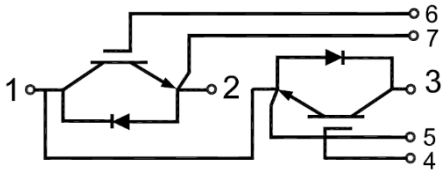
GK75HF60T1VH

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

V_{CES}	Collector-Emitter Blocking Voltage	T_J=25℃	600	V
V_{GES}	Gate-Emitter Voltage		±20	V
I_C	Continuous Collector Current	T_C=80℃	75	A
		T_C=25℃	100	A
I_{CM}	Repetitive Peak Collector Current	tp=1ms	150	A
t_{SC}	Short Circuit Withstand Time		>10	μs
P_D	Maximum Power Dissipation per IGBT	T_C=25℃ T_{Jmax}=150℃	365	W

Electrical Characteristics of IGBT

Static characteristics

Symbol	Description	Conditions		Min.	Typ.	Max.	Units
$V_{GE(th)}$	Gate-Emitter Threshold Voltage	I_C=1mA, V_{CE}=V_{GE}, T_J=25℃		4.5	5.0	5.5	V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	I_C=75A, V_{GE}=15V	T_J=25℃		1.90	2.40	V
			T_J=125℃		2.20		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℃				400	nA
C_{ies}	Input Capacitance	V_{CE}=25V, V_{GE}=0V, f=100kHz			2.77		nF
C_{oes}	Output Capacitance				0.44		nF
C_{res}	Reverse Transfer Capacitance				0.23		nF

Switching Characteristics

$t_{d(on)}$	Turn-on Delay Time	V_{CC}=300V, I_C=75A, R_{Gon}=20Ω, V_{GE}=±15V, Inductive Load	T_J=25℃		194		ns
			T_J=125℃		205		
t_r	Rise Time		T_J=25℃		74		ns
			T_J=125℃		75		
$t_{d(off)}$	Turn-off Delay Time	V_{CC}=300V, I_C=75A, R_{Goff}=20Ω, V_{GE}=±15V, Inductive Load	T_J=25℃		276		ns
			T_J=125℃		290		
t_f	Fall Time		T_J=25℃		112		ns
			T_J=125℃		131		
E_{on}	Turn-on Switching Loss	V_{CC}=300V, I_C=75A, R_{Gon}=20Ω, V_{GE}=±15V, di/dt=850A/μs (T_J=125℃) Inductive Load	T_J=25℃		1.0		mJ
			T_J=125℃		1.1		
E_{off}	Turn-off Switching Loss	V_{CC}=300V, I_C=75A, R_{Goff}=20Ω, V_{GE}=±15V, du/dt=6550V/μs (T_J=125℃) Inductive Load	T_J=25℃		1.4		mJ
			T_J=125℃		1.9		
Q_g	Total Gate Charge		T_J=25℃		396		nC
$R_{G(int)}$	Internal Gate Resistant		T_J=25℃		0		Ω
SCSOA	V_{CC}=300V, V_{GE}=15V, T_J=150℃			10			μs
$R_{θJC}$	IGBT Thermal Resistance: Junction-to-Case					0.342	℃/W

FWD, Inverter
Maximum Rated Values

V_{RRM}	Repetitive Peak Reverse Voltage	T_J=25℃	600	V
I_F	Diode Continuous Forward Current		75	A
I_{FM}	Diode Maximum Forward Current	tp=1ms	150	A

