

Power Module

1200V 150A IGBT Module

Electrical and Thermal Specifications ($T_J = 25^\circ\text{C}$, 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 =6.0mA		5.0	5.8	6.5	V
V _{CE(sat)}	Collector - Emitter	I _C =150A, V _{GE} =15V, T _J =25°C			1.7		V
	Saturation Voltage	I _C =150A, 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				1	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				5.0		Ω
Q _{ge}	Gate Charge	V _{CE} =600V, I _C =150A , V _{GE} =±15V			1.4		μC
C _{ies}	Input Capacitance	V _{CE} =25V, V _{GE} =0V, f =1MHz			10.5		nF
C _{RES}	Reverse Transfer Capacitance				0.4		nF
t _{d(on)}	Turn - on Delay Time	V _{CC} =600V I _C =150A R _G =2.4Ω V _{GE} =±15V Inductive Load	T _J =25°C		260		ns
			T _J =125°C		290		ns
t _r	Rise Time		T _J =25°C		30		ns
			T _J =125°C		50		ns
t _{d(off)}	Turn - off Delay Time		T _J =25°C		420		ns
			T _J =125°C		520		ns
t _f	Fall Time		T _J =25°C		70		ns
			T _J =125°C		90		ns
E _{on}	Turn - on Energy		T _J =25°C		12		mJ
			T _J =125°C		16		mJ
E _{off}	Turn - off Energy		T _J =25°C		11		mJ
			T _J =125°C		14.5		mJ
I _{SC}	Short Circuit Current	t _{psc} ≤10μS , V _{GE} =15V, T _J =125°C , V _{CC} =900V			600		A
R _{thJC}	Junction-to-Case Thermal Resistance (Per IGBT)					0.20	K/W
Diode							
V _F	Forward Voltage	I _F =150A, V _{GE} =0V, T _J =25°C			1.65		V
		I _F =150A, V _{GE} =0V, T _J =125°C			1.65		V
t _{RR}	Reverse Recovery Time	I _F =150A, V _R =600V di _F /dt=3600A/μs T _J =125°C			350		ns
I _{RRM}	Max. Reverse Recovery Current				160		A
E _{rec}	Reverse Recovery Energy				13.5		mJ
R _{thJCD}	Junction-to-Case Thermal Resistance (Per Diode)					0.36	K/W

NTC Characteristics ($T_J = 25^\circ\text{C}$, unless otherwise specified)

Symbol	Parameters	Test Conditions	Min	Typ	Max	Unit
R_{25}	Resistance	$T_c=25^\circ\text{C}$		5		K Ω
$B_{25/50}$				3375		K

