Electrical and Thermal Specifications (T_C = 25°C, unless otherwise specified)

Symbol	Parameters	Test Conditions		Min	Typ	Max	Unit
IGBT							
$V_{GE(th)}$	Gate - Emitter Threshold Voltage	$V_{CE}=V_{GE}$, I_C=16mA		5.0	5.8	6.5	V
$V_{CE(sat)}$	Collector - Emitter Saturation Voltage	I_C=400A, V_{GE}=15V, T_J=25°C			1.7		V
		I_C=400A, V_{GE}=15V, T_J=125°C			1.9		V
I_{ICES}	Collector Leakage Current	V_{CE}=1200V, V_{GE}=0V, T_J=25°C				2	mA
		V_{CE}=1200V, V_{GE}=0V, T_J=125°C				10	mA
I_{GES}	Gate Leakage Current	V_{CE}=0V, V_{GE}=±15V, T_J=125°C		-400		400	nA
R_{Gint}	Integrated Gate Resistor				1.9		Ω
Q_{ge}	Gate Charge	V_{CE}=600V, I_C=400A , V_{GE}=±15V			3.8		μC
C_{ies}	Input Capacitance	V_{CE}=25V, V_{GE}=0V, f =1MHz			28		nF
C_{res}	Reverse Transfer Capacitance				1.0		nF
$t_{d(on)}$	Turn - on Delay Time	V_{CC}=600V I_C=400A R_G =1.8Ω V_{GE}=±15V Inductive Load	T_J=25°C		160		ns
			T_J=125°C		170		ns
t_r	Rise Time		T_J=25°C		40		ns
			T_J=125°C		45		ns
$t_{d(off)}$	Turn - off Delay Time		T_J=25°C		450		ns
			T_J=125°C		520		ns
t_f	Fall Time		T_J=25°C		100		ns
			T_J=125°C		160		ns
E_{on}	Turn - on Energy		T_J=25°C		20		mJ
			T_J=125°C		30		mJ
E_{off}	Turn - off Energy		T_J=25°C		33		mJ
			T_J=125°C		50		mJ
I_{SC}	Short Circuit Current	t_{psc}≤10μS , V_{GE}=15V, T_J=125°C , V_{CC}=900V			1550		A
R_{thJC}	Junction-to-Case Thermal Resistance (Per IGBT)					0.065	K/W
Diode							
V_F	Forward Voltage	I_F=400A, V_{GE}=0V, T_J =25°C			1.65		V
		I_F=400A, V_{GE}=0V, T_J =125°C			1.65		V
t_{RR}	Reverse Recovery Time	I_F=400A, V_R=600V di_F/dt=-8000A/μs T_J=125°C			450		ns
I_{RRM}	Max. Reverse Recovery Current				75		A
E_{rec}	Reverse Recovery Energy				35		mJ
R_{thJCD}	Junction-to-Case Thermal Resistance (Per Diode)					0.12	K/W

