

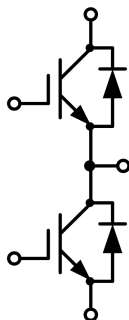
34mm Half Bridge IGBT Module

电气特性:

- 1200V 沟槽栅/场终止工艺
- 低开关损耗
- 正温度系数

典型应用:

- 逆变焊机
- 感应加热
- 高频开关应用
- 逆变器



$V_{CES}=1200V$, $I_{C\ nom}=150A$ / $I_{CRM}=300A$

IGBT, 逆变器 / IGBT, Inverter

最大额定值 / Maximum Ratings

Parameter	Conditions	Symbol	Value	Unit
集电极-发射极电压 Collector-Emitter voltage	$T_{vj}=25^{\circ}C$	V_{CES}	1200	V
连续集电极直流电流 Continuous DC collector current	$T_c=100^{\circ}C$, $T_{vj\ max}=175^{\circ}C$	$I_{C\ nom}$	150	A
集电极重复峰值电流 Repetitive peak collector current	$t_p=1ms$	I_{CRM}	300	A
栅极-发射极电压 Gate emitter voltage		V_{GE}	± 20	V

特征值 / Characteristic Values

Parameter	Conditions	Symbol	Value			Unit
			Min.	Typ.	Max.	
集电极-发射极饱和电压 Collector-Emitter saturation voltage	$V_{GE}=15V$, $I_C=150A$ $V_{GE}=15V$, $I_C=150A$ $V_{GE}=15V$, $I_C=150A$	$T_{vj}=25^{\circ}C$ $T_{vj}=125^{\circ}C$ $T_{vj}=150^{\circ}C$	V_{CEsat}	1.96 2.46 2.58	2.56	V
栅极-发射极阈值电压 Gate-Emitter threshold voltage	$I_C=5.3mA$, $V_{GE}=V_{CE}$	$T_{vj}=25^{\circ}C$	$V_{GE(th)}$	5.10	5.70 6.30	
内部栅极电阻 Internal gate resistor		R_{Gint}		NA		Ω
输入电容 Input capacitance	$f=100kHz$, $V_{CE}=25V$, $V_{GE}=0V$ $T_{vj}=25^{\circ}C$	C_{ies}		16.69		nF
反向传输电容 Reverse transfer capacitance		C_{res}		0.25		

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集电极-发射极截止电流 Collector-emitter cut-off current	$V_{CE}=1200V, V_{GE}=0V$ $T_{vj}=25^{\circ}C$	I_{CES}			1	mA
栅极-发射极漏电流 Gate-emitter leakage current	$V_{CE}=0V, V_{GE}=20V$ $T_{vj}=25^{\circ}C$	I_{GES}			150	nA
开通延迟时间 Turn-on delay time	$I_C=150A, V_{CE}=600V$ $V_{GE}=\pm 15V, R_G=15\Omega$ (电感负载) / (inductive load) $T_{vj}=25^{\circ}C$ $T_{vj}=125^{\circ}C$ $T_{vj}=150^{\circ}C$	$t_{d\ on}$		137 116 108		
上升时间 Rise time	$I_C=150A, V_{CE}=600V$ $V_{GE}=\pm 15V, R_G=15\Omega$ (电感负载) / (inductive load) $T_{vj}=25^{\circ}C$ $T_{vj}=125^{\circ}C$ $T_{vj}=150^{\circ}C$	t_r		70 69 69		
关断延迟时间 Turn-off delay time	$I_C=150A, V_{CE}=600V$ $V_{GE}=\pm 15V, R_G=15\Omega$ (电感负载) / (inductive load) $T_{vj}=25^{\circ}C$ $T_{vj}=125^{\circ}C$ $T_{vj}=150^{\circ}C$	$t_{d\ off}$		379 406 412		ns
下降时间 Fall time	$I_C=150A, V_{CE}=600V$ $V_{GE}=\pm 15V, R_G=15\Omega$ (电感负载) / (inductive load) $T_{vj}=25^{\circ}C$ $T_{vj}=125^{\circ}C$ $T_{vj}=150^{\circ}C$	t_f		63 102 115		
开通损耗能量（每脉冲） Turn-on energy loss per pulse	$I_C=150A, V_{CE}=600V$ $V_{GE}=\pm 15V, R_G=15\Omega$ $di/dt=1729A/\mu s(T_{vj}=150^{\circ}C)$ (电感负载) / (inductive load) $T_{vj}=25^{\circ}C$ $T_{vj}=125^{\circ}C$ $T_{vj}=150^{\circ}C$	E_{on}		9.08 11.54 12.30		
关断损耗能量（每脉冲） Turn-off energy loss per pulse	$I_C=150A, V_{CE}=600V$ $V_{GE}=\pm 15V, R_G=15\Omega$ $dv/dt=8288V/\mu s(T_{vj}=150^{\circ}C)$ (电感负载) / (inductive load) $T_{vj}=25^{\circ}C$ $T_{vj}=125^{\circ}C$ $T_{vj}=150^{\circ}C$	E_{off}		5.08 6.65 7.08		mJ
在开关状态下温度 Temperature under switching conditions		$T_{vj\ op}$	-40		150	$^{\circ}C$

