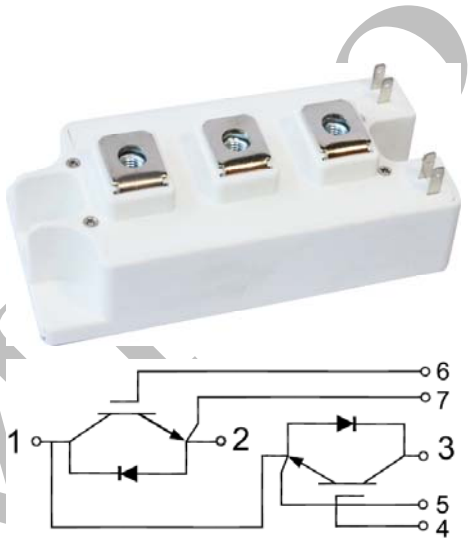
GTR200HF65A5H

IGBT Module

Preliminary Data

Features:



- Short Circuit Rated >10μs
- Low Saturation Voltage: $V_{CE\ (sat)}$ = 1.60V @ I_C =200A , T_C=25℃
- Low Switching Loss
- Low Stray Inductance
- Lead Free, Compliant with RoHS Requirement

Applications:

- UPS and SMPS
- Industrial Inverters
- Servo Applications

IGBT, Inverter

Maximum Rated Values (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 = 80℃,	200	A
		T_C = 25℃	310	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℃	994	W

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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 = 1 mA, V_{CE} = V_{GE}		5.5	6.0	6.5	V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	I_C = 200A, V_{GE} = 15V	T_J = 25℃		1.60	1.80	V
			T_J = 125℃		1.80	2.00	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			17.0		nF
C_{oes}	Output Capacitance				0.70		nF
C_{res}	Reveres Transfer Capacitance				0.56		nF

Switching Characteristics

$t_{d(on)}$	Turn-on Delay Time	V_{CC} =300V,I_C = 200A, R_G = 15Ω,V_{GE} = ±15V, Inductive Load	T_J = 25℃		725		ns
			T_J = 125℃		730		
t_r	Rise Time		T_J = 25℃		280		ns
			T_J = 125℃		285		
$t_{d(off)}$	Turn-off Delay Time		T_J = 25℃		720		ns
			T_J = 125℃		735		
t_f	Fall Time		T_J = 25℃		115		ns
			T_J = 125℃		120		
E_{on}	Turn-on Switching Loss		T_J = 25℃		17.2		mJ
			T_J = 125℃		19.8		
E_{off}	Turn-off Switching Loss		T_J = 25℃		11.6		mJ
			T_J = 125℃		12.5		
Q_g	Total Gate Charge		T_J = 25℃		8.2		nC
SCSOA	Short Circuit Safe Operation Area	V_{CC} = 300V, V_{GE} = 15V, T_J = 150℃		10			μs
$R_{\theta JC}$	IGBT Thermal Resistance: Junction-To-Case				0.151		℃/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}	Diode Maximum Forward Current	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℃		1.45		V
			T_J = 125℃		1.55		
I_{rr}	Peak Reverse Recovery Current	I_F = 200A, di/dt = 580A/μs, V_{rr} = 300V, V_{GE} = -15V	T_J = 25℃		40		A
			T_J = 125℃		55		
Q_{rr}	Reverse Recovery Charge		T_J = 25℃		4.9		μC
			T_J = 125℃		9.1		
E_{rec}	Reverse Recovery Energy		T_J = 25℃		1.66		mJ
			T_J = 125℃		2.51		
$R_{\theta JC}$	Diode Thermal Resistance: Junction-To-Case				0.307		℃/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				175	℃
T_{JOP}	Maximum Operating Junction Temperature Range		-40		+150	℃
T_{stg}	Storage Temperature		-40		+125	℃
$R_{\theta CS}$	Case-To-Sink Thermally (Conductive Grease Applied)			0.04		℃/W
M	Power Terminals Screw:M5		3.0		5.0	N·m
M	Mounting Screw:M6		4.0		6.0	N·m
G	Weight			210		g