Figure 1: Typical Output Characteristics

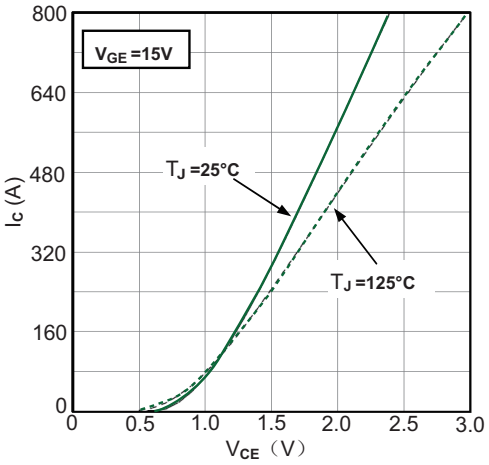


Figure 2: Typical Output Characteristics

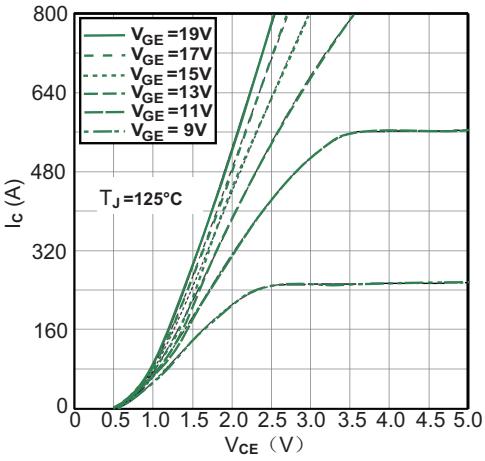


Figure 3: Typical Transfer characteristics

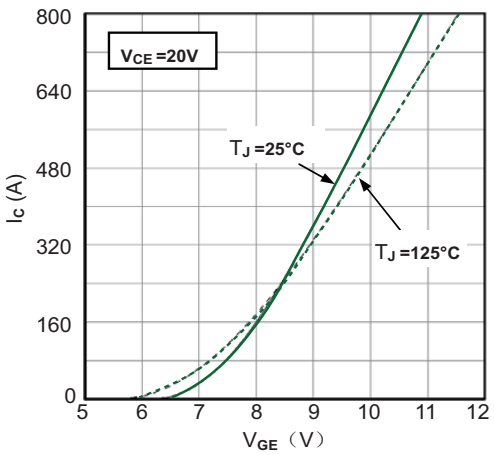


Figure 4: Switching Energy vs. Gate Resistor

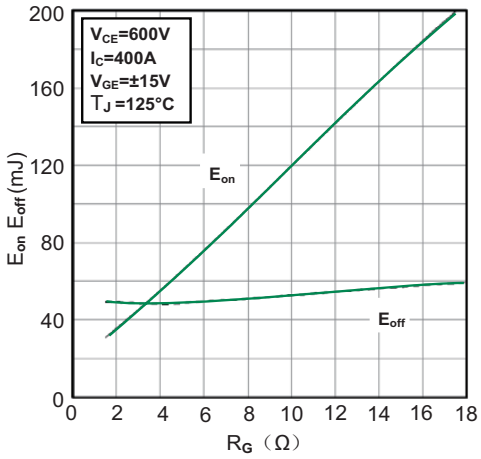


Figure 5: Switching Energy vs. Collector Current

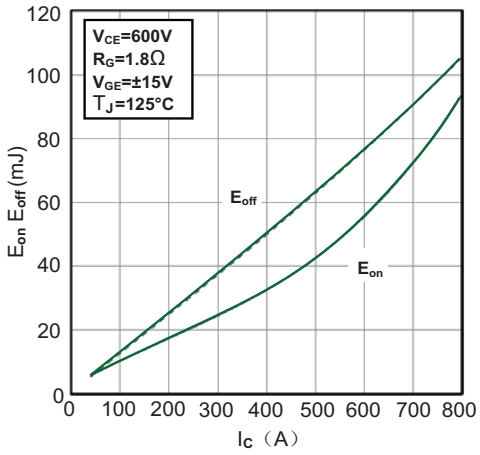


Figure 6: Reverse Biased Safe Operating Area

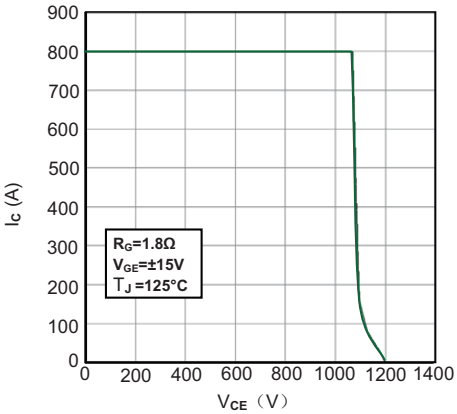


Figure 7: Diode Forward Characteristics

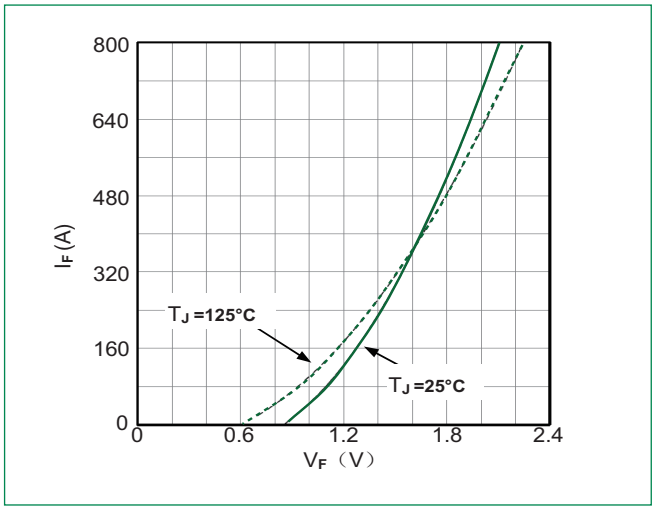