二极管，逆变器 / Diode, Inverter

最大额定值 / Maximum Ratings

Parameter	Conditions	Symbol	Value	Unit
反向重复峰值电压 Repetitive peak reverse voltage	$T_{vj}=25^{\circ}C$	V_{RRM}	1200	V
连续正向直流电流 Continuous DC forward current		I_F	150	A
正向重复峰值电流 Repetitive peak forward current	$t_p=1ms$	I_{FRM}	300	A
I^2t 值 I^2t value	$t_p=10ms, \sin 180^{\circ}, T_{vj}=125^{\circ}C$	I^2t	3280	A^2s

特征值 / Characteristic Values

Parameter	Conditions	Symbol	Value			Unit
			Min.	Typ.	Max.	
正向电压 Forward voltage	$I_F=150A, V_{GE}=0V$ $I_F=150A, V_{GE}=0V$ $I_F=150A, V_{GE}=0V$	$T_{vj}=25^{\circ}C$ $T_{vj}=125^{\circ}C$ $T_{vj}=150^{\circ}C$		2.62 2.13 2.00	3.22	V
反向恢复峰值电流 Peak reverse recovery current	$I_F=150A,$ $-di_F/dt=2527A/\mu s(T_{vj}=150^{\circ}C)$ $V_R=600V, V_{GE}=-15V$	$T_{vj}=25^{\circ}C$ $T_{vj}=125^{\circ}C$ $T_{vj}=150^{\circ}C$		77 139 159		A
恢复电荷 Recovered charge	$I_F=150A,$ $-di_F/dt=2527A/\mu s(T_{vj}=150^{\circ}C)$ $V_R=600V, V_{GE}=-15V$	$T_{vj}=25^{\circ}C$ $T_{vj}=125^{\circ}C$ $T_{vj}=150^{\circ}C$		6.40 15.60 18.90		μC
反向恢复损耗（每脉冲） Reverse recovered energy	$I_F=150A,$ $-di_F/dt=2527A/\mu s(T_{vj}=150^{\circ}C)$ $V_R=600V, V_{GE}=-15V$	$T_{vj}=25^{\circ}C$ $T_{vj}=125^{\circ}C$ $T_{vj}=150^{\circ}C$		2.39 6.18 7.66		mJ
在开关状态下温度 Temperature under switching conditions		$T_{vj\ op}$	-40		150	$^{\circ}C$

模块 / Module

Parameter	Conditions	Symbol	Value			Unit
绝缘测试电压 Isolation test voltage	RMS, $f=50Hz, t=1min$	V_{ISOL}	4000			V
内部绝缘 Internal isolation			Al_2O_3			
储存温度 Storage temperature		T_{stg}	-40		125	$^{\circ}C$
模块安装的扭矩 Mounting torque for modul mounting		M	3.0		5.0	Nm
端子连接扭矩 Terminal Connection Torque		M	2.5		5.0	Nm
重量 Weight		W		158		g

