

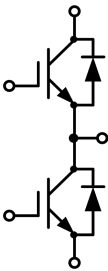
34mm Half Bridge IGBT Module

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



$V_{CES}=1200V$, $I_{C\ nom}=100A$ / $I_{CRM}=200A$

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	$T_C=100^{\circ}C$, $T_{vj\ max}=175^{\circ}C$	$I_{C\ nom}$	100	A
集电极重复峰值电流 Repetitive peak collector current	$t_P=1\ ms$	I_{CRM}	200	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	$V_{GE}=15V$, $I_C=100A$ $V_{GE}=15V$, $I_C=100A$ $V_{GE}=15V$, $I_C=100A$ $T_{vj}=25^{\circ}C$ $T_{vj}=125^{\circ}C$ $T_{vj}=150^{\circ}C$	V_{CEsat}		1.98 2.25 2.32	2.50	V
栅极-发射极阈值电压 Gate-Emitter threshold voltage	$I_C=3.8mA$, $V_{GE}=V_{CE}$ $T_{vj}=25^{\circ}C$	$V_{GE(th)}$	4.80	5.80	6.40	
栅电荷 Gate charge	$V_{GE}=-15V...+15V$	Q_G		0.49		μC

内部栅极电阻 Internal gate resistor	$T_{vj}=25^{\circ}\text{C}$	R_{Gint}		8.24		Ω
输入电容 Input capacitance	$f=1\text{MHz}, V_{CE}=25\text{ V}, V_{GE}=0\text{ V} \quad T_{vj}=25^{\circ}\text{C}$	C_{ies}		5.80		nF
反向传输电容 Reverse transfer capacitance		C_{res}		0.25		
集电极-发射极截止电流 Collector-emitter cut-off current	$V_{CE}=1200\text{V}, V_{GE}=0\text{ V} \quad T_{vj}=25^{\circ}\text{C}$	I_{CES}			1	mA
栅极-发射极漏电流 Gate-emitter leakage current	$V_{CE}=0\text{ V}, V_{GE}=20\text{ V} \quad T_{vj}=25^{\circ}\text{C}$	I_{GES}			100	nA
开通延迟时间 Turn-on delay time	$I_C=100\text{A}, V_{CE}=600\text{ V} \quad T_{vj}=25^{\circ}\text{C}$ $V_{GE}=\pm 15\text{ V}, R_G=6.8\Omega \quad T_{vj}=125^{\circ}\text{C}$ (电感负载) / (inductive load) $T_{vj}=150^{\circ}\text{C}$	t_{don}		182 191 207		ns
上升时间 Rise time	$I_C=100\text{A}, V_{CE}=600\text{ V} \quad T_{vj}=25^{\circ}\text{C}$ $V_{GE}=\pm 15\text{ V}, R_G=6.8\Omega \quad T_{vj}=125^{\circ}\text{C}$ (电感负载) / (inductive load) $T_{vj}=150^{\circ}\text{C}$	t_r		41 43 40		
关断延迟时间 Turn-off delay time	$I_C=100\text{A}, V_{CE}=600\text{ V} \quad T_{vj}=25^{\circ}\text{C}$ $V_{GE}=\pm 15\text{ V}, R_G=6.8\Omega \quad T_{vj}=125^{\circ}\text{C}$ (电感负载) / (inductive load) $T_{vj}=150^{\circ}\text{C}$	t_{doff}		254 308 326		
下降时间 Fall time	$I_C=100\text{A}, V_{CE}=600\text{ V} \quad T_{vj}=25^{\circ}\text{C}$ $V_{GE}=\pm 15\text{ V}, R_G=6.8\Omega \quad T_{vj}=125^{\circ}\text{C}$ (电感负载) / (inductive load) $T_{vj}=150^{\circ}\text{C}$	t_f		61 102 114		
开通损耗能量（每脉冲） Turn-on energy loss per pulse	$I_C=100\text{A}, V_{CE}=600\text{ V} \quad T_{vj}=25^{\circ}\text{C}$ $V_{GE}=\pm 15\text{ V}, R_G=6.8\Omega \quad T_{vj}=125^{\circ}\text{C}$ $di/dt=1900\text{A}/\mu\text{s} (T_{vj}=150^{\circ}\text{C})$ (电感负载) / (inductive load) $T_{vj}=150^{\circ}\text{C}$	E_{on}		5.05 8.22 9.19		mJ
关断损耗能量（每脉冲） Turn-off energy loss per pulse	$I_C=100\text{A}, V_{CE}=600\text{ V} \quad T_{vj}=25^{\circ}\text{C}$ $V_{GE}=\pm 15\text{ V}, R_G=6.8\Omega \quad T_{vj}=125^{\circ}\text{C}$ $dv/dt=5600\text{V}/\mu\text{s} (T_{vj}=150^{\circ}\text{C})$ (电感负载) / (inductive load) $T_{vj}=150^{\circ}\text{C}$	E_{off}		3.31 4.94 5.62		
短路数据 SC data	$V_{GE}\leq 15\text{V}, V_{CC}=800\text{V}$ $V_{CEmax}=V_{CES}-L_{sCE}\cdot di/dt \quad t_p\leq 10\mu\text{s}, T_{vj}=150^{\circ}\text{C}$	I_{SC}		448		A
在开关状态下温度 Temperature under switching conditions		$T_{vj op}$	-40		150	$^{\circ}\text{C}$

