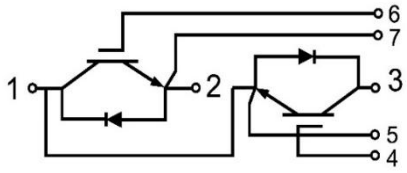
南京银茂微电子

NJSM

GT300HF170T2VH

IGBT Module

Circuit Diagram



Features:

- Vces=1700V Ic=300A Trench & Field Stop IGBT Module
- Short Circuit Capability
- Low Saturation Voltage
- Low Switching Loss
- 100% RBSOA Tested(2×Ic)
- Low Stray Inductance
- Lead Free, Compliant with RoHS Requirement



Applications:

- Industrial Inverters
- Motor Drives
- UPS Systems

Type	Package	Marking
GT300HF170T2VH	T2V	GT300HF170T2VH

IGBT, Inverter

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

V_{CES}	Collector-Emitter Blocking Voltage		1700	V
V_{GES}	Gate-Emitter Voltage		±20	V
I_C	Continuous Collector Current, Limited by T_{Jmax}	T_C=90℃	300	A
		T_C=25℃	600	A
I_{CM}	Peak Collector Current Repetitive	t_p limited by T_{Jmax}	600	A
P_D	Maximum Power Dissipation (IGBT)	T_C=25℃,T_{Jmax}=175℃	2380	W

2026 NJSM 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=12mA, V_{CE}=V_{GE}		5.2	5.9	6.6	V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	I_C=300A, V_{GE}=15V	T_J=25℃		1.77	2.15	V
			T_J=125℃		2.24		V
			T_J=150℃		2.50		V
I_{CES}	Collector-Emitter Leakage Current	V_{GE}=0V, V_{CE}=1700V, T_J=25℃				1	mA
I_{GES}	Gate-Emitter Leakage Current	V_{GE}=20V, V_{CE}=0V, T_J=25℃				600	nA
C_{ies}	Input Capacitance	V_{CE}=25V, V_{GE}=0V, f=100kHz			28.95		nF
C_{oes}	Output Capacitance				1.73		nF
C_{res}	Reverse Transfer Capacitance				0.37		nF

Switching Characteristics

$t_{d(on)}$	Turn-on Delay Time	V_{CC}=900V, I_C=300A, R_{Gon}=1Ω, V_{GE}=±15V, Inductive Load	T_J=25℃		122		ns
			T_J=125℃		135		
			T_J=150℃		142		
t_r	Rise Time		T_J=25℃		38		ns
			T_J=125℃		46		
			T_J=150℃		54		
$t_{d(off)}$	Turn-off Delay Time	V_{CC}=900V, I_C=300A, R_{Goff}=1Ω, V_{GE}=±15V, Inductive Load	T_J=25℃		353		ns
			T_J=125℃		403		
			T_J=150℃		419		
t_f	Fall Time		T_J=25℃		297		ns
			T_J=125℃		346		
			T_J=150℃		369		
E_{on}	Turn-on Switching Loss	V_{CC}=900V, I_C=300A, R_{Gon}=1Ω, V_{GE}=±15V, di/dt=4400A/μs(T_J=150℃) Inductive Load	T_J=25℃		60		mJ
			T_J=125℃		80		
			T_J=150℃		89		

2026 NJSM All rights reserved

E_{off}	Turn-off Switching Loss	V_{CC}=900V, I_C=300A, R_{Goff}=1Ω, V_{GE}=±15V, du/dt=5000V/μs(T_J=150℃) Inductive Load	T_J=25℃		46		mJ
			T_J=125℃		57		
			T_J=150℃		59		
Q_g	Total Gate Charge	V_{CE}=900V,V_{GE}=±15V, I_C=300A	T_J=25℃		2.33		uC
$R_{G\ (int)}$	Internal Gate Resistance		T_J=25℃		1.5		Ω
T_{SC}	V_{CC}=1000V, V_{GE}=±15V, T_J=150℃note1					10	us
$R_{\theta JC}$	IGBT Thermal Resistance: Junction-to-Case (per IGBT)					0.063	℃/W
$R_{\theta CS}$	IGBT Thermal Resistance: Case-to-Sink (per IGBT) (per IGBT, λ_{grease} = 1 W/(m • K))				0.045		℃/W

note1: Short circuit withstand time cannot exceed 10us under specified condition.

