



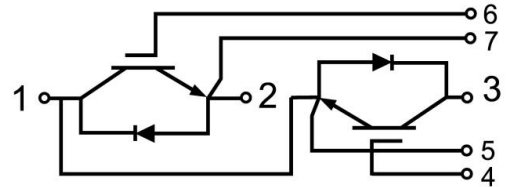
GT100HF120T2VH

IGBT Module

Preliminary Data

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:

- Welding
- Power Supply
- Induction Heating

IGBT, Inverter

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)	$T_C=25^\circ\text{C}$ $T_{Jmax}=175^\circ\text{C}$	1081	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	$I_C=4\text{mA}$, $V_{CE}=V_{GE}$	4.0	4.8	5.5	V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C=100\text{A}$, $V_{GE}=15\text{V}$	$T_J=25^{\circ}\text{C}$	1.40	1.70	V
			$T_J=125^{\circ}\text{C}$	1.65		V
			$T_J=150^{\circ}\text{C}$	1.70		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	$V_{CE}=25\text{V}$, $V_{GE}=0\text{V}$, $f=100\text{kHz}$		24.98		nF
C_{oes}	Output Capacitance			0.79		nF
C_{res}	Reveres Transfer Capacitance			0.26		nF

Switching Characteristics

t _{d(on)}	Turn-on Delay Time	V _{CC} =600V, I _C =100A, R _{Gon} =4.7Ω, V _{GE} =±15V, Inductive Load	T _J =25℃		52		ns
			T _J =125℃		54		
			T _J =150℃		54		
t _r	Rise Time		T _J =25℃		38		ns
			T _J =125℃		42		
			T _J =150℃		42		
t _{d(off)}	Turn-off Delay Time	V _{CC} =600V, I _C =100A, R _{Goff} =4.7Ω, V _{GE} =±15V, Inductive Load	T _J =25℃		342		ns
			T _J =125℃		392		
			T _J =150℃		408		
t _f	Fall Time		T _J =25℃		152		ns
			T _J =125℃		154		
			T _J =150℃		156		
E _{on}	Turn-on Switching Loss	V _{CC} =600V, I _C =100A, R _{Gon} =4.7Ω, V _{GE} =±15V, di/dt=2024A/μs(T _J =150℃), Inductive Load	T _J =25℃		3.52		mJ
			T _J =125℃		5.85		
			T _J =150℃		6.15		



E _{off}	Turn-off Switching Loss	V _{CC} =600V, I _C =100A, R _{Goff} =4.7Ω, V _{GE} =±15V, du/dt=5287V/μs(T _J =150°C), Inductive Load	T _J =25°C		5.82		mJ
			T _J =125°C		7.80		
			T _J =150°C		8.27		
Q _g	Total Gate Charge	V _{GE} =+15V...-15V	T _J =25°C		2907		nC
R _{G(int)}	Internal Gate Resistor		T _J =25°C		0		Ω
SCSOA	V _{CC} =600V, V _{GE} =+/-15V, T _J =25°C			10			μs
R _{θJC}	Thermal Resistance: Junction-to-Case (per IGBT)					0.14	°C/W

Diode, Inverter

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

V _{RRM}	Repetitive Peak Reverse Voltage	T _J =25°C	1200	V
I _F	Diode Continuous Forward Current	T _C =100°C	100	A
I _{FM}	Peak Diode Current Repetitive	t _p =1ms	200	A

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

Symbol	Description	Conditions		Min.	Typ.	Max.	Units
V _{FM}	Forward Voltage	I _F =100A	T _J =25℃		1.45		V
			T _J =125℃		1.50		
			T _J =150℃		1.50		
t _{rr}	Reverse Recovery Time	I _F =100A, -diF/dt=2202A/μs(T _J =150℃), V _R =600V, V _{GE} =-15V	T _J =25℃		162		ns
			T _J =125℃		222		
			T _J =150℃		228		
I _{rr}	Peak Reverse Recovery Current		T _J =25℃		150		A
			T _J =125℃		157		
			T _J =150℃		160		
Q _{rr}	Reverse Recovery Charge		T _J =25℃		13.9		μC
			T _J =125℃		20.5		
			T _J =150℃		21.6		



