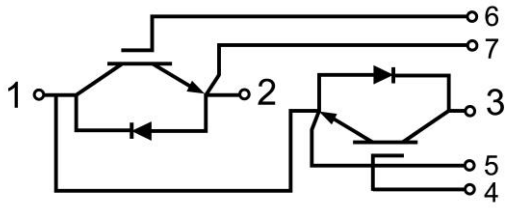
GT75HF120T1NH

IGBT Module

Preliminary Data

Features：

- Field Stop Trench Gate IGBT
- Low Saturation Voltage
- Low Switching Loss
- 100% RBSOA Tested(2×Ic)
- Low Stray Inductance
- Lead Free, Compliant with RoHS Requirement



Applications：

- Welding
- UPS
- EV and EHV
- Induction Heating

IGBT, Inverter

Maximum Rated Values (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}	Peak Collector Current Repetitive	t_P=1ms	150	A
P_D	Maximum Power Dissipation (IGBT)	T_C=25℃ T_{Jmax}=175℃	541	W

2025 NJSME All rights reserved

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=1mA, V_{CE}=V_{GE}		3.8	4.5	5.2	V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	I_C=75A, V_{GE}=15V	T_J=25℃		1.50	1.80	V
			T_J=125℃		1.80		V
			T_J=150℃		1.85		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			12.20		nF
C_{oes}	Output Capacitance				0.39		nF
C_{res}	Reveres Transfer Capacitance				0.14		nF

Switching Characteristics

$t_{d(on)}$	Turn-on Delay Time	V_{CC}=600V, I_C=75A, R_{Gon}=15Ω, V_{GE}=±15V, Inductive Load	T_J=25℃		372		ns
			T_J=125℃		374		
			T_J=150℃		399		
t_r	Rise Time		T_J=25℃		80		ns
			T_J=125℃		83		
			T_J=150℃		83		
$t_{d(off)}$	Turn-off Delay Time	V_{CC}=600V, I_C=75A, R_{Goff}=15Ω, V_{GE}=±15V, Inductive Load	T_J=25℃		353		ns
			T_J=125℃		366		
			T_J=150℃		370		
t_f	Fall Time		T_J=25℃		162		ns
			T_J=125℃		206		
			T_J=150℃		215		
E_{on}	Turn-on Switching Loss	V_{CC}=600V, I_C=75A, R_{Gon}=15Ω, V_{GE}=±15V, di/dt=774A/μs(T_J=150℃), Inductive Load	T_J=25℃		3.8		mJ
			T_J=125℃		4.2		
			T_J=150℃		4.4		

2025 NJSME All rights reserved

E_{off}	Turn-off Switching Loss	V_{CC}=600V, I_C=75A, R_{Goff}=15Ω, V_{GE}=±15V, du/dt=4839V/μs(T_J=150℃), Inductive Load	T_J=25℃		2.6		mJ
			T_J=125℃		3.8		
			T_J=150℃		4.1		
Q_g	Total Gate Charge	V_{GE}=+15V…-15V	T_J=25℃		648		nC
$R_{G(int)}$	Internal Gate Resistor		T_J=25℃		0		Ω
$R_{\theta JC}$	Thermal Resistance: Junction-to-Case (per IGBT)					0.28	℃/W

Diode, Inverter

Maximum Rated Values (T_C=25℃ unless otherwise specified)

V_{RRM}	Repetitive Peak Reverse Voltage	T_J=25℃	1200	V
I_F	Diode Continuous Forward Current	T_C=100℃	75	A
I_{FM}	Peak Diode Current Repetitive	t_P=1ms	150	A

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

Symbol	Description	Conditions		Min.	Typ.	Max.	Units
V_{FM}	Forward Voltage	I_F=75A	T_J=25℃		1.65		V
			T_J=125℃		1.75		
			T_J=150℃		1.75		
t_{rr}	Reverse Recovery Time	I_F=75A, -diF/dt=1196A/μs(T_J=150℃), V_{rr}=600V, V_{GE}=-15V	T_J=25℃		218		ns
			T_J=125℃		386		
			T_J=150℃		424		
I_{rr}	Peak Reverse Recovery Current		T_J=25℃		71.6		A
			T_J=125℃		73.1		
			T_J=150℃		73.8		
Q_{rr}	Reverse Recovery Charge		T_J=25℃		6.94		μC
			T_J=125℃		12.11		
			T_J=150℃		13.44		