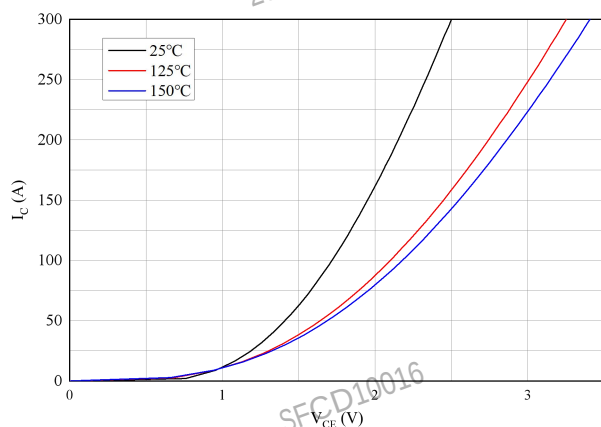
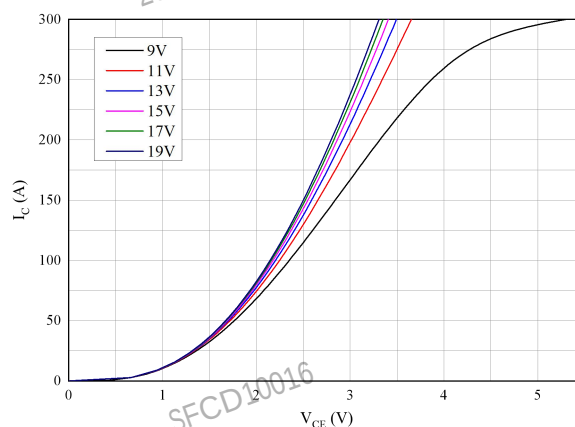
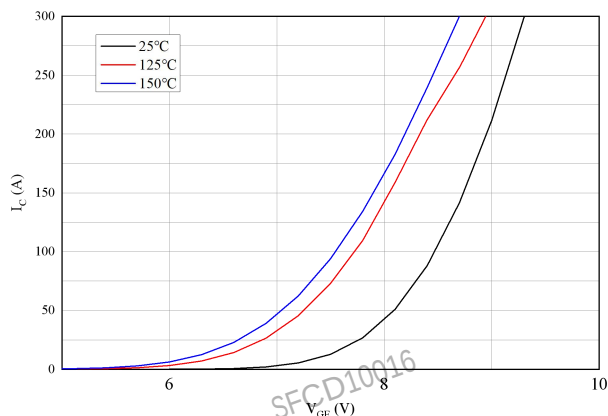
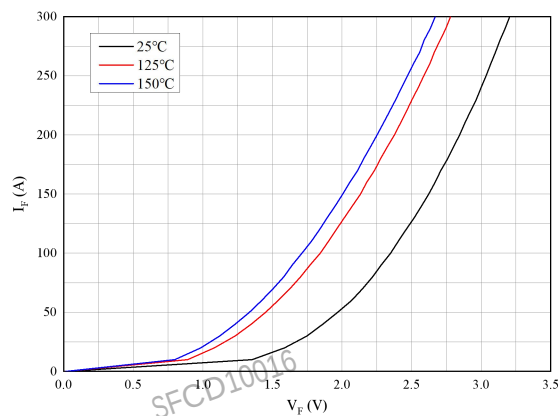
图 1. 典型输出特性 ($V_{GE}=15V$)Figure 1. Typical output characteristics ($V_{GE}=15V$)图 2. 典型输出特性 ($T_{vj}=150^{\circ}C$)Figure 2. Typical output characteristics ($T_{vj}=150^{\circ}C$)图 3. 典型传输特性 ($V_{CE}=20V$)Figure 3. Typical transfer characteristic ($V_{CE}=20V$)

