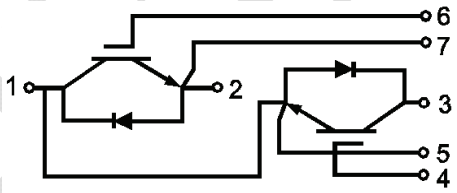
GF100HF120T2VH
IGBT Module

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

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℃	100	A
		T_C=25℃	200	A
I_{CM}	Repetitive Peak Collector Current	T_J=150℃	200	A
t_{SC}	Short Circuit Withstand Time		>10	μs
P_D	Maximum Power Dissipation per leg	T_C=25℃ T_{Jmax}=150℃	875	W

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

Static Characteristics

Symbol	Description	Conditions		Min.	Typ.	Max.	Units
$V_{GE(th)}$	Gate-Emitter Threshold Voltage	I_C=4mA, V_{CE}=V_{GE}		5.0	5.9	6.5	V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	I_C=100A, V_{GE}=15V	T_J=25℃		3.15	3.50	V
			T_J=125℃		3.90		V
			T_J=150℃		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			7.63		nF
C_{oes}	Output Capacitance				0.71		nF
C_{res}	Reverse Transfer Capacitance				0.35		nF

Switching Characteristics

Symbol	Description	Conditions		Min.	Typ.	Max.	Units
$t_{d(on)}$	Turn-on Delay Time	V_{CC}=600V,I_C=100A, R_{Gon}=15Ω,V_{GE}=±15V, Inductive Load	T_J=25℃		563		ns
			T_J=125℃		564		
			T_J=150℃		573		
t_r	Rise Time		T_J=25℃		110		ns
			T_J=125℃		109		
			T_J=150℃		109		
$t_{d(off)}$	Turn-off Delay Time	V_{CC}=600V,I_C=100A, R_{Goff}=15Ω,V_{GE}=±15V, Inductive Load	T_J=25℃		544		ns
			T_J=125℃		572		
			T_J=150℃		585		
t_f	Fall Time		T_J=25℃		144		ns
			T_J=125℃		159		
			T_J=150℃		170		
E_{on}	Turn-on Switching Loss	V_{CC}=600V,I_C=100A, R_{Gon}=15Ω,V_{GE}=±15V, di/dt=810A/μs(T_J=150℃), Inductive Load	T_J=25℃		7.3		mJ
			T_J=125℃		8.6		
			T_J=150℃		9.4		

E_{off}	Turn-off Switching Loss	V_{CC}=600V,I_C=100A, R_{Goff}=15Ω,V_{GE}=±15V, du/dt=4320V/μs(T_J=150℃), Inductive Load	T_J=25℃		4.2		mJ
			T_J=125℃		5.6		
			T_J=150℃		5.9		
Q_g	Total Gate Charge	V_{GE}=+15V…-15V	T_J=25℃		1.1		μC
RBSOA	I_C=200A,V_{CC}=1050V,V_p=1200V,R_G=15Ω, V_{GE}=+15V to 0V, T_J=150℃			Trapezoid			
SC Data	Vcc=600V,t_p=10us,V_{GE}=+/-15V,R_{Gon}=15ohm,R_{Goff}=15ohm,T_J=150℃			10			μs
$R_{\theta JC}$	IGBT Thermal Resistance: Junction-to-Case					0.143	℃/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	100	A
I_{FM}	Diode Maximum Forward Current	200	A

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

Symbol	Description	Conditions		Min.	Typ.	Max.	Units
V_{FM}	Forward Voltage	I_F=100A	T_J=25℃		2.95		V
			T_J=125℃		3.05		
			T_J=150℃		3.00		
t_{rr}	Reverse Recovery Time	I_F=100A, -diF/dt=1165A/μs(T_J=150℃), V_{rr}=600V,V_{GE}=-15V	T_J=25℃		132		ns
			T_J=125℃		265		
			T_J=150℃		314		
I_{rr}	Peak Reverse Recovery Current		T_J=25℃		39.1		A
			T_J=125℃		54.7		
			T_J=150℃		57.8		
Q_{rr}	Reverse Recovery Charge		T_J=25℃		2.8		μC
			T_J=125℃		6.1		
			T_J=150℃		7.4		

