IGBT MODULE

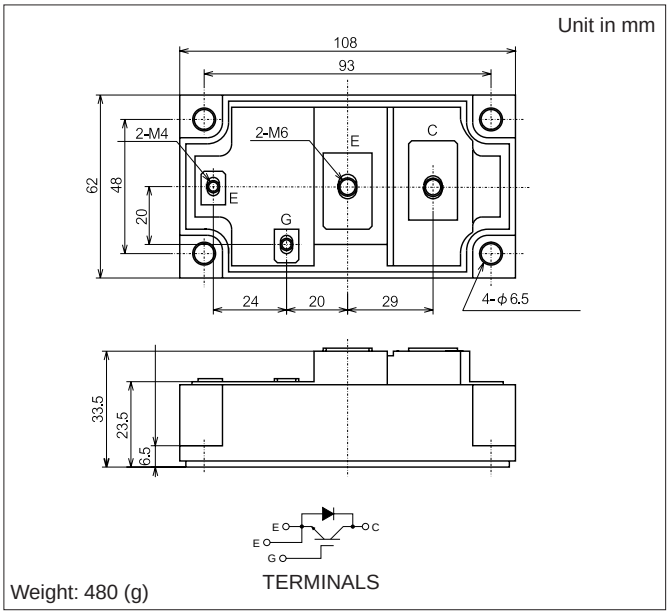
MBN400GS12AW

Silicon N-channel IGBT

FEATURES

* High speed and low saturation voltage.
* low noise due to built-in free-wheeling diode - ultra soft fast recovery diode(USFD).
* Isolated head sink (terminal to base).

OUTLINE DRAWING



Weight: 480 (g)

ABSOLUTE MAXIMUM RATINGS (Tc=25°C)

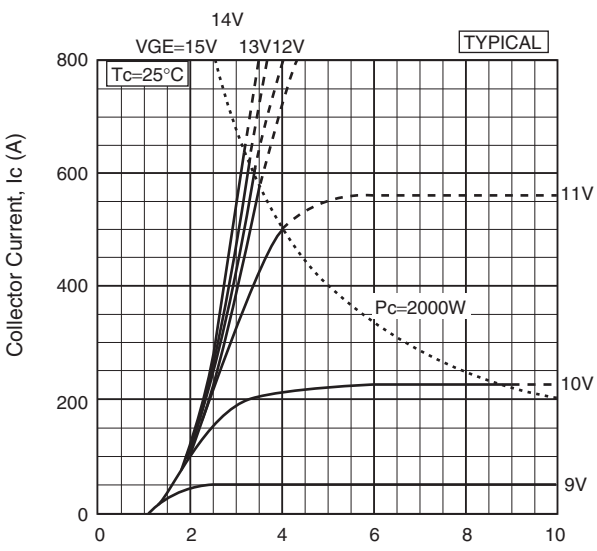
Item		Symbol	Unit	MBN400GS12AW	
Collector Emitter Voltage		V_{CES}	V	1,200	
Gate Emitter Voltage		V_{GES}	V	±20	
Collector Current	DC	I_C	A	400	
	1ms	I_{Cp}		800	
Forward Current	DC	I_F	A	400	(1)
	1ms	I_{FM}		800	
Collector Power Dissipation		Pc	W	2,000	
Junction Temperature		T_j	°C	-40 ~ +150	
Storage Temperature		T_{stg}	°C	-40 ~ +125	
Isolation Voltage		V_{ISO}	V_{RMS}	2,500(AC 1 minute)	
Screw Torque	Terminals	-	N.m (kgf.cm)	1.37(14)/2.94(30)	(2)
	Mounting	-		2.94(30)	(3)

Notes:(1)RMS Current of Diode 120Arms max.
(2)Recommended Value 1.18/2.45N.m(12/25kgf.cm) (3)Recommended Value 2.45N.m(25kgf.cm)

