IGBT Module

Features:

- Short Circuit Rated 10μs
- Low Saturation Voltage: $V_{CE\ (sat)}$ = 2.30V @ I_C =100A , T_C=25℃
- Low Switching Loss
- 100% RBSOA Tested（2×Ic）
- Low Stray Inductance
- Lead Free, Compliant with RoHS Requirement

Applications:

- Industrial Inverters
- Motor Drives
- UPS Systems

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	T_C = 80℃,	100	A
		T_C = 25℃	135	A
I_{CM}	Repetitive Peak Collector Current	T_J = 150℃	200	A
t_{SC}	Short Circuit Withstand Time		>10	μs
P_D	Maximum Power Dissipation per IGBT	T_C = 25℃ T_{Jmax}=150℃	620	W

Electrical Characteristics of IGBT (T_C=25℃Unless otherwise specified)

Static characteristics

Symbol	Description	Conditions		Min	Typ	Max	Unit
$V_{GE(th)}$	Gate-Emitter Threshold Voltage	I_C = 1 mA, V_{CE} = V_{GE}		5.5	6.0	6.5	V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	I_C = 100A, V_{GE} = 15V	T_J = 25℃		2.30	2.50	V
			T_J = 125℃		2.70	2.90	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℃				300	nA
C_{ies}	Input Capacitance	V_{CE} = 25V, V_{GE} = 0V , f =1MHz			6.7		nF
C_{oes}	Output capacitance				0.35		nF

Switching Characteristics

$t_{d(on)}$	Turn-on Delay Time	V_{CC} =900V,I_C = 100A, R_G = 10Ω,V_{GE} = ±15V, Inductive Load	T_J = 25℃		310		ns
			T_J = 125℃		315		
t_r	Rise Time		T_J = 25℃		115		ns
			T_J = 125℃		115		
$t_{d(off)}$	Turn-off Delay Time		T_J = 25℃		295		ns
			T_J = 125℃		325		
t_f	Fall Time		T_J = 25℃		260		ns
			T_J = 125℃		370		
E_{on}	Turn-on Switching Loss		T_J = 25℃		23.1		mJ
			T_J = 125℃		29.2		
E_{off}	Turn-off Switching Loss		T_J = 25℃		14.7		mJ
			T_J = 125℃		24.2		
Q_g	Total Gate Charge	V_{CC} =900V,I_C = 100A, R_G = 10Ω,V_{GE} = ±15V, Inductive Load	T_J = 25℃		600		nC
RBSOA	Reverse Bias Safe Operation Area	I_C=200A,V_{CC}=1650V,Vp=1700V, Rg = 10Ω, V_{GE}=+15V to 0V, T_J =150°C		Trapezoid			
SCSOA	Short Circuit Safe Operation Area	V_{CC} = 900V, V_{GE} = 15V, T_J = 150℃		10			μs
$R_{\theta JC}$	IGBT Thermal Resistance: Junction-To-Case				0.202		℃/W

Diode, Inverter

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

V_{RRM}	Repetitive Peak Reverse Voltage	1700	V
I_F	Diode Continuous Forward Current	100	A
I_{FM}	Diode Maximum Forward Current	200	A

Electrical Characteristics of FWD (T_C=25℃Unless otherwise specified)

Symbol	Description	Conditions		Min	Typ	Max	Unit
V_{FM}	Forward Voltage	I_F = 100A , V_{GE} = 0V	T_J = 25℃		1.80		V
			T_J = 125℃		2.00		
I_{rr}	Peak Reverse Recovery Current	I_F = 100A, di/dt = 920A/μs, V_{rr} = 900V, V_{GE} = -15V	T_J = 25℃		50		A
			T_J = 125℃		70		
Q_{rr}	Reverse Recovery Charge		T_J = 25℃		13.8		μC
			T_J = 125℃		26.9		
E_{rec}	Reverse Recovery Energy		T_J = 25℃		8.1		mJ
			T_J = 125℃		16.6		
$R_{\theta JC}$	Diode Thermal Resistance: Junction-To-Case				0.275		℃/W

