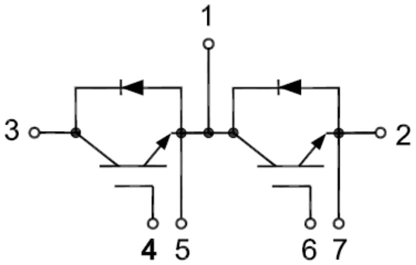
SYMF75HF120T1VH

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

Circuit Diagram



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 = 100℃	75	A
		T_C = 25℃	150	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℃	735	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	5.7	6.5	V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	I_C =75A, V_{GE} = 15V	T_J = 25℃		3.25		V
			T_J = 125℃		4.05		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 =100KHz			6.70		nF
C_{oes}	Output Capacitance				0.62		nF
C_{res}	Reverse Transfer Capacitance				0.27		nF

Switching Characteristics

Symbol	Description	Conditions		Min	Typ	Max	Unit
$t_{d(on)}$	Turn-on Delay Time	V_{CC} = 600V,I_C =75A, R_{Gon} =13.6Ω, V_{GE} = ±15V, Inductive Load	T_J=25℃		635		ns
			T_J=125℃		615		
t_r	Rise Time		T_J=25℃		125		ns
			T_J=125℃		120		
$t_{d(off)}$	Turn-off Delay Time	V_{CC} = 600V,I_C =75A, R_{Goff} =13.6Ω, V_{GE} = ±15V, Inductive Load	T_J=25℃		615		ns
			T_J=125℃		620		
t_f	Fall Time		T_J=25℃		150		ns
			T_J=125℃		175		
E_{on}	Turn-on Switching Loss	V_{CC} = 600V,I_C =75A, R_{Gon} =13.6Ω, V_{GE} = ±15V, di/dt=520A/μs(T_J=125℃), Inductive Load	T_J=25℃		6.2		mJ
			T_J=125℃		7.7		
E_{off}	Turn-off Switching Loss	V_{CC} = 600V,I_C =75A, R_{Goff} =13.6Ω,V_{GE} = ±15V, du/dt=4140V/μs(T_J=125℃), Inductive Load	T_J=25℃		3.6		mJ
			T_J=125℃		4.8		
Q_g	Total Gate Charge	V_{GE}=+15V…-15V	T_J=25℃		0.9		uC
RBSOA	Reverse Bias Safe Operation Area	I_C=150A,V_{CC}=1050V,Vp=1200V, R_{Goff} = 13.6Ω, V_{GE}=+15V to 0V, T_J =125°C		Trapezoid			
SCSOA	SCSOA	V_{CC} = 600V, V_{GE} = 15V, T_J = 150℃		10			μs
$R_{θJC}$	IGBT Thermal Resistance: Junction-To-Case (per IGBT)					0.17	℃/W

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℃		2.40		V
			T_J=125℃		2.50		
t_{rr}	Reverse Recovery Time	I_F=75A, -diF/dt =770A/μs(T_J=125℃), V_{rr} = 600V, V_{GE} = -15V	T_J=25℃		170		ns
			T_J=125℃		360		
I_{rr}	Peak Reverse Recovery Current		T_J=25℃		32.8		A
			T_J=125℃		45.3		
Q_{rr}	Reverse Recovery Charge		T_J=25℃		3.27		μC
			T_J=125℃		7.35		
E_{rec}	Reverse Recovery Energy		T_J=25℃		0.98		mJ
			T_J=125℃		2.58		
$R_{\theta JC}$	Diode Thermal Resistance: Junction-To-Case(per Diode)					0.50	℃/W

Module

Symbol	Description		Min	Typ	Max	Unit
V_{iso}	Isolation Voltage (All Terminals Shorted)	f = 50Hz, 30s	4500			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			V
$R_{\theta CS}$	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

