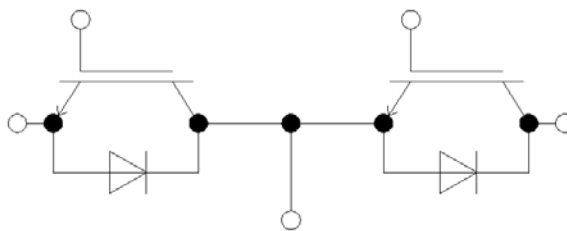


采用沟槽栅/场终止型 IGBT，超快恢复二极管。
Discrete with trench / field stop IGBT, ultra fast recovery diode.



特征/Features

- 低开关损耗 / Low Switching Losses
- 沟槽栅/场终止工艺 / Trench+ Field Stop Technology
- 低饱和压降/ Low $V_{CE\ sat}$

典型应用/Typical Applications

- 电机传动 / Motor Drives
- UPS 系统 / UPS Systems

最大额定值/Maximum Rated Values

初步数据/Preliminary Data

IGBT-逆变器/IGBT-Inverter

参数 Parameter	测试条件 Test Conditions	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}	1200	V
连续集电极直流电流 Continuous DC collector current	$T_C=100^{\circ}\text{C}$, $T_{vj\ max}=175^{\circ}\text{C}$	I_C	200	A
集电极重复峰值电流 Repetitive peak collector current	$T_p=1\text{ms}$	I_{CRM}	400	A
总功率损耗 Total power dissipation	$T_C=25^{\circ}\text{C}$, $T_{vj\ max}=175^{\circ}\text{C}$	P_{tot}	1660	W
栅极-发射极峰值电压 Gate-emitter peak voltage		V_{GES}	± 20	V

二极管-逆变器/Diode-Inverter

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	200	A
正向重复峰值电流 Repetitive peak forward current	$T_p=1\text{ms}$	I_{FRM}	400	A
I^2t -值 I^2t -value	$V_R=0\text{V}$, $T_p=10\text{ms}$, $T_{vj}=125^{\circ}\text{C}$	I^2t	8500	A^2s

