



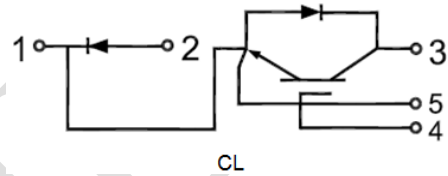
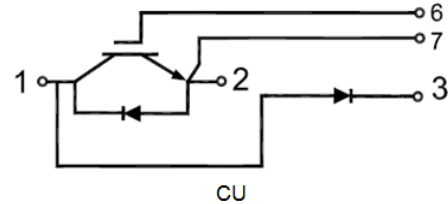
GT100CU120T1VH

GT100CL120T1VH

IGBT Module

Features:

- Field Stop Trench Gate IGBT
- Short Circuit Rated >10 μ s
- Low Saturation Voltage
- Low Switching Loss
- 100% RBSOA Tested(2xIc)
- Low Stray Inductance
- Lead Free, Compliant with RoHS Requirement



Applications:

- Welding Machine、Cutting Machine
- Plating Power Supply、Induction Heating
- SMPS、UPS

IGBT, Brake-Chopper Maximum Rated Values of IGBT

V _{CEs}	Collector-Emitter Blocking Voltage	T _J =25°C	1200	V
V _{GES}	Gate-Emitter Voltage		±20	V
I _c	Continuous Collector Current	T _c =100°C	100	A
		T _c =25°C	200	A
I _{CM}	Repetitive Peak Collector Current	t _p =1ms	200	A
t _{sc}	Short Circuit Withstand Time		>10	μ s
P _D	Maximum Power Dissipation per IGBT	T _c =25°C T _{Jmax} =175°C	714	W



Electrical Characteristics of IGBT

Static Characteristics

Symbol	Description	Conditions	Min	Typ	Max	Unit	
$V_{GE(th)}$	Gate-Emitter Threshold Voltage	$I_C=1mA, V_{CE}=V_{GE}, T_J=25^\circ C$	5.0	5.5	6.6	V	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C=100A, V_{GE}=15V$	$T_J=25^\circ C$		1.70	2.00	V
			$T_J=125^\circ C$		1.90		V
			$T_J=150^\circ C$		1.90		V
I_{CES}	Collector-Emitter Leakage Current	$V_{GE}=0V, V_{CE}=V_{CES}, T_J=25^\circ C$			1	mA	
I_{GES}	Gate-Emitter Leakage Current	$V_{GE}=\pm 20V, V_{CE}=0V, T_J=25^\circ C$			200	nA	
C_{ies}	Input Capacitance	$V_{CE}=25V, V_{GE}=0V, f=1MHz, T_J=25^\circ C$		8.03		nF	
C_{oes}	Output Capacitance			1.22		nF	
C_{res}	Reveres Transfer Capacitance			0.59		nF	

Switching Characteristics

$t_{d(on)}$	Turn-on Delay Time	$V_{CC}=600V, I_C=100A, R_{Gon}=1\Omega, V_{GE}=\pm 15V, \text{Inductive Load}$	$T_J=25^\circ C$		228		ns
			$T_J=125^\circ C$		250		
			$T_J=150^\circ C$		254		
t_r	Rise Time		$T_J=25^\circ C$		63		ns
			$T_J=125^\circ C$		67		
			$T_J=150^\circ C$		69		
$t_{d(off)}$	Turn-off Delay Time		$T_J=25^\circ C$		269		ns
			$T_J=125^\circ C$		279		
			$T_J=150^\circ C$		284		
t_f	Fall Time	$T_J=25^\circ C$		184		ns	
		$T_J=125^\circ C$		291			
		$T_J=150^\circ C$		317			
E_{on}	Turn-on Switching Loss	$V_{CC}=600V, I_C=100A, R_{Gon}=1\Omega, V_{GE}=\pm 15V, di/dt=1387A/\mu s (T_J=150^\circ C), \text{Inductive Load}$	$T_J=25^\circ C$		3.1		mJ
		$T_J=125^\circ C$		4.3			
		$T_J=150^\circ C$		4.8			



