

BS200HF65B1SDA

IGBT Module

650V , 200A Half Bridge Module

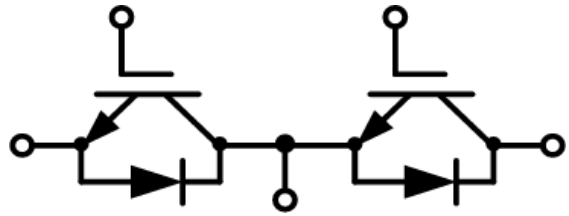


概述

Bestirpower的 IGBT 提供超快的开关速度适用于焊接、感应加热、UPS 和其他高频应用。

General Description

Bestirpower's IGBTs offer ultrafast switching speed for application such as welding, inductive heating, UPS and other high frequency applications.



特点

- 正温度系数的VCE(sat)
- 650V200A,VCE(sat)(typ.)=1.45V
- 低开关损耗
- 大电流能力
- 出色的短路耐受性

Features

- VCE(sat) with positive temperature coefficient
- 650V200A,VCE(sat)(typ.)=1.45V
- Low switching losses
- High current capability
- Excellent short circuit ruggedness

最大额定绝对值/ Absolute Maximum Ratings $T_C=25^{\circ}\text{C}$ unless otherwise noted

Symbol	Parameter		Value	Unit	Note
V_{CES}	集电极-发射极电压	Collector-Emitter Voltage	650	V	
V_{GES}	栅极-发射极电压	Continuous Gate to Emitter Voltage	± 20	V	
I_{cnom}	连续集电极直流电流	Continuous Collector Current ($T_C=108^{\circ}\text{C}$)	200	A	
P_D	最大功耗 ($T_C=25^{\circ}\text{C}$)	Maximum Power Dissipation ($T_C=25^{\circ}\text{C}$)	694	W	
	最大功耗 ($T_J=175^{\circ}\text{C}$)	Maximum Power Dissipation ($T_J=175^{\circ}\text{C}$)			
I_{sc}	短路电流	Short Circuit Current	1479	A	
T_J	IGBT最大结温	Maximum IGBT Junction Temperature	150	$^{\circ}\text{C}$	
T_{JOP}	最大工作结温范围	Maximum Operating Junction Temperature Range	-40 to +150	$^{\circ}\text{C}$	
T_{stg}	保存温度	Storage Temperature Range	-40 to +125	$^{\circ}\text{C}$	
V_{RRM}	二极管重复峰值反向电压初步数据 Repetitive Peak Reverse Voltage Preliminary Data		650	V	
I_F	二极管连续正向电流	Diode Continuous Forward Current ($T_C=25^{\circ}\text{C}$)	200	A	Fig.6
I_{FM}	二极管最大正向电流	Diode Maximun Forward Current	400	A	

IGBT电气特性/ Electrical Characteristics of IGBT $T_C=25^{\circ}\text{C}$ unless otherwise noted

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Units	Note	
BV _{CES}	集电极-发射极击穿电压 Collector-Emitter Breakdown Voltage	V _{GE} = 0V		650	-	-	V		
I _{CES}	集电极-发射极漏电流 Collector-Emitter Leakage Current	V _{CE} = 650V ,V _{GE} = 0V		-	-	1	mA		
I _{GES}	栅极-发射极正向漏电流 Gate to Emitter Leakage Current	V _{GE} = 20V, V _{CE} =0V		-	-	200	nA		
V _{GE(th)}	阈值电压 Gate Threshold Voltage	V _{GE} =V _{CE} , I _C =0.25mA		4	5.33	7	V	Fig.3	
V _{CE(sat)}	集电极-发射极饱和电压 Collector-Emitter Saturation Voltage	V _{GE} =15V, I _C =200A, T _J = 25°C		-	1.45	2	V	Fig.2	
		V _{GE} =15V, I _C =200A, T _J = 150°C		-	1.54	-			
t _{d(on)}	开通延迟时间 Turn-on Delay time	V _{CC} = 350V, I _C = 200A V _{GE} = +15/-15V R _{Gon} = 10Ω R _{Goff} = 10Ω	T _J = 25°C	-	0.18	-	us		
			T _J = 150°C	-	0.20	-			
t _r	开通上升时间 Turn-on Rise Time		T _J = 25°C	-	0.14	-	us		
			T _J = 150°C	-	0.15	-			
t _{d(off)}	关断延迟时间 Turn-off Delay time		T _J = 25°C	-	0.26	-	us		
			T _J = 150°C	-	0.29	-			
t _f	关断下降时间 Turn-off Fall Time		T _J = 25°C	-	0.17	-	us		
			T _J = 150°C	-	0.36	-			
E _{on}	开通损耗 Turn-on Switching Loss		T _J = 25°C	-	10.6	-	mJ	Fig.4	
			T _J = 150°C	-	15.1	-			
E _{off}	关断损耗 Turn-off Switching Loss		T _J = 25°C	-	3.06	-	mJ		
			T _J = 150°C	-	11.6	-			
Q _g	栅极电荷 Total Gate Charge	V _{CC} = 600V, V _{GE} = +15/-15V	T _J = 25°C	-	780	-	nC		
C _{ies}	输入电容 Input Capacitance	V _{CE} =25V V _{GE} =0V f=1MHz T _J = 25°C		-	19.29	-	nF		
C _{res}	反向传输电容 Reverse Transfer Capacitance			-	0.85	-			
R _{Gint}	栅极电阻 Integrated Gate Resistor	T _J = 25°C		-	2.8	-	Ω		
R _{thJC}	IGBT的芯片与外壳间的热阻 Thermal Resistance, Junction-to-Case (IGBT)	Per IGBT		-	-	0.22	°C/W	Fig.5	

