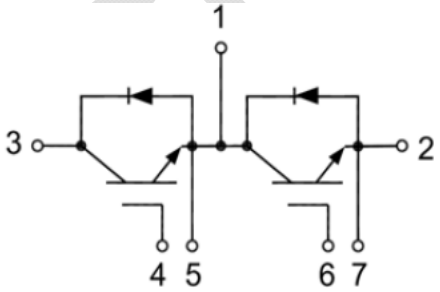
GT75HF120T1H-M

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：

- Industrial Inverters
- Servo Applications

IGBT, Inverter

Maximum Rated Values(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℃	75	A
		T_C = 25℃	150	A
I_{CM}	Peak Collector Current Repetitive	T_J = 175℃	150	A
t_{SC}	Short Circuit Withstand Time		>10	μs
P_D	Maximum Power Dissipation (IGBT)	T_C = 25℃ T_{Jmax}=175℃	555	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 = 2.6 mA, V_{CE} = V_{GE}		5.0	5.5	6.8	V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	I_C =75A, V_{GE} = 15V	T_J = 25℃		1.60		V
			T_J = 125℃		1.80		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℃				200	nA
C_{ies}	Input Capacitance	V_{CE} = 25V, V_{GE} = 0V , f =1MHz			7.5		nF
C_{res}	Reveres Transfer Capacitance				0.21		nF

Switching Characteristics

$t_{d(on)}$	Turn-on Delay Time	V_{CC} = 600V,I_C =75A, R_G = 2Ω,V_{GE} = ±15V, Inductive Load	T_J = 25℃		158		ns
			T_J = 125℃		163		
t_r	Rise Time		T_J = 25℃		49		ns
			T_J = 125℃		53		
$t_{d(off)}$	Turn-off Delay Time		T_J = 25℃		193		ns
			T_J = 125℃		211		
t_f	Fall Time		T_J = 25℃		204		ns
			T_J = 125℃		371		
E_{on}	Turn-on Switching Loss		T_J = 25℃		3.22		mJ
			T_J = 125℃		4.35		
E_{off}	Turn-off Switching Loss		T_J = 25℃		3.40		mJ
			T_J = 125℃		5.91		
Q_g	Total Gate Charge		T_J = 25℃		374		nC
RBSOA	RBSOA	I_C=150A,V_{CC}=1050V,Vp=1200V, Rg = 2Ω, V_{GE}=+15V to 0V, T_J =150°C		Trapezoid			
SC data	Vcc=800V tp=10us Vge=+/-15V Rg=10ohm Tj=25℃				469		A
$R_{\theta JC}$	IGBT Thermal Resistance: Junction-To-Case				0.27		℃/W

Diode, Inverter

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

V_{RRM}	Repetitive Peak Reverse Voltage	1200	V
I_F	Diode Continuous Forward Current	75	A
I_{FM}	Peak FWD Current Repetitive	150	A

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

Symbol	Description	Conditions		Min	Typ	Max	Unit
V_{FM}	Forward Voltage	I_F = 75A	T_J = 25℃		2.10		V
			T_J = 125℃		2.20		
t_{rr}	Reverse Recovery Time	I_F=75A, -diF/dt=1250A/μs (T_J=125℃) V_{rr} = 600V, V_{GE} = -15V	T_J = 25℃		204		ns
			T_J = 125℃		389		
I_{rr}	Peak Reverse Recovery Current		T_J = 25℃		47.8		A
			T_J = 125℃		64.7		
Q_{rr}	Reverse Recovery Charge		T_J = 25℃		4.56		μC
			T_J = 125℃		9.42		
E_{rec}	Reverse Recovery Energy		T_J = 25℃		1.68		mJ
			T_J = 125℃		3.60		
$R_{\theta JC}$	Diode Thermal Resistance: Junction-To-Case				0.43		℃/W

Module

Symbol	Description	Conditions	Min	Typ	Max	Unit
V_{iso}	Isolation Voltage (All Terminals Shorted)	f = 50Hz, 1minute	2500			V
Internal Isolation			Al2O3			
Material of Module Baseplate			Copper			
L_{SCE}	Stray Inductance Module			30		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)			0.1		℃/W
T	Power Terminals Screw:M5		3.0		5.0	N·m
T	Mounting Screw:M6		4.0		6.0	N·m
G	Weight			135		g