E _{off}	Turn-off Switching Loss	V _{CC} =600V, I _C =100A, R _{Goff} =1Ω, V _{GE} =±15V, du/dt=4448V/μs(T _J =150°C), Inductive Load	T _J =25°C	5.28	mJ
			T _J =125°C	8.33	
			T _J =150°C	9.30	
Q _g	Total Gate Charge	V _{GE} =+15V...-15V	T _J =25°C	745	nC
R _{g internal}	Internal Gate Resistance		T _J =25°C	7.5	Ω
RBSOA	I _C =200A, V _{CC} =1050V, V _p =1200V, R _G =1Ω, V _{GE} =+15V to 0V, T _J =150°C			Trapezoid	
SC data	V _{CC} =600V, t _p =10us, V _{ge} =+/-15V, R _{Gon} =1ohm, R _{Goff} =1ohm, T _J =25°C			575	A
R _{θJC}	IGBT Thermal Resistance: Junction-To-Case			0.21	°C/W

Diode, Reverse Maximum Rated Values of Diode

V _{RRM}	Repetitive Peak Reverse Voltage	T _J =25°C	1200	V
I _F	Diode Continuous Forward Current		75	A
I _{FM}	Peak FWD Current Repetitive	t _p =1ms	150	A

Electrical Characteristics of Diode

Symbol	Description	Conditions	Min	Typ	Max	Unit
V _{FM}	Forward Voltage	I _F =75A	T _J = 25°C	2.10		V
			T _J = 125°C	2.20		
t _{rr}	Reverse Recovery Time		T _J = 25°C	204		ns
			T _J = 125°C	389		
I _{rr}	Peak Reverse Recovery Current	I _F =75A, -di _F /dt =1250A/μs(T _J =125°C), V _{rr} =600V, V _{GE} =-15V	T _J = 25°C	47.8		A
			T _J = 125°C	64.7		
Q _{rr}	Reverse Recovery Charge		T _J = 25°C	4.56		μC
			T _J = 125°C	9.42		
E _{rec}	Reverse Recovery Energy		T _J = 25°C	1.68		mJ
			T _J = 125°C	3.60		
R _{θJC}	Diode Thermal Resistance: Junction-To-Case				0.43	°C/W



Diode-Chopper Maximum Rated Values of Diode

V_{RRM}	Repetitive Peak Reverse Voltage	$T_J=25^{\circ}\text{C}$	1200	V
I_F	Diode Continuous Forward Current		100	A
I_{FM}	Diode Maximum Forward Current	$t_p=1\text{ms}$	200	A

Electrical Characteristics of Diode

Symbol	Description	Conditions	Min	Typ	Max	Unit
V_{FM}	Forward Voltage	$I_F=100\text{A}$	$T_J=25^{\circ}\text{C}$	1.70		V
			$T_J=125^{\circ}\text{C}$	1.80		
			$T_J=150^{\circ}\text{C}$	1.80		
t_{rr}	Reverse Recovery Time		$T_J=25^{\circ}\text{C}$	260		ns
			$T_J=125^{\circ}\text{C}$	396		
			$T_J=150^{\circ}\text{C}$	454		
I_{rr}	Peak Reverse Recovery Current	$I_F=100\text{A},$ $-diF/dt = 1911\text{A}/\mu\text{s}(T_J=150^{\circ}\text{C}),$ $V_R=600\text{V},$ $V_{GE}=-15\text{V}$	$T_J=25^{\circ}\text{C}$	92		A
			$T_J=125^{\circ}\text{C}$	104		
			$T_J=150^{\circ}\text{C}$	105		
Q_{rr}	Reverse Recovery Charge		$T_J=25^{\circ}\text{C}$	10.2		μC
			$T_J=125^{\circ}\text{C}$	16.8		
			$T_J=150^{\circ}\text{C}$	19.2		
E_{rec}	Reverse Recovery Energy		$T_J=25^{\circ}\text{C}$	4.83		mJ
			$T_J=125^{\circ}\text{C}$	7.92		
			$T_J=150^{\circ}\text{C}$	9.13		
$R_{\theta JC}$	Diode Thermal Resistance: Junction-To-Case				0.33	$^{\circ}\text{C}/\text{W}$



Module

Symbol	Description	Min	Typ	Max	Unit
V _{iso}	Isolation Voltage (All Terminals Shorted) RMS, 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 _{ecs}	Case-To-Sink Thermally (Conductive Grease Applied)			0.07	°C/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

