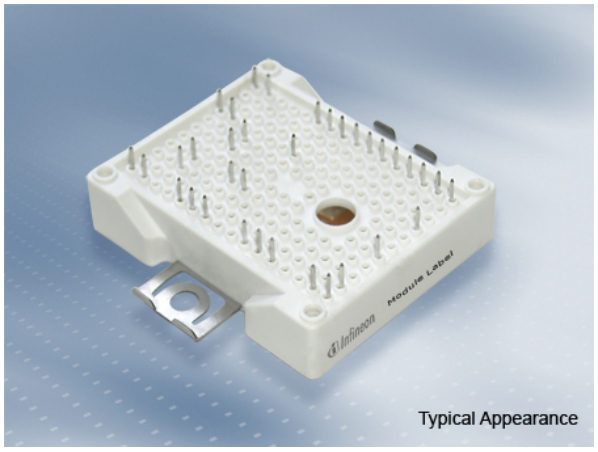
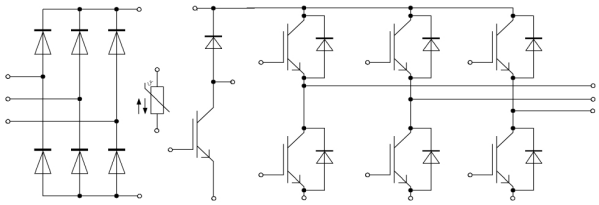
EasyPIM™ 模块 采用第七代沟槽栅/场终止IGBT7和第七代发射极控制二极管 带有温度检测NTC
EasyPIM™ module with TRENCHSTOP™IGBT7 and Emitter Controlled 7 diode and NTC

初步数据 / Preliminary Data





V_{CES} = 1200V
$I_{C\ nom}$ = 25A / I_{CRM} = 50A

潜在应用
- 电机传动
- 空调
- 辅助逆变器

Potential Applications
- Motor drives
- Air conditioning
- Auxiliary inverters

电气特性
- 低 V_{CEsat}
- 沟槽栅IGBT7
- 过载操作达175°C

Electrical Features
- Low V_{CEsat}
- Trenchstop™ IGBT7
- Overload operation up to 175°C

机械特性
- 2.5 kV 交流 1分钟 绝缘
- 低热阻的三氧化二铝 Al_2O_3 衬底
- 焊接技术
- 紧凑型设计
- 高功率密度

Mechanical Features
- 2.5 kV AC 1min insulation
- Al_2O_3 substrate with low thermal resistance
- Solder contact technology
- Compact design
- High power density

Module Label Code

Barcode Code 128

Sample
000001234560000000000000

DMX - Code

Content of the Code	Digit
Module Serial Number	1 - 5
Module Material Number	6 - 11
Production Order Number	12 - 19
Datecode (Production Year)	20 - 21
Datecode (Production Week)	22 - 23

初步数据
Preliminary Data

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_{vj} = 25°C	V_{CES}	1200		V
连续集电极直流电流 Continuous DC collector current	T_H = 105°C, $T_{vj\,max}$ = 175°C	I_{CDC}	25		A
集电极重复峰值电流 Repetitive peak collector current	t_P = 1 ms	I_{CRM}	50		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 = 25 A, V_{GE} = 15 V I_C = 25 A, V_{GE} = 15 V I_C = 25 A, V_{GE} = 15 V	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 175°C	$V_{CE\,sat}$		1,60 1,74 1,82	t.b.d.	V V V
栅极阈值电压 Gate threshold voltage	I_C = 0,525 mA, V_{CE} = V_{GE}, T_{vj} = 25°C		V_{GEth}	5,15	5,80	6,45	V
栅极电荷 Gate charge	V_{GE} = -15 / 15 V, V_{CE} = 600 V		Q_G		0,395		µC
内部栅极电阻 Internal gate resistor	T_{vj} = 25°C		R_{Gint}		0,0		Ω
输入电容 Input capacitance	f = 100 kHz, T_{vj} = 25°C, V_{CE} = 25 V, V_{GE} = 0 V		C_{ies}		4,77		nF
反向传输电容 Reverse transfer capacitance	f = 100 kHz, T_{vj} = 25°C, V_{CE} = 25 V, V_{GE} = 0 V		C_{res}		0,017		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_{vj} = 25°C	I_{CES}			0,0056	mA
栅极-发射极漏电流 Gate-emitter leakage current	V_{CE} = 0 V, V_{GE} = 20 V, T_{vj} = 25°C		I_{GES}			100	nA
开通延迟时间(电感负载) Turn-on delay time, inductive load	I_C = 25 A, V_{CE} = 600 V V_{GE} = -15 / 15 V R_{Gon} = 6,2 Ω	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 175°C	$t_{d\,on}$		0,035 0,036 0,043		µs µs µs
上升时间(电感负载) Rise time, inductive load	I_C = 25 A, V_{CE} = 600 V V_{GE} = -15 / 15 V R_{Gon} = 6,2 Ω	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 175°C	t_r		0,021 0,026 0,031		µs µs µs
关断延迟时间(电感负载) Turn-off delay time, inductive load	I_C = 25 A, V_{CE} = 600 V V_{GE} = -15 / 15 V R_{Goff} = 6,2 Ω	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 175°C	$t_{d\,off}$		0,19 0,26 0,38		µs µs µs
下降时间(电感负载) Fall time, inductive load	I_C = 25 A, V_{CE} = 600 V V_{GE} = -15 / 15 V R_{Goff} = 6,2 Ω	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 175°C	t_f		0,19 0,27 0,29		µs µs µs
开通损耗能量 (每脉冲) Turn-on energy loss per pulse	I_C = 25 A, V_{CE} = 600 V, Lσ = 35 nH di/dt = 650 A/µs (T_{vj} = 175°C) V_{GE} = -15 / 15 V, R_{Gon} = 6,2 Ω	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 175°C	E_{on}		1,78 2,57 3,18		mJ mJ mJ
关断损耗能量 (每脉冲) Turn-off energy loss per pulse	I_C = 25 A, V_{CE} = 600 V, Lσ = 35 nH du/dt = 3000 V/µs (T_{vj} = 175°C) V_{GE} = -15 / 15 V, R_{Goff} = 6,2 Ω	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 175°C	E_{off}		1,68 2,67 3,20		mJ mJ mJ
短路数据 SC data	V_{GE} ≤ 15 V, V_{CC} = 800 V V_{CEmax} = V_{CES} -L_{sCE} ·di/dt	t_P ≤ 8 µs, T_{vj} = 150°C t_P ≤ 7 µs, T_{vj} = 175°C	I_{SC}		80 75		A A
结 - 散热器热阻 Thermal resistance, junction to heatsink	每个 IGBT / per IGBT		R_{thJH}		1,25		K/W
在开关状态下温度 Temperature under switching conditions			$T_{vj\,op}$	-40		175	°C

初步数据
Preliminary Data

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°C	V_{RRM}	1200		V
连续正向直流电流 Continuous DC forward current		I_F	25		A
正向重复峰值电流 Repetitive peak forward current	t_P = 1 ms	I_{FRM}	50		A
I2t-值 I²t - value	V_R = 0 V, t_P = 10 ms, T_{vj} = 125°C V_R = 0 V, t_P = 10 ms, T_{vj} = 175°C	I²t	72,5 63,0		A²s A²s