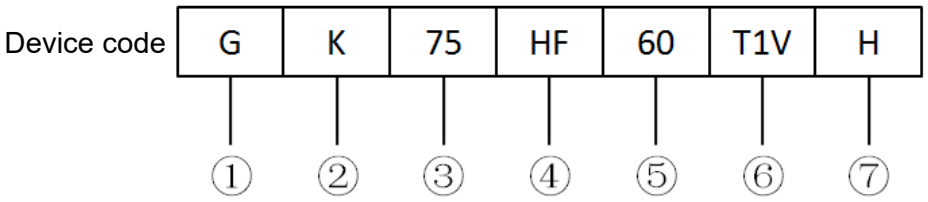
Electrical Characteristics of Diode

Symbol	Description	Conditions		Min.	Typ.	Max.	Units
V_{FM}	Forward Voltage	I_F=75A	T_J=25℃		1.60		V
			T_J=125℃		1.70		
t_{rr}	Reverse Recovery Time	I_F=75A, di/dt=1175A/μs(T_J=125℃), V_{rr}=300V, V_{GE}=-15V	T_J=25℃		121		ns
			T_J=125℃		176		
I_{rr}	Peak Reverse Recovery Current		T_J=25℃		34.4		A
			T_J=125℃		40.6		
Q_{rr}	Reverse Recovery Charge		T_J=25℃		2.5		μC
			T_J=125℃		4.1		
E_{rec}	Reverse Recovery Energy		T_J=25℃		0.44		mJ
			T_J=125℃		0.88		
$R_{\theta JC}$	Diode Thermal Resistance: Junction-to-Case					0.831	℃/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)				0.07	℃/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



① - IGBT Module
② - Non Punch Through (NPT) Technology
③ - Rated Current (75=75A)
④ - Circuit Configuration (HF=Half Bridge)
⑤ - Rated Voltage (60=600V)
⑥ - Package Type
⑦ - Test Level (Pass the Important Reliability Test-Industrial Grade)

