合肥中恒微半导体有限公司
HeFei Cpower Technology.,Ltd.
2E600M120A1P

➢ 产品外观 / Appearance

V_{CES} = 1200V

$I_{C\ nom}$ = 600A / I_{CRM} = 1200A

➢ 特性 / Features

A. 端子超声波焊接	A. Ultrasonic Welding of Terminal
B. 铜线键合工艺	B. Copper Wire Bonding
C. 高强度陶瓷基板	C. High Strength Ceramic Substrate
D. 高可靠性模块	D. High Reliability Module

➢ 用途 / Applications

A. 电动汽车应用	A. Automotive Application
B. 电机传动	B. Motor Drives
C. 风力发电机	C. Wind Turbines

➢ 相关信息 / Related Information

条形码 / Barcode Code

二维码 / DMX – Code

公司地址：合肥市高新区创新大道与明珠大道交叉口 106 号 5 号楼 2 层 C 区、D 区。

Address：Area C and D, 2nd floor, Building 5, No. 106, Intersection of Innovation Avenue and Mingzhu Avenue, High-tech Zone, Hefei City.

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IGBT, 逆变器 / IGBT, Inverter

最大额定值 / Maximum Rated Values

集电极-发射极电压 Collector-emitter voltage	T_j = 25℃	V_{CES}	1200	V
连续集电极直流电流 Continuous DC collector current	T_C = 100℃, $T_{j\,max}$ = 175℃	$I_{C\,nom}$	600	A
集电极重复峰值电流 Repetitive peak collector current	t_p= 1 ms	I_{CRM}	1200	A
总功率损耗 Total power dissipation	T_C = 25℃, $T_{j\,max}$ = 175℃	P_{tot}	3400	W
栅极-发射极峰值电压 Gate-emitter peak voltage		V_{GES}	+/-20	V

特征值 / Characteristic Values

			Min.	Typ.	Max.	
集电极-发射极饱和电压 Collector-emitter saturation voltage	I_C = 600 A, V_{GE} = 15 V	T_j = 25℃ T_j = 125℃ T_j = 150℃	$V_{CE\,sat}$		1.7 1.9 1.9	2.1	V
栅极阈值电压 Gate threshold voltage	I_C = 6mA, V_{CE} = V_{GE}, T_j = 25℃		V_{GEth}	5.0	5.3	6.0	V
栅极电荷/Gate charge	V_{GE} =-15 V … +15 V		Q_G		3.65		µC
内部栅极电阻 Internal gate resistor	T_j = 25℃		R_{Gint}		1.1		Ω
输入电容/Input capacitance	f = 1 MHz, T_j = 25℃,V_{CE} = 25 V,V_{GE} = 0 V		C_{ies}		28.9		nF
反向传输电容 Reverse transfer capacitance			C_{res}		2.10		nF
集电极-发射极截止电流 Collector-emitter cut-off current	V_{CE} = 1200 V, V_{GE} = 0 V, T_j = 25℃		I_{CES}			3.0	mA
栅极-发射极漏电流 Gate-emitter leakage current	V_{CE} = 0 V, V_{GE} = 20 V, T_j = 25℃		I_{GES}			400	nA
开通延迟时间/Turn-on delay time	I_C = 600 A, V_{CE} = 600 V V_{GE} = ±15 V R_G = 2.0 Ω Inductive Load Turn-on(T_j = 150℃): di/dt = 2500 A/µs Turn-off(T_j = 150℃): dv/dt = 2800 V/µs	T_j = 25℃ T_j = 125℃ T_j = 150℃	$t_{d\,on}$		211 226 234		ns
上升时间/Rise time		T_j = 25℃ T_j = 125℃ T_j = 150℃	t_r		179 190 192		ns
关断延迟时间/Turn-off delay time		T_j = 25℃ T_j = 125℃ T_j = 150℃	$t_{d\,off}$		693 759 776		ns
下降时间/Fall time		T_j = 25℃ T_j = 125℃ T_j = 150℃	t_f		134 168 179		ns
开通损耗能量/Turn-on energy loss		T_j = 25℃ T_j = 125℃ T_j = 150℃	E_{on}		33.5 49.2 55.1		mJ
关断损耗能量/Turn-off energy loss		T_j = 25℃ T_j = 125℃ T_j = 150℃	E_{off}		80.3 91.9 95.3		mJ
短路数据/SC data	V_{GE} ≤ 15 V, V_{CC} = 800 V t_p ≤ 10µs,T_j = 150℃		I_{SC}		2400		A
结 – 外壳热阻 Thermal resistance, junction to case	每个 IGBT / per IGBT		R_{thJC}			0.04	K/W
在开关状态下温度 Temperature under switching			$T_{j\,op}$	-40		150	℃