特征值 / Characteristic Values

			min.	typ.	max.	
正向电压 Forward voltage	I_F = 25 A, V_{GE} = 0 V, T_{vj} = 25°C I_F = 25 A, V_{GE} = 0 V, T_{vj} = 125°C I_F = 25 A, V_{GE} = 0 V, T_{vj} = 175°C	V_F		1,83 1,70 1,63	t.b.d.	V V V
反向恢复峰值电流 Peak reverse recovery current	I_F = 25 A, - di_F/dt = 650 A/µs (T_{vj}=175°C), T_{vj} = 25°C V_R = 600 V, T_{vj} = 125°C V_{GE} = -15 V, T_{vj} = 175°C	I_{RM}		20,5 26,4 30,2		A A A
恢复电荷 Recovered charge	I_F = 25 A, - di_F/dt = 650 A/µs (T_{vj}=175°C), T_{vj} = 25°C V_R = 600 V, T_{vj} = 125°C V_{GE} = -15 V, T_{vj} = 175°C	Q_r		2,47 4,31 5,62		µC µC µC
反向恢复损耗（每脉冲） Reverse recovery energy	I_F = 25 A, - di_F/dt = 650 A/µs (T_{vj}=175°C), T_{vj} = 25°C V_R = 600 V, T_{vj} = 125°C V_{GE} = -15 V, T_{vj} = 175°C	E_{rec}		0,94 1,48 1,85		mJ mJ mJ
结 - 散热器热阻 Thermal resistance, junction to heatsink	每个二极管 / per diode	R_{thJH}		1,73		K/W
在开关状态下温度 Temperature under switching conditions		$T_{vj\,op}$	-40		175	°C

二极管,整流器 / Diode, Rectifier

最大额定值 / Maximum Rated Values

反向重复峰值电压 Repetitive peak reverse voltage	T_{vj} = 25°C	V_{RRM}	1600		V
最大正向均方根电流(每芯片) Maximum RMS forward current per chip	T_H = 100°C	I_{FRMSM}	45		A
最大整流器输出均方根电流 Maximum RMS current at rectifier output	T_H = 100°C	I_{RMSM}	50		A
正向浪涌电流 Surge forward current	t_p = 10 ms, T_{vj} = 25°C t_p = 10 ms, T_{vj} = 150°C	I_{FSM}	450 370		A A
I2t-值 I²t - value	t_p = 10 ms, T_{vj} = 25°C t_p = 10 ms, T_{vj} = 150°C	I²t	1010 685		A²s A²s

特征值 / Characteristic Values

			min.	typ.	max.	
正向电压 Forward voltage	T_{vj} = 150°C, I_F = 25 A	V_F		0,88		V
反向电流 Reverse current	T_{vj} = 150°C, V_R = 1600 V	I_R		1,00		mA
结 - 散热器热阻 Thermal resistance, junction to heatsink	每个二极管 / per diode	R_{thJH}		1,36		K/W
在开关状态下温度 Temperature under switching conditions		$T_{vj\,op}$	-40		150	°C

初步数据
Preliminary Data

IGBT, 制动-斩波器 / IGBT, Brake-Chopper

最大额定值 / Maximum Rated Values

集电极 - 发射极电压 Collector-emitter voltage	T_{vj} = 25°C	V_{CES}	1200	V
连续集电极直流电流 Continuous DC collector current	T_H = 105°C, $T_{vj\,max}$ = 175°C	I_{CDC}	25	A
集电极重复峰值电流 Repetitive peak collector current	t_P = 1 ms	I_{CRM}	50	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 = 25 A, V_{GE} = 15 V 	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 175°C	$V_{CE\,sat}$		1,60 1,74 1,82	t.b.d.	V V V
栅极阈值电压 Gate threshold voltage	I_C = 0,525 mA, V_{CE} = V_{GE}, T_{vj} = 25°C		V_{GEth}	5,15	5,80	6,45	V
栅极电荷 Gate charge	V_{GE} = -15 / 15 V, V_{CE} = 600 V		Q_G		0,395		µC
内部栅极电阻 Internal gate resistor	T_{vj} = 25°C		R_{Gint}		0,0		Ω
输入电容 Input capacitance	f = 100 kHz, T_{vj} = 25°C, V_{CE} = 25 V, V_{GE} = 0 V		C_{ies}		4,77		nF
反向传输电容 Reverse transfer capacitance	f = 100 kHz, T_{vj} = 25°C, V_{CE} = 25 V, V_{GE} = 0 V		C_{res}		0,017		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_{vj} = 25°C	I_{CES}			0,0056	mA
栅极-发射极漏电流 Gate-emitter leakage current	V_{CE} = 0 V, V_{GE} = 20 V, T_{vj} = 25°C		I_{GES}			100	nA
开通延迟时间(电感负载) Turn-on delay time, inductive load	I_C = 25 A, V_{CE} = 600 V V_{GE} = -15 / 15 V R_{Gon} = 6,2 Ω	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 175°C	$t_{d\,on}$		0,034 0,035 0,041		µs µs µs
上升时间(电感负载) Rise time, inductive load	I_C = 25 A, V_{CE} = 600 V V_{GE} = -15 / 15 V R_{Gon} = 6,2 Ω	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 175°C	t_r		0,022 0,026 0,033		µs µs µs
关断延迟时间(电感负载) Turn-off delay time, inductive load	I_C = 25 A, V_{CE} = 600 V V_{GE} = -15 / 15 V R_{Goff} = 6,2 Ω	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 175°C	$t_{d\,off}$		0,19 0,25 0,37		µs µs µs
下降时间(电感负载) Fall time, inductive load	I_C = 25 A, V_{CE} = 600 V V_{GE} = -15 / 15 V R_{Goff} = 6,2 Ω	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 175°C	t_f		0,17 0,27 0,29		µs µs µs
开通损耗能量 (每脉冲) Turn-on energy loss per pulse	I_C = 25 A, V_{CE} = 600 V, Lσ = 35 nH di/dt = 650 A/µs (T_{vj} = 175°C) V_{GE} = -15 / 15 V, R_{Gon} = 6,2 Ω	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 175°C	E_{on}		1,66 2,32 2,94		mJ mJ mJ
关断损耗能量 (每脉冲) Turn-off energy loss per pulse	I_C = 25 A, V_{CE} = 600 V, Lσ = 35 nH du/dt = 3000 V/µs (T_{vj} = 175°C) V_{GE} = -15 / 15 V, R_{Goff} = 6,2 Ω	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 175°C	E_{off}		1,73 2,68 3,32		mJ mJ mJ
短路数据 SC data	V_{GE} ≤ 15 V, V_{CC} = 800 V V_{CEmax} = V_{CES} -L_{sCE} ·di/dt	t_P ≤ 8 µs, T_{vj} = 150°C t_P ≤ 7 µs, T_{vj} = 175°C	I_{SC}		80 75		A A
结 - 散热器热阻 Thermal resistance, junction to heatsink	每个 IGBT / per IGBT		R_{thJH}		1,25		K/W
在开关状态下温度 Temperature under switching conditions			$T_{vj\,op}$	-40		175	°C

初步数据
Preliminary Data

二极管，制动-斩波器 / Diode, Brake-Chopper

最大额定值 / Maximum Rated Values

反向重复峰值电压 Repetitive peak reverse voltage	T_{vj} = 25°C		V_{RRM}	1200	V
连续正向直流电流 Continuous DC forward current			I_F	10	A
正向重复峰值电流 Repetitive peak forward current	t_P = 1 ms		I_{FRM}	20	A
I2t-值 I²t - value	V_R = 0 V, t_P = 10 ms, T_{vj} = 125°C V_R = 0 V, t_P = 10 ms, T_{vj} = 175°C		I²t	27,5 24,0	A²s A²s

