

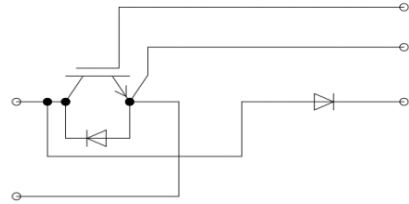
62mm Chopper IGBT Module

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:

- 高频电源
- UPS
- 变频器



$V_{CES}=1200V$, $I_{C\ nom}=300A$ / $I_{CRM}=600A$

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}	1470	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	$V_{GE}=15V$, $I_C=300A$ $T_{vj}=25^{\circ}C$ $V_{GE}=15V$, $I_C=300A$ $T_{vj}=125^{\circ}C$ $V_{GE}=15V$, $I_C=300A$ $T_{vj}=150^{\circ}C$	V_{CEsat}		2.23 2.74 2.86	2.70	V
栅极-发射极阈值电压 Gate-Emitter threshold voltage	$I_C=8mA$, $V_{GE}=V_{CE}$ $T_{vj}=25^{\circ}C$	$V_{GE(th)}$	5.00	5.65	6.20	
栅电荷 Gate charge	$V_{GE}=-15V...+15V$	Q_G		1.52		μC

内部栅极电阻 Internal gate resistor		R_{Gint}		2.0		Ω
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}		22.53		nF
反向传输电容 Reverse transfer capacitance		C_{res}		0.85		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}			1	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	$I_C=300\text{ A}, V_{CE}=600\text{ V}$ $V_{GE}=\pm 15\text{ V}, R_G=2.5\Omega$ (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}		196 205 209		
上升时间 Rise time	$I_C=300\text{ A}, V_{CE}=600\text{ V}$ $V_{GE}=\pm 15\text{ V}, R_G=2.5\Omega$ (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		56 61 62		
关断延迟时间 Turn-off delay time	$I_C=300\text{ A}, V_{CE}=600\text{ V}$ $V_{GE}=\pm 15\text{ V}, R_G=2.5\Omega$ (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}		257 294 303		ns
下降时间 Fall time	$I_C=300\text{ A}, V_{CE}=600\text{ V}$ $V_{GE}=\pm 15\text{ V}, R_G=2.5\Omega$ (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		85 141 136		
开通损耗能量（每脉冲） Turn-on energy loss per pulse	$I_C=300\text{ A}, V_{CE}=600\text{ V}$ $V_{GE}=\pm 15\text{ V}, R_G=2.5\Omega$ (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}		9.47 19.02 22.82		mJ
关断损耗能量（每脉冲） Turn-off energy loss per pulse	$I_C=300\text{ A}, V_{CE}=600\text{ V}$ $V_{GE}=\pm 15\text{ V}, R_G=2.5\Omega$ (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}		18.28 22.20 23.10		
短路数据 SC data	$V_{GE}\leq 15\text{ V}, V_{CC}=800\text{ V}$ $V_{CEmax}=V_{CES}-L_{sCE}\cdot di/dt$ $t_p\leq 10\mu\text{s}, T_{vj}=150^{\circ}\text{C}$	I_{SC}		979		A
结-外壳热阻 Thermal resistance, junction to case	每个 IGBT / per IGBT	R_{thJC}			0.10	K/W
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	300	A
正向重复峰值电流 Repetitive peak forward current	$t_p=1\text{ ms}$	I_{FRM}	600	A
I^2t 值 I^2t -value	$t_p=10\text{ ms}, \sin 180^{\circ}, T_j=125^{\circ}\text{C}$	I^2t	4050	A^2s

特征值 / Characteristic Values

Parameter	Conditions	Symbol	Value			Unit
			Min.	Typ.	Max.	
正向电压 Forward voltage	$I_F=300A, V_{GE}=0V$ $I_F=300A, V_{GE}=0V$ $I_F=300A, V_{GE}=0V$	$T_{vj}=25^{\circ}C$ $T_{vj}=125^{\circ}C$ $T_{vj}=150^{\circ}C$		2.23 2.31 2.24	2.75	V
反向恢复峰值电流 Peak reverse recovery current	$I_F=300A,$ $-di_F/dt=4233A/\mu s(T_{vj}=150^{\circ}C)$ $V_R=600V, V_{GE}=-15V$	$T_{vj}=25^{\circ}C$ $T_{vj}=125^{\circ}C$ $T_{vj}=150^{\circ}C$		186 218 230		A
恢复电荷 Recovered charge	$I_F=300A,$ $-di_F/dt=4233A/\mu s(T_{vj}=150^{\circ}C)$ $V_R=600V, V_{GE}=-15V$	$T_{vj}=25^{\circ}C$ $T_{vj}=125^{\circ}C$ $T_{vj}=150^{\circ}C$		11.30 29.50 38.40		μC
反向恢复损耗（每脉冲） Reverse recovered energy	$I_F=300A,$ $-di_F/dt=4233A/\mu s(T_{vj}=150^{\circ}C)$ $V_R=600V, V_{GE}=-15V$	$T_{vj}=25^{\circ}C$ $T_{vj}=125^{\circ}C$ $T_{vj}=150^{\circ}C$		5.25 12.71 16.10		mJ
结-外壳热阻 Thermal resistance, junction to case	每个 Diode / 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_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		313		g

