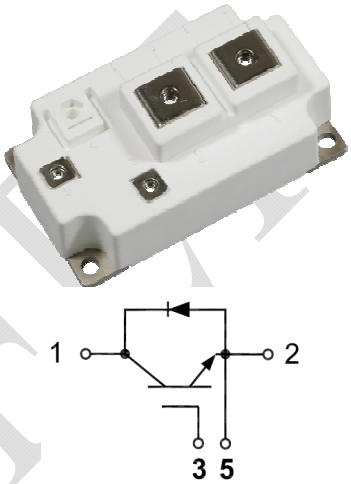
GT800SD65T2ZH

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：

- High Power Converters
- Induction Heating
- UPS Systems

IGBT, Inverter

Maximum Rated Values of IGBT(T_C=25℃ unless otherwise specified)

V_{CES}	Collector-Emitter Blocking Voltage		650	V
V_{GES}	Gate-Emitter Voltage		±20	V
I_C	Continuous Collector Current	T_C = 100℃	800	A
		T_C = 25℃	1255	A
I_{CM}	Repetitive Peak Collector Current	T_J = 175℃	1600	A
t_{SC}	Short Circuit Withstand Time		>10	μs
P_D	Maximum Power Dissipation per IGBT	T_C = 25℃ T_{Jmax}=175℃	3260	W

Electrical Characteristics of IGBT (T_C=25℃ unless otherwise specified)

Static Characteristics

Symbol	Description	Conditions		Min	Typ	Max	Unit
$V_{GE(th)}$	Gate-Emitter Threshold Voltage	I_C = 12 mA, V_{CE} = V_{GE}		5.0	6.0	6.5	V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	I_C = 800A, V_{GE} = 15V	T_J = 25℃		1.30	1.50	V
			T_J = 125℃		1.50		V
			T_J = 150℃		1.60		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			59.34		nF
C_{oes}	Output Capacitance				4.15		nF
C_{res}	Reveres Transfer Capacitance				2.45		nF

Switching Characteristics

$t_{d(on)}$	Turn-on Delay Time	V_{CC} = 300V,I_C = 800A, R_{Gon} =1 Ω,V_{GE} = ±15V, Inductive Load	T_J=25℃		0.55		μs
			T_J=125℃		0.54		
			T_J=150℃		0.54		
t_r	Rise Time		T_J=25℃		0.37		μs
			T_J=125℃		0.38		
			T_J=150℃		0.39		
$t_{d(off)}$	Turn-off Delay Time	V_{CC} = 300V,I_C = 800A, R_{Goff} =1 Ω,V_{GE} = ±15V, Inductive Load	T_J=25℃		0.48		μs
			T_J=125℃		0.49		
			T_J=150℃		0.50		
t_f	Fall Time		T_J=25℃		0.20		μs
			T_J=125℃		0.25		
			T_J=150℃		0.25		
E_{on}	Turn-on Switching Loss	V_{CC} = 300V,I_C = 800A, R_{Gon} = 1 Ω,V_{GE} = ±15V, di/dt =1746A/μs(T_J=125℃) Inductive Load	T_J=25℃		10.8		mJ
			T_J=125℃		13		
			T_J=150℃		14		

E_{off}	Turn-off Switching Loss	V_{CC} = 300V,I_C = 800A, R_{Goff} = 1 Ω,V_{GE} = ±15V, du/dt =1715V/μs(T_J=125℃) Inductive Load	T_J=25℃		82		mJ
			T_J=125℃		91		
			T_J=150℃		94		
Q_g	Total Gate Charge	V_{GE}=-15V…+15V	T_J=25℃		5.25		μC
RBSOA	I_C=1600A, V_{CC}=600V,Vp=650V, Rg= 1Ω, V_{GE}=+15V to 0V, T_J=150°C			Trapezoid			
SCSOA	V_{CC}=300V, V_{GE}=15V, T_J=150℃			10			μs
$R_{θJC}$	IGBT Thermal Resistance: Junction-To-Case(per leg)					0.046	℃/W