2025 NJSME All rights reserved

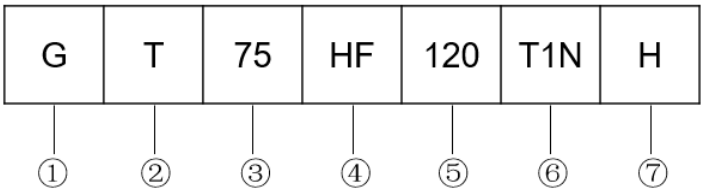
E_{rec}	Reverse Recovery Energy	I_F=75A, -diF/dt=1196A/μs(T_J=150℃), V_{rr}=600V, V_{GE}=-15V	T_J=25℃		2.17		mJ
			T_J=125℃		4.09		
			T_J=150℃		4.60		
$R_{\theta JC}$	Thermal Resistance: Junction-to-Case (per Diode)					0.50	℃/W

Module

Symbol	Description	Conditions	Min.	Typ.	Max.	Units
V_{iso}	Isolation Voltage (All Terminals Shorted)	f=50Hz, 1minute		2500		V
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)				0.07	℃/W
T	Power Terminals Screw:M5		3.0		5.0	N·m
T	Mounting Screw:M6		4.0		6.0	N·m
G	Weight			150		g

Ordering Information Table

Device code



① - IGBT Module
② - Trench, Low Switching Losses IGBT
③ - Rated Current (75=75A)
④ - Circuit Configuration: HF (Half Bridge)
⑤ - Rated Voltage (120=1200V)
⑥ - Package Type
⑦ - Test Level (Pass the Important Reliability Test-Industrial Grade)

