MMG100J120UZ6HN

1200V 100A IGBT Module

April 2015 **Version 01** **RoHS Compliant**

PRODUCT FEATURES

☐ High short circuit capability,self limiting short circuit current

☐ IGBT CHIP(T4 Fast Trench+Field Stop technology)

☐ $V_{CE(sat)}$ with positive temperature coefficient

☐ Fast switching and short tail current

☐ Popular SOT-227 Package

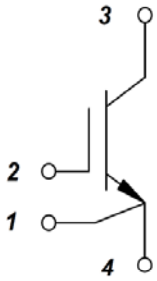
APPLICATIONS

☐ High frequency switching application

☐ Medical applications

☐ Motion/servo control

☐ UPS systems



IGBT

ABSOLUTE MAXIMUM RATINGS

T_C=25°C unless otherwise spe

Symbol	Parameter/Test Conditions		Values	t
V_{CES}	Collector Emitter Voltage	T_J=25℃	1200	V
V_{GES}	Gate Emitter Voltage		±20	
I_C	DC Collector Current	T_C=25℃	150	A
		T_C=95℃	100	
I_{CM}	Repetitive Peak Collector Current	tp=1ms	200	
P_{tot}	Power Dissipation Per IGBT		550	W

MODULE CHARACTERISTICS

T_C=25°C unless otherwise sp

Symbol	Parameter/Test Conditions		Values	t
T_{Jmax}	Max. Junction Temperature		175	°C
T_{Jop}	Operating Temperature		-40~150	
T_{stg}	Storage Temperature		-40~125	
V_{isol}	Isolation Breakdown Voltage	AC, 50Hz(R.M.S), t=1minute	3000	V
Torque	to heatsink	Recommended（M4）	0.7~1.1	Nm
	to terminal	Recommended（M4）	0.7~1.1	Nm
Weight			26.5	g

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ELECTRICAL CHARACTERISTICS

T_C=25°C unless otherwise spe

Symbol	Parameter/Test Conditions			Min.	Typ.	Max.	t
$V_{GE(th)}$	Gate Emitter Threshold Voltage	$V_{CE}=V_{GE}$, I_C=4mA		5.4	6.0	6.5	V
$V_{CE(sat)}$	Collector Emitter Saturation Voltage	I_C=100A, V_{GE}=15V, T_J=25℃			2.1	2.5	
		I_C=100A, V_{GE}=15V, T_J=125℃			2.5		
I_{CES}	Collector Leakage Current	V_{CE}=1200V, V_{GE}=0V, T_J=25℃				1	mA
		V_{CE}=1200V, V_{GE}=0V, T_J=125℃				10	mA
I_{GES}	Gate Leakage Current	V_{CE}=0V,V_{GE}=±15V, T_J=125℃		-400		400	nA
R_{gint}	Integrated Gate Resistor				7.5		Ω
Q_g	Gate Charge	V_{CE}=600V, I_C=100A , V_{GE}=15V			0.47		μC
C_{ies}	Input Capacitance	V_{CE}=25V, V_{GE}=0V, f =1MHz			6.2		nF
C_{res}	Reverse Transfer Capacitance				0.35		nF
$t_{d(on)}$	Turn on Delay Time	V_{CC}=600V,I_C=100A R_G =7.5Ω, V_{GE}=±15V, Inductive Load	T_J=25℃		150		ns
			T_J=125℃		160		ns
t_r	Rise Time		T_J=25℃		65		ns
			T_J=125℃		70		ns
$t_{d(off)}$	Turn off Delay Time	V_{CC}=600V,I_C=100A R_G =7.5Ω, V_{GE}=±15V, Inductive Load	T_J=25℃		400		ns
			T_J=125℃		450		ns
t_f	Fall Time		T_J=25℃		40		ns
			T_J=125℃		60		ns
E_{on}	Turn on Energy	V_{CC}=600V,I_C=100A R_G =7.5Ω, V_{GE}=±15V, Inductive Load	T_J=125℃		11.5		mJ
			T_J=150℃		12.5		mJ
E_{off}	Turn off Energy		T_J=125℃		5.5		mJ
			T_J=150℃		6.0		mJ
I_{SC}	Short Circuit Current	tpsc≤10μS , V_{GE}=15V T_J=125℃,V_{CC}=600V			400		A
R_{thJC}	Junction to Case Thermal Resistance （Per IGBT）					0.27	K/W