Diode, Inverter

Maximum Rated Values of Diode (T_C=25℃ unless otherwise specified)

V_{RRM}	Repetitive Peak Reverse Voltage	650	V
I_F	Diode Continuous Forward Current	800	A
I_{FM}	Diode Maximum Forward Current	1600	A

Electrical Characteristics of Diode (T_C=25℃ unless otherwise specified)

V_{FM}	Forward Voltage	I_F=800A	T_J=25℃		1.60		V
			T_J=125℃		1.90		
			T_J=150℃		1.95		
I_{rr}	Peak Reverse Recovery Current	I_F=800A, -di$_F$/dt=1982A/μs, V_R = 300V, V_{GE} = -15V	T_J=25℃		177		A
			T_J=125℃		234		
			T_J=150℃		244		
Q_{rr}	Reverse Recovery Charge		T_J=25℃		23.3		μC
			T_J=125℃		41.1		
			T_J=150℃		47.6		
E_{rec}	Reverse Recovery Energy		T_J=25℃		4.5		mJ
			T_J=125℃		10.3		
			T_J=150℃		11.6		
$R_{θJC}$	Diode Thermal Resistance: Junction-To-Case(per leg)					0.088	℃/W

Module

Symbol	Description		Min	Typ	Max	Unit
V_{iso}	Isolation Voltage (All Terminals Shorted)	RMS, f = 50Hz, 1minute	2500			V
Internal Isolation				Al2O3		
Material of Module Baseplate				Copper		
d_{creep}	Terminal to Heatsink			25		mm
	Terminal to Terminal			19		mm
d_{clear}	Terminal to Heatsink			25		mm
	Terminal to Terminal			10		mm
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

