

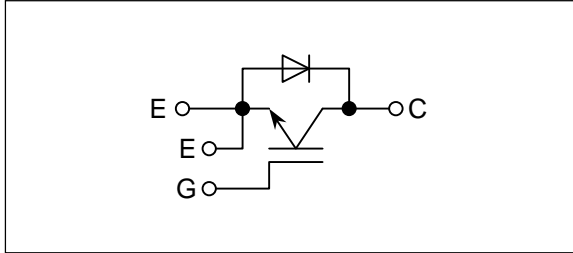
# MBN1200GR12A

[Rated 1200A/1200V, Single-pack type]

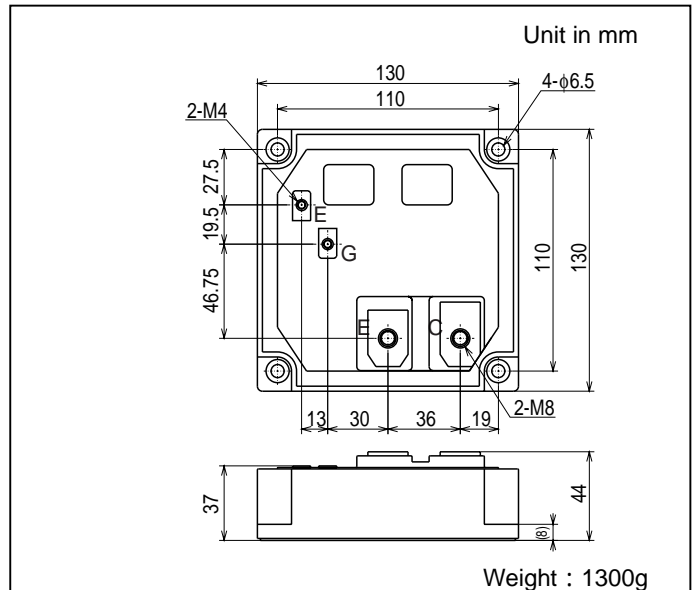
## FEATURES

- Low saturation voltage and high speed.
- Low turn-OFF switching loss.
- Low noise due to built-in free-wheeling diode.  
(Ultra Soft and Fast recovery Diode (USFD))
- High reliability structure.
- Isolated heat sink (terminals to base).

## CIRCUIT DIAGRAM



## OUTLINE DRAWING



## ABSOLUTE MAXIMUM RATINGS (T<sub>c</sub>=25°C)

Item	Symbol	Unit	Value
Collector-Emitter Voltage	V <sub>CES</sub>	V	1200
Gate-Emitter Voltage	V <sub>GES</sub>	V	±20
Collector Current	DC	I <sub>C</sub>	1200
	1ms	I <sub>CP</sub>	2400
Forward Current	DC	I <sub>F</sub>	1200 <sup>*1</sup>
	1ms	I <sub>FM</sub>	2400
Collector Power Dissipation	P <sub>C</sub>	W	8330
Junction Temperature	T <sub>j</sub>	°C	-40 ~ +150
Storage Temperature	T <sub>stg</sub>	°C	-40 ~ +125
Isolation Voltage	V <sub>iso</sub>	V <sub>RMS</sub>	2500(AC 1 minute)
Screw Torque	Terminals(M4/M8)	—	1.37 / 7.84 <sup>*2</sup>
	Mounting		2.94 <sup>*3</sup>