Diode, Rectifier

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

V_{RRM}	Repetitive peak reverse voltage	T_J =25℃	1800	V
I_{FRMSM}	Maximum RMS forward current per chip	T_J =80℃	100	A
I_{RMSM}	Maximum RMS current at rectifier output	T_J =80℃	150	A
I_{FSM}	Surge Current @t_p=10 ms	T_J =25℃	1200	A
		T_J =150℃	900	
I^2t	I²t - value	T_J =25℃	6700	A^2s
		T_J =150℃	3900	

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

Symbol	Description	Conditions		Min	Typ	Max	Unit
V_F	Forward voltage	I_F = 100 A ,	T_J =25℃		1.15		V
			T_J =150℃		1.10		
I_R	Reverse current	V_R=1700V	T_J =25℃			1	mA
$R_{\theta JC}$	Junction-To-Case Diode				0.335		℃/W

Module

Symbol	Description	Conditions	Min	Typ	Max	Unit
V_{iso}	Isolation Voltage(All Terminals Shorted)	f = 50Hz, 1minute	2500			V
T_J	Maximum Junction Temperature				150	℃
T_{JOP}	Maximum Operating Junction Temperature Range		-40		+150	℃
T_{stg}	Storage Temperature		-40		+125	℃
$R_{\theta CS}$	Case-To-Sink (Conductive Grease Applied)			0.02		℃/W
T	Mounting Screw:M5		4.0		6.0	N·m
G	Weight			300		g

