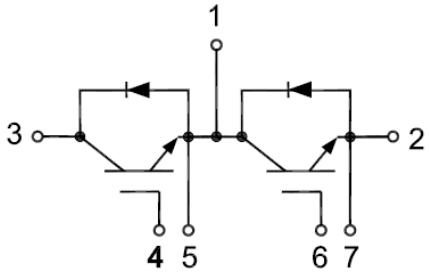
GF75HF120T1VH

IGBT Module

Features：

- Non Punch Through (NPT) 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
- Plating Power Supply、Induction Heating
- SMPS、UPS

IGBT, Inverter

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 = 80℃	75	A
		T_C = 25℃	140	A
I_{CM}	Repetitive Peak Collector Current	T_J = 150℃	150	A
t_{SC}	Short Circuit Withstand Time		>10	μs
P_D	Maximum Power Dissipation per IGBT	T_C = 25℃ T_{Jmax}=150℃	710	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 = 1mA, V_{CE} = V_{GE}		4.5	5.4	6.5	V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	I_C =75A, V_{GE} = 15V	T_J = 25℃		2.55	2.85	V
			T_J = 125℃		3.20		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			6.58		nF
C_{oes}	Output Capacitance				0.57		nF
C_{res}	Reverse Transfer Capacitance				0.29		nF

Switching Characteristics

$t_{d(on)}$	Turn-on Delay Time	V_{CC} = 600V,I_C =75A, R_{Gon} =10Ω,V_{GE} = ±15V, Inductive Load	T_J=25℃		425		ns
			T_J=125℃		335		
t_r	Rise Time		T_J=25℃		85		ns
			T_J=125℃		67		
$t_{d(off)}$	Turn-off Delay Time	V_{CC} = 600V,I_C =75A, R_{Goff} =10Ω,V_{GE} = ±15V, Inductive Load	T_J=25℃		445		ns
			T_J=125℃		375		
t_f	Fall Time		T_J=25℃		142		ns
			T_J=125℃		167		
E_{on}	Turn-on Switching Loss	V_{CC} = 600V,I_C =75A, R_{Gon} =10Ω,V_{GE} = ±15V, di/dt=950A/μs(T_J=125℃), Inductive Load	T_J=25℃		4.92		mJ
			T_J=125℃		5.18		
E_{off}	Turn-off Switching Loss	V_{CC} = 600V,I_C =75A, R_{Goff} =10Ω,V_{GE} = ±15V, du/dt=5905V/μs(T_J=125℃), Inductive Load	T_J=25℃		2.60		mJ
			T_J=125℃		3.58		
Q_g	Total Gate Charge	V_{GE}=+15V…-15V	T_J=25℃		892		nC
RBSOA	Reverse Bias Safe Operation Area	I_C=150A,V_{CC}=1050V,Vp=1200V, R_{Goff} = 10Ω, V_{GE}=+15V to 0V, T_J =150°C		Trapezoid			
SCSOA	SCSOA	V_{CC} = 600V, V_{GE} = 15V, T_J = 150℃		10			μs
$R_{\theta JC}$	IGBT Thermal Resistance: Junction-To-Case					0.176	℃/W

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Diode, Inverter

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	75	A
I_{FM}	Diode Maximum Forward Current	150	A

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

Symbol	Description	Conditions		Min	Typ	Max	Unit
V_{FM}	Forward Voltage	I_F =75A	T_J=25℃		2.55		V
			T_J=125℃		2.65		
t_{rr}	Reverse Recovery Time	I_F=75A, -diF/dt =1740A/μs(T_J=150℃), V_{rr} = 600V, V_{GE} = -15V	T_J=25℃		175		ns
			T_J=125℃		312		
I_{rr}	Peak Reverse Recovery Current		T_J=25℃		43.5		A
			T_J=125℃		57.7		
Q_{rr}	Reverse Recovery Charge		T_J=25℃		4.00		μC
			T_J=125℃		7.55		
E_{rec}	Reverse Recovery Energy	I_F=75A, -diF/dt =1318A/μs(T_J=125℃), V_{rr} = 600V, V_{GE} = -15V	T_J=25℃		1.72		mJ
			T_J=125℃		3.40		
$R_{\theta JC}$	Diode Thermal Resistance: Junction-To-Case					0.522	℃/W

