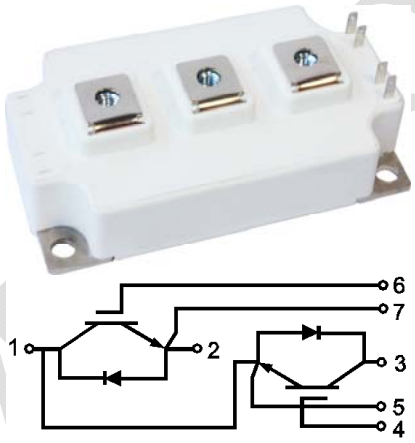
SILVERMICRO

GT200HF65T2VH-M

Preliminary Data

IGBT Module

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
- Industrial Motor Drives
- UPS Systems

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℃	200	A
		T_C=25℃	335	A
I_{CM}	Repetitive Peak Collector Current	T_J=175℃	400	A
t_{SC}	Short Circuit Withstand Time		>10	μs
P_D	Maximum Power Dissipation per IGBT	T_C=25℃ T_{Jmax}=175℃	1000	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=2mA, V_{CE}=V_{GE}		5.0	5.9	6.8	V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	I_C=200 A, V_{GE} =15V	T_J=25℃		1.50		V
			T_J=125℃		1.60		V
			T_J=150℃		1.65		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} =V_{CES}, T_J=25℃				400	nA
C_{ies}	Input Capacitance	V_{CE}=25V, V_{GE}=0V , f=1MHz			14.84		nF
C_{oes}	Output Capacitance				1.04		nF
C_{res}	Reveres Transfer Capacitance				0.61		nF

Switching Characteristics

$t_{d(on)}$	Turn-on Delay Time	V_{CC}=300V,I_C=200A, R_{Gon}=0Ω,V_{GE}=±15V, Inductive Load	T_J=25℃		173		ns
			T_J=125℃		166		
			T_J=150℃		164		
t_r	Rise Time		T_J=25℃		105		ns
			T_J=125℃		109		
			T_J=150℃		110		
$t_{d(off)}$	Turn-off Delay Time	V_{CC}=300V,I_C=200A, R_{Goff} =0Ω,V_{GE}= ±15V, Inductive Load	T_J=25℃		207		ns
			T_J=125℃		205		
			T_J=150℃		204		
t_f	Fall Time		T_J=25℃		115		ns
			T_J=125℃		153		
			T_J=150℃		170		
E_{on}	Turn-on Switching Loss	V_{CC}=300V,I_C=200A, R_{Gon} =0Ω,V_{GE}= ±15V, di/dt=1445A/μs(T_J=150℃) Inductive Load	T_J=25℃		0.9		mJ
			T_J=125℃		1.29		
			T_J=150℃		1.41		

E_{off}	Turn-off Switching Loss	V_{CC}=300V,I_C=200A, R_{Goff} =0Ω,V_{GE}=±15V, du/dt=4945V/μs(T_J=150℃) Inductive Load	T_J=25℃		4.41		mJ
			T_J=125℃		6.45		
			T_J=150℃		6.96		
Q_g	Total Gate Charge	V_{GE}=-15V…+15V	T_J=25℃		1.18		μC
RBSOA	I_C=400A,V_{CC}=600V,Vp=650V, R_{Goff} = 0Ω, V_{GE}=+15V to 0V, T_J =150°C			Trapezoid			
SCSOA	V_{CC}=300V, V_{GE}=15V, T_J=150℃			10			μs
$R_{\theta JC}$	IGBT Thermal Resistance: Junction-To-Case (per leg)				0.15		℃/W

Diode, Inverter

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

V_{RRM}	Repetitive Peak Reverse Voltage	650	V
I_F	Diode Continuous Forward Current	200	A
I_{FM}	Peak FWD Current Repetitive	400	A