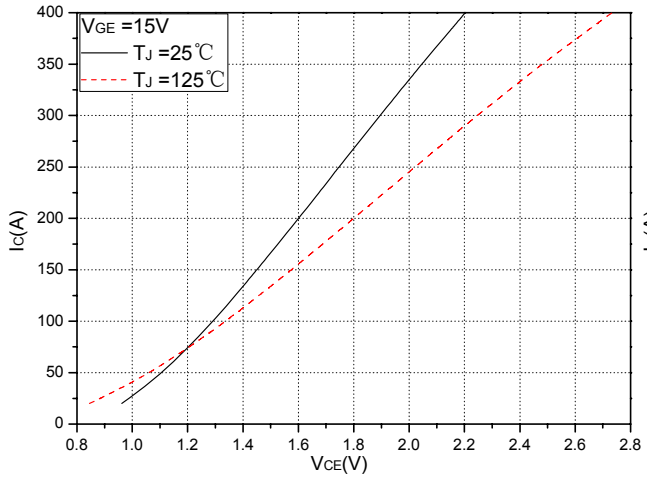


Fig.1Typical Saturation Voltage Characteristics

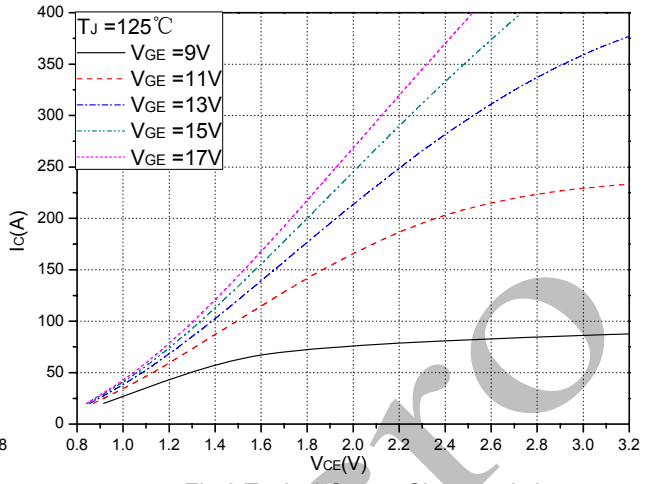


Fig.2 Typical Output Characteristic

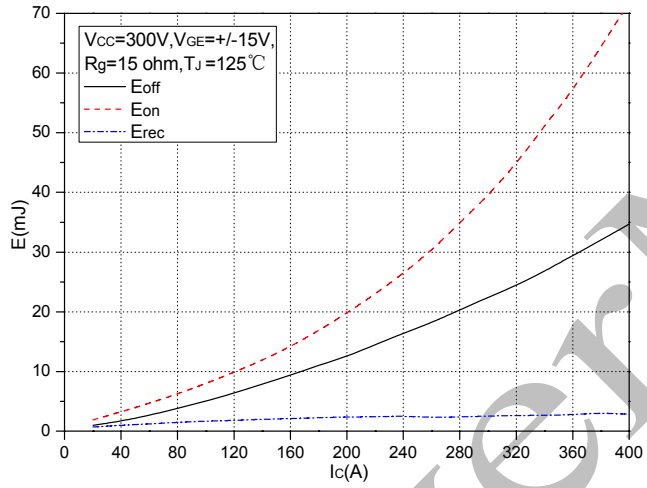


Fig.3Typical Switching Loss vs. Collector Current

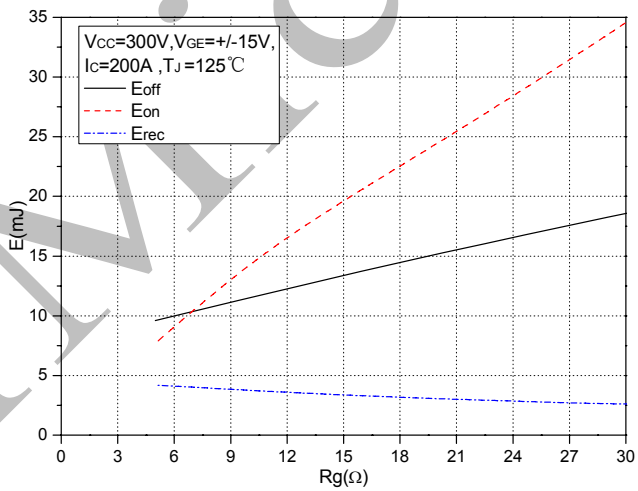


Fig.4Typical Switching Losses vs. Gate Resistance

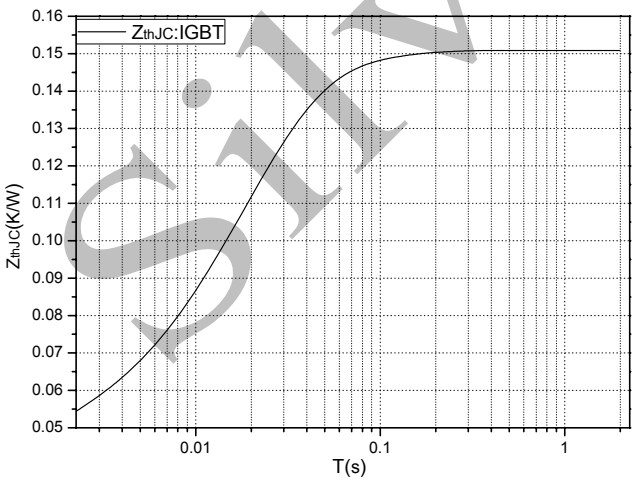


Fig.5Transient Thermal Impedance (IGBT)