2025 NJSME All rights reserved

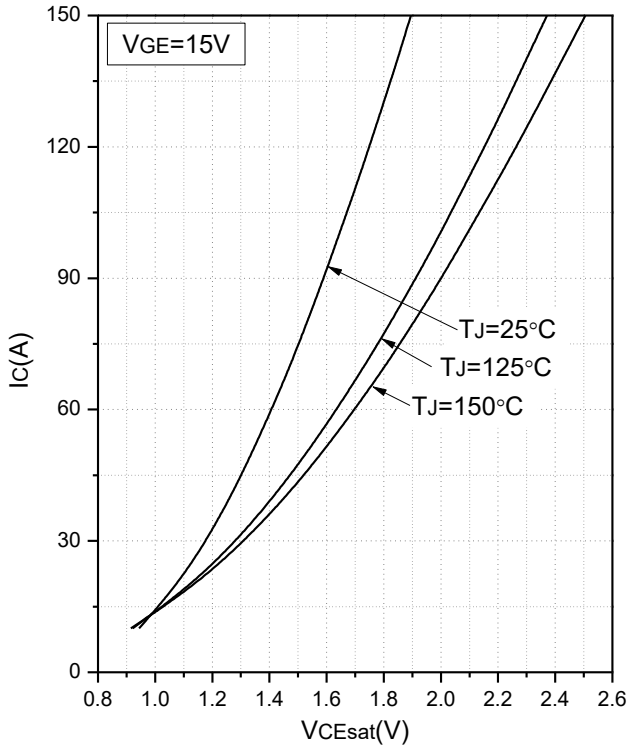


Fig.1 Typical Saturation Voltage Characteristics

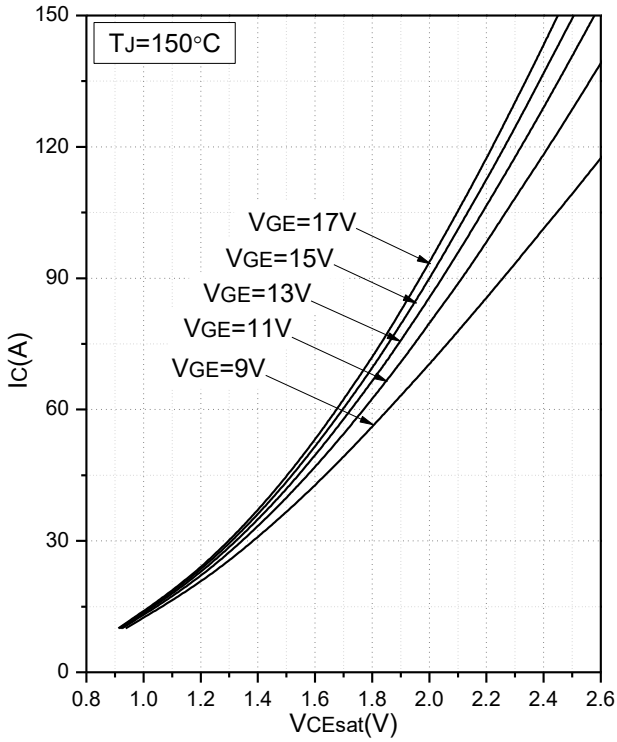


Fig.2 Typical Output Characteristics

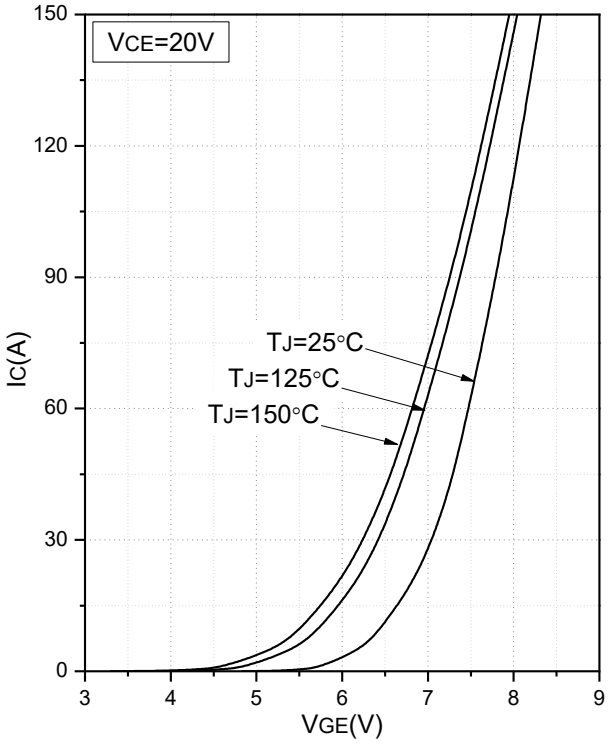


Fig.3 Transfer Characteristics