特征值/Characteristic Values

初步数据/Preliminary Data

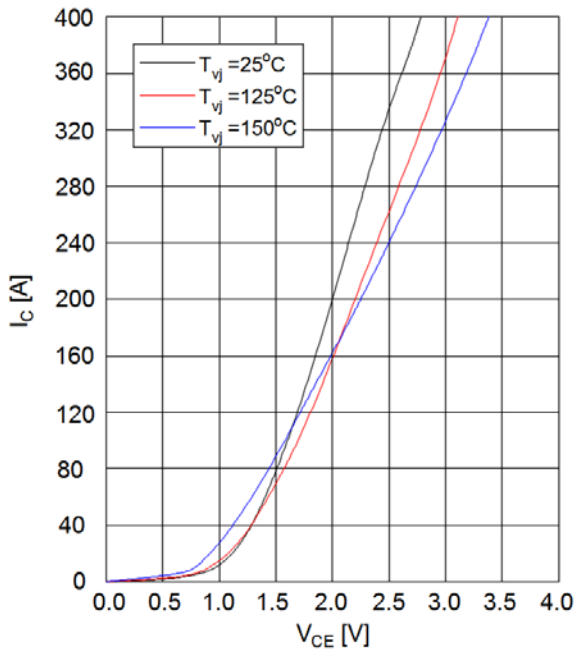
IGBT-逆变器/IGBT-Inverter							
参数 Parameter	测试条件 Test Conditions	符号 Symbol	Min.	Typ.	Max.	Unit	
集电极-发射极饱和电压 Collector-emitter saturation voltage	$I_C=200A, V_{GE}=15V$	$T_{vj}=25^{\circ}C$ $T_{vj}=125^{\circ}C$ $T_{vj}=150^{\circ}C$	$V_{CE\ sat}$		2.00 2.20 2.25	V	
栅极阈值电压 Gate threshold voltage	$I_C=7.6mA, V_{CE}=V_{GE}$	$T_{vj}=25^{\circ}C$	V_{Geth}	5.0	7.0	V	
栅极-发射极漏电流 Gate-emitter leakage current	$V_{GE}=20V, V_{CE}=0V$	$T_{vj}=25^{\circ}C$	I_{GES}	-600	600	nA	
集电极-发射极截止电流 Collector-emitter leakage current	$V_{CE}=1200V, V_{GE}=0V$	$T_{vj}=25^{\circ}C$	I_{CES}		1	mA	
内部栅极电阻 Internal gate resistor		$T_{vj}=25^{\circ}C$	R_{Gint}		2.75	Ω	
栅极电荷 Gate charge	$V_{GE}=-15V \dots +15V$		Q_G		2.1	μC	
输入电容 Input capacitance			C_{ies}		14.8	nF	
输出电容 Output capacitance	$f=1\ MHz, V_{CE}=25V,$ $V_{GE}=0V$	$T_{vj}=25^{\circ}C$	C_{oes}		1.1	nF	
反向传输电容 Reverse transfer capacitance			C_{res}		0.56	nF	
开通延迟时间 Turn-on delay time		$T_{vj}=25^{\circ}C$ $T_{vj}=125^{\circ}C$ $T_{vj}=150^{\circ}C$	$T_{d\ on}$		104 116 117	ns	
关断延迟时间 Turn-off delay time		$T_{vj}=25^{\circ}C$ $T_{vj}=125^{\circ}C$ $T_{vj}=150^{\circ}C$	$T_{d\ off}$		532 555 557	ns	
上升时间 Rise time	$I_C=200A, V_{CE}=600V$ $V_{GE}=\pm 15V$	$T_{vj}=25^{\circ}C$ $T_{vj}=125^{\circ}C$ $T_{vj}=150^{\circ}C$	T_r		58 67 69	ns	
下降时间 Fall time	$R_{Gon}=4.7\Omega, R_{Goff}=4.7\Omega$ 电感负载 (Inductive load)	$T_{vj}=25^{\circ}C$ $T_{vj}=125^{\circ}C$ $T_{vj}=150^{\circ}C$	T_f		29 39 41	ns	
开通损耗 (每脉冲) Turn-on energy loss per pulse		$T_{vj}=25^{\circ}C$ $T_{vj}=125^{\circ}C$ $T_{vj}=150^{\circ}C$	E_{on}		16.5 18.6 18.8	mJ	
关断损耗 (每脉冲) Turn-off energy loss per pulse		$T_{vj}=25^{\circ}C$ $T_{vj}=125^{\circ}C$ $T_{vj}=150^{\circ}C$	E_{off}		9.0 11.5 11.8	mJ	
短路数据 Short circuit data	$V_{GE}\leq 15V, V_{CC}=800V$ $V_{CEmax}=V_{CES}-L_{sCE}\cdot di/dt$	$T_P\leq 10\mu s$ $T_{vj}=150^{\circ}C$	I_{sc}		900	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 conditions		T _{vj op}	-40		150	°C
二极管-逆变器/Diode-Inverter						
参数 Parameter	测试条件 Test Conditions	符号 Symbol	Min.	Typ.	Max.	Unit
正向电压 Forward voltage	I _F =200A, V _{GE} =0V	T _{vj} =25°C T _{vj} =125°C T _{vj} =150°C V _F		1.95 1.80 1.80		V
反向恢复峰值电流 Peak reverse recovery current		T _{vj} =25°C T _{vj} =125°C T _{vj} =150°C I _{RM}		150 224 232		A
恢复电荷 Recovered charge	I _F =200A, V _R =600V V _{GE} =-15V	T _{vj} =25°C T _{vj} =125°C T _{vj} =150°C Q _r		12.0 31.5 33.0		μC
反向恢复损耗（每脉冲） Reverse recovery energy		T _{vj} =25°C T _{vj} =125°C T _{vj} =150°C E _{rec}		4.4 12.2 14.0		mJ
结-外壳热阻 Thermal resistance, junction to case	每个二极管/Per diode	R _{thJC}			0.18	K/W
在开关状态下温度 Temperature under switching conditions		T _{vj op}	-40		150	°C
模块/Module			初步数据/Preliminary Data			
绝缘测试电压 Isolation test voltage	RMS, f=50Hz, t=1min	V _{ISOL}		4.0		kV
模块基板材料 Material of module baseplate				Cu		
内部绝缘 Internal isolation				Al ₂ O ₃		
爬电距离 Creepage distance	端子-端子/Terminal to terminal			23.0		mm
电气间隙 Clearance	端子-端子/Terminal to terminal			11.0		mm
			min.	typ.	max.	
杂散电感，模块 Stray inductance module		L _{sCE}		20		nH
模块引线电阻，端子-芯片 Module lead resistance, terminals-chip	T _C =25°C, 每个开关/Per switch	R _{CC'+EE'}		0.7		mΩ
储存温度 Storage temperature		T _{stg}	-40		125	°C
模块安装的安装扭矩 Mounting torque for module mounting		M	3.00		6.00	Nm
重量 Weight		G		340		g