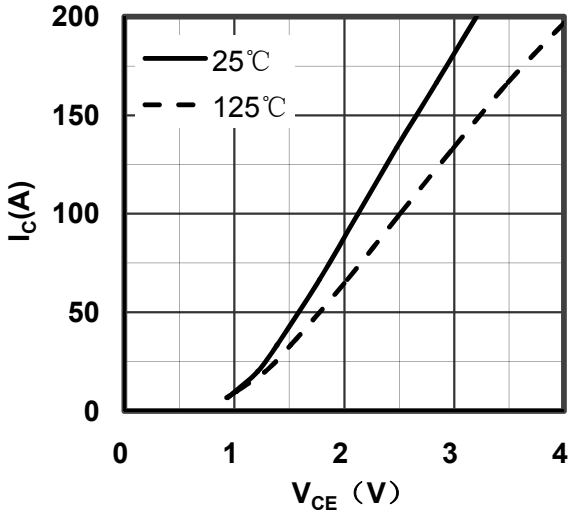


Figure 1. Typical Output Characteristics IGBT

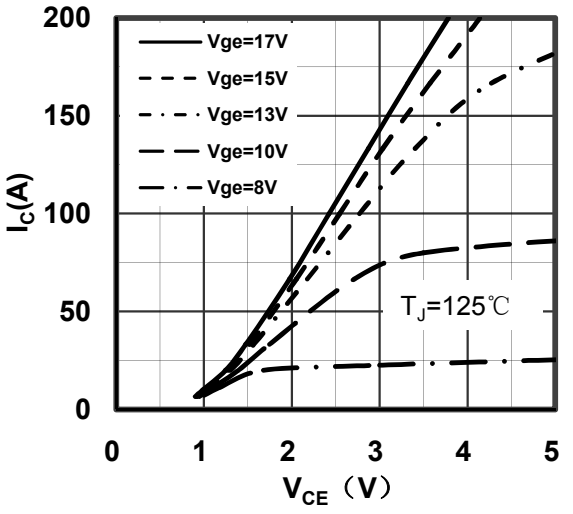


Figure 2. Typical Output Characteristics IGBT

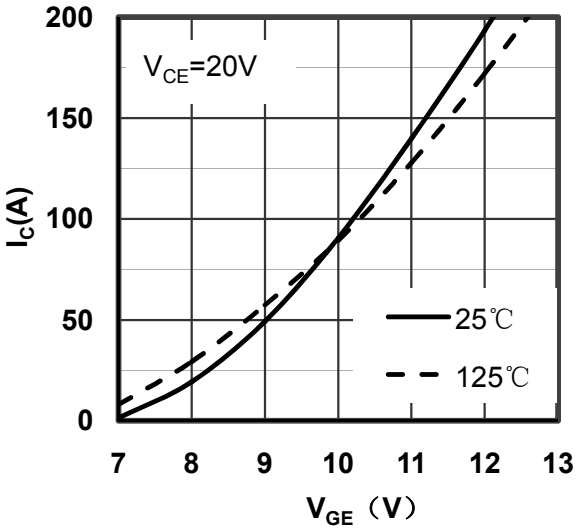


Figure 3. Typical Transfer characteristics IGBT

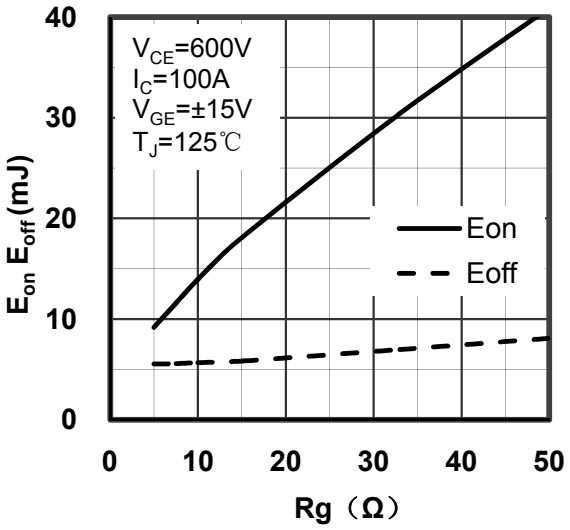


Figure 4. Switching Energy vs Gate Resistor IGBT

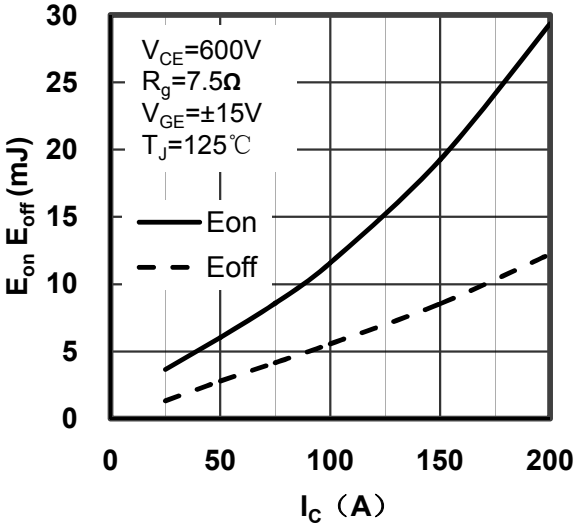


