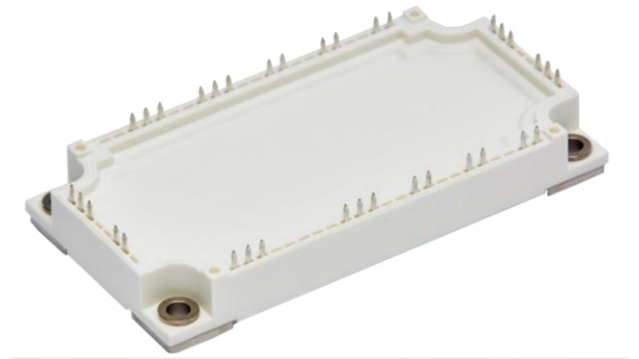
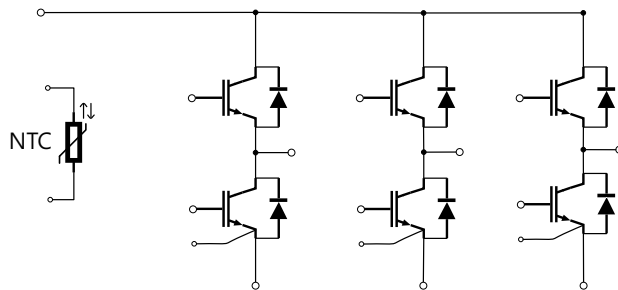


### 等效电路原理图/Equivalent Circuit Schematic



150A/1200V

### 说明/Description

晶恒 IGBT 功率模块具有超低的导通损耗

JingHeng IGBT Power Module provides ultra low  
以及良好的短路可靠性。

conduction loss as well as short circuit ruggedness.

该产品是为了通用逆变器以及不间断电源

They are designed for the applications such as  
等应用所设计。

general inverters and UPS.

### 电气特性/Electrical Features

- 具有正温度系数的 $V_{CEsat}$  / $V_{CEsat}$  with positive temperature coefficient
- 集成NTC温度传感器 /Integrated NTC temperature sensor
- 高功率和热循环能力 /High power and thermal cycling capability

### 典型应用/Typical Applications

- 辅助逆变器 /Auxiliary Inverters
- 医疗应用 /Medical applications
- 伺服驱动器 /Servo Drives

# IGBT, 逆变器 / IGBT ,Inverter

## 最大额定值 / Maximum Rated Values

Parameter	Symbol	Conditions	Value	Unit
集电极-发射极电压 Collector-emitter voltage	$V_{CES}$	$V_{GE}=0V, I_C=1mA, T_{vj}=25^{\circ}C$	1200	V
连续集电极直流电流 Continuous DC collector current	$I_{C\ nom}$	$T_C=95^{\circ}C, T_{vj\ max}=175^{\circ}C$	150	A
集电极重复峰值电流 Repetitive peak collector current	$I_{CRM}$	$t_p=1ms$	300	A
栅极-发射极峰值电压 Gate-emitter peak voltage	$V_{GES}$	$T_{vj}=25^{\circ}C$	$\pm 20$	V

## 特征值 / Characteristic Values

Parameter	Symbol	Conditions	Value			Unit
			Min	Typ	Max	
栅极阈值电压 Gate threshold voltage	$V_{Geth}$	$V_{GE}=V_{CE}, I_C=5.7mA, T_{vj}=25^{\circ}C$	5.0		6.8	V
栅极-发射极漏电流 Gate-emitter leakage current	$I_{GES}$	$V_{CE}=0V, V_{GE}=20V, T_{vj}=25^{\circ}C$			400	nA
集电极-发射极截止电流 Collector-emitter cut-off current	$I_{CES}$	$V_{CE}=1200V, V_{GE}=0V, T_{vj}=25^{\circ}C$			1	mA
集电极-发射极饱和电压 Collector-emitter saturation voltage	$V_{CE\ sat}$	$I_C=150A, V_{GE}=15V, T_{vj}=25^{\circ}C$		1.65	2.36	V
		$I_C=150A, V_{GE}=15V, T_{vj}=125^{\circ}C$		1.93		
		$I_C=150A, V_{GE}=15V, T_{vj}=150^{\circ}C$		1.98		
内部栅极电阻 Internal gate resistance	$R_{gint}$	$T_{vj}=25^{\circ}C$		5.0		$\Omega$
栅极电荷 Gate charge	$Q_G$	$V_{GE}=-15V \sim +15V$		2.1		$\mu C$
输入电容 Input capacitance	$C_{ies}$	$V_{CE}=25V, V_{GE}=0V, f=1MHz, T_{vj}=25^{\circ}C$		12.6		nF
反向传输电容 Reverse transfer capacitance	$C_{res}$			0.5		