Device code	G	T	100	CU	120	T1V	H
	①	②	③	④	⑤	⑥	⑦

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

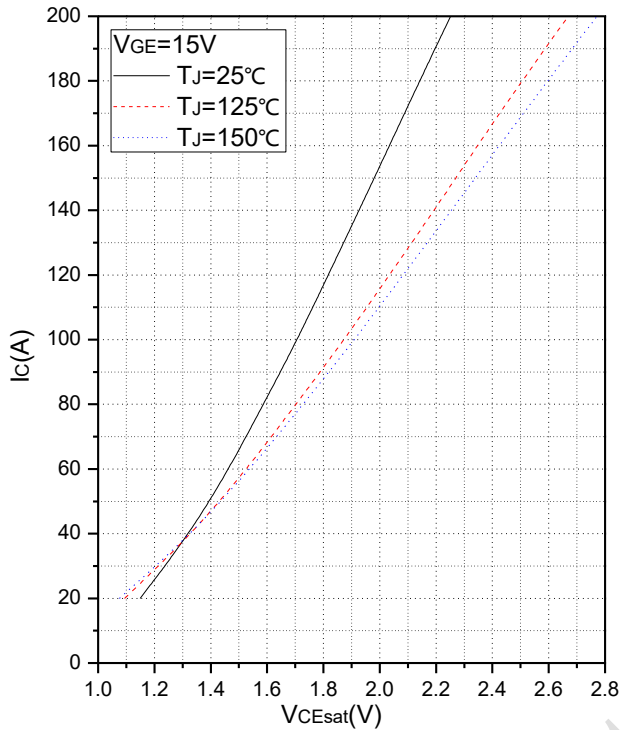


Fig.1 Typical Saturation Voltage Characteristics

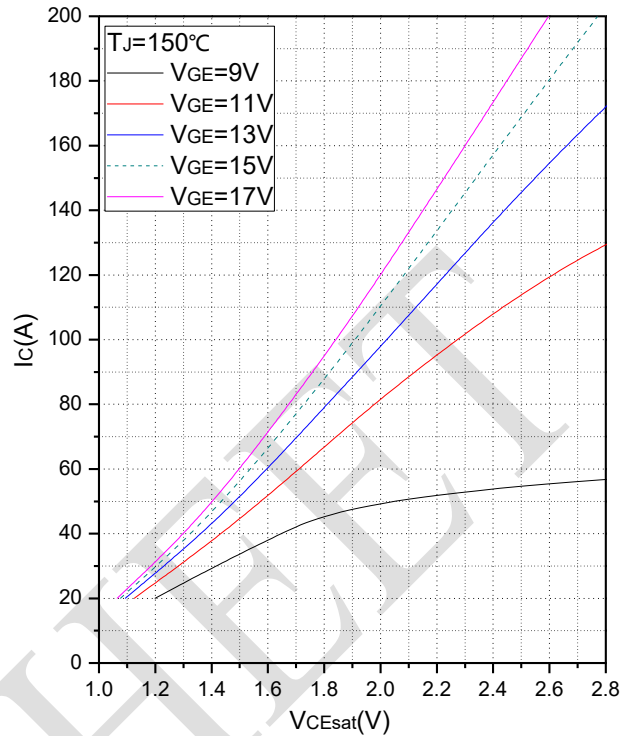