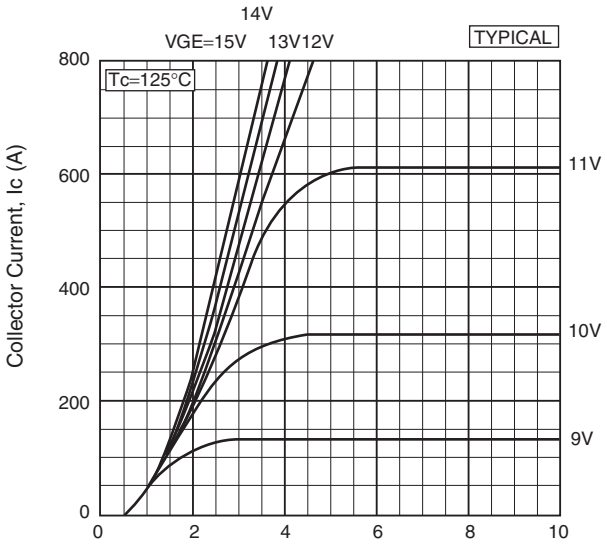
CHARACTERISTICS (Tc=25°C)

Item		Symbol	Unit	Min.	Typ.	Max.	Test Conditions
Collector Emitter Cut-Off Current		I_{CES}	mA	-	-	1.0	V_{CE}=1,200V,V_{GE}=0V
Gate Emitter Leakage Current		I_{GES}	nA	-	-	±500	V_{GE}=±20V,V_{CE}=0V
Collector Emitter Saturation Voltage		$V_{CE(sat)}$	V	-	2.7	3.4	I_C=400A,V_{GE}=15V
Gate Emitter Threshold Voltage		$V_{GE(TO)}$	V	-	-	10	V_{CE}=5V, I_C =400mA
Input Capacitance		C_{ies}	pF	-	37,000	-	V_{CE}=10V,V_{GE}=0V,f=1MHz
Switching Times	Rise Time	t_r	μs	-	0.25	0.5	V_{CC}=600V
	Turn On Time	t_{on}		-	0.4	0.7	R_L=1.5Ω
	Fall Time	t_f		-	0.25	0.35	R_G=2.7Ω (4)
	Turn Off Time	t_{off}		-	0.75	1.1	V_{GE}=±15V
Peak Forward Voltage Drop		V_{FM}	V	-	2.5	3.5	I_F=400A,V_{GE}=0V
Reverse Recovery Time		t_{rr}	μs	-	-	0.4	I_F=400A,V_{GE}=-10V, di/dt=400A/μs
Thermal Impedance	IGBT	Rth(j-c)	°C/W	-	-	0.06	Junction to case
	FWD	Rth(j-c)		-	-	0.14	

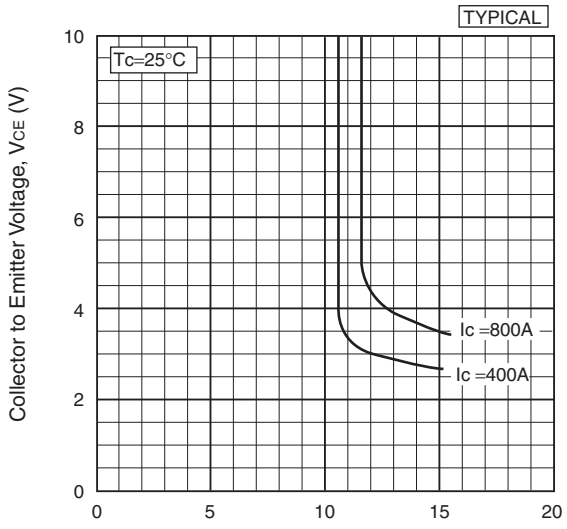
Notes:(4) R_G value is the test condition's value for decision of the switching times, not recommended value.
Determine the suitable R_G value after the measurement of switching waveforms
(overshoot voltage,etc.)with appliance mounted.



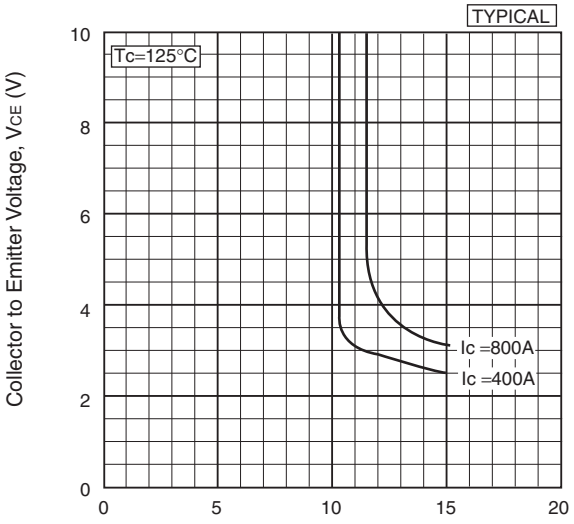
Collector current vs. Collector to Emitter voltage