初步数据/Preliminary Data

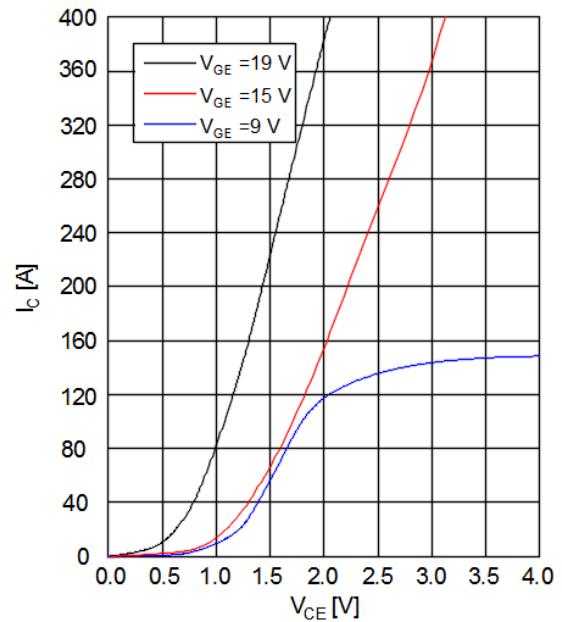
输出特性 IGBT-逆变器 (典型)
Output characteristic IGBT-Inverter (Typical)

$I_C = f(V_{CE})$
 $V_{GE} = 15V$



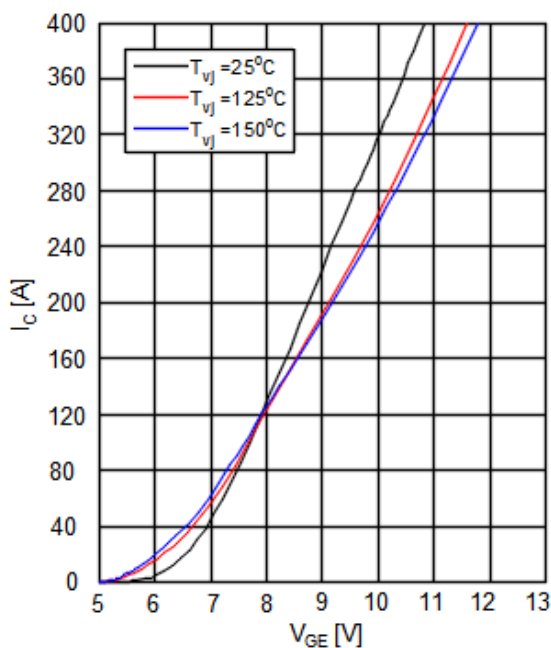
输出特性 IGBT-逆变器 (典型)
Output characteristic IGBT-Inverter (Typical)

