34mm Half Bridge IGBT Module

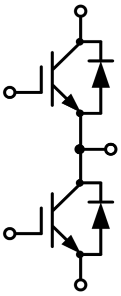
V_{CES}= 1200V, I_C= 100A, $V_{CE(sat)}$= 2.5V

Features

- Low collector to emitter saturation voltage
- Switching-Loss rating includes all “tail” losses
- Optimized for Fast Switching

Applications

- Uninterruptible Power Supply
- Induction Heating
- High Power Converters
- Electric welding machine



IGBT Inverter

Maximum Ratings

Parameter	Symbol	Conditions	Value	Unit
Collector to Emitter Voltage	V_{CES}		1200	V
Continuous Gate to Emitter Voltage	V_{GES}		±20	V
Continuous Collector Current	$I_{C\ nom}$	T_C=100℃	100	A
		T_C=25℃	200	A
Repetitive peak collector current	I_{CRM}	t_p=1ms	200	A
Maximum Power Dissipation (IGBT)	P_D	T_C=25℃, T_J=175℃	882	W

Characteristics Values

Parameter	Symbol	Conditions		Min	Typ	Max	Unit
Gate-Emitter Threshold Voltage	$V_{GE(th)}$	I_C=1mA, V_{CE}=V_{GE}, T_J=25℃		4.6	5.6	6.6	V
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=100A,V_{GE}=15V	T_J=25℃		2.5		V
			T_J=150℃		3.2		
Collector-Emitter Leakage Current	I_{CES}	V_{GE}=0V,V_{CE}=V_{CES},T_J=25℃				1.0	mA
Gate-Emitter Leakage Current	I_{GES}	V_{GE}=±20V, V_{CE}=0V,T_J=25℃				100	nA
Input Capacitance	C_{ies}	V_{CE}=25V, V_{GE}=0V ,f=1MHz			7.2		nF
Reverse Transfer Capacitance	C_{res}				0.26		

Integrated gate resistor	R_{gint}	T_{vj}=25℃			0.9		Ω
Turn-on Delay Time	$t_{d(on)}$	V_{CC}=600V, I_C=100A, V_{GE}=±15V, L=525uH, Rg=10Ω	T_J=25℃		43		ns
			T_J=150℃		40		
Rise Time	t_r		T_J=25℃		75		ns
			T_J=150℃		77		
Turn-off Delay Time	$t_{d(off)}$		T_J=25℃		288		ns
			T_J=150℃		313		
Fall Time	t_f		T_J=25℃		134		ns
			T_J=150℃		214		
Turn-on Switching Loss	E_{on}		T_J=25℃		10.8		mJ
			T_J=150℃		17.1		
Turn-off Switching Loss	E_{off}		T_J=25℃		4.3		mJ
			T_J=150℃		5.9		
Junction-To-Case (IGBT)	$R_{θJC}$				0.17		K/W

Diode, Inverter

Maximum Ratings

Parameter	Symbol	Conditions	Value	Unit
Repetitive peak reverse voltage	V_{RRM}	T_{vj}=25℃	1200	V
Diode Continuous Forward Current	I_F	T_C=100℃	100	A
Peak FWD Current Repetitive	I_{FM}	t_p=1ms	200	A

Characteristics Values

Parameter	Symbol	Conditions		Min	Typ	Max	Unit
Forward Voltage	V_{FM}	I_F=100A,V_{GE}=0V	T_J=25℃		2.2		V
			T_J=150℃		1.8		
Peak Reverse Recovery Current	I_{RM}	I_F=100A, V_{CC}=600V, V_{GE}=-15V, L=525uH, Rg=10Ω	T_J=25℃		49.8		A
			T_J=150℃		72.7		
Reverse Recovery Charge	Q_{rr}		T_J=25℃		4.7		μC
			T_J=150℃		12.2		
Reverse Recovery Energy	E_{rec}		T_J=25℃		1.8		mJ
			T_J=150℃		3.1		
Junction-To-Case Diode	$R_{θJC}$				0.3		K/W

