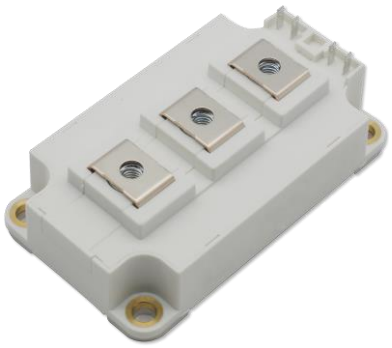
合肥中恒微半导体有限公司
HeFei Cpower Technology.,Ltd.
CLB300M120S1P

➢ 产品外观 / Appearance



V_{CES} = 1200V

$I_{C\ nom}$ = 300A / I_{CRM} = 600A

➢ 特性 / Features

A. 低 V_{CEsat}	A. Low V_{CEsat}
B. 低开关损耗	B. Low Switching Loss
C. 功率端子超声焊接	C. Ultrasonic Welding of Power Terminals
D. 标准封装	D. Standard Housing

➢ 用途 / Applications

A. 电机传动	A. Motor Drives
B. 风力发电机	B. Wind Turbines
C. 大功率变流器	C. High Power Converters

➢ 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, 制动-斩波器 / IGBT, Chopper

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℃	$I_{C\,nom}$	300	A
集电极重复峰值电流 Repetitive peak collector current	t_p= 1 ms	I_{CRM}	600	A
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 = 300 A, V_{GE} = 15 V	T_j = 25℃ T_j = 125℃ T_j = 150℃	$V_{CE\,sat}$		1.70 1.80 1.85	1.95	V
栅极阈值电压 Gate threshold voltage	I_C = 7.4mA, V_{CE} = V_{GE}, T_j = 25℃		V_{GEth}	4.2		5.8	V
栅极电荷/Gate charge	V_{GE} = -15 V … +15 V		Q_G		2.0		µC
内部栅极电阻 Internal gate resistor	T_j = 25℃		R_{Gint}		2.5		Ω
输入电容/Input capacitance	f = 1 MHz, T_j = 25℃,V_{CE} = 25 V,V_{GE} = 0 V		C_{ies}		20.2		nF
反向传输电容 Reverse transfer capacitance			C_{res}		0.9		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}			5	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}			500	nA
开通延迟时间 Turn-on delay time	I_C = 300 A, V_{CE} = 600 V V_{GE} = ±15 V R_G = 1 Ω Inductive Load Turn-on(T_j = 150℃): di/dt = 2800 A/µs Turn-off(T_j = 150℃): dv/dt = 4300 V/µs	T_j = 25℃ T_j = 125℃ T_j = 150℃	$t_{d\,on}$		170 185 197		ns
上升时间/Rise time		T_j = 25℃ T_j = 125℃ T_j = 150℃	t_r		81 85 86		ns
关断延迟时间 Turn-off delay time		T_j = 25℃ T_j = 125℃ T_j = 150℃	$t_{d\,off}$		337 416 431		ns
下降时间/Fall time		T_j = 25℃ T_j = 125℃ T_j = 150℃	t_f		170 238 259		ns
开通损耗能量 Turn-on energy loss		T_j = 25℃ T_j = 125℃ T_j = 150℃	E_{on}		5.4 7.1 8.5		mJ
关断损耗能量 Turn-off energy loss		T_j = 25℃ T_j = 125℃ T_j = 150℃	E_{off}		22.3 33.5 36.4		mJ
短路数据/SC data	V_{GE} ≤ 15 V, V_{CC} = 600 V t_p ≤ 10µs,T_j = 150℃		I_{SC}		1200		A
结 – 外壳热阻 Thermal resistance, junction to case	每个 IGBT / per IGBT		R_{thJC}			0.09	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，制动-斩波器 / Diode, Chopper

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	300	A
正向重复峰值电流 Repetitive peak forward current	t_p= 1 ms	I_{FRM}	600	A

特征值 / Characteristic Values

				Min.	Typ.	Max.	
正向电压/Forward voltage	I_F = 300 A, V_{GE} = 0 V	T_j = 25℃ T_j = 125℃ T_j = 150℃	V_F		1.8 1.8 1.8	2.1	V
反向恢复峰值电流 Peak reverse recovery current	I_F = 300 A, V_R = 600 V V_{GE} = -15 V -di$_F$/dt =3600A/μs	T_j = 25℃ T_j = 125℃ T_j = 150℃	I_{RM}		233 272 289		A
恢复电荷/Recovered charge		T_j = 25℃ T_j = 125℃ T_j = 150℃	Q_r		24.5 36.9 43.3		μC
反向恢复损耗 Reverse recovery energy		T_j = 25℃ T_j = 125℃ T_j = 150℃	E_{rec}		11.8 17.9 21.3		mJ
结 – 外壳热阻 Thermal resistance,junction to case	每个二极管 / per diode		R_{thJC}			0.16	K/W
在开关状态下温度 Temperature under switching			$T_{j\,op}$	-40		150	℃