特征值 / Characteristic Values

				min.	typ.	max.	
正向电压 Forward voltage	I_F = 10 A, V_{GE} = 0 V I_F = 10 A, V_{GE} = 0 V I_F = 10 A, V_{GE} = 0 V	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 175°C	V_F		1,72 1,59 1,52	t.b.d.	V V V
反向恢复峰值电流 Peak reverse recovery current	I_F = 10 A, - di_F/dt = 500 A/µs (T_{vj}=175°C) V_R = 600 V V_{GE} = -15 V	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 175°C	I_{RM}		9,81 14,7 16,1		A A A
恢复电荷 Recovered charge	I_F = 10 A, - di_F/dt = 500 A/µs (T_{vj}=175°C) V_R = 600 V V_{GE} = -15 V	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 175°C	Q_r		0,93 1,66 2,12		µC µC µC
反向恢复损耗（每脉冲） Reverse recovery energy	I_F = 10 A, - di_F/dt = 500 A/µs (T_{vj}=175°C) V_R = 600 V V_{GE} = -15 V	T_{vj} = 25°C T_{vj} = 125°C T_{vj} = 175°C	E_{rec}		0,25 0,51 0,72		mJ mJ mJ
结 - 散热器热阻 Thermal resistance, junction to heatsink	每个二极管 / per diode		R_{thJH}		2,44		K/W
在开关状态下温度 Temperature under switching conditions			$T_{vj\,op}$	-40		175	°C

负温度系数热敏电阻 / NTC-Thermistor

特征值 / Characteristic Values

			min.	typ.	max.	
额定电阻值 Rated resistance	T_{NTC} = 25°C	R_{25}		5,00		kΩ
R100 偏差 Deviation of R100	T_{NTC} = 100°C, R_{100} = 493 Ω	ΔR/R	-5		5	%
耗散功率 Power dissipation	T_{NTC} = 25°C	P_{25}			20,0	mW
B-值 B-value	$R_2 = R_{25} \exp [B_{25/50}(1/T_2 - 1/(298,15\ K))]$	$B_{25/50}$		3375		K
B-值 B-value	$R_2 = R_{25} \exp [B_{25/80}(1/T_2 - 1/(298,15\ K))]$	$B_{25/80}$		3411		K
B-值 B-value	$R_2 = R_{25} \exp [B_{25/100}(1/T_2 - 1/(298,15\ K))]$	$B_{25/100}$		3433		K

根据应用手册标定
Specification according to the valid application note.

初步数据
Preliminary Data

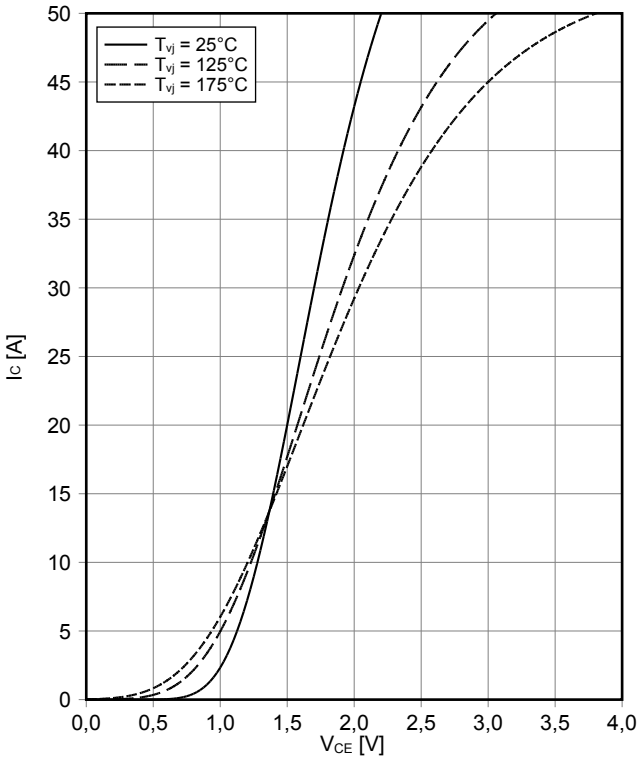
模块 / Module

绝缘测试电压 Isolation test voltage	RMS, f = 50 Hz, t = 1 min	V_{ISOL}		2,5		kV
内部绝缘 Internal isolation	基本绝缘 (class 1, IEC 61140) basic insulation (class 1, 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			11,5 6,3		mm
电气间隙 Clearance	端子至散热器 / terminal to heatsink 端子至端子 / terminal to terminal			10,0 5,0		mm
相对电痕指数 Comperative tracking index		CTI		> 200		
相对温度指数 (电) RTI Elec.	住房 housing	RTI		140		°C
			min.	typ.	max.	
杂散电感,模块 Stray inductance module		L_{sCE}		30		nH
模块引线电阻,端子-芯片 Module lead resistance, terminals - chip	T_H = 25°C, 每个开关 / per switch	$R_{CC'+EE'}$ $R_{AA'+CC'}$		5,00 6,00		mΩ
储存温度 Storage temperature		T_{stg}	-40		125	°C
Anpresskraft für mech. Bef. pro Feder mountig force per clamp		F	40	-	80	N
重量 Weight		G		39		g

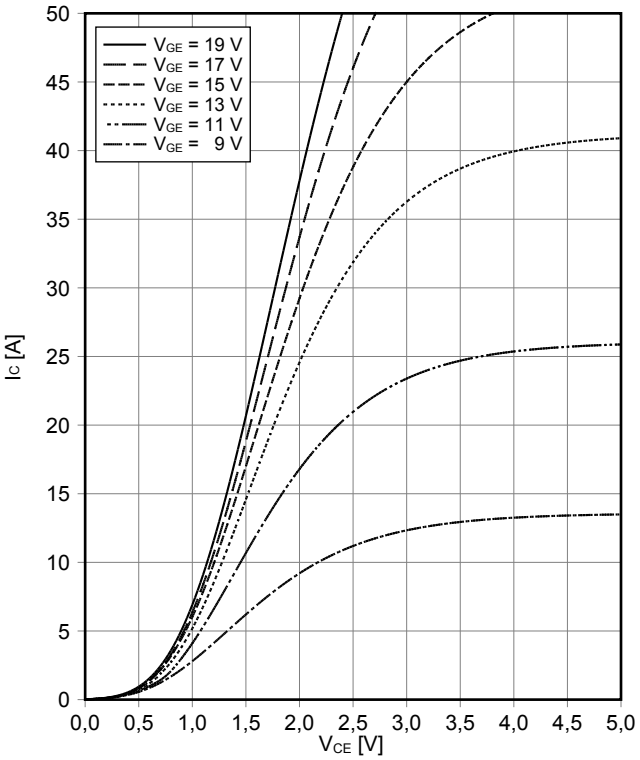
Der Strom im Dauerbetrieb ist auf 30 A effektiv pro Anschlusspin begrenzt.
The current under continuous operation is limited to 30 A rms per connector pin.
Tvj op > 150°C ist im Überlastbetrieb zulässig. Detaillierte Angaben sind AN 2018-14 zu entnehmen
Tvj op > 150°C is allowed for operation at overload conditions. For detailed specifications, please refer to AN 2018-14.

初步数据
Preliminary Data

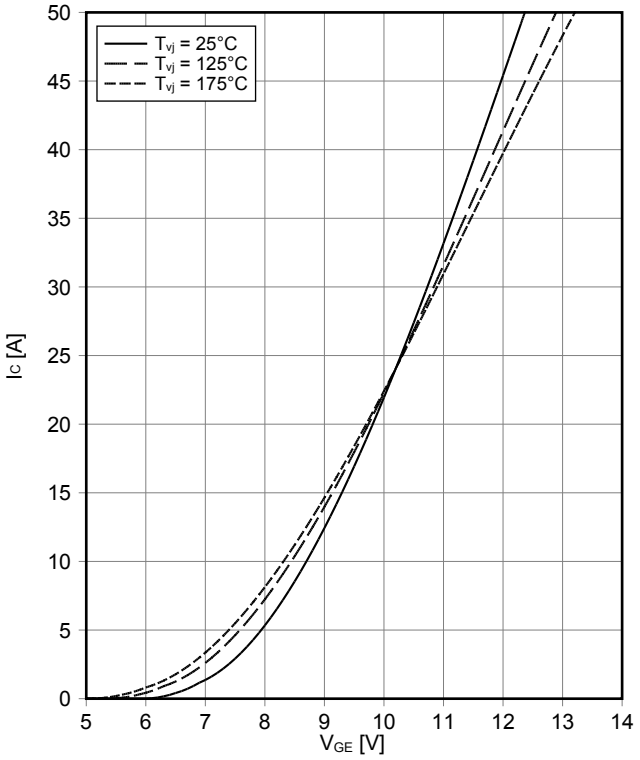
输出特性 IGBT, 逆变器 （典型)
output characteristic IGBT,Inverter (typical)
$I_C = f(V_{CE})$
V_{GE} = 15 V