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

Symbol	Description	Conditions		Min	Typ	Max	Unit
V_{FM}	Forward Voltage	I_F=200A	T_J=25℃		1.60		V
			T_J=125℃		1.70		
			T_J=150℃		1.70		
t_{rr}	Reverse Recovery Time	I_F=200A, -diF/dt=1550A/μs T_J=150℃, V_R=300V, V_{GE}=-15V	T_J=25℃		122		ns
			T_J=125℃		154		
			T_J=150℃		167		
I_{rr}	Peak Reverse Recovery Current		T_J=25℃		75		A
			T_J=125℃		96		
			T_J=150℃		103		
Q_{rr}	Reverse Recovery Charge		T_J=25℃		5.54		μC
			T_J=125℃		9.98		
			T_J=150℃		11.48		

E_{rec}	Reverse Recovery Energy	I_F=200A, -diF/dt=1510A/μs T_J=150℃, V_R=300V, V_{GE}=-15V	T_J=25℃		0.44		mJ
			T_J=125℃		1.55		
			T_J=150℃		1.92		
$R_{\theta JC}$	Diode Thermal Resistance: Junction-To-Case (per leg)				0.25		℃/W

Module

Symbol	Description		Min	Typ	Max	Unit
V_{iso}	Isolation Voltage (All Terminals Shorted)	f = 50Hz, 1minute	2500			V
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	Power Terminals Screw:M6		3.0		5.0	N·m
T	Mounting Screw:M6		4.0		6.0	N·m
G	Weight			300		g