Fig.2 Typical Output Characteristics

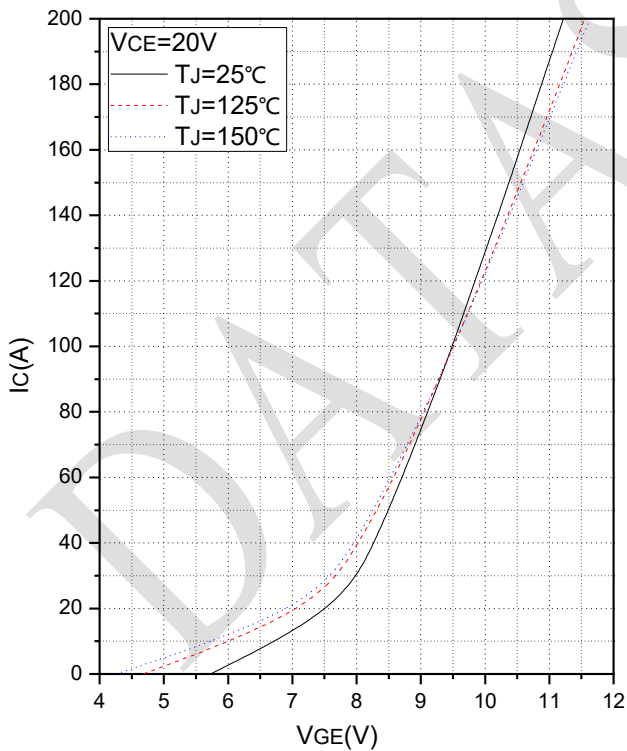


Fig.3 Transfer Characteristic

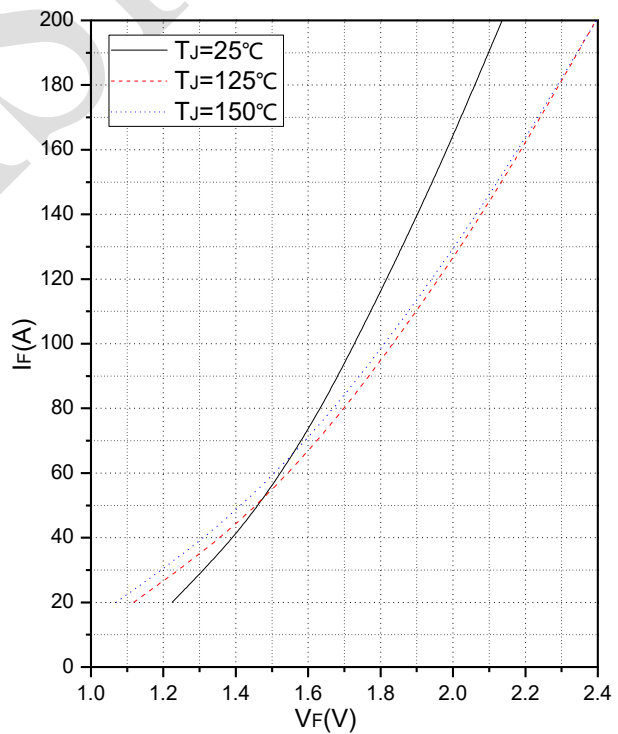


Fig.4 Forward Characteristics of Chopper Diode

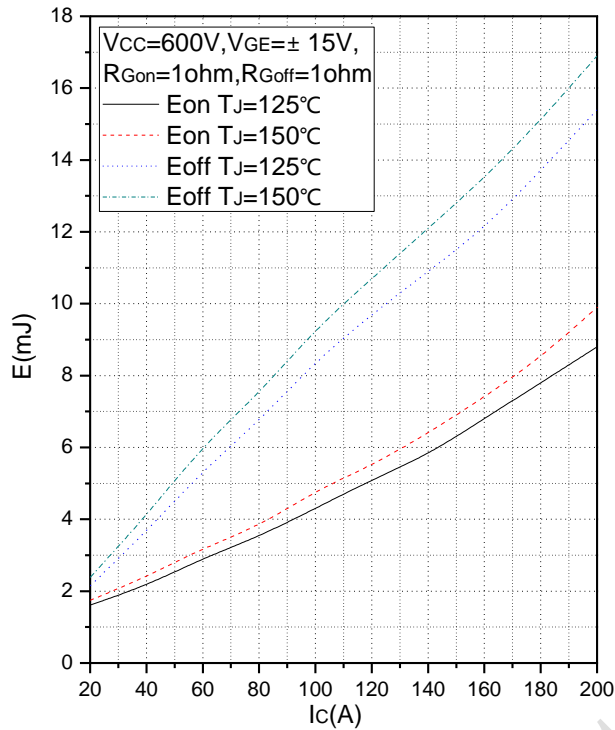


