

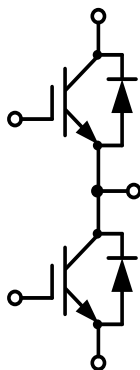
62mm Half Bridge IGBT Module

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



$V_{CES} = 1200V$, $I_{C\ nom} = 200A$ / $I_{CRM} = 400A$

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	$T_C = 100^{\circ}C$, $T_{vj\ max} = 175^{\circ}C$	$I_{C\ nom}$	200	A
集电极重复峰值电流 Repetitive peak collector current	$t_p = 1\ ms$	I_{CRM}	400	A
总功率损耗 Total power dissipation	$T_C = 25^{\circ}C$, $T_{vj\ max} = 175^{\circ}C$	P_{tot}	1070	W
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	$V_{GE} = 15V$, $I_C = 200A$ $V_{GE} = 15V$, $I_C = 200A$ $V_{GE} = 15V$, $I_C = 200A$	$T_{vj} = 25^{\circ}C$ $T_{vj} = 125^{\circ}C$ $T_{vj} = 150^{\circ}C$	V_{CESat}	2.24 2.72 2.87	2.6	V
栅极-发射极阈值电压 Gate-Emitter threshold voltage	$I_C = 8mA$, $V_{GE} = V_{CE}$	$T_{vj} = 25^{\circ}C$	$V_{GE(th)}$	5.2 5.83	6.4	
栅电荷 Gate charge	$V_{GE} = -15V \dots +15V$		Q_G	0.98		μC
内部栅极电阻			R_{Gint}	2.84		Ω

Internal gate resistor						
输入电容 Input capacitance	$f=1\text{MHz}, V_{CE}=25\text{V}, V_{GE}=0\text{V}$ $T_{vj}=25^\circ\text{C}$	C_{ies}		14.56		nF
反向传输电容 Reverse transfer capacitance		C_{res}		0.55		nF
集电极-发射极截止电流 Collector-emitter cut-off current	$V_{CE}=1200\text{V}, V_{GE}=0\text{V}$ $T_{vj}=25^\circ\text{C}$	I_{CES}			2	mA
栅极-发射极漏电流 Gate-emitter leakage current	$V_{CE}=0\text{V}, V_{GE}=20\text{V}$ $T_{vj}=25^\circ\text{C}$	I_{GES}			200	nA
开通延迟时间 Turn-on delay time	$I_C=200\text{A}, V_{CE}=600\text{V}$ $V_{GE}=\pm 15\text{V}, R_G=5\Omega$ (电感负载) / (inductive load) $T_{vj}=25^\circ\text{C}$ $T_{vj}=125^\circ\text{C}$ $T_{vj}=150^\circ\text{C}$	t_{don}		127		
				136		
				142		
上升时间 Rise time	$I_C=200\text{A}, V_{CE}=600\text{V}$ $V_{GE}=\pm 15\text{V}, R_G=5\Omega$ (电感负载) / (inductive load) $T_{vj}=25^\circ\text{C}$ $T_{vj}=125^\circ\text{C}$ $T_{vj}=150^\circ\text{C}$	t_r		48		ns
				53		
				53		
关断延迟时间 Turn-off delay time	$I_C=200\text{A}, V_{CE}=600\text{V}$ $V_{GE}=\pm 15\text{V}, R_G=5\Omega$ (电感负载) / (inductive load) $T_{vj}=25^\circ\text{C}$ $T_{vj}=125^\circ\text{C}$ $T_{vj}=150^\circ\text{C}$	t_{doff}		244		
				278		
				288		
下降时间 Fall time	$I_C=200\text{A}, V_{CE}=600\text{V}$ $V_{GE}=\pm 15\text{V}, R_G=5\Omega$ (电感负载) / (inductive load) $T_{vj}=25^\circ\text{C}$ $T_{vj}=125^\circ\text{C}$ $T_{vj}=150^\circ\text{C}$	t_f		86		
				90		
				120		
开通损耗能量 (每脉冲) Turn-on energy loss per pulse	$I_C=200\text{A}, V_{CE}=600\text{V}$ $V_{GE}=\pm 15\text{V}, R_G=5\Omega$ (电感负载) / (inductive load) $T_{vj}=25^\circ\text{C}$ $T_{vj}=125^\circ\text{C}$ $T_{vj}=150^\circ\text{C}$	E_{on}		12.27		mJ
				23.10		
				26.63		
关断损耗能量 (每脉冲) Turn-off energy loss per pulse	$I_C=200\text{A}, V_{CE}=600\text{V}$ $V_{GE}=\pm 15\text{V}, R_G=5\Omega$ (电感负载) / (inductive load) $T_{vj}=25^\circ\text{C}$ $T_{vj}=125^\circ\text{C}$ $T_{vj}=150^\circ\text{C}$	E_{off}		8.16		
				10.34		
				11.14		
短路数据 SC data	$V_{GE}\leq 15\text{V}, V_{ce}=800\text{V}$ $V_{CEmax}=V_{CES}-L_{sCE}\cdot di/dt$ $t_p\leq 10\mu\text{s}, T_{vj}=150^\circ\text{C}$	I_{sc}		680		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	200	A
正向重复峰值电流 Repetitive peak forward current	$t_p=1\text{ms}$	I_{FRM}	400	A
I^2t 值 I^2t -value	$t_p=10\text{ms}, \sin 180^\circ, T_j=125^\circ\text{C}$	I^2t	7800	A^2S