Notes; \*1 : RMS current of diode ≤ 360 Arms

\*2 : Recommended value 1.18 / 7.35 N·m

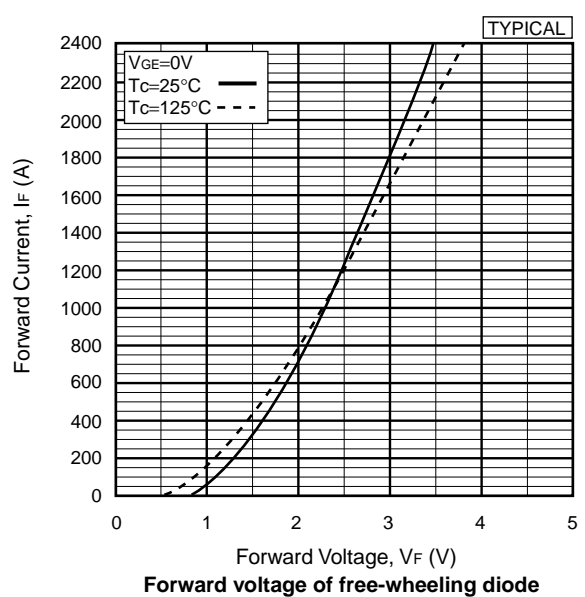
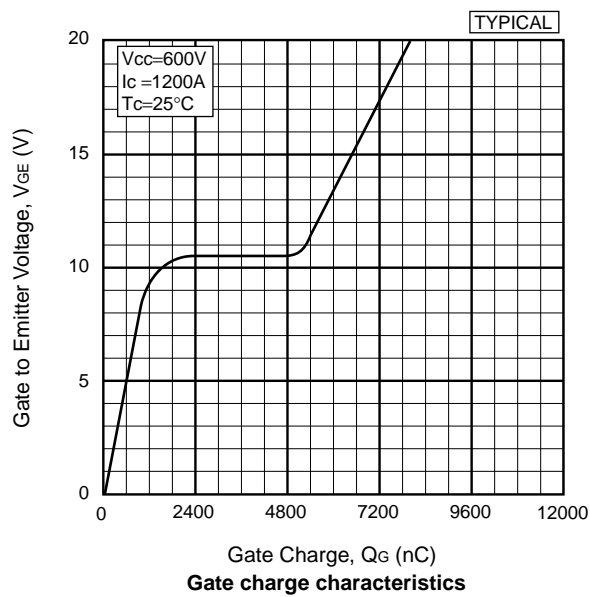
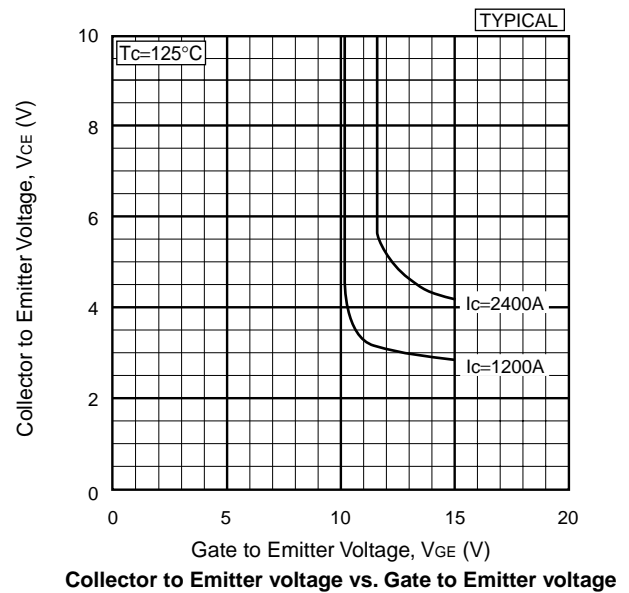
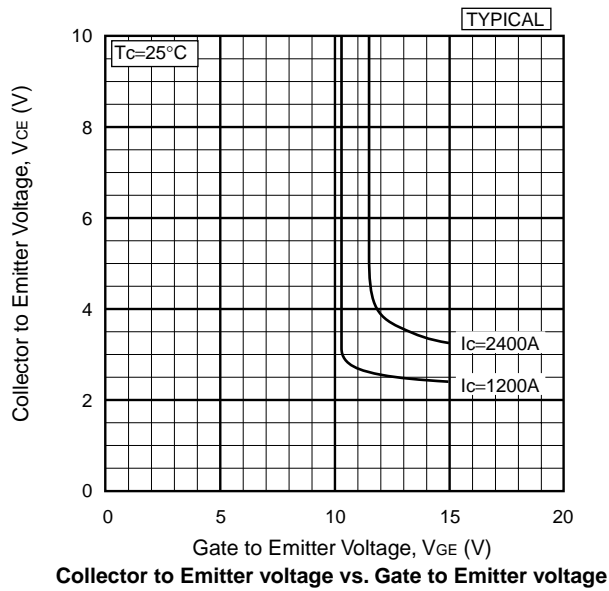
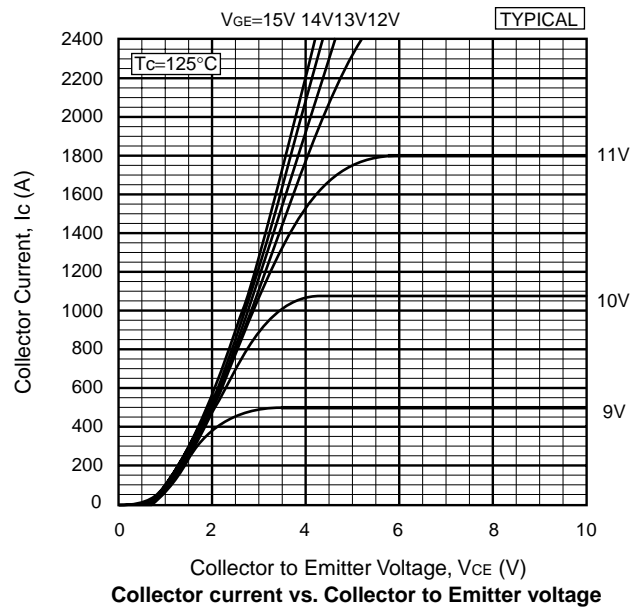
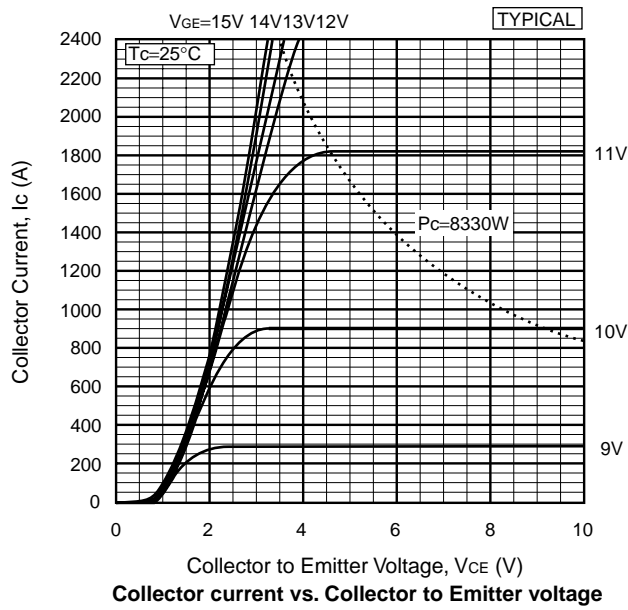
\*3 : Recommended value 2.45 N·m

