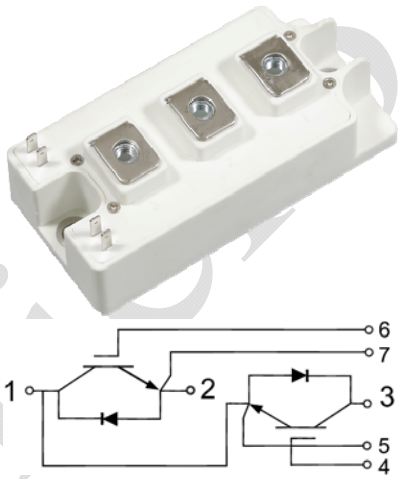
SILVERMICRO

GF200HF120A5H

Preliminary Data

IGBT Module

Features：



- Non Punch Through Technology
- 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：

- Welding Machine, Cutting Machine
- Induction Heating
- Ultrasonic Device

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

V_{CES}	Collector-Emitter Blocking Voltage		1200	V
V_{GES}	Gate-Emitter Voltage		±20	V
I_C	Continuous Collector Current	T_C=100℃	200	A
		T_C=25℃	330	A
I_{CM}	Repetitive Peak Collector Current	T_J=150℃	400	A
t_{SC}	Short Circuit Withstand Time		>10	μs
P_D	Maximum Power Dissipation per IGBT	T_C=25℃ T_{Jmax}=150℃	1435	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=1mA, V_{CE}=V_{GE}		4.5	5.0	5.5	V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	I_C= 200A, V_{GE} = 15V	T_J=25℃		3.30	3.50	V
			T_J=125℃		3.80		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			22.7		nF
C_{oes}	Output Capacitance				1.80		nF

Switching Characteristics

$t_{d(on)}$	Turn-on Delay Time	V_{CC} = 600V,I_C =200A, R_{Gon} = 3.3Ω,V_{GE} = ±15V, Inductive Load	T_J=25℃		205		ns
			T_J=125℃		195		
t_r	Rise Time		T_J=25℃		125		ns
			T_J=125℃		130		
$t_{d(off)}$	Turn-off Delay Time	V_{CC} = 600V,I_C =200A, R_{Goff} = 3.3Ω,V_{GE} = ±15V, Inductive Load	T_J=25℃		560		ns
			T_J=125℃		575		
t_f	Fall Time		T_J=25℃		120		ns
			T_J=125℃		135		
E_{on}	Turn-on Switching Loss	V_{CC} = 600V,I_C =200A, R_{Gon} = 3.3Ω,V_{GE} = ±15V, di/dt=1240A/μs (T_J=150℃) Inductive Load	T_J=25℃		10.6		mJ
			T_J=125℃		17.5		
E_{off}	Turn-off Switching Loss	V_{CC} = 600V,I_C =200A, R_{Goff} = 3.3Ω,V_{GE} = ±15V, du/dt=4765V/μs (T_J=150℃) Inductive Load	T_J=25℃		8.5		mJ
			T_J=125℃		12.6		
Q_g	Total Gate Charge	V_{GE}=+15V…-15V	T_J=25℃		2.4		μC
RBSOA	I_C=400A,V_{CC}=1050V,Vp=1200V, R_{Goff} = 3.3Ω, 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(per leg)				0.087		℃/W

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

V_{RRM}	Repetitive Peak Reverse Voltage	1200	V
I_F	Diode Continuous Forward Current	200	A
I_{FM}	Diode Maximum Forward Current	400	A

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

Symbol	Description	Conditions		Min	Typ	Max	Unit
V_{FM}	Forward Voltage	I_F =200A	T_J=25℃		2.20		V
			T_J=125℃		2.40		
t_{rr}	Reverse Recovery Time	I_F=200A, -diF/dt =2020A/μs(T_J=150℃), V_R = 600V, V_{GE} = -15V	T_J=25℃		166		ns
			T_J=125℃		223		
I_{rr}	Peak Reverse Recovery Current		T_J=25℃		130		A
			T_J=125℃		180		
Q_{rr}	Reverse Recovery Charge		T_J=25℃		13.4		μC
			T_J=125℃		22.9		
E_{rec}	Reverse Recovery Energy		T_J=25℃		6.0		mJ
			T_J=125℃		10.4		
$R_{\theta JC}$	Diode Thermal Resistance: Junction-To-Case (per leg)				0.17		℃/W