E_{rec}	Reverse Recovery Energy	I_F=100A -diF/dt=1165A/μs(T_J=150℃), V_{rr}=600V, V_{GE}=-15V	T_J=25℃		1.08		mJ
			T_J=125℃		2.38		
			T_J=150℃		2.91		
$R_{\theta JC}$	Diode Thermal Resistance: Junction-to-Case					0.41	℃/W

Module

Symbol	Description		Min.	Typ.	Max.	Units
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		+125	℃
T_{stg}	Storage Temperature		-40		+125	℃
CTI	Comparative Tracking Index		200			
$R_{\theta CS}$	Case-to-Sink Thermally (Conductive Grease Applied)				0.03	℃/W
T	Power Terminals Screw:M6		3.0		5.0	N·m
T	Mounting Screw:M6		4.0		6.0	N·m
G	Weight			300		g

Ordering Information Table

Device code

G	F	100	HF	120	T2V	H
①	②	③	④	⑤	⑥	⑦

① - IGBT Module
② - NPT, Fast IGBT
③ - Rated Current (100=100A)
④ - Circuit Configuration (Half Bridge)
⑤ - Rated Voltage (120=1200V)
⑥ - Package Type
⑦ - Test Level (Pass the Important Reliability Test-Industrial Grade)

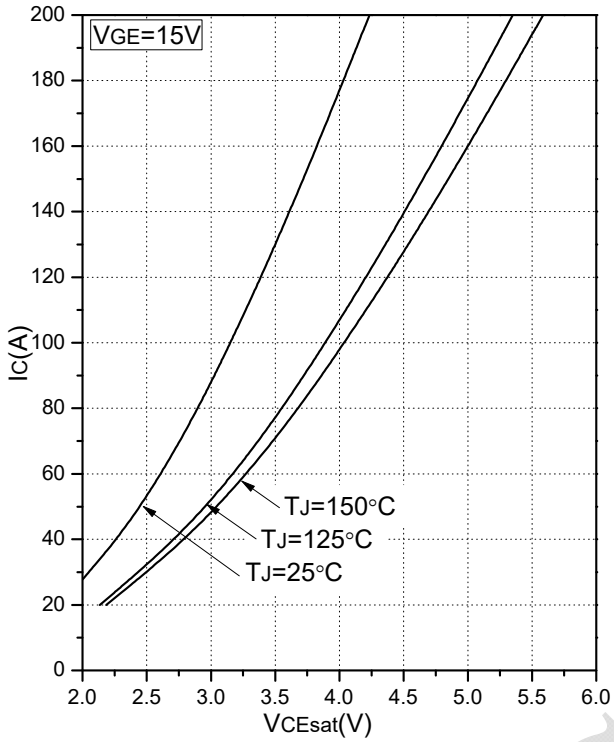


Fig.1 Typical Saturation Voltage Characteristics

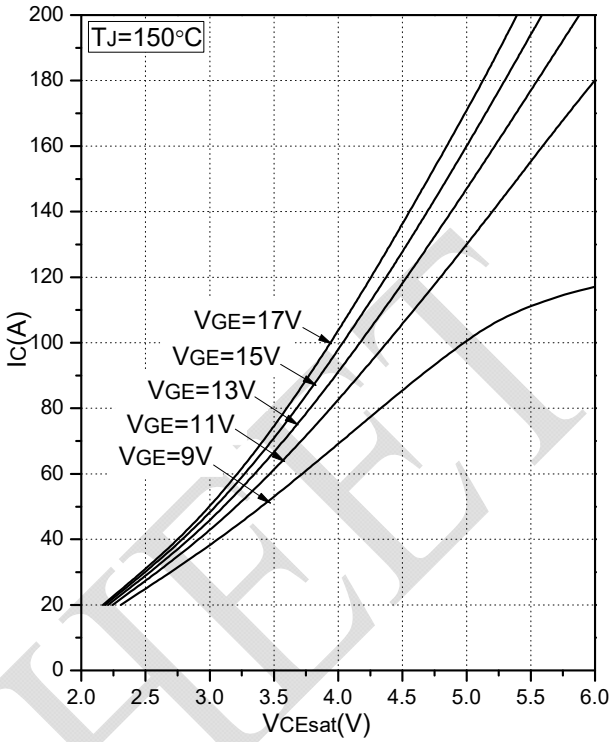


Fig.2 Typical Output Characteristics

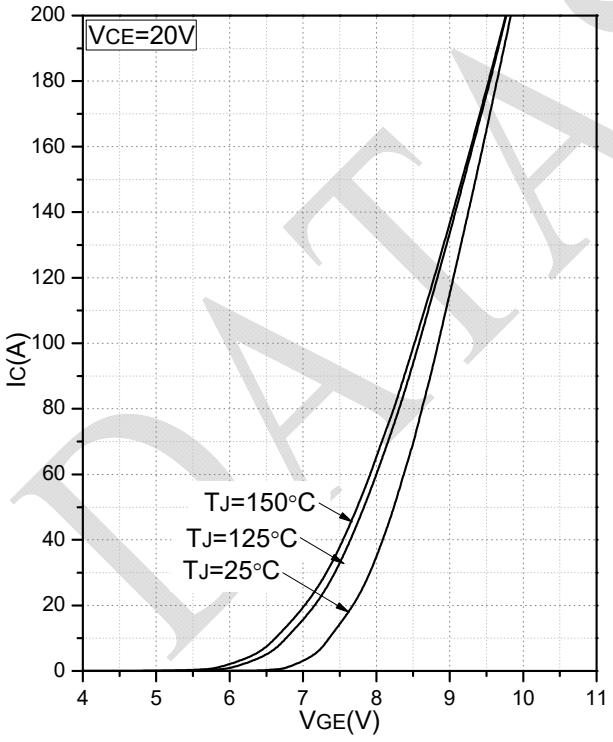


Fig.3 Transfer Characteristic

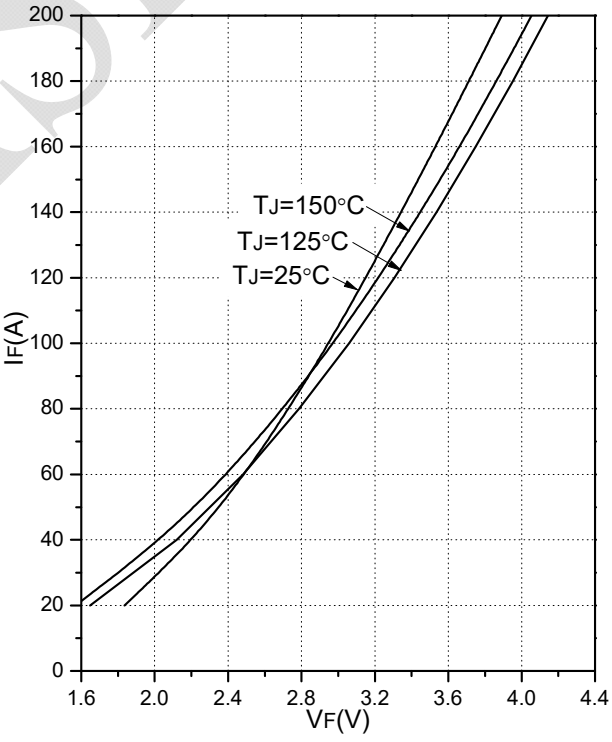


Fig.4Forward Characteristics of Diode

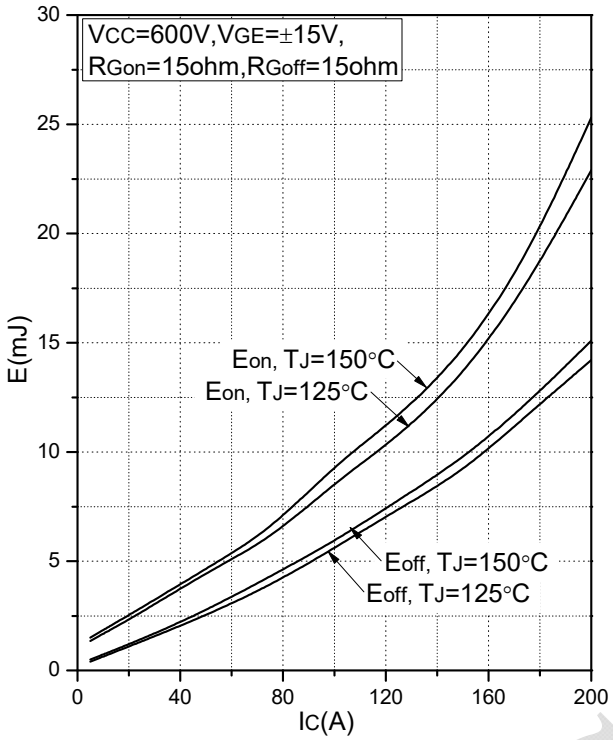