Figure 1: Typical Output Characteristics for IGBT Inverter

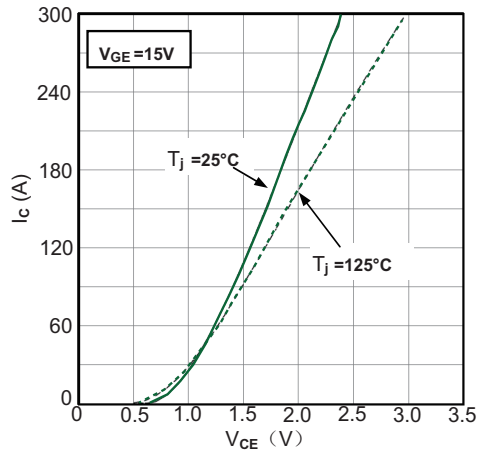


Figure 2: Typical Output Characteristics for IGBT Inverter

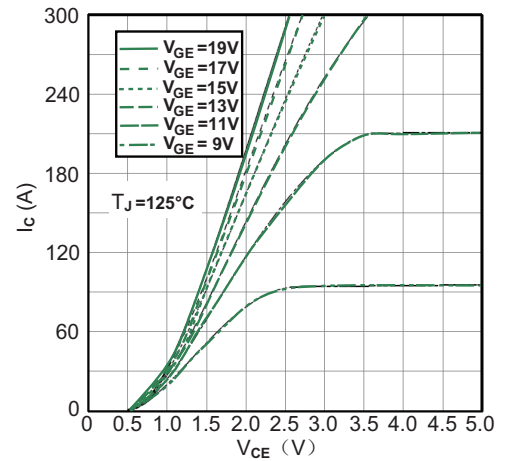


Figure 3: Typical Transfer Characteristics for IGBT Inverter

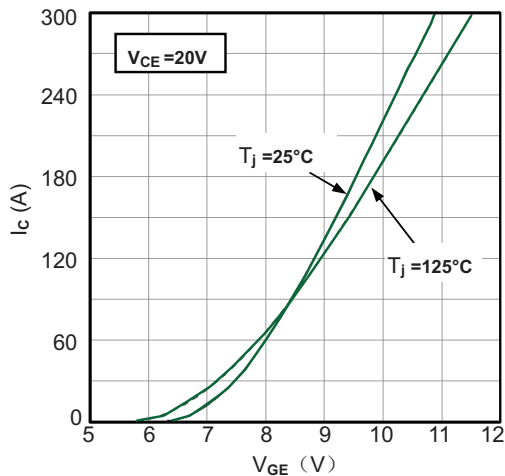


Figure 4: Switching Energy vs. Gate Resistor for IGBT Inverter

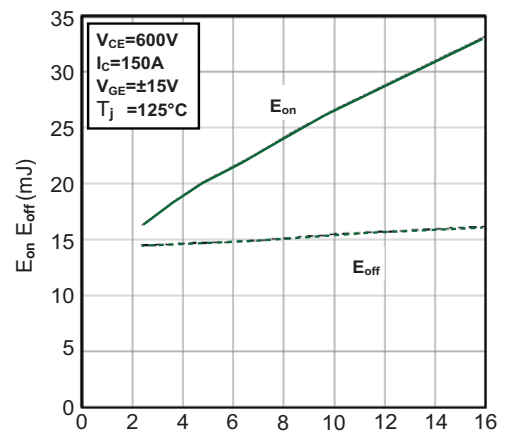


Figure 5: Switching Energy vs. Collector Current for IGBT Inverter