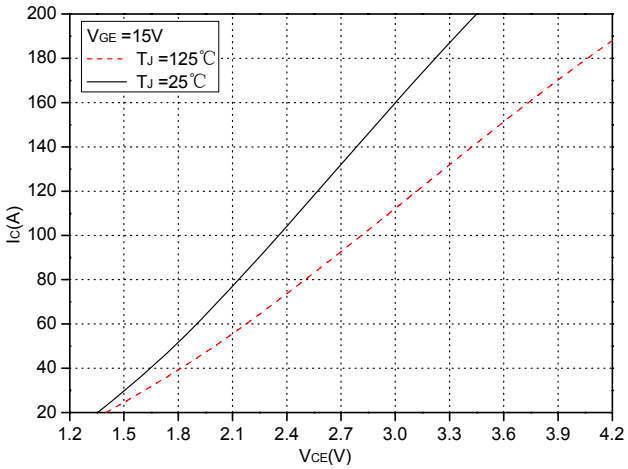


Fig.1Typical Saturation Voltage Characteristics

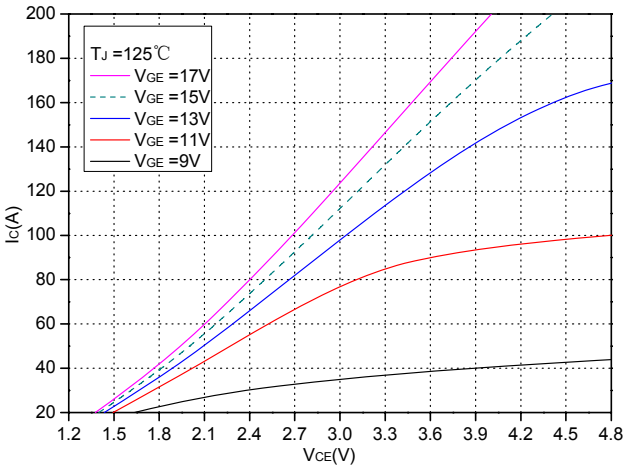


Fig.2 Typical Output Characteristics

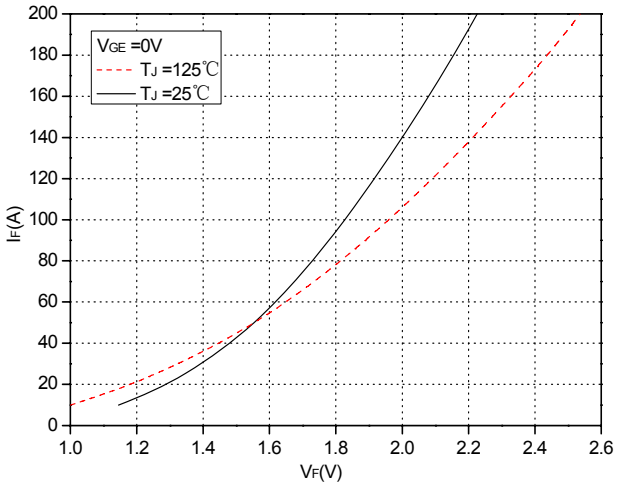


Fig.3 Forward Characteristics of FWD

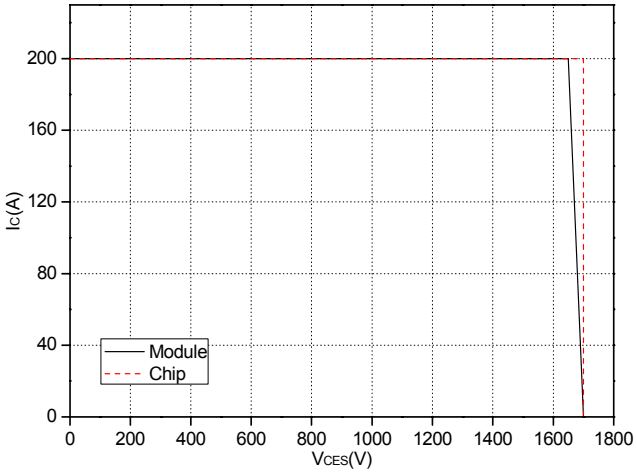


Fig.4 Reverse Bias Safe Operation Area (RBSOA)