Fig.5 Typical Switching Loss vs. Collector Current

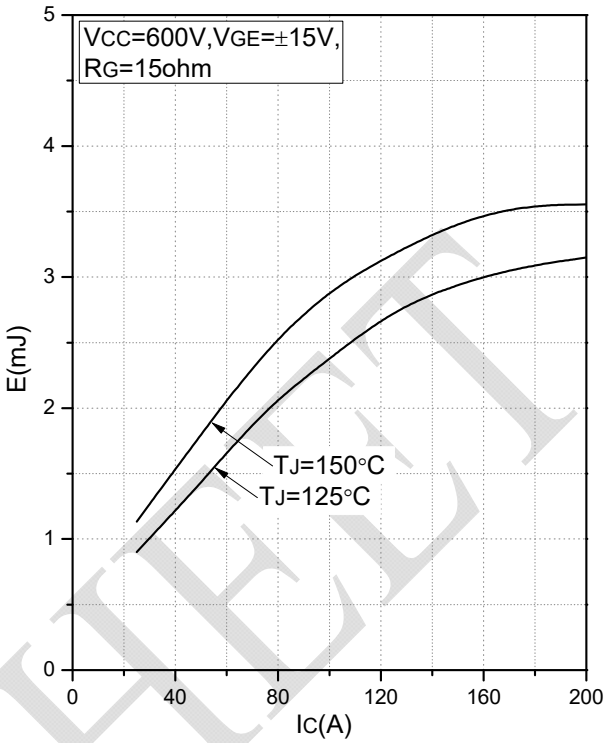


Fig.6 Typical Switching Loss vs. Forward Current

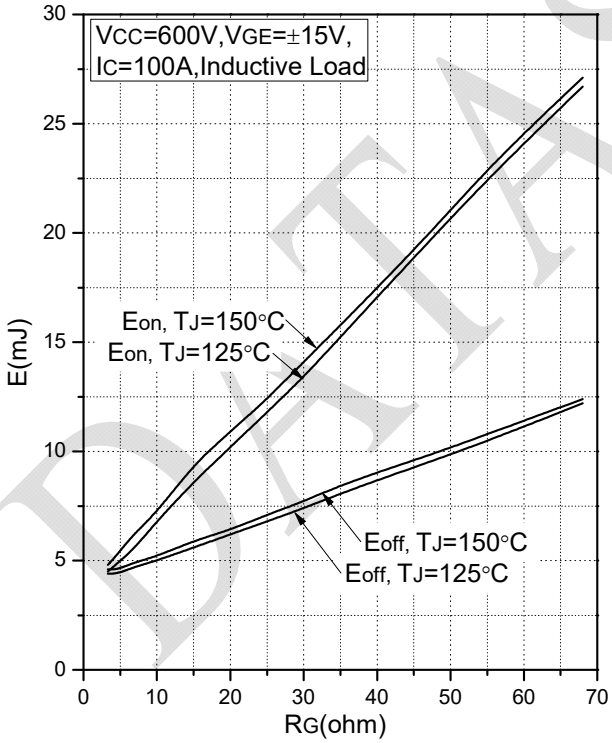


Fig.7 Typical Switching Loss vs. Gate Resistance

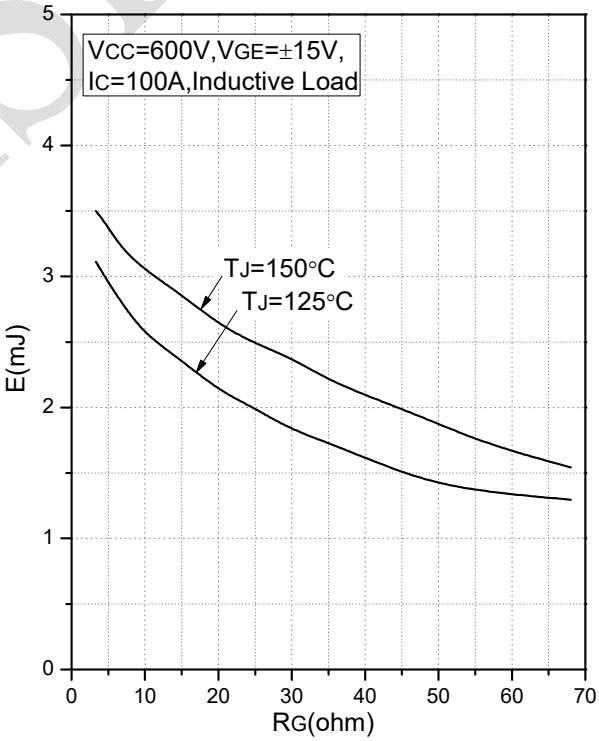


Fig.8Typical Switching Loss vs. Gate Resistance

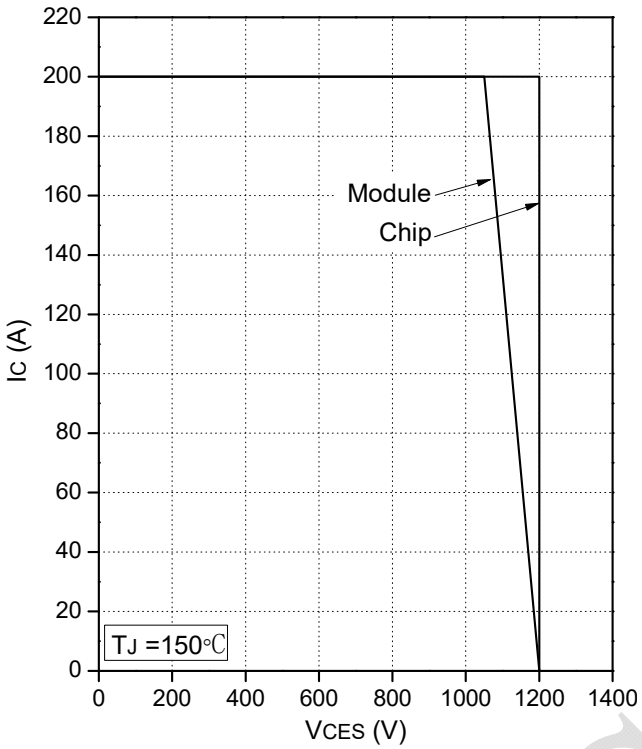


Fig.9 Reverse Bias Safe Operation Area (RBSOA)