Fig.5 Typical Switching Loss vs. Collector Current

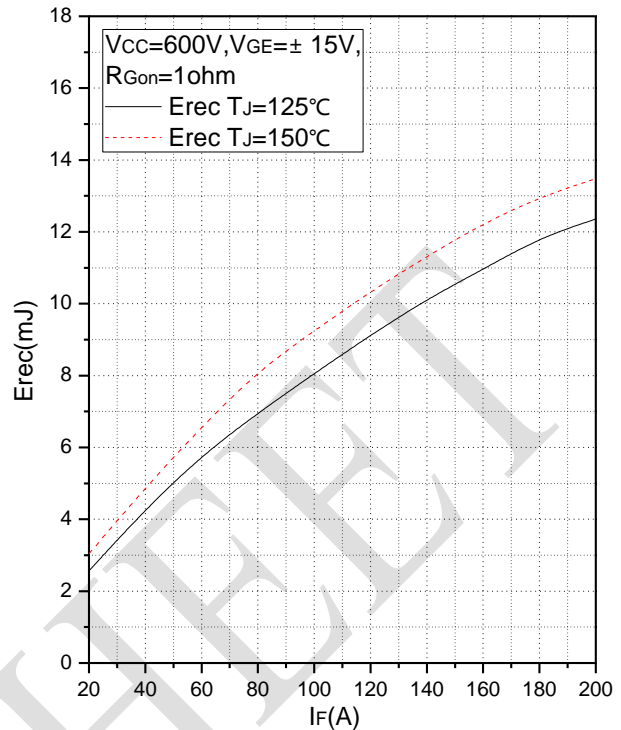


Fig.6 Typical Switching Loss vs. Forward Current

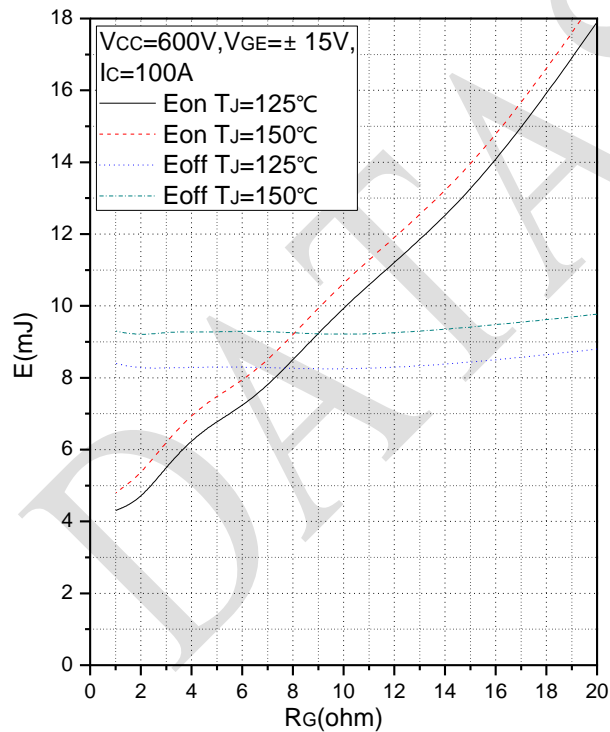


Fig.7 Typical Switching Loss vs. Gate Resistance

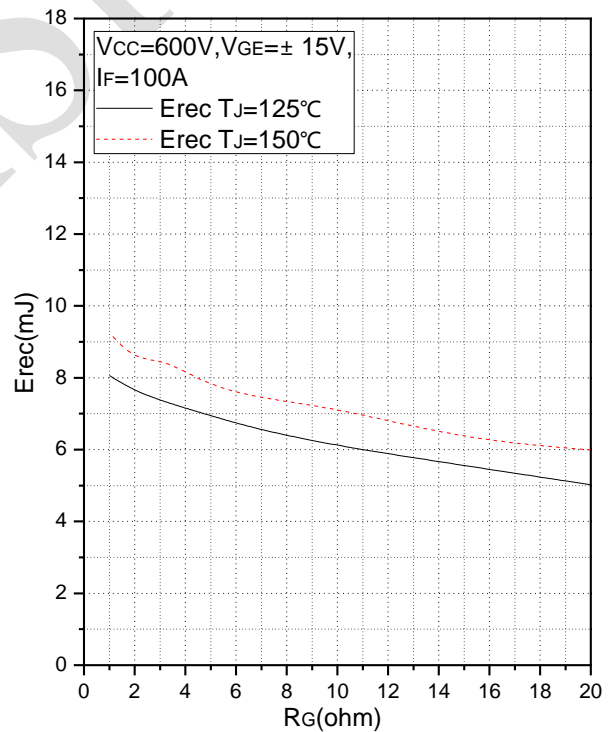


