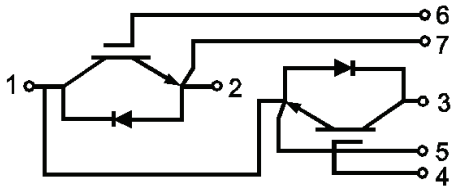
GT150HF120T2VH
IGBT Module

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：

- Welding
- HEV Inverter
- Industrial Motor Drives
- 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 = 100℃	150	A
		T_C = 25℃	265	A
I_{CM}	Repetitive Peak Collector Current	T_J = 175℃	300	A
t_{SC}	Short Circuit Withstand Time		>10	μs
P_D	Maximum Power Dissipation per leg	T_C = 25℃ T_{Jmax}=175℃	1040	W

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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	5.8	6.8	V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	I_C=150A, V_{GE}=15V	T_J=25℃		1.95	2.25	V
			T_J=125℃		2.30		
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=100kHz			13.80		nF
C_{oes}	Output Capacitance				0.90		
C_{res}	Reverse Transfer Capacitance				0.12		

Switching Characteristics

$t_{d(on)}$	Turn-on Delay Time	V_{CC}=600V,I_C=150A, R_{Gon}=4.7Ω,V_{GE}=±15V, Inductive Load	T_J=25℃		320		ns
			T_J=125℃		360		
t_r	Rise Time		T_J=25℃		105		ns
			T_J=125℃		117		
$t_{d(off)}$	Turn-off Delay Time	V_{CC}=600V,I_C=150A, R_{Goff}=4.7Ω,V_{GE}=±15V, Inductive Load	T_J=25℃		238		ns
			T_J=125℃		244		
t_f	Fall Time		T_J=25℃		164		ns
			T_J=125℃		304		
E_{on}	Turn-on Switching Loss	V_{CC}=600V,I_C=150A, R_{Gon}=4.7Ω,V_{GE}=±15V, di/dt=1090A/μs(T_J=125℃), Inductive Load	T_J=25℃		9.3		mJ
			T_J=125℃		14.7		
E_{off}	Turn-off Switching Loss	V_{CC}=600V,I_C=150A, R_{Goff}=4.7Ω,V_{GE}=±15V, du/dt=5875V/μs(T_J=125℃), Inductive Load	T_J=25℃		8.0		mJ
			T_J=125℃		12.9		
Q_g	Total Gate Charge	V_{GE}=+15V…-15V	T_J=25℃		658		nC
$R_{g\ internal}$	Internal Gate Resistance		T_J=25℃		5		Ω
RBSOA	Reverse Bias Safe Operation Area	I_C=400A,V_{CC}=1050V,Vp=1200V, R_{Goff}=2Ω, V_{GE}=+15V to 0V, T_J=150°C		Trapezoid			
SC Data	Vcc=600V, tp=10us, V_{GE}=+/-15V ,R_{Gon}=4.7ohm,R_{Goff}=4.7ohm,Tj=125℃				750		A
$R_{\theta JC}$	IGBT Thermal Resistance: Junction-To-Case					0.144	℃/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	150	A
I_{FM}	Diode Maximum Forward Current	300	A

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

Symbol	Description	Conditions		Min.	Typ.	Max.	Units
V_{FM}	Forward Voltage	I_F=150A	T_J=25℃		1.60		V
			T_J=125℃		1.70		
t_{rr}	Reverse Recovery Time	I_F=150A, -diF/dt=1413A/μs(T_J=125℃), V_{rr}=600V, V_{GE}=-15V	T_J=25℃		335		ns
			T_J=125℃		567		
I_{rr}	Peak Reverse Recovery Current		T_J=25℃		68		A
			T_J=125℃		72		
Q_{rr}	Reverse Recovery Charge		T_J=25℃		10		μC
			T_J=125℃		16		
E_{rec}	Reverse Recovery Energy		T_J=25℃		4.1		mJ
			T_J=125℃		6.9		
$R_{\theta JC}$	Diode Thermal Resistance: Junction-to-Case					0.250	℃/W

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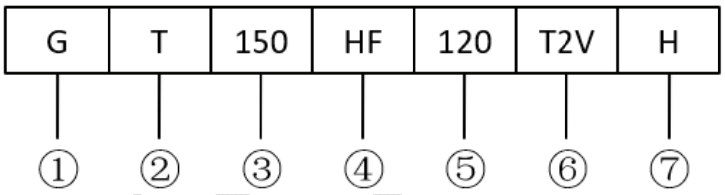
Module

