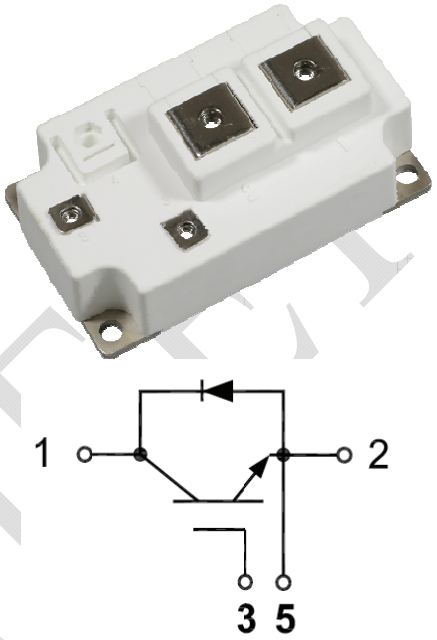
GT900SD120T2ZH

IGBT Module

Preliminary Data

Features：

- Field Stop Trench Gate IGBT
- Short Circuit Rated>10μs
- Low Saturation Voltage
- Low Switching Loss
- 100% RBSOA Tested(2×Ic)
- Low Stray Inductance
- Lead Free, Compliant with RoHS Requirement



Applications：

- Induction Heating
- UPS Systems
- High Power converters

IGBT, Inverter
Maximum Rated Values of IGBT

V_{CES}	Collector-Emitter Blocking Voltage	T_J=25℃	1200	V
V_{GES}	Gate-Emitter Voltage		±20	V
I_C	Continuous Collector Current	T_C=100℃	900	A
		T_C=25℃	1670	A
I_{CM}	Peak Collector Current Repetitive	tp=1ms	1800	A
t_{SC}	Short Circuit Withstand Time		>10	μs
P_D	Maximum Power Dissipation (IGBT)	T_C=25℃ T_{Jmax}=175℃	6000	W

Electrical Characteristics of IGBT

Static Characteristics

Symbol	Description	Conditions		Min	Typ	Max	Unit
$V_{GE(th)}$	Gate-Emitter Threshold Voltage	I_C=1 mA, V_{CE}=V_{GE}, T_J=25℃		5.0	5.5	6.0	V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	I_C=900A, V_{GE}=15V	T_J=25℃		1.80	2.00	V
			T_J=125℃		2.10	2.30	V
I_{CES}	Collector-Emitter Leakage Current	V_{GE}=0V, V_{CE}=V_{CES}, T_J=25℃				1	mA
I_{GES}	Gate-Emitter Leakage Current	V_{GE}=±20V, V_{CE}=0V, T_J=25℃				400	nA
C_{ies}	Input Capacitance	V_{CE}=25V, V_{GE}=0V , f =1MHz, T_J=25℃			55.2		nF
C_{oes}	Output capacitance				3.0		nF

Switching Characteristics

$t_{d(on)}$	Turn-on Delay Time	V_{CC}=600V,I_C=900A, R_{Gon}=2.5Ω,V_{GE}=±15V, Inductive Load	T_J=25℃		2250		ns
			T_J=125℃		1950		
t_r	Rise Time		T_J=25℃		360		ns
			T_J=125℃		420		
$t_{d(off)}$	Turn-off Delay Time	V_{CC}=600V,I_C=900A, R_{Goff}=2.5Ω,V_{GE}=±15V, Inductive Load	T_J=25℃		1965		ns
			T_J=125℃		2100		
t_f	Fall Time		T_J=25℃		180		ns
			T_J=125℃		195		
E_{on}	Turn-on Switching Loss	V_{CC}=600V,I_C=900A, R_{Gon}=2.5Ω,V_{GE}=±15V, di/dt=2250A/μs (T_J=125℃) Inductive Load	T_J=25℃		70.2		mJ
			T_J=125℃		110		
E_{off}	Turn-off Switching Loss	V_{CC}=600V,I_C=900A, R_{Goff}=2.5Ω,V_{GE}=±15V, du/dt=3450V/μs (T_J=125℃) Inductive Load	T_J=25℃		90		mJ
			T_J=125℃		128		
Q_g	Total Gate Charge	V_{GE}=+15V…-15V	T_J=25℃		7470		nC
RBSOA	I_C=1800A,V_{CC}=1050V,Vp=1200V, Rg = 4.7Ω, V_{GE}=+15V to 0V, T_J=150°C			Trapezoid			
SCSOA	V_{CC} = 600V, V_{GE} = 15V, T_J=150℃			10			μs
$R_{\theta JC}$	IGBT Thermal Resistance: Junction-To-Case				0.025		℃/W