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	$T_{vj}=25^{\circ}\text{C}$	V_{RRM}	1200	V
连续正向直流电流 Continuous DC forward current		I_F	100	A
正向重复峰值电流 Repetitive peak forward current	$t_p=1\text{ms}$	I_{FRM}	200	A
I^2t 值 I^2t -value	$t_p=10\text{ms}, \sin 180^{\circ}, T_{vj}=125^{\circ}\text{C}$	I^2t	1920	A^2s

特征值 / Characteristic Values

Parameter	Conditions	Symbol	Value			Unit
			Min.	Typ.	Max.	
正向电压 Forward voltage	$I_F=100A, V_{GE}=0V$ $I_F=100A, V_{GE}=0V$ $I_F=100A, V_{GE}=0V$	$T_{vj}=25^{\circ}C$ $T_{vj}=125^{\circ}C$ $T_{vj}=150^{\circ}C$		2.38 1.91 1.79	2.60	V
反向恢复峰值电流 Peak reverse recovery current	$I_F=100A,$ $-di_F/dt=1900A/\mu s(T_{vj}=150^{\circ}C)$ $V_R=600V, V_{GE}=-15V$	$T_{vj}=25^{\circ}C$ $T_{vj}=125^{\circ}C$ $T_{vj}=150^{\circ}C$		57 92 104		A
恢复电荷 Recovered charge	$I_F=100A,$ $-di_F/dt=1900A/\mu s(T_{vj}=150^{\circ}C)$ $V_R=600V, V_{GE}=-15V$	$T_{vj}=25^{\circ}C$ $T_{vj}=125^{\circ}C$ $T_{vj}=150^{\circ}C$		4.28 10.83 13.21		μC
反向恢复损耗（每脉冲） Reverse recovered energy	$I_F=100A,$ $-di_F/dt=1900A/\mu s(T_{vj}=150^{\circ}C)$ $V_R=600V, V_{GE}=-15V$	$T_{vj}=25^{\circ}C$ $T_{vj}=125^{\circ}C$ $T_{vj}=150^{\circ}C$		1.49 3.68 4.51		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		155		g

