

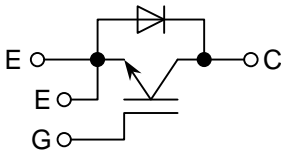
# MBN600GR12A

[Rated 600A/1200V, Single-pack type]

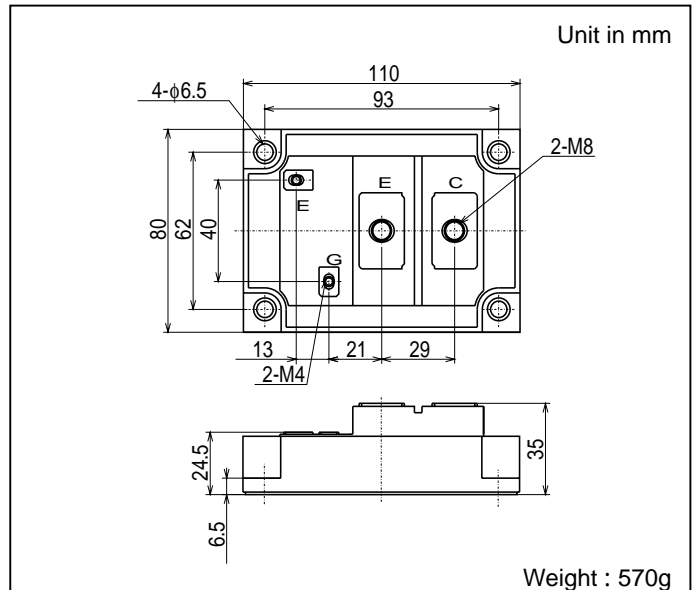
## FEATURES

- 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>	600	
	1ms	I <sub>CP</sub>	1200	
Forward Current	DC	I <sub>F</sub>	600 <sup>*1</sup>	
	1ms	I <sub>FM</sub>	1200	
Collector Power Dissipation	P <sub>C</sub>	W	3790	
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)	—	N·m	1.37 / 7.84 <sup>*2</sup>
	Mounting			2.94 <sup>*3</sup>