$I_C = f(V_{CE})$
 $T_{vj} = 125^\circ C$



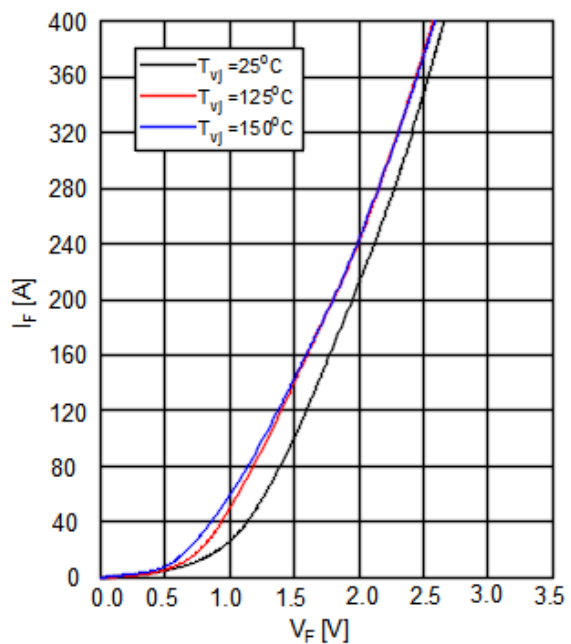
传输特性 IGBT-逆变器 (典型)
Transfer characteristic IGBT-Inverter (Typical)

$I_C = f(V_{GE})$
 $V_{CE} = 20V$



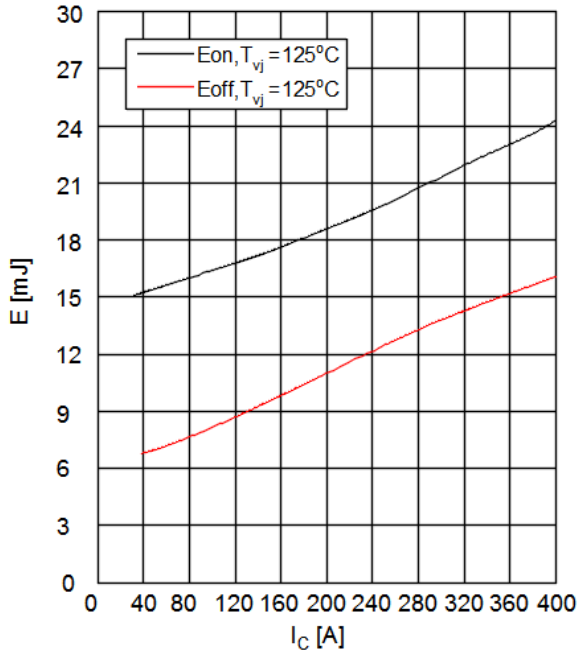
正向偏压特性二极管-逆变器 (典型)
Forward characteristic of Diode-Inverter (Typical)

$I_F = f(V_F)$



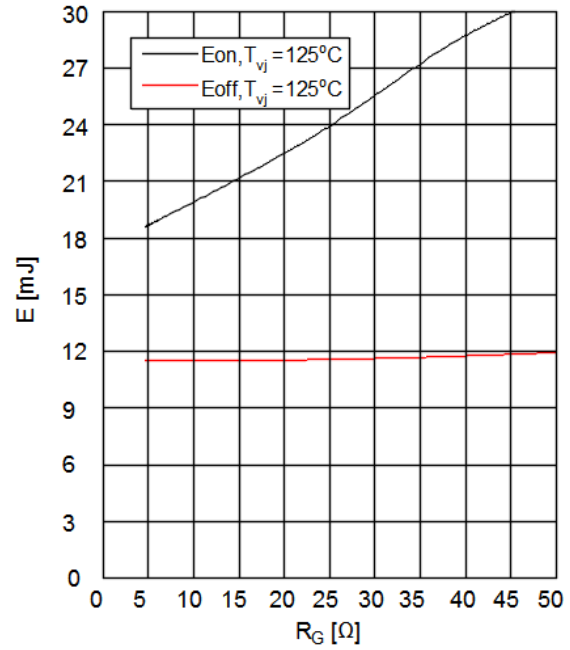
开关损耗 IGBT-逆变器 (典型)
Switching losses IGBT-Inverter (Typical)