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反向二极管 / Diode, Reverse

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	200	A
正向重复峰值电流 Repetitive peak forward current	t_p= 1 ms	I_{FRM}	400	A

特征值 / Characteristic Values

				Min.	Typ.	Max.	
正向电压/Forward voltage	I_F = 200 A, V_{GE} = 0 V	T_j = 25℃ T_j = 125℃ T_j = 150℃	V_F		1.8 1.8 1.8	2.1	V
反向恢复峰值电流 Peak reverse recovery current	I_F = 200 A, V_R = 600 V V_{GE} = -15 V -di$_F$/dt =4000A/μs	T_j = 25℃ T_j = 125℃ T_j = 150℃	I_{RM}		200 221 230		A
恢复电荷/Recovered charge		T_j = 25℃ T_j = 125℃ T_j = 150℃	Q_r		17.4 26.9 31.0		μC
反向恢复损耗 Reverse recovery energy		T_j = 25℃ T_j = 125℃ T_j = 150℃	E_{rec}		8.3 12.9 15.1		mJ
结 – 外壳热阻 Thermal resistance,junction to case	每个二极管 / per diode		R_{thJC}			0.25	K/W
在开关状态下温度 Temperature under switching			$T_{j\,op}$	-40		150	℃

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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, IEC 61140) Basic insulation (class1, IEC 61140)			Al_2O_3	
爬电距离/Creepage distance	端子至散热器 / terminal to heatsink 端子至端子 / terminal to terminal			29.0 23.0	mm
电气间隙/Clearance	端子至散热器 / terminal to heatsink 端子至端子 / terminal to terminal			23.0 11.0	mm
相对电痕指数 Comperative tracking index		CTI		> 400	

			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	$R_{CC'+EE'}$		0.70		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 M6 / Screw M6	M	3.00		6.00	Nm
端子联接扭距 Terminal connection torque	螺丝 M6 / Screw M6	M	2.5		5.0	Nm
重量/Weight		G		315		g

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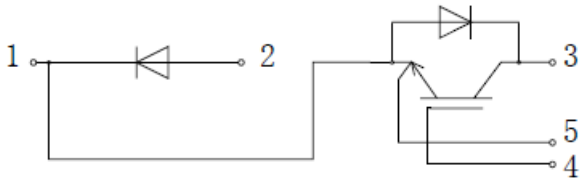
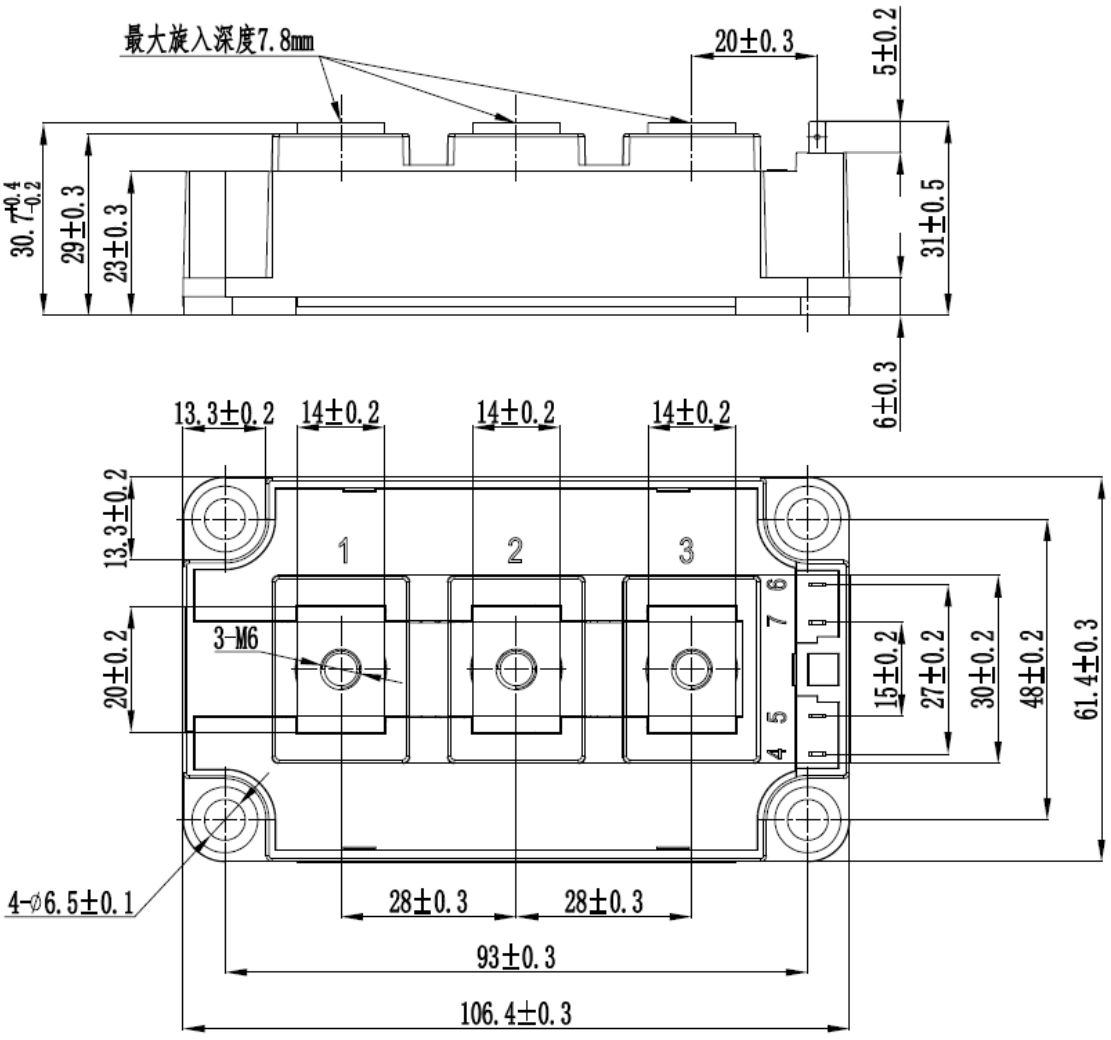
封装 / Package

