

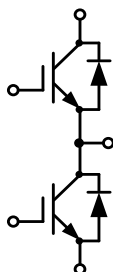
62mm Half Bridge IGBT Module

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


 $V_{CES}=1200V, I_{C\ nom}=300A / I_{CRM}=600A$
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	$T_C=100^{\circ}C, T_{vj\ max}=175^{\circ}C$	$I_{C\ nom}$	300	A
集电极重复峰值电流 Repetitive peak collector current	$t_p=1\ ms$	I_{CRM}	600	A
总功率损耗 Total power dissipation	$T_C = 25^{\circ}C, T_{vj\ max} = 175^{\circ}C$	P_{tot}	1600	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	$V_{GE}=15V, I_C=300A$ $V_{GE}=15V, I_C=300A$ $V_{GE}=15V, I_C=300A$	$T_{vj}=25^{\circ}C$ $T_{vj}=125^{\circ}C$ $T_{vj}=150^{\circ}C$	V_{CESat}	2.25 2.75 2.85	2.75	V
栅极-发射极阈值电压 Gate-Emitter threshold voltage	$I_C = 8mA, V_{GE}= V_{CE}$	$T_{vj}=25^{\circ}C$	$V_{GE(th)}$	5.20 5.80	6.40	
栅电荷 Gate charge	$V_{GE}=-15V...+15V$		Q_G	1.42		μC
内部栅极电阻 Internal gate resistor			R_{Gint}	1.72		Ω
输入电容 Input capacitance	$f=1\ MHz, V_{CE}=25\ V, V_{GE}=0\ V$	$T_{vj}=25^{\circ}C$	C_{ies}	22.51		nF

反向传输电容 Reverse transfer capacitance		C_{res}		0.8		
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}			2	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}			200	nA
开通延迟时间 Turn-on delay time	$I_C=300A, V_{CE}=600V$ $V_{GE}=\pm 15V, R_G=3\Omega$ (电感负载) / (inductive load) $T_{vj}=25^{\circ}C$ $T_{vj}=125^{\circ}C$ $T_{vj}=150^{\circ}C$	$t_{d on}$			122 131 138	ns
上升时间 Rise time	$I_C=300A, V_{CE}=600V$ $V_{GE}=\pm 15V, R_G=3\Omega$ (电感负载) / (inductive load) $T_{vj}=25^{\circ}C$ $T_{vj}=125^{\circ}C$ $T_{vj}=150^{\circ}C$	t_r			61 65 67	
关断延迟时间 Turn-off delay time	$I_C=300A, V_{CE}=600V$ $V_{GE}=\pm 15V, R_G=3\Omega$ (电感负载) / (inductive load) $T_{vj}=25^{\circ}C$ $T_{vj}=125^{\circ}C$ $T_{vj}=150^{\circ}C$	$t_{d off}$			267 295 305	
下降时间 Fall time	$I_C=300A, V_{CE}=600V$ $V_{GE}=\pm 15V, R_G=3\Omega$ (电感负载) / (inductive load) $T_{vj}=25^{\circ}C$ $T_{vj}=125^{\circ}C$ $T_{vj}=150^{\circ}C$	t_f			99 109 113	
开通损耗能量 (每脉冲) Turn-on energy loss per pulse	$I_C=300A, V_{CE}=600V$ $V_{GE}=\pm 15V, R_G=3\Omega$ $di/dt=3619A/\mu s$ ($T_{vj}=150^{\circ}C$) (电感负载) / (inductive load) $T_{vj}=25^{\circ}C$ $T_{vj}=125^{\circ}C$ $T_{vj}=150^{\circ}C$	E_{on}			18.81 32.26 34.56	mJ
关断损耗能量 (每脉冲) Turn-off energy loss per pulse	$I_C=300A, V_{CE}=600V$ $V_{GE}=\pm 15V, R_G=3\Omega$ $dv/dt=7289V/\mu s$ ($T_{vj}=150^{\circ}C$) (电感负载) / (inductive load) $T_{vj}=25^{\circ}C$ $T_{vj}=125^{\circ}C$ $T_{vj}=150^{\circ}C$	E_{off}			16.74 21.40 22.21	
短路数据 SC data	$V_{GE}\leq 15V, V_{CC}=800V$ $V_{CEmax}=V_{CES}-L_{sCE}\cdot di/dt$ $t_p\leq 10\mu s, T_{vj}=150^{\circ}C$	I_{sc}			1012	A
结-外壳热阻 Thermal resistance, junction to case	每个 IGBT / per IGBT	R_{thJC}			0.093	K/W
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	300	A
正向重复峰值电流 Repetitive peak forward current	$t_p=1ms$	I_{FRM}	600	A
I^2t 值 I^2t -value	$t_p=10ms, \sin 180^{\circ}, T_j=125^{\circ}C$	I^2t	19000	A^2S