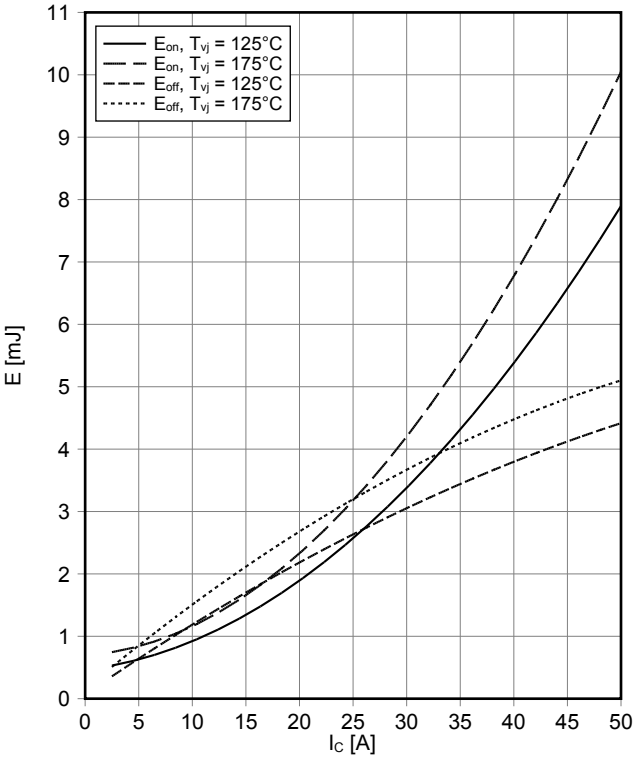
输出特性 IGBT, 逆变器 （典型)
output characteristic IGBT,Inverter (typical)
$I_C = f(V_{CE})$
T_{vj} = 175°C



传输特性 IGBT, 逆变器 (典型)
transfer characteristic IGBT,Inverter (typical)
$I_C = f(V_{GE})$
V_{CE} = 20 V

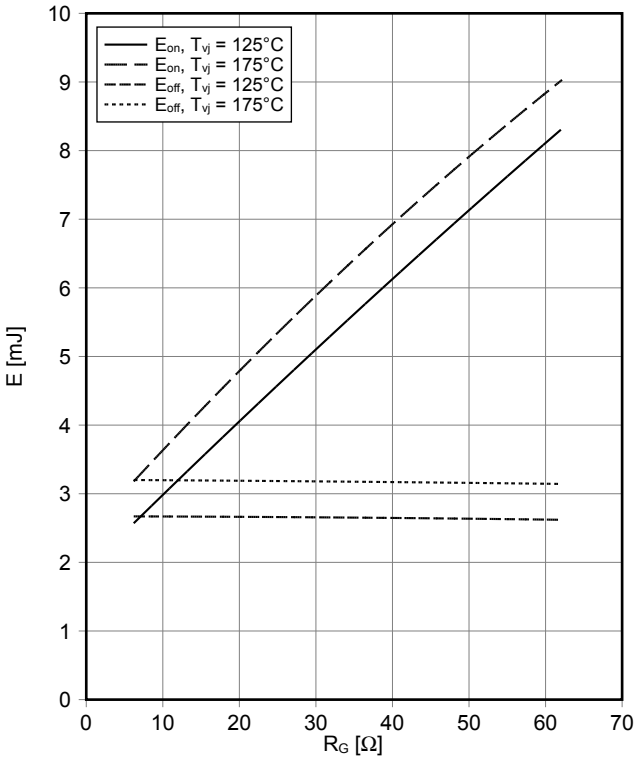


开关损耗 IGBT, 逆变器 （典型)
switching losses IGBT,Inverter (typical)
$E_{on} = f(I_C)$, $E_{off} = f(I_C)$
V_{GE} = ±15 V, R_{Gon} = 6.2 Ω, R_{Goff} = 6.2 Ω, V_{CE} = 600 V

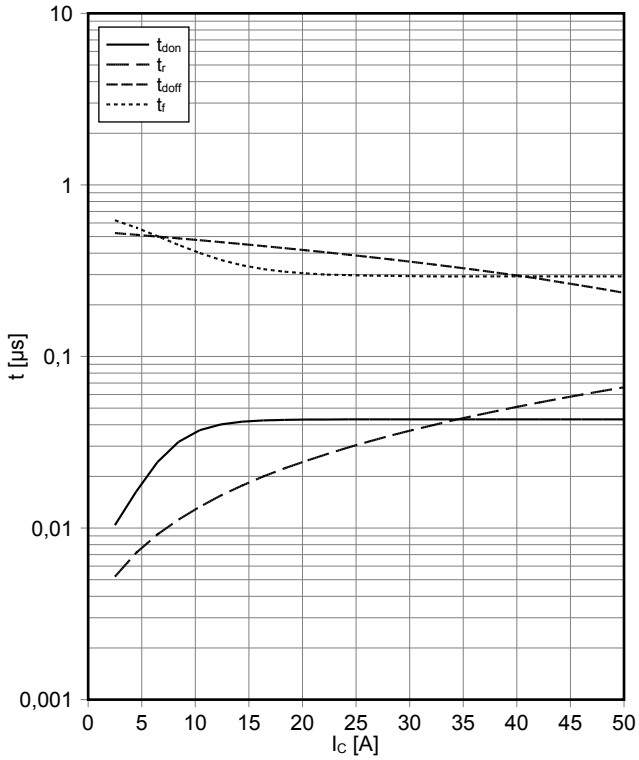


初步数据
Preliminary Data

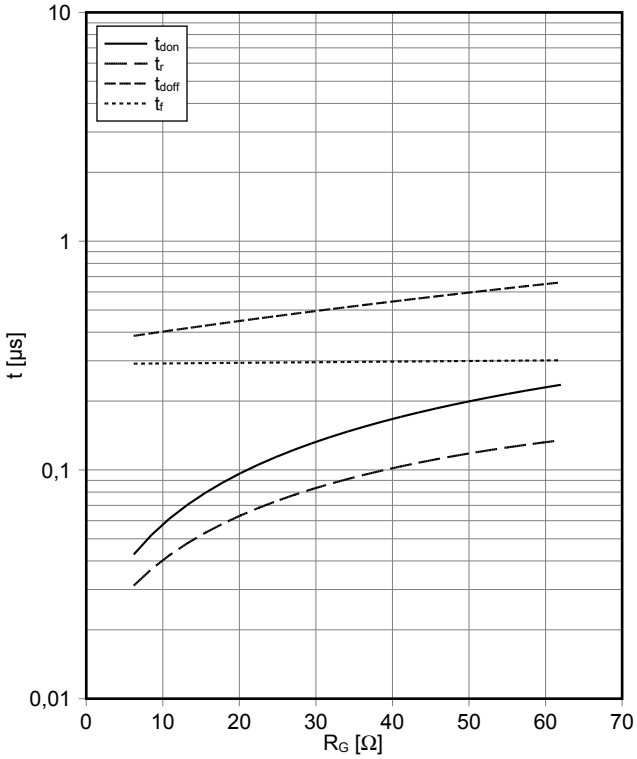
开关损耗 IGBT, 逆变器 （典型）
switching losses IGBT,Inverter (typical)
$E_{on} = f(R_G)$, $E_{off} = f(R_G)$
V_{GE} = ±15 V, I_C = 25 A, V_{CE} = 600 V