E _{rec}	Reverse Recovery Energy	I _F =100A, -diF/dt=2202A/μs(T _J =150°C), V _R =600V, V _{GE} =-15V	T _J =25°C		6.01		mJ
			T _J =125°C		8.70		
			T _J =150°C		9.00		
R _{θJC}	Thermal Resistance: Junction-to-Case (per Diode)					0.25	°C/W

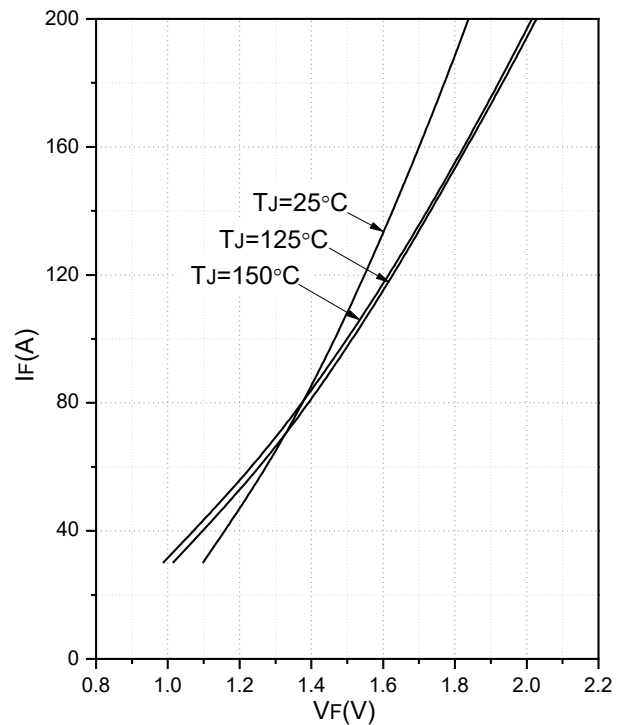
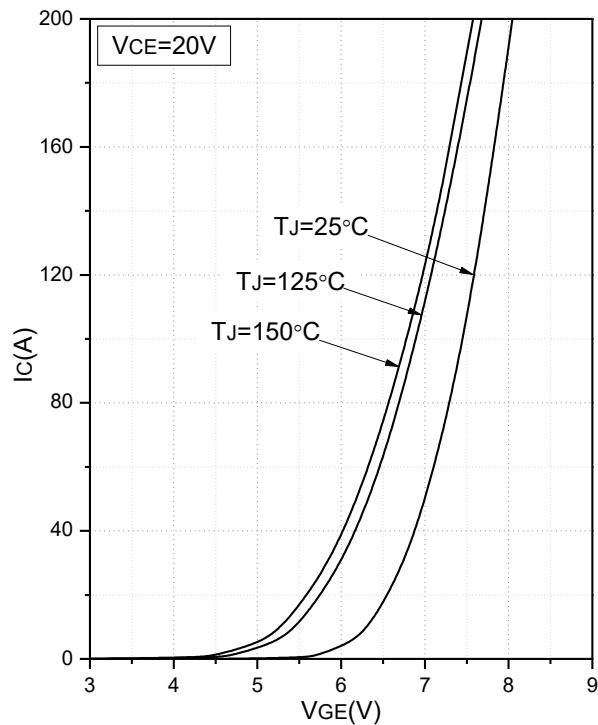
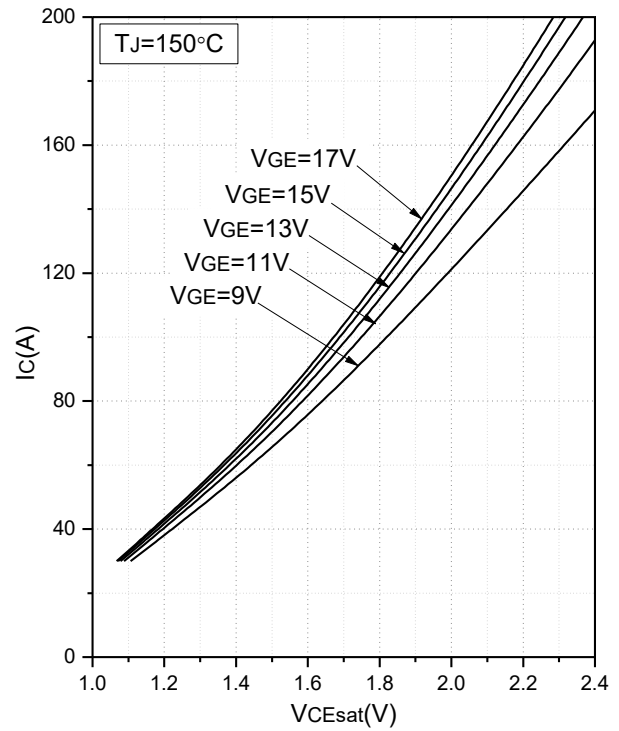
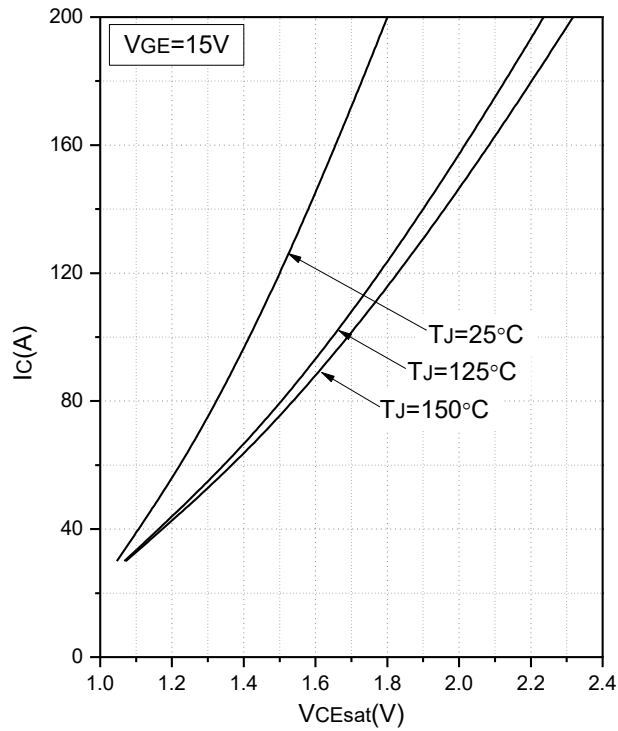
Module