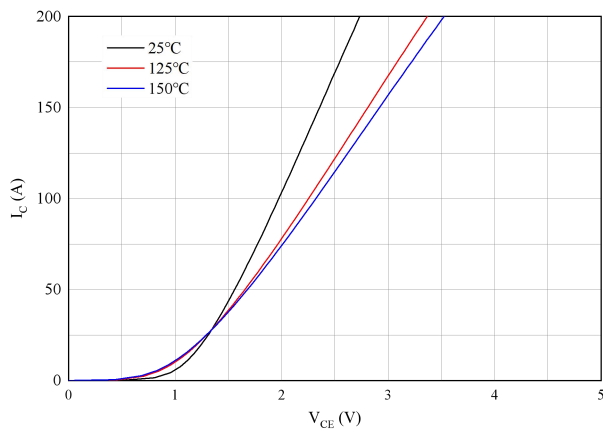
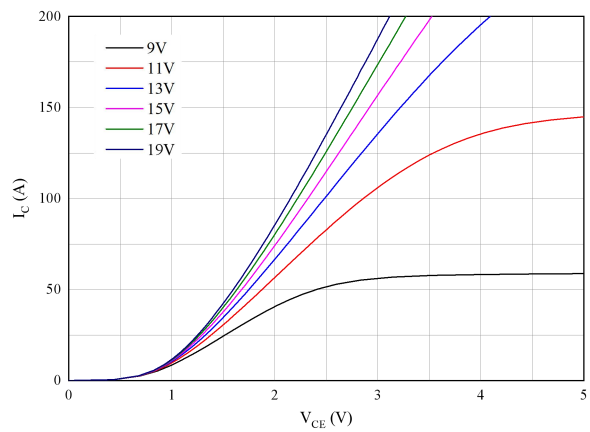
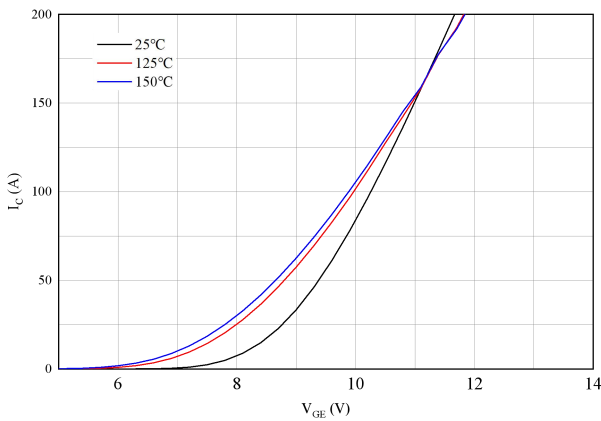
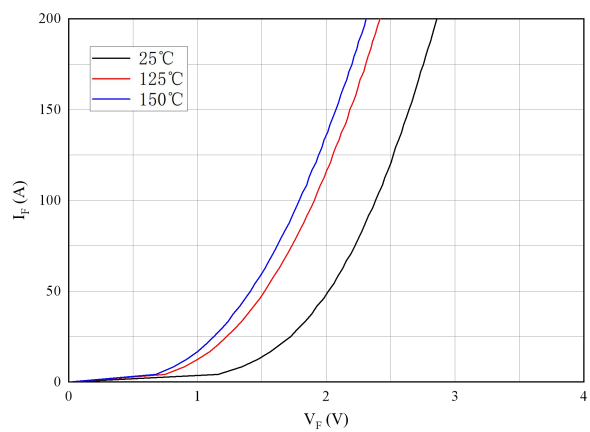
图 1. 典型输出特性 ($V_{GE}=15V$)Figure 1. Typical output characteristics ($V_{GE}=15V$)图 2. 典型输出特性 ($T_{vj}=150^{\circ}C$)Figure 2. Typical output characteristics ($T_{vj}=150^{\circ}C$)图 3. 典型传输特性($V_{CE}=20V$)Figure 3. Typical transfer characteristics ($V_{CE}=20V$)