Figure 5. Switching Energy vs Collector Current IGBT

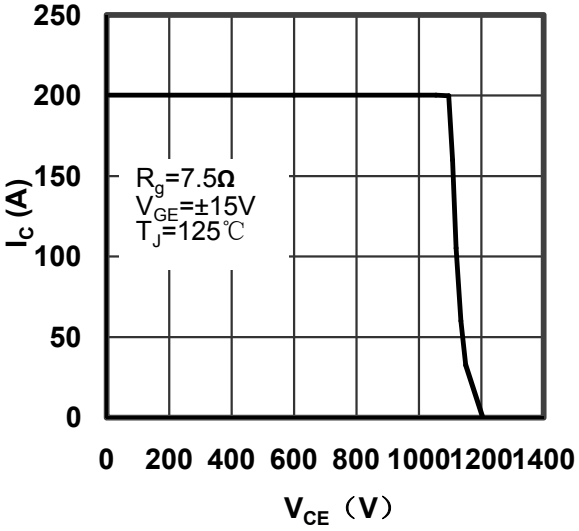


Figure 6. Reverse Biased Safe Operating Area IGBT

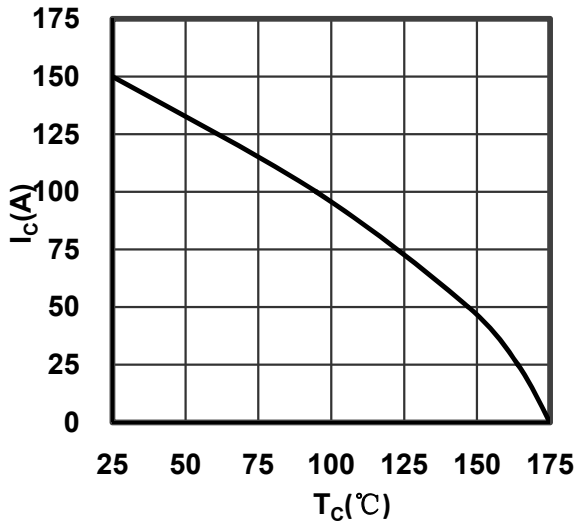


Figure 7. Collector Current vs Case temperature

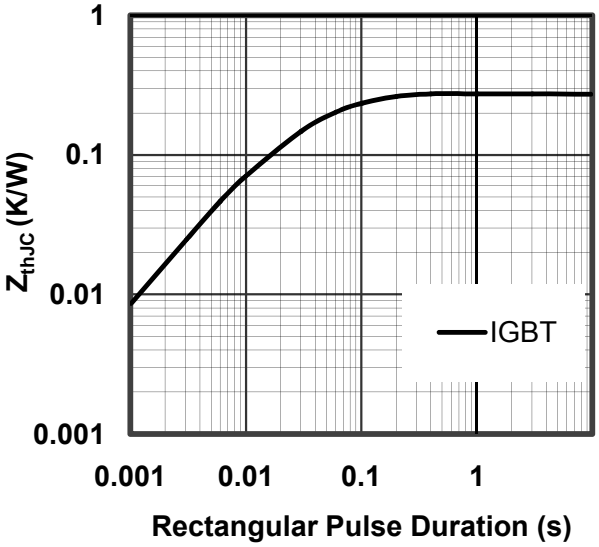
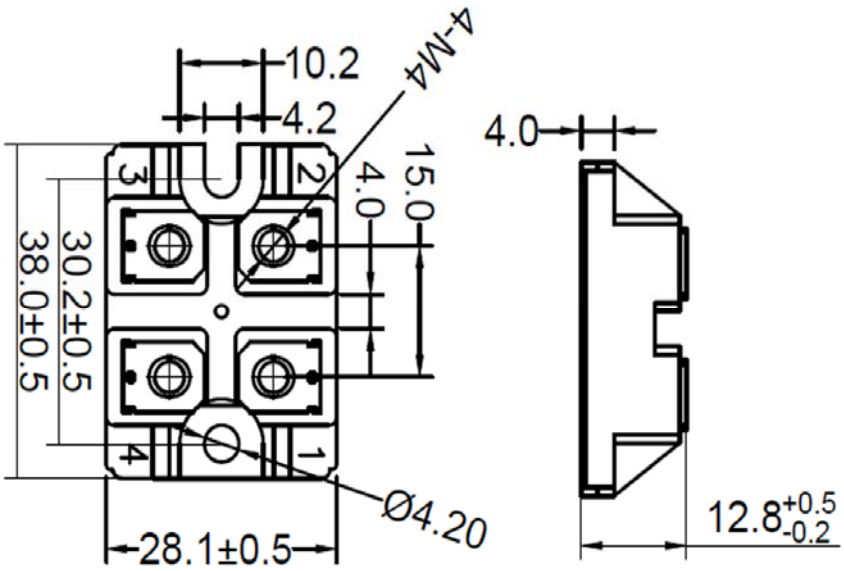


Figure 8. Transient Thermal Impedance of IGBT



Dimensions in (mm)
Figure 9. Package Outline