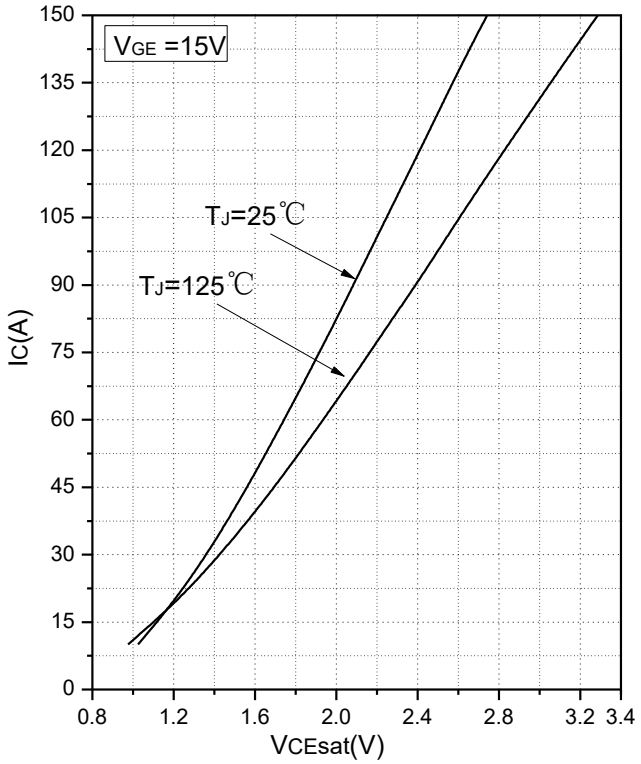


Fig.1 Typical Saturation Voltage Characteristics

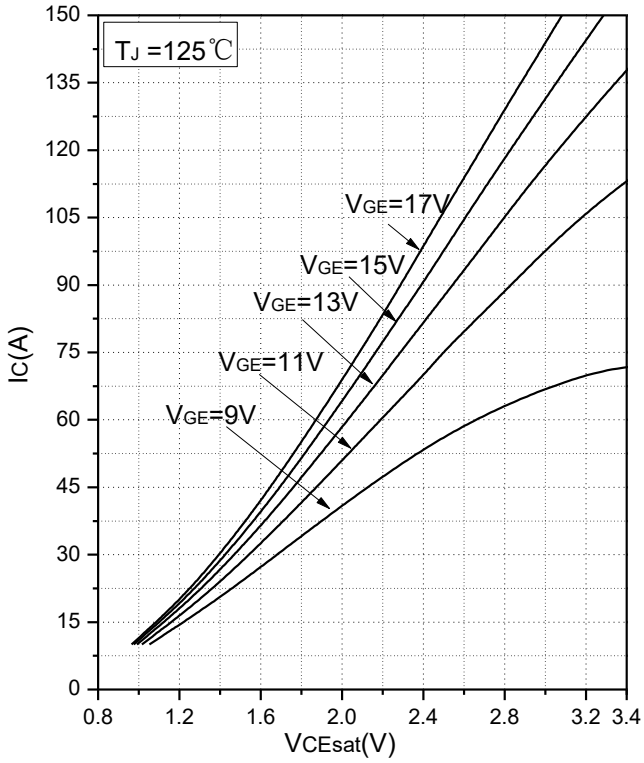


Fig.2 Typical Output Characteristics

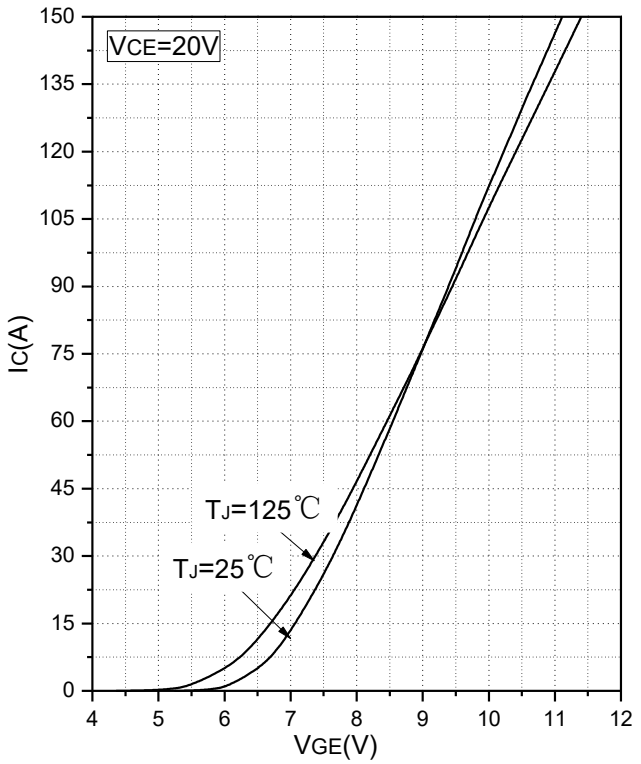


Fig.3 Transfer Characteristic

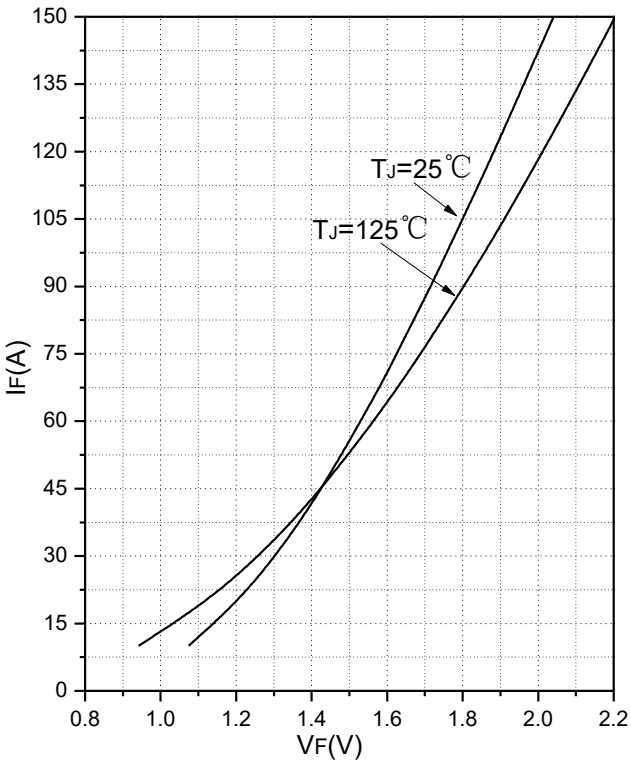