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二极管，逆变器 / Diode, Inverter

负温度系数热敏电阻 / NTC-Thermistor

二极管，逆变器 / Diode, Inverter

最大额定值 / Maximum Rated Values

反向重复峰值电压 Repetitive peak reverse voltage	T_j = 25℃	V_{RRM}	1200	V
连续正向直流电流 Continuous DC forward current		I_F	600	A
正向重复峰值电流 Repetitive peak forward current	t_p= 1 ms	I_{FRM}	1200	A

特征值 / Characteristic Values

				Min.	Typ.	Max.	
正向电压/Forward voltage	I_F = 600 A, V_{GE} = 0 V	T_j = 25℃ T_j = 125℃ T_j = 150℃	V_F		1.9 1.9 1.9	2.1	V
反向恢复峰值电流 Peak reverse recovery current	I_F = 600 A, V_R = 600 V V_{GE} = -15 V -di_F/dt = 1600A/μs	T_j = 25℃ T_j = 125℃ T_j = 150℃	I_{RM}		282 330 347		A
恢复电荷/Recovered charge		T_j = 25℃ T_j = 125℃ T_j = 150℃	Q_r		39.7 68.9 80.7		μC
反向恢复损耗 Reverse recovery energy		T_j = 25℃ T_j = 125℃ T_j = 150℃	E_{rec}		16.1 28.3 33.3		mJ
结 – 外壳热阻 Thermal resistance, junction to case	每个二极管 / per diode		R_{thJC}			0.08	K/W
在开关状态下温度 Temperature under switching			$T_{j\,op}$	-40		150	℃

负温度系数热敏电阻 / NTC-Thermistor

特征值 / Characteristic Values

			Min.	Typ.	Max.	
额定阻值/Rated resistance	T_C = 25℃	R_{25}		5.00		kΩ
阻值误差/Deviation of R100	T_C = 100℃， R_{100} = 465 Ω	Δ R/R	-5		5	%
功率损耗/Power dissipation	T_C = 25℃	P_{25}			10.0	mW
B 值/B – value	$R_2=R_{25}\exp[B_{25/50}(1/T_2-1/(298.15K))]$	$B_{25/50}$		3380		K
B 值/B – value	$R_2=R_{25}\exp[B_{25/80}(1/T_2-1/(298.15K))]$	$B_{25/80}$		3468		K
B 值/B – value	$R_2=R_{25}\exp[B_{25/100}(1/T_2-1/(298.15K))]$	$B_{25/100}$		3523		K

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模块 / Module

绝缘测试电压 Isolation test voltage	RMS, f = 50 Hz, t = 1 min.	V_{ISOL}	2.5	kV
模块基板材料 Material of module baseplate			Cu	
内部绝缘/Internal isolation	基本绝缘 (class 1, IEC61140) Basic insulation (class 1, IEC61140)		ZTA	
爬电距离/Creepage distance	端子至散热器 / terminal to heatsink 端子至端子 / terminal to terminal		14.5 13.0	mm
电气间隙/Clearance	端子至散热器 / terminal to heatsink 端子至端子 / terminal to terminal		12.5 10.0	mm
相对电痕指数 Comperative tracking index		CTI	> 200	

			Min.	Typ.	Max.	
杂散电感，模块 Stray inductance module		L_{sCE}		20		nH
模块引线电阻 Module lead resistance	T_C = 25℃， 每个开关 / per switch	$R_{CC'+EE}$		1.1		mΩ
储存温度/Storage temperature		T_{stg}	-40		125	℃
模块安装的安装扭距 / Mounting torque for module mounting	螺丝 M5 / Screw M5	M	3.00		6.00	Nm
端子联接扭距 Terminal connection torque	螺丝 M6 / Screw M6	M	3.0		6.0	Nm
重量/Weight		G		345		g

