

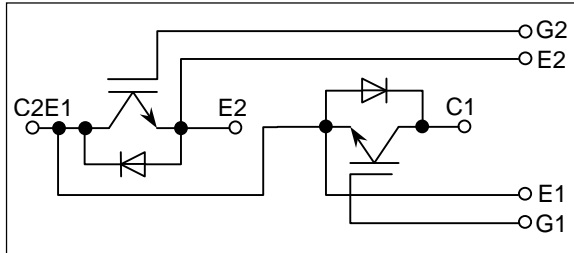
# MBM400GR6

[Rated 400A/600V, Dual-pack type]

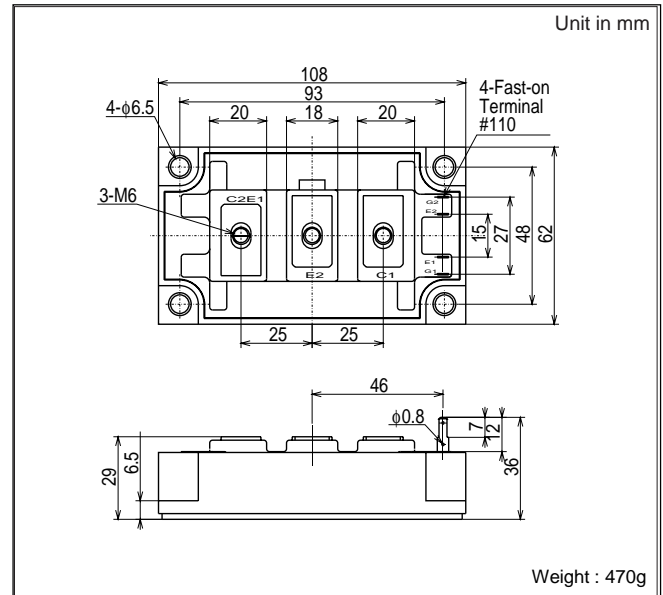
## FEATURES

- 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( $T_c=25^\circ\text{C}$ )

Item	Symbol	Unit	Value
Collector-Emitter Voltage	$V_{CES}$	V	600
Gate-Emitter Voltage	$V_{GES}$	V	$\pm 20$
Collector Current	DC	$I_C$	400
	1ms	$I_{CP}$	800
Forward Current	DC	$I_F$	400 <sup>*1</sup>
	1ms	$I_{FM}$	800
Collector Power Dissipation	$P_C$	W	1170
Junction Temperature	$T_j$	$^\circ\text{C}$	-40 ~ +150
Storage Temperature	$T_{sig}$	$^\circ\text{C}$	-40 ~ +125
Isolation Voltage	$V_{iso}$	$V_{RMS}$	2500(AC 1 minute)
Screw Torque	Terminals	-	2.94(30) <sup>*2</sup>
	Mounting		2.94(30) <sup>*3</sup>