Fig.4 Forward Characteristics of Diode

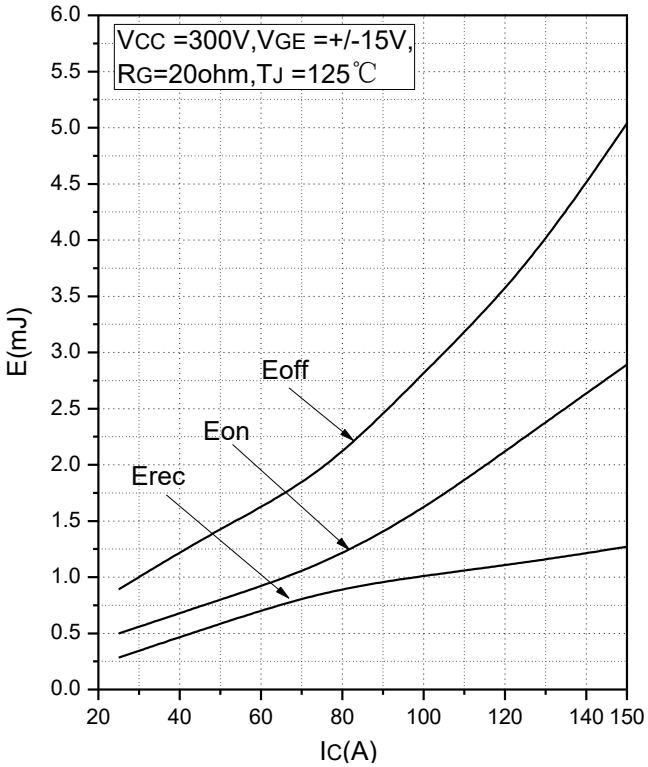


Fig.5 Typical Switching Loss vs. Collector Current

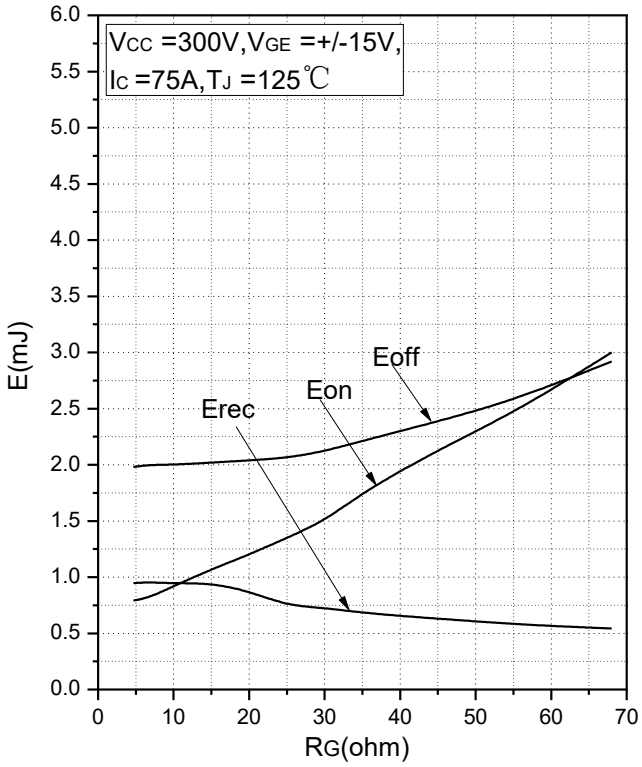


Fig.6 Typical Switching Loss vs. Gate Resistance

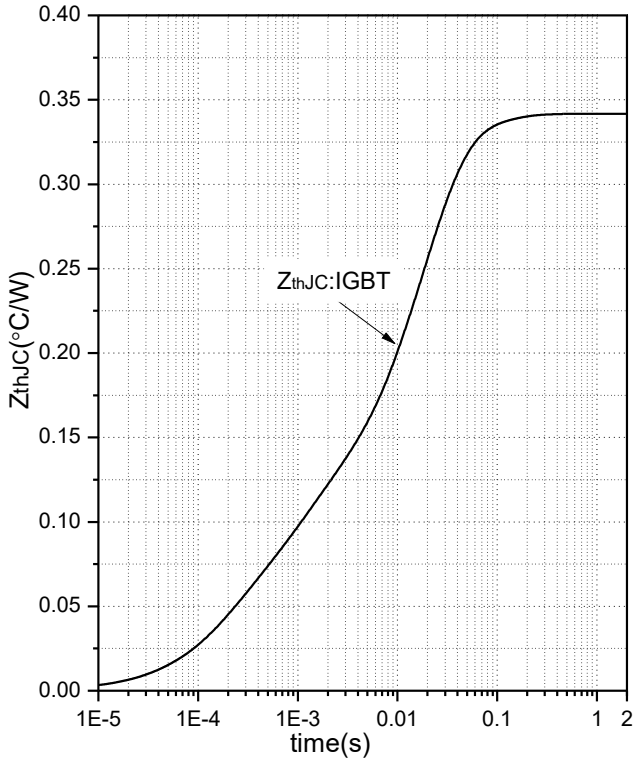


Fig.7 Transient Thermal Impedance (IGBT)