Figure 8: Switching Energy vs. Gate Resistor

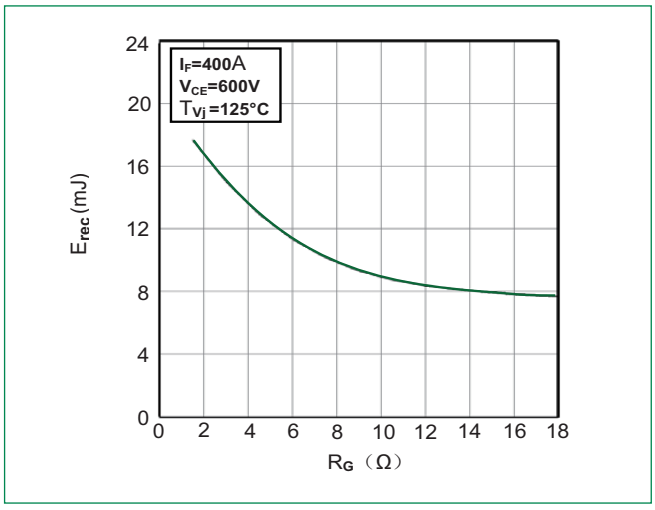


Figure 9: Switching Energy vs. Forward Current

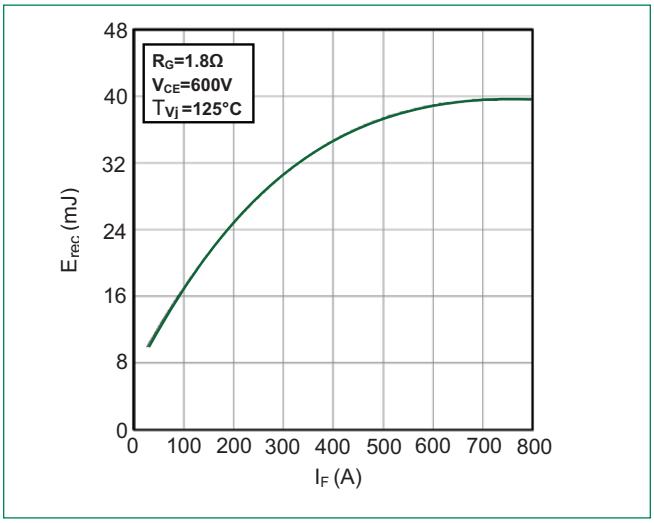
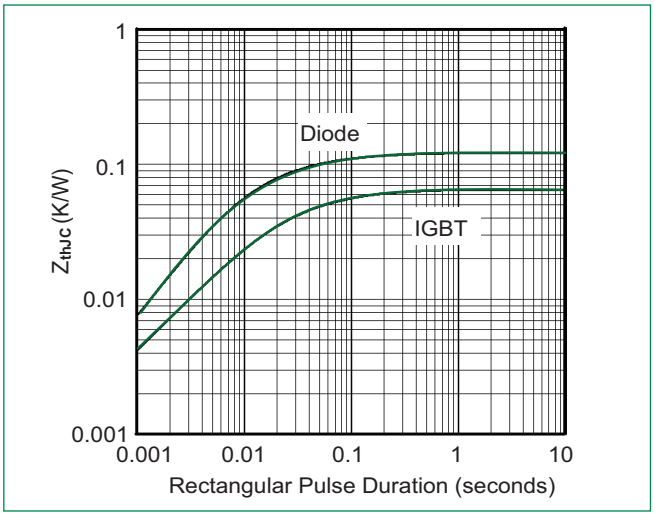
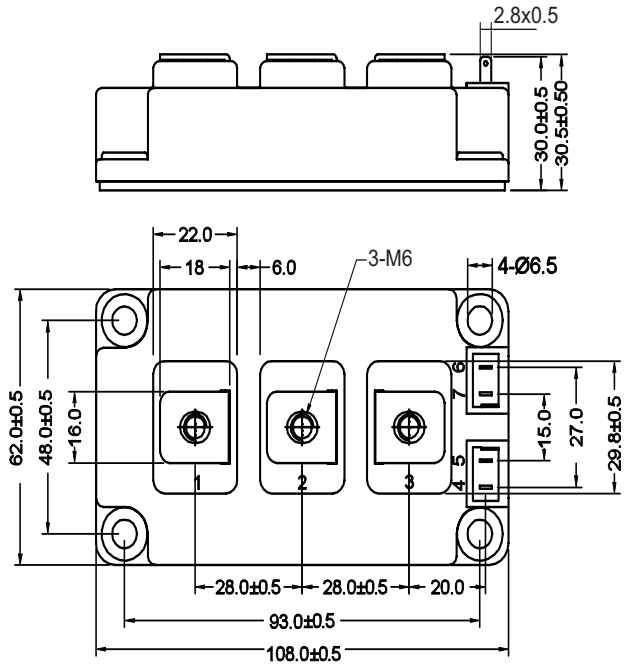


Figure 10: Transient Thermal Impedance

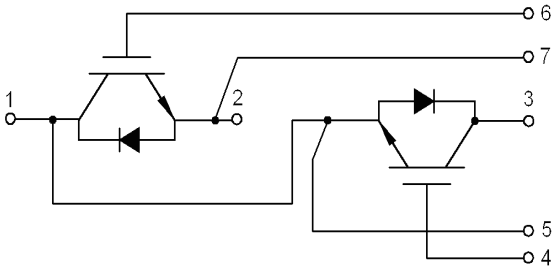


Power Module
1200V 400A IGBT Module

Dimensions-Package D



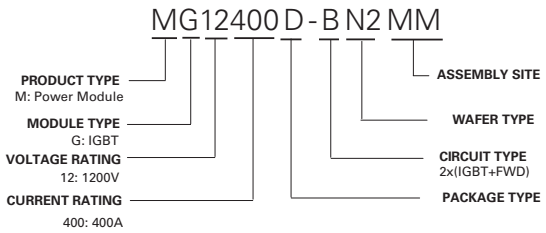
Circuit Diagram



Packing Options

Part Number	Marking	Weight	Packing Mode	M.O.Q
MG12400D-BN2MM	MG12400D-BN2MM	320g	Bulk Pack	60

Part Numbering System



Part Marking System