

NI300B17C6K4

1700V 300A IGBT 模块, C6 封装, 内置续流二极管
1700V 300A IGBT Module, C6 Package, with FWD

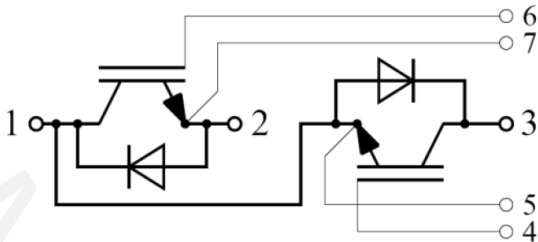
特点 Features

- 高短路耐量, 自限短路电流
High Short Circuit Capability, Self Limiting Short Circuit Current
- 沟槽场截止技术
Trench Filed Stop Technology
- 低开关损耗, 快速开关
Low Switching Loss, Fast Switching
- 快速和软反向恢复续流二极管
Free Wheeling Diodes with Fast and Soft Reverse Recovery
- 正温度系数
Positive Temperature Coefficient



应用 Applications

- 高频开关应用
High Frequency Switching Application
- 医疗应用
Medical Applications
- 运动、伺服控制
Motion Control, Servo Control
- UPS 系统
UPS Systems



IGBT,逆变器/IGBT,Inverter 最大额定值/ Maximum Ratings

参数 Parameter	符号 Symbol	数值 Value	单位 Unit
集电极-发射极电压 Collector-Emitter Voltage, $T_{vj}=25^{\circ}\text{C}$	V_{CES}	1700	V
集电极电流 DC Collector Current, $T_c=100^{\circ}\text{C}, T_{vj,max}=175^{\circ}\text{C}$	I_C	300	A
集电极峰值电流 Repetitive Peak Collector Current, $t_p=1\text{ms}$	I_{CM}	600	A
栅极-发射极电压 Gate-Emitter Peak Voltage	V_{GES}	± 20	V
IGBT最大功耗 IGBT Maximum Power Dissipation, $T_c=25^{\circ}\text{C}, T_{vj,max}=175^{\circ}\text{C}$	P_D	1800	W
IGBT短路耐量 IGBT Short Circuit Withstand Time	t_{sc}	10	μs
最高结温 Maximum Junction Temperature	$T_{vj, max}$	175	$^{\circ}\text{C}$
工作结温 Operating Junction Temperature	$T_{vj,op}$	-40~150	$^{\circ}\text{C}$
存储温度范围 Storage Temperature Range	T_{stg}	-40~125	$^{\circ}\text{C}$

IGBT电特性 IGBT Electrical Characteristics (T_{vj}=25°C unless otherwise noted)

参数 Parameter	符号 Symbol	条件 Condition		数值 Value			单位 Unit
				Min	Typ.	Max	
集电极-发射极饱和电压 Collector-Emitter Saturation Voltage	V _{CE(sat)}	I _C =300A, V _{GE} =15V	T _{vj} =25°C		1.80	2.00	V
			T _{vj} =150°C		2.10		
栅极-发射极开启电压 Gate-Emitter Threshold Voltage	V _{GE(th)}	I _C =2mA, V _{CE} =V _{GE}		5.0	5.6	6.5	V
集电极-发射极截止电流 Collector-Emitter Cut-off Current	I _{CES}	V _{CE} =1700V, V _{GE} =0V, T _{vj} =25°C				1	mA
栅极-发射极漏电流 Gate-Emitter Leakage Current	I _{GES}	V _{CE} =0V, V _{GE} =±15V, T _{vj} =150°C		-500		500	nA
输入电容 Input Capacitance	C _{ies}	f=1MHz, T _{vj} =25°C, V _{GE} =0V, V _{CE} =25V			15.0		nF
反向传输电容 Reverse Transfer Capacitance	C _{res}				0.82		nF
集成栅极电阻 Integrated Gate Resistor	R _{gint}	Per Switch			2.3		Ω
开通延迟时间 Turn-on Delay Time	t _{d(on)}	I _C =300A, V _{CE} =900V, V _{GE} =±15V R _{Gon} =4.7Ω R _{Goff} =4.7Ω Inductive Load	T _{vj} =25°C		250		ns
			T _{vj} =150°C		270		
上升时间 Rise Time	t _r		T _{vj} =25°C		230		ns
			T _{vj} =150°C		280		
关断延迟时间 Turn-off Delay Time	t _{d(off)}		T _{vj} =25°C		450		ns
			T _{vj} =150°C		630		
下降时间 Fall Time	t _f		T _{vj} =25°C		230		ns
			T _{vj} =150°C		260		
开通损耗 Turn-on Energy Loss	E _{on}		T _{vj} =25°C		123		mJ
			T _{vj} =150°C		175		
关断损耗 Turn-off Energy Loss	E _{off}		T _{vj} =25°C		70		mJ
			T _{vj} =150°C		110		
短路电流 Short Circuit Current	I _{sc}	V _{GE} =15V, t _p ≤10us, V _{CC} =900V, V _{CE,max} =V _{CES} -L _{s(CE)} x di/dt, T _j =125°C			1200		A

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	$T_{vj}=25^{\circ}\text{C}$	V_{RRM}	1700	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