特征值 / Characteristic Values

Parameter	Conditions	Symbol	Value			Unit
			Min.	Typ.	Max.	
正向电压 Forward voltage	$I_F=300A$ $I_F=300A$ $I_F=300A$	$T_{vj}=25^{\circ}C$ $T_{vj}=125^{\circ}C$ $T_{vj}=150^{\circ}C$	V_F	2.15 2.27 2.19	2.65	V
反向恢复峰值电流 Peak reverse recovery current	$I_F=300A$, $-di_F/dt=3061A/\mu s(T_{vj}=150^{\circ}C)$ $V_R=600V, V_{GE}=-15V$	$T_{vj}=25^{\circ}C$ $T_{vj}=125^{\circ}C$ $T_{vj}=150^{\circ}C$	I_{RM}	121 134 147		A
恢复电荷 Recovered charge	$I_F=300A$, $-di_F/dt=3061A/\mu s(T_{vj}=150^{\circ}C)$ $V_R=600V, V_{GE}=-15V$	$T_{vj}=25^{\circ}C$ $T_{vj}=125^{\circ}C$ $T_{vj}=150^{\circ}C$	Q_r	15.87 30.40 39.55		μC
反向恢复损耗（每脉冲） Reverse recovered energy	$I_F=300A$, $-di_F/dt=3061A/\mu s(T_{vj}=150^{\circ}C)$ $V_R=600V, V_{GE}=-15V$	$T_{vj}=25^{\circ}C$ $T_{vj}=125^{\circ}C$ $T_{vj}=150^{\circ}C$	E_{rec}	4.95 9.75 13.32		mJ
结-外壳热阻 Thermal resistance, junction to case	每个二极管 / per diode		R_{thJC}		0.15	K/W
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 ₂ O 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

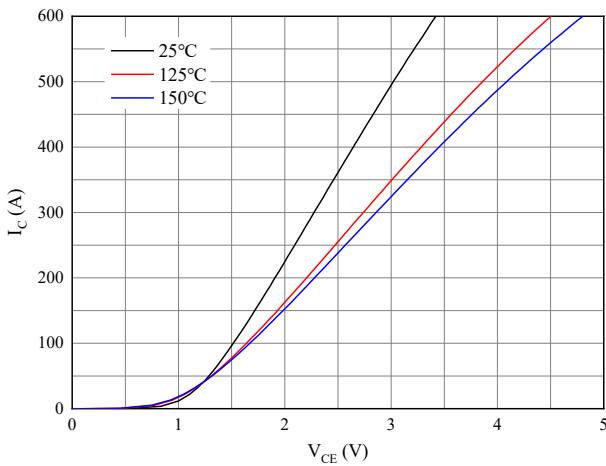


图 1. 典型输出特性 ($V_{GE}=15V$)

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

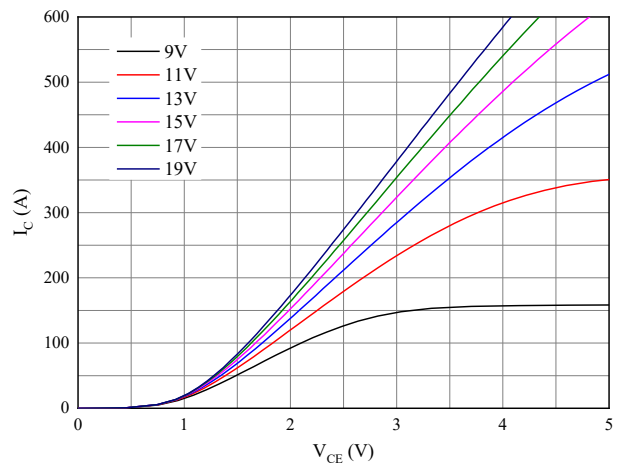


图 2. 典型输出特性 ($T_{vj}=150^{\circ}C$)

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

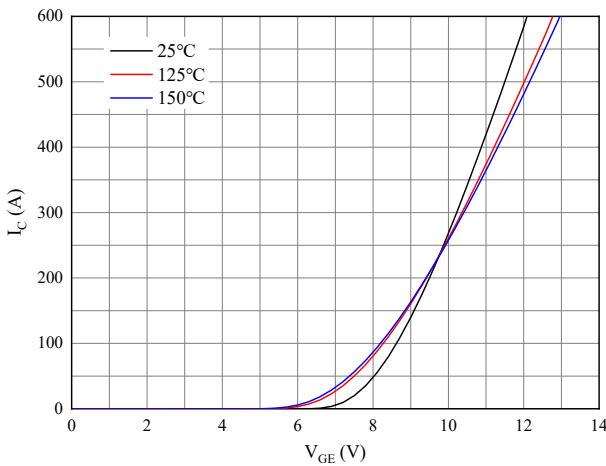


图 3. 典型传输特性 ($V_{CE}=20V$)