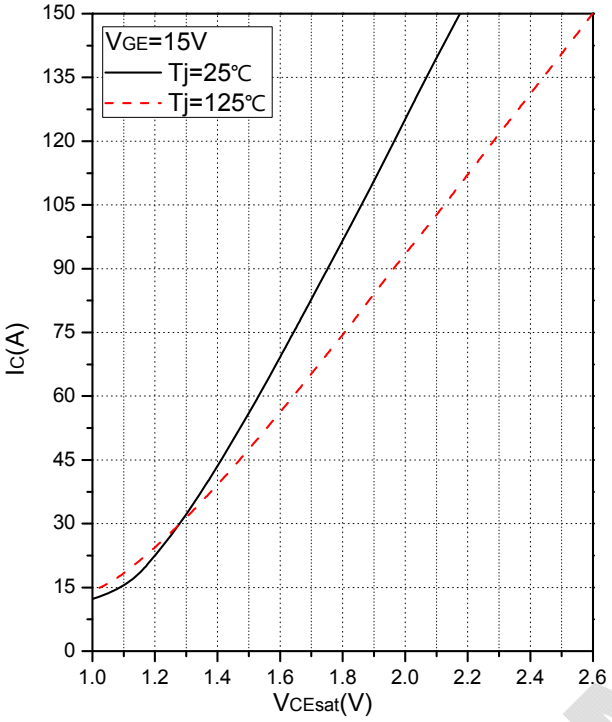


Fig.1 Typical Saturation Voltage Characteristics

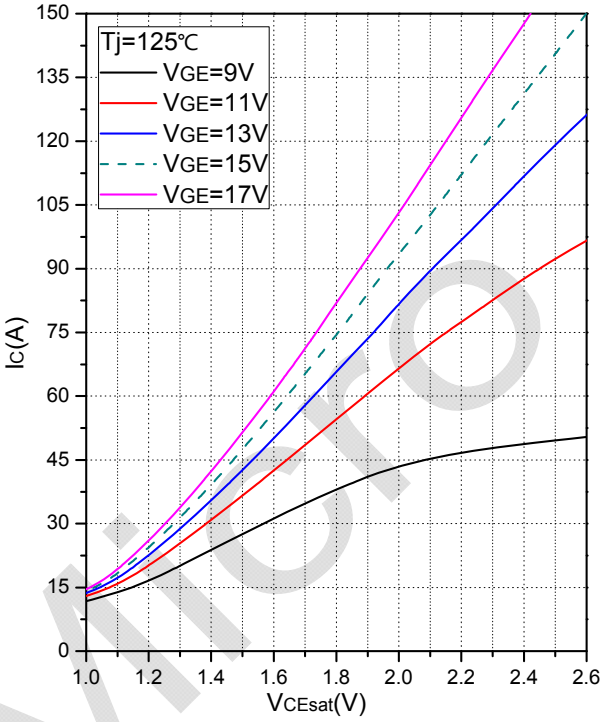


Fig.2 Typical Output Characteristics

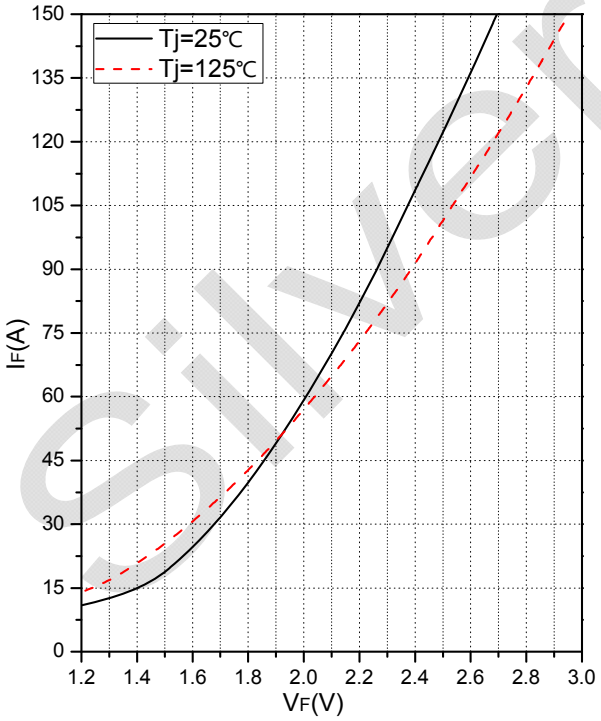