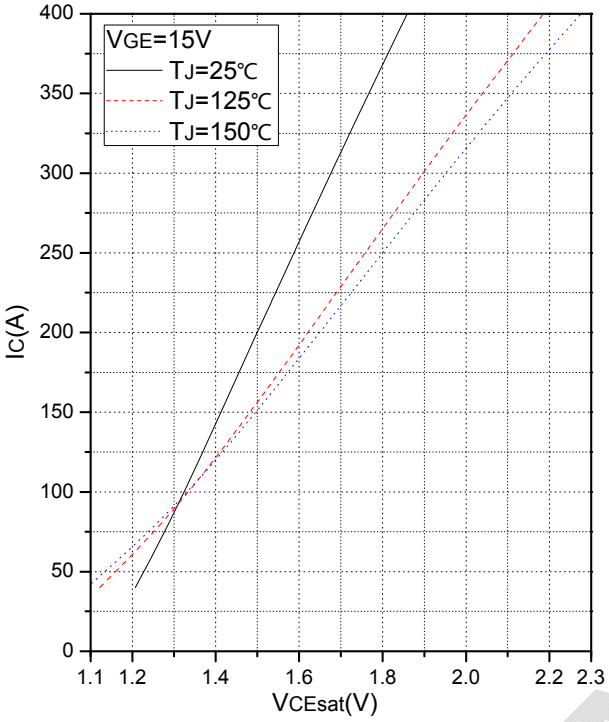


Fig.1 Typical Saturation Voltage Characteristics

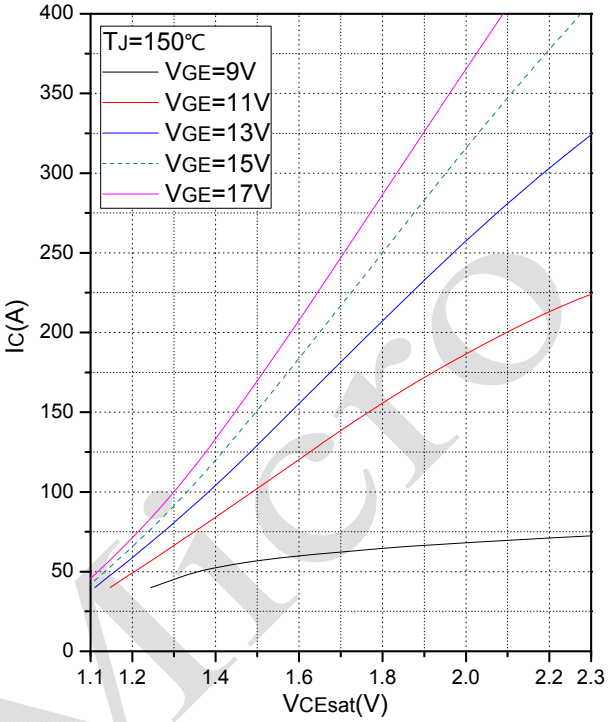


Fig.2 Typical Output Characteristics

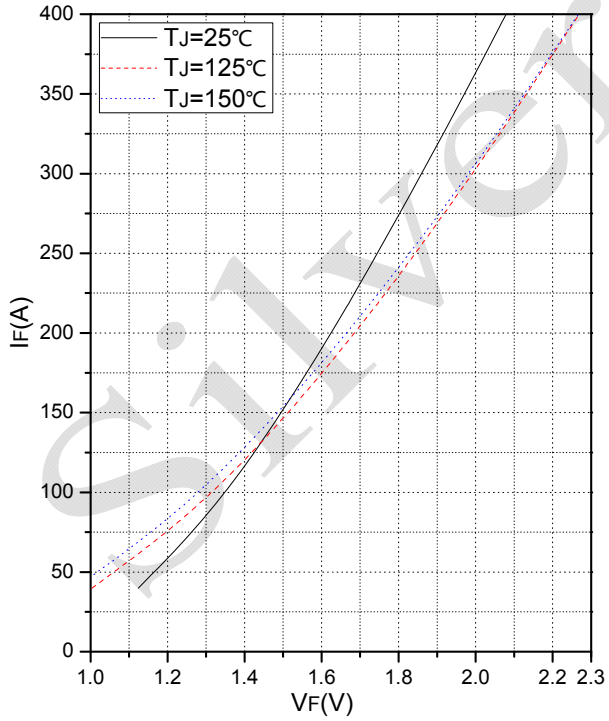


Fig.3 Forward Characteristics of FWD

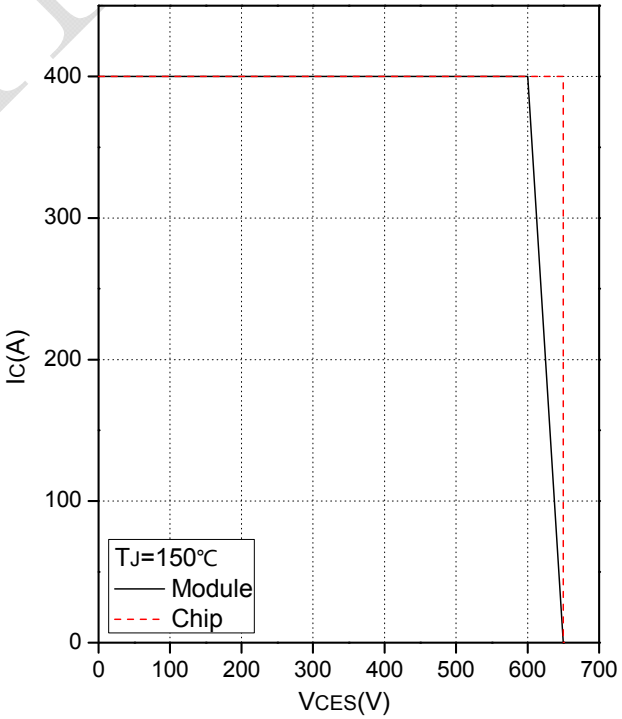


Fig.4 Reverse Bias Safe Operation Area (RBSOA)

