

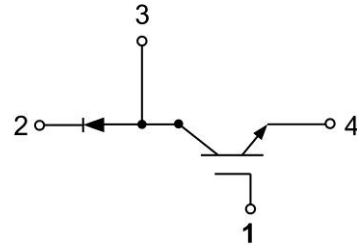


GT100CU120B5H

IGBT Module

Features:

- Field Stop Trench Gate IGBT
- Short Circuit Rated $>10\mu\text{s}$
- Low Saturation Voltage
- Low Switching Loss
- 100% RBSOA Tested($2\times I_c$)
- Low Stray Inductance
- Lead Free, Compliant with RoHS Requirement



Applications:

- Industrial Inverters
- Servo Applications

IGBT, Brake-Chopper

Maximum Rated Values ($T_c=25^\circ\text{C}$ unless otherwise specified)

V_{CES}	Collector-Emitter Blocking Voltage		1200	V
V_{GES}	Gate-Emitter Voltage		± 20	V
I_c	Continuous Collector Current	$T_c=100^\circ\text{C}$	100	A
		$T_c=25^\circ\text{C}$	200	A
I_{CM}	Peak Collector Current Repetitive	$t_p=1\text{ms}$	200	A
P_D	Maximum Power Dissipation (IGBT)	$T_c=25^\circ\text{C}$ $T_{Jmax}=175^\circ\text{C}$	704	W



Electrical Characteristics of IGBT ($T_C=25^{\circ}\text{C}$ unless otherwise specified)

Static Characteristics

Symbol	Description	Conditions	Min.	Typ.	Max.	Units
$V_{GE(th)}$	Gate-Emitter Threshold Voltage	$I_C=2.4\text{mA}$, $V_{CE}=V_{GE}$	5.0	5.7	6.6	V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C=100\text{A}$, $V_{GE}=15\text{V}$	$T_J=25^{\circ}\text{C}$	1.65	1.90	V
			$T_J=125^{\circ}\text{C}$	2.00		V
			$T_J=150^{\circ}\text{C}$	2.10		V
I_{CES}	Collector-Emitter Leakage Current	$V_{GE}=0\text{V}$, $V_{CE}=V_{CES}$, $T_J=25^{\circ}\text{C}$			1	mA
I_{GES}	Gate-Emitter Leakage Current	$V_{GE}=\pm 20\text{V}$, $V_{CE}=0\text{V}$, $T_J=25^{\circ}\text{C}$			± 200	nA
C_{ies}	Input Capacitance	$V_{CE}=25\text{V}$, $V_{GE}=0\text{V}$, $f=100\text{kHz}$		11.46		nF
C_{oes}	Output Capacitance			1.52		nF
C_{res}	Reveres Transfer Capacitance			0.74		nF

Switching Characteristics

t _{d(on)}	Turn-on Delay Time	V _{CC} =600V, I _C =100A, R _{Gon} =1Ω, V _{GE} =±15V, Inductive Load	T _J =25℃		152		ns
			T _J =125℃		168		
			T _J =150℃		172		
t _r	Rise Time		T _J =25℃		32		ns
			T _J =125℃		40		
			T _J =150℃		42		
t _{d(off)}	Turn-off Delay Time	V _{CC} =600V, I _C =100A, R _{Goff} =1Ω, V _{GE} =±15V, Inductive Load	T _J =25℃		302		ns
			T _J =125℃		348		
			T _J =150℃		352		
t _f	Fall Time		T _J =25℃		158		ns
			T _J =125℃		250		
			T _J =150℃		250		
E _{on}	Turn-on Switching Loss	V _{CC} =600V, I _C =100A, R _{Gon} =1Ω, V _{GE} =±15V, di/dt=2061A/μs(T _J =150℃), Inductive Load	T _J =25℃		2.70		mJ
			T _J =125℃		4.70		
			T _J =150℃		5.64		