$E_{on}=f(I_C)$, $E_{off}=f(I_C)$
 $V_{CE}=600V$, $R_{Gon}=4.7\Omega$, $R_{Goff}=4.7\Omega$, $V_{GE}=\pm 15V$



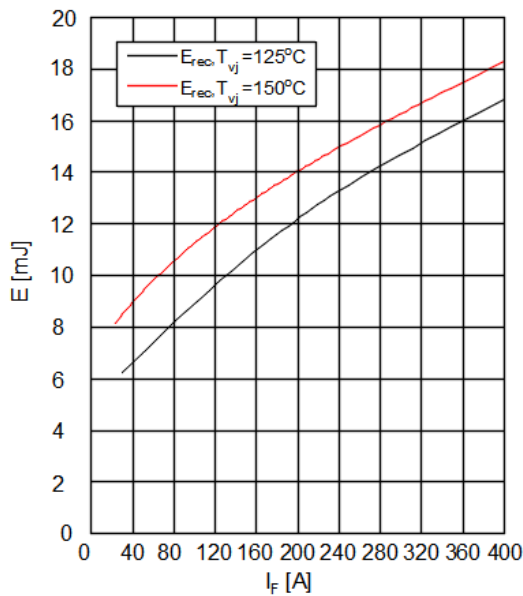
开关损耗 IGBT-逆变器 (典型)
Switching losses IGBT-Inverter (Typical)

$E_{on}=f(R_G)$, $E_{off}=f(R_G)$
 $V_{CE}=600V$, $I_C=200A$, $V_{GE}=\pm 15V$



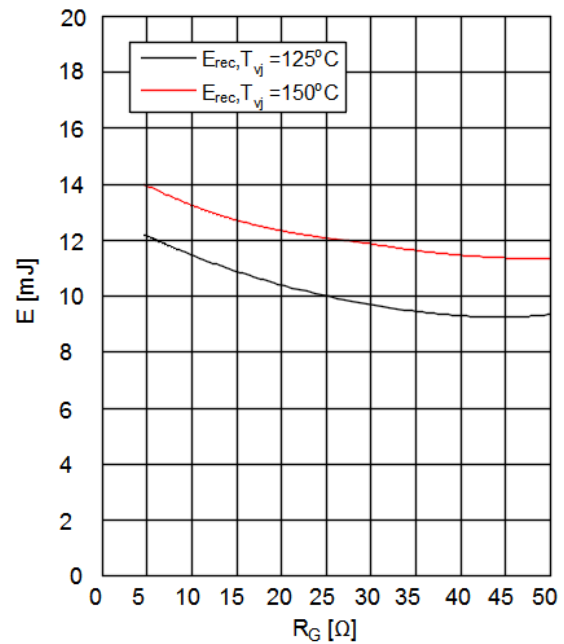
开关损耗二极管-逆变器 (典型)
Switching losses Diode-Inverter (Typical)

$E_{rec}=f(I_F)$
 $V_{CE}=600V$, $R_{Gon}=4.7\Omega$



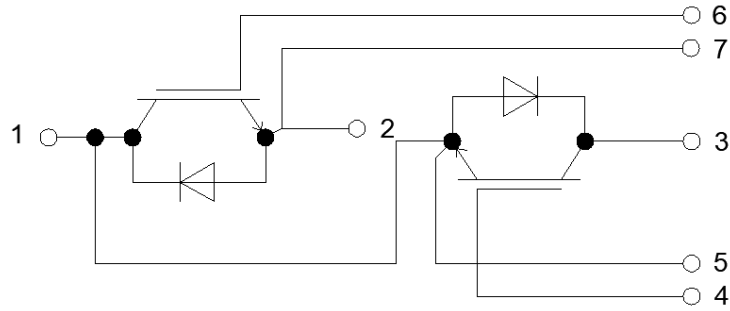
开关损耗二极管-逆变器 (典型)
Switching losses Diode-Inverter (Typical)