Module

Symbol	Description	Conditions	Min	Typ	Max	Unit
V_{iso}	Isolation Voltage(All Terminals Shorted)	f = 50Hz, 1minute	2500			V
T_J	Maximum Junction Temperature				150	℃
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 (Conductive Grease Applied)			0.10		℃/W
T	Power Terminals Screw:M5		4.0		6.0	N·m
T	Mounting Screw:M6		4.0		6.0	N·m
G	Weight			200		g

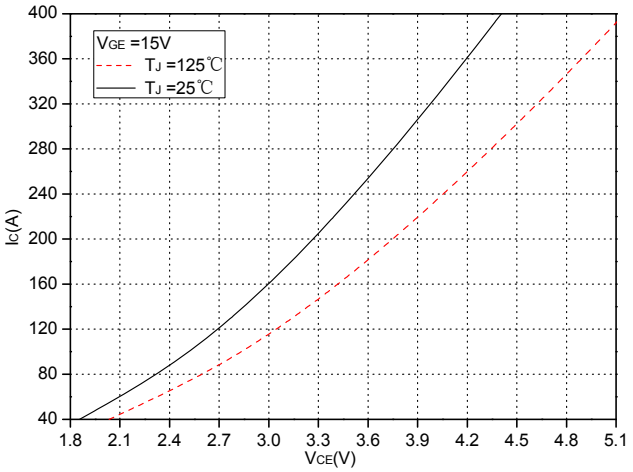


Fig.1 Typical Saturation Voltage Characteristics

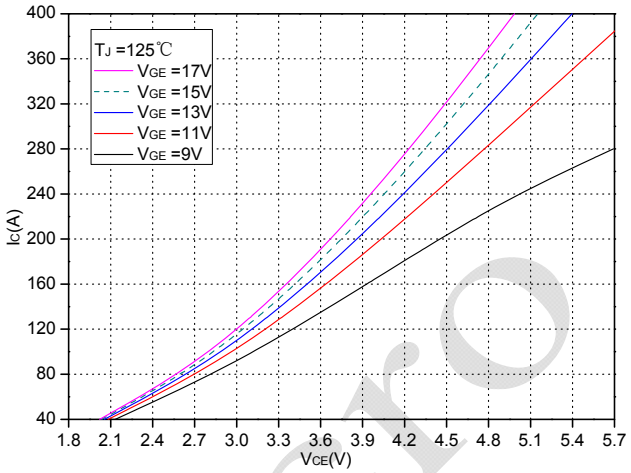


Fig.2 Typical Output Characteristics

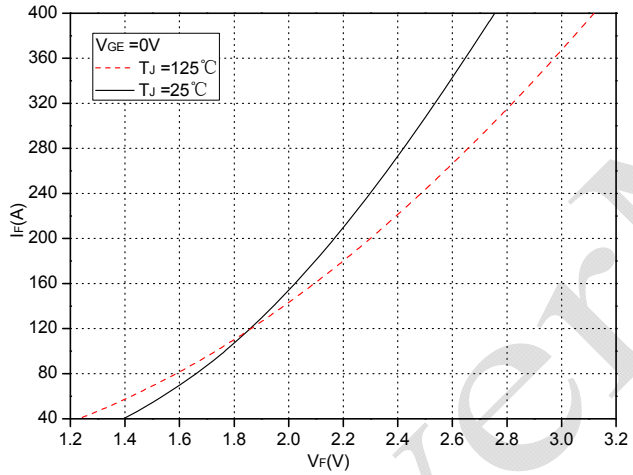


Fig.3 Forward Characteristics of Diode

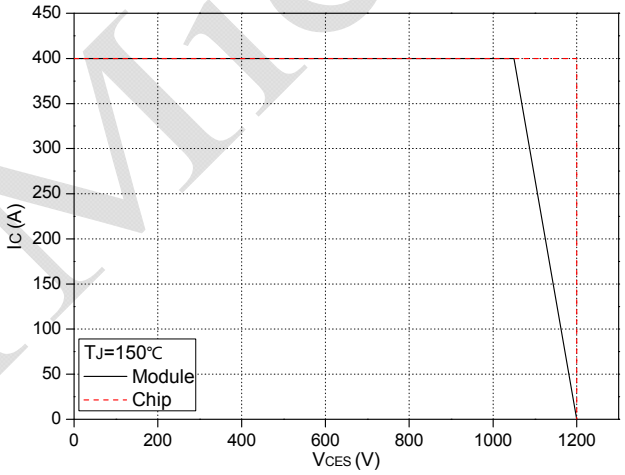


Fig.4 Reverse Bias Safe Operation Area (RBSOA)

