

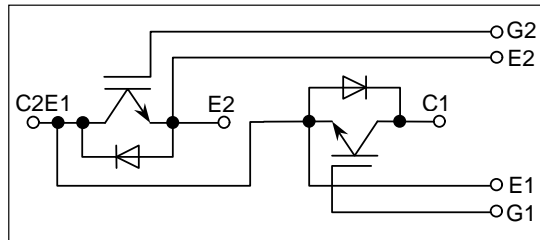
# MBM200GR12

[Rated 200A/1200V, Dual-pack type]

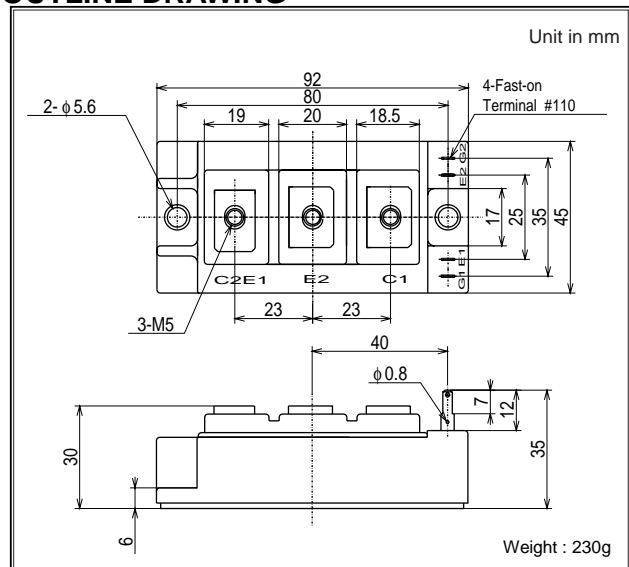
## FEATURES

- Low saturation voltage and high speed.
- Low turn-OFF switching loss.
- Low noise due to build-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>	200
	1ms	I <sub>CP</sub>	400
Forward Current	DC	I <sub>F</sub>	200 *1
	1ms	I <sub>FM</sub>	400
Collector Power Dissipation	P <sub>C</sub>	W	1130
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	-	1.96(20) *2
	Mounting	-	1.96(20) *3

Notes; \*1: RMS current of Diode ≤ 60 Arms

\*2, \*3 : Recommended value 1.67 N·m (17 kgf·cm)

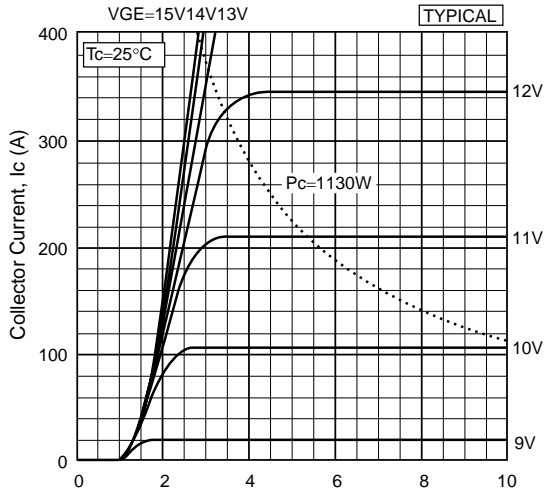
## CHARACTERISTICS (T<sub>c</sub>=25°C)

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> =200A, 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> =200mA
Input Capacitance	C <sub>ies</sub>	pF	-	19000	-	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 R <sub>L</sub> =3.0Ω R <sub>G</sub> =6.2Ω *4 V <sub>GE</sub> =±15V
	Turn-ON Time	t <sub>on</sub>	-	0.35	0.8	
	Fall Time	t <sub>f</sub>	-	0.2	0.35	
	Turn-Off Time	t <sub>off</sub>	-	0.5	1.0	
Peak Forward Voltage Drop	V <sub>FM</sub>	V	-	2.5	3.5	I <sub>F</sub> =200A, V <sub>GE</sub> =0V
Reverse Recovery Time	t <sub>rr</sub>	μs	-	-	0.35	I <sub>F</sub> =200A, V <sub>GE</sub> =-10V, di/dt=300A/μs
Thermal Impedance	IGBT	R <sub>th(j-c)</sub>	°C/W	-	-	Junction to case
	FWD	R <sub>th(j-c)</sub>	°C/W	-	-	