图 4. 正向偏压特性 二极管

Figure 4. Forward characteristic of Diode

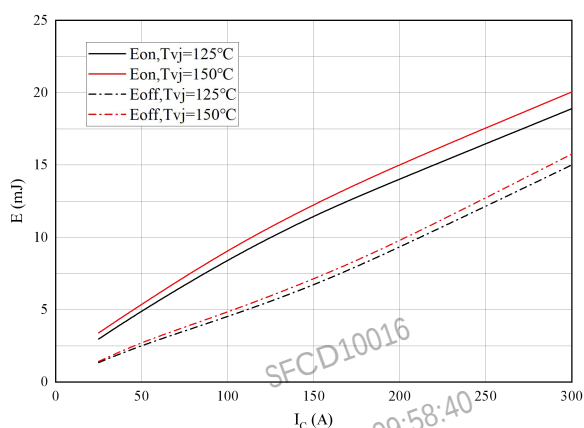


图 5. 开关损耗 逆变器

Figure 5. Switching losses of IGBT

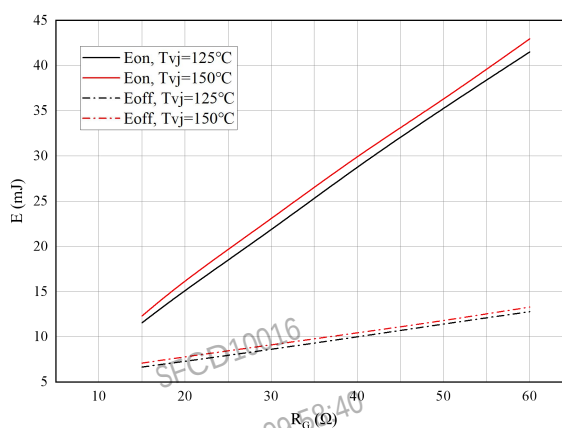
 $V_{GE}=\pm 15V, R_{Gon}=15\Omega, R_{Goff}=15\Omega, V_{CE}=600V$