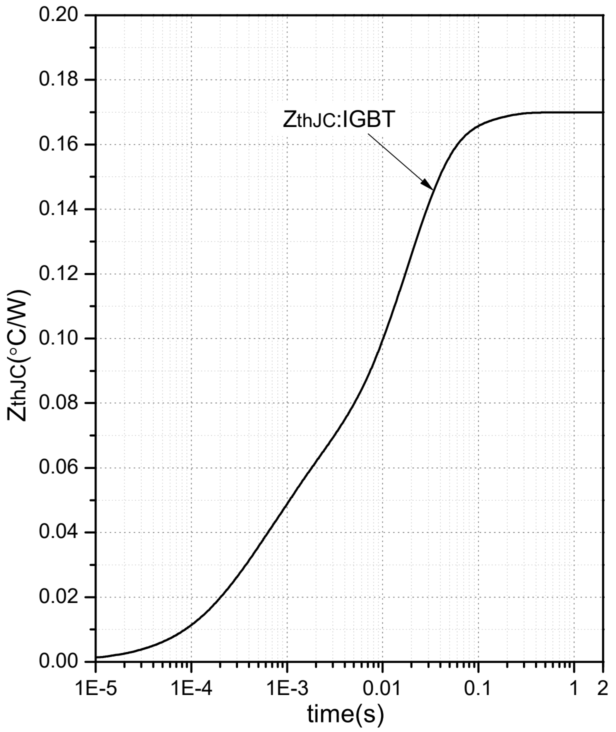


Fig.1 Transient Thermal Impedance (IGBT)

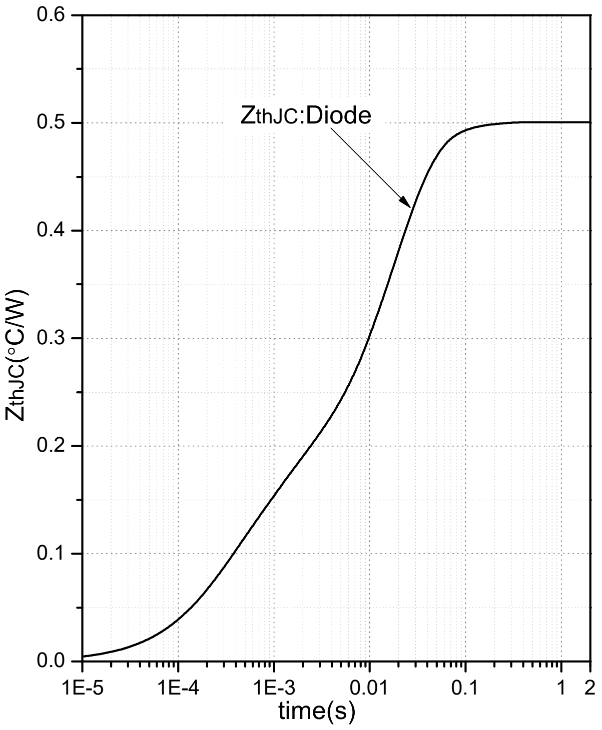


Fig.2 Transient Thermal Impedance (Diode)

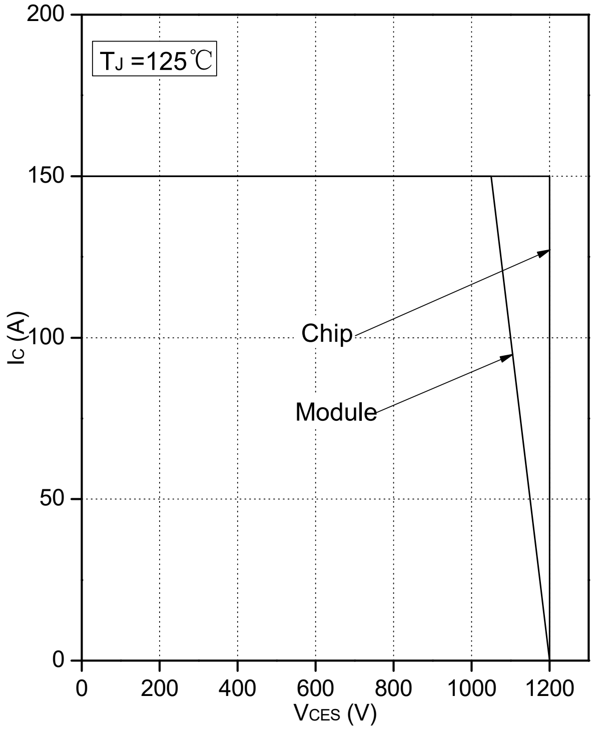
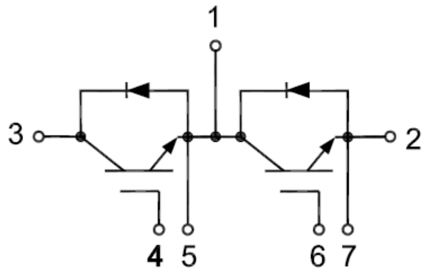


Fig.3 Reverse Bias Safe Operation Area (RBSOA)

Internal Circuit



Package Outline (Unit: mm):