Module

Characteristics Values

Parameter	Symbol	Conditions	Value			Unit
			Min.	Typ.	Max.	
Isolation Voltage	V_{ISOL}	f=50Hz, t=1min			2.5	KV
Maximum Junction Temperature	T_J				175	℃
Maximum Operating Junction Temperature Range	T_{JOP}		-40		+150	℃
Storage Temperature	T_{stg}		-40		+150	℃
Case-To-Sink (Conductive Grease Applied)	$R_{\theta CS}$			0.1		K/W
Power Terminals Screw:M5	M		2.5		5	N·m
Mounting Screw:M6	M		3		5	N·m
Weight	G			149		g

Typical Characteristics

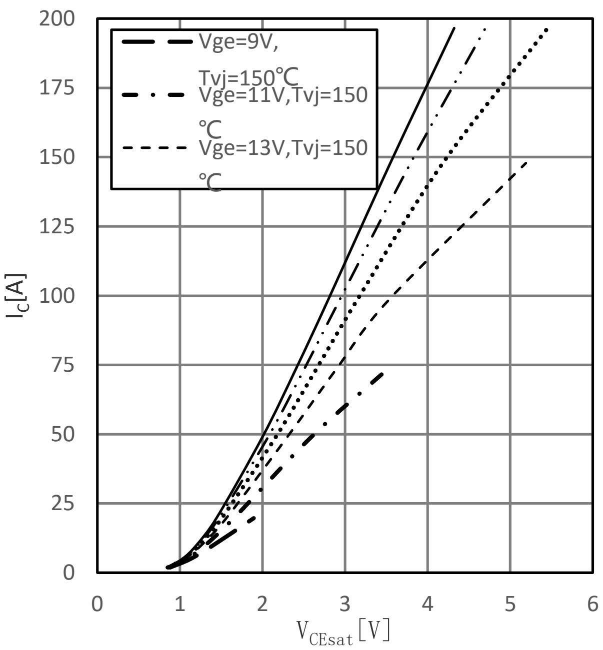


Fig.1 output characteristic IGBT Inverter (typical)

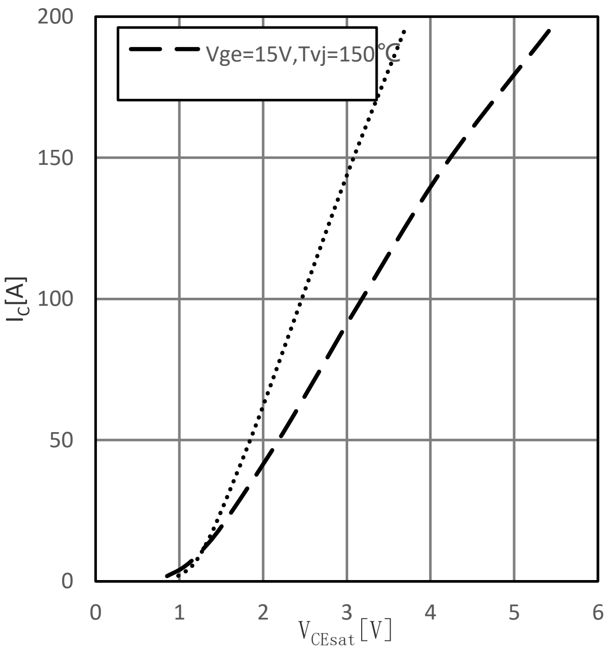


Fig.2 output characteristic IGBT Inverter (typical)