Fig.3 Forward Characteristics of FWD

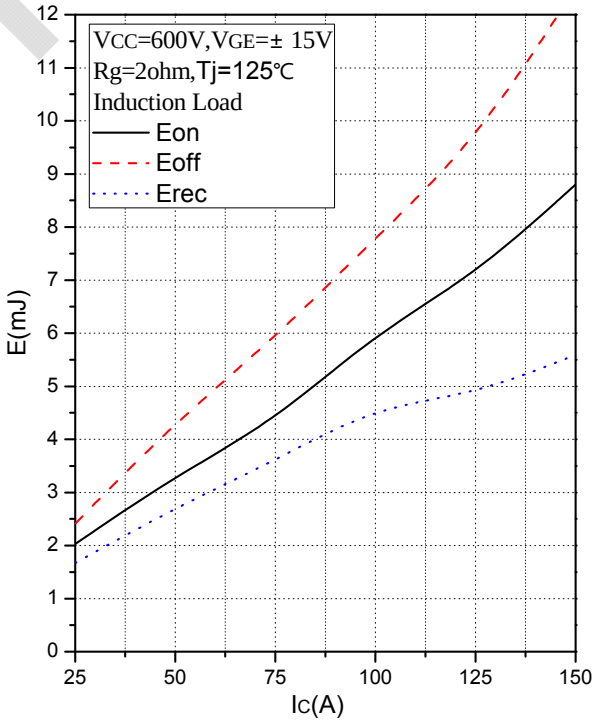


Fig.4 Typical Switching Loss vs. Collector Current

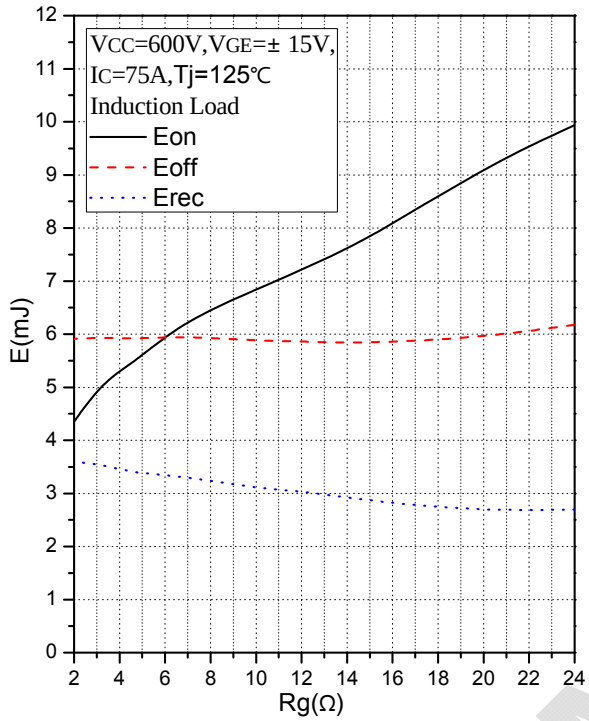


Fig.5 Typical Switching Loss vs. Gate Resistance