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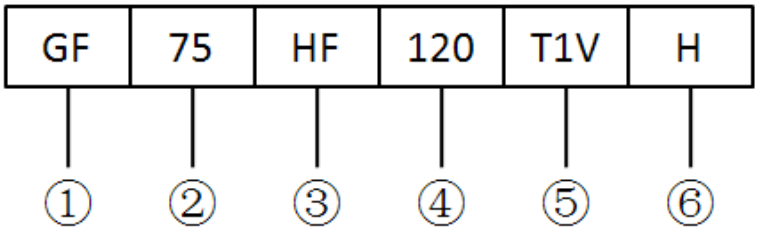
Module

Symbol	Description		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 Thermally (Conductive Grease Applied)				0.07	℃/W
T	Power Terminals Screw:M5		3.0		5.0	N·m
T	Mounting Screw:M6		4.0		6.0	N·m
G	Weight			165		g

Ordering Information Table

Device code



① - Non Punch Through (NPT) Technology IGBT Module
② - Rated Current (75=75A)
③ - Circuit Configuration (Half Bridge)
④ - Rated Voltage (120=1200V)
⑤ - Package Type
⑥ - Test Level (Pass the Important Reliability Test-Industrial Grade)

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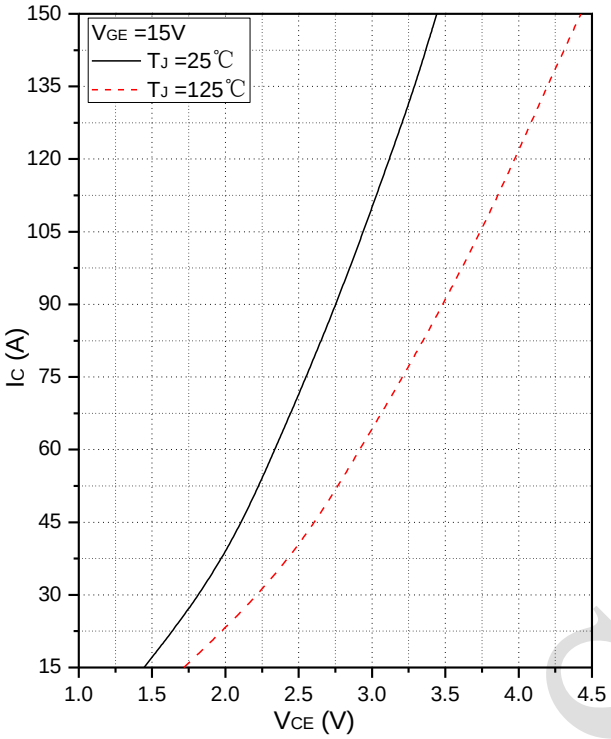