Notes; \*1 : RMS current of diode ≤ 180 Arms

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

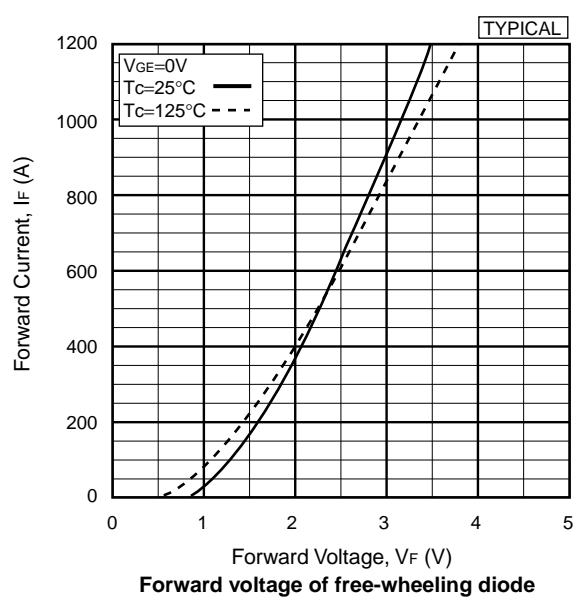
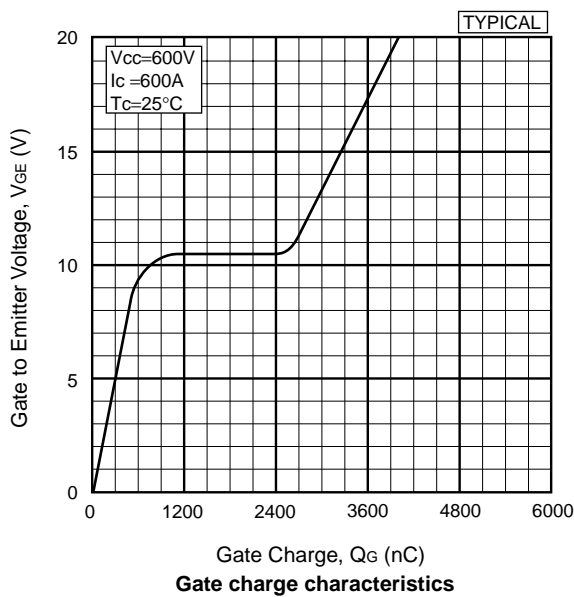
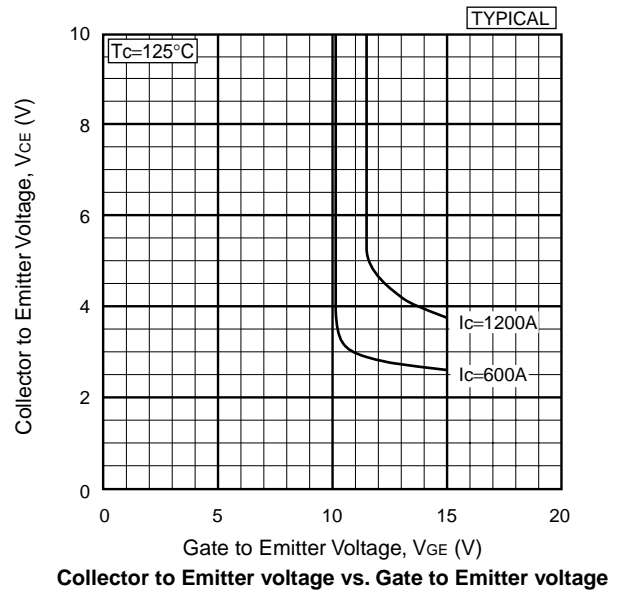
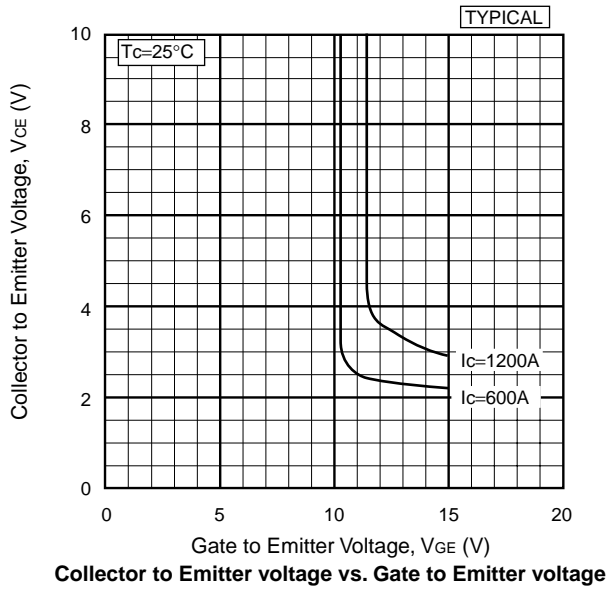
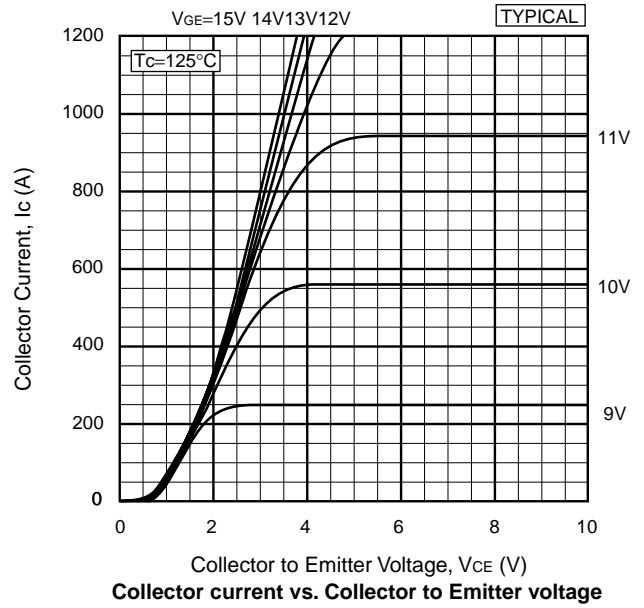
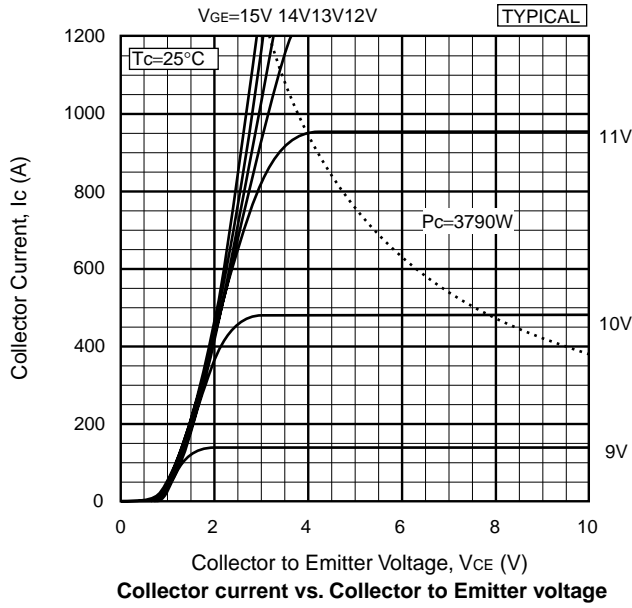
\*3 : Recommended value 2.45 N·m