Diode, Inverter
Maximum Rated Values of Diode

V_{RRM}	Repetitive Peak Reverse Voltage	T_J=25℃	1200	V
I_F	Diode Continuous Forward Current		900	A
I_{FM}	Peak FWD Current Repetitive	tp=1ms	1800	A

Electrical Characteristics of Diode

Symbol	Description	Conditions		Min	Typ	Max	Unit
V_{FM}	Forward Voltage	I_F=900A	T_J=25℃		2.2		V
			T_J=125℃		2.4		
t_{rr}	Reverse Recovery Time	I_F=900A, V_R=600V, V_{GE}=-15V diF/dt=3200A/μs(T_J=125℃),	T_J=25℃		0.41		μs
			T_J=125℃		0.65		
I_{rr}	Peak Reverse Recovery Current		T_J=25℃		286		A
			T_J=125℃		354		
Q_{rr}	Reverse Recovery Charge		T_J=25℃		62		μC
			T_J=125℃		115		
E_{rec}	Reverse Recovery Energy		T_J=25℃		26		mJ
			T_J=125℃		46		
$R_{\theta JC}$	Diode Thermal Resistance: Junction-To-Case				0.043		℃/W

Module

Symbol	Description		Min	Typ	Max	Unit
V_{iso}	Isolation Voltage (All Terminals Shorted)	RMS, f = 50Hz, 1minute	2.5			kV
L_{sCE}	Stray Inductance Module			16		nH
T_J	Maximum Junction Temperature				175	℃
T_{JOP}	Maximum Operating Junction Temperature Range		-40		+150	℃
T_{stg}	Storage Temperature		-40		+125	℃
CTI	Comparative Tracking Index		200			
$R_{\theta CS}$	Case-To-Sink Thermally (Conductive Grease Applied)			0.03		℃/W
T	Signal Terminals Screw:M4		1.1		2.0	N·m
	Power Terminals Screw:M6		2.5		5.0	N·m
T	Mounting Screw:M6		3.0		6.0	N·m
G	Weight			320		g