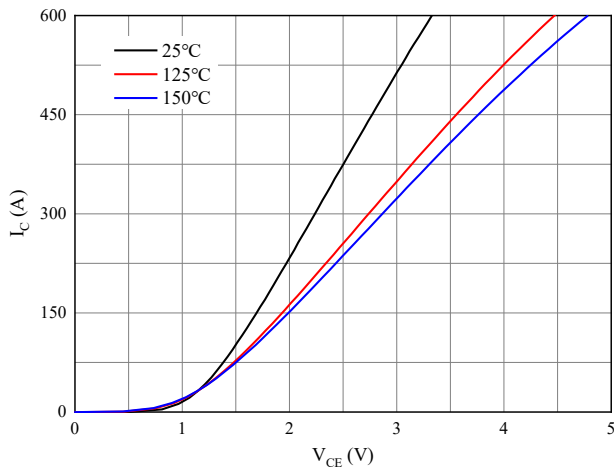
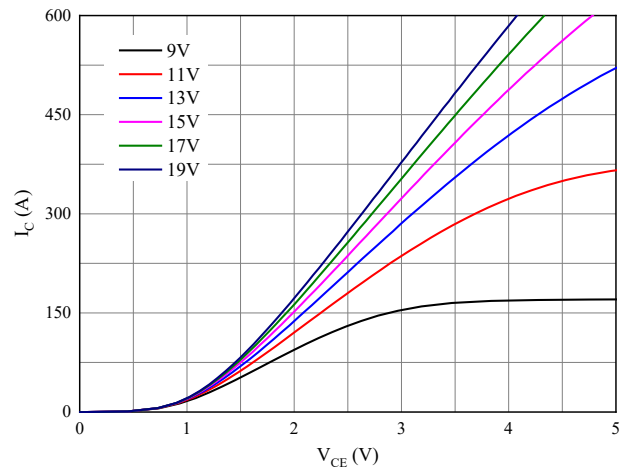
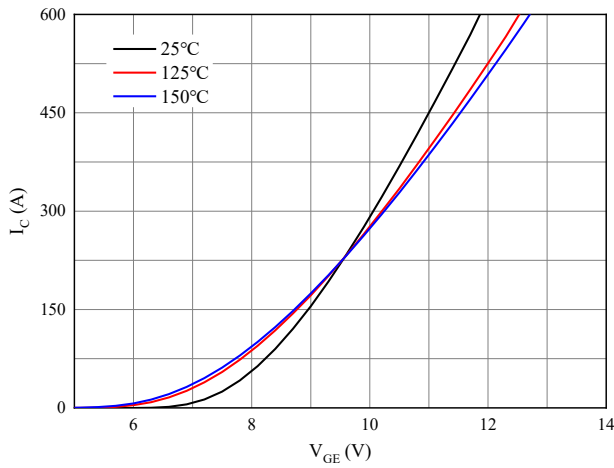
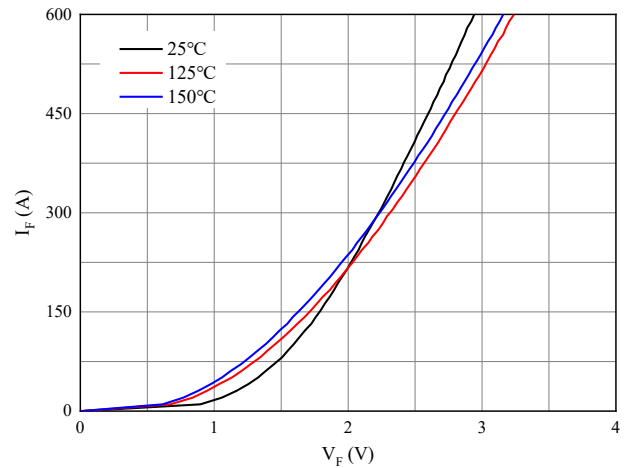
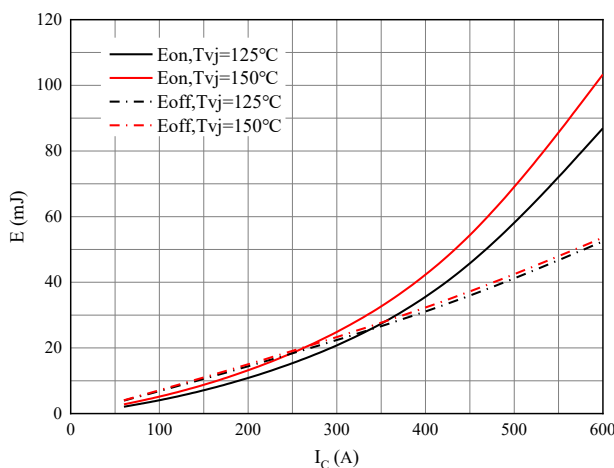
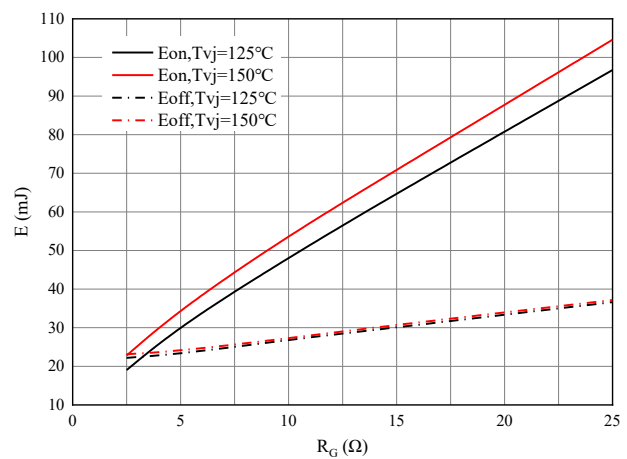
Figure 1. Typical output characteristics ($V_{GE}=15V$)Figure 2. Typical output characteristics ($T_{vj}=150^{\circ}C$)Figure 3. Typical transfer characteristic ($V_{CE}=20V$)