Parameter	Symbol	Conditions	Value			Unit
			Min	Typ	Max	
开通延迟时间（电感负载） Turn-on delay time, inductive load	$t_{don}$	$I_C=150A, V_{CE}=600V$ $R_{gon}=R_{goff}=2\Omega$ $V_{GE}=-15V/+15V$ $T_{vj}=25^\circ C$		248		ns
上升时间（电感负载） Rise time, inductive load	$t_r$			54		
关断延迟时间（电感负载） Turn-off delay time, inductive load	$t_{doff}$			311		
下降时间（电感负载） Fall time, inductive load	$t_f$			184		
开通损耗能量（每脉冲） Turn-on energy loss per pulse	$E_{on}$			5.3		mJ
关断损耗能量（每脉冲） Turn-off energy loss per pulse	$E_{off}$			9.3		
短路数据 SC data	$I_{SC}$	$t_p \leq 8\mu s, V_{GE} \leq 15V,$ $V_{CC}=600V, V_{CEM} \leq 1200V,$ $T_{vj}=150^\circ C$		700		A
结-外壳热阻 Thermal resistance, junction to case	$R_{thJC}$	每个 IGBT / per IGBT			0.16	K/W
外壳-散热器热阻 Thermal resistance, case to heatsink	$R_{thCH}$	每个 IGBT / per IGBT $\lambda_{grease}=1W/(m \cdot K)$		0.08		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	Symbol	Conditions	Value	Unit
反向重复峰值电压 Repetitive peak reverse voltage	$V_{RRM}$	$T_{vj}=25^\circ C$	1200	V
连续正向直流电流 Continuous DC forward current	$I_F$		150	A
正向重复峰值电流 Repetitive peak forward current	$I_{FRM}$	$t_p=1ms$	300	A

## 特征值 / Characteristic Values

Parameter	Symbol	Conditions	Value			Unit
			Min	Typ	Max	
正向电压 Forward voltage	$V_F$	$I_F=150A, V_{GE}=0V, T_{vj}=25^{\circ}C$		2.2		V
恢复电荷 Recovered charge	$Q_{rr}$	$I_F=150A, V_R=600V$ $-di_F/dt=2800A/\mu s$ $V_{GE}=-15V, T_{vj}=25^{\circ}C$		10.1		$\mu C$
反向恢复峰值电流 Peak reverse recovery current	$I_{RM}$			126		A
反向恢复损耗（每脉冲） Reverse recovery energy	$E_{rec}$			4.3		mJ
结-外壳热阻 Thermal resistance, junction to case	$R_{thJC}$	每个二极管 / per diode			0.27	K/W
外壳-散热器热阻 Thermal resistance, case to heatsink	$R_{thCH}$	每个二极管 / per diode $\lambda_{grease}=1W/(m^{\circ}K)$		0.12		K/W
在开关状态下温度 Temperature under switching conditions	$T_{vj op}$		-40		150	$^{\circ}C$

## 负温度系数热敏电阻 / NTC - Thermistor

### 特征值 / Characteristic Values

Parameter	Symbol	Conditions	Value			Unit
			Min	Typ	Max	
额定电阻值 Rated resistance	$R_{25}$			5		$k\Omega$
R100 偏差 Deviation of R100	$\Delta R/R$	$T_c=100^{\circ}C, R_{100}=493.3\Omega$	-5		5	%
B-值 B-value	$B_{25/50}$	$R_2=R_{25}\exp[B_{25/50}(1/T_2-1/(298.15K))]$		3380		K