Symbol	Description		Min	Typ	Max	Unit
V_{iso}	Isolation Voltage(All Terminals Shorted)	f=50Hz, 1minute	2500			V
L_{SCE}	Stray Inductance Module			20		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)				0.03	℃/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



①-IGBT Module
②-Trench, Low Switching Losses IGBT
③-Rated Current (150=150A)
④-Circuit Configuration: HF (Half Bridge)
⑤-Rated Voltage (120=1200V)
⑥-Package Type
⑦-Test Level (Pass the Important Reliability Test-Industrial Grade)

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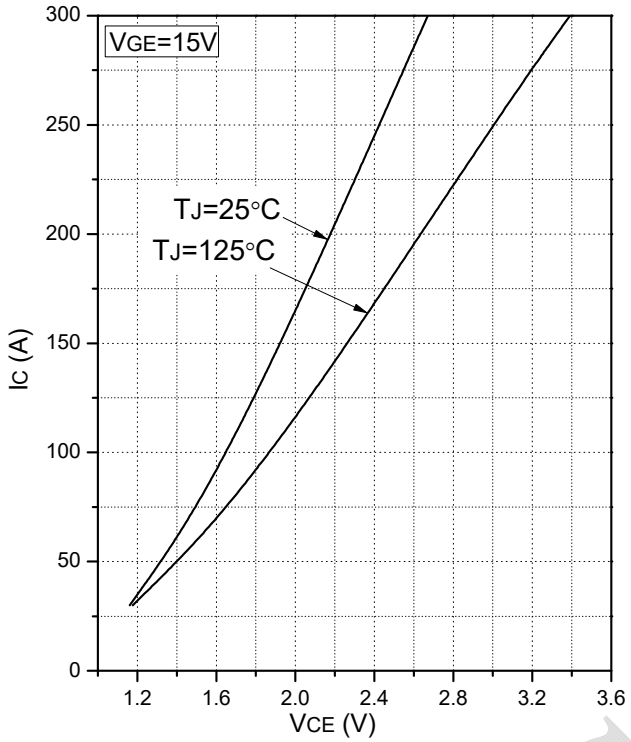