二极管电气特性/ Electrical Characteristics of Diode $T_C=25^{\circ}\text{C}$ unless otherwise noted

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Units	Note
V _F	二极管导通电压 Diode Forward Voltage	I _F = 200A V _{GE} =0V	T _J = 25°C	1	1.59	2.0	V	Fig.6
			T _J = 150°C	-	1.38	-		
I _{rr}	二极管反向恢复峰值电流 Diode peak Reverse Recovery Current	I _F =200A V _R = 350V	T _J = 25°C	-	43	-	A	
			T _J = 150°C		78			
Q _{rr}	二极管反向恢复电荷 Diode Reverse Recovery Charge		T _J = 25°C	-	3.19	-	uC	
			T _J = 150°C	-	5.13	-		
E _{rr}	二极管反向恢复能量 Diode Reverse Recovery Energy	I _F =200A V _R = 350V V _{GE} =-15V	T _J = 25°C	-	0.73	-	mJ	Fig.8
			T _J = 150°C	-	2.31	-		
R _{thJC}	二极管的芯片与外壳间的热阻 Thermal Resistance, Junction-to-Case (Diode)	Per Diode		-	-	0.46	°C/W	Fig.7

模块特性/ Module Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Units
V_{ISOL}	隔离电压 Isolation Voltage (All Terminals Shorted), $f = 50\text{Hz}$, 1minute	2700	-	-	V
L_s	模块杂散电感 Stray Inductance Module	-	30	-	nH
M	模块安装扭矩: M6 Mounting Torque For Module Mounting: M6	3.0	-	5.0	N·m
M	端子联接扭矩 : M5 Terminal Connection Screw: M5	2.5	-	5.0	N·m
G	重量 Weight	-	163	-	g

图1.IGBT输出特性, 逆变器(典型)

Fig 1, Output Characteristics IGBT, Inverter (typical)

$I_C = f(V_{CE}) \quad V_{GE}=15V$

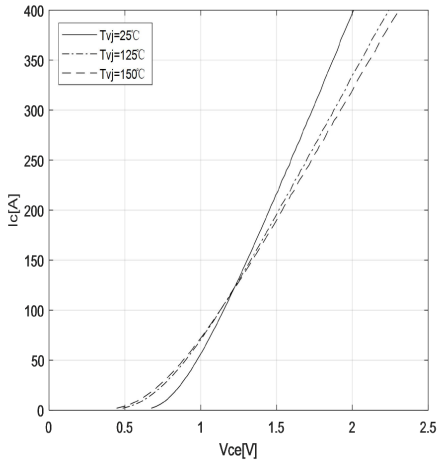


图2.IGBT输出特性, 逆变器(典型)

Fig 2, Output Characteristics IGBT, Inverter (typical)

$I_C = f(V_{CE}) \quad T_J = 150^\circ C$

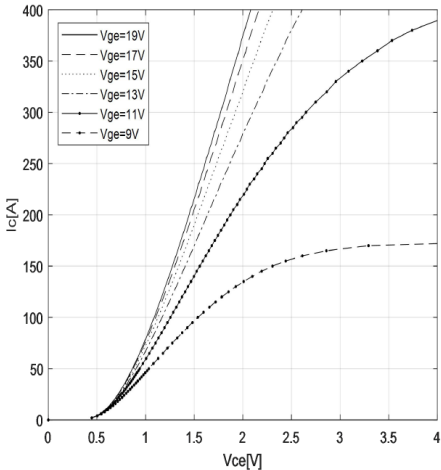


图3. IGBT传输特性, 逆变器(典型)

Fig 3, Transfer Characteristics IGBT, Inverter (typical)