Diode, Inverter

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

V_{RRM}	Repetitive Peak Reverse Voltage	T_J=25℃	1700	V
I_F	Diode Continuous Forward Current		300	A
I_{FM}	Diode Maximum Forward Current	t_p=1ms	600	A

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

Symbol	Description	Conditions		Min.	Typ.	Max.	Units
V_{FM}	Forward Voltage	I_F=300A	T_J=25℃		1.89	2.30	V
			T_J=125℃		2.05		
			T_J=150℃		2.11		
t_{rr}	Reverse Recovery Time	I_F=300A, -diF/dt=6000A/μs(T_J=150℃), V_{CC}=900V, V_{GE}=-15V	T_J=25℃		626		ns
			T_J=125℃		1019		
			T_J=150℃		1411		
I_{rr}	Peak Reverse Recovery Current		T_J=25℃		440		A
			T_J=125℃		400		
			T_J=150℃		376		
Q_{rr}	Reverse Recovery Charge		T_J=25℃		74		μC
			T_J=125℃		100		
			T_J=150℃		118		

2026 NJSM All rights reserved

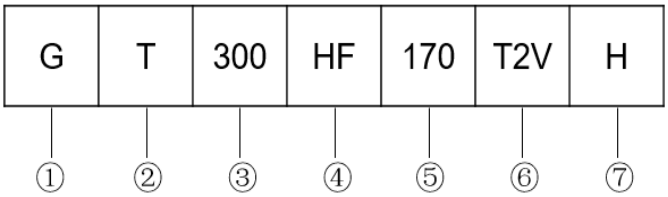
E_{rec}	Reverse Recovery Energy	I_F=300A, -diF/dt=6000A/μs(T_J=150℃), V_{CC}=900V, V_{GE}=-15V	T_J=25℃		38		mJ
			T_J=125℃		54		
			T_J=150℃		66		
$R_{\theta JC}$	Diode Thermal Resistance: Junction-to-Case (per Diode)					0.129	℃/W
$R_{\theta CS}$	Diode Thermal Resistance: Case-to-Sink (per Diode, λ_{grease} = 1 W/(m • K))				0.093		℃/W

Module

Symbol	Description	Conditions	Min.	Typ.	Max.	Units
V_{iso}	Isolation Voltage (All Terminals Shorted)	RMS, f=50Hz, 60s		3400		V
T_J	Maximum Junction Temperature		-40		175	℃
T_{JOP}	Maximum Operating Junction Temperature Range		-40		150	℃
T_{stg}	Storage Temperature		-40		125	℃
CTI	Comparative Tracking Index			200		
M	Power Terminals Screw:M6		3.0		5.0	N·m
M	Mounting Screw:M6		3.0		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 (300=300A)
④ - Circuit Configuration: HF (Half Bridge)
⑤ - Rated Voltage (170=1700V)
⑥ - Package Type
⑦ - Test Level (Pass the Important Reliability Test-Industrial Grade)