特征值 / Characteristic Values

Parameter	Conditions	Symbol	Value			Unit
			Min.	Typ.	Max.	
正向电压 Forward voltage	$I_F=200A, V_{GE}=0V$ $I_F=200A, V_{GE}=0V$ $I_F=200A, V_{GE}=0V$	$T_{vj}=25^{\circ}C$ $T_{vj}=125^{\circ}C$ $T_{vj}=150^{\circ}C$	V_F		2.28 1.88 1.76	2.8 V
反向恢复峰值电流 Peak reverse recovery current	$I_F=200A,$ $-di_F/dt=2919A/\mu s(T_{vj}=150^{\circ}C)$ $V_R=600V, V_{GE}=-15V$	$T_{vj}=25^{\circ}C$ $T_{vj}=125^{\circ}C$ $T_{vj}=150^{\circ}C$	I_{RM}		83 109 154	A
恢复电荷 Recovered charge	$I_F=200A,$ $-di_F/dt=2919A/\mu s(T_{vj}=150^{\circ}C)$ $V_R=600V, V_{GE}=-15V$	$T_{vj}=25^{\circ}C$ $T_{vj}=125^{\circ}C$ $T_{vj}=150^{\circ}C$	Q_r		8.57 20.83 25.35	μC
反向恢复损耗（每脉冲） Reverse recovered energy	$I_F=200A,$ $-di_F/dt=2919A/\mu s(T_{vj}=150^{\circ}C)$ $V_R=600V, V_{GE}=-15V$	$T_{vj}=25^{\circ}C$ $T_{vj}=125^{\circ}C$ $T_{vj}=150^{\circ}C$	E_{rec}		2.77 5.98 7.67	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		6.0	Nm
重量 Weight		W		324		g

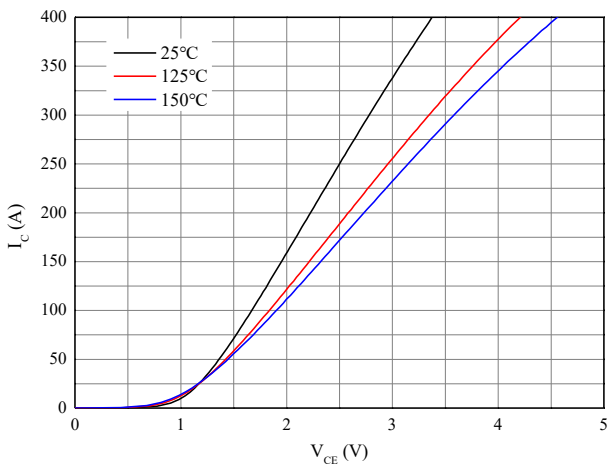


图 1. 典型输出特性 ($V_{GE}=15V$)