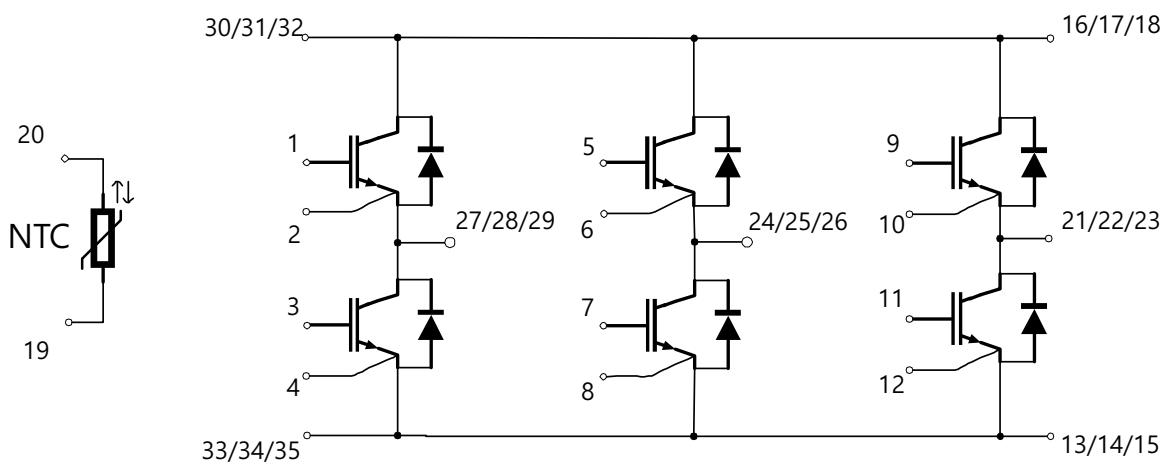
## 模块 / Module

特征值（除非另有说明，否则  $T_c=25^{\circ}\text{C}$ ）

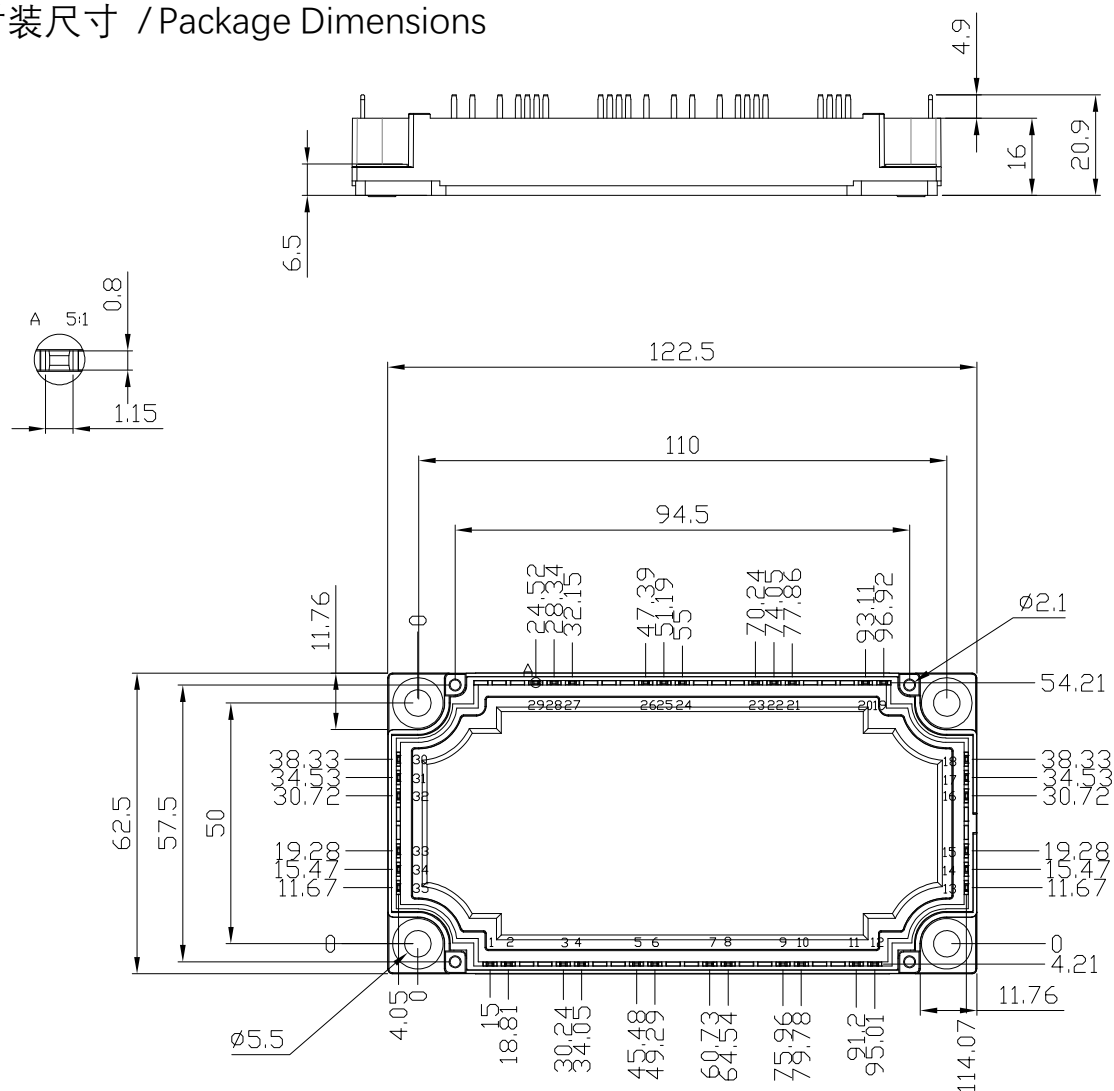
Characteristic Values ( $T_c=25^{\circ}\text{C}$  unless otherwise specified)