E _{off}	Turn-off Switching Loss	V _{CC} =600V, I _C =100A, R _{Goff} =1Ω, V _{GE} =±15V, du/dt=5171V/μs(T _J =150°C), Inductive Load	T _J =25°C		7.83		mJ
			T _J =125°C		10.18		
			T _J =150°C		10.81		
Q _g	Total Gate Charge	V _{GE} =+15V...-15V	T _J =25°C		2912		nC
R _{g internal}	Internal Gate Resistor		T _J =25°C		5.5		Ω
SCSOA	V _{CC} =600V, V _{GE} =+/-15V, R _{Gon} =1Ω, R _{Goff} =1Ω, T _J =25°C			10			μs
R _{θJC}	Thermal Resistance: Junction-To-Case (per IGBT)					0.213	°C/W

Diode, Brake-Chopper

Maximum Rated Values of Diode (T_C=25°C unless otherwise specified)

V _{RRM}	Repetitive Peak Reverse Voltage	1200	V
I _F	Diode Continuous Forward Current	100	A
I _{FM}	Peak FWD Current Repetitive	200	A

Electrical Characteristics of FWD (T_C=25°C unless otherwise specified)

Symbol	Description	Conditions		Min.	Typ.	Max.	Units
V _{FM}	Forward Voltage	I _F =100A	T _J =25°C		1.65		V
			T _J =125°C		1.80		
			T _J =150°C		1.75		
t _{rr}	Reverse Recovery Time	I _F =100A, -diF/dt=2356A/μs(T _J =150°C), V _R =600V, V _{GE} =-15V	T _J =25°C		138		ns
			T _J =125°C		182		
			T _J =150°C		212		
I _{rr}	Peak Reverse Recovery Current		T _J =25°C		136		A
			T _J =125°C		155		
			T _J =150°C		159		
Q _{rr}	Reverse Recovery Charge		T _J =25°C		10.6		μC
			T _J =125°C		15.4		
			T _J =150°C		17.5		



E _{rec}	Reverse Recovery Energy	I _F =100A, -diF/dt=2356A/μs(T _J =150°C), V _R =600V, V _{GE} =-15V	T _J =25°C		4.98		mJ
			T _J =125°C		6.67		
			T _J =150°C		7.59		
R _{θJC}	Thermal Resistance: Junction-To-Case (per Diode)					0.251	°C/W

Module

Symbol	Description	Conditions	Min.	Typ.	Max.	Units
V _{iso}	Isolation Voltage (All Terminals Shorted)	f=50Hz, 30s	4500			V
T _J	Maximum Junction Temperature				175	°C
T _{JOP}	Maximum Operating Junction Temperature Range		-40		+150	°C
T _{stg}	Storage Temperature		-40		+150	°C
CTI	Comparative Tracking Index		200			
R _{θCS}	Case-To-Sink Thermally (Conductive Grease Applied)				0.21	°C/W
T	Power Terminals Screw:M4		1.1		1.5	N·m
T	Mounting Screw:M4		1.1		1.5	N·m
G	Weight			30		g

Ordering Information Table

Device code	G	T	100	CU	120	B5	H
	①	②	③	④	⑤	⑥	⑦

- ① - IGBT Module
- ② - Trench, Low Switching Losses IGBT
- ③ - Rated Current (100=100A)
- ④ - Circuit Configuration: Chopper (Diode on High Side)
- ⑤ - Rated Voltage (120=1200V)
- ⑥ - Package Type
- ⑦ - Test Level (Pass the Important Reliability Test-Industrial Grade)