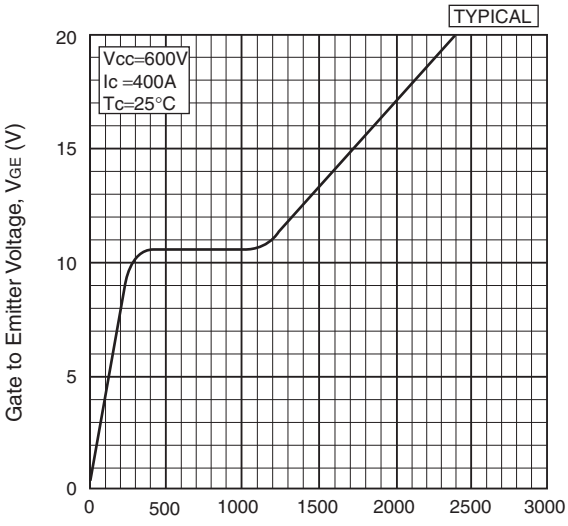
Collector current vs. Collector to Emitter voltage



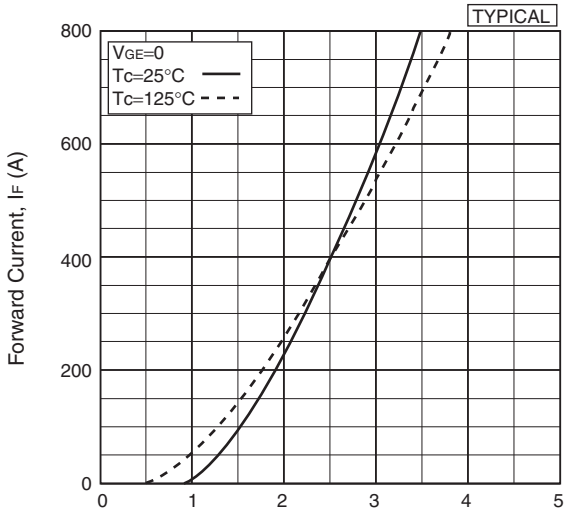
Collector to Emitter voltage vs. Gate to Emitter voltage



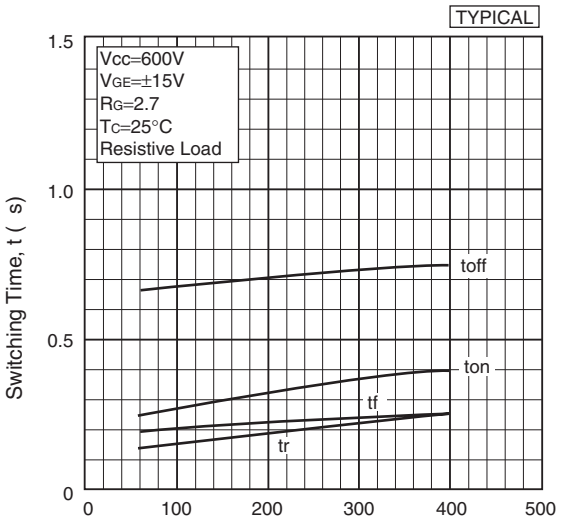
Collector to Emitter voltage vs. Gate to Emitter voltage