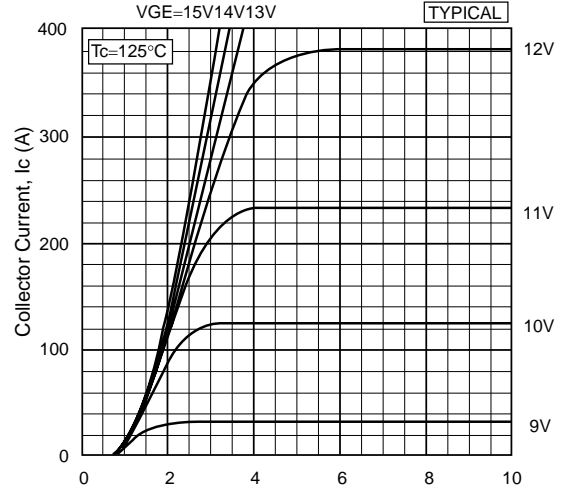
Notes; \*4: R<sub>G</sub> value is the test condition's value for decision of the switching times, not recommended value, please determine the suitable R<sub>G</sub> value after the measurement of switching waveforms (overshoot voltage, etc.) with appliance mounted.

Remark; The specification given herein, is subject to change without prior notice to improve product characteristics.

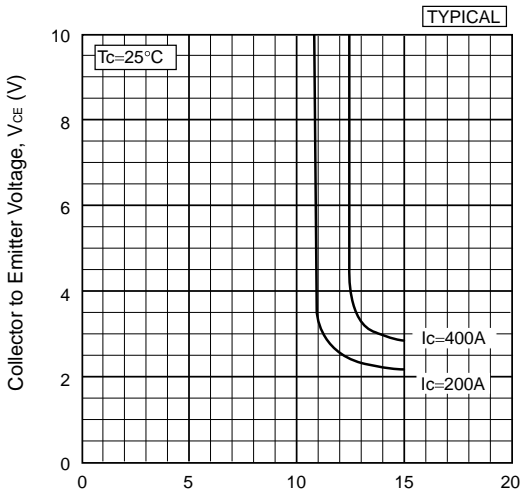
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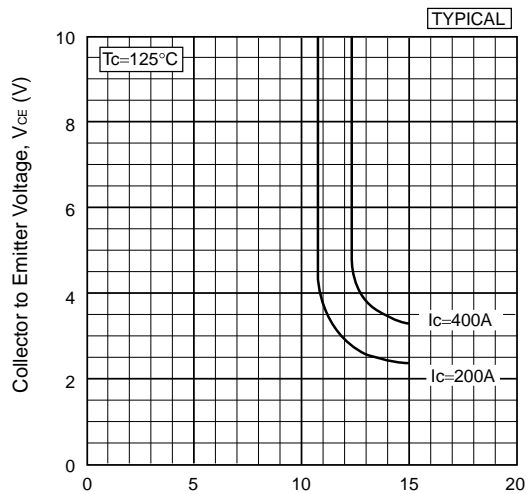
Collector current vs. Collector to Emitter voltage



