

FEATURES

- High level of integration
- IGBT³ CHIP(Trench+Field Stop technology)
- Low saturation voltage and positive temperature coefficient
- Fast switching and short tail current
- Free wheeling diodes with fast and soft reverse recovery
- Solderable pins for PCB mounting
- Temperature sense included



APPLICATIONS

- AC motor control
- Motion/servo control
- Inverter and power supplies

INVERTER SECTOR

ABSOLUTE MAXIMUM RATINGS

T_c=25°C unless otherwise specified

Symbol	Parameter	Test Conditions	Values	Unit
IGBT				
V _{CES}	Collector - Emitter Voltage	T _{vj} =25°C	1200	V
V _{GES}	Gate - Emitter Voltage		±20	V
I _c	DC Collector Current	T _c =25°C	200	A
		T _c =80°C	150	A
I _{CM}	Repetitive Peak Collector Current	t _p =1ms	300	A
P _{tot}	Power Dissipation Per IGBT		625	W
Diode				
V _{RRM}	Repetitive Reverse Voltage	T _{vj} =25°C	1200	V
I _{F(AV)}	Average Forward Current	T _c =25°C	200	A
		T _c =80°C	150	A
I _{FRM}	Repetitive Peak Forward Current	t _p =1ms	300	A
I ² t		T _{vj} =125°C, t=10ms, V _R =0V	4350	A ² s

INVERTER SECTOR

ELECTRICAL AND THERMAL CHARACTERISTICS

T_C=25°C unless otherwise specified

Symbol	Parameter	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 Saturation Voltage	I _C =150A, V _{GE} =15V, T _{VJ} =25°C		1.7		V
		I _C =150A, V _{GE} =15V, T _{VJ} =125°C		1.9		V
I _{CEs}	Collector Leakage Current	V _{CE} =1200V, V _{GE} =0V, T _{VJ} =25°C			1	mA
		V _{CE} =1200V, V _{GE} =0V, T _{VJ} =125°C			10	mA
I _{GES}	Gate Leakage Current	V _{CE} =0V, V _{GE} ± 15V, T _{VJ} =125°C	-400		400	nA
R _{Gint}	Integrated Gate Resistor			5		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	
t _{d(on)}	Turn - on Delay Time	V _{CC} =600V, I _C =150A, T _{VJ} =25°C		260		ns
		R _G =2.4 Ω, T _{VJ} =125°C		290		ns
t _r	Rise Time	V _{GE} = ± 15V, T _{VJ} =25°C		30		ns
		Inductive Load T _{VJ} =125°C		50		ns
t _{d(off)}	Turn - off Delay Time	V _{CC} =600V, I _C =150A, T _{VJ} =25°C		420		ns
		R _G =2.4 Ω, T _{VJ} =125°C		520		ns
t _f	Fall Time	V _{GE} = ± 15V, T _{VJ} =25°C		70		ns
		Inductive Load T _{VJ} =125°C		90		ns
E _{on}	Turn - on Energy	V _{CC} =600V, I _C =150A, T _{VJ} =25°C		12		mJ
		R _G =2.4 Ω, T _{VJ} =125°C		16		mJ
E _{off}	Turn - off Energy	V _{GE} = ± 15V, T _{VJ} =25°C		11		mJ
		Inductive Load T _{VJ} =125°C		14.5		mJ
I _{sc}	Short Circuit Current	t _{psc} ≤ 10μS, V _{GE} =15V T _{VJ} =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 _{VJ} =25°C		1.65		V
		I _F =150A, V _{GE} =0V, T _{VJ} =125°C		1.65		V
t _{rr}	Reverse Recovery Time	I _F =150A, V _R =600V		350		ns
I _{RRM}	Max. Reverse Recovery Current	di _F /dt=-3600A/μs		160		A
E _{rec}	Reverse Recovery Energy	T _{VJ} =125°C		13.5		mJ
R _{thJCD}	Junction-to-Case Thermal Resistance (Per Diode)				0.36	K /W

NTC SECTOR

CHARACTERISTIC VALUES

T_c=25°C unless otherwise specified

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
R ₂₅	Resistance	T _c =25°C		5		KΩ
B _{25/50}				3375		K

