Final datasheet

EasyPACK™ 模块 采用 CoolSiC™ Trench MOSFET 带有 PressFIT 压接管脚和温度检测 NTC

特性

Typical appearance

- 电气特性
  - V_{DSS} = 1200 V
  - I_{DN} = 50 A / I_{DRM} = 100 A
  - 低电感设计
  - 高电流密度
  - 可以从下面链接寻找适合的英飞凌驱动 IC https://www.infineon.com/gdfinder
- 机械特性
  - PressFIT 压接技术
  - 集成 NTC 温度传感器
  - 集成的安装夹使安装坚固

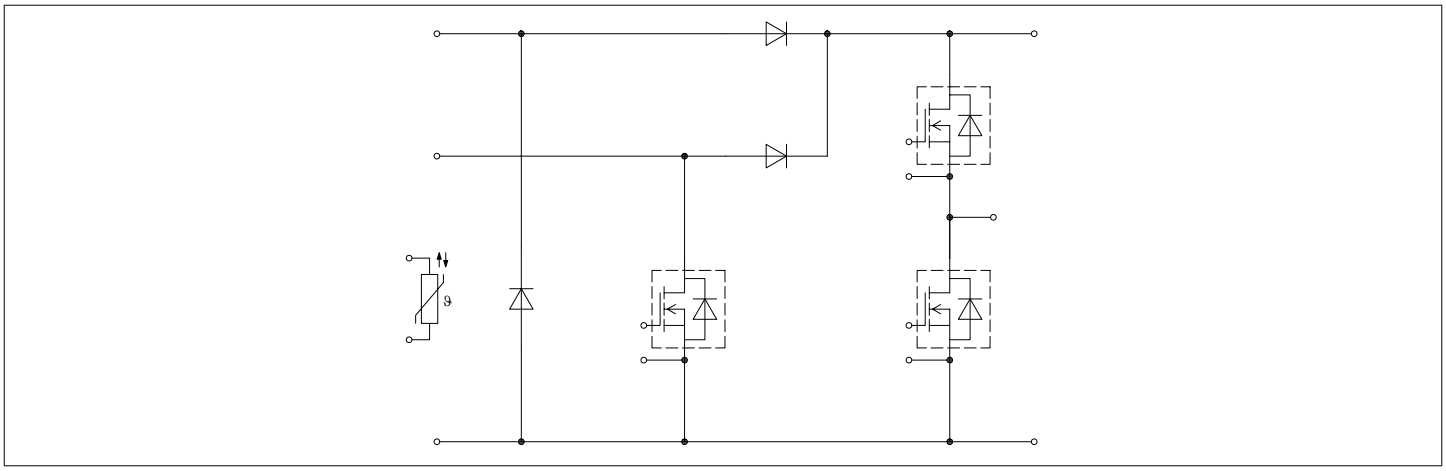
可选应用

- 太阳能应用

产品认证

- 根据 IEC 60747、60749 和 60068 标准的相关测试，符合工业应用的要求。

描述



内容

1 封装

表 1 绝缘参数

特征参数	代号	标注或测试条件	数值	单位
绝缘测试电压	V_{ISOL}	RMS, f = 50 Hz, *t* = 1 min	3.0	kV
NTC 绝缘测试电压	$V_{ISOL(NTC)}$	RMS, f = 50 Hz, *t* = 1 min	3.0	kV
内部绝缘		基本绝缘 (class 1, IEC 61140)	Al_2O_3	
相对电痕指数	*CTI*		> 200	
相对温度指数 (电)	*RTI*	封装	140	°C

表 2 特征值

特征参数	代号	标注或测试条件	数值			单位
			最小值	典型值	最大值	
杂散电感,模块	L_{sCE}			14		nH
模块引线电阻,端子-芯片	$R_{AA'+CC'}$	T_H = 25 °C, 每个开关		3.5		mΩ
模块引线电阻,端子-芯片	$R_{CC'+EE'}$	T_H = 25 °C, 每个开关		2.7		mΩ
储存温度	T_{stg}		-40		125	°C
Mounting force per clamp	*F*		20		50	N
重量	*G*			24		g

注: The current under continuous operation is limited to 25 A rms per connector pin.

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表 3 最大标定值

特征参数	代号	标注或测试条件		数值	单位
漏源极电压	V_{DSS}		T_{vj} = 25 °C	1200	V
连续漏极直流电流	I_{DDC}	T_{vj} = 175 °C, V_{GS} = 18 V	T_H = 80 °C	50	A
漏极重复峰值电流	I_{DRM}	verified by design, t_p limited by T_{vjmax}		100	A
栅-源瞬态最大电压	V_{GS}	*D* < 0.01		-10/23	V
栅-源稳态最大电压	V_{GS}			-7/20	V

表 4 推荐值

特征参数	代号	标注或测试条件	[ZH]Values	单位
通态栅极电压	$V_{GS(on)}$		15...18	V
断态栅极电压	$V_{GS(off)}$		-5...0	V