2026 NJSM All rights reserved

Characteristic diagram

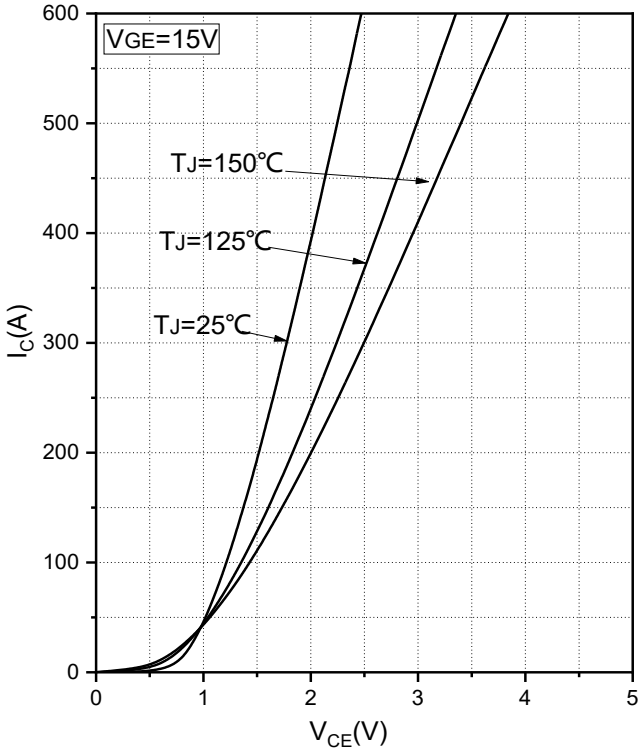


Fig.1 Typical Saturation Voltage Characteristics

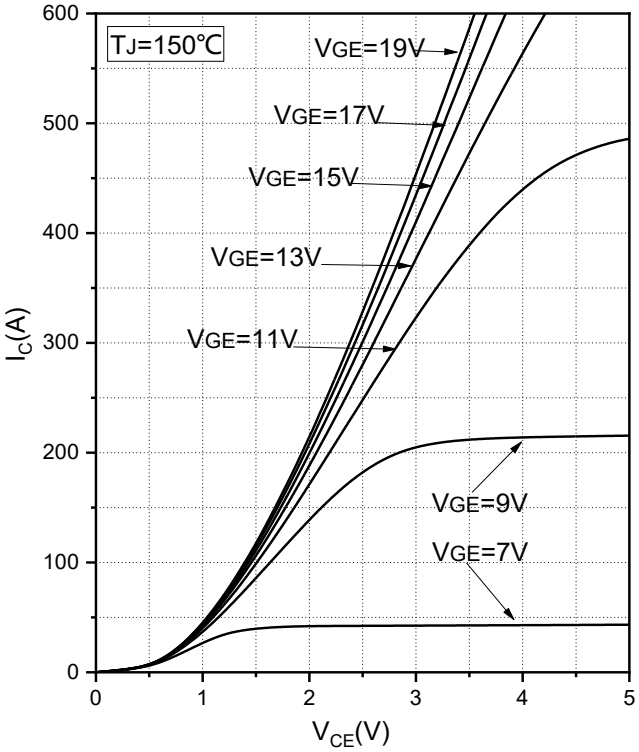


Fig.2 Typical Output Characteristics

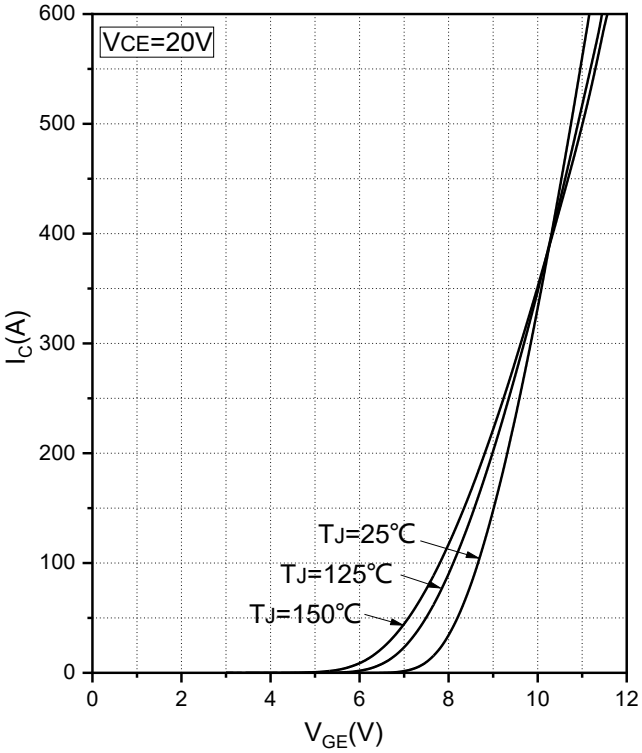