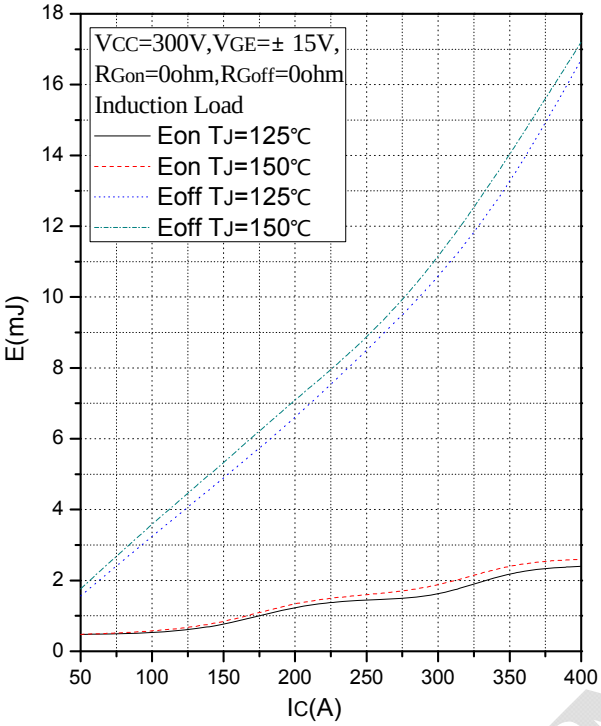


Fig.5 Typical Switching Loss vs. Collector Current

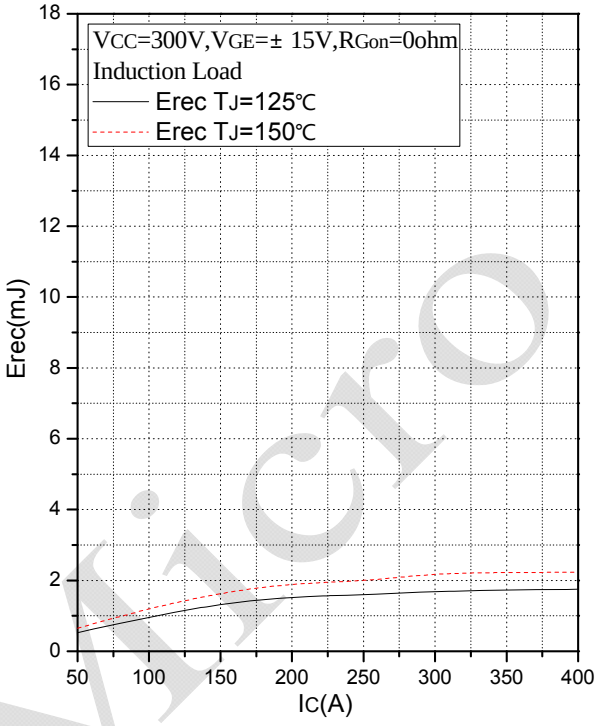


Fig.6 Typical Switching Loss vs. Forward Current

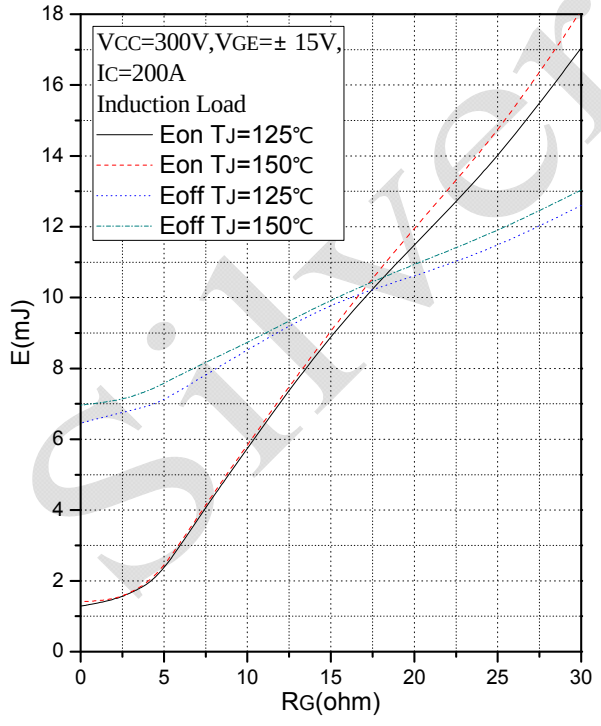