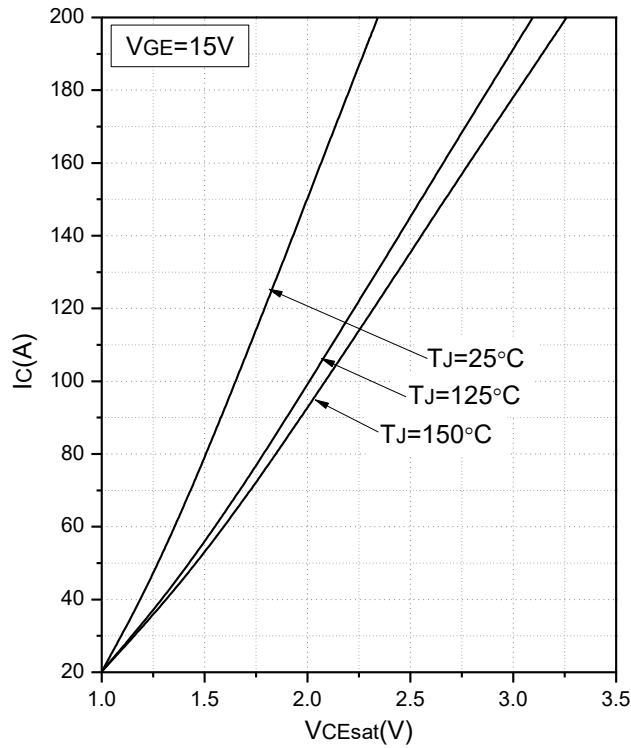


Fig.1 Typical Saturation Voltage Characteristics

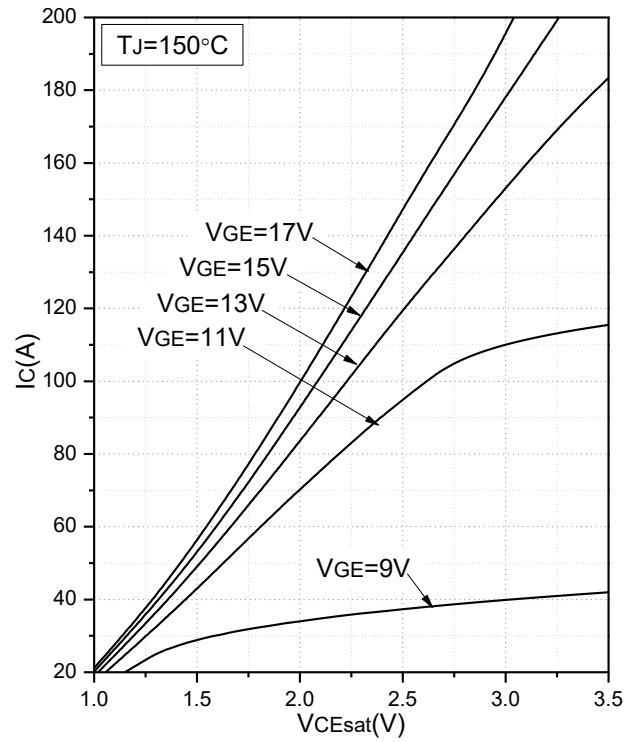