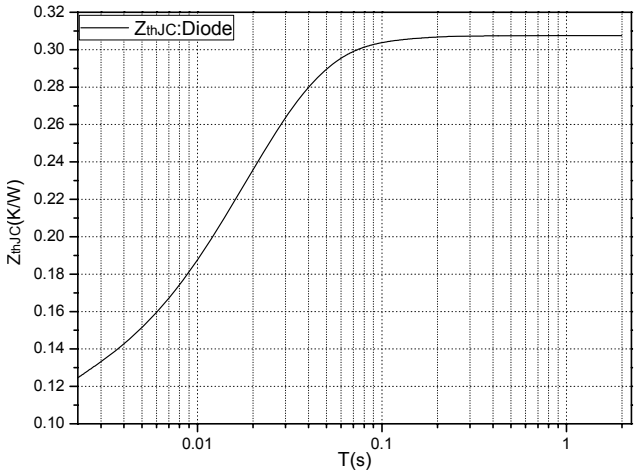


Fig.6Transient Thermal Impedance (Diode)

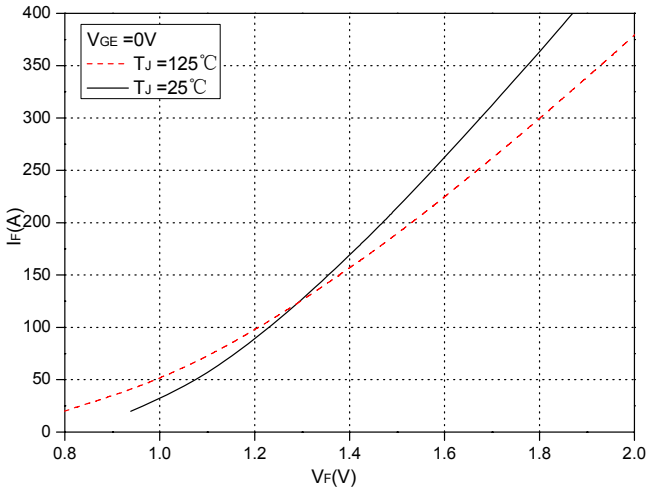
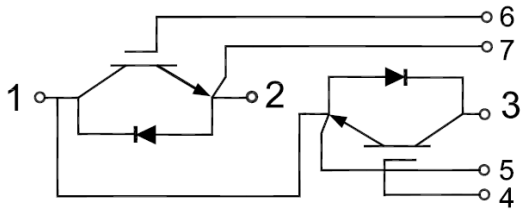
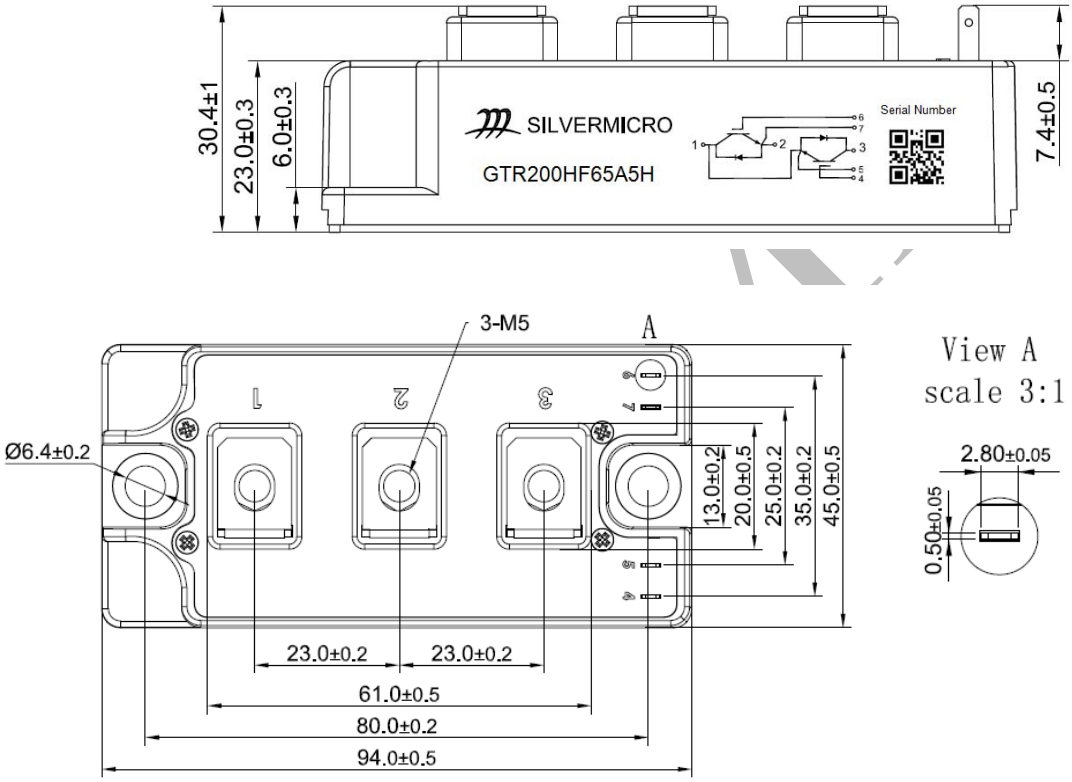


Fig.7 Forward Characteristics of FWD

Internal Circuit:



Package Outline (Unit: mm):



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