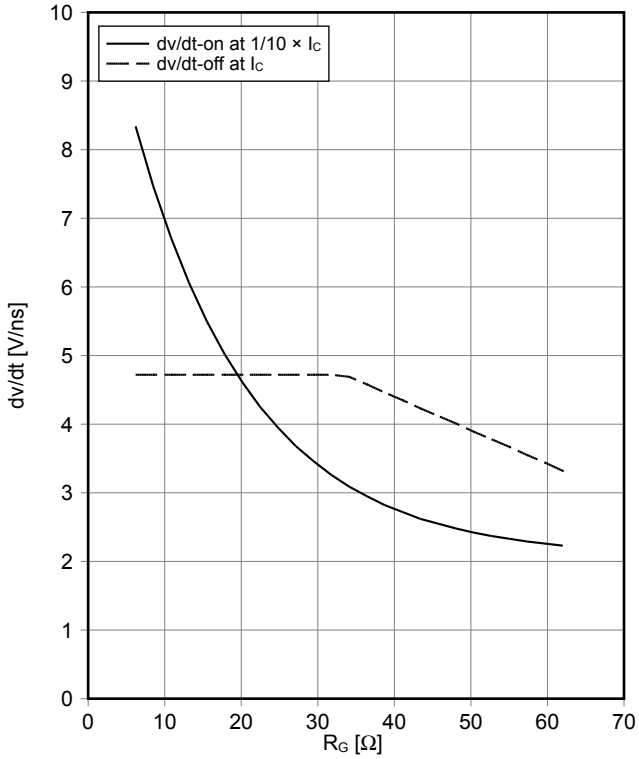
??? IGBT, 逆变器 （典型）
switching times IGBT,Inverter (typical)
$t_{don} = f(I_C)$, $t_r = f(I_C)$, $t_{doff} = f(I_C)$, $t_f = f(I_C)$
V_{GE} = ±15 V, R_{Gon} = 6.2 Ω, R_{Goff} = 6.2 Ω, V_{CE} = 600 V, T_{vj} = 175°C



??? IGBT, 逆变器 （典型）
switching times IGBT,Inverter (typical)
$t_{don} = f(R_G)$, $t_r = f(R_G)$, $t_{doff} = f(R_G)$, $t_f = f(R_G)$
V_{GE} = ±15 V, I_C = 25 A, V_{CE} = 600 V, T_{vj} = 175°C,

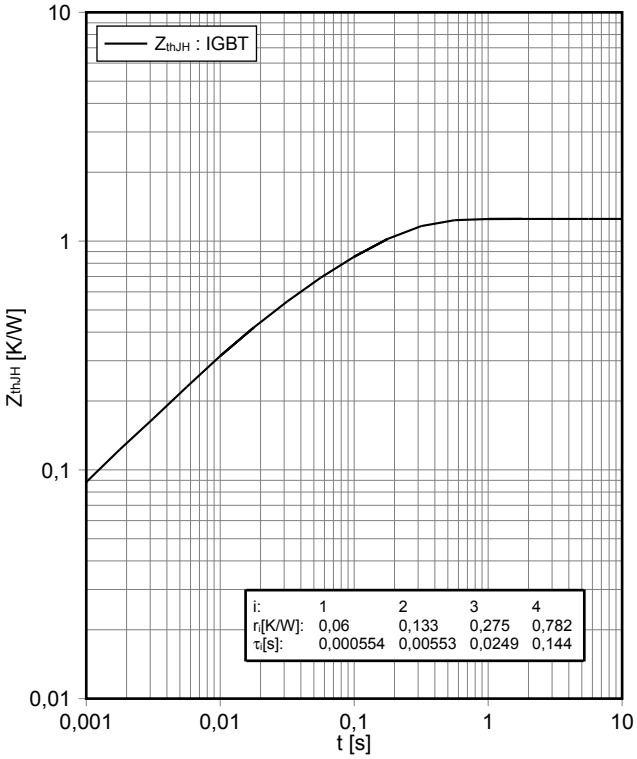


dv/dt IGBT, 逆变器 （典型）
dv/dt IGBT,Inverter (typical)
$dv/dt = f(R_G)$
V_{GE} = ±15 V, I_C = 25 A, V_{CE} = 600 V, T_{vj} = 25°C

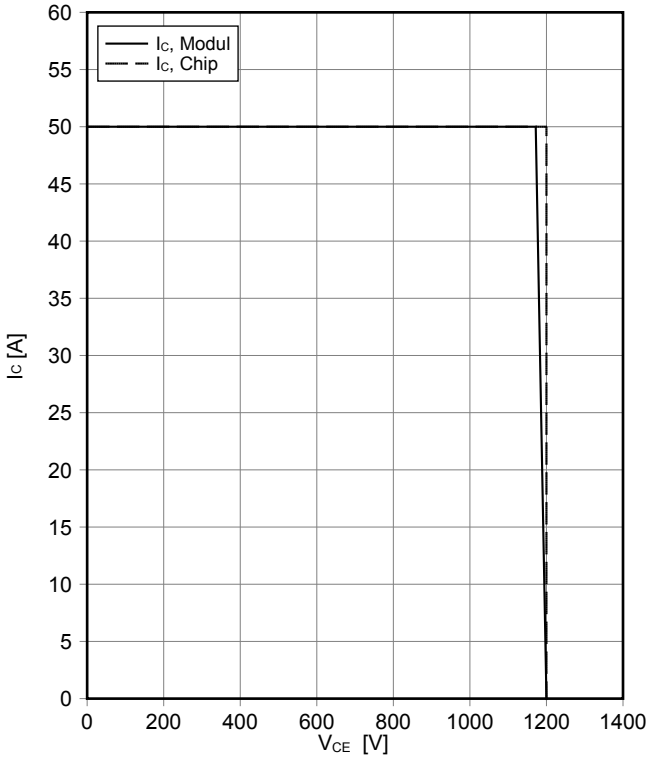


初步数据
Preliminary Data

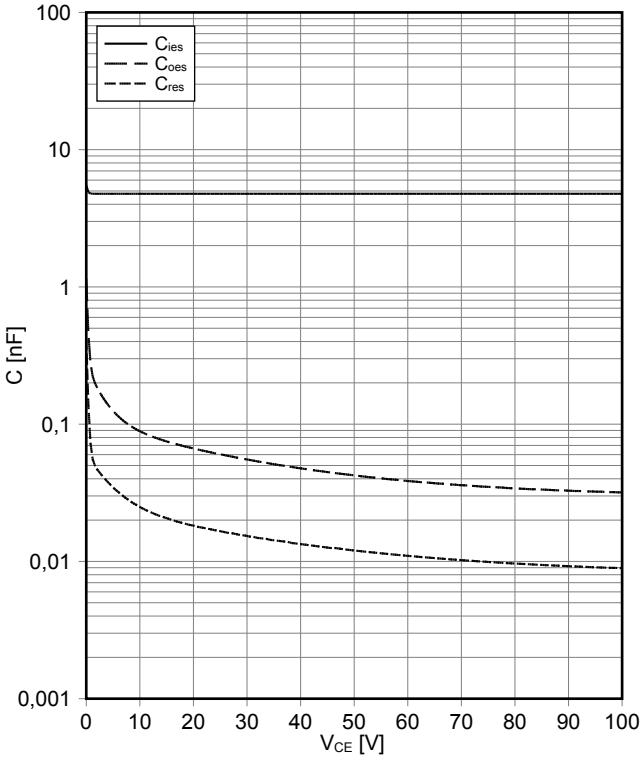
瞬态热阻抗 IGBT, 逆变器
transient thermal impedance IGBT,Inverter
$Z_{thJH} = f(t)$