Fig.7 Typical Switching Loss vs. Gate Resistance

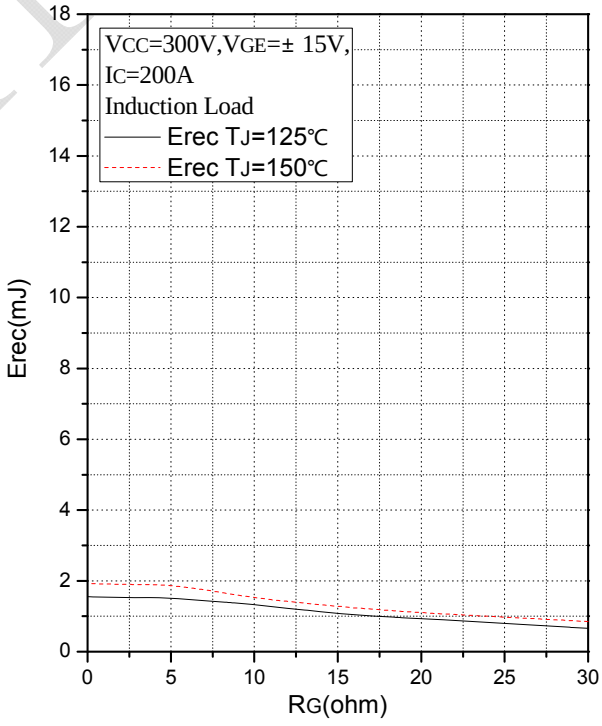


Fig.8 Typical Switching Loss vs. Gate Resistance

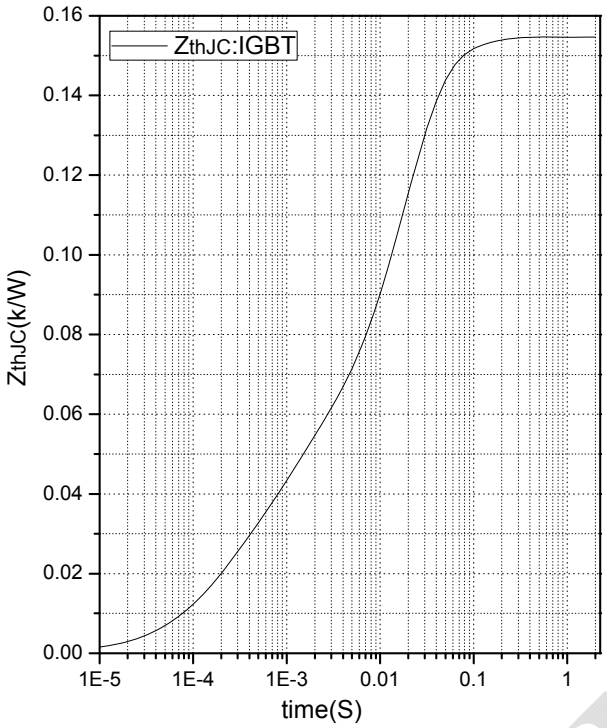


Fig.9 Transient Thermal Impedance (IGBT)