Fig.1 Typical Saturation Voltage Characteristics

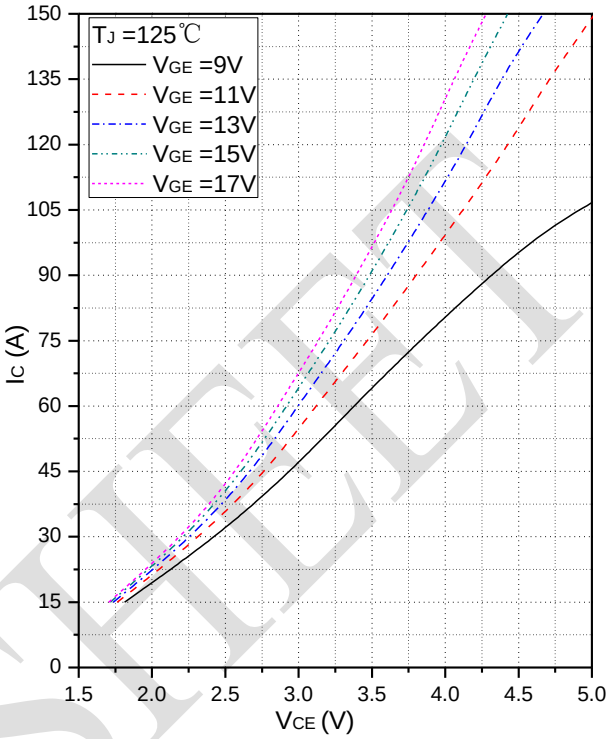

Fig.2 Typical Output Characteristics

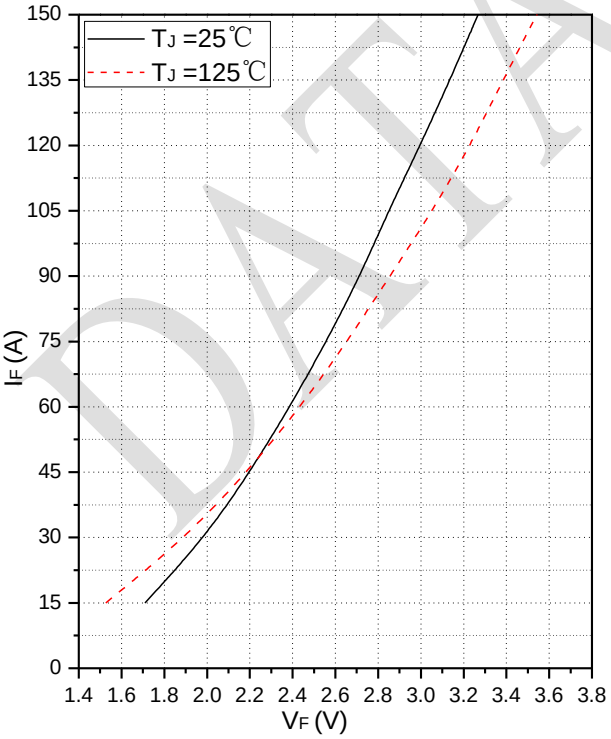

Fig.3 Forward Characteristics of Diode

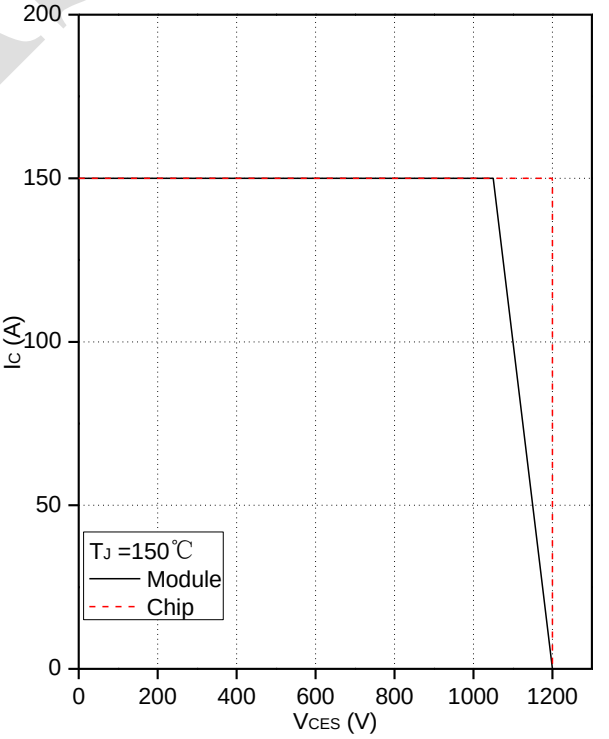

Fig.4 Reverse Bias Safe Operation Area (RBSOA)

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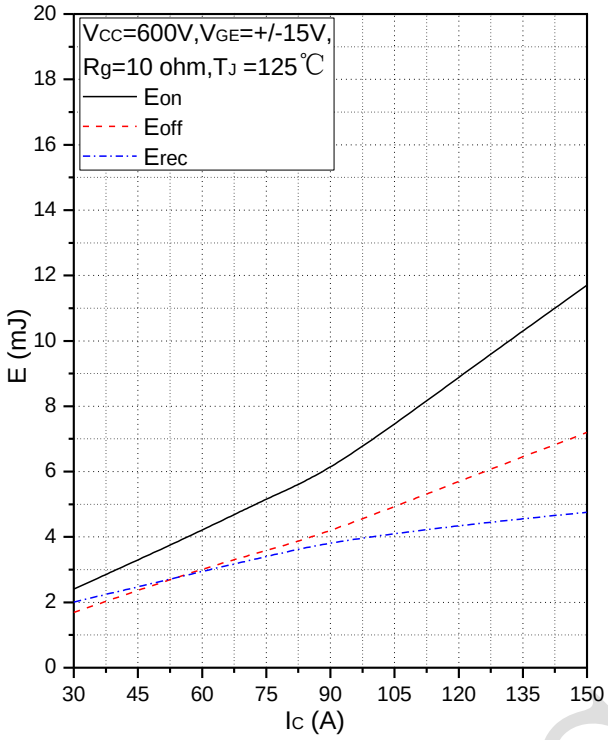