MODULE CHARACTERISTICS

T_c=25°C unless otherwise specified

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
T _{vj max}	Max. Junction Temperature				150	°C
T _{vj op}	Operating Temperature		-40		125	°C
T _{stg}	Storage Temperature		-40		125	°C
V _{isol}	Insulation Test Voltage	AC, t=1min		3000		V
CTI	Comparative Tracking Index		250			
M _d	Mounting Torque	Recommended (M5)	2.5		5	N· m
Weight				300		g

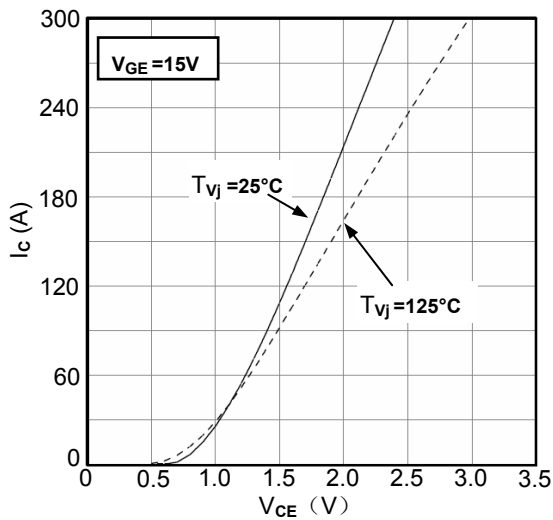