Fig.3 Transfer Characteristic

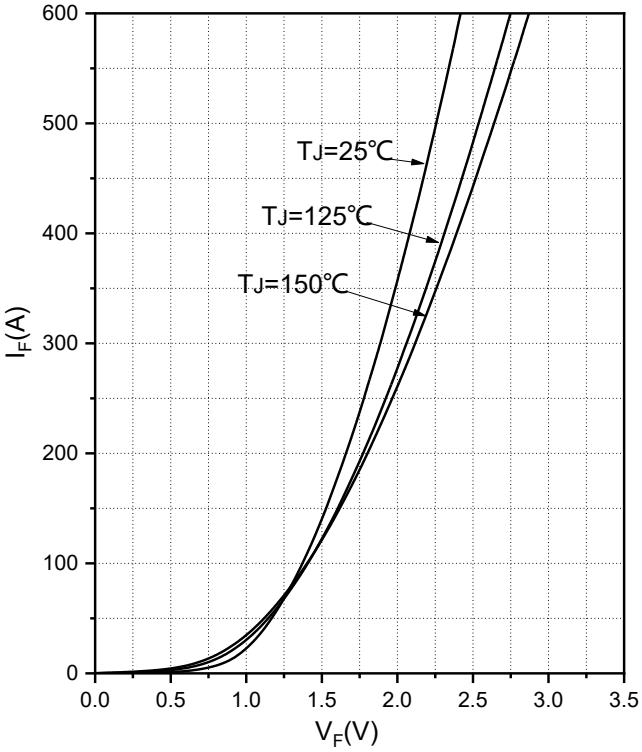


Fig.4 Forward Characteristics of Diode

2026 NJSM All rights reserved

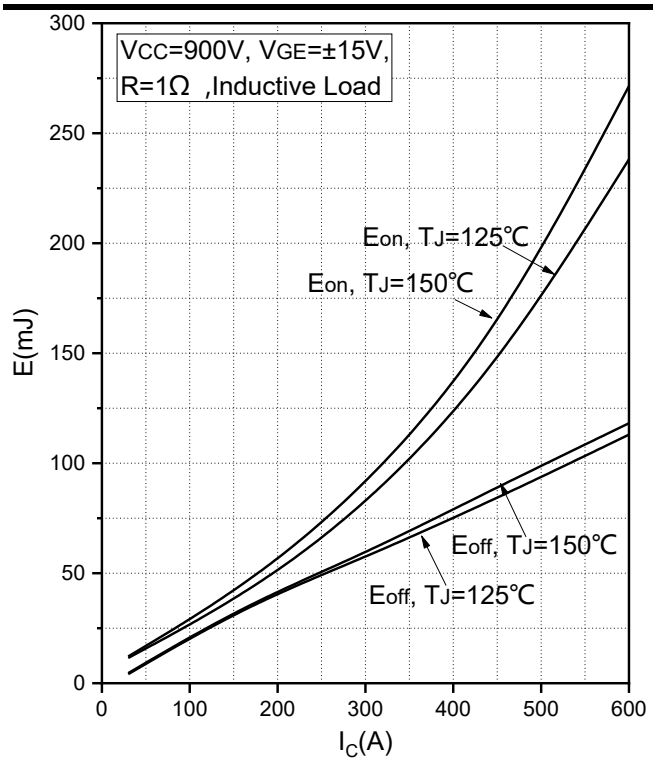


Fig.5 Typical Switching Loss IGBT vs. Collector Current