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

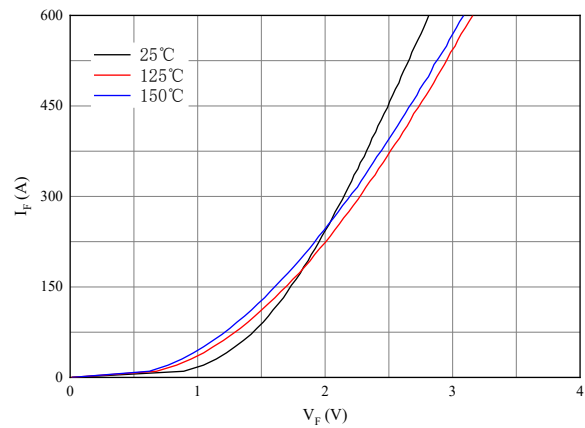


图 4. 正向偏压特性 二极管

Figure 4. Forward characteristic of Diode

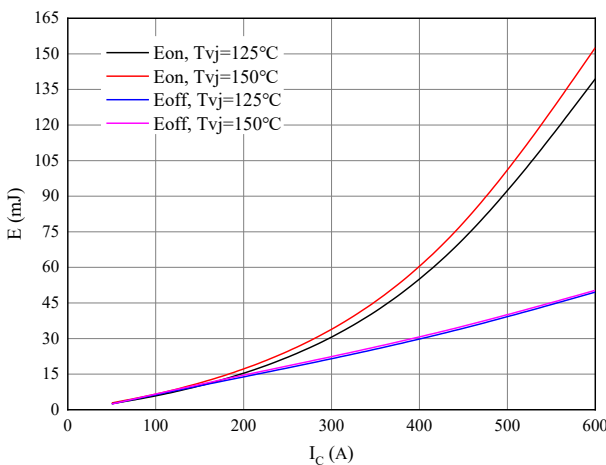


图 5. 开关损耗 逆变器

Figure 5. Switching losses of IGBT
 $V_{GE}=\pm 15V, R_{Gon}=3\Omega, R_{Goff}=3\Omega, V_{CE}=600V$