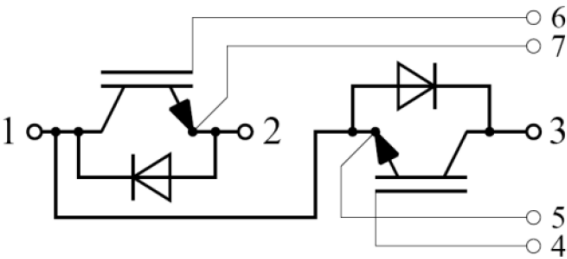
特征值/Characteristic Values

参数 Parameter	符号 Symbol	条件 Condition		数值 Value			单位 Unit
				Min	Typ.	Max	
正向电压 Forward Voltage	V_F	$I_F=300\text{A}$	$T_{vj}=25^{\circ}\text{C}$		2.20	2.40	V
			$T_{vj}=150^{\circ}\text{C}$		2.10		
反向峰值电流 Peak Reverse recovery current	I_{RM}	$I_F=300\text{A},$ $V_R=900\text{V},$ $di_F/dt=-1800\text{A}/\mu\text{s}$ $V_{GE}=-15\text{V}$	$T_{vj}=150^{\circ}\text{C}$		250		A
反向恢复电荷 Reverse Recovery Charge	Q_{rr}		$T_{vj}=150^{\circ}\text{C}$		3		uC
反向恢复损耗 Reverse Recovery Energy Loss	E_{rec}		$T_{vj}=150^{\circ}\text{C}$		45		mJ

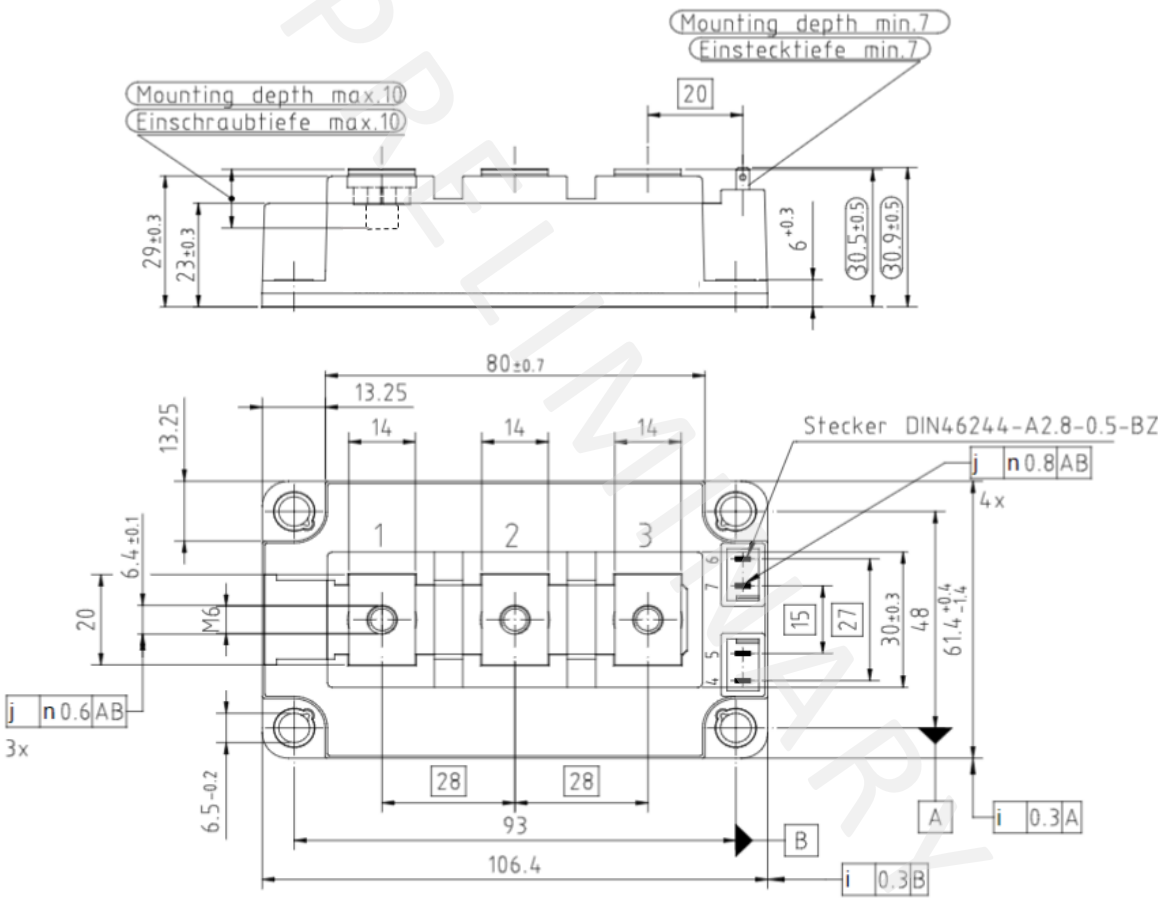
封装特性 Package Properties

参数 Parameter	符号 Symbol	条件 Condition	数值 Value			单位 Unit
			Min	Typ.	Max	
IGBT 结-壳热阻 IGBT Thermal Resistance: Junction to Case	$R_{th(J-C)}$	每个IGBT/per IGBT			0.085	K/W
二极管 结-壳热阻 Diode Thermal Resistance: Junction to Case	$R_{th(J-C)}$	每个二极管/per Diode			0.14	K/W
绝缘耐压 Isolation Voltage	V_{isol}	RMS, f=50Hz, t=60s	3.0			kV
安装扭矩 Mounting Torques	M	基板至散热器, Baseplate to Heatsink, M6	3.0		6.0	Nm
		功率端子安装, Power Terminal, M6	2.5		5.0	Nm
模块重量 Module Weight	G			323		g

电路图 Circuit Diagram



外形尺寸 Outline Drawing



修订记录 Revision History

版本 Version	日期 Date	描述 Description
v1.0	2023-06-12	初版 Initial Release