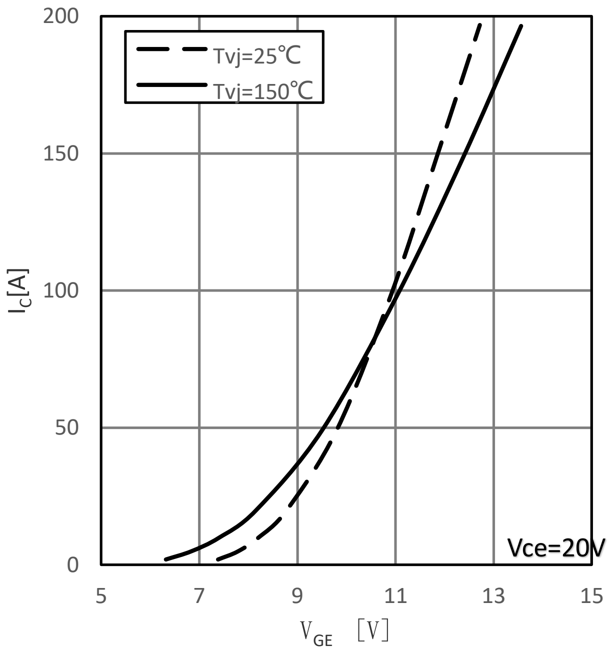


Fig.3 transfer characteristic IGBT Inverter (typical)

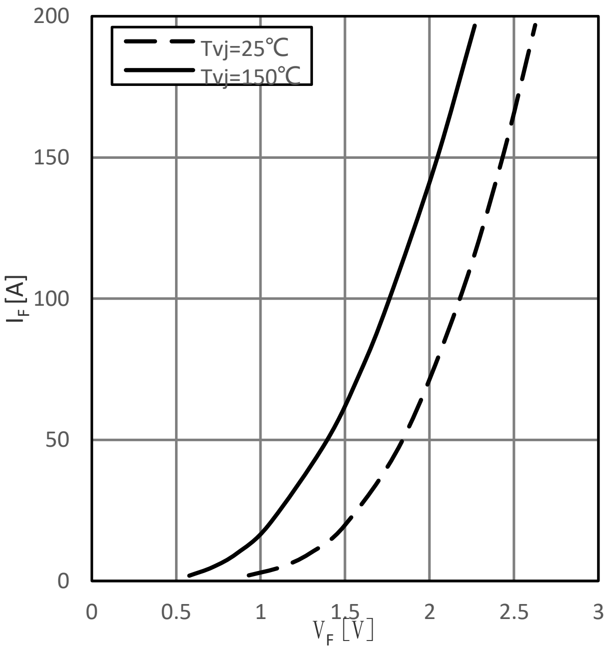


Fig.4 forward characteristic of Diode, Inverter (typical)

V_{CC}=600V， V_{CE}=±15V
R_G=10Ω

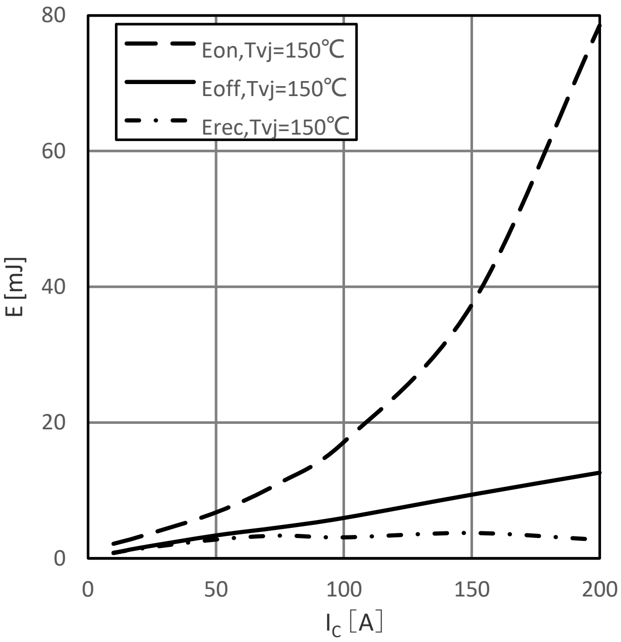


Fig.5 switching losses IGBT Inverter (typical)