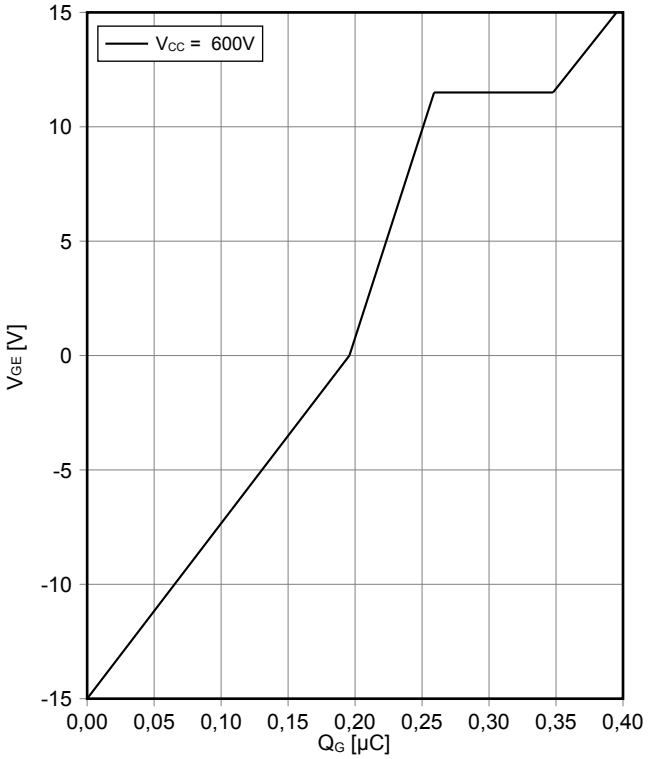
反偏安全工作区 IGBT, 逆变器（RBSOA）
reverse bias safe operating area IGBT,Inverter (RBSOA)
$I_C = f(V_{CE})$
$V_{GE} = \pm 15$ V, $R_{Goff} = 6.2\ \Omega$, $T_{vj} = 175°C$



电容特性 IGBT, 逆变器（典型）
capacity characteristic IGBT,Inverter (typical)
$C = f(V_{CE})$
$V_{GE} = 0$ V, $T_{vj} = 25°C$, f = 100kHz

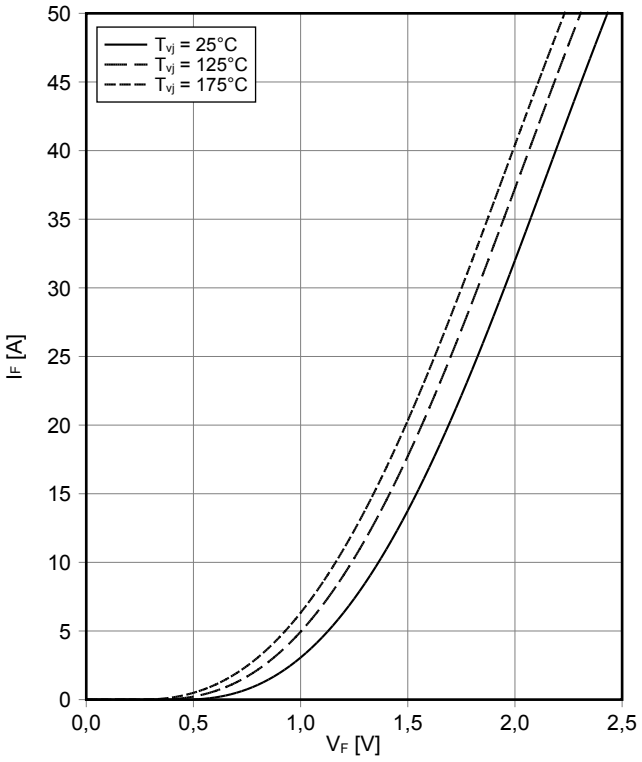


栅极电荷特性 IGBT, 逆变器（典型）
gate charge characteristic IGBT,Inverter (typical)
$V_{GE} = f(Q_G)$
$I_C = 25$ A, $T_{vj} = 25°C$

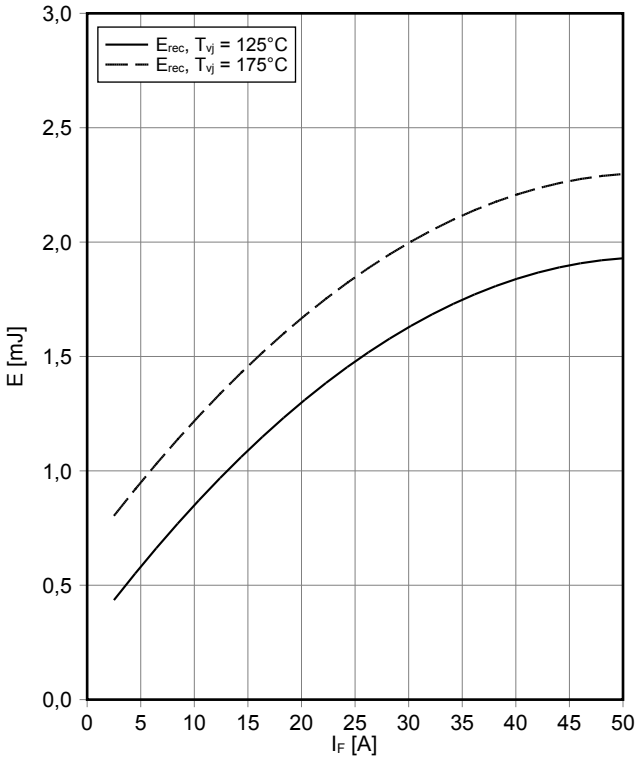


初步数据
Preliminary Data

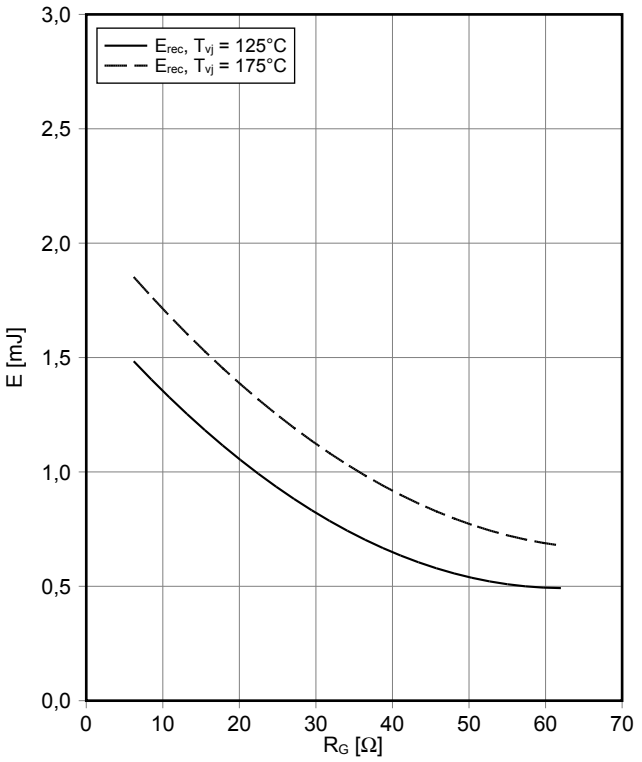
正向偏压特性 二极管,逆变器 （典型）
forward characteristic of Diode, Inverter (typical)
$I_F = f(V_F)$