Figure 1. Typical output characteristics ($V_{GE}=15V$)

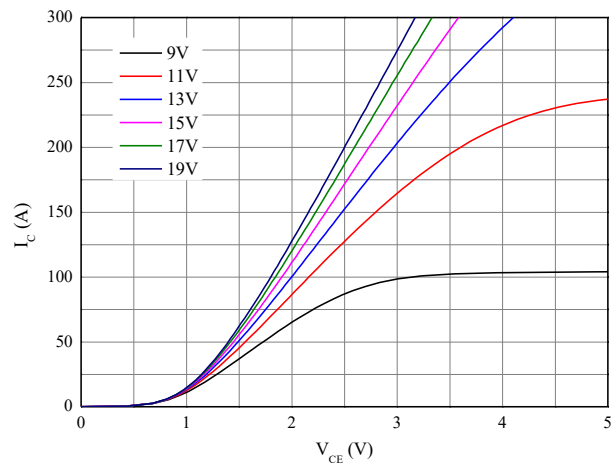


图 2. 典型输出特性 ($T_{vj}=150^{\circ}C$)

Figure 2. Typical output characteristics ($T_{vj}=150^{\circ}C$)

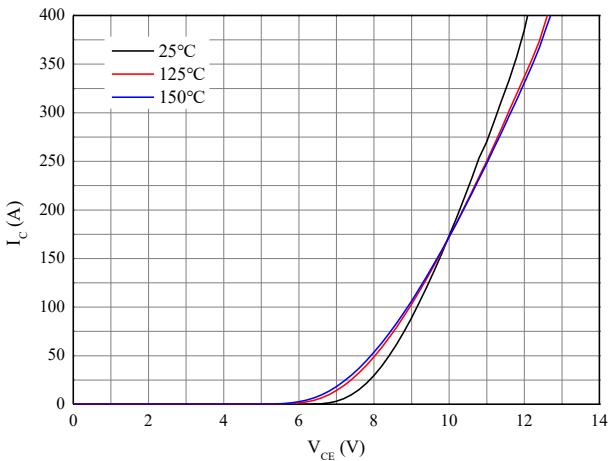


图 3. 典型传输特性($V_{CE}=20V$)

Figure 3. Typical transfer characteristic($V_{CE}=20V$)