Parameter	Symbol	Conditions	Value			Unit
			Min	Typ	Max	
绝缘电压 Isolation voltage	$V_{\text{isol}}$	$t=1\text{min}, f=50\text{Hz}$	2500			V
最大结温 Maximum junction temperature	$T_{\text{jmax}}$				150	$^{\circ}\text{C}$
在开关状态下温度 Operating junction temperature	$T_{\text{vj op}}$		-40		150	$^{\circ}\text{C}$
储存温度 Storage temperature	$T_{\text{stg}}$		-40		125	$^{\circ}\text{C}$
杂散电感（模块） Stray inductance module	$L_{\text{CE}}$			40		nH
模块安装扭矩 Mounting torque for module mounting	M	M5 螺丝（底板到散热器） Screw M5 baseplate to heatsink	3.0		6.0	N.m
模块重量 / Weight of module	G			300		g

## 电路图 / Circuit Diagram



## 封装尺寸 / Package Dimensions



## Friendship Reminder 友情提示

■JiNan JingHeng (hereinafter referred to as JH) reserves the right to make changes to this document and its products and specifications at anytime without notice.

济南晶恒（以下简称JH）保留，未经通知变更本文件和与本文件相关的产品及规格的权利。

■Customers should obtain and confirm the latest product information and specifications before final design, purchase or use.

使用方应在使用、采购本产品之前获取并确认产品信息和规格书的最新版本。

■JH makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does JH assume any liability for application assistance or customer product design.

JH对其产品用于某特定用途的适用性，既不做任何保证、说明或担保、也不承担任何应用协助或使用方设计的法定责任。

■JH does not warrant or accept any liability with products which are purchased or used for any unintended or unauthorized application.

JH不保证或承担任何责任，其产品被采购使用于任何非预期或授权的应用。

■No license is granted by implication or otherwise under any intellectual property rights of JH.

此规格书属于JH的知识产权，没有经过我司授权不得抄袭。

■JH's products are not authorized for use as critical components in life support devices or systems without express written approval of JH.

没有JH的书面授权，JH的产品不能在生命支撑设备或系统里作为关键零件使用。