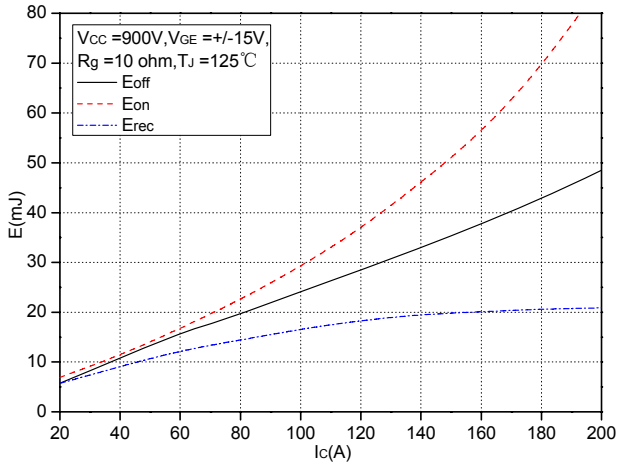


Fig.5Typical Switching Loss vs. Collector Current

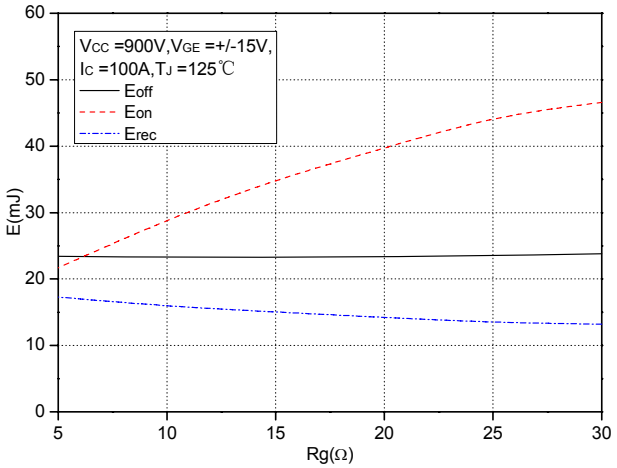


Fig.6Typical Switching Losses vs. Gate Resistance

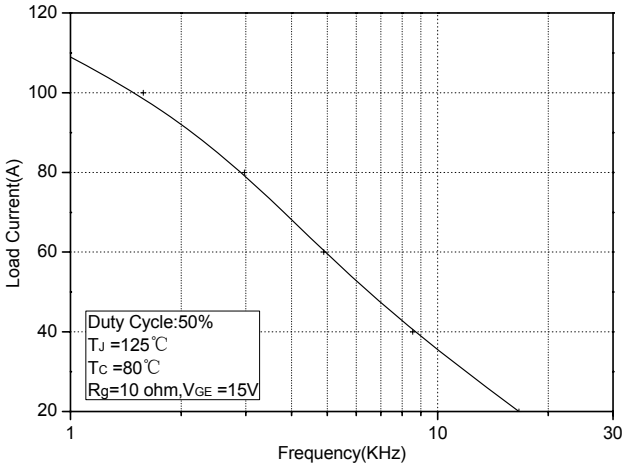


Fig.7Typical Load Current vs. Frequency

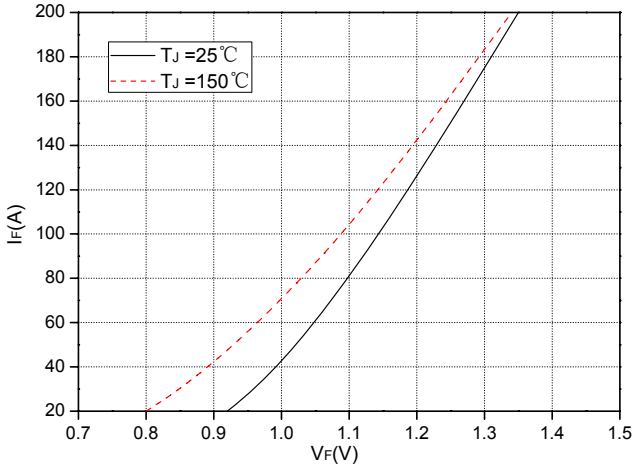


Fig.8 Forward Characteristics of Diode (Rectifier)

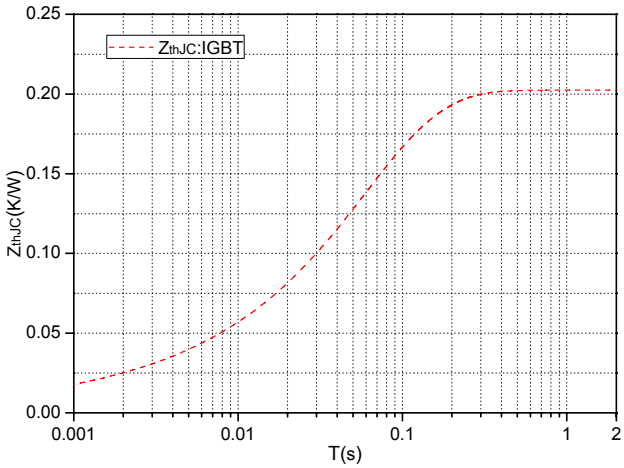


Fig.9Transient thermal impedance (IGBT)

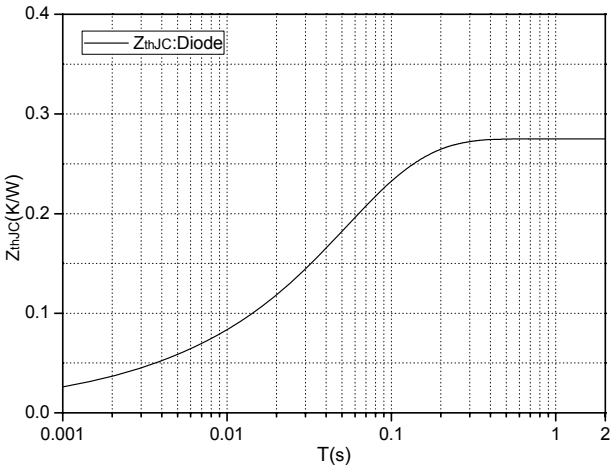
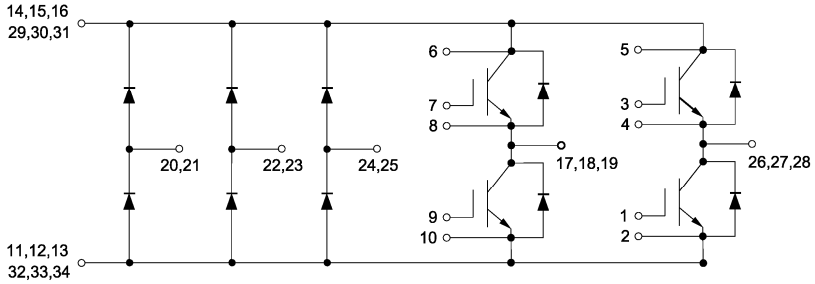


Fig.10Transient thermal impedance (Diode)

Internal Circuit:



Package Outline (Unit: mm):