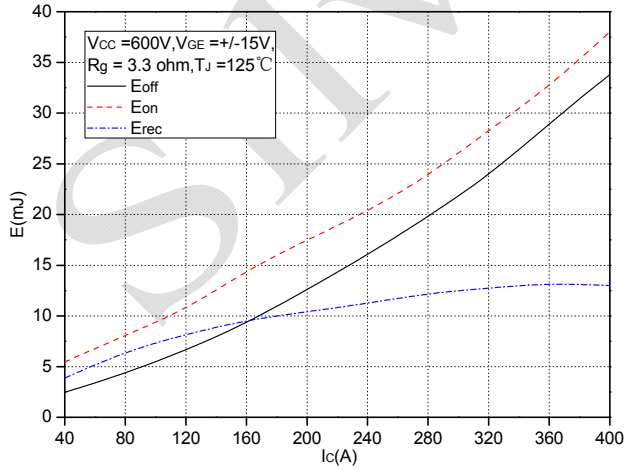


Fig.5 Typical Switching Loss vs. Collector Current

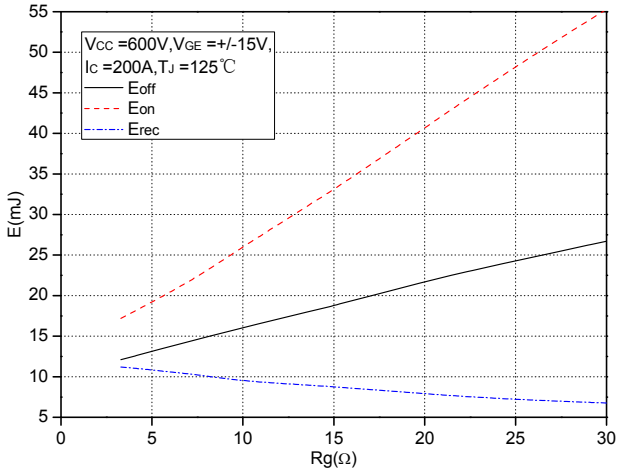


Fig.6 Typical Switching Loss vs. Gate Resistance

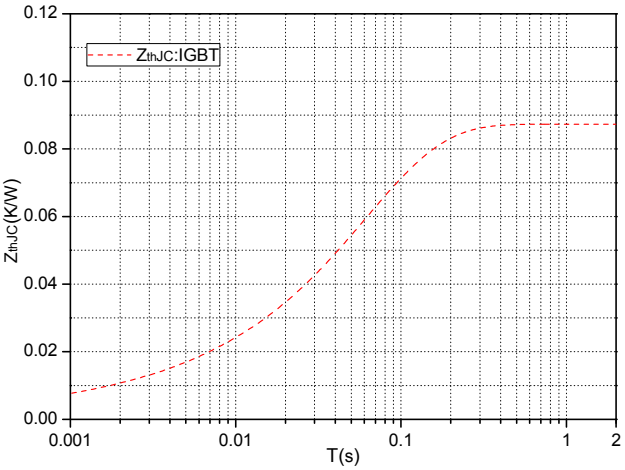


Fig.7 Transient Thermal Impedance (IGBT)

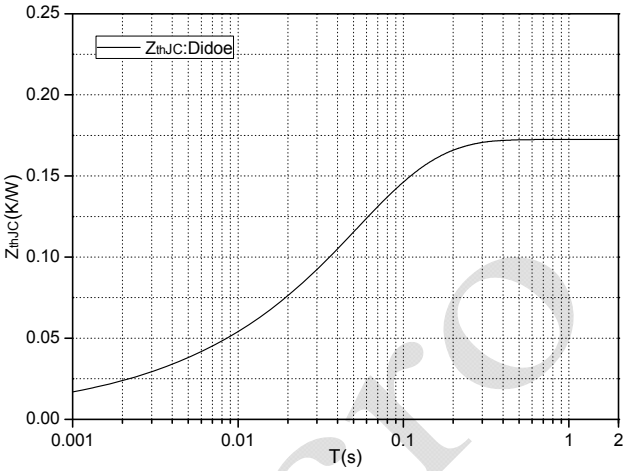


Fig.8 Transient Thermal Impedance (Diode)