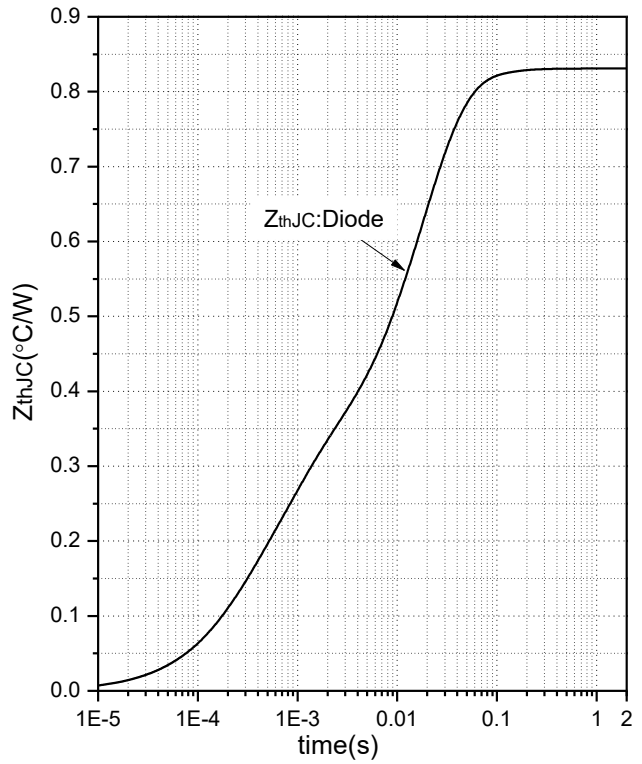


Fig.8 Transient Thermal Impedance (Diode)