V_{CC}=600V， V_{CE}=±15V
Ic=100A

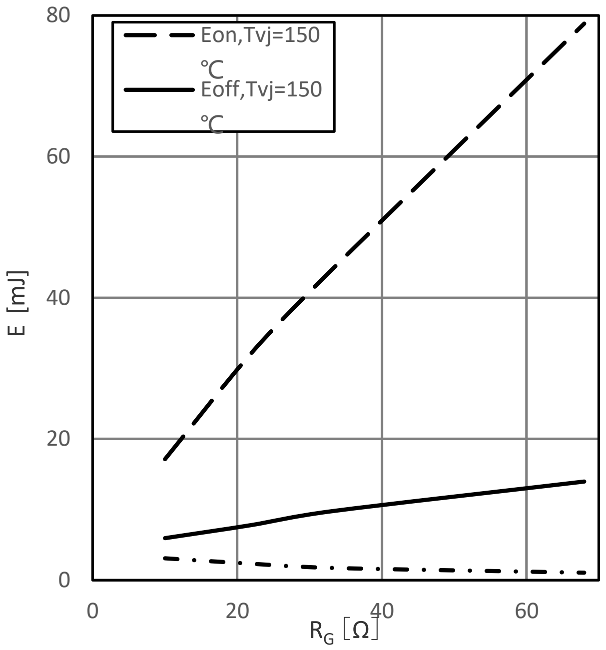


Fig.6 switching Losses vs. Gate Resistance (Typical)