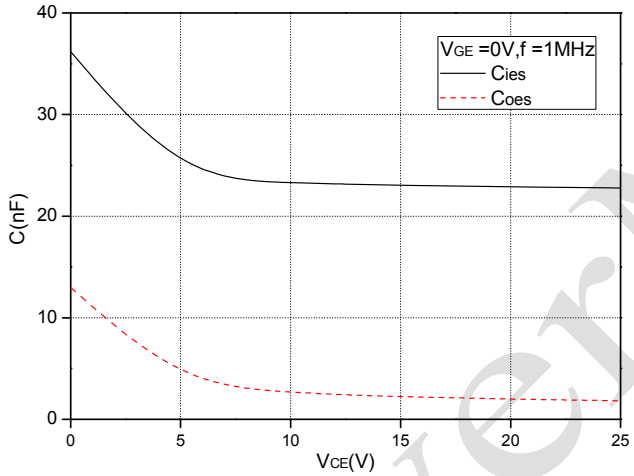
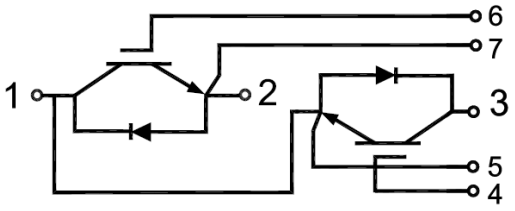
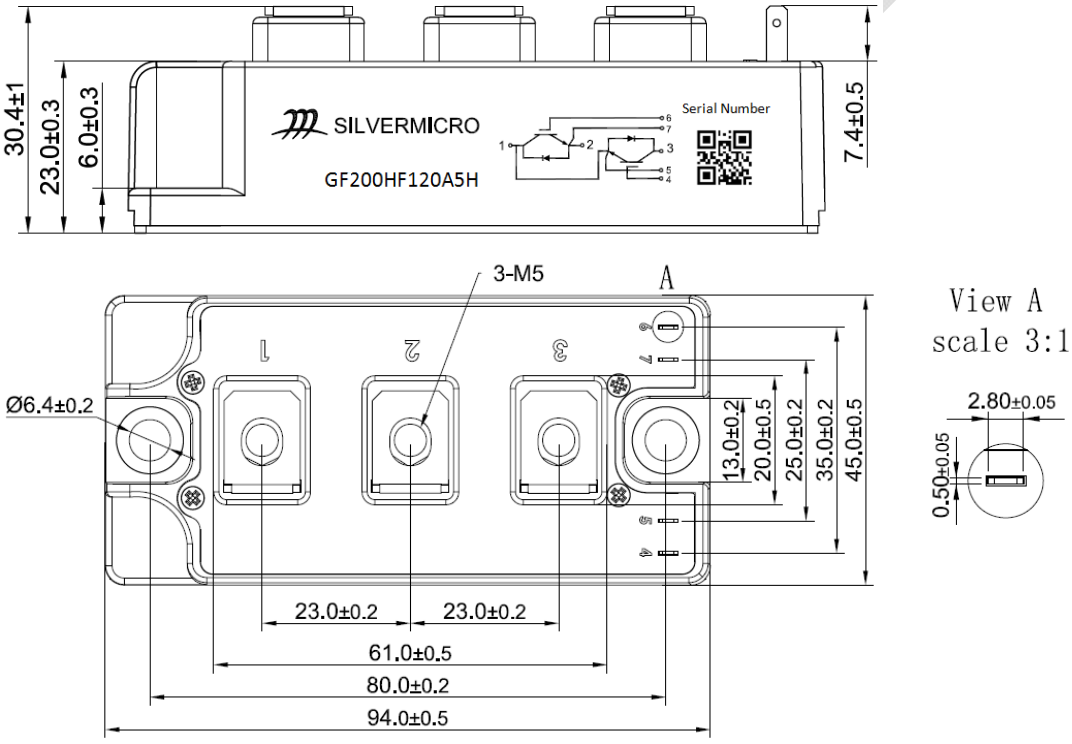


Fig.9 Capacitance Characteristics

Internal Circuit



Package Outline (Unit: mm):



Date	Revision	Notes
11/16/2018	01	Initial release

Announcement

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