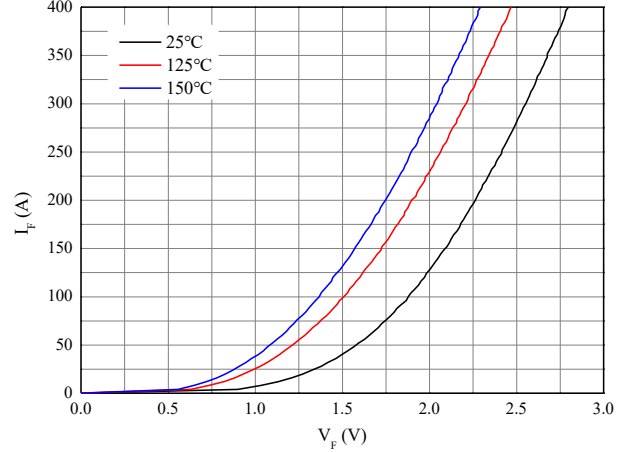


图 4. 正向偏压特性 二极管

Figure 4. Forward characteristic of Diode

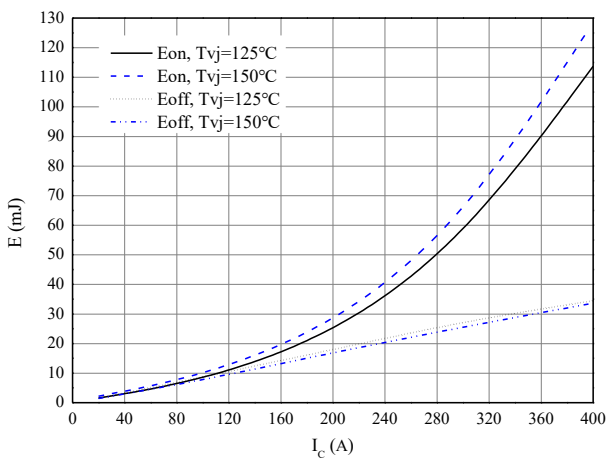


图 5. 开关损耗 逆变器

Figure 5. Switching losses of IGBT

$V_{GE}=\pm 15V, R_{Gon}=2.5\Omega, R_{Goff}=2.5\Omega, V_{CE}=600V$

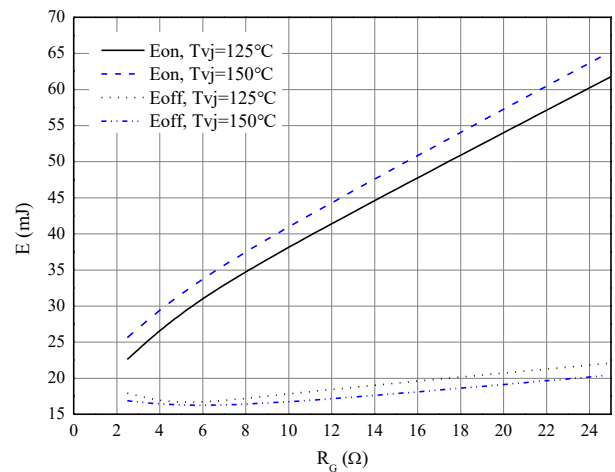


图 6. 开关损耗 逆变器

Figure 6. Switching losses of IGBT

$V_{GE}=\pm 15V, I_C=200A, V_{CE}=600V$

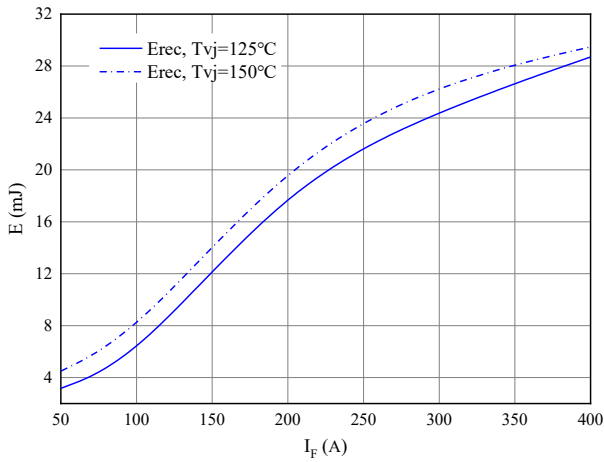


图 7. 开关损耗 二极管

Figure 7. Switching losses of Diode