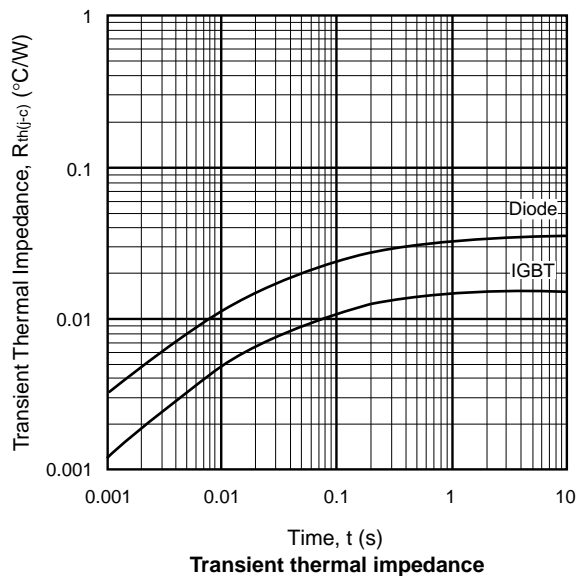
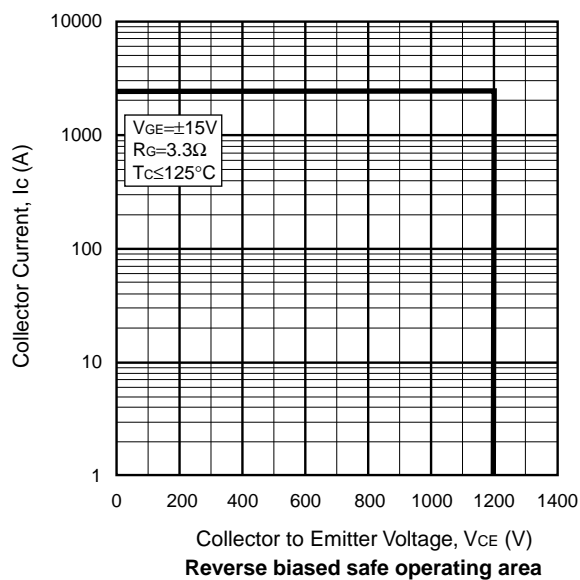
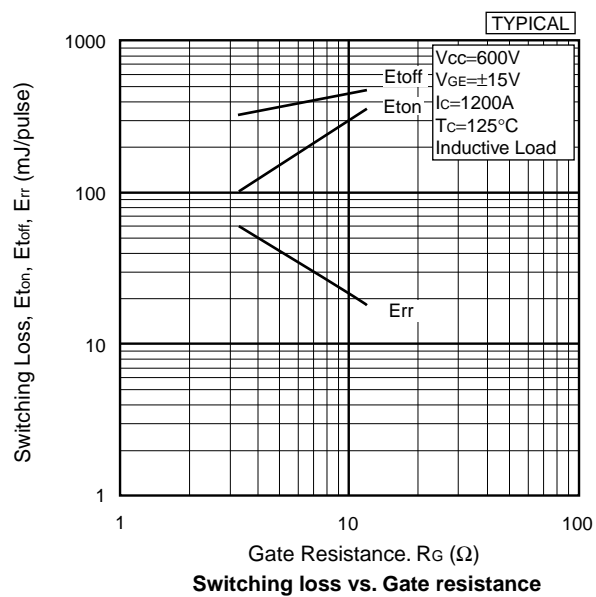
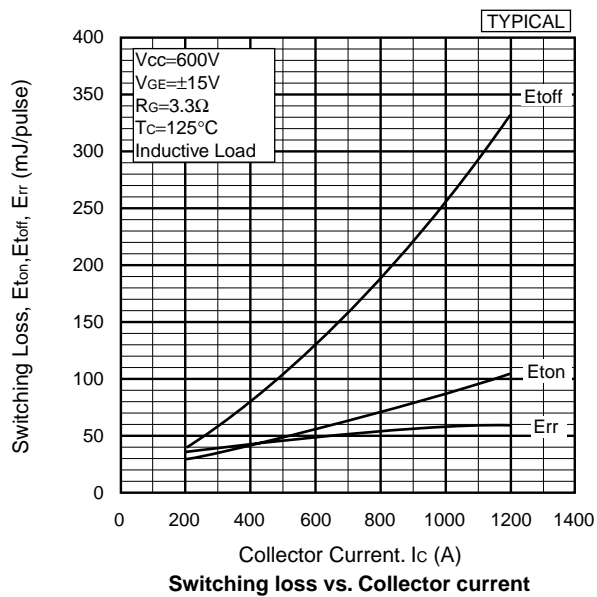
## CHARACTERISTICS (T<sub>c</sub>=25°C)