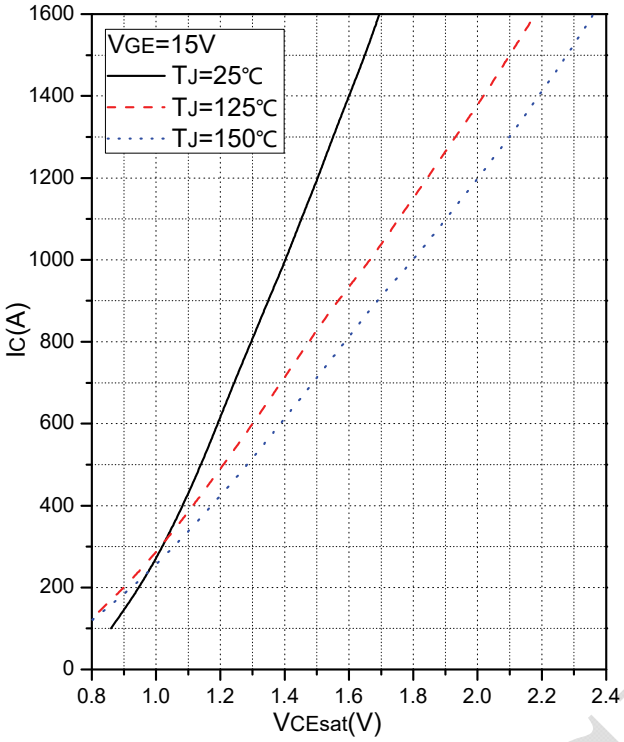


Fig.1 Typical Saturation Voltage Characteristics

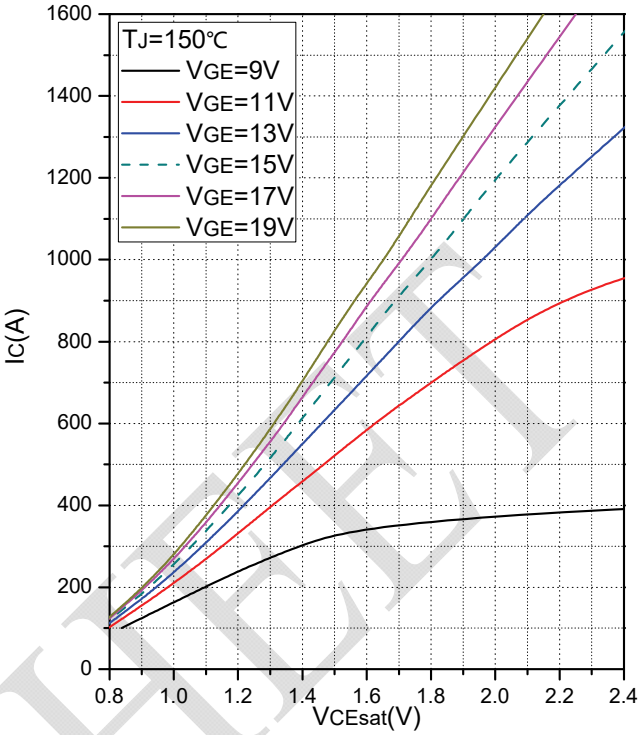


Fig.2 Typical Output Characteristics

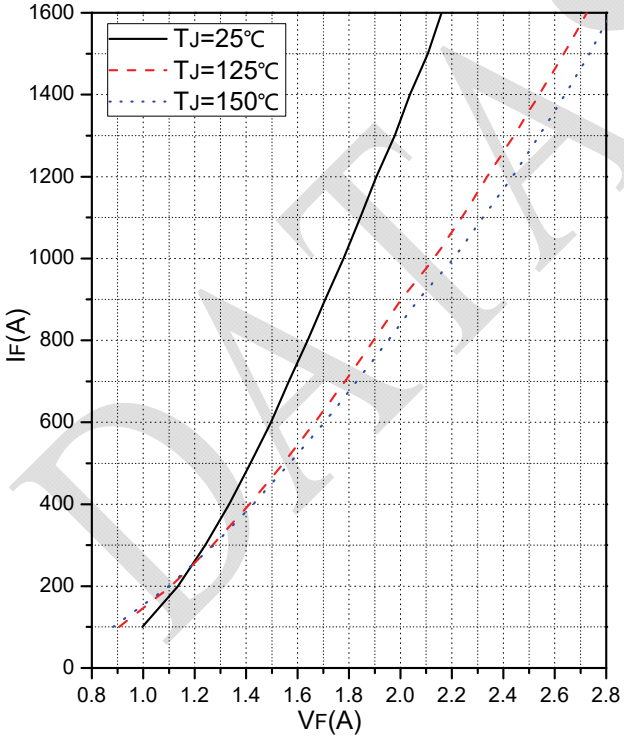


Fig.3 Forward Characteristics of FWD