Figure1. Typical Output Characteristics IGBT-inverter

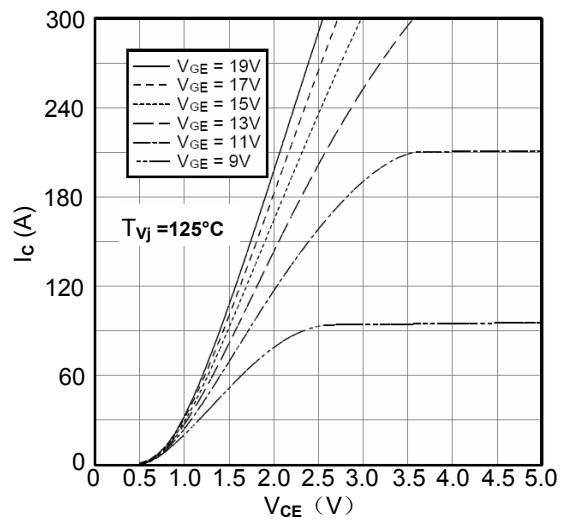


Figure2. Typical Output Characteristics IGBT-inverter

MIMMG150W120X6TN

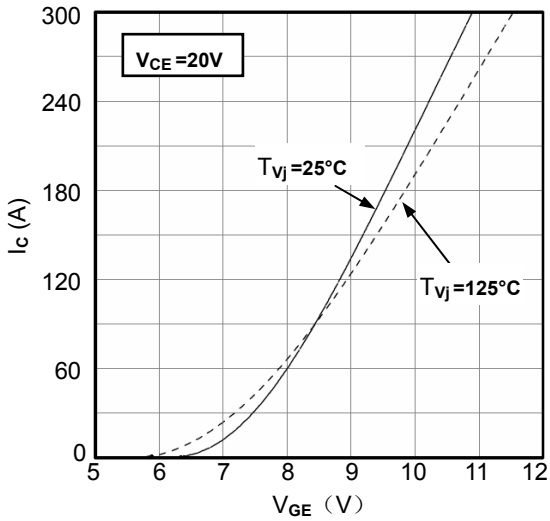


Figure3. Typical Transfer characteristics IGBT-inverter

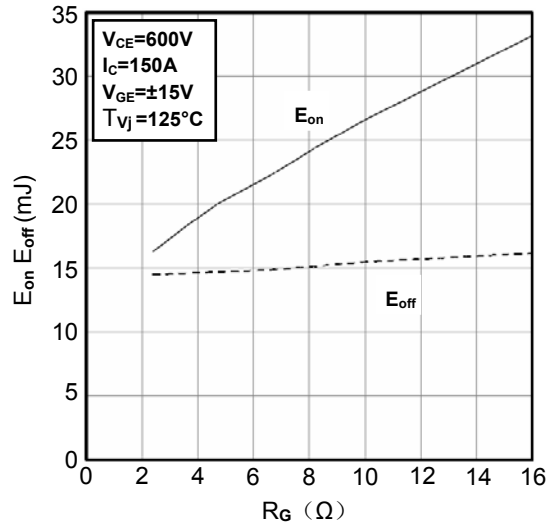


Figure4. Switching Energy vs. Gate Resistor IGBT-inverter

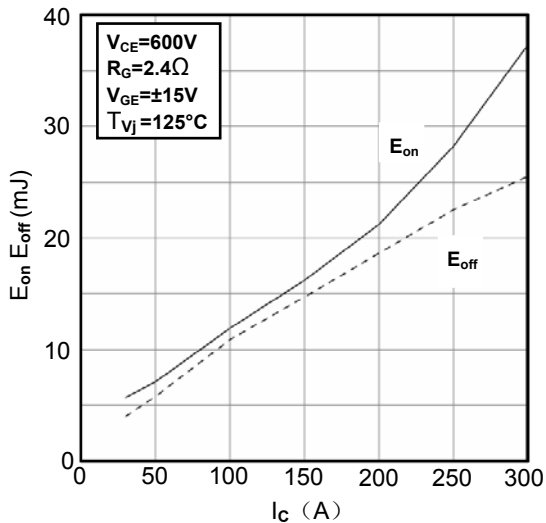