Notes; <sup>\*1</sup>: RMS current of Diode  $\leq 120$  Arms

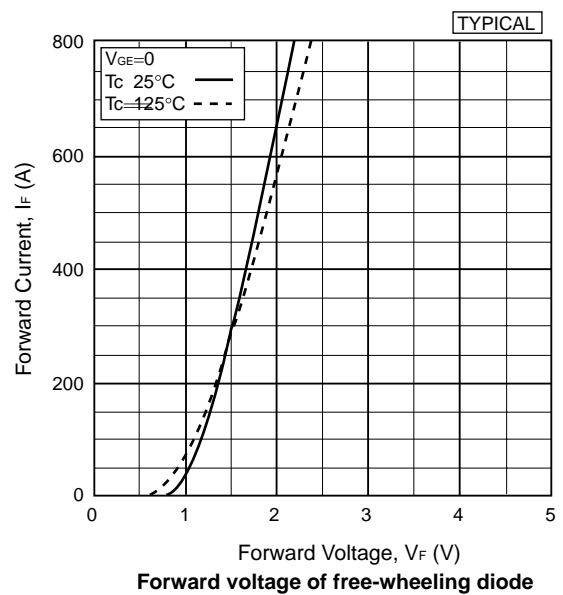
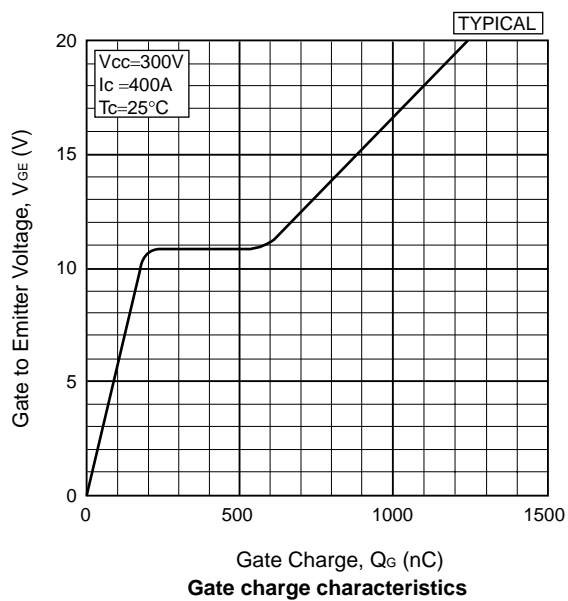
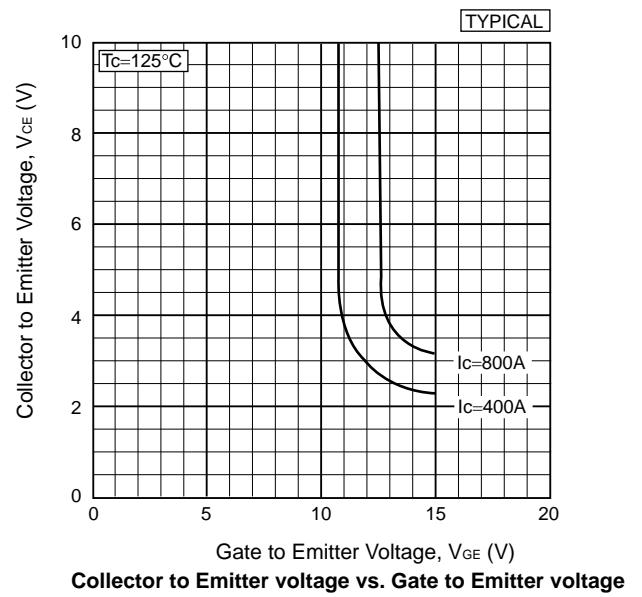
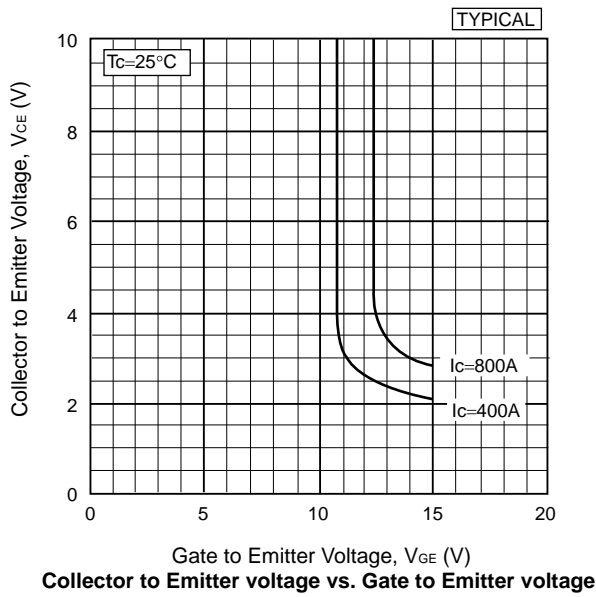
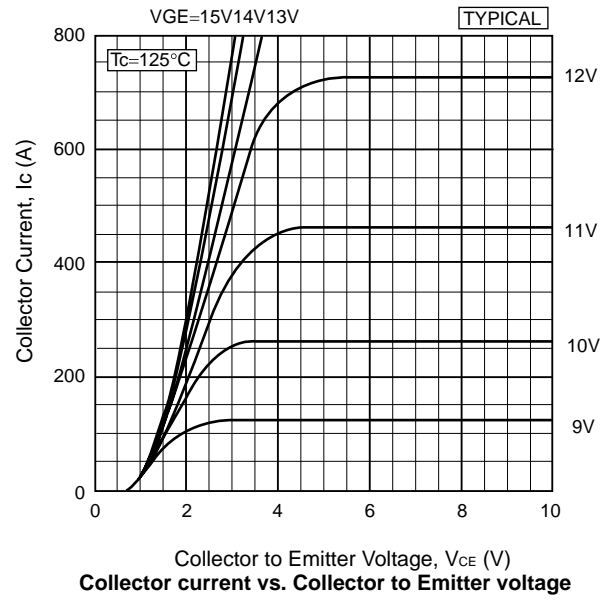
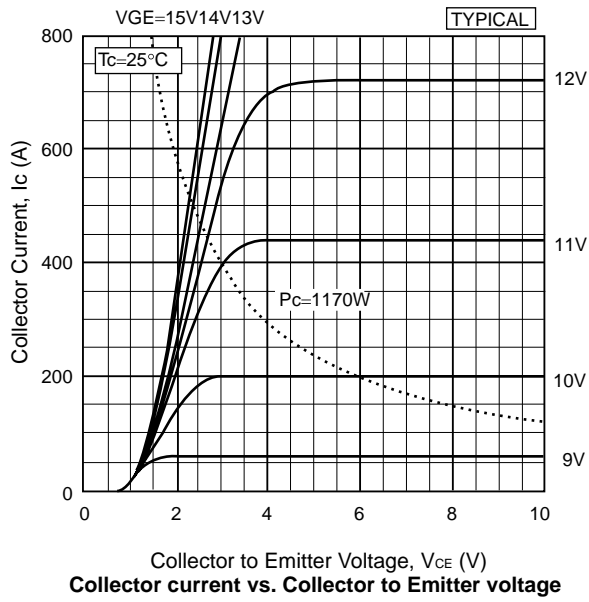
<sup>\*2</sup>, <sup>\*3</sup> : Recommended value 2.45 N·m (25 kgf·cm)