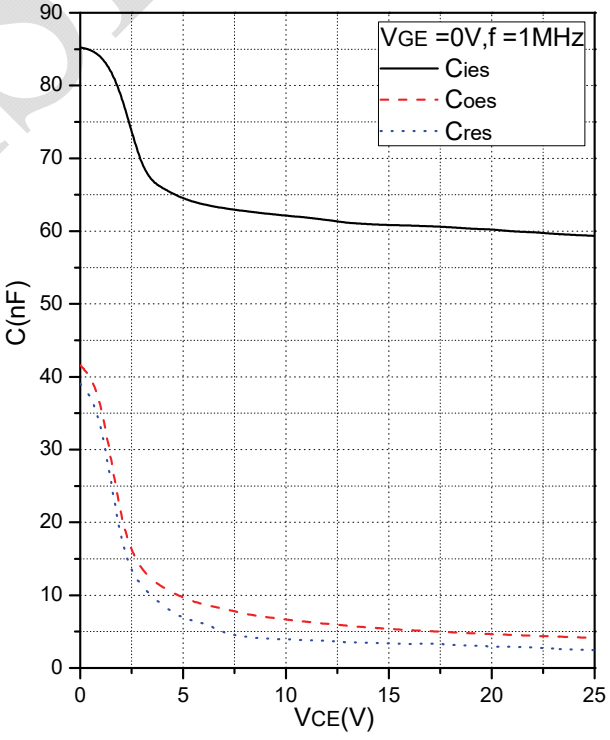


Fig.4 Capacitance Characteristics

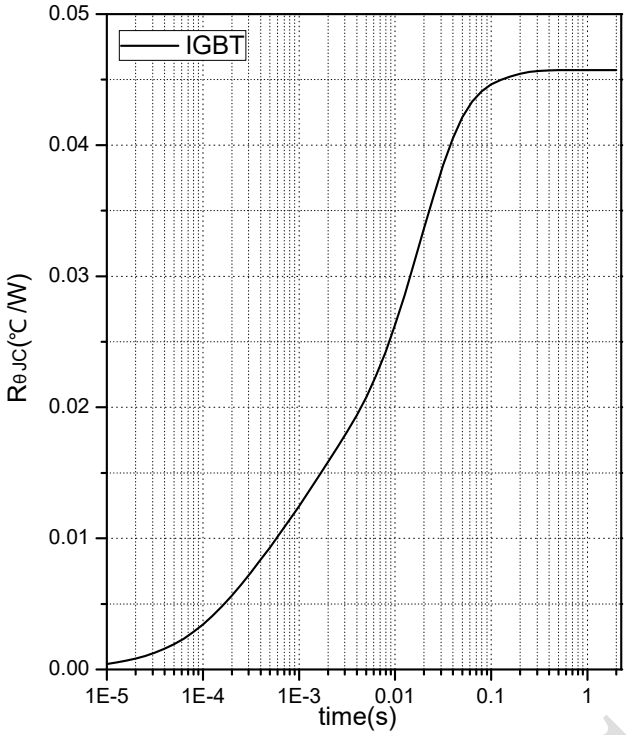


Fig.5 Transient Thermal Impedance (IGBT)

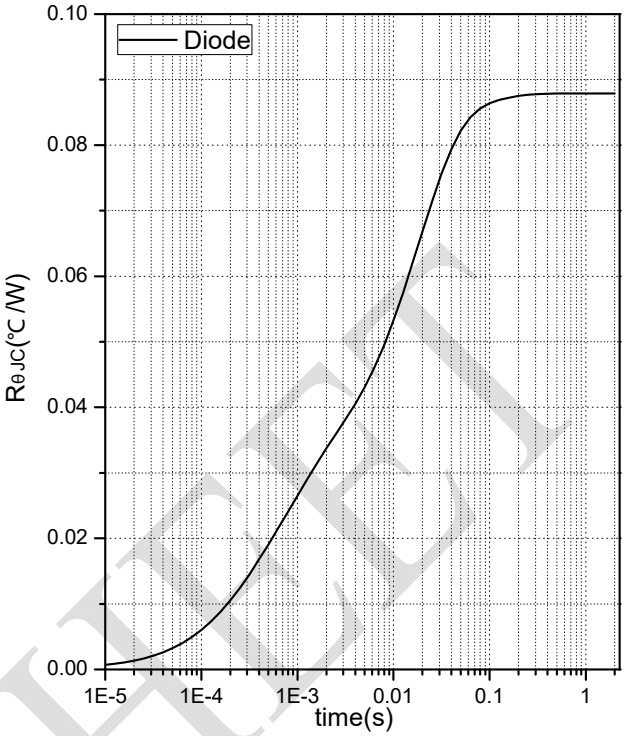


Fig.6 Transient Thermal Impedance (Diode)