Fig.1 Typical Saturation Voltage Characteristics

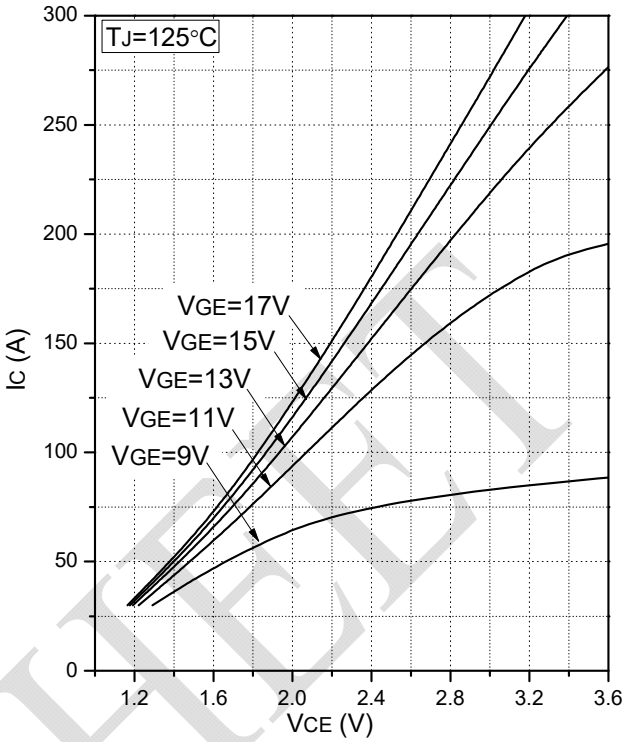

Fig.2 Typical Output Characteristics

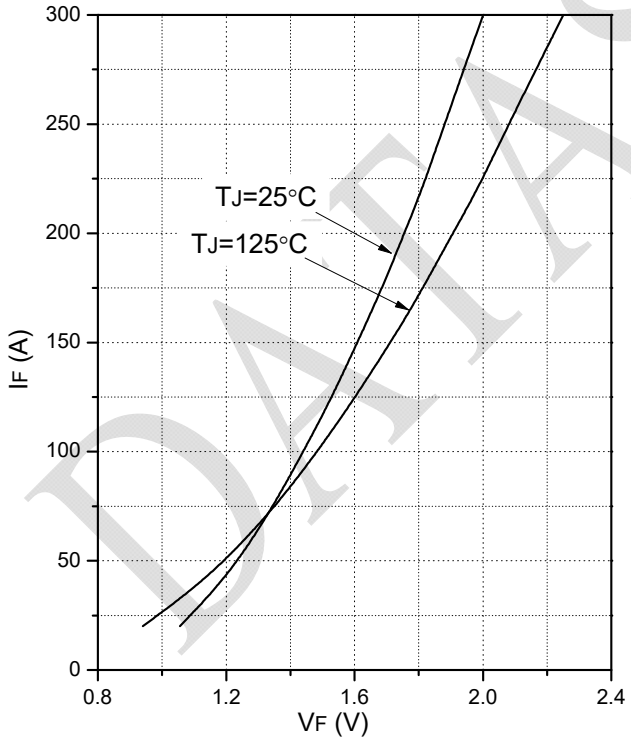

Fig.3 Forward Characteristics of Diode

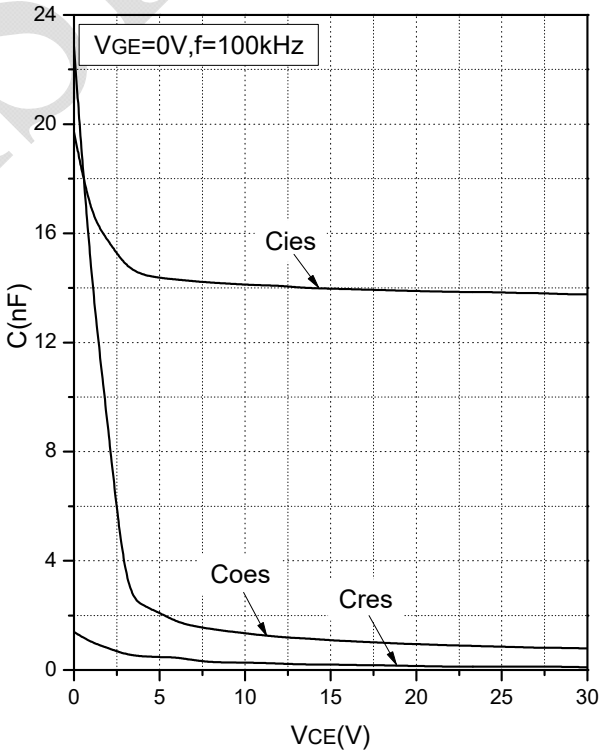

Fig.4 Capacitance Characteristics

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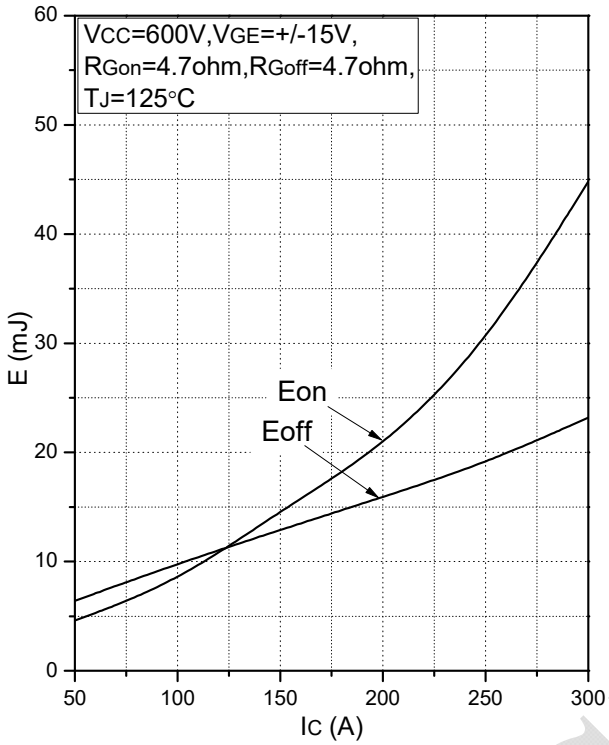