Figure5. Switching Energy vs. Collector Current IGBT-inverter

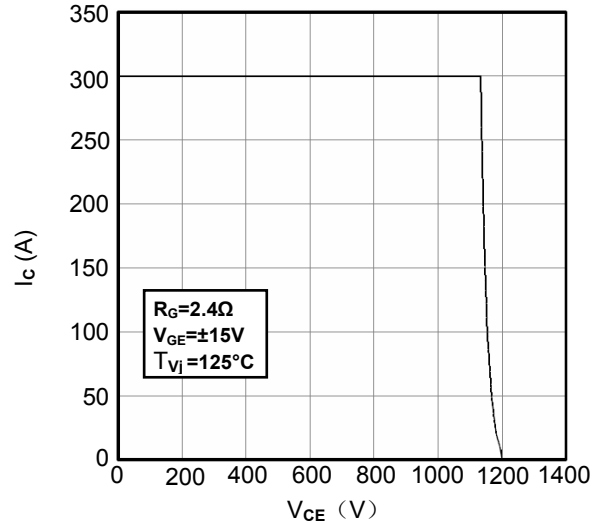


Figure6. Reverse Biased Safe Operating Area IGBT-inverter

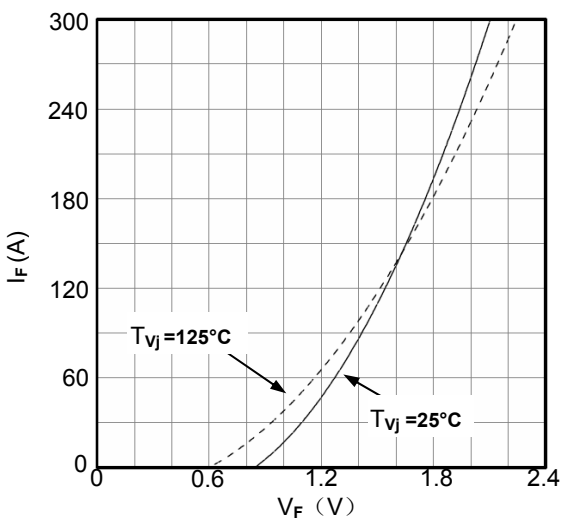


Figure7. Diode Forward Characteristics Diode -inverter

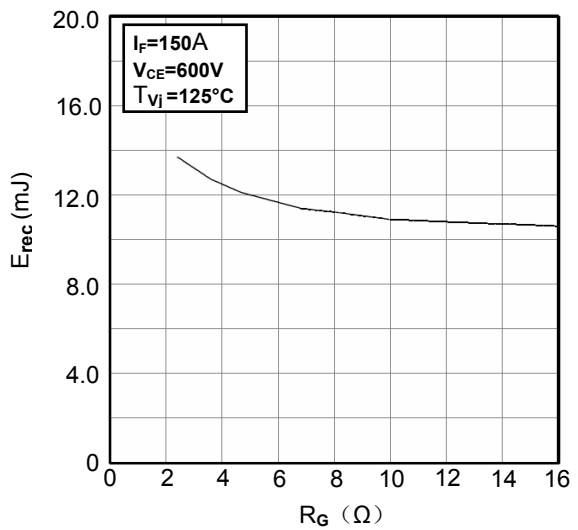


Figure8. Switching Energy vs. Gate Resistor Diode -inverter

MIMMG150W120X6TN

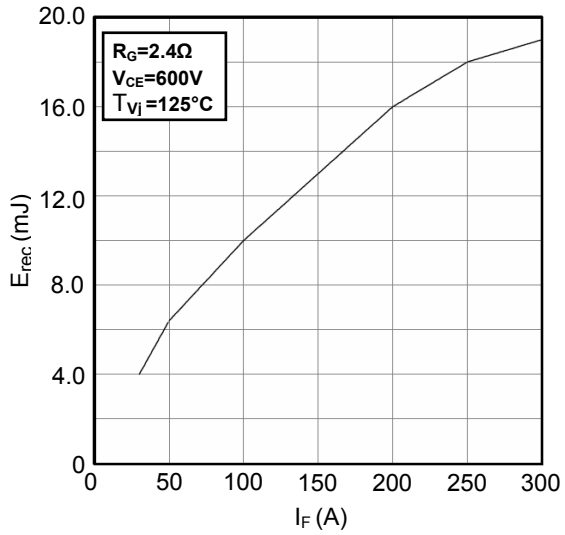