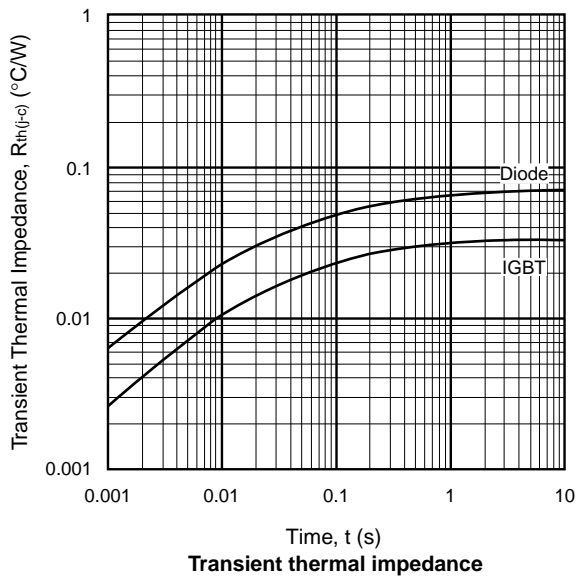
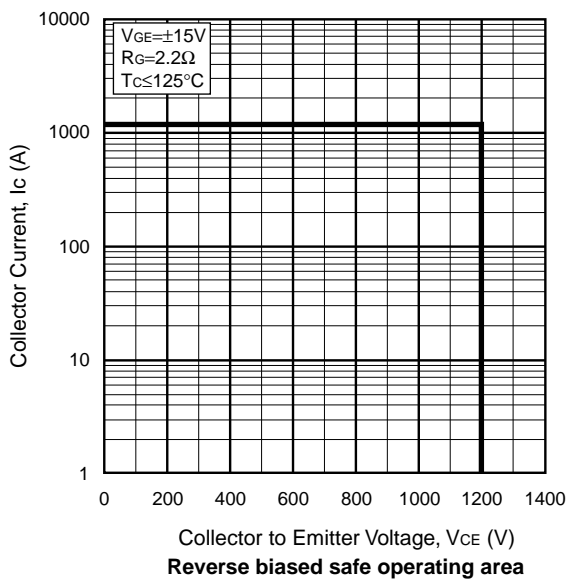
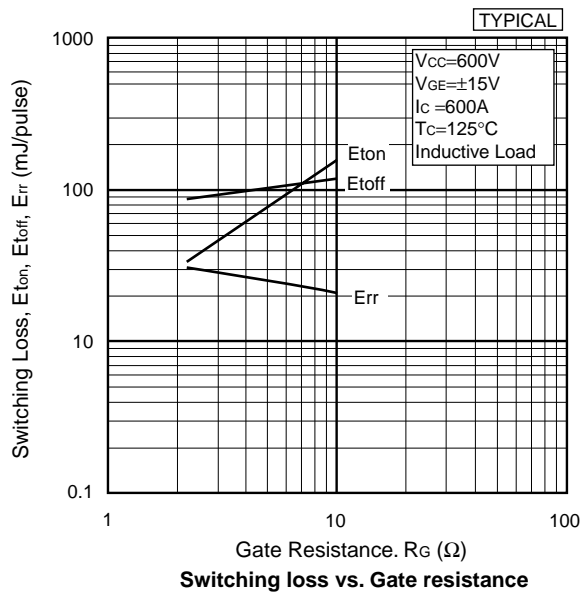
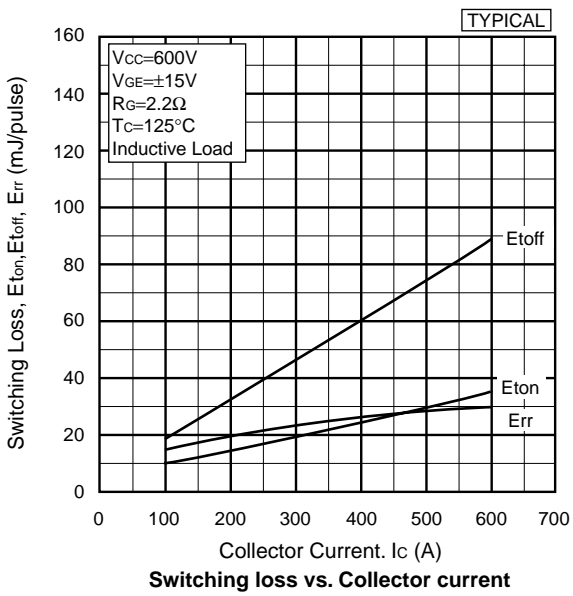
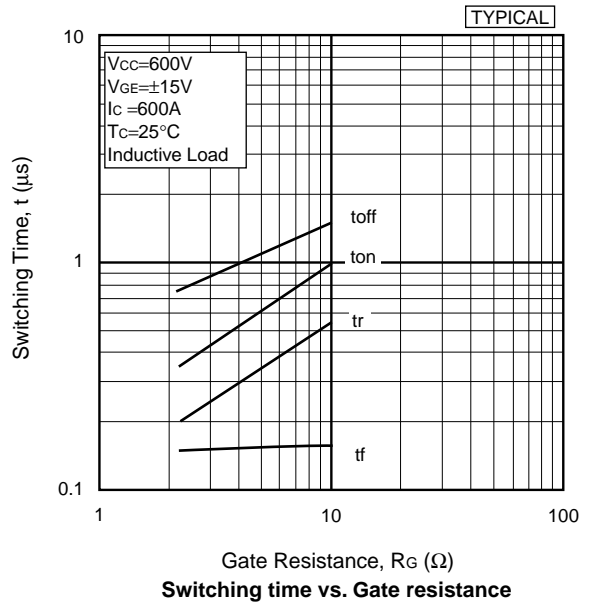
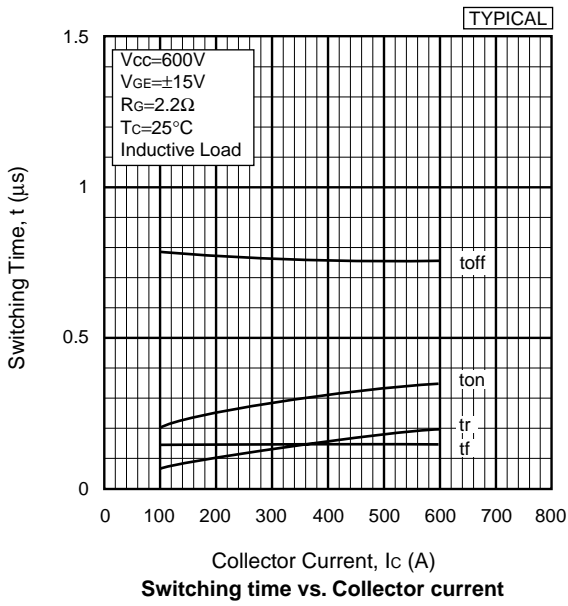
## CHARACTERISTICS (T<sub>c</sub>=25°C)