Fig.5Typical Switching Loss vs. Collector Current

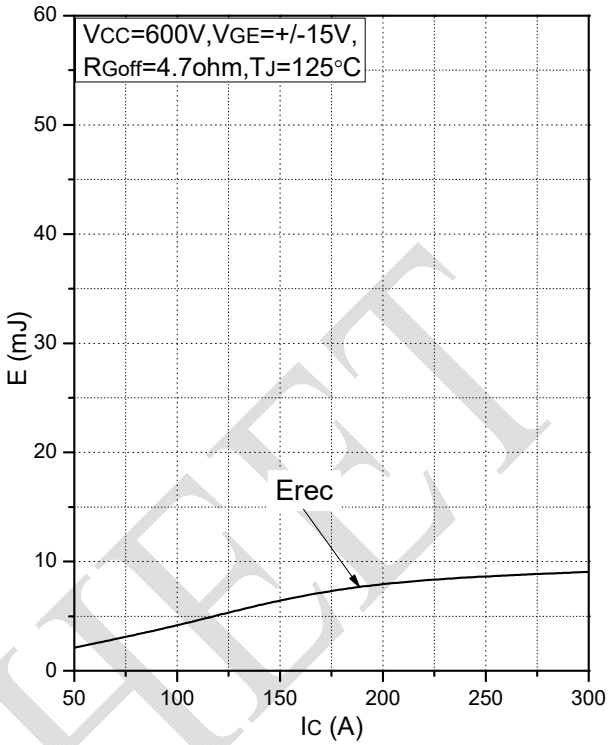

Fig.6 Typical Switching Loss vs. Forward Current

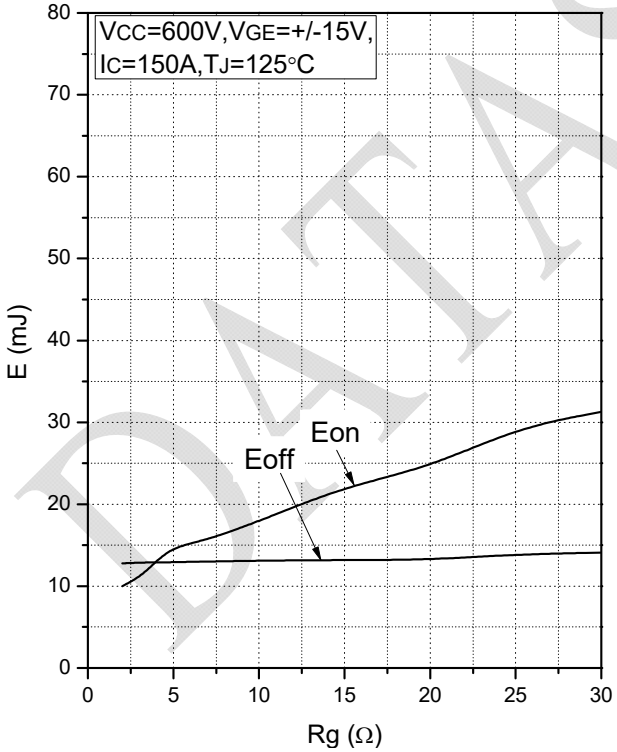

Fig.7 Typical Switching Loss vs. Gate Resistance

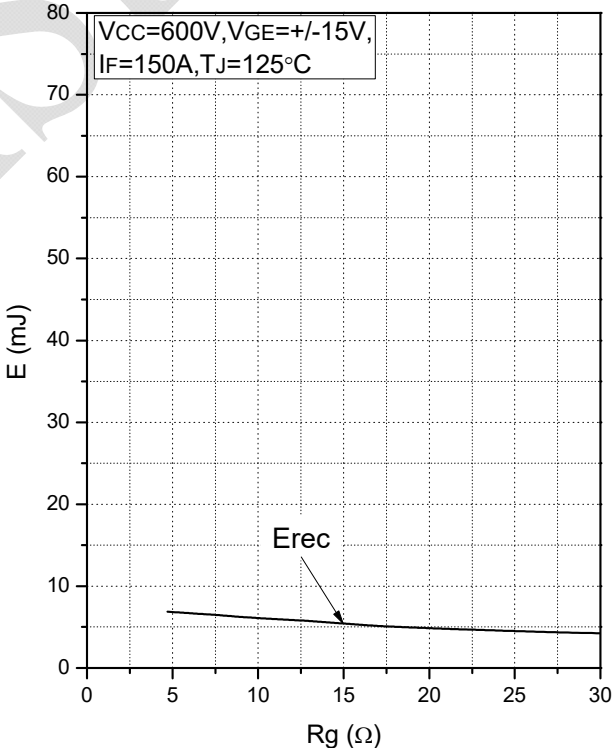