Fig.2 Typical Output Characteristics

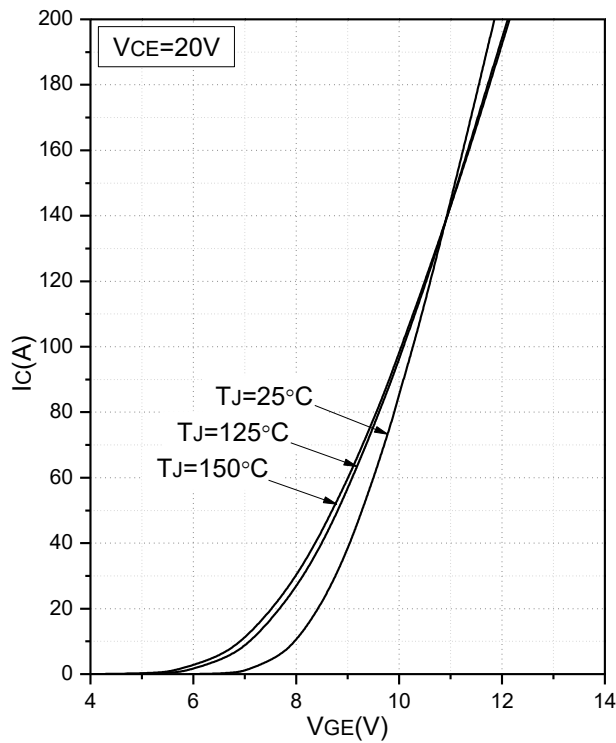


Fig.3 Transfer Characteristics

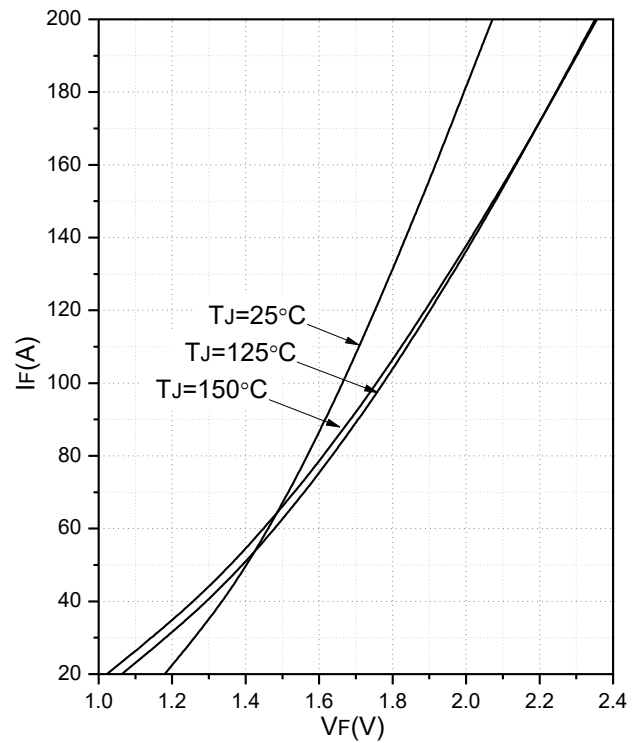