 $R_{Gon}=2.5\ \Omega$, $V_{CE}=600V$

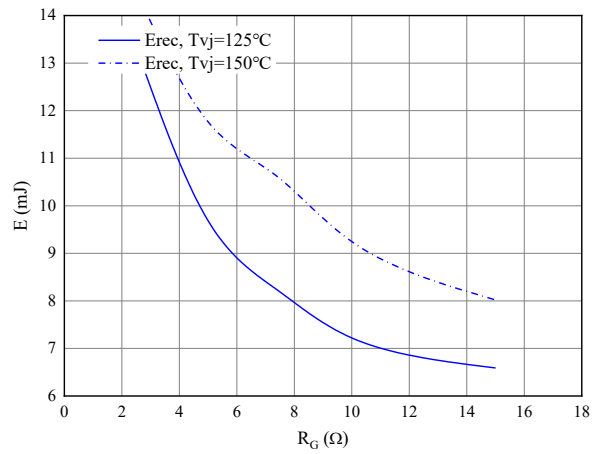


图 8. 开关损耗 二极管

Figure 8. Switching losses of Diode
 $I_F=200A$, $V_{CE}=600V$

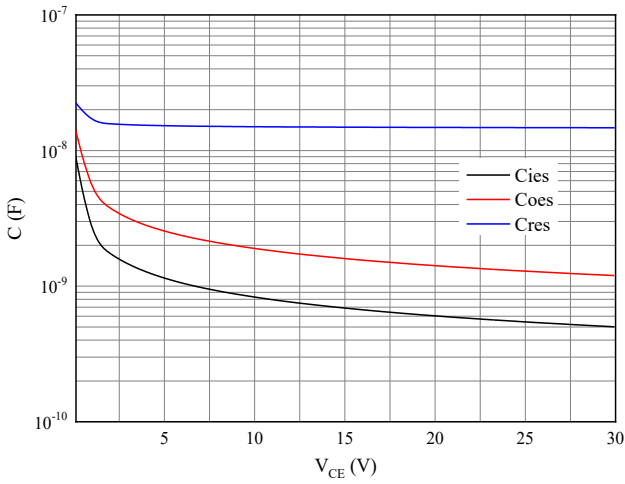
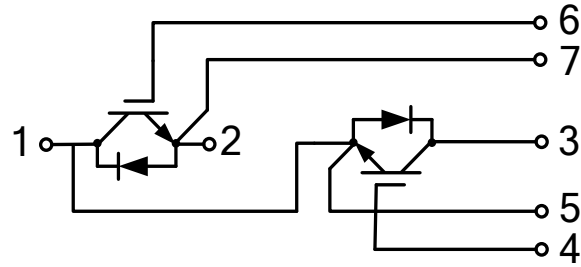


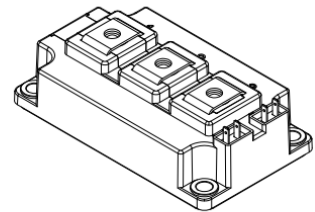
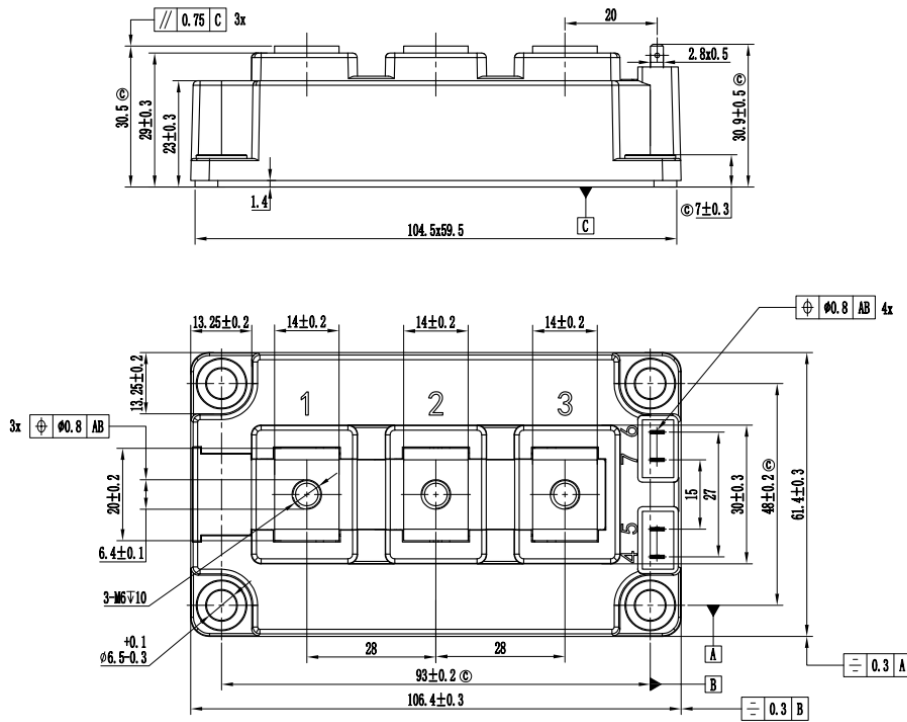
图 9. 电容特性

Figure 9. Capacitance characteristic

接线图 / Circuit diagram



封装尺寸 / Package outlines



注: 1. © 尺寸为关键管控尺寸
2. 未标注公差按GB/T1804-m执行