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	—	2.2	2.8	I <sub>C</sub> =600A, V <sub>GE</sub> =15V	
Gate-Emitter Threshold Voltage	V <sub>GE(To)</sub>	V	—	—	10	V <sub>CE</sub> =5V, I <sub>C</sub> =600mA	
Input Capacitance	C <sub>ies</sub>	pF	—	54000	—	V <sub>CE</sub> =10V, V <sub>GE</sub> =0V, f=1MHz	
Switching Times	Rise Time	t <sub>r</sub>	—	0.2	0.5	V <sub>CC</sub> =600V, I <sub>C</sub> =600A R <sub>G</sub> =2.2Ω <sup>*4</sup> V <sub>GE</sub> =±15V Inductive Load	
	Turn-On Time	t <sub>on</sub>	—	0.35	0.8		
	Fall Time	t <sub>f</sub>	—	0.15	0.35		
	Turn-Off Time	t <sub>off</sub>	—	0.75	1.2		
Peak Forward Voltage Drop	V <sub>FM</sub>	V	—	2.5	3.5	I <sub>F</sub> =600A, V <sub>GE</sub> =0V	
Reverse Recovery Time	t <sub>rr</sub>	μs	—	—	0.4	I <sub>F</sub> =600A, V <sub>GE</sub> =-10V, di/dt=600A/μs	
Thermal Impedance	IGBT	R <sub>th(j-c)</sub>	°C/W	—	—	0.033	Junction to case
	FWD	R <sub>th(j-c)</sub>					

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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