$I_C = f(V_{GE}) \quad V_{CE} = 20 V$

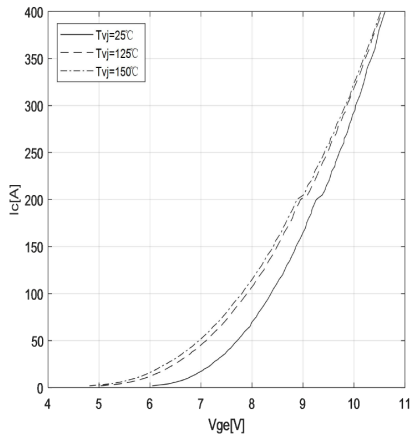


图4. IGBT开关损耗 逆变器(典型)

Fig 4, Switching Losses IGBT, Inverter (typical), $V_{CE} = 350V$

$E_{on} = f(I_C), E_{off} = f(I_C), V_{GE} = \pm 15 V, R_{Gon} = 10\Omega, R_{Goff} = 10\Omega$

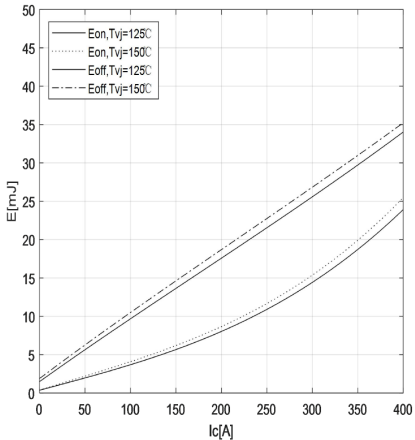


图5. IGBT瞬态热阻特性, 逆变器(典型)

Fig 5, Transient Thermal Impedance IGBT, Inverter (typical)

$Z_{thJC} = f(t)$

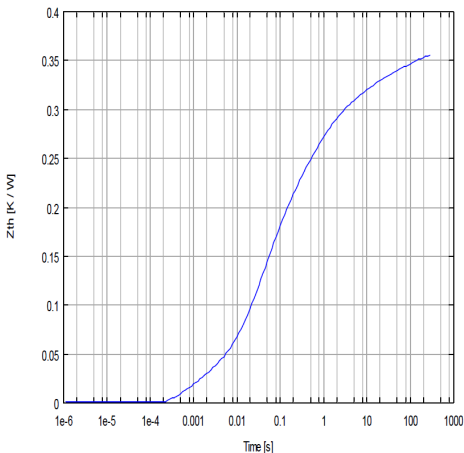
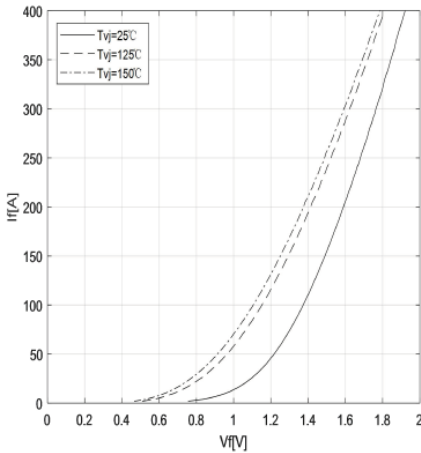
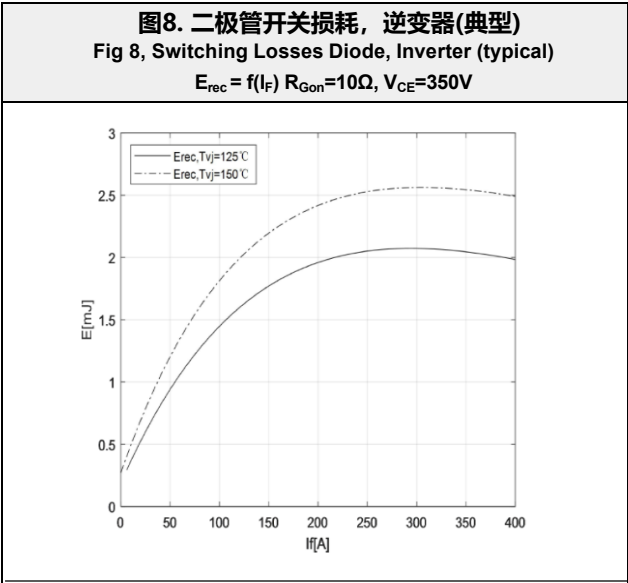
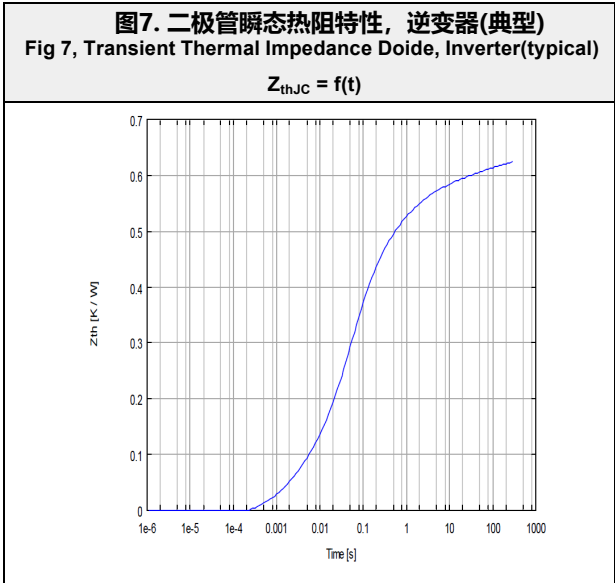