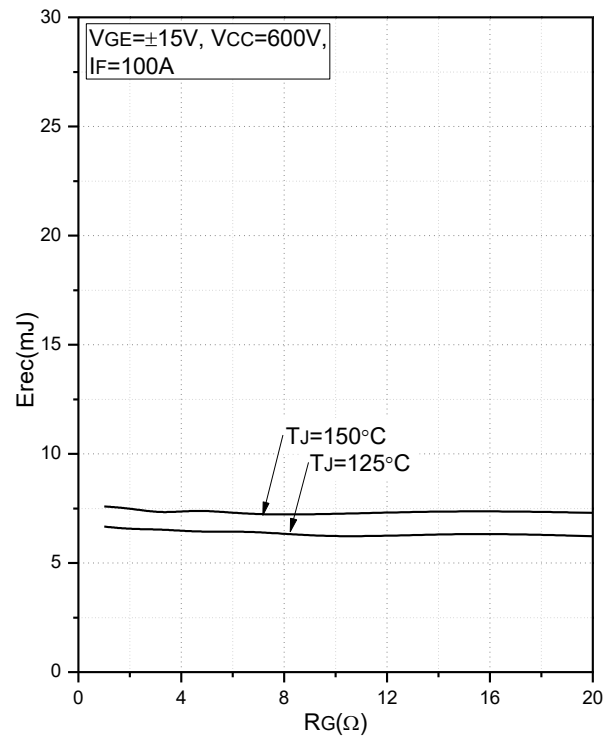
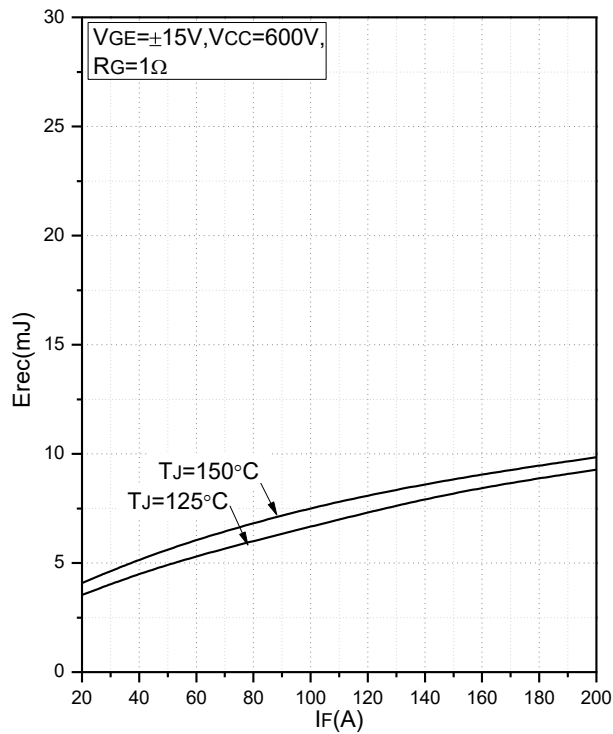
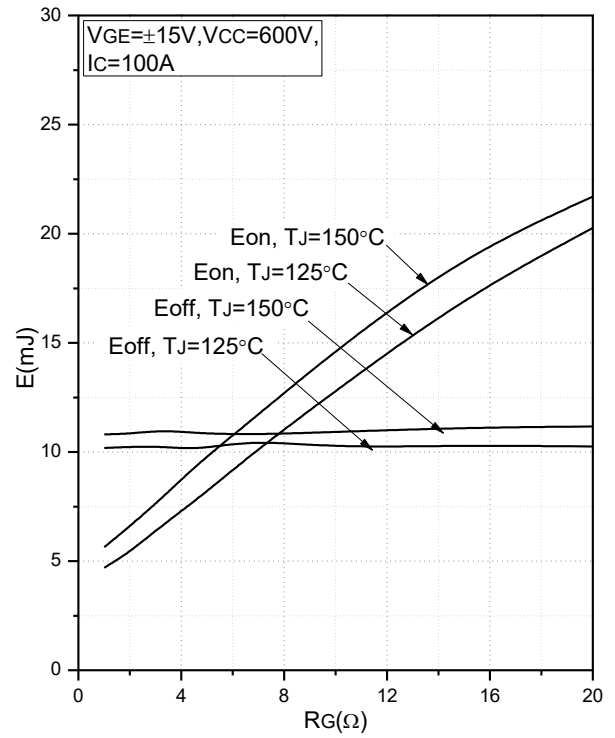
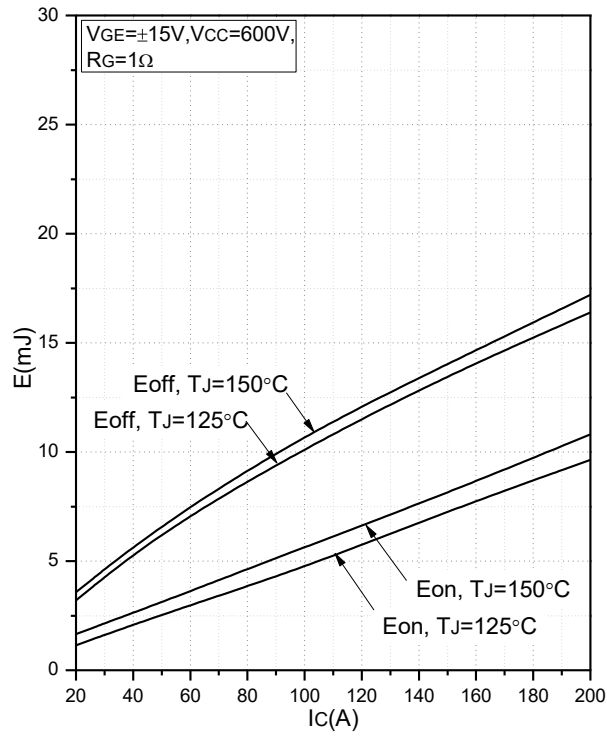