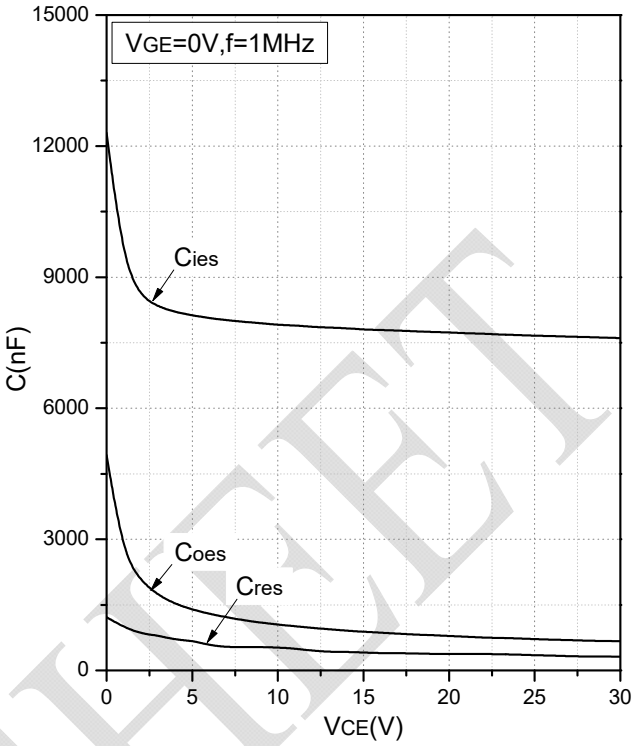


Fig.10Capacitance Characteristics

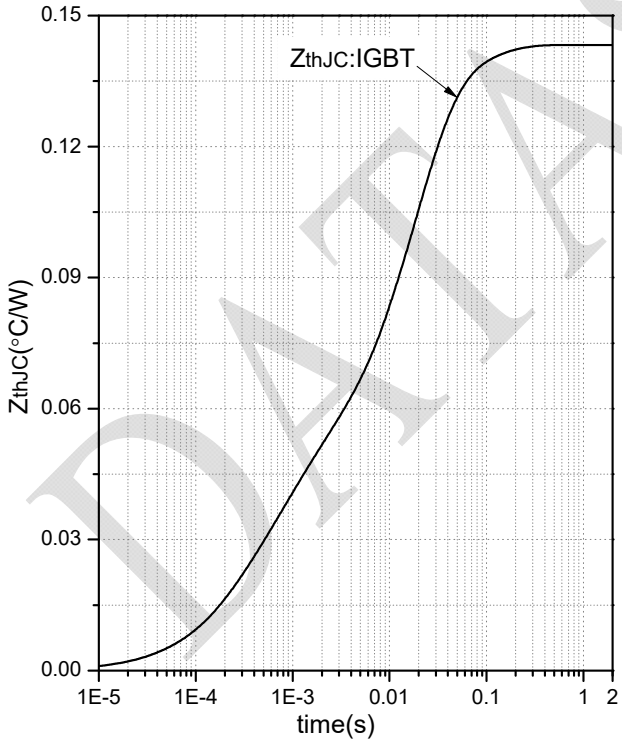


Fig.11 Transient Thermal Impedance (IGBT)