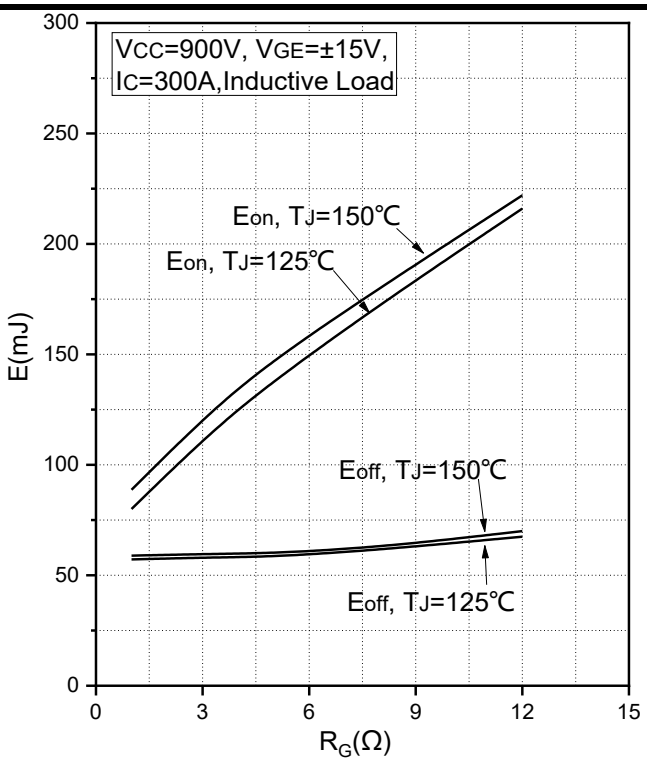


Fig.6 Typical Switching Loss IGBT vs. Gate Resistance

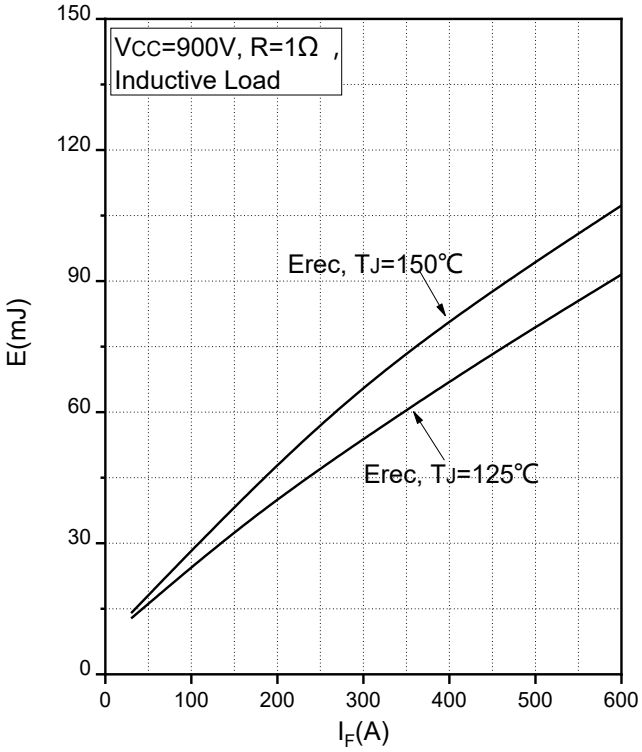


Fig.7 Typical Switching Loss Diode vs. Forward Current

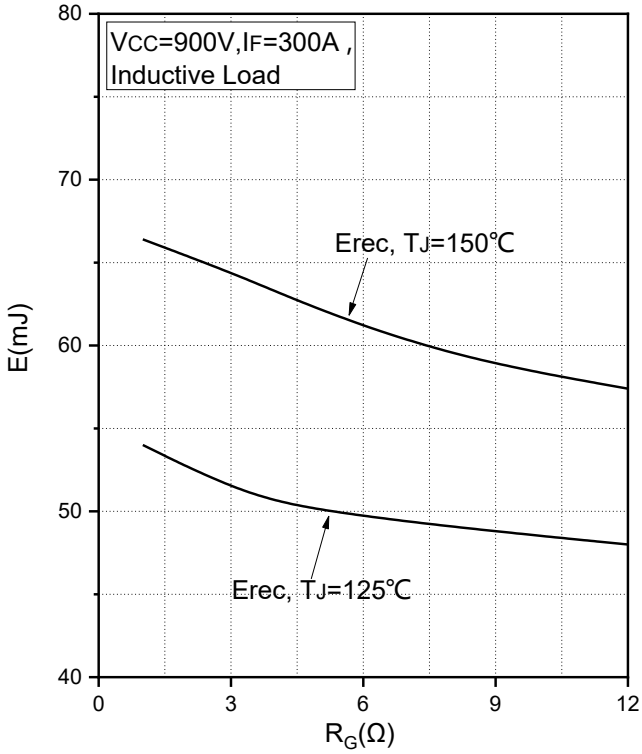