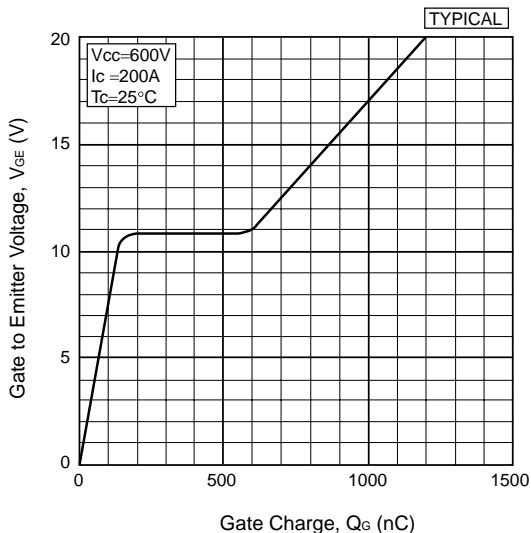
Collector current vs. Collector to Emitter voltage



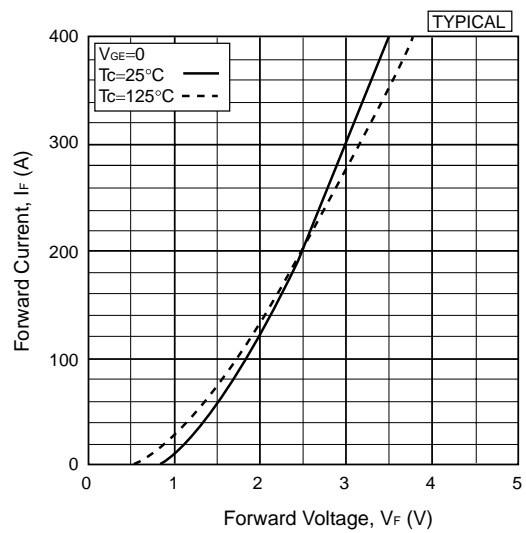
Collector to Emitter voltage vs. Gate to Emitter voltage