Fig.8 Typical Switching Loss vs. Gate Resistance

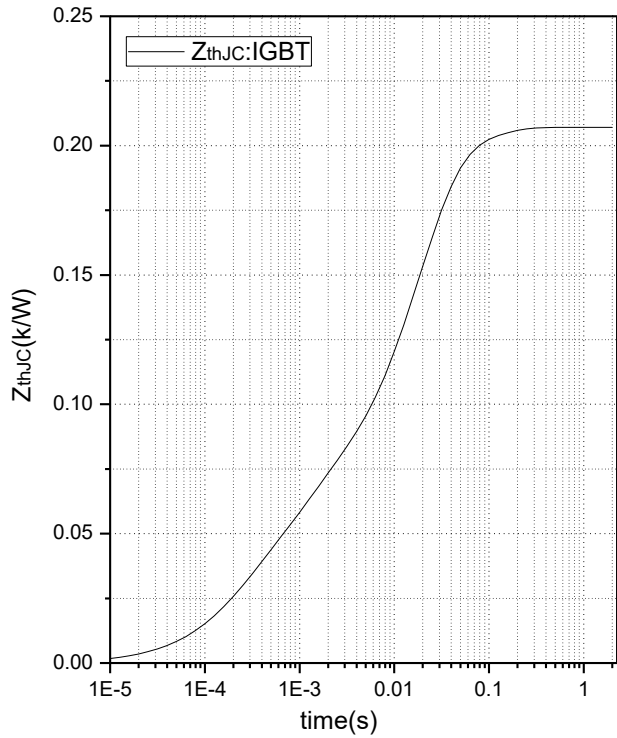


Fig.9 Transient Thermal Impedance (IGBT)

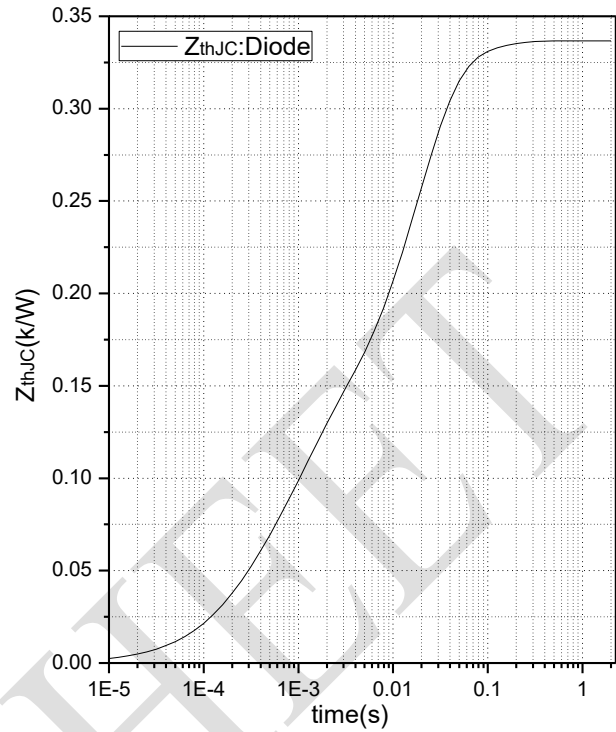


Fig.10 Transient Thermal Impedance (Chopper Diode)