Fig.8 Typical Switching Loss Diode vs. Gate Resistance

2026 NJSM All rights reserved

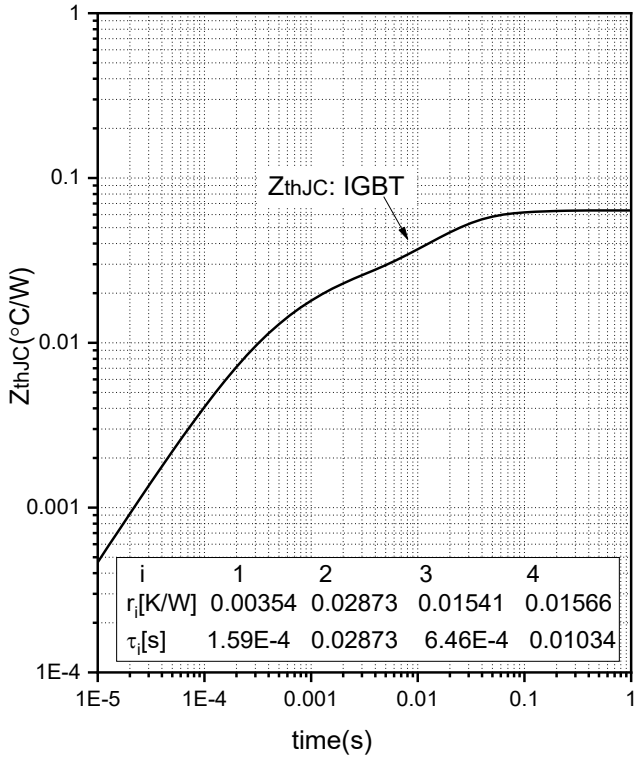


Fig.9 Transient Thermal Impedance (IGBT)

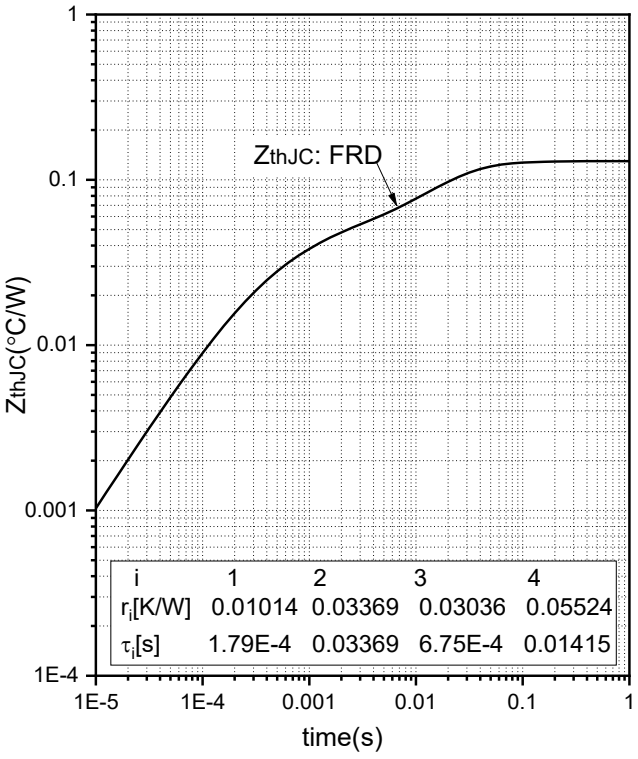


Fig.10 Transient Thermal Impedance (Diode)