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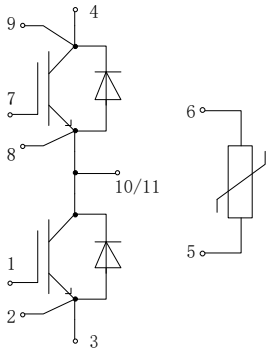
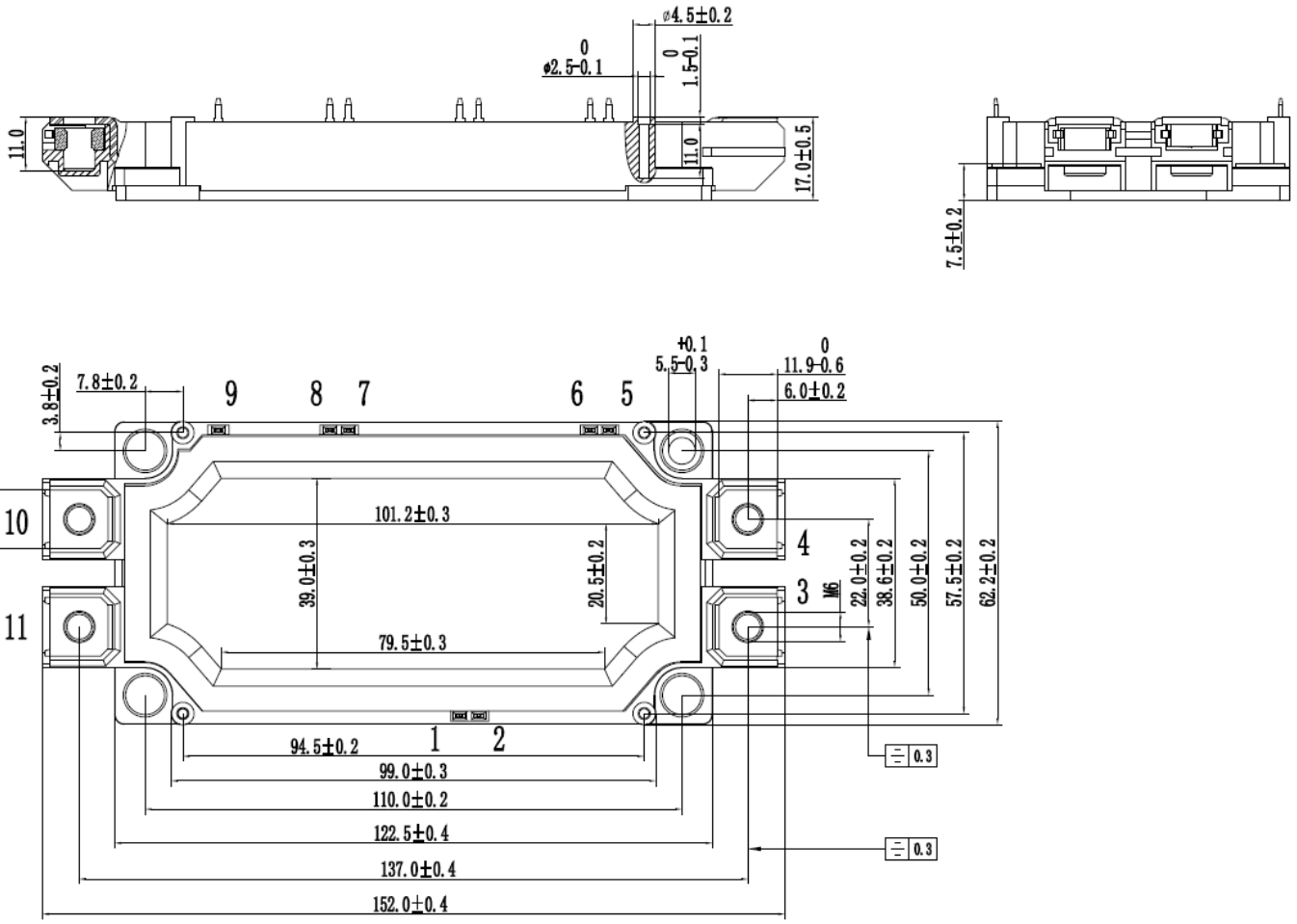
封装 / Package