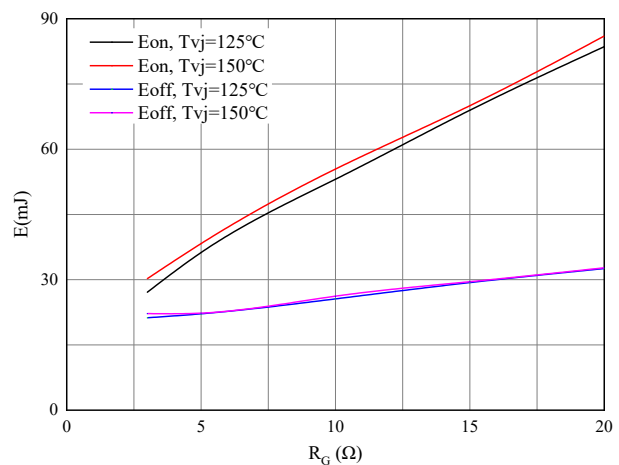


图 6. 开关损耗 逆变器

Figure 6. Switching losses of IGBT
 $V_{GE}=\pm 15V, I_C=300A, V_{CE}=600V$

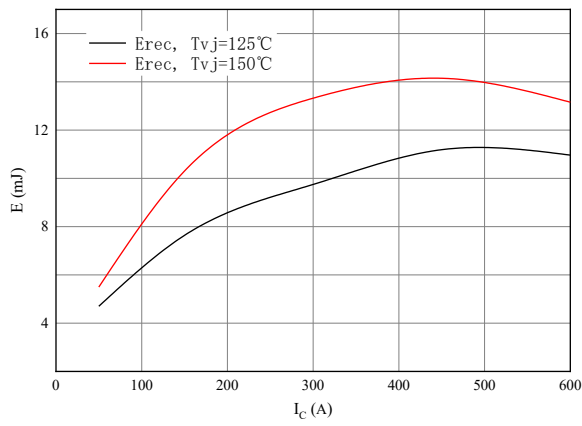


图 7. 开关损耗二极管

Figure 7. Switching losses of Diode
 $R_{Gon}=3\Omega, V_{CE}=600V$

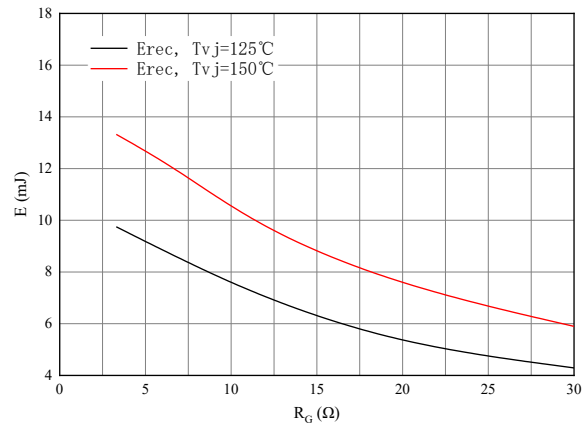


图 8. 开关损耗二极管

Figure 8. Switching losses of Diode
 $I_F=300A, V_{CE}=600V$

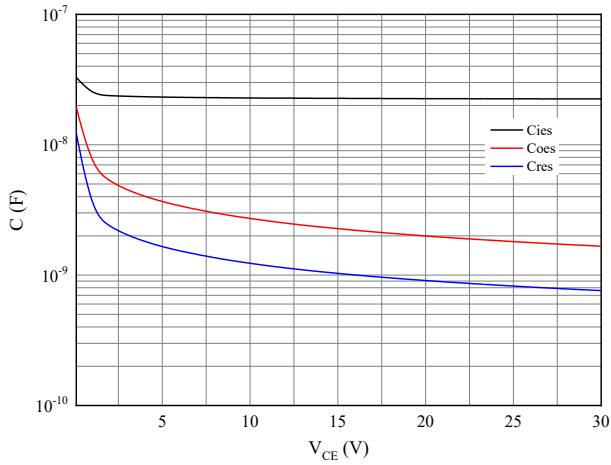
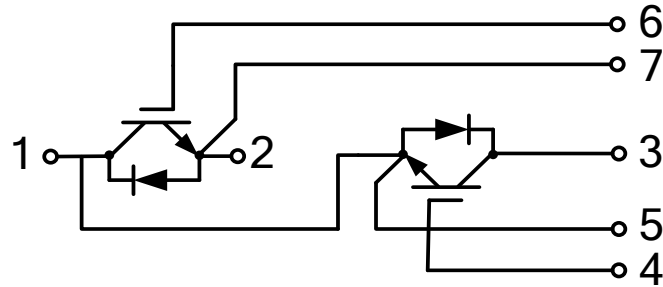


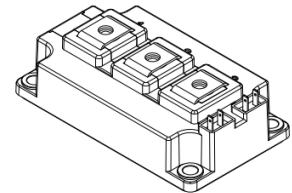
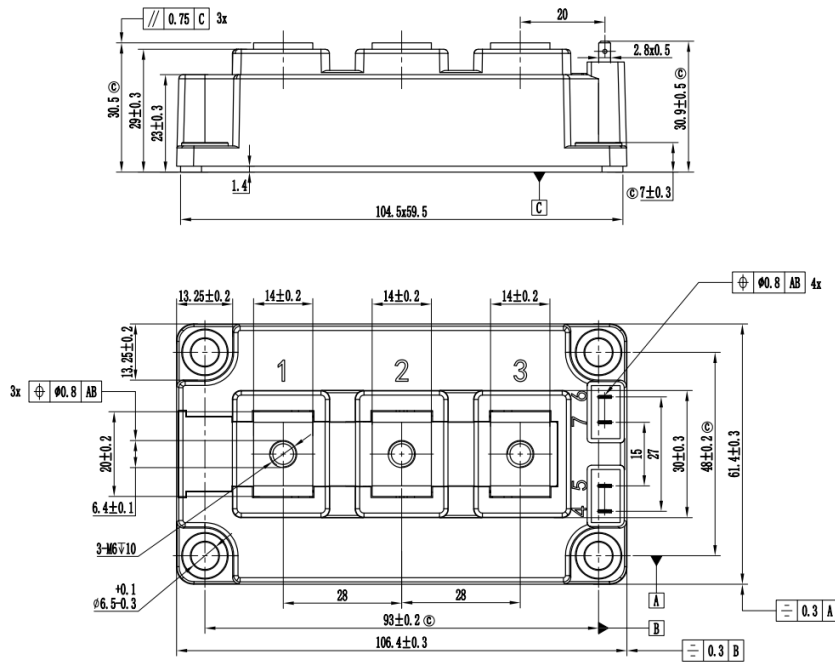
图 9. 电容特性

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