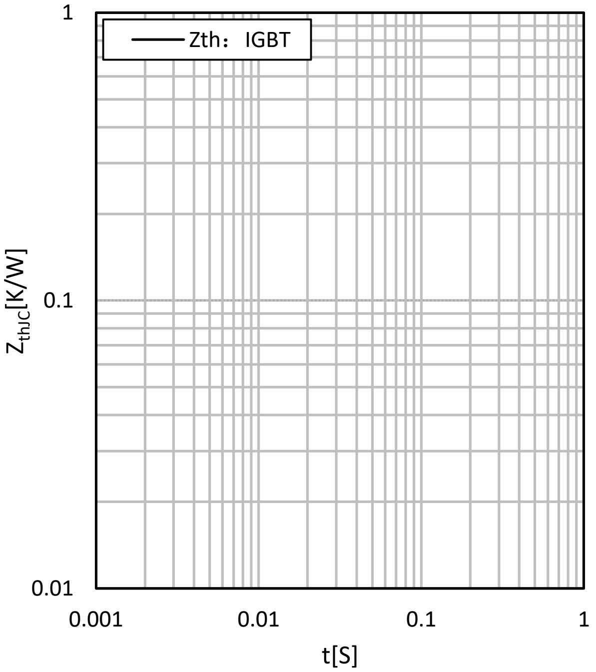


Fig.7 Transient thermal impedance IGBT

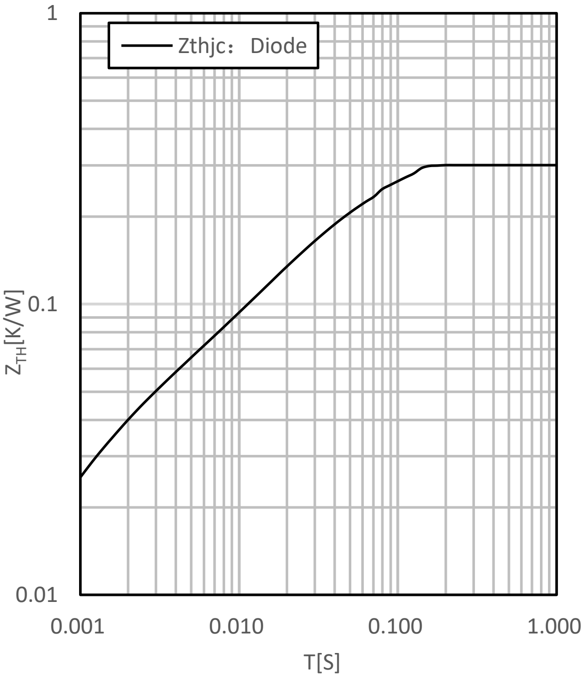
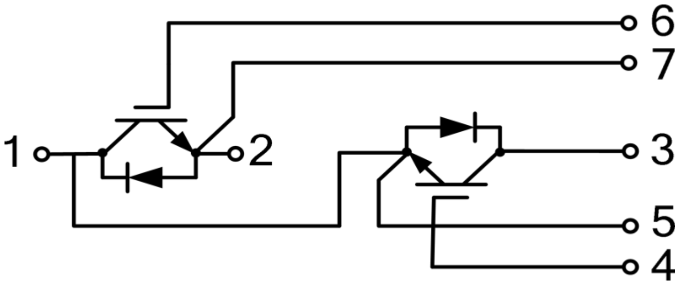
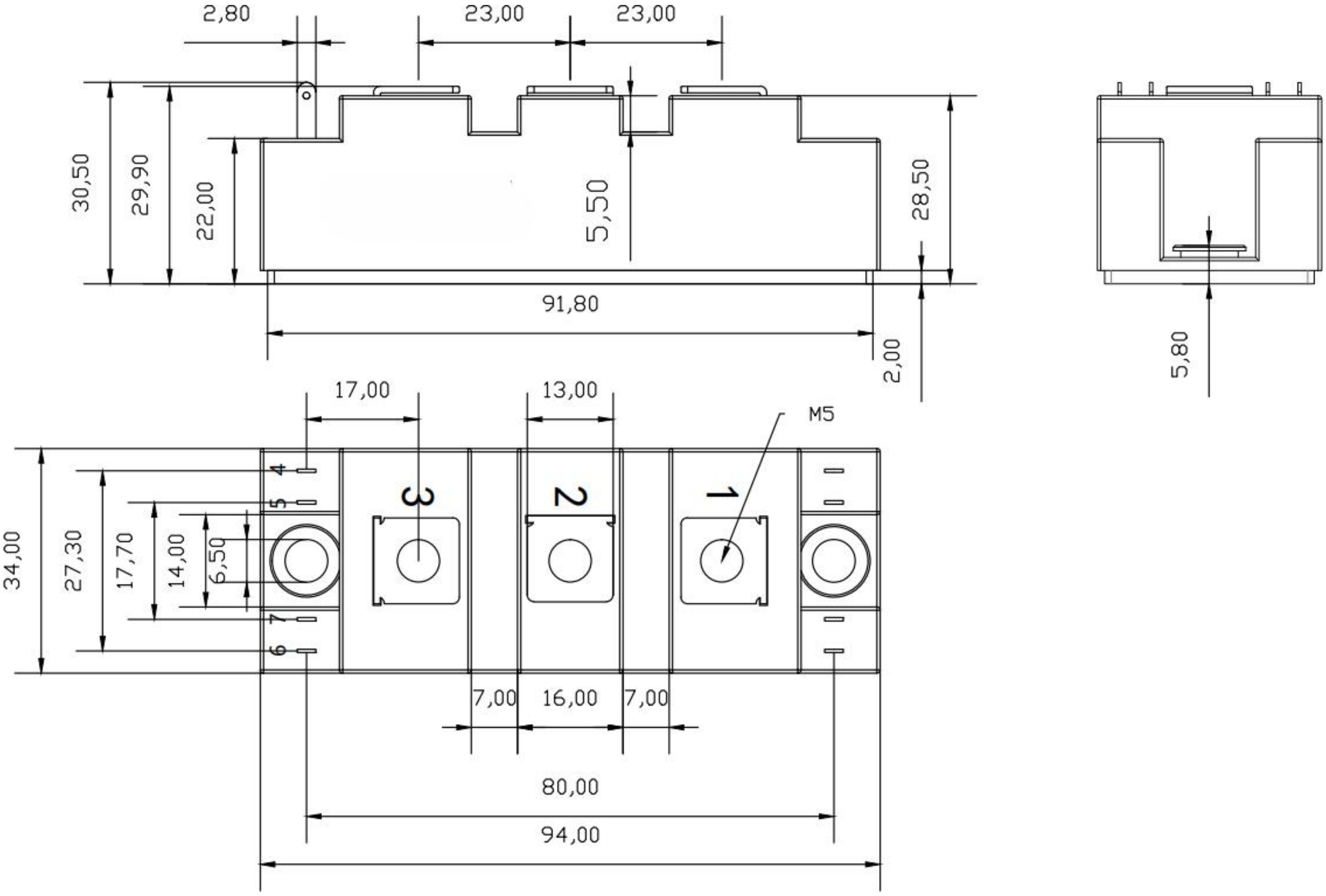


Fig.8 Transient thermal impedance Diode

Circuit Diagram



Package Outlines (Unit: mm)



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