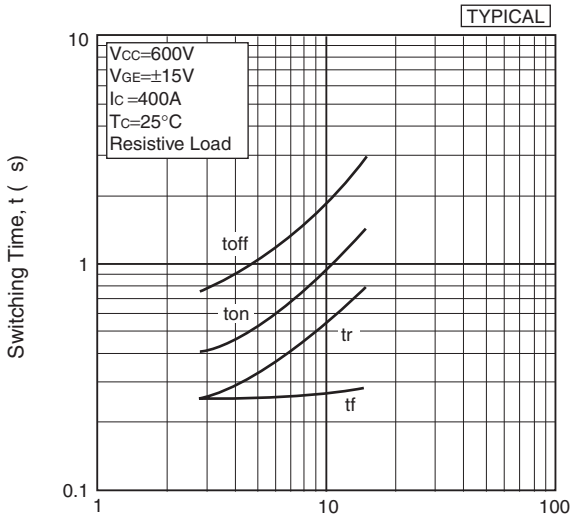
Gate charge characteristics



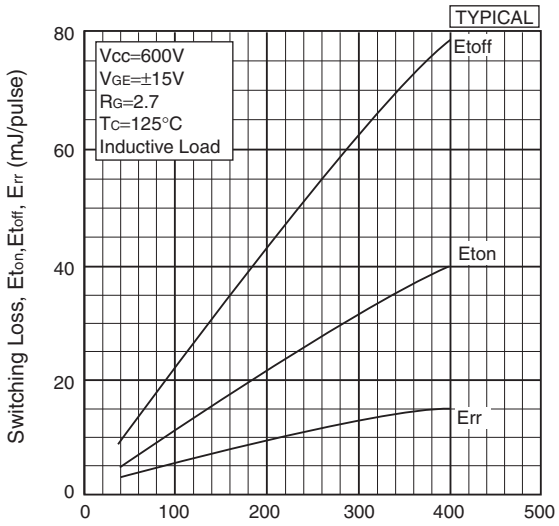
Forward voltage of free-wheeling diode



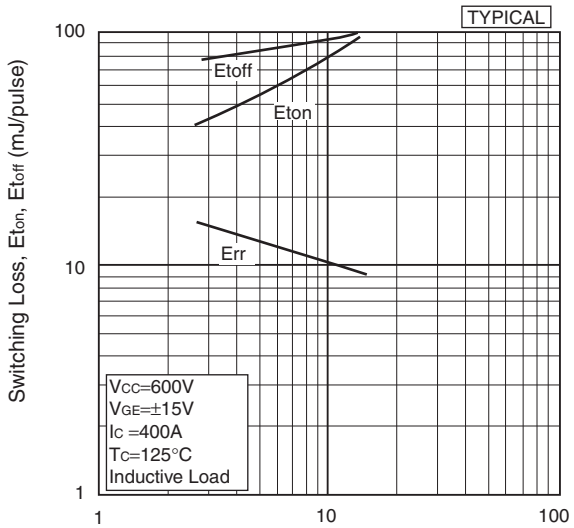
Switching time vs. Collector current



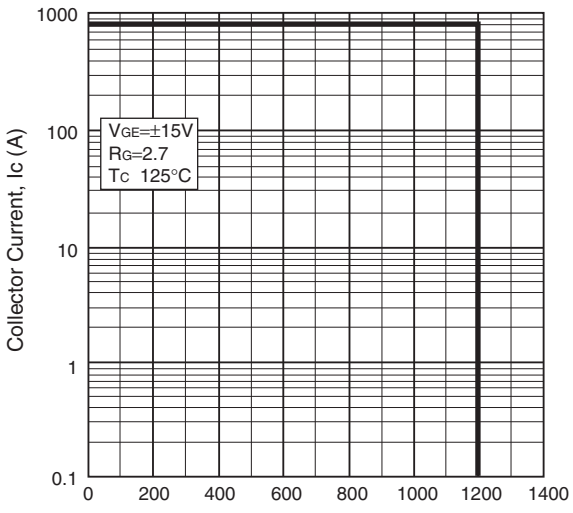
Switching time vs. Gate resistance



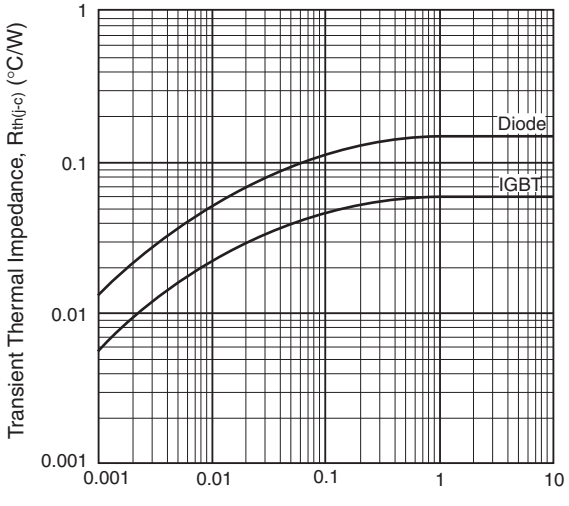
Switching loss vs. Collector current



Switching loss vs. Gate resistance



Reverse biased safe operating area



Transient thermal impedance

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