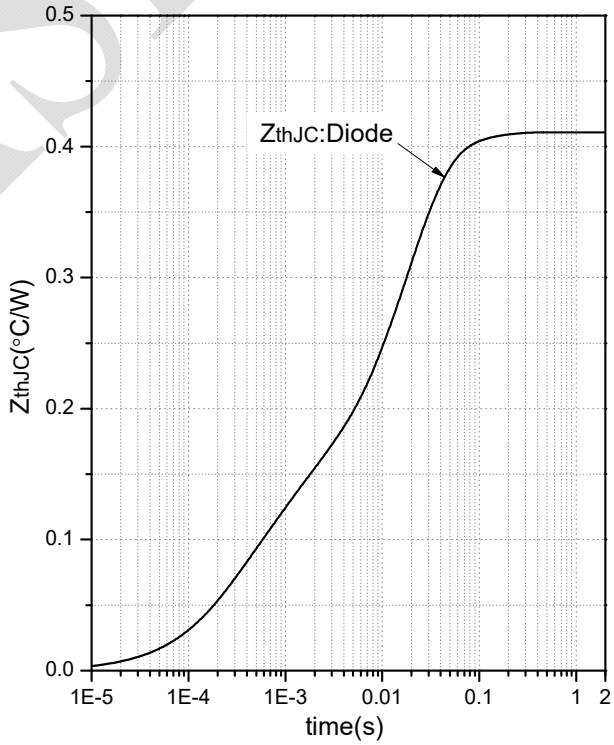
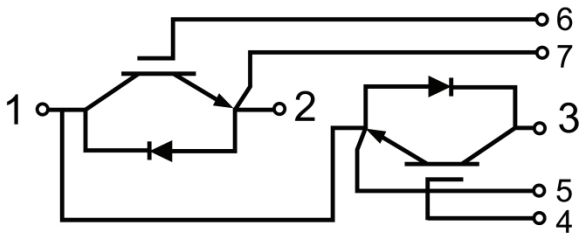
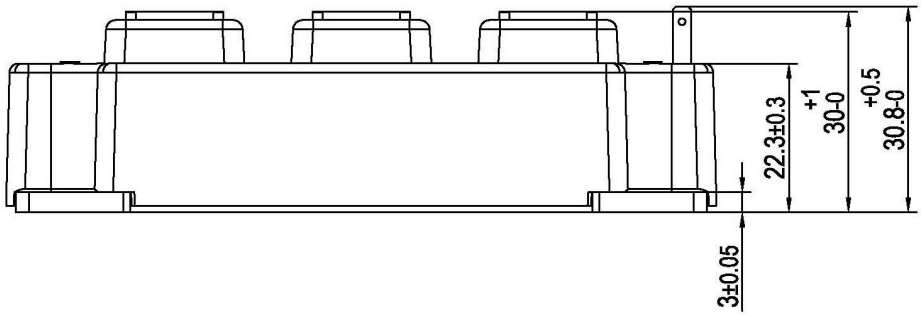


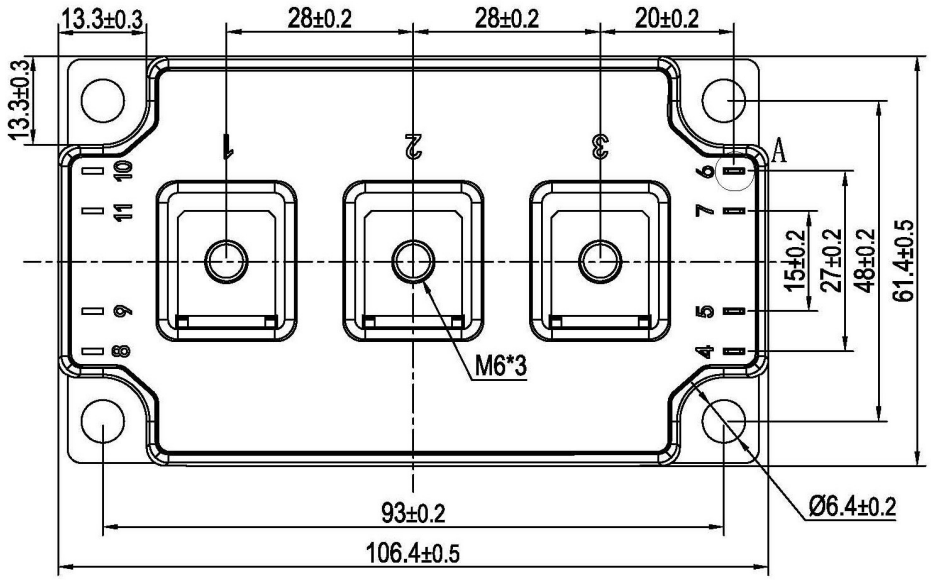
Fig.12 Transient Thermal Impedance (Diode)

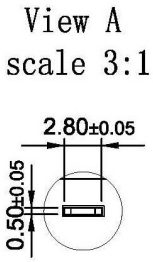
Internal Circuit



Package Outline (Unit: mm):







Date	Revision	Notes
08/03/2021	A	Final Version

Announcements

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The released datasheet would be issued with “REV.” + “alphabet characters”.