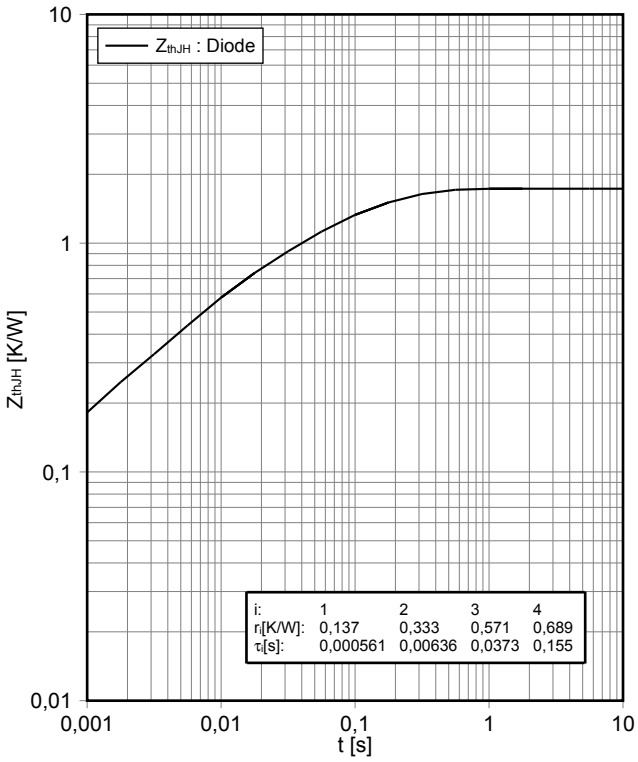
开关损耗 二极管,逆变器 （典型）
switching losses Diode, Inverter (typical)
$E_{rec} = f(I_F)$
$R_{Gon} = 6.2\ \Omega$, $V_{CE} = 600\ V$



开关损耗 二极管,逆变器 （典型）
switching losses Diode, Inverter (typical)
$E_{rec} = f(R_G)$
$I_F = 25\ A$, $V_{CE} = 600\ V$

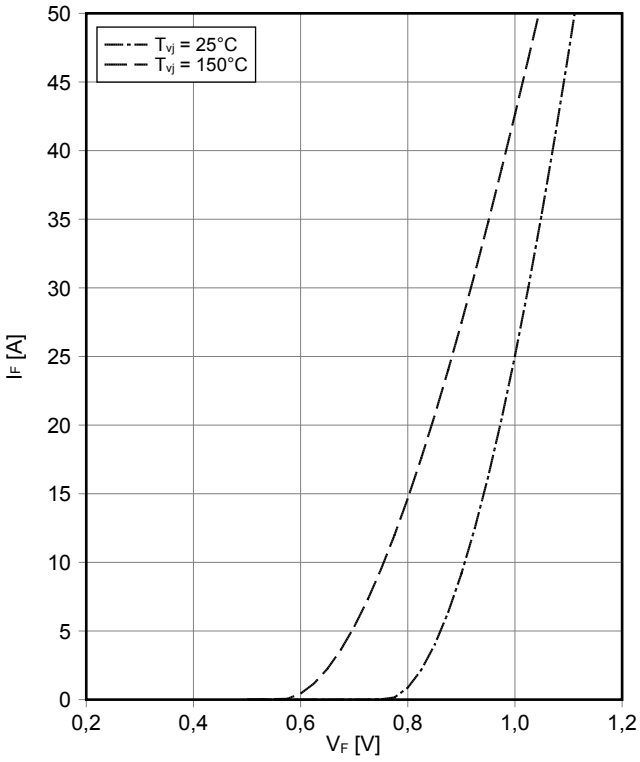


瞬态热阻抗 二极管,逆变器
transient thermal impedance Diode, Inverter
$Z_{thJH} = f(t)$

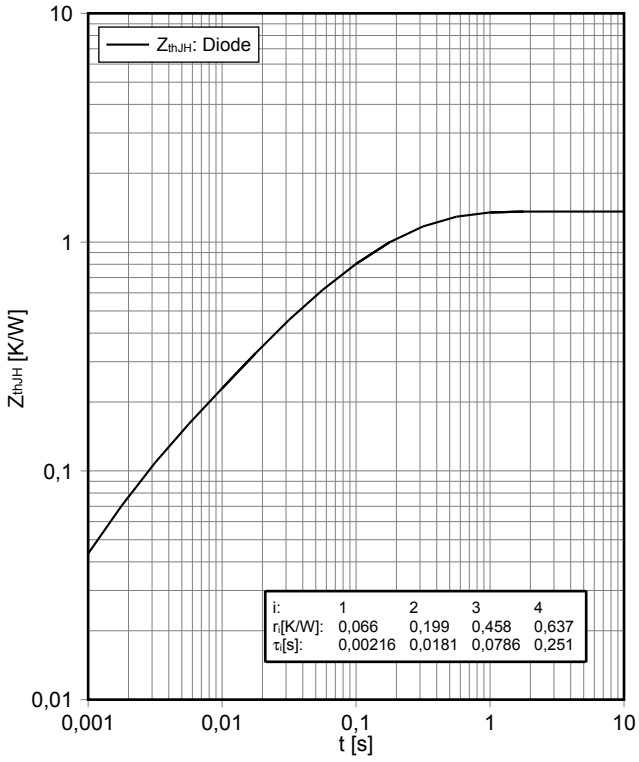


初步数据
Preliminary Data

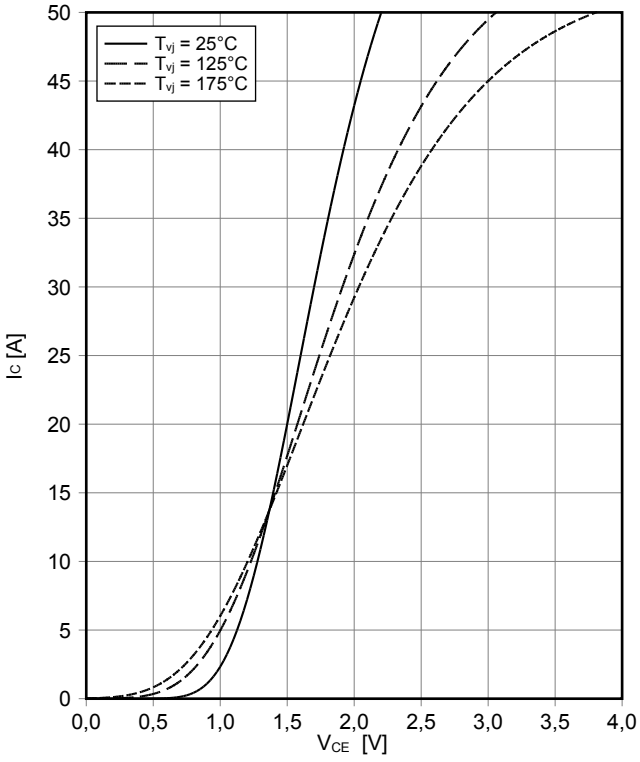
正向偏压特性 二极管,整流器 （典型）
forward characteristic of Diode, Rectifier (typical)
$I_F = f(V_F)$



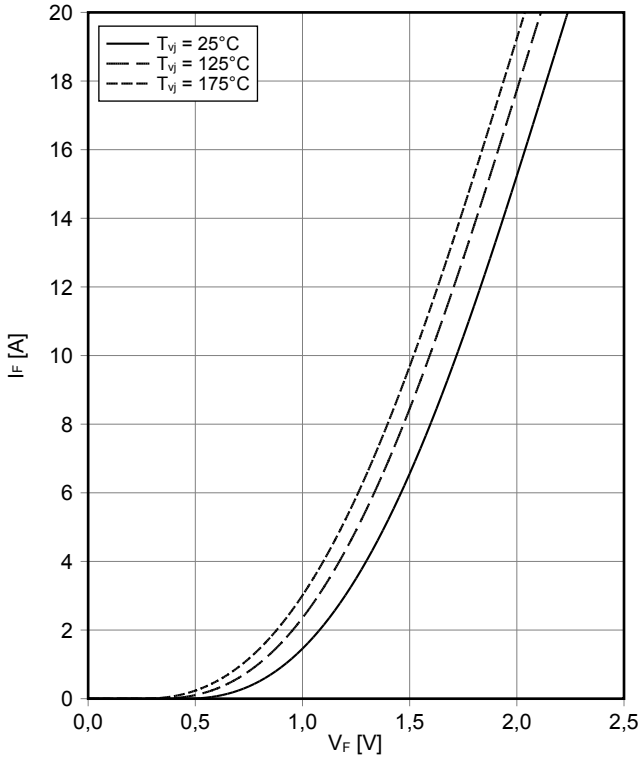
瞬态热阻抗 二极管,整流器
transient thermal impedance Diode, Rectifier
$Z_{thJH} = f(t)$