Fig.5 Typical Switching Loss vs. Collector Current

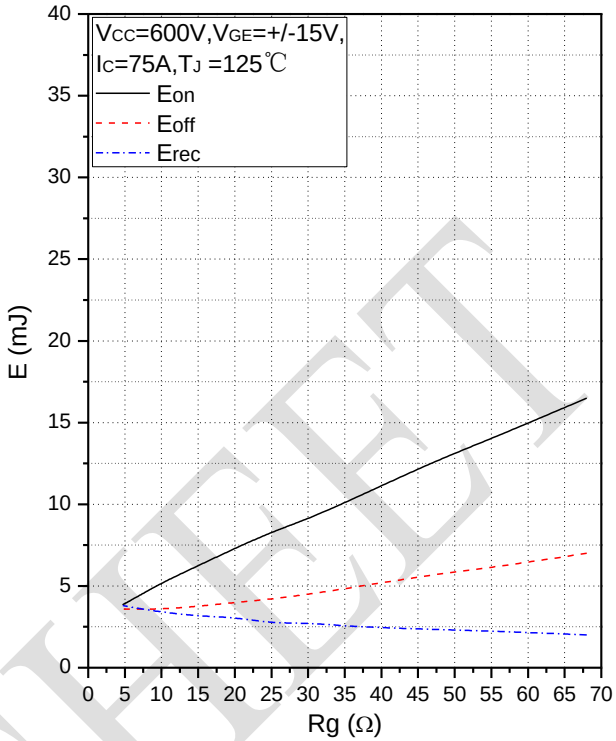

Fig.6 Typical Switching Loss vs. Gate Resistance

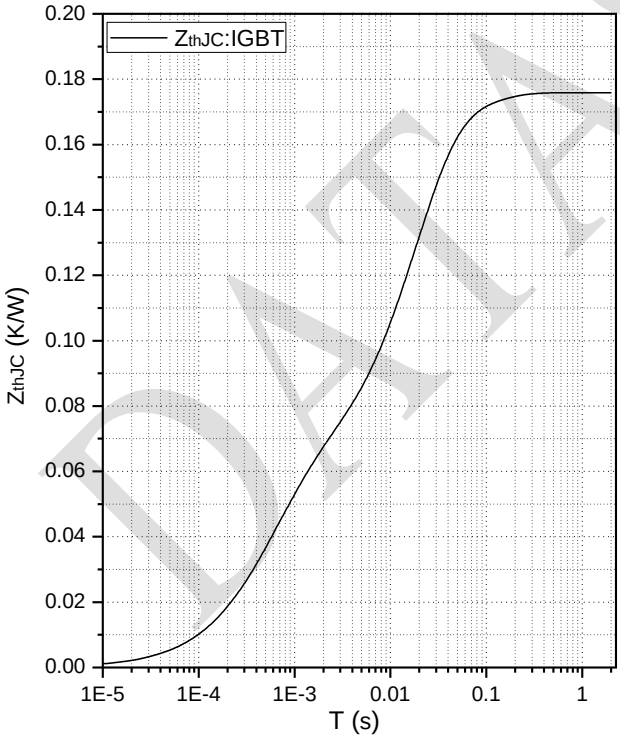

Fig.7 Transient Thermal Impedance (IGBT)