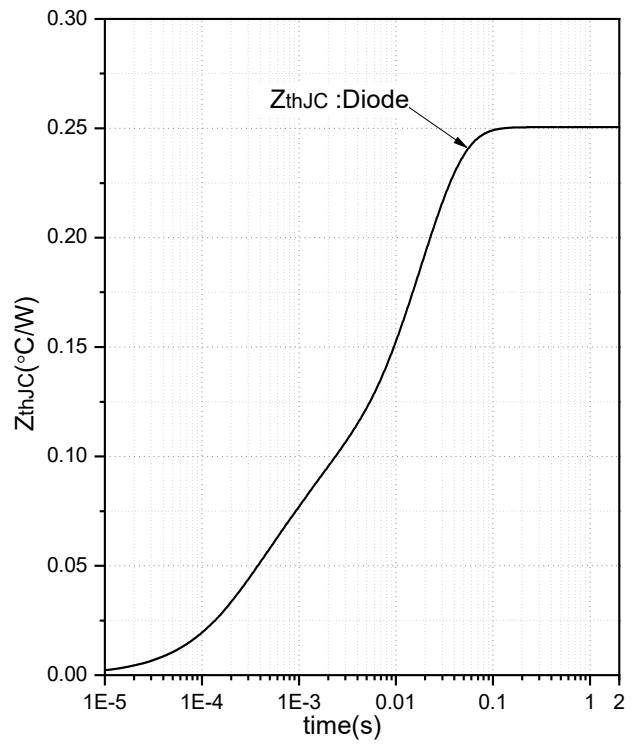
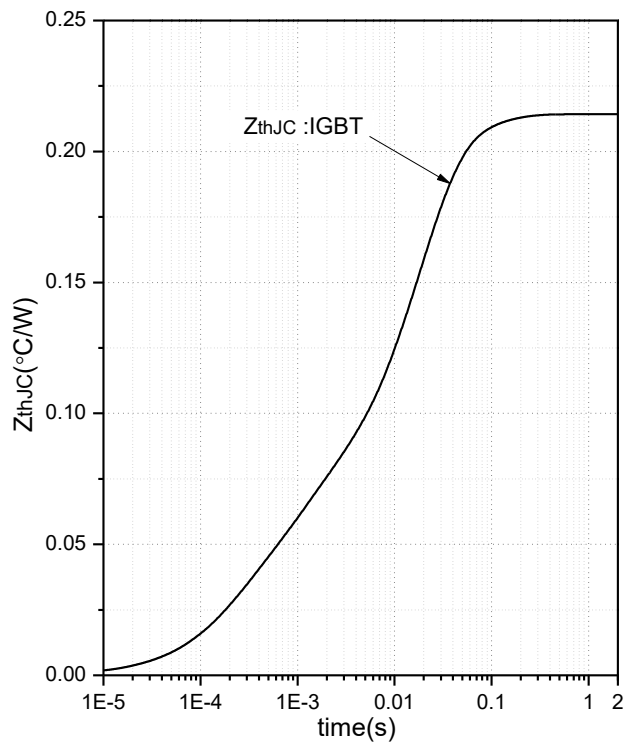
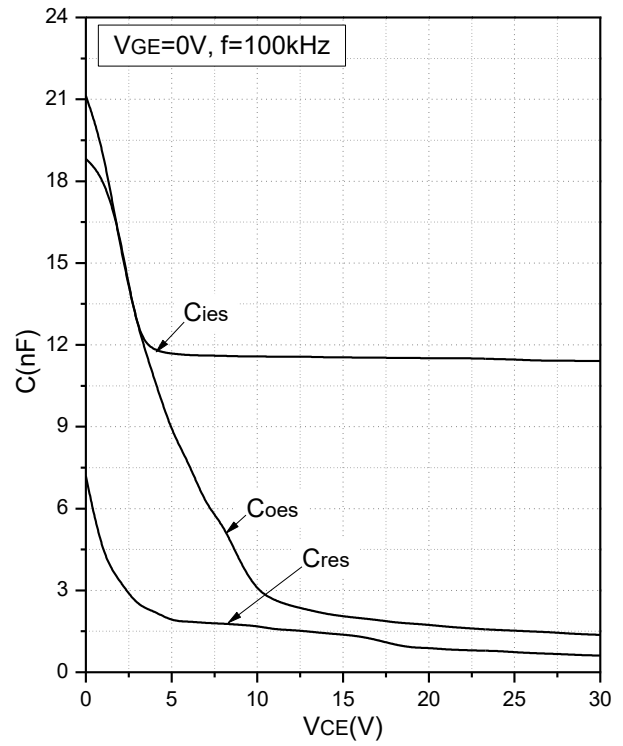
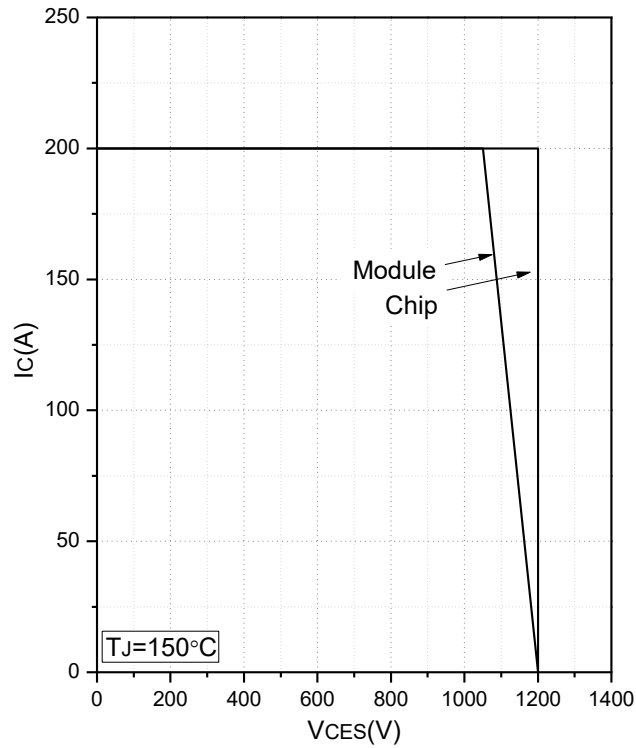