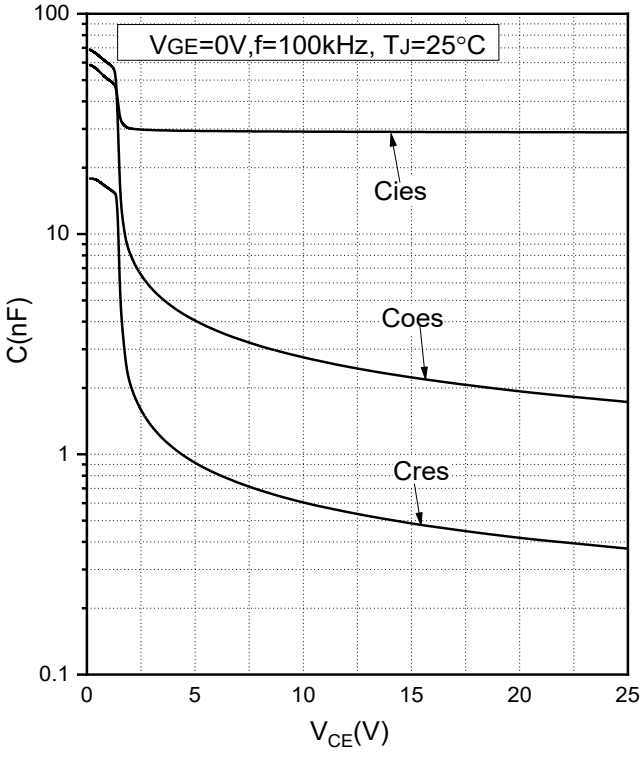


Fig.11 Capacitance Characteristics

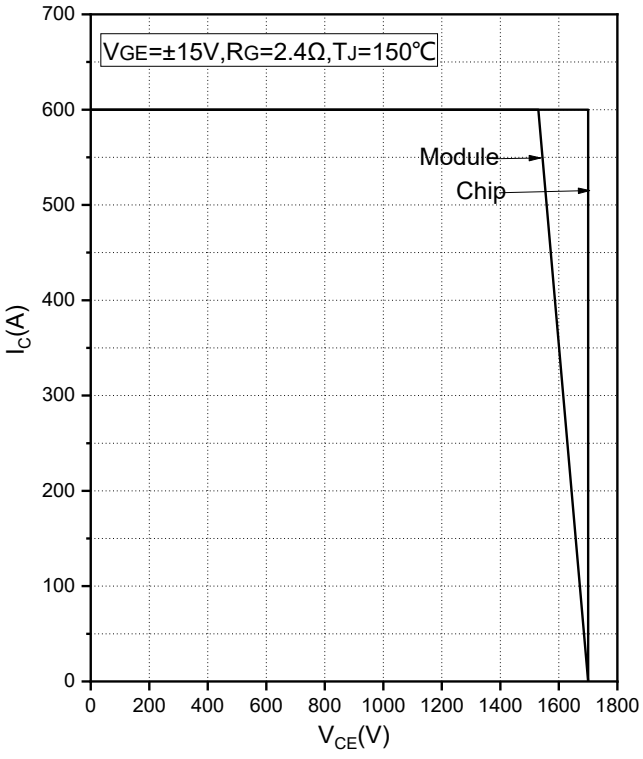


Fig.12 Reverse Bias Safe Operation Area (RBSOA)

2026 NJSM All rights reserved

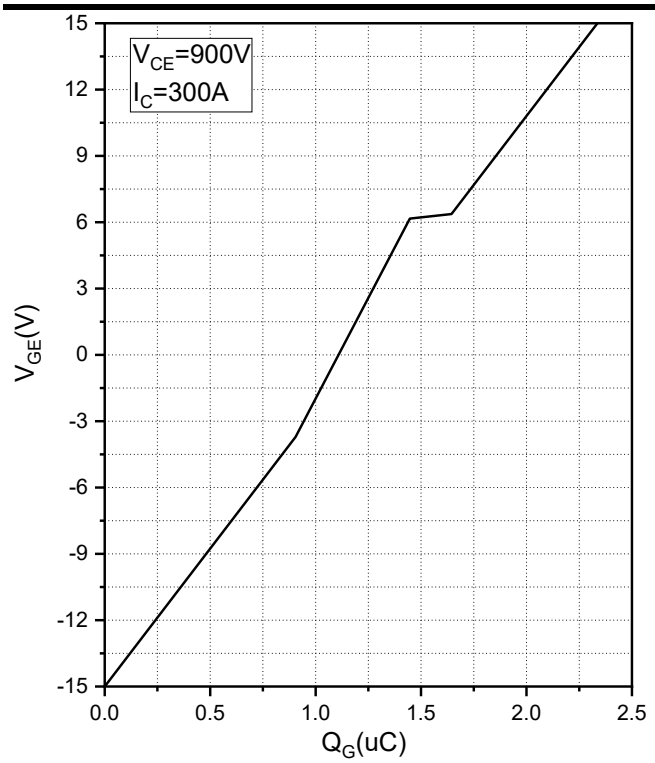
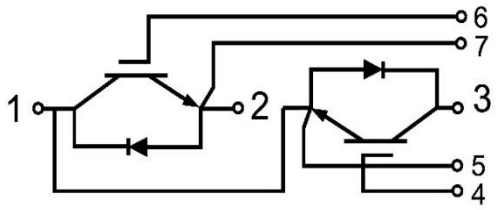