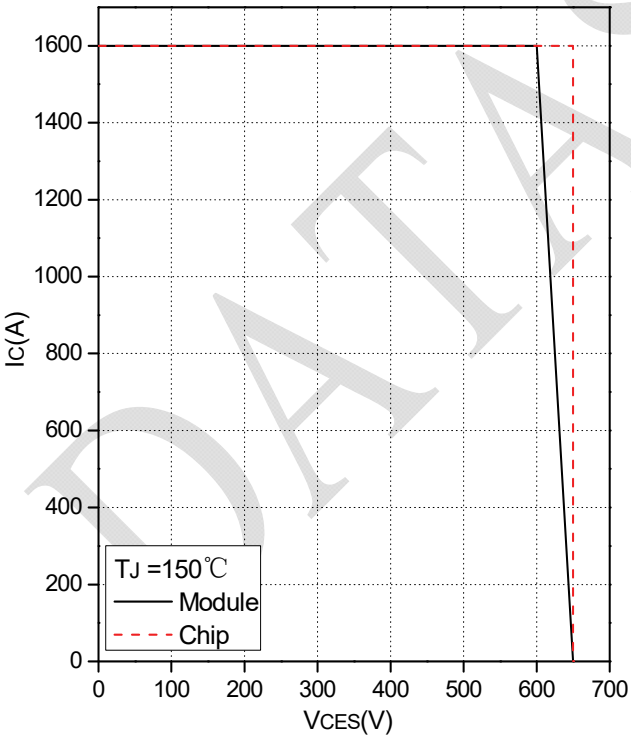
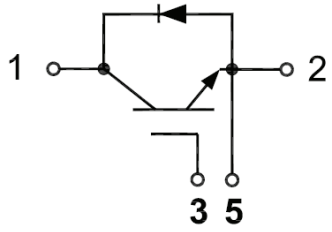
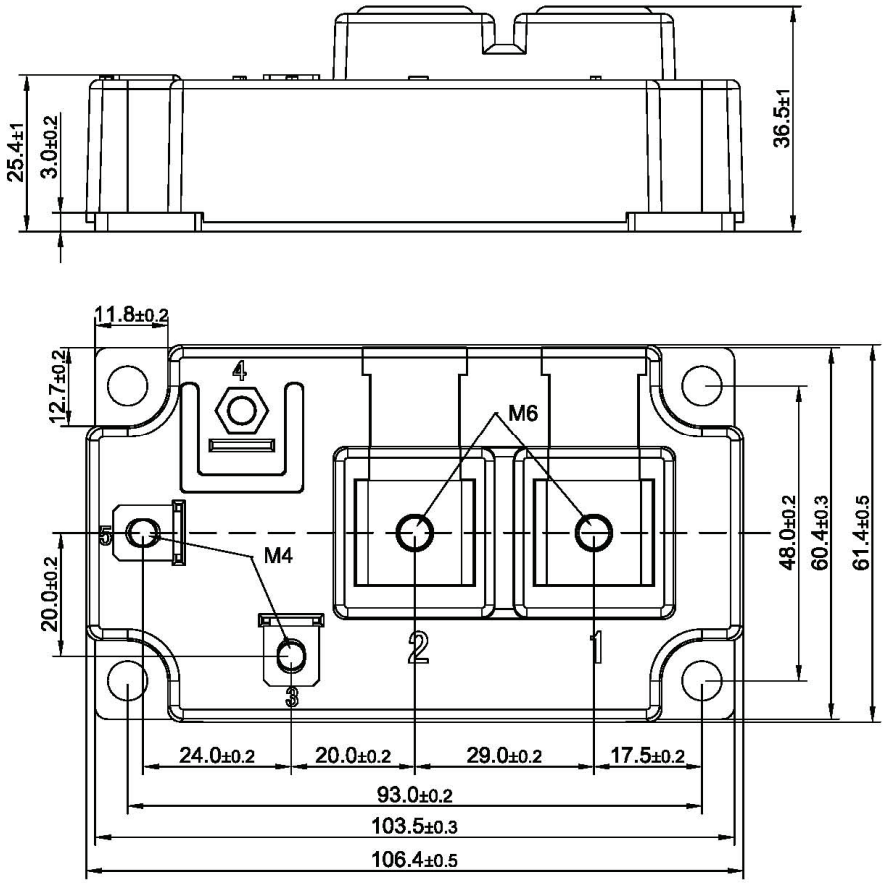


Fig.7 Reverse Bias Safe Operation Area (RBSOA)

Internal Circuit



Package Outline (Unit: mm):



Date	Revision	Notes
03/19/2020	01	Initial release

Announcement

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