Fig.8 Typical Switching Loss vs. Gate Resistance

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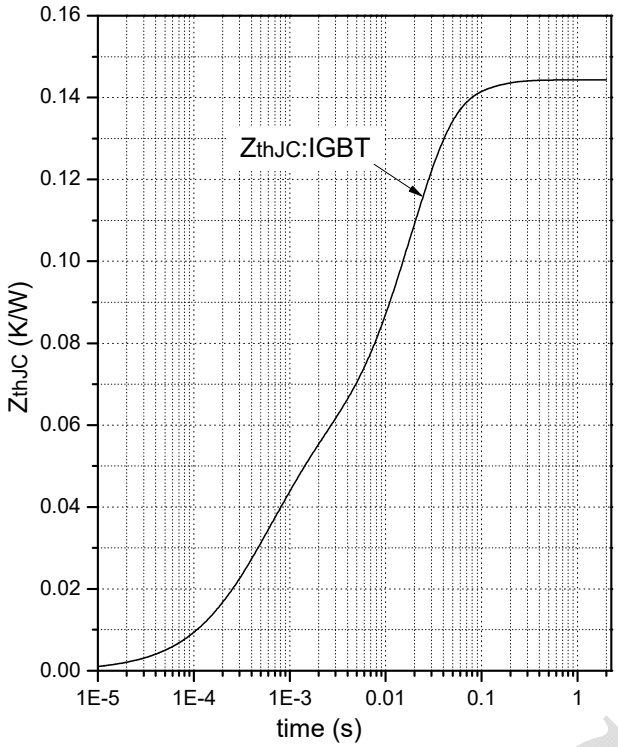

Fig.9 Transient Thermal Impedance (IGBT)

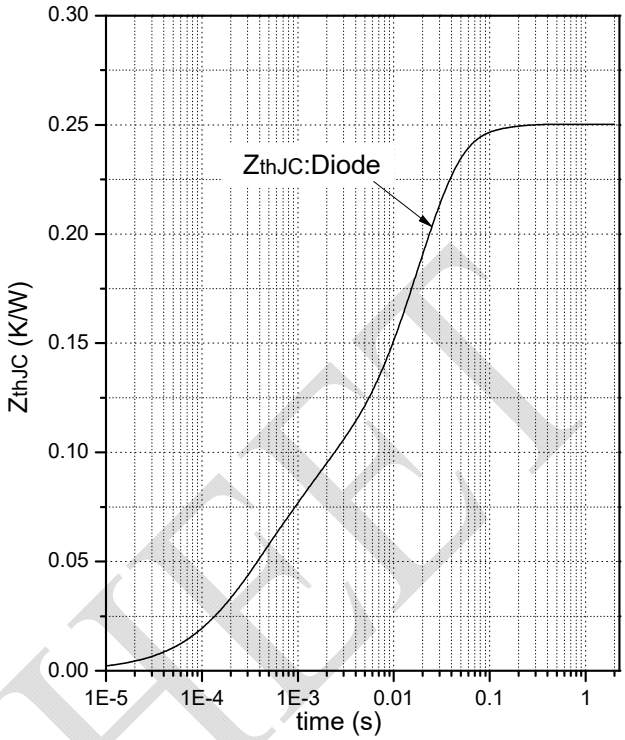

Fig.10 Transient Thermal Impedance (Diode)