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	°C
T _{JOP}	Maximum Operating Junction Temperature Range		-40		+150	°C
T _{stg}	Storage Temperature		-40		+125	°C
CTI	Comparative Tracking Index		200			
R _{θCS}	Case-to-Sink Thermally (Conductive Grease Applied)				0.03	°C/W
T	Power Terminals Screw:M6		3.0		5.0	N·m
T	Mounting Screw:M6		3.0		6.0	N·m
G	Weight			300		g

Ordering Information Table

Device code	G	T	100	HF	120	T2V	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: HF (Half Bridge)
- ⑤ - Rated Voltage (120=1200V)
- ⑥ - Package Type
- ⑦ - Test Level (Pass the Important Reliability Test-Industrial Grade)



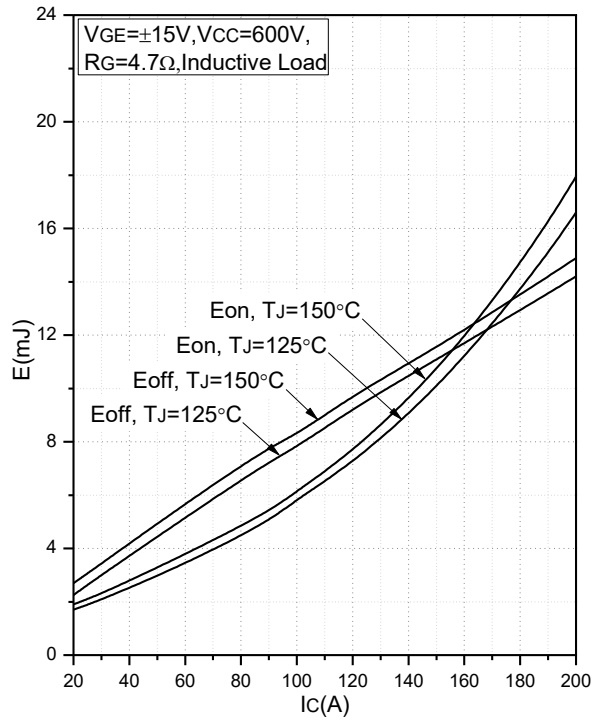


Fig.5 Typical Switching Loss vs. Collector Current

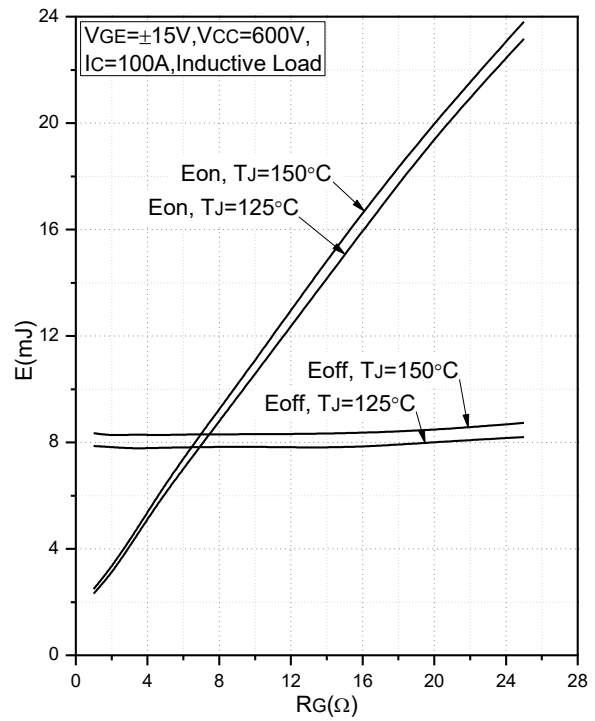


Fig.6 Typical Switching Loss vs. Gate Resistance

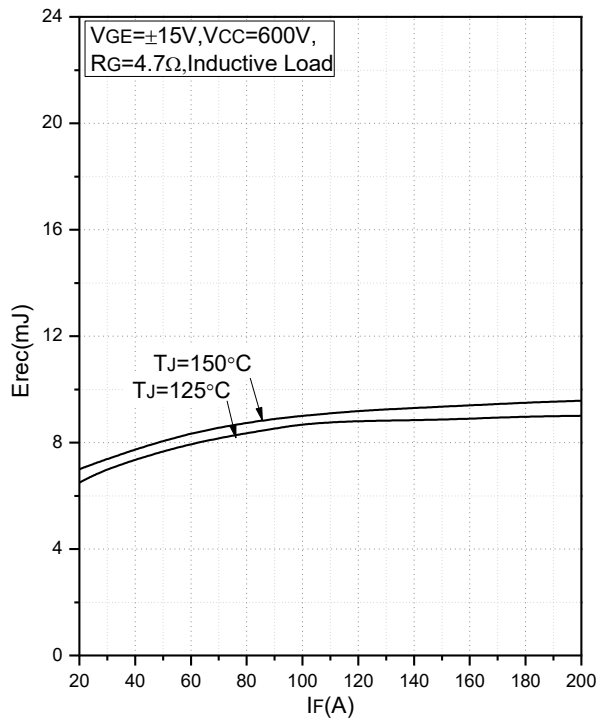


Fig.7 Typical Switching Loss vs. Forward Current

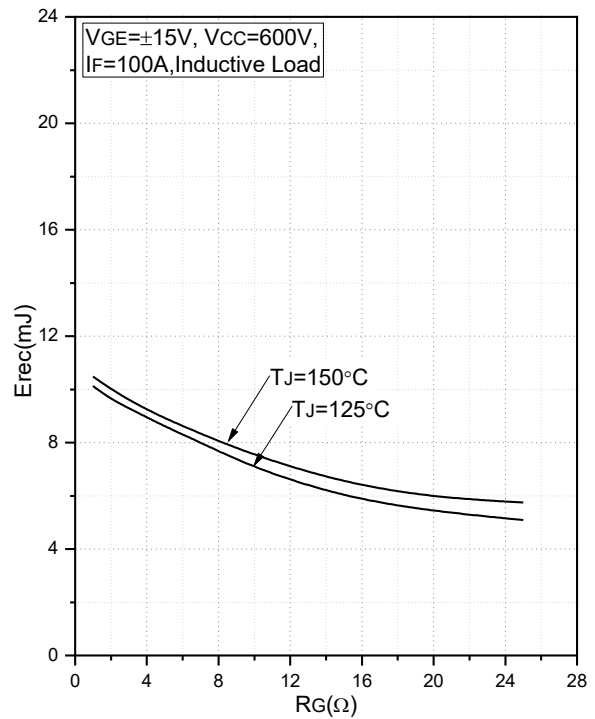


Fig.8 Typical Switching Loss vs. Gate Resistance

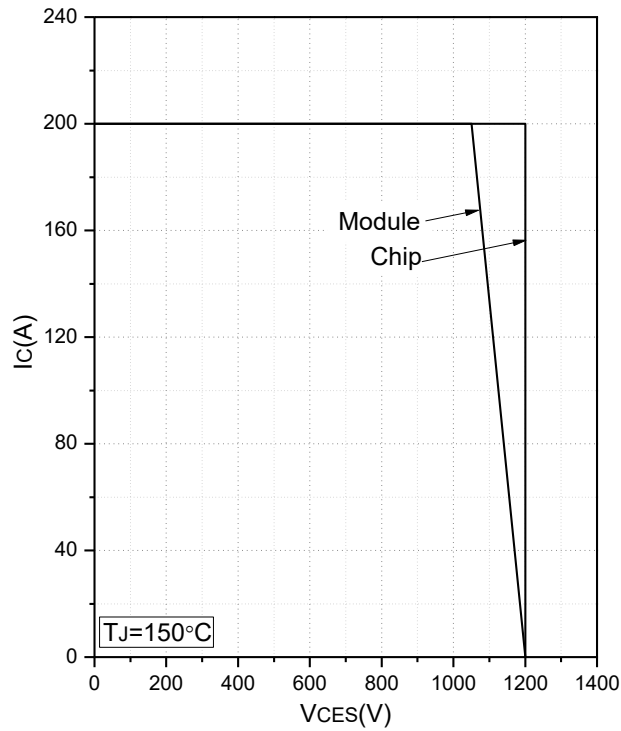


Fig.9 Reverse Bias Safe Operation Area (RBSOA)