Figure 4. Forward characteristic of Diode

Figure 5. Switching losses of IGBT
 $V_{GE}=\pm 15V$, $R_{Gon}=2.5\Omega$, $R_{Goff}=2.5\Omega$, $V_{CE}=600V$ Figure 6. Switching losses of IGBT
 $V_{GE}=\pm 15V$, $I_C=300A$, $V_{CE}=600V$

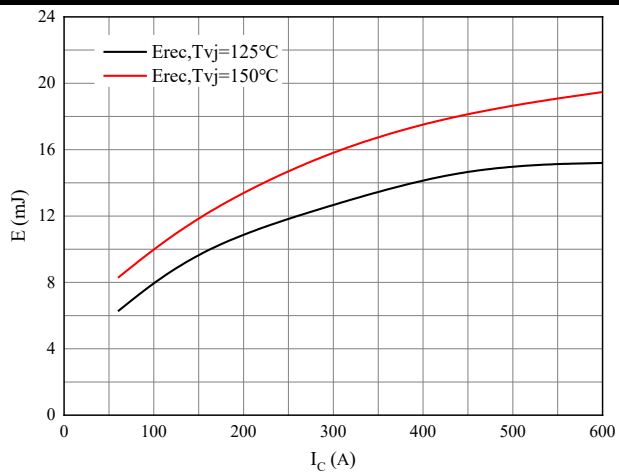


Figure 7. Switching losses of Diode
 $R_{Gon}=2.5\Omega$, $V_{CE}=600V$