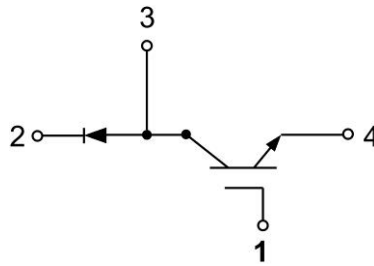
Fig.4 Forward Characteristics of Diode



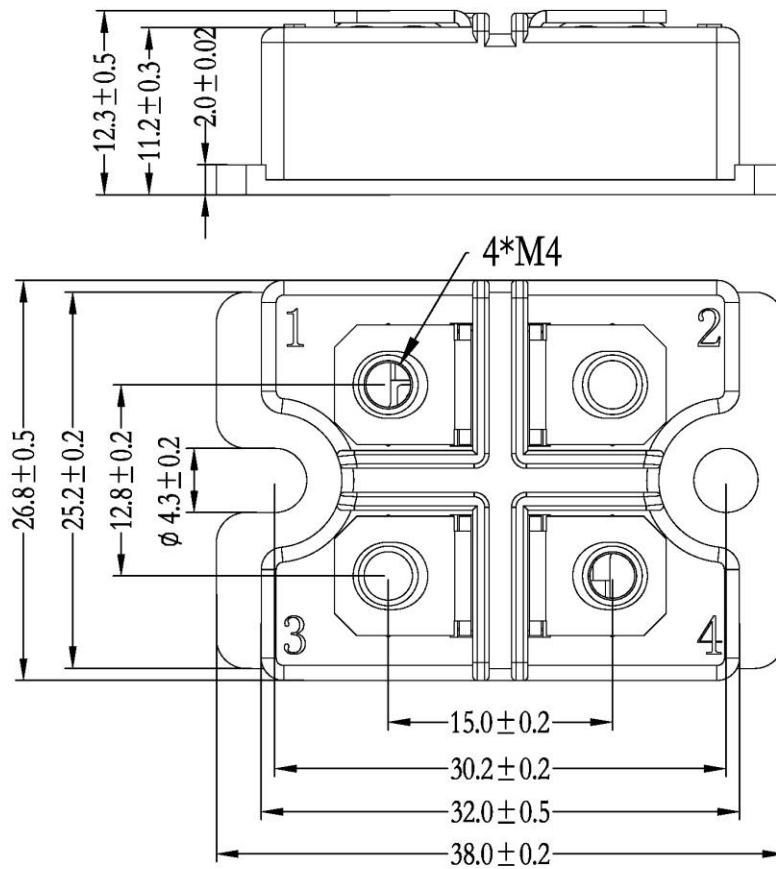




Internal Circuit:



Package Outline (Unit: mm):





Date	Revision	Notes
04/21/2024	A	Final Version

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”.