Figure9. Switching Energy vs. Forward Current Diode-inverter

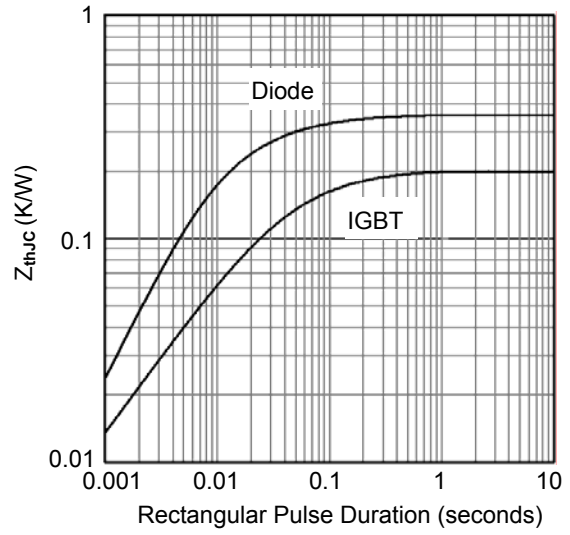


Figure10. Transient Thermal Impedance of Diode and IGBT-inverter

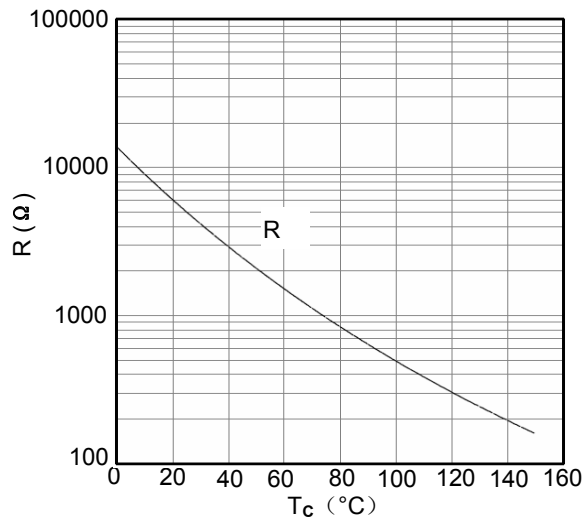


Figure11. NTC Characteristics

MIMMG150W120X6TN

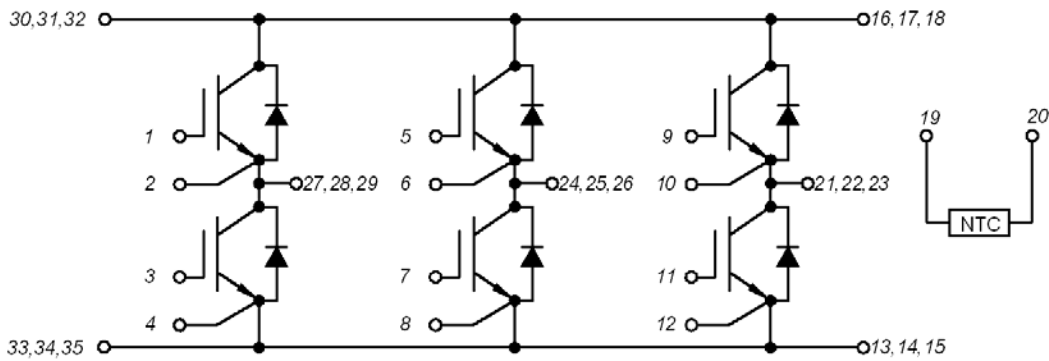
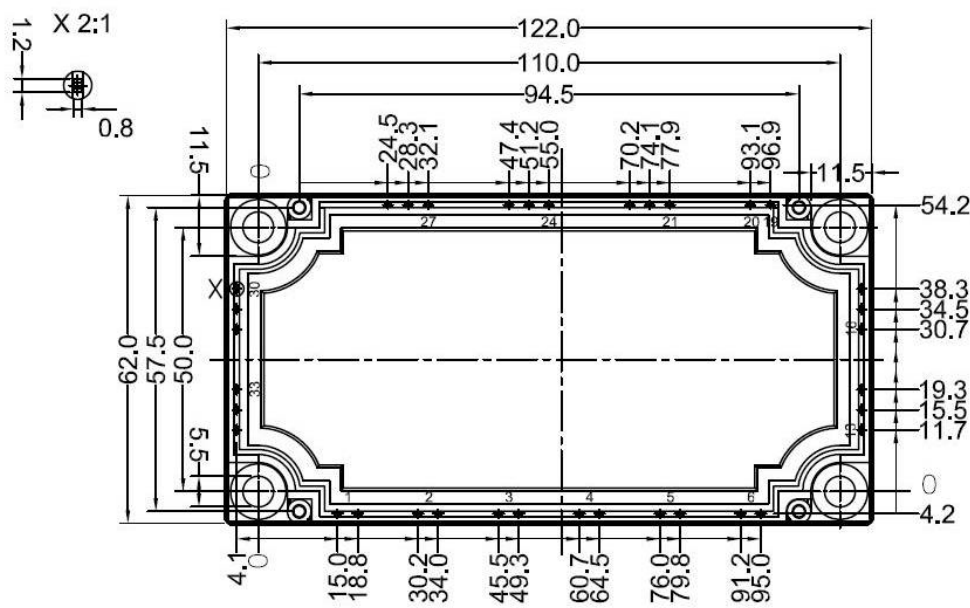
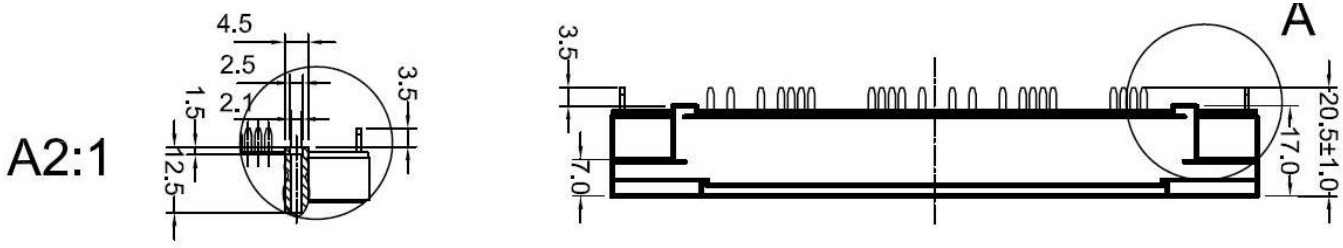


Figure12. Circuit Diagram



Dimensions (mm)
Figure13. Package Outline