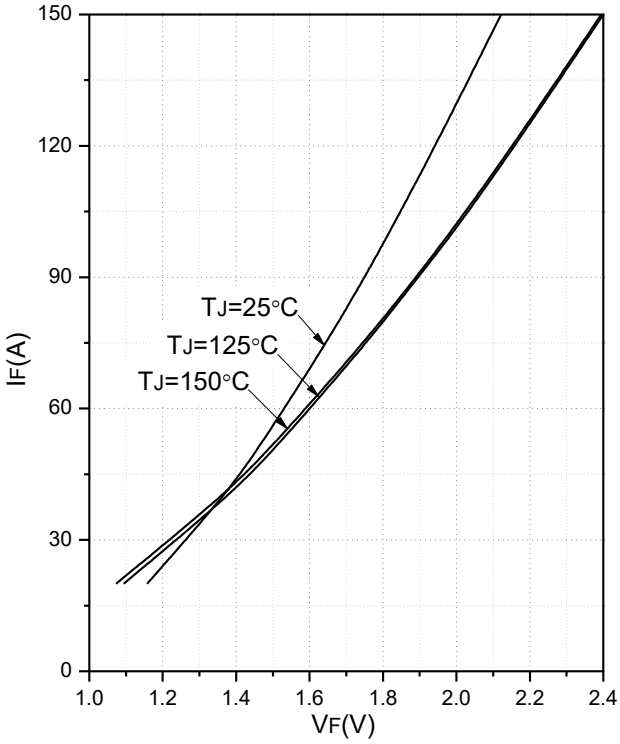


Fig.4 Forward Characteristics of Diode

2025 NJSME All rights reserved

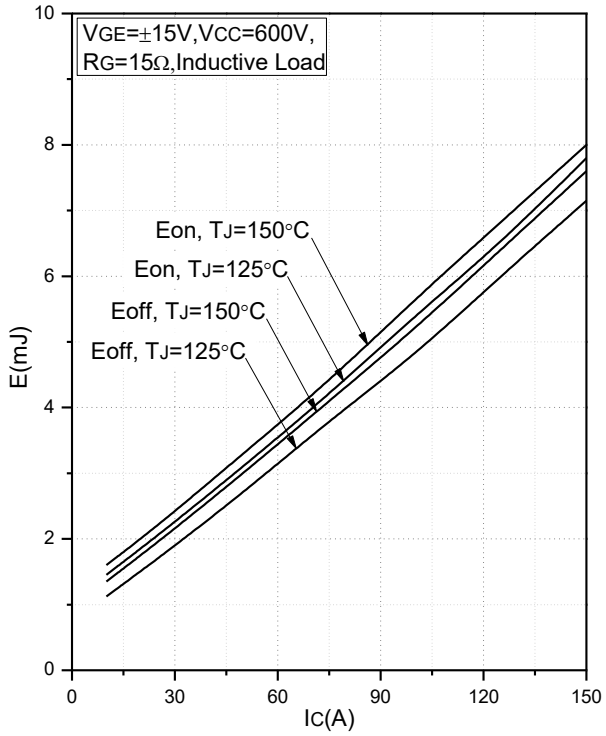


Fig.5 Typical Switching Loss vs. Collector Current

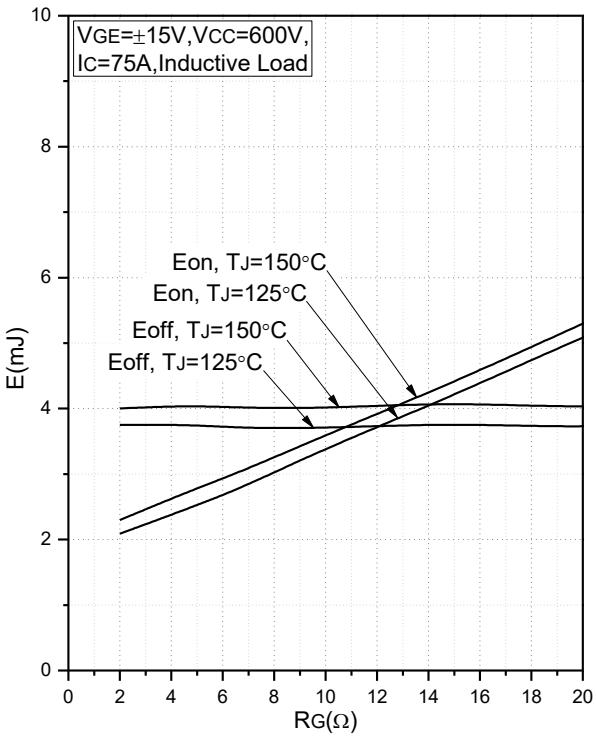


Fig.6 Typical Switching Loss vs. Gate Resistance