图 6. 开关损耗 逆变器

Figure 6. Switching losses of IGBT

 $V_{GE}=\pm 15V, I_C=150A, V_{CE}=600V$

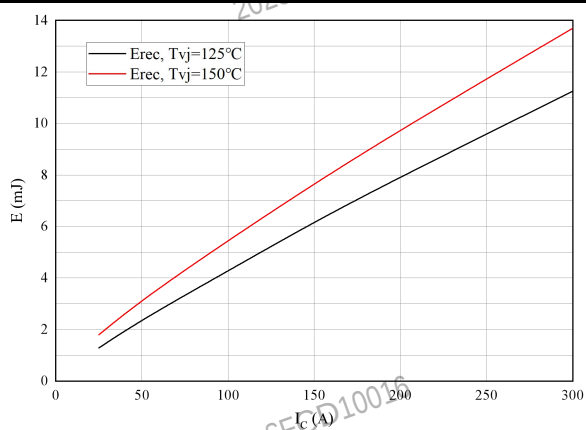


图 7. 开关损耗 二极管

Figure 7. Switching losses of Diode

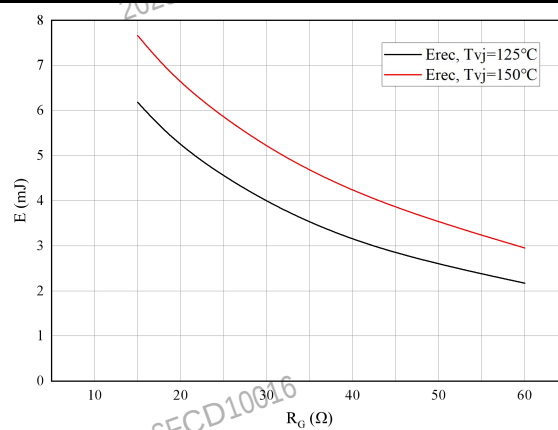
 $R_{Gon}=15\Omega$, $V_{CE}=600V$ 

图 8. 开关损耗 二极管

Figure 8. Switching losses of Diode

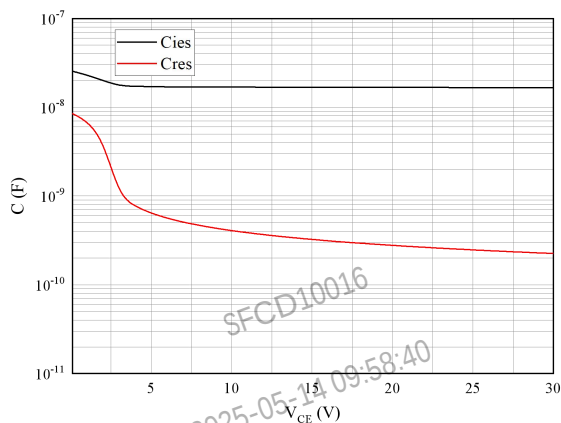
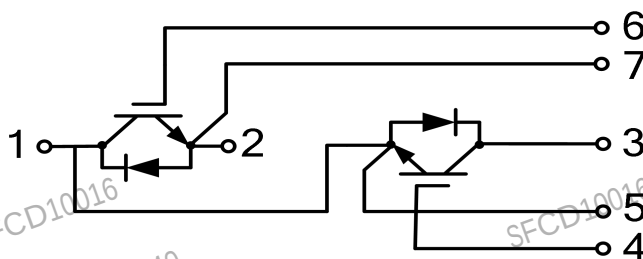
 $I_F=150A$, $V_{CE}=600V$ 

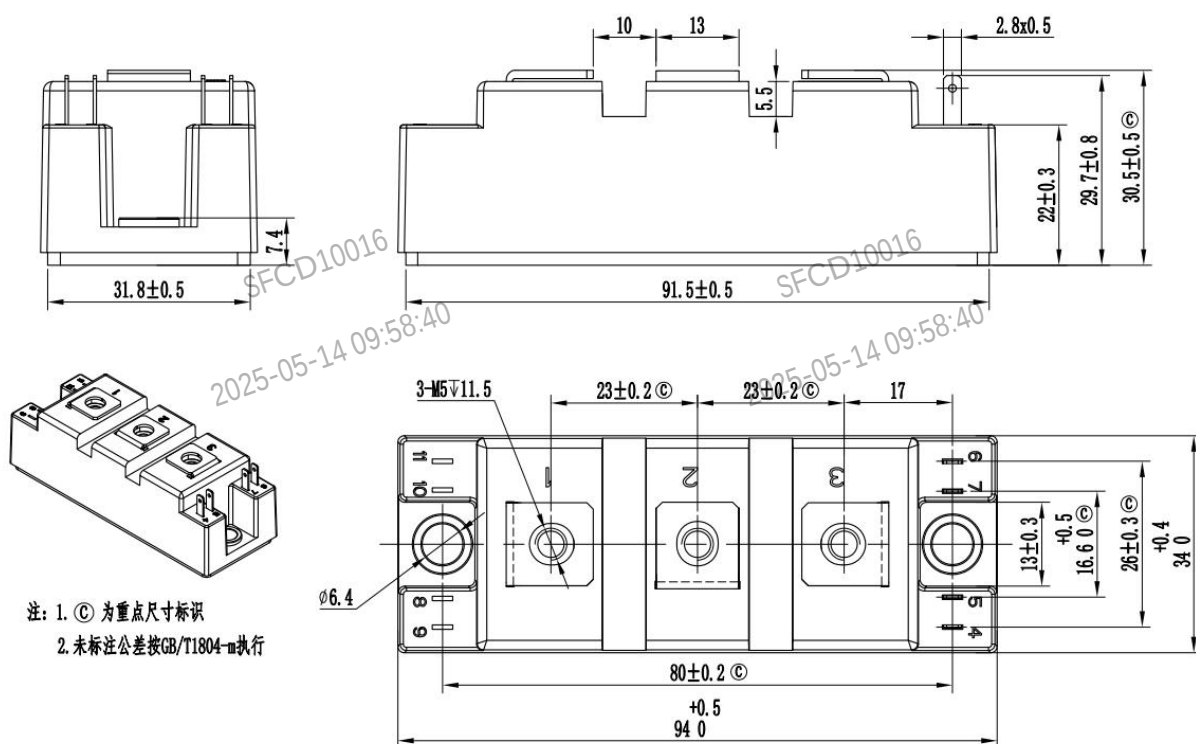
图 9. 电容特性

Figure 9. Capacitance characteristic

接线图 / Circuit diagram



封装尺寸 / Package outlines



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