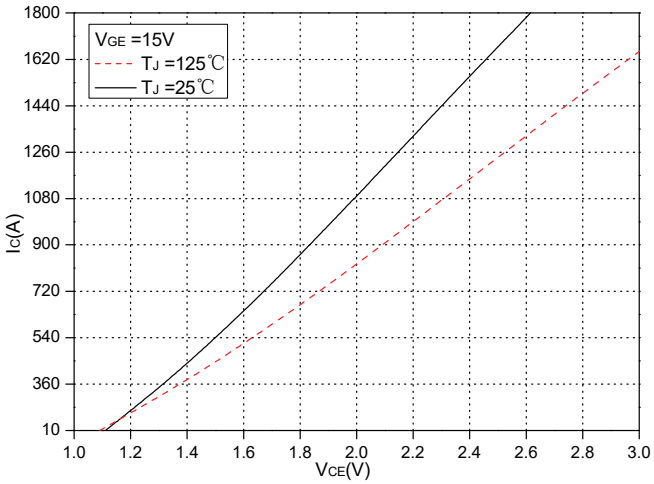


Fig.1 Typical Saturation Voltage Characteristics

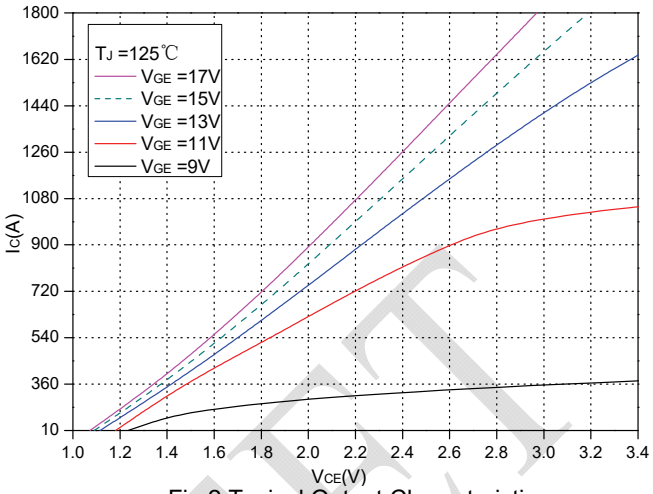


Fig.2 Typical Output Characteristics

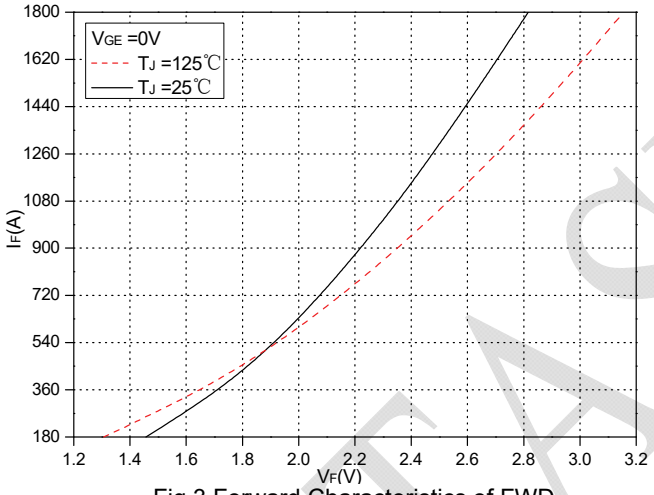


Fig.3 Forward Characteristics of FWD

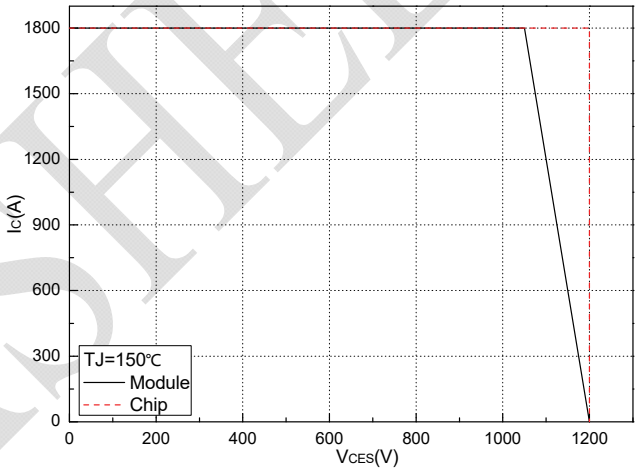


Fig.4 Reverse Bias Safe Operation Area (RBSOA)

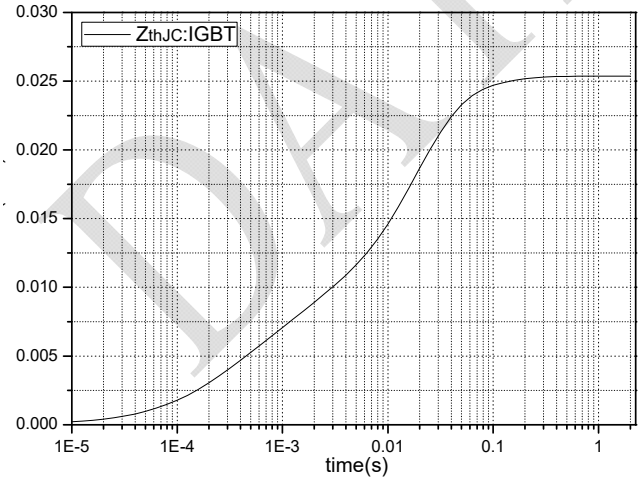


Fig.5 Transient Thermal Impedance (IGBT)