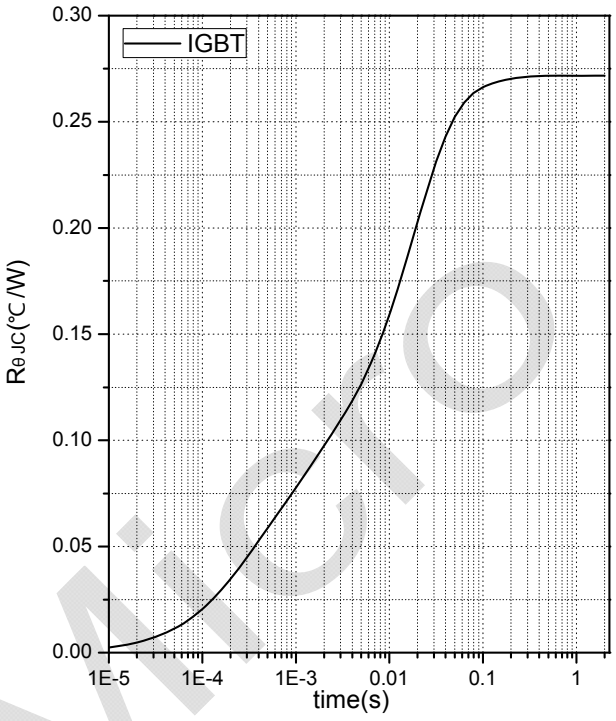


Fig.6 Transient Thermal Impedance

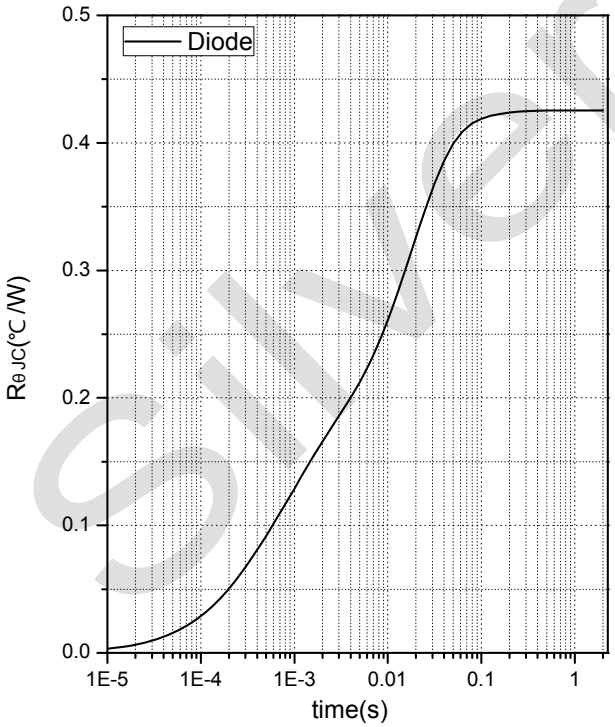


Fig.7 Transient Thermal Impedance

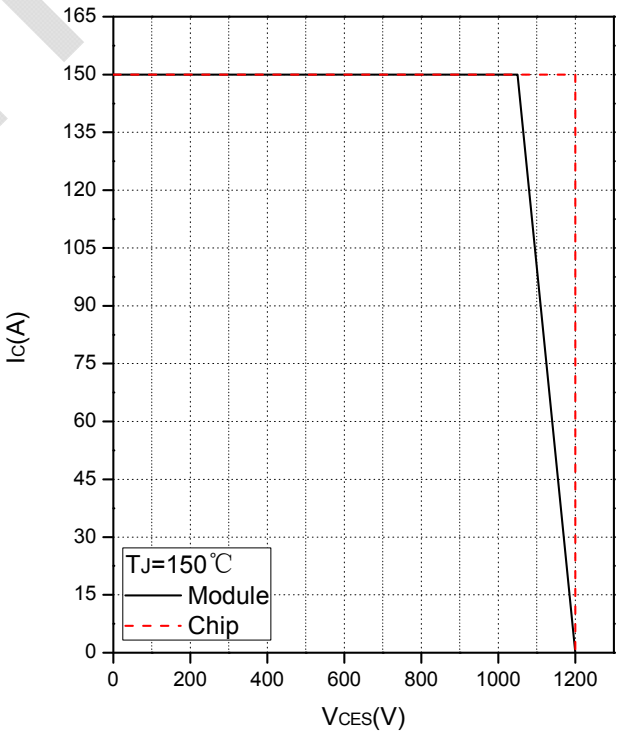


Fig.8 Reverse Bias Safe Operation Area (RBSOA)