接线图 / Circuit Diagram



封装尺寸 / Package outlines



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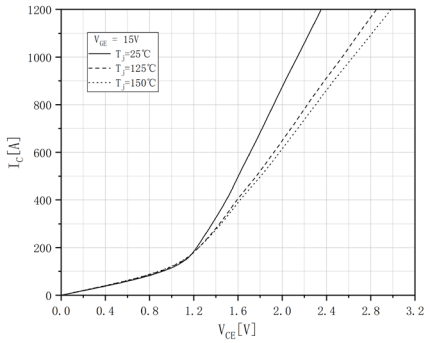
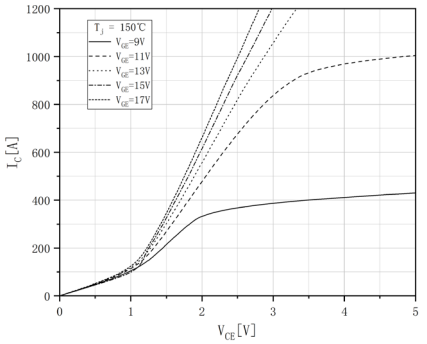
性能 / Performance

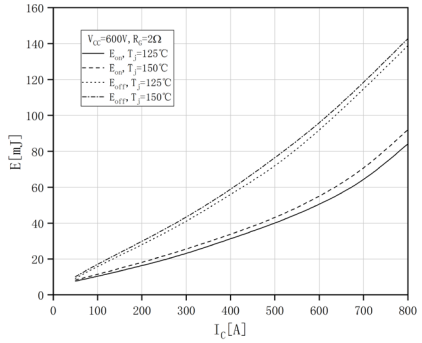
输出特性 IGBT, 逆变器（典型）
output characteristic IGBT, Inverter (typical)



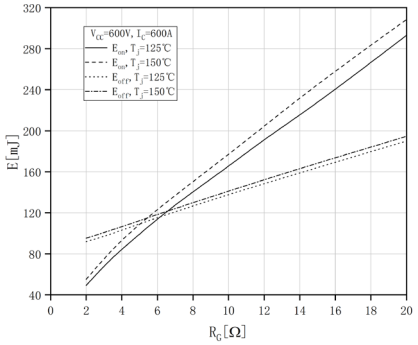
输出特性 IGBT, 逆变器（典型）
output characteristic IGBT, Inverter (typical)



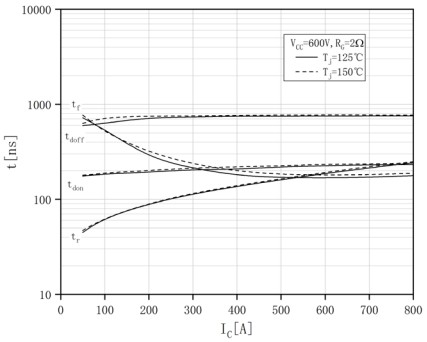
开关损耗 IGBT, 逆变器（典型）
switching losses IGBT, Inverter (typical)



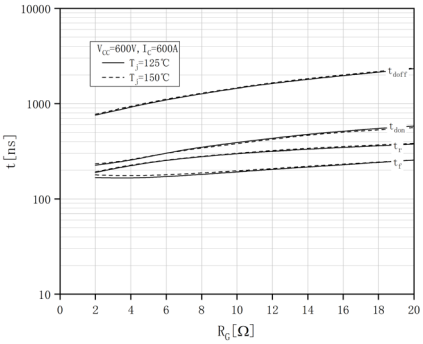
开关损耗 IGBT, 逆变器（典型）
switching losses IGBT, Inverter (typical)



开关时间 IGBT, 逆变器（典型）
switching time IGBT, Inverter (typical)



开关时间 IGBT, 逆变器（典型）
switching time IGBT, Inverter (typical)



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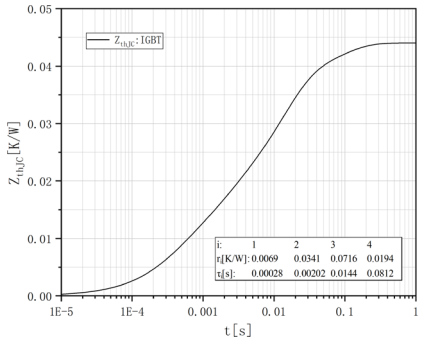
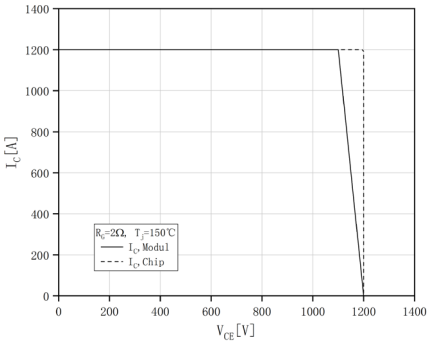
性能 / Performance