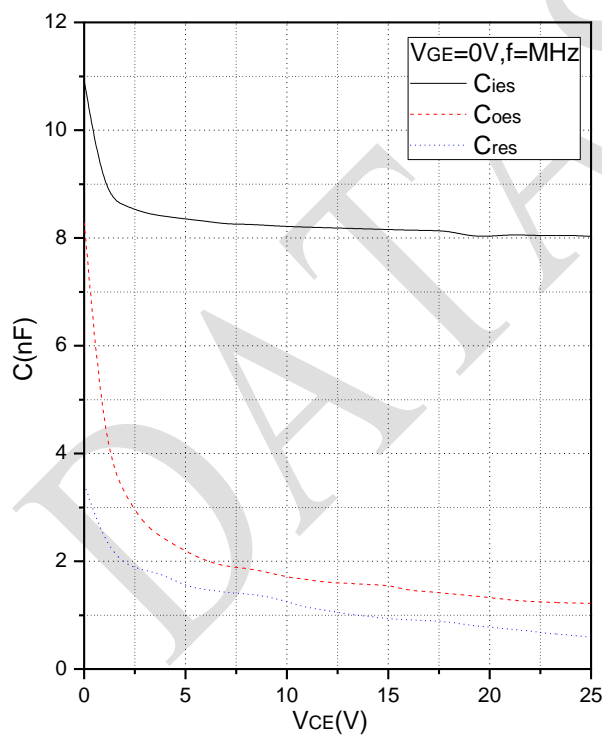


Fig.11 Capacitance Characteristics

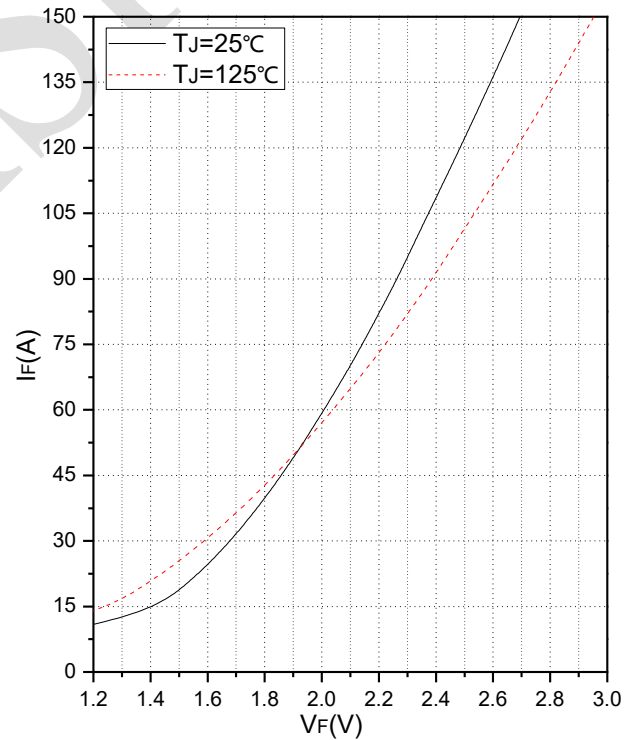


Fig.12 Forward Characteristics of Reverse Diode

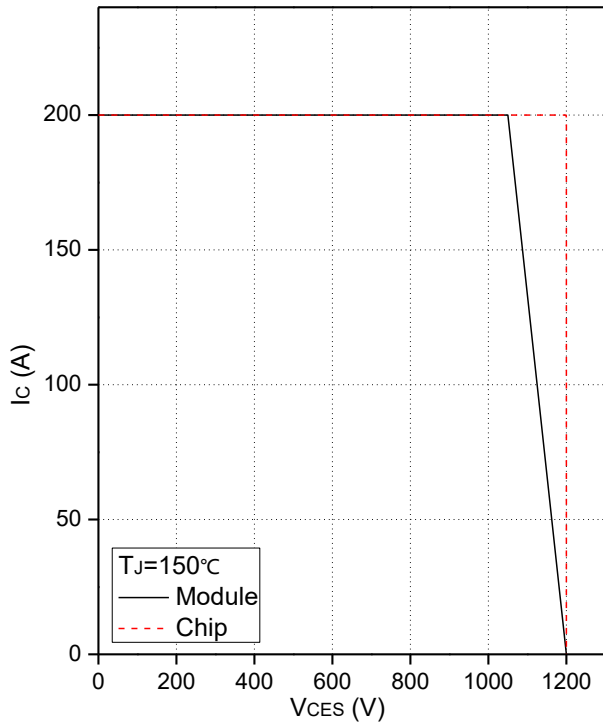


Fig.13 Reverse Bias Safe Operation Area (RBSOA)

DATA SHEET



Date	Revision	Notes
06/24/2019	A	Final Version

Announcements

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

DATA SHEET