输出特性 IGBT, 制动-斩波器 （典型）
output characteristic IGBT, Brake-Chopper (typical)
$I_C = f(V_{CE})$
$V_{GE} = 15\ V$

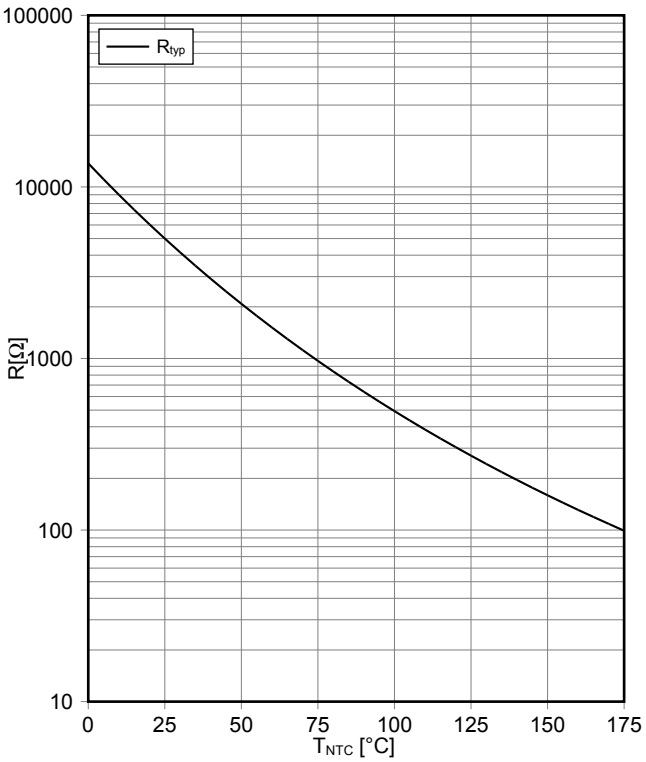


正向偏压特性 二极管，制动-斩波器 （典型）
forward characteristic of Diode, Brake-Chopper (typical)
$I_F = f(V_F)$



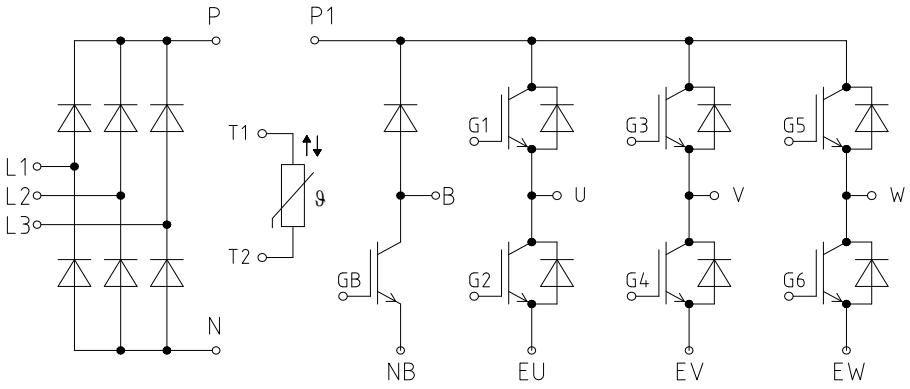
初步数据
Preliminary Data

负温度系数热敏电阻 温度特性
NTC-Thermistor-temperature characteristic (typical)
R = f (T_{NTC})

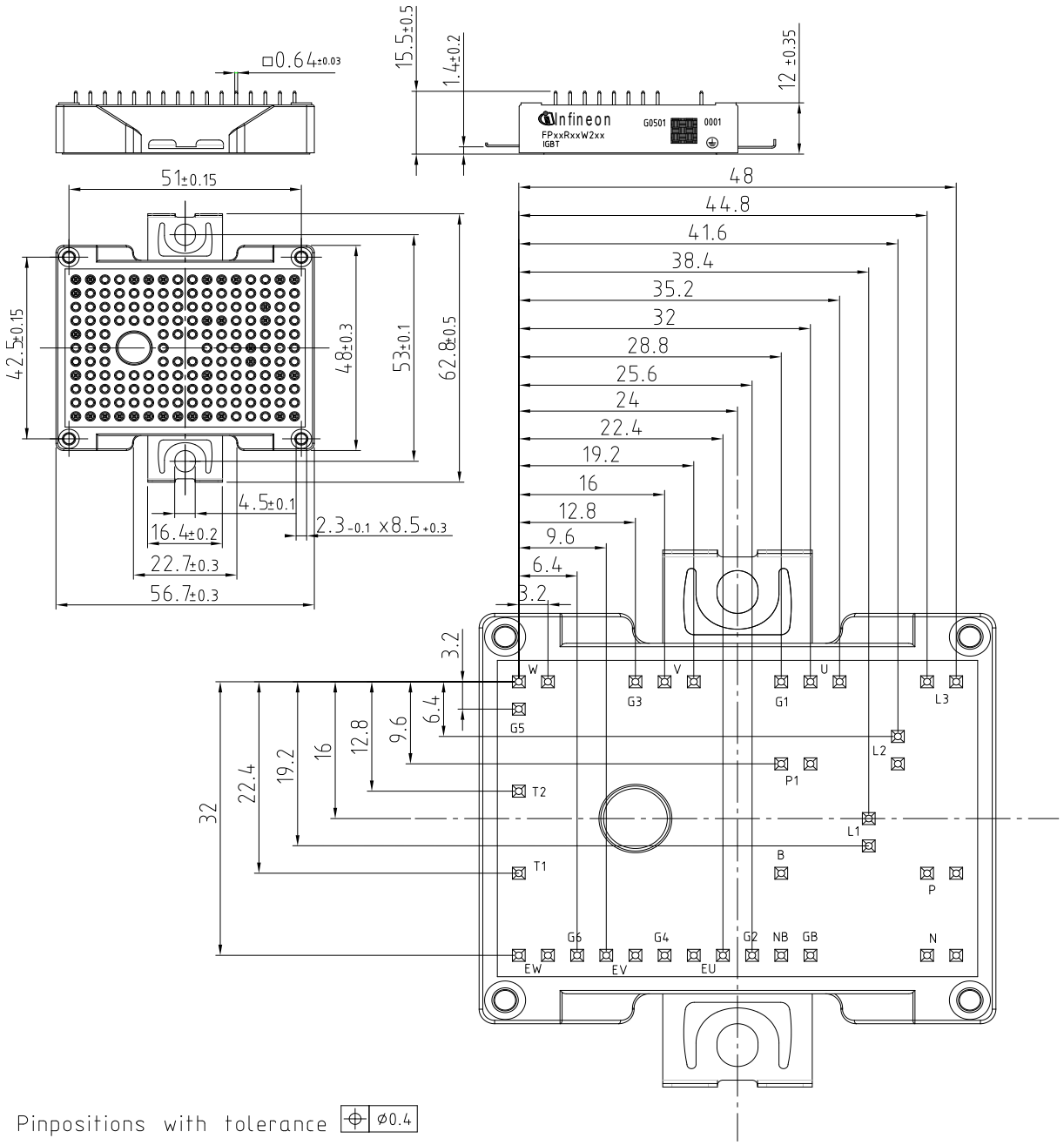


初步数据
Preliminary Data

接线图 / Circuit diagram



封装尺寸 / Package outlines



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