图 4. 正向偏压特性 二极管

Figure 4. Forward characteristics of Diode

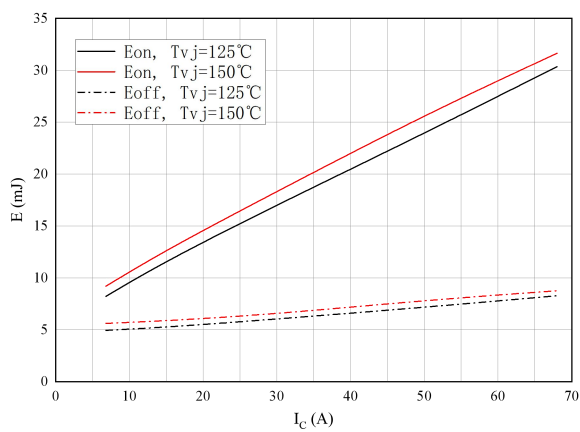


图 5. 开关损耗 逆变器

Figure 5. Switching losses of IGBT

$V_{GE}=\pm 15V$, $R_{Gon}=6.8\Omega$, $R_{Goff}=6.8\Omega$, $V_{CE}=600V$

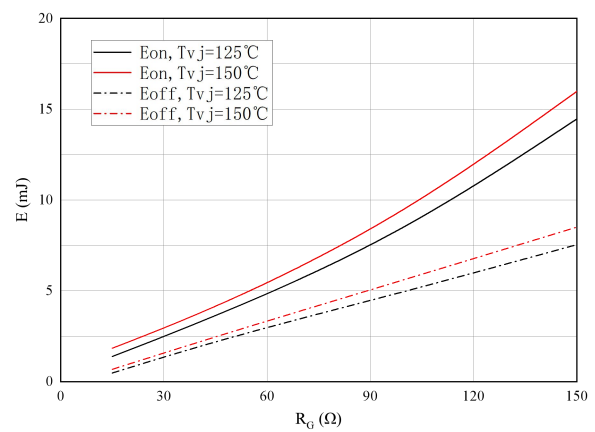


图 6. 开关损耗 逆变器

Figure 6. Switching losses of IGBT

$V_{GE}=\pm 15V$, $I_C=100A$, $V_{CE}=600V$

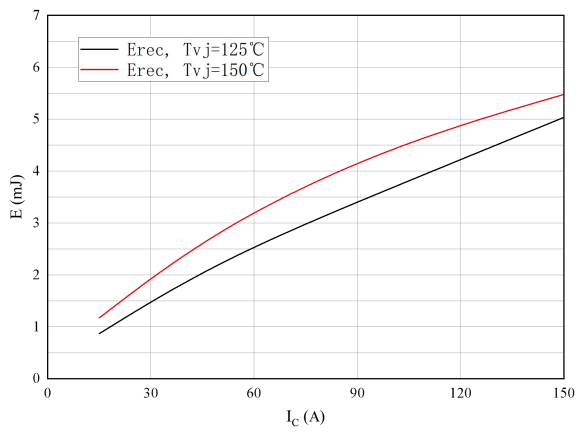


图 7. 开关损耗 二极管
Figure 7. Switching losses of Diode
 $R_{Gon}=6.8\ \Omega$, $V_{CE}=600\text{V}$

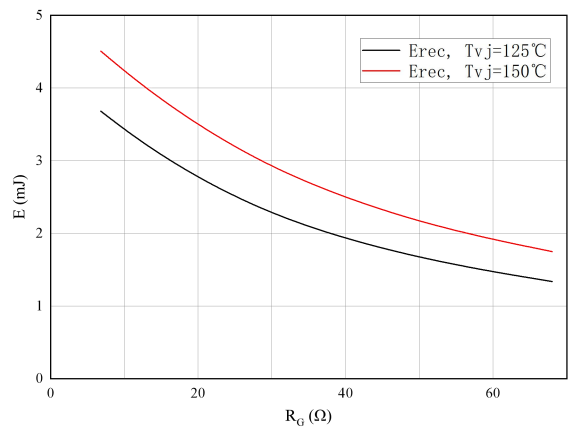


图 8. 开关损耗 二极管
Figure 8. Switching losses of Diode
 $I_F=100\text{A}$, $V_{CE}=600\text{V}$

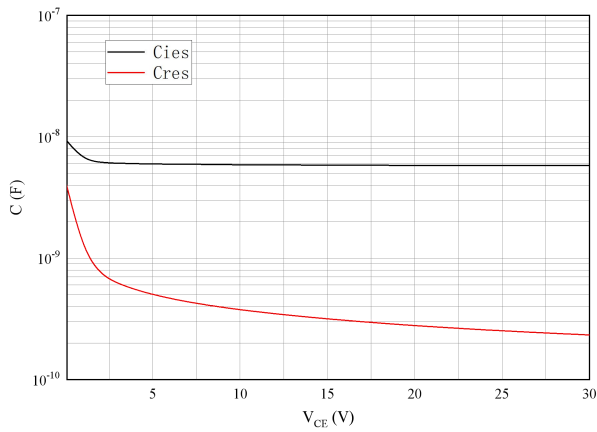
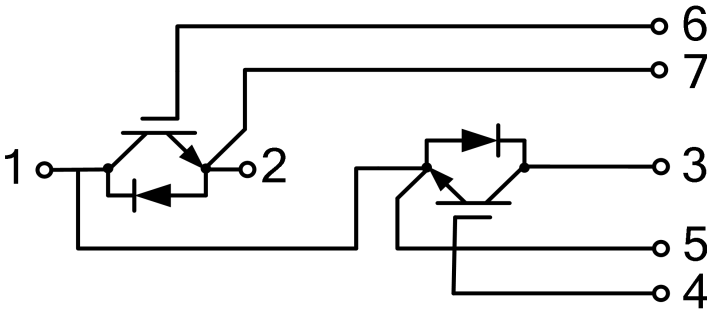


图 9. 电容特性
Figure 9. Capacitance characteristics

接线图 / Circuit diagram



封装尺寸 / Package outlines