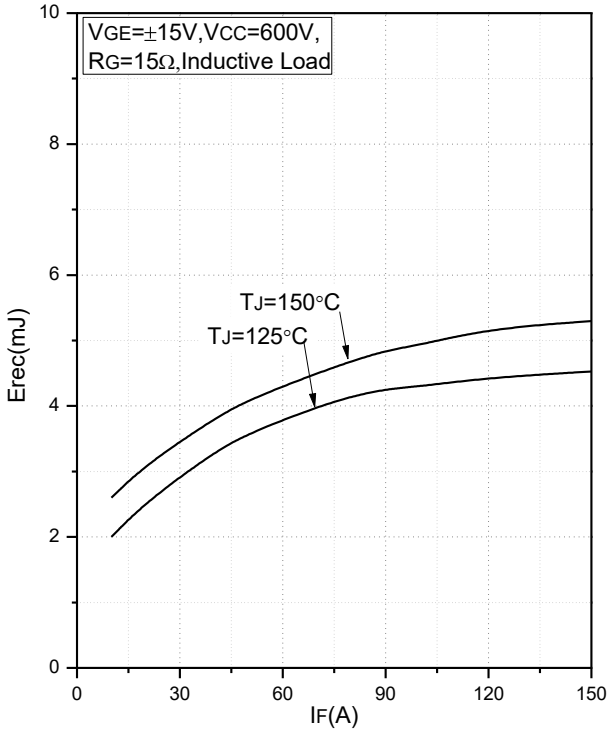


Fig.7 Typical Switching Loss vs. Forward Current

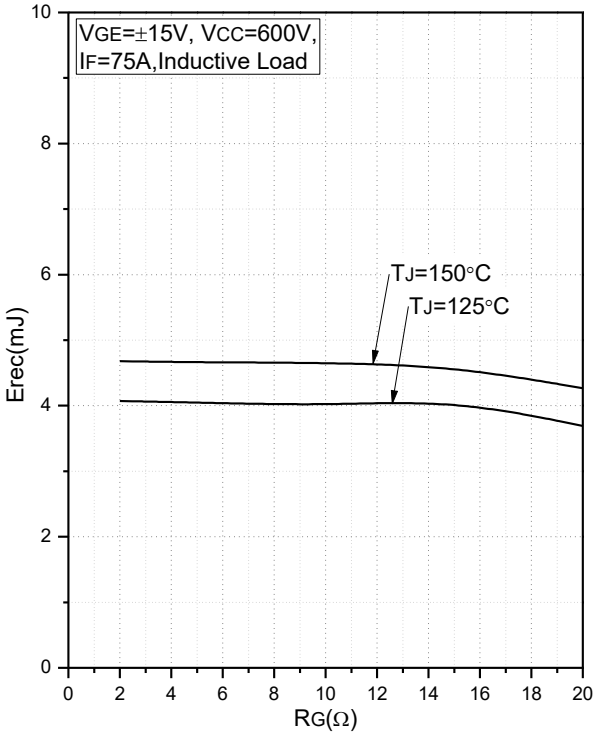


Fig.8 Typical Switching Loss vs. Gate Resistance

2025 NJSME All rights reserved

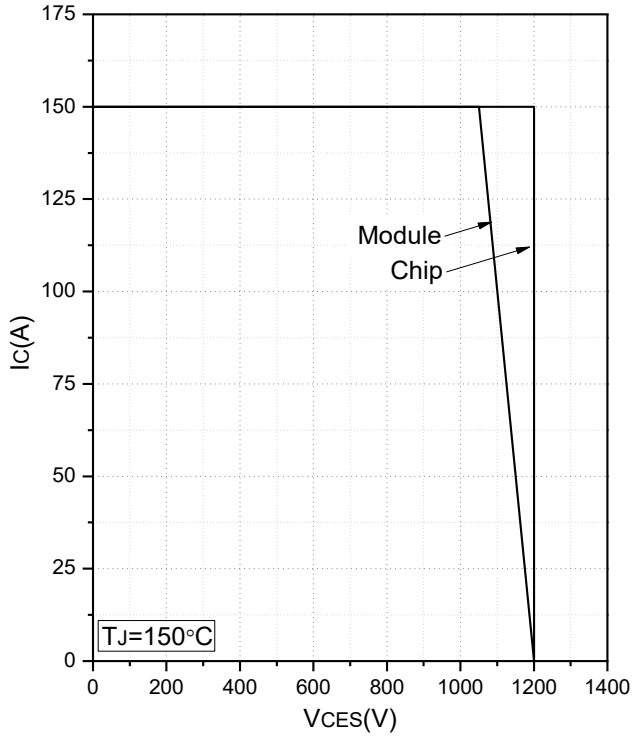


Fig.9 Reverse Bias Safe Operation Area(RBSOA)