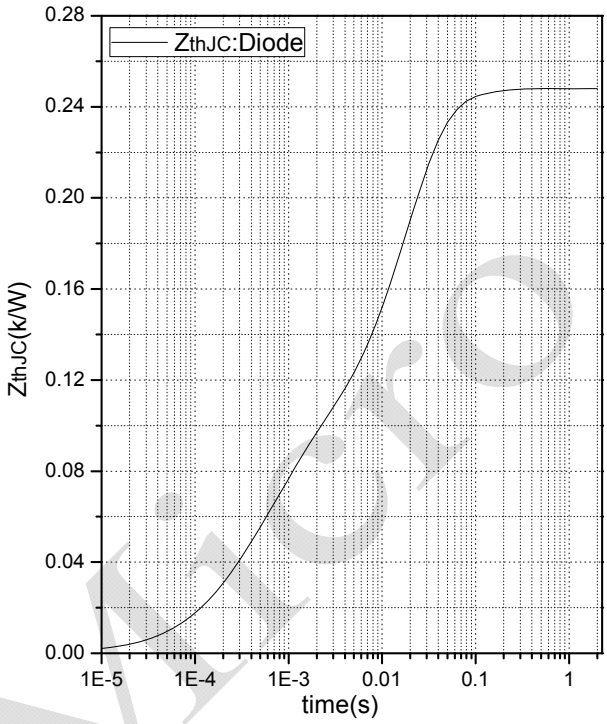
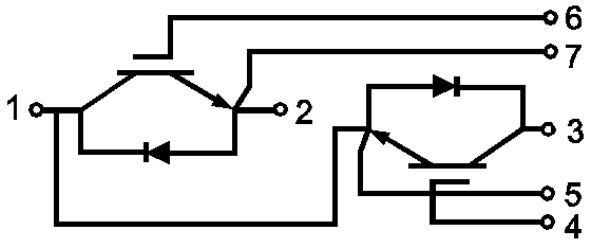
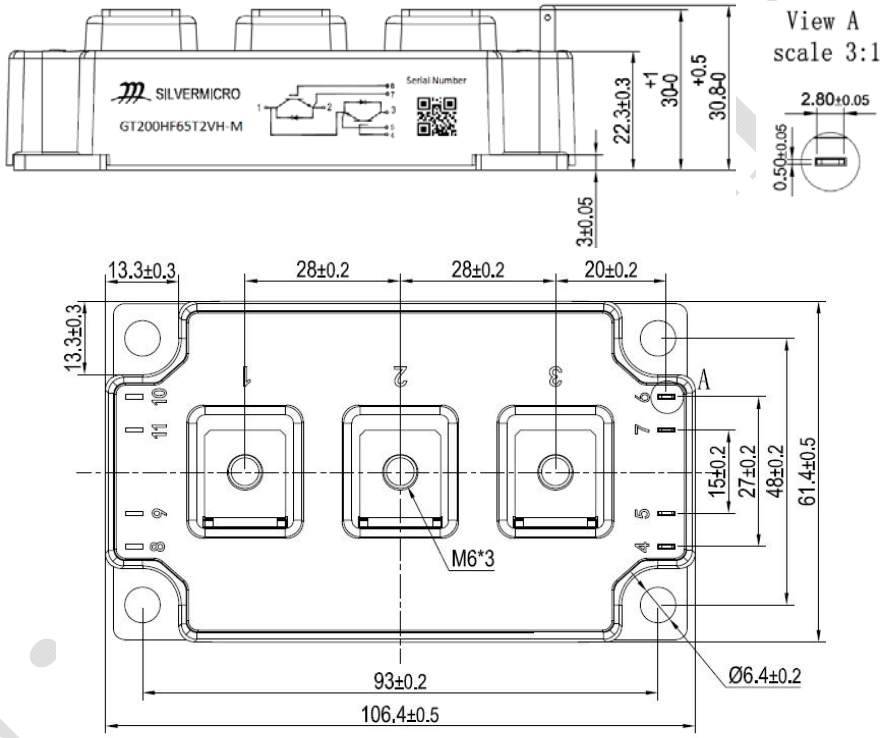


Fig.10 Transient Thermal Impedance (Diode)

Internal Circuit



Package Outline (Unit: mm):



Date	Revision	Notes
01/17/2019	01	Initial Release

Announcement

Information in this document is believed to be accurate and reliable. However, NJSME does not give any representations or warranties, expressed or implied, as to the accuracy or completeness of such information and shall have no liability for the consequences of use of such information.

Right to Make Changes

NJSME reserves the right to make changes to information published in this document, including without limitation specifications and product descriptions, at any time and without notice. This document supersedes and replaces all information supplied prior to the publication hereof.