接线图 / Circuit Diagram



封装尺寸 / Package outlines



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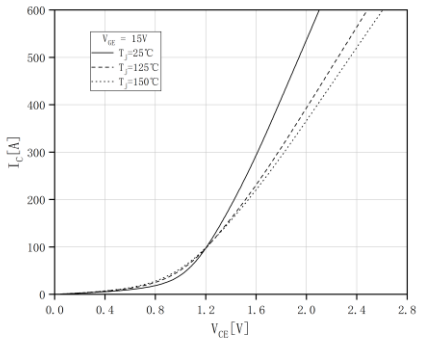
性能 / Performance

输出特性 IGBT, 制动-斩波器（典型）
output characteristic IGBT, Chopper (typical)



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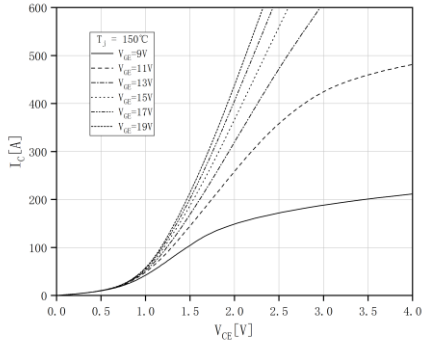
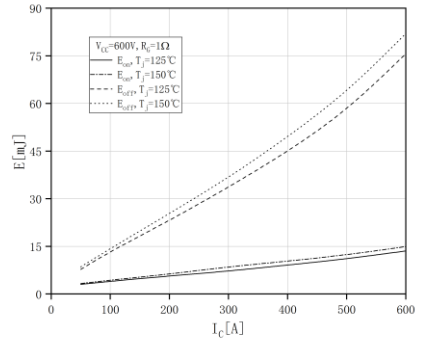
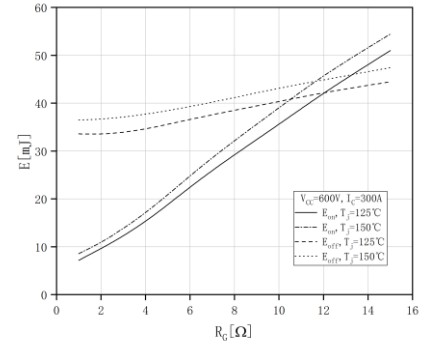
output characteristic IGBT, Chopper (typical)



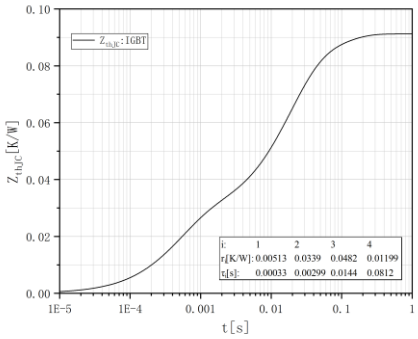
开关损耗 IGBT, 制动-斩波器（典型）
switching losses IGBT, Chopper (typical)