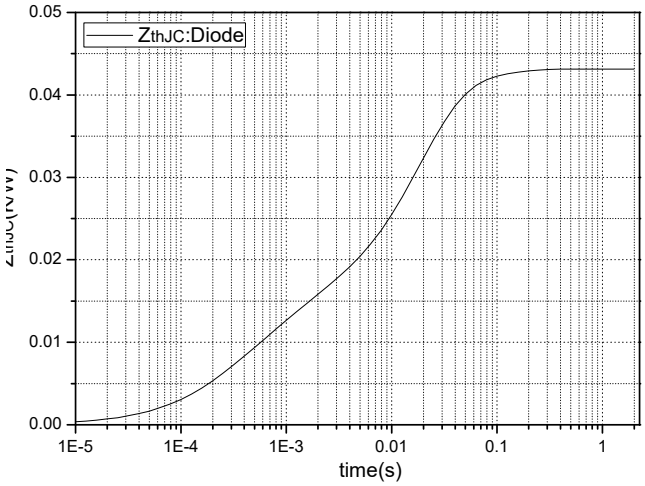
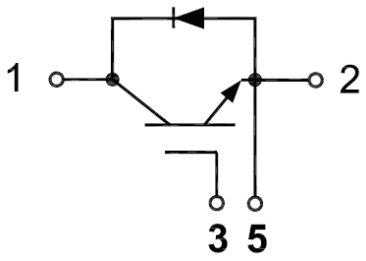
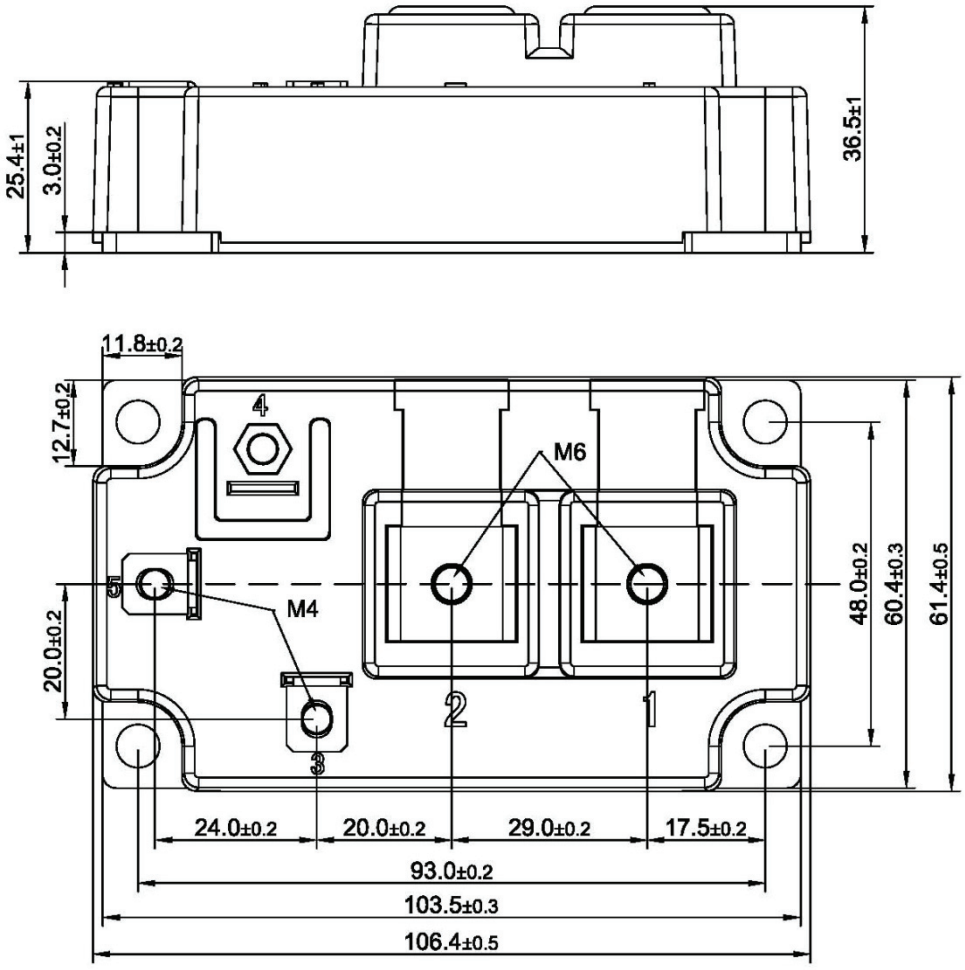


Fig.6 Transient Thermal Impedance (Diode)

Internal Circuit



Package Outline (Unit: mm):



Revision History

Date	Revision	Notes
05/29/2020	01	Initial Release

Announcement

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