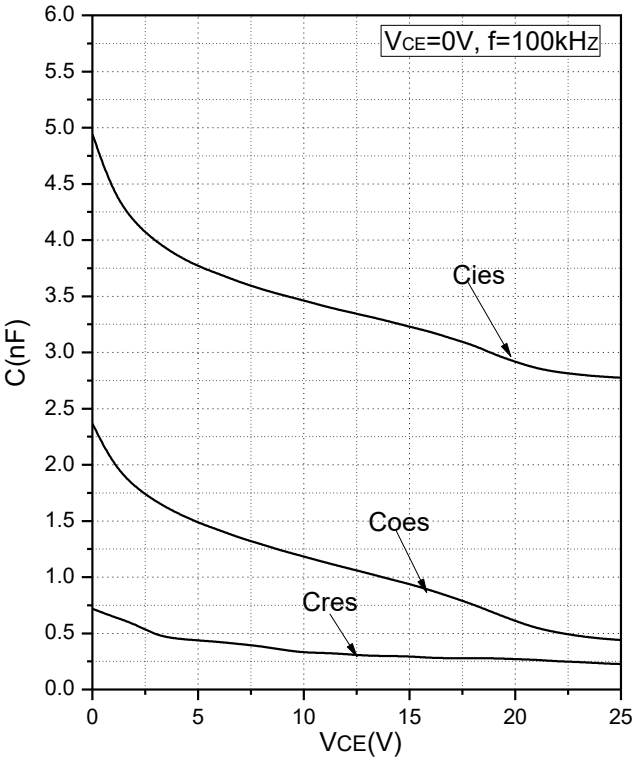


Fig.9 Capacitance Characteristics

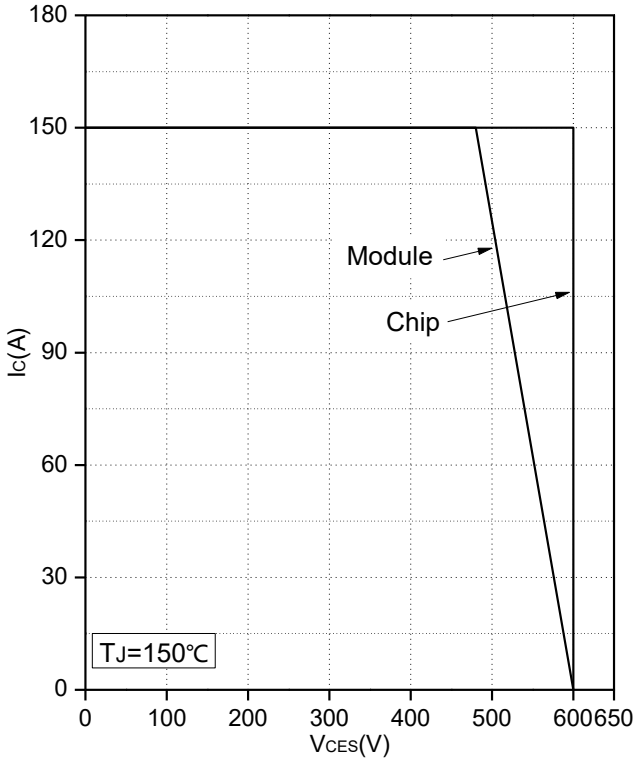
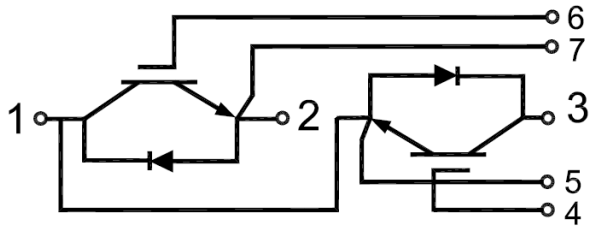
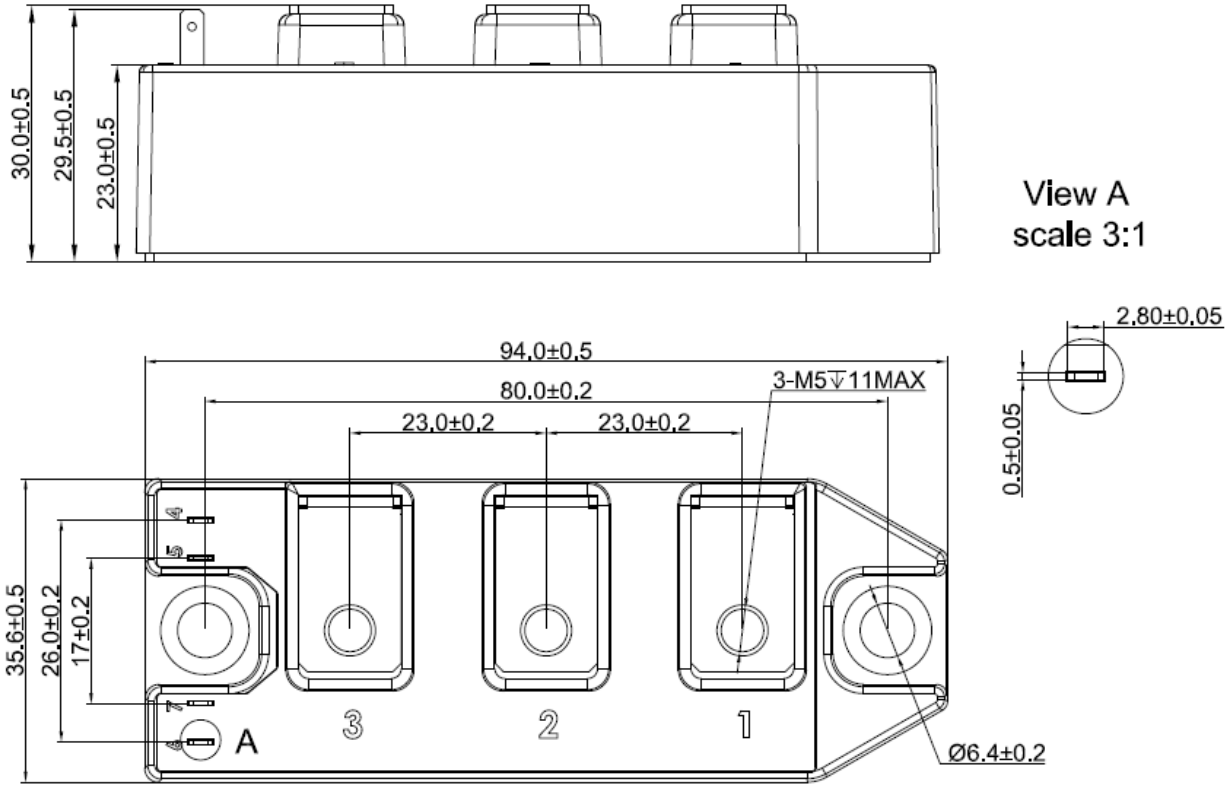


Fig.10 Reverse Bias Safe Operation Area (RBSOA)

Internal Circuit



Package Outline (Unit: mm):



Revision	Notes
A	Final Version
B	Update Electrical Characteristic

Announcement

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