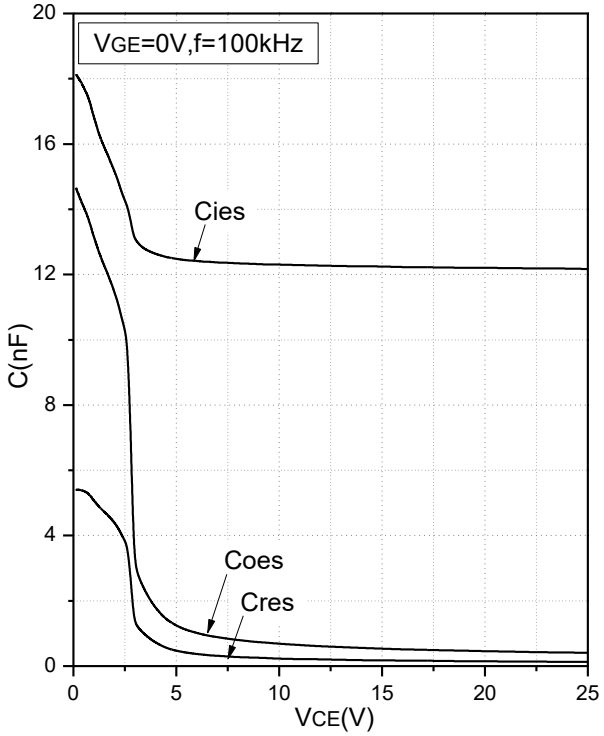


Fig.10 Capacitance Characteristics

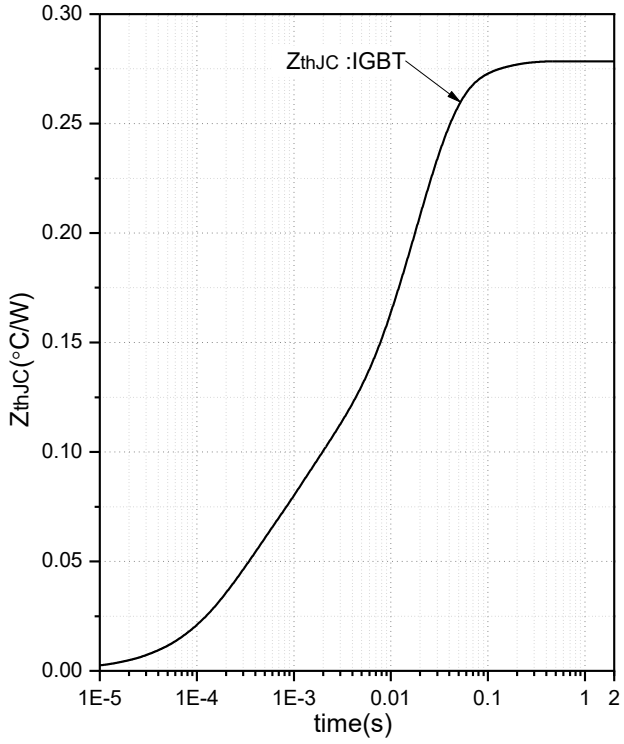


Fig.11 Transient Thermal Impedance(IGBT)

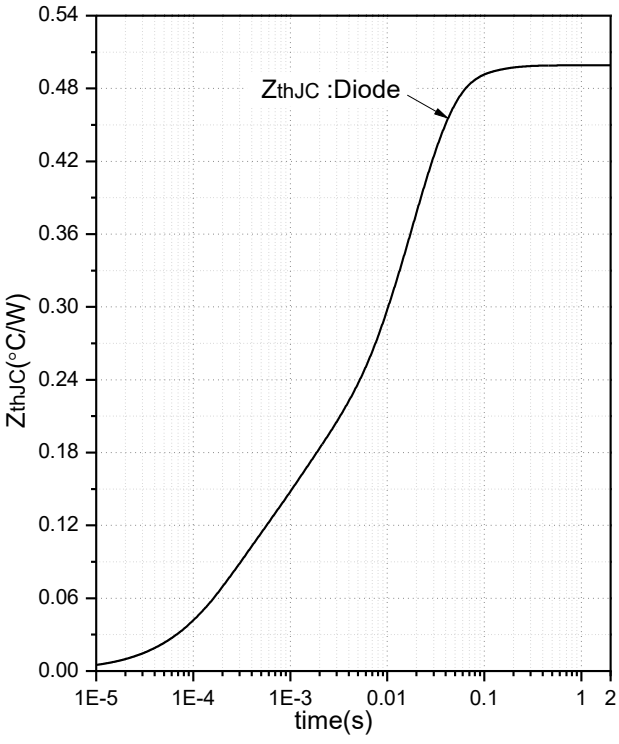
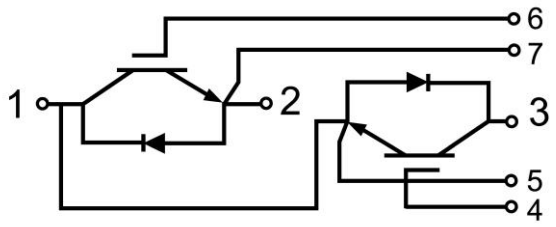