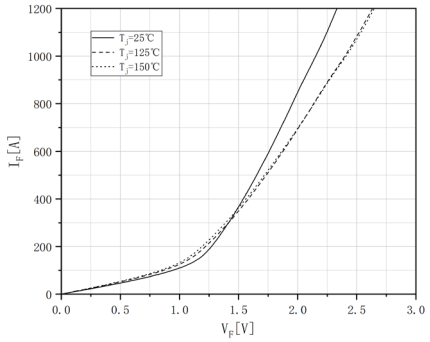
瞬态热阻抗 IGBT, 逆变器
transient thermal impedance IGBT, Inverter



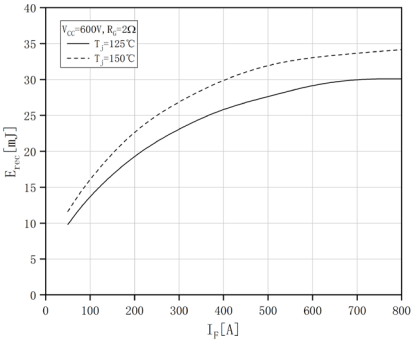
反偏安全工作区 IGBT, 逆变器（RBSOA）
Reverse bias safe operating area IGBT, Inverter(RBSOA)



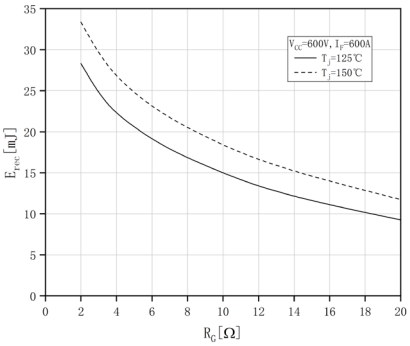
正向偏压特性 二极管,逆变器（典型）
forward characteristic of Diode, Inverter(typical)



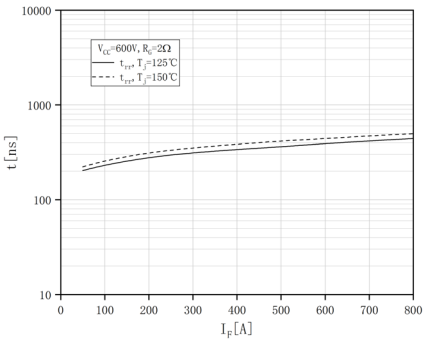
开关损耗 二极管, 逆变器（典型）
switching losses Diode, Inverter(typical)



开关损耗 二极管, 逆变器（典型）
switching losses Diode, Inverter(typical)



反向恢复时间 二极管, 逆变器（典型）
reverse recovery time, Inverter(typical)



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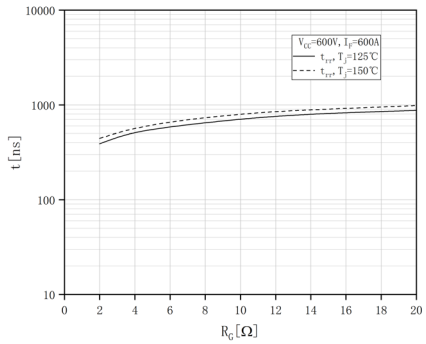
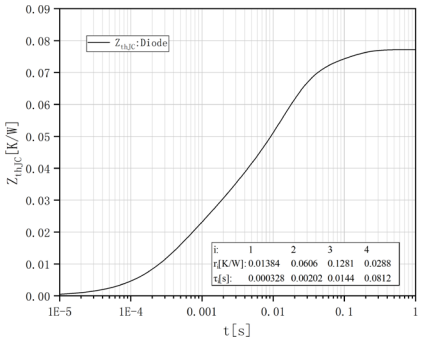
性能 / Performance

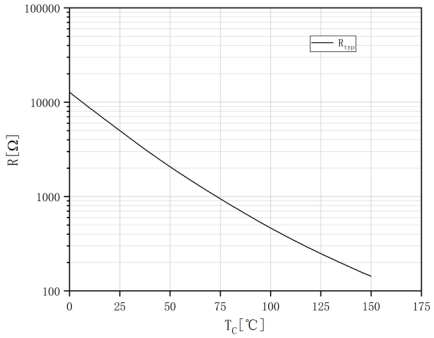
反向恢复时间 二极管，逆变器（典型）
reverse recovery time, Inverter(typical)



瞬态热阻抗 二极管，逆变器
transient thermal impedance Diode, Inverter



负温度系数热敏电阻 温度特性
NTC-Thermistor-temperature characteristic (typical)



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