$E_{rec}=f(R_G)$
 $V_{CE}=600V$, $I_F=200A$

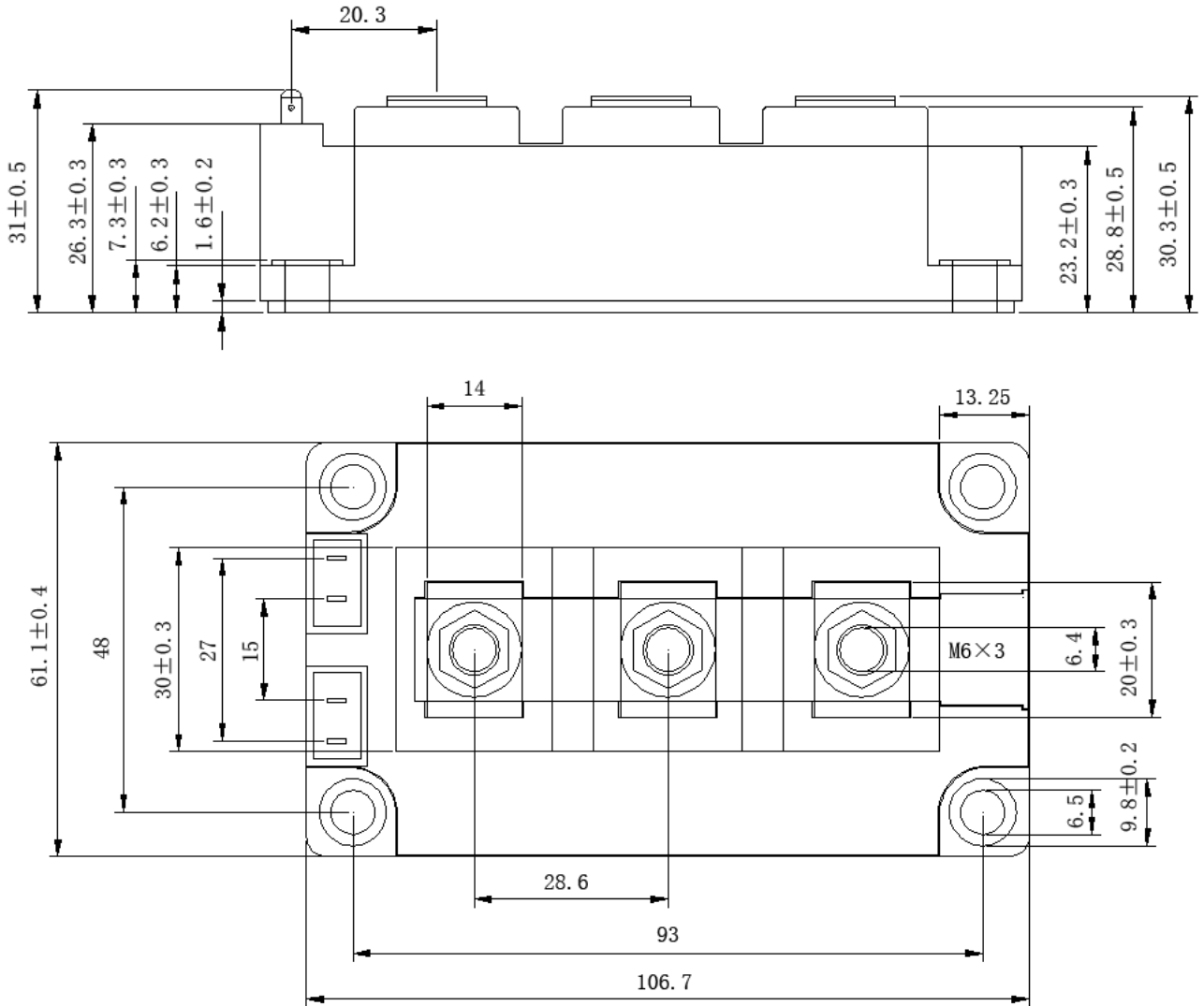


接线图/Circuit diagram

初步数据/Preliminary Data



封装尺寸/Package outlines



● 重要提示:

产品规格书包含了产品的基本参数和适用范围。

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