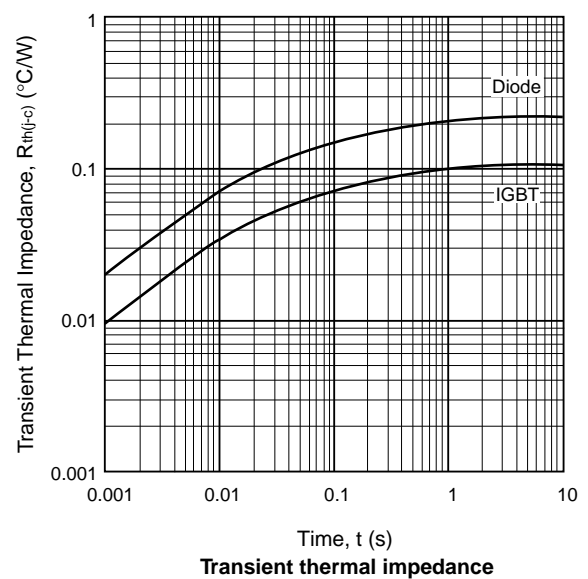
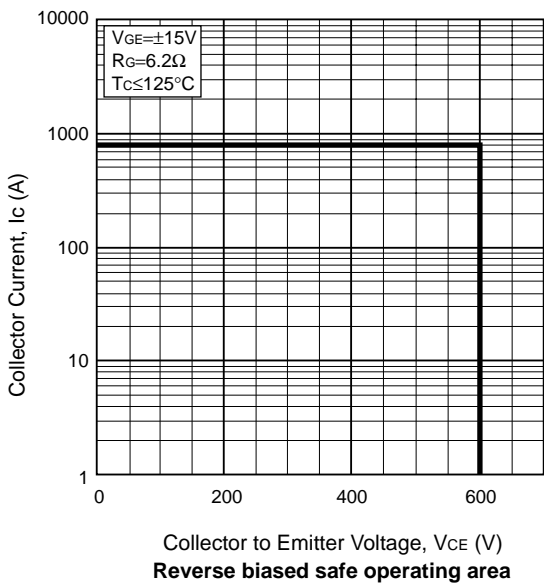
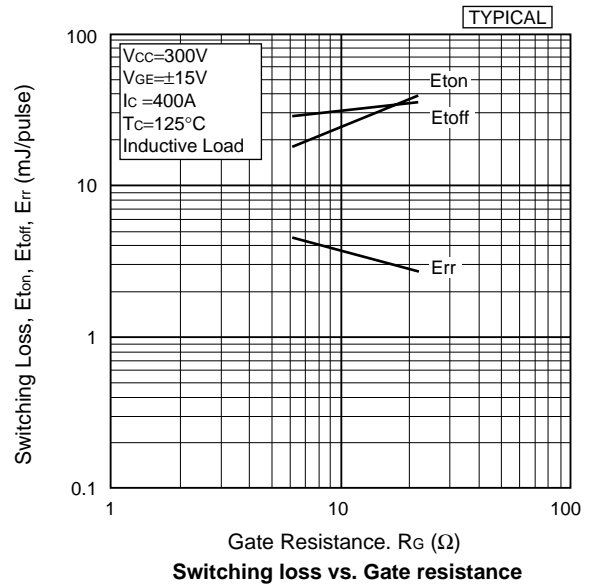
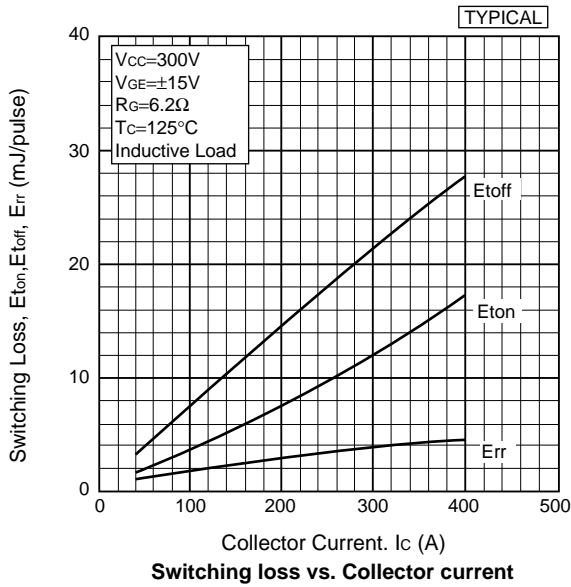
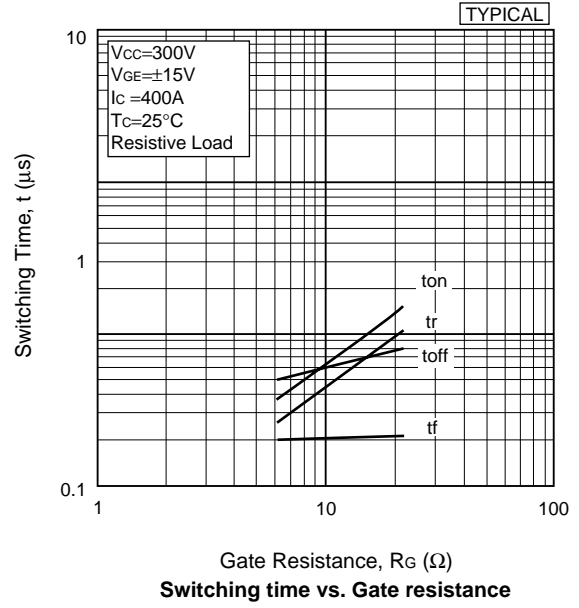
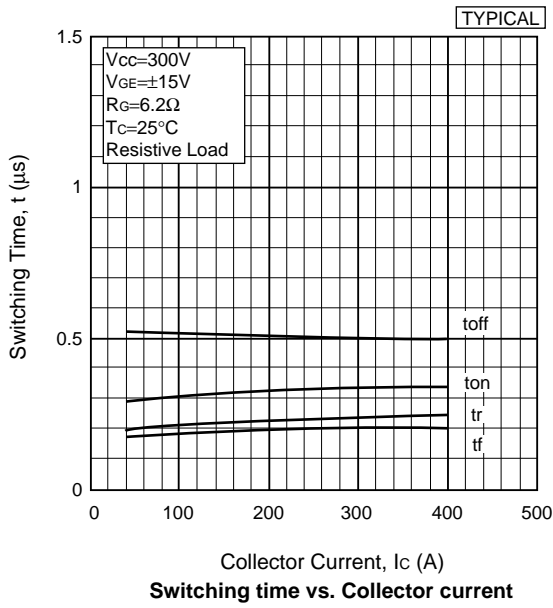
## CHARACTERISTICS ( $T_c=25^\circ\text{C}$ )