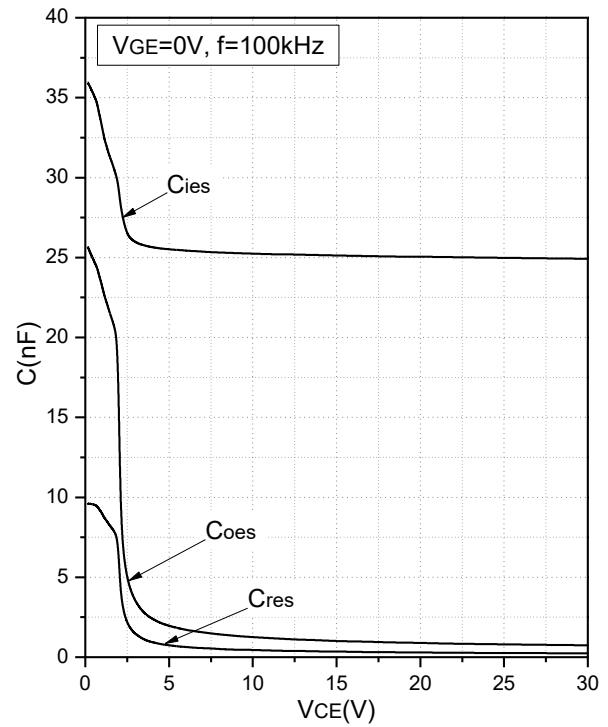


Fig.10 Capacitance Characteristics

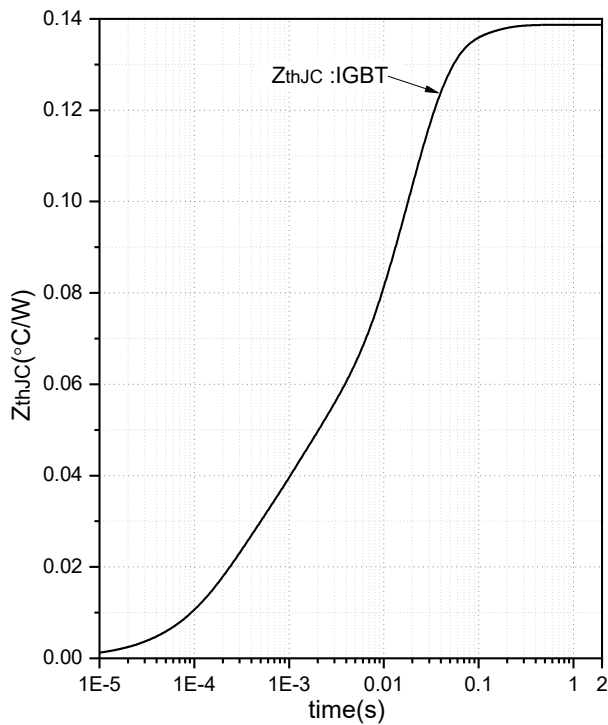


Fig.11 Transient Thermal Impedance (IGBT)

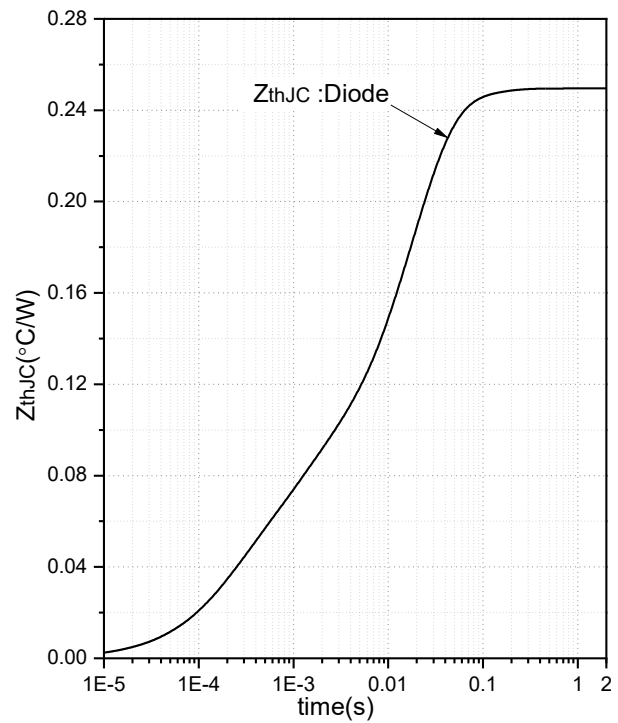


Fig.12 Transient Thermal Impedance (Diode)



Revision	Notes
01	Initial Release

Announcement

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