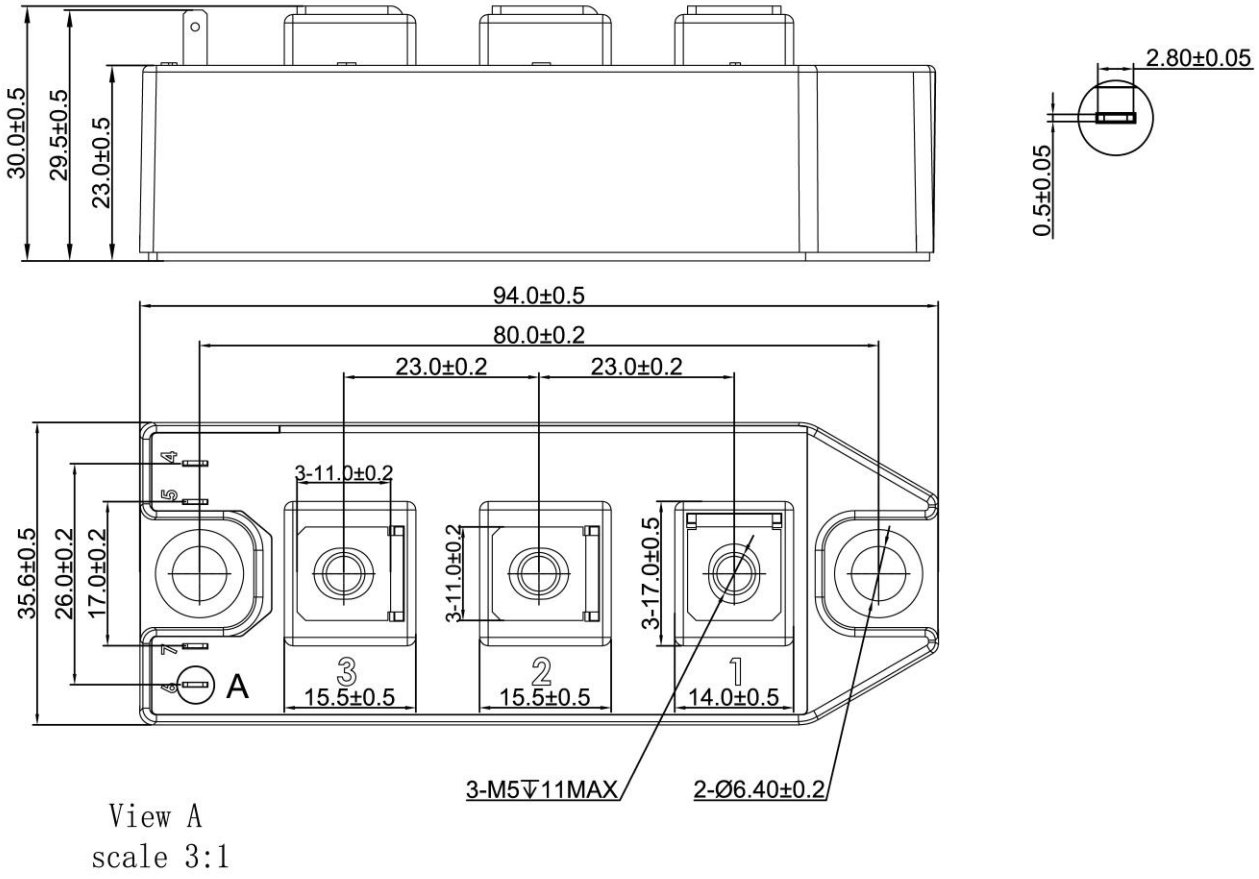
Fig.12 Transient Thermal Impedance(Diode)

2025 NJSME All rights reserved

Internal Circuit:



Package Outline (Unit: mm):



View A
scale 3:1

2025 NJSME All rights reserved

Revision	Notes
01	Initial Release

Announcement

Information in this document is believed to be accurate and reliable. However, NJSME does not give any representations or warranties, expressed or implied, as to the accuracy or completeness of such information and shall have no liability for the consequences of use of such information.

Right to Make Changes

NJSME reserves the right to make changes to information published in this document, including without limitation specifications and product descriptions, at any time and without notice. This document supersedes and replaces all information supplied prior to the publication hereof.

The datasheet with “REV.” + “Arabic numerals” is based on engineering data for initial reference purpose only.

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

2025 NJSME All rights reserved