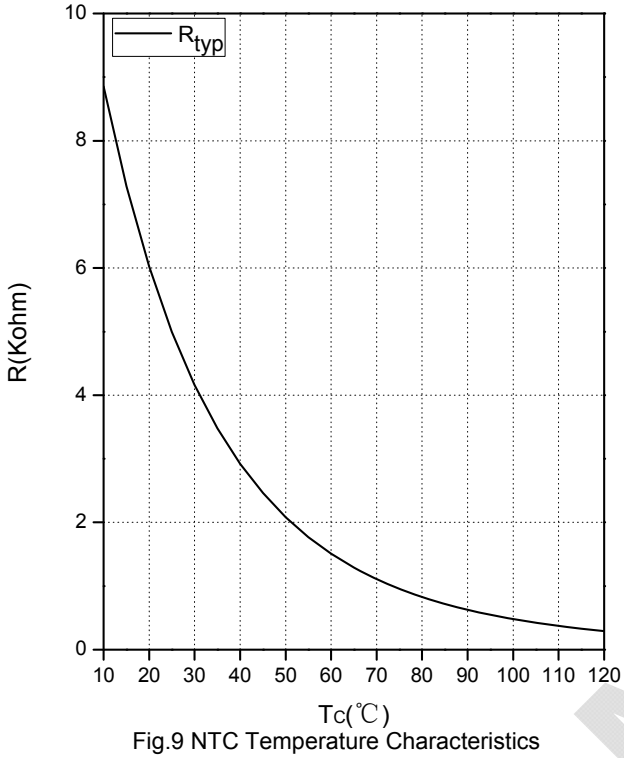


Fig.9 NTC Temperature Characteristics

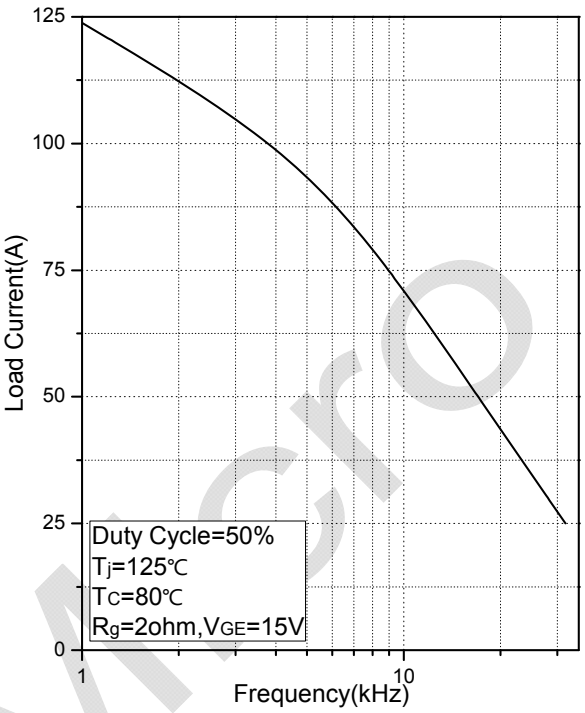
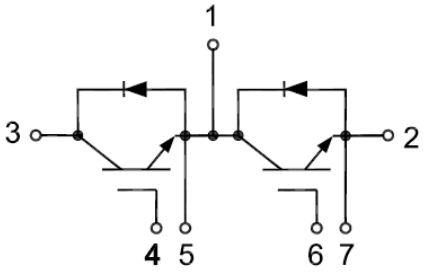
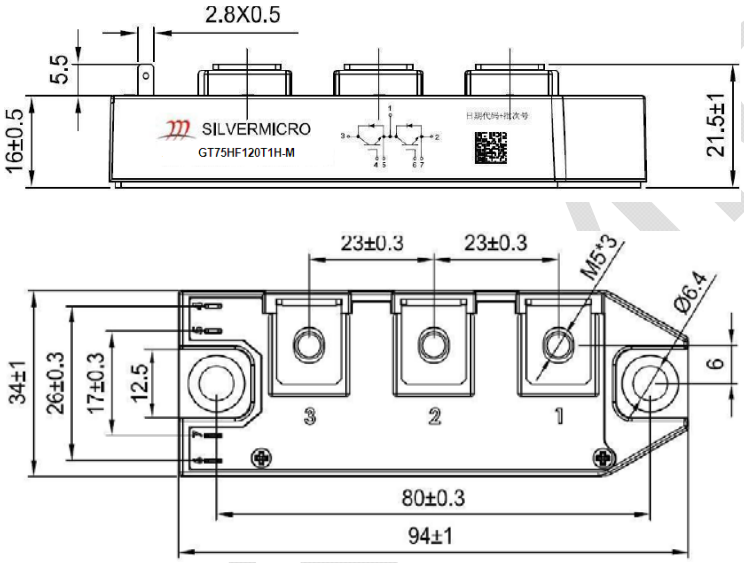


Fig.10 Typical Load Current vs. Frequency

Internal Circuit:



Package Outline (Unit: mm):



Date	Revision	Notes
05/14/2020	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.