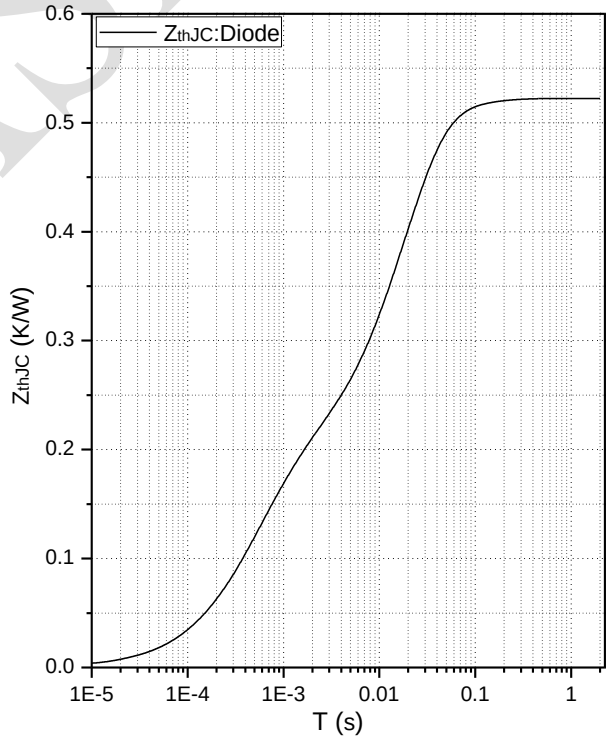

Fig.8 Transient Thermal Impedance (Diode)

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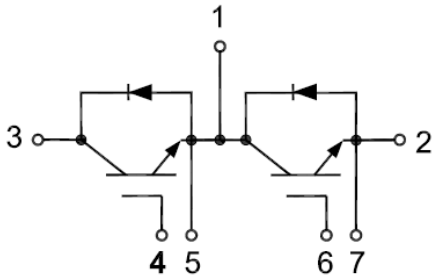
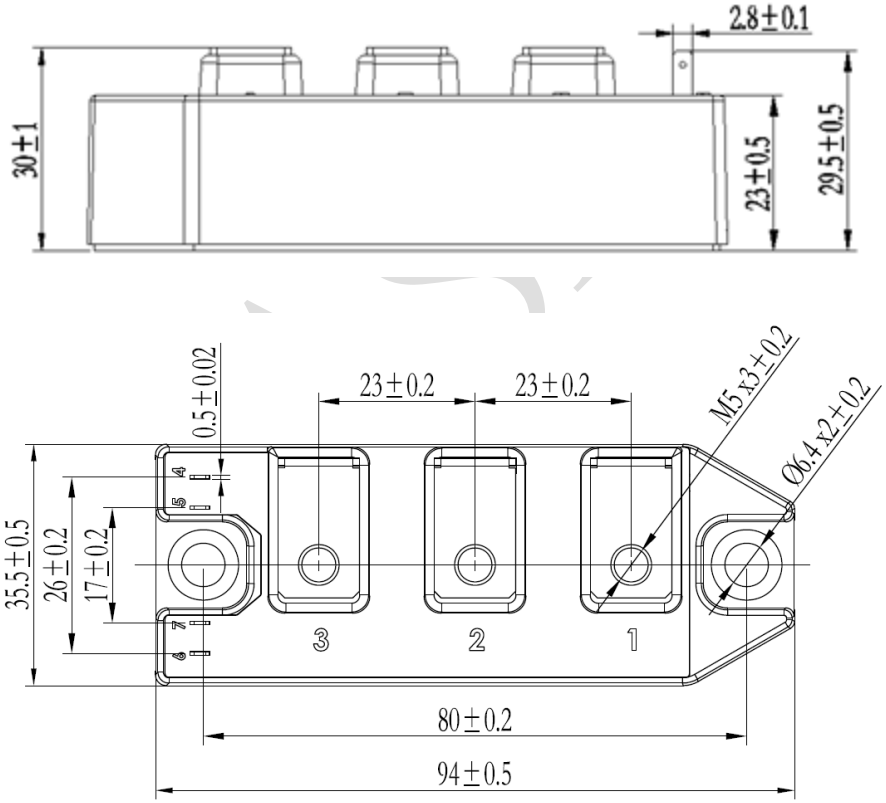
Internal Circuit



Package Outline (Unit: mm):



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Date	Revision	Notes
03/18/2021	A	Final Version

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