Item	Symbol	Unit	Min.	Typ.	Max.	Test Conditions
Collector-Emitter Cut-Off Current	I <sub>CES</sub>	mA	—	—	1.0	V <sub>CE</sub> =1200V, V <sub>GE</sub> =0V
Gate-Emitter Leakage Current	I <sub>GES</sub>	nA	—	—	±500	V <sub>GE</sub> =±20V, V <sub>CE</sub> =0V
Collector-Emitter Saturation Voltage	V <sub>CE(sat)</sub>	V	—	2.4	3.0	I <sub>C</sub> =1200A, V <sub>GE</sub> =15V
Gate-Emitter Threshold Voltage	V <sub>GE(TH)</sub>	V	—	—	10	V <sub>CE</sub> =5V, I <sub>C</sub> =1200mA
Input Capacitance	C <sub>ies</sub>	nF	—	108	—	V <sub>CE</sub> =10V, V <sub>GE</sub> =0V, f=1MHz
Switching Times	Rise Time	t <sub>r</sub>	—	0.6	1.5	V <sub>CC</sub> =600V, I <sub>C</sub> =1200A R <sub>G</sub> =3.3Ω <sup>*4</sup> V <sub>GE</sub> =±15V Inductive Load
	Turn-On Time	t <sub>on</sub>	—	0.8	2.1	
	Fall Time	t <sub>f</sub>	—	0.2	0.4	
	Turn-Off Time	t <sub>off</sub>	—	1.4	1.8	
Peak Forward Voltage Drop	V <sub>FM</sub>	V	—	2.5	3.7	I <sub>F</sub> =1200A, V <sub>GE</sub> =0V
Reverse Recovery Time	t <sub>rr</sub>	μs	—	—	0.5	I <sub>F</sub> =1200A, V <sub>GE</sub> =-10V, di/dt=1200A/μs
Thermal Impedance	IGBT	R <sub>th(j-c)</sub>	°C/W	—	0.015	Junction to case
	FWD	R <sub>th(f-c)</sub>			0.035	

Notes; \*4 : R<sub>G</sub> value is the test condition's value for decision of the switching times, not recommended value, please determine the suitable R<sub>G</sub> value after the measurement of switching waveforms (overshoot voltage, etc.) with appliance mounted.

Remark; For actual application, please confirm this spec. sheet is the newest revision.





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