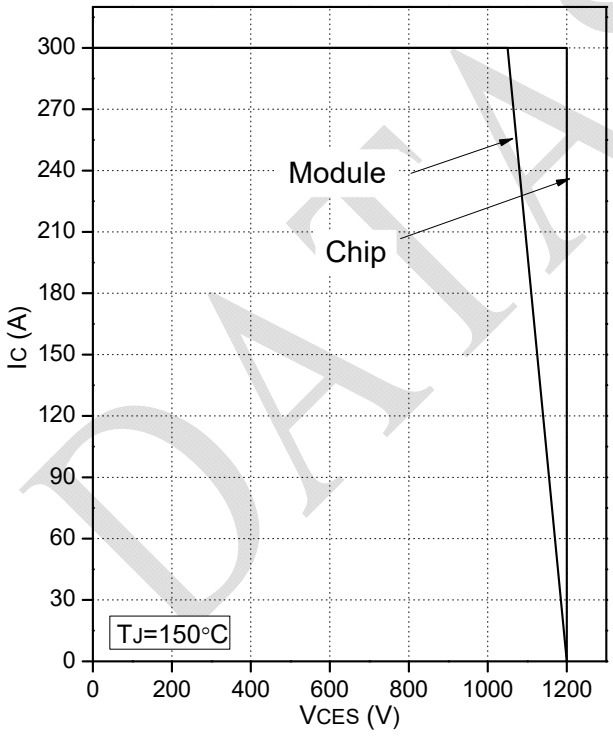

Fig.11 Reverse Bias Safe Operation Area (RBSOA)

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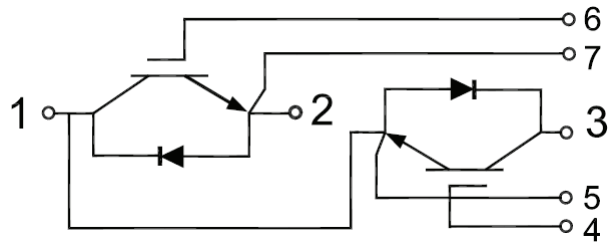
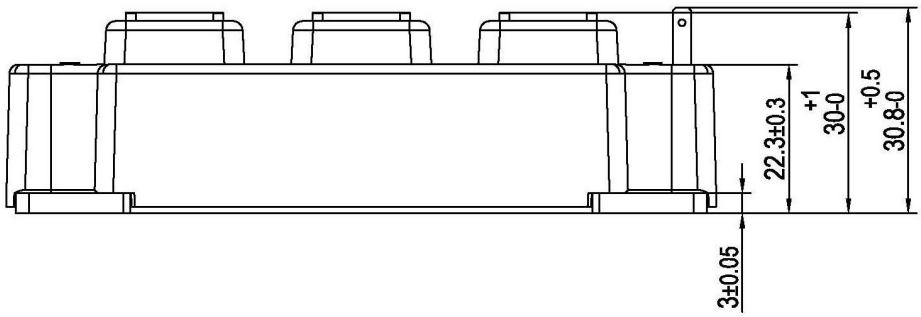
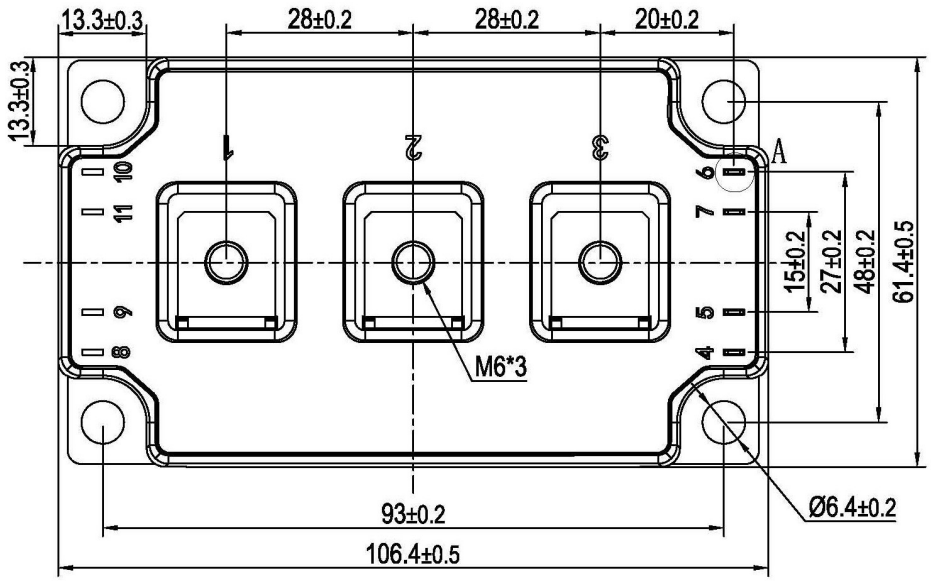
Internal Circuit

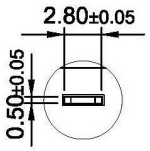


Package Outline (Unit: mm):





View A
scale 3:1



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Date	Revision	Notes
03/04/2022	A	Final Version

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