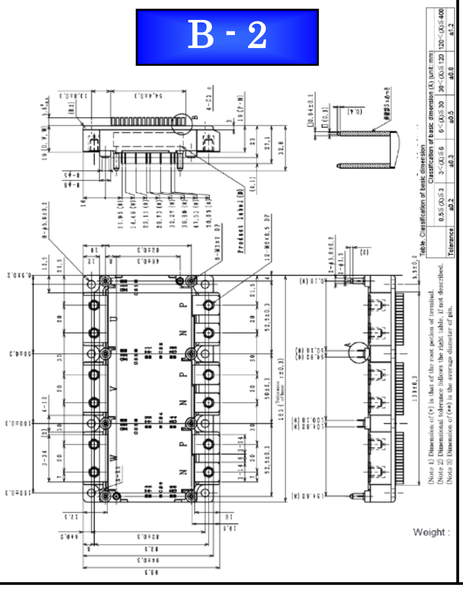
M- 15



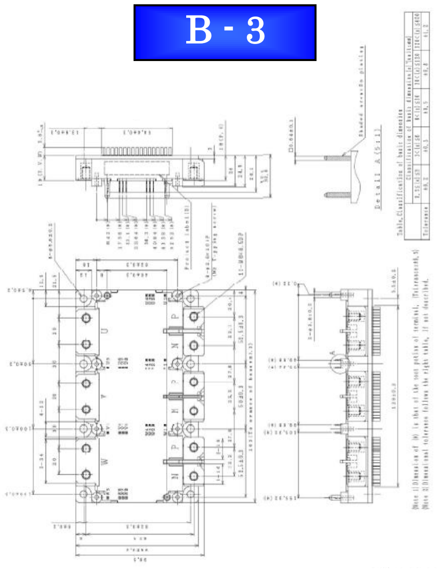
B - 1



B - 2



B - 3



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