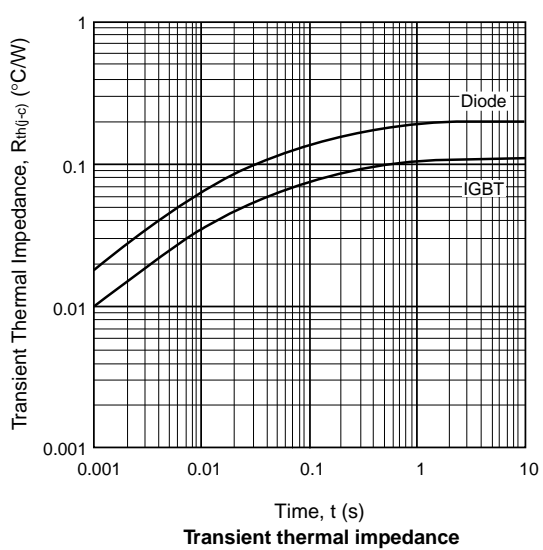
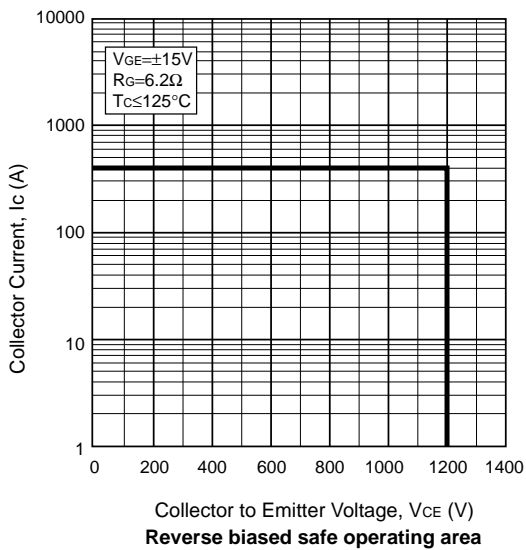
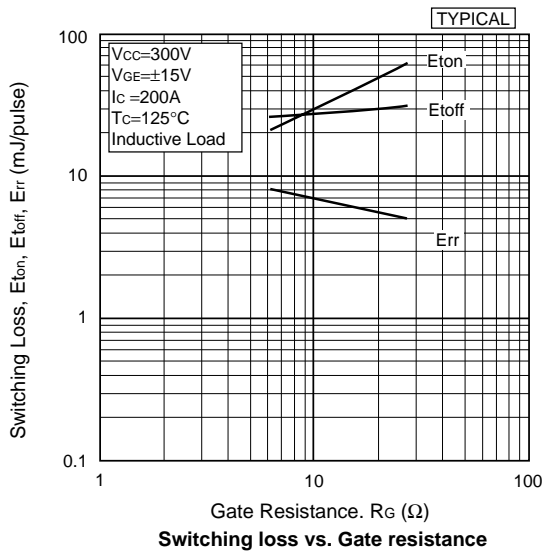
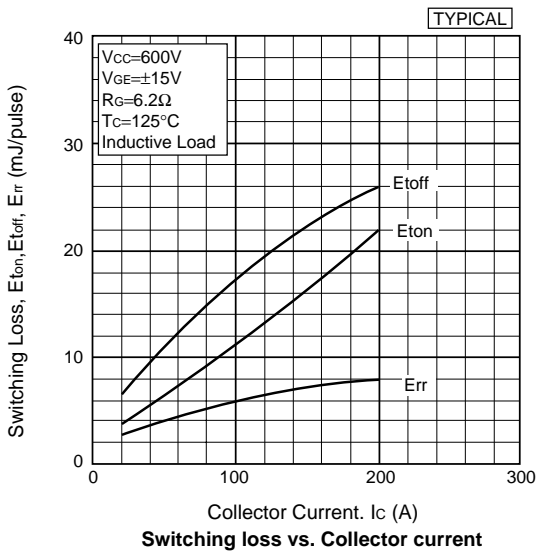
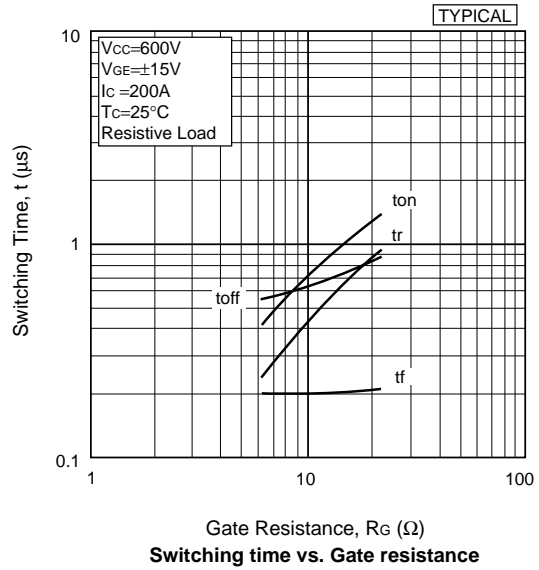
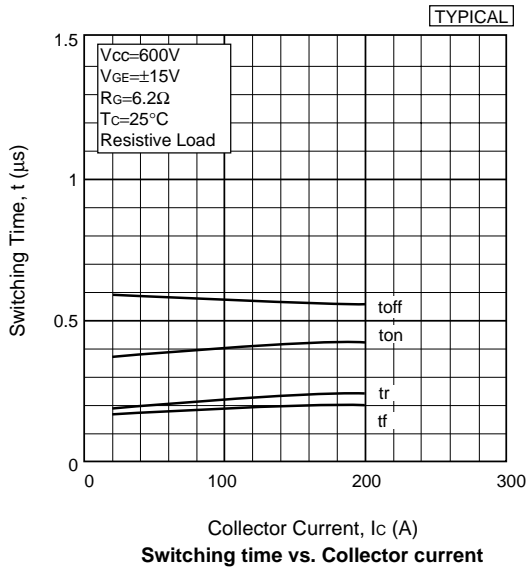
Collector to Emitter voltage vs. Gate to Emitter voltage



Gate charge characteristics



Forward voltage of free-wheeling diode



# HITACHI POWER SEMICONDUCTORS

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