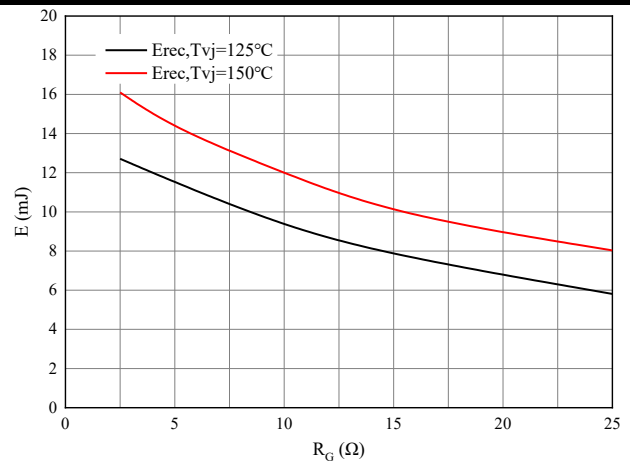


Figure 8. Switching losses of Diode
 $I_F=300A$, $V_{CE}=600V$

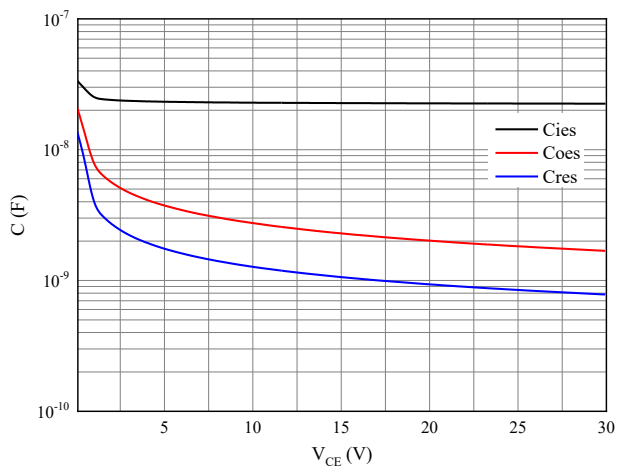
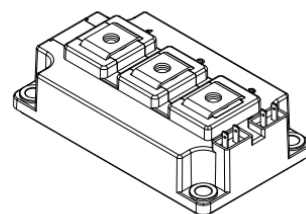
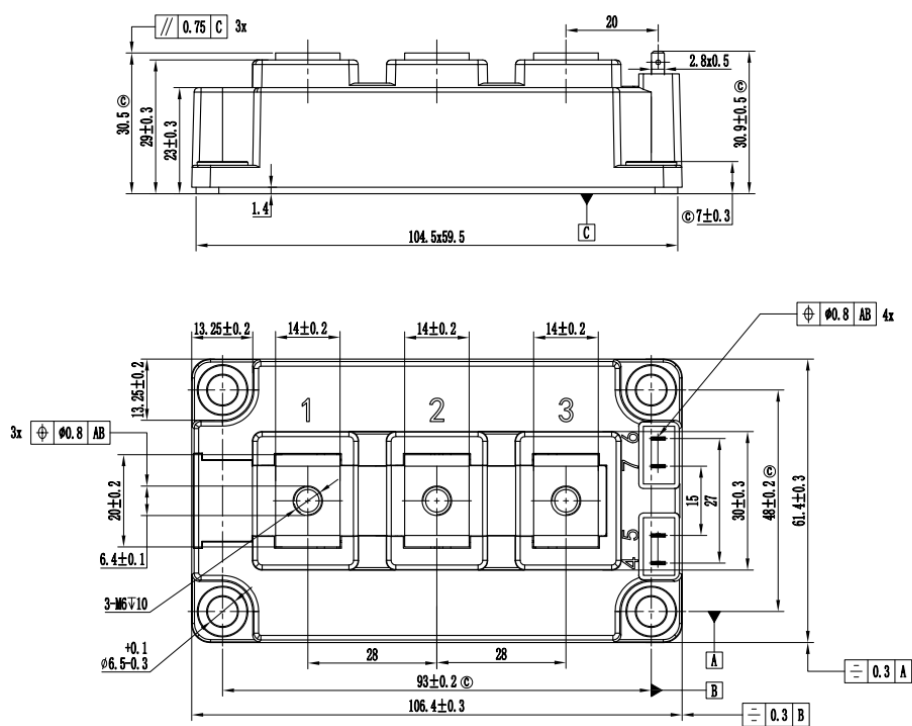
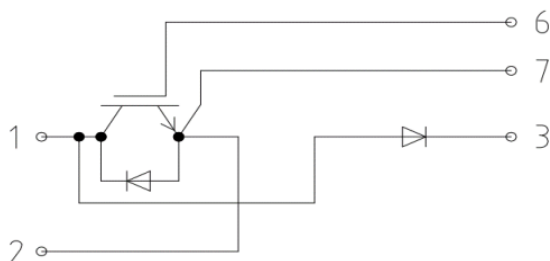


Figure 9. Capacitance characteristic



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