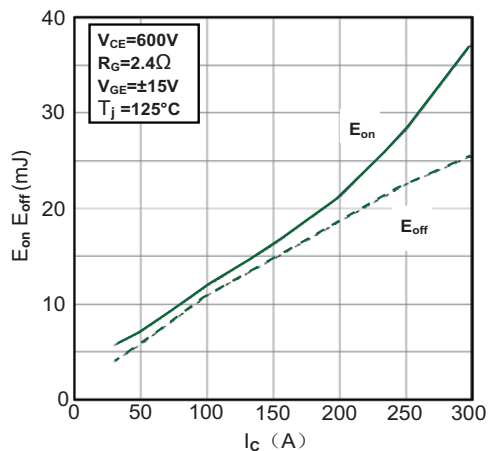


Figure 6: Reverse Biased Safe Operating Area for IGBT Inverter

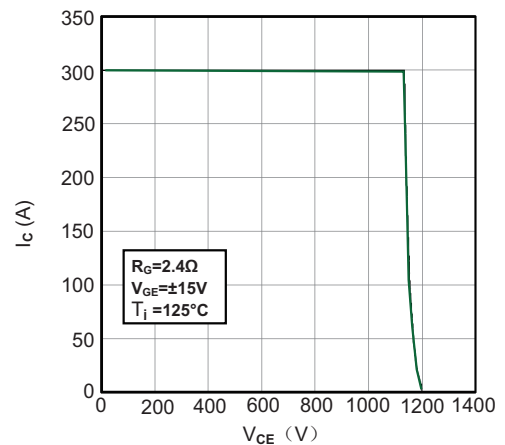


Figure 7: Diode Forward Characteristics for Diode Inverter

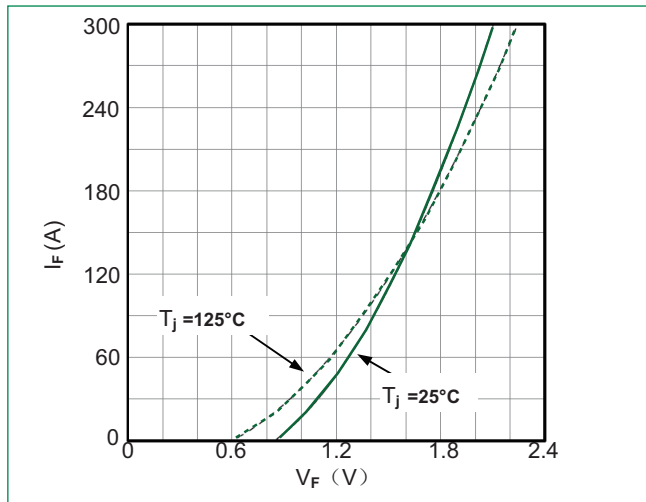


Figure 8: Switching Energy vs. Gate Resistort for Diode Inverter

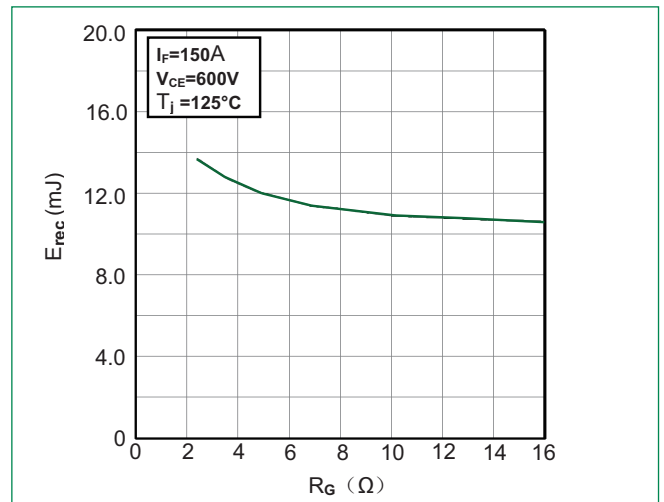


Figure 9: Switching Energy vs. Forward Current for Diode Inverter

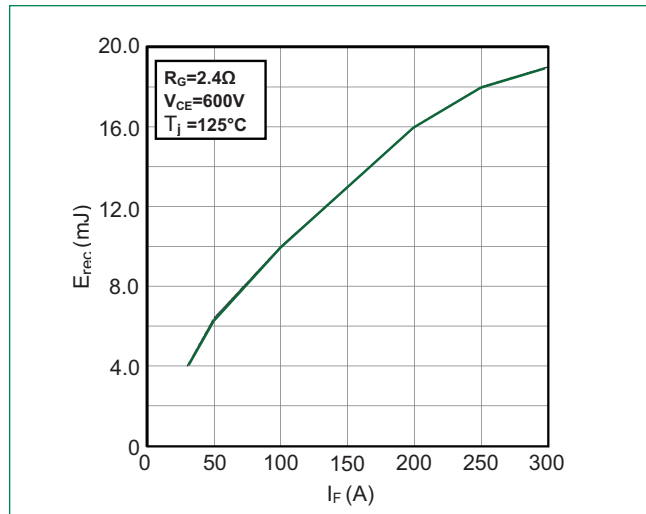