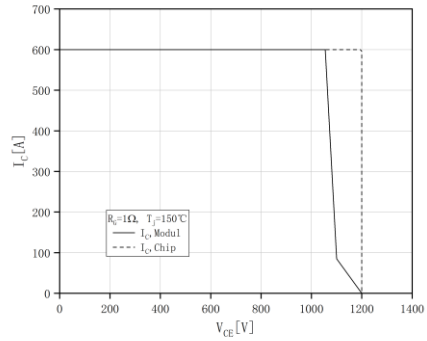
开关损耗 IGBT, 制动-斩波器（典型）
switching losses IGBT, Chopper (typical)



瞬态热阻抗 IGBT, 制动-斩波器
transient thermal impedance IGBT, Chopper



反偏安全工作区 IGBT, 制动-斩波器（RBSOA）
Reverse bias safe operating area IGBT, Chopper(RBSOA)



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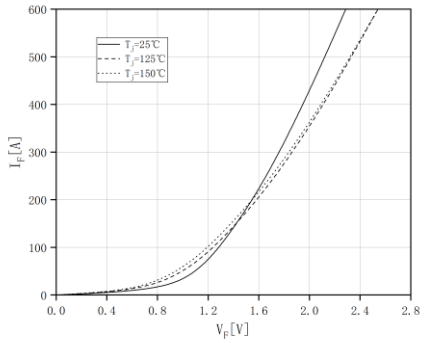
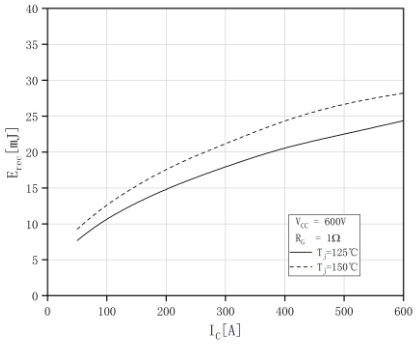
性能 / Performance

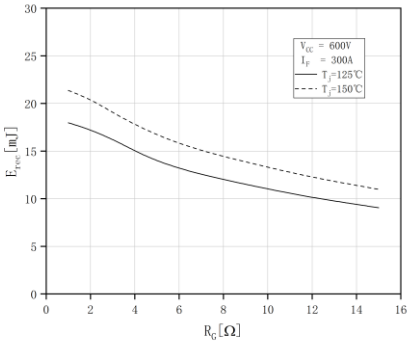
正向偏压特性 二极管,制动-斩波器（典型）
forward characteristic of Diode, Chopper(typical)



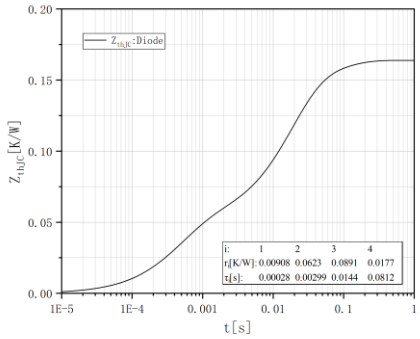
开关损耗 二极管，制动-斩波器（典型）
switching losses Diode, Chopper(typical)



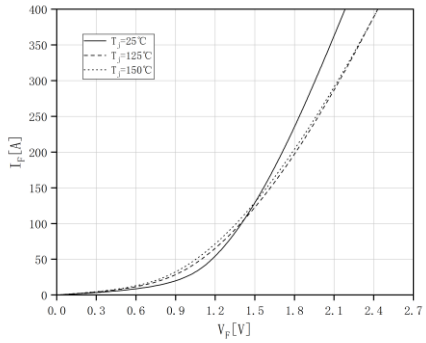
开关损耗 二极管，制动-斩波器（典型）
switching losses Diode, Chopper(typical)



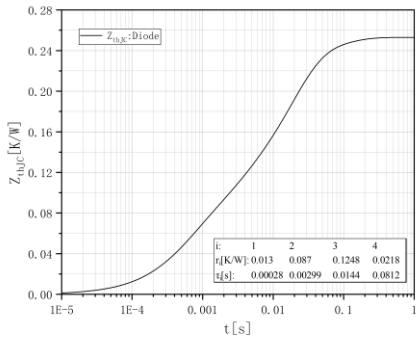
瞬态热阻抗 二极管，制动-斩波器
transient thermal impedance Diode, Chopper



正向偏压特性 反向二极管（典型）
forward characteristic of Diode, Reverse(typical)



瞬态热阻抗 反向二极管
transient thermal impedance Diode, Reverse



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