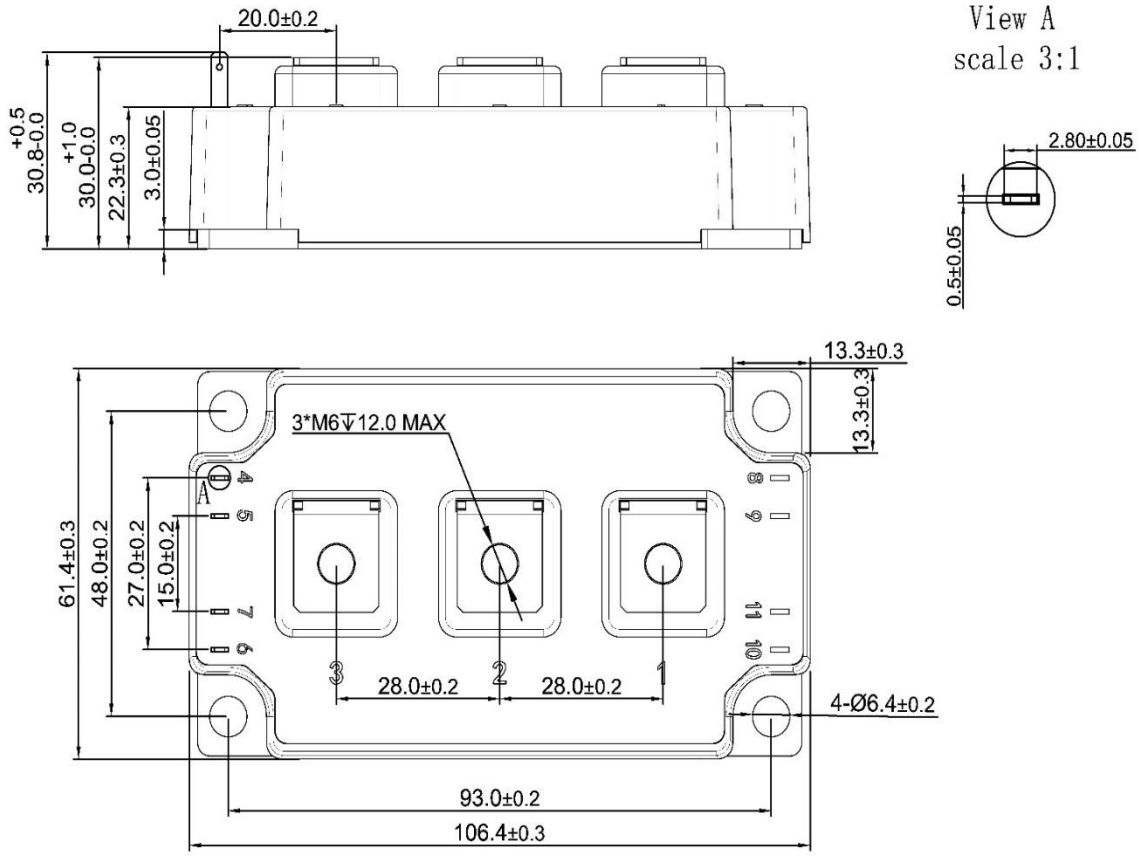
Fig.13 Gate Charge Characteristics

2026 NJSM All rights reserved

Internal Circuit:



Package Outline (Unit: mm):



2026 NJSM All rights reserved

Revision	Notes
01	Preliminary Datasheet
02	Engineering Sample Datasheet

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”.

2026 NJSM All rights reserved