图6. 二极管正向偏压特性, 逆变器(典型)

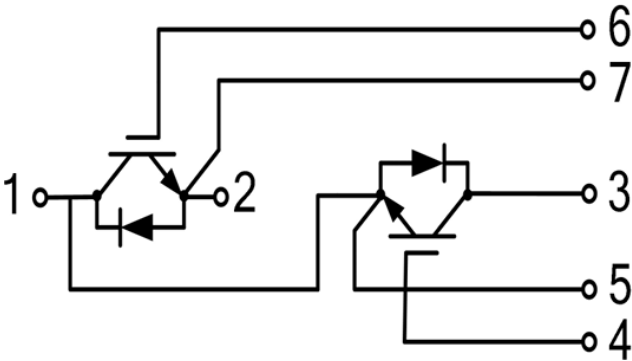
Fig 6, Forward Characteristics of Diode, Inverter (typical)

$I_F = f(V_F)$

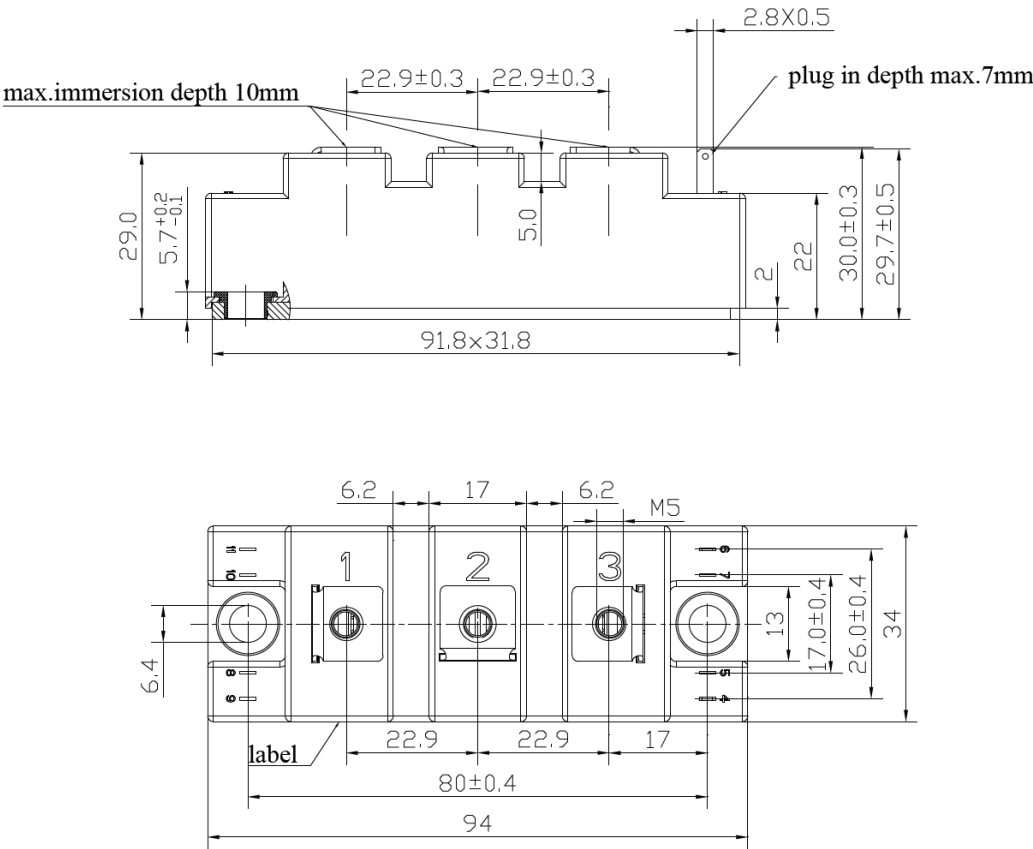




接线图 / Circuit diagram headline



封装尺寸 / Package outlines



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