Figure 10: Transient Thermal Impedance of Diode and IGBT Inverter

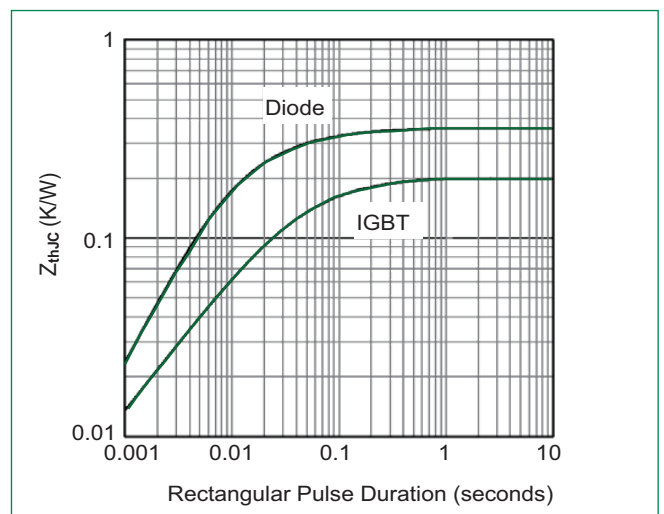
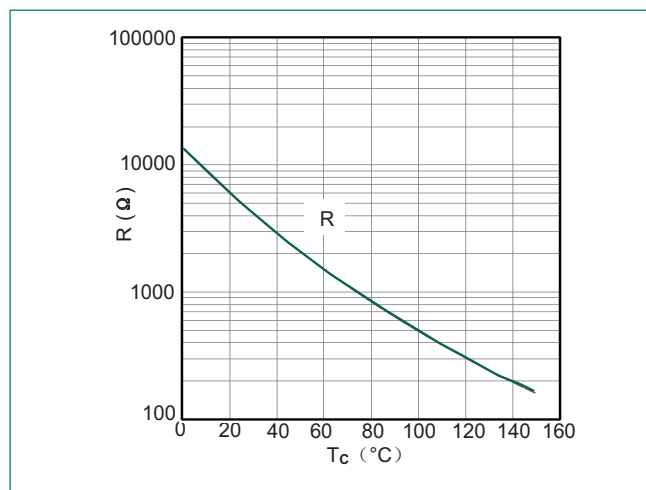
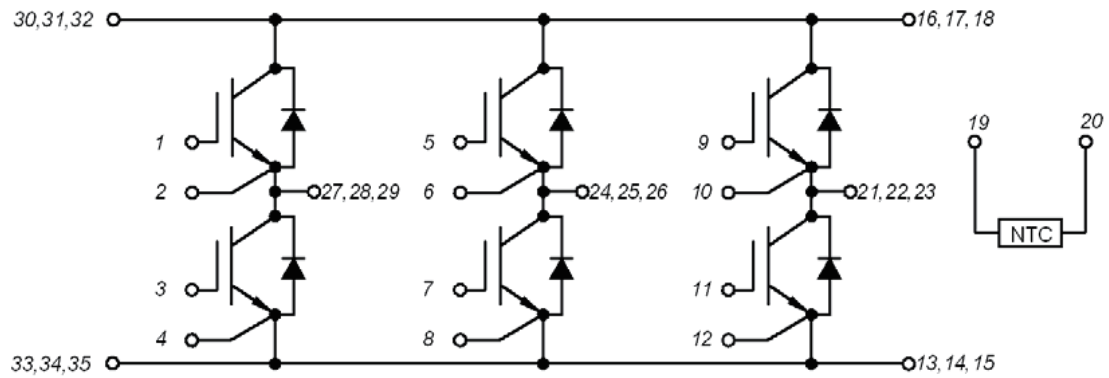


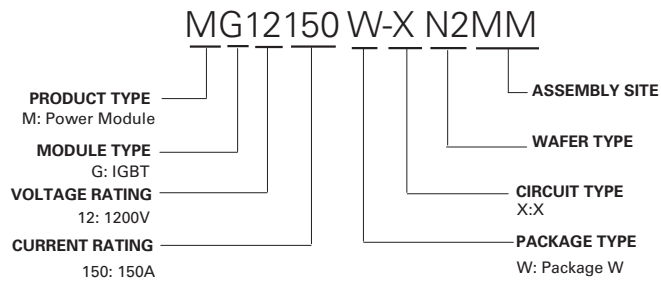
Figure 11: NTC Characteristics



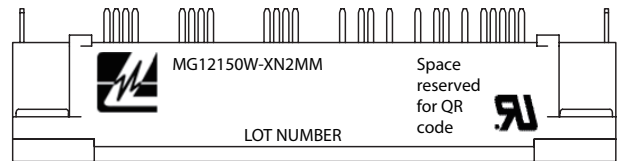
Circuit Diagram



Part Numbering System



Part Marking System



Packing Options

Part Number	Marking	Weight	Packing Mode	M.O.Q
MG12150W-XN2MM	MG12150W-XN2MM	300g	Bulk Pack	20

Dimensions-Package W