Item	Symbol	Unit	Min.	Typ.	Max.	Test Conditions
Collector-Emitter Cut-Off Current	$I_{CES}$	mA	-	-	1.0	$V_{CE}=600\text{V}$ , $V_{GE}=0\text{V}$
Gate-Emitter Leakage Current	$I_{GES}$	nA	-	-	$\pm 500$	$V_{GE}=\pm 20\text{V}$ , $V_{CE}=0\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	V	-	2.1	2.6	$I_C=400\text{A}$ , $V_{GE}=15\text{V}$
Gate-Emitter Threshold Voltage	$V_{GE(TH)}$	V	-	-	10	$V_{CE}=5\text{V}$ , $I_C=400\text{mA}$
Input Capacitance	$C_{ies}$	pF	-	20000	-	$V_{CE}=10\text{V}$ , $V_{GE}=0\text{V}$ , $f=1\text{MHz}$
Switching Times	Rise Time	$t_r$	-	0.25	0.5	$V_{CC}=300\text{V}$ $R_L=0.75\Omega$ $R_G=6.2\Omega$ <sup>*4</sup> $V_{GE}=\pm 15\text{V}$
	Turn-ON Time	$t_{on}$	-	0.35	0.7	
	Fall Time	$t_f$	-	0.2	0.32	
	Turn-Off Time	$t_{off}$	-	0.8	1.1	
Peak Forward Voltage Drop	$V_{FM}$	V	-	1.6	2.2	$I_F=400\text{A}$ , $V_{GE}=0\text{V}$
Reverse Recovery Time	$t_{rr}$	$\mu\text{s}$	-	-	0.3	$I_F=400\text{A}$ , $V_{GE}=-10\text{V}$ , $di/dt=400\text{A}/\mu\text{s}$
Thermal Impedance	IGBT	$R_{th(j-c)}$	$^\circ\text{C/W}$	-	-	0.106
	FWD	$R_{th(j-c)}$				0.22

Notes; <sup>\*4</sup>:  $R_G$  value is the test condition's value for decision of the switching times, not recommended value, please determine the suitable  $R_G$  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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