表 5　　特征值

特征参数	代号	标注或测试条件		数值			单位
				最小值	典型值	最大值	
漏源通态电阻	$R_{DS(on)}$	I_D = 50 A	V_{GS} = 18 V, T_{vj} = 25 °C		16.2	24	mΩ
			V_{GS} = 18 V, T_{vj} = 125 °C		26.1		
			V_{GS} = 18 V, T_{vj} = 175 °C		34.7		
			V_{GS} = 15 V, T_{vj} = 25 °C		19.4		
栅极阈值电压	$V_{GS(th)}$	I_D = 20 mA, V_{DS} = V_{GS}, T_{vj} = 25 °C, (tested after 1ms pulse at V_{GS} = +20 V)		3.45	4.3	5.15	V
栅极电荷	Q_G	V_{DD} = 800 V, V_{GS} = -3/18 V, T_{vj} = 25 °C			0.149		µC
内部栅极电阻	R_{Gint}	T_{vj} = 25 °C			4.1		Ω
输入电容	C_{ISS}	f = 100 kHz, V_{DS} = 800 V, V_{GS} = 0 V	T_{vj} = 25 °C		4.4		nF
输出电容	C_{OSS}	f = 100 kHz, V_{DS} = 800 V, V_{GS} = 0 V	T_{vj} = 25 °C		0.21		nF
反向传输电容	C_{rss}	f = 100 kHz, V_{DS} = 800 V, V_{GS} = 0 V	T_{vj} = 25 °C		0.014		nF
C_{OSS} 存储能量	E_{OSS}	V_{DS} = 800 V, V_{GS} = -3/18 V, T_{vj} = 25 °C			86		µJ
漏源泄漏电流	I_{DSS}	V_{DS} = 1200 V, V_{GS} = -3 V	T_{vj} = 25 °C		0.03	210	µA
栅极漏电流	I_{GSS}	V_{DS} = 0 V, T_{vj} = 25 °C	V_{GS} = 20 V			400	nA
开通延迟时间(感性负载)	$t_{d\,on}$	I_D = 50 A, R_{Gon} = 1.1 Ω, V_{DD} = 600 V, V_{GS} = -3/18 V, t_{dead} = 1000 ns, 0.1 V_{GS} to 0.1 I_D	T_{vj} = 25 °C		27		ns
			T_{vj} = 125 °C		27		
			T_{vj} = 175 °C		27		
上升时间(感性负载)	t_r	I_D = 50 A, R_{Gon} = 1.1 Ω, V_{DD} = 600 V, V_{GS} = -3/18 V, t_{dead} = 1000 ns, 0.1 I_D to 0.9 I_D	T_{vj} = 25 °C		18		ns
			T_{vj} = 125 °C		18		
			T_{vj} = 175 °C		18		
关断延迟时间(感性负载)	$t_{d\,off}$	I_D = 50 A, R_{Goff} = 1 Ω, V_{DD} = 600 V, V_{GS} = -3/18 V, 0.9 V_{GS} to 0.9 I_D	T_{vj} = 25 °C		52		ns
			T_{vj} = 125 °C		56		
			T_{vj} = 175 °C		58		

(待续)

表 5 (续) 特征值

特征参数	代号	标注或测试条件		数值			单位
				最小值	典型值	最大值	
下降时间(感性负载)	t_f	I_D = 50 A, R_{Goff} = 1 Ω, V_{DD} = 600 V, V_{GS} = -3/18 V, 0.9 I_D to 0.1 I_D	T_{vj} = 25 °C		9		ns
			T_{vj} = 125 °C		8		
			T_{vj} = 175 °C		8		
开通损耗能量 (每脉冲)	E_{on}	I_D = 50 A, V_{DD} = 600 V, L_σ = 15 nH, V_{GS} = -3/18 V, R_{Gon} = 1.1 Ω, di/dt = 7.36 kA/µs (T_{vj} = 175 °C), t_{dead} = 1000 ns	T_{vj} = 25 °C		0.38		mJ
			T_{vj} = 125 °C		0.38		
			T_{vj} = 175 °C		0.38		
关断损耗能量 (每脉冲）	E_{off}	I_D = 50 A, V_{DD} = 600 V, L_σ = 15 nH, V_{GS} = -3/18 V, R_{Goff} = 1 Ω, dv/dt = 57.8 kV/µs (T_{vj} = 175 °C)	T_{vj} = 25 °C		0.11		mJ
			T_{vj} = 125 °C		0.12		
			T_{vj} = 175 °C		0.12		
结－散热器热阻	R_{thJH}	每个 MOSFET, λ_{grease} = 1 W/(m·K)			0.825		K/W
允许开关的温度范围	$T_{vj\,op}$			-40		175	°C

注: The selection of positive and negative gate-source voltages impacts losses and the long-term behavior of the MOSFET and body diode. The design guidelines described in Application Notes AN 2018-09 and AN 2021-13 must be considered to ensure sound operation of the device over the planned lifetime.
Tvj,op > 150°C is allowed for operation at overload conditions for MOSFET and body diode. For detailed specifications, please refer to AN 2021-13

3 Body diode (MOSFET)

表 6 最大标定值

特征参数	代号	标注或测试条件		数值	单位
体二极管正向直流电流	I_{SD}	T_{vj} = 175 °C, V_{GS} = -3 V	T_H = 80 °C	25	A

表 7 特征值

特征参数	代号	标注或测试条件		数值			单位
				最小值	典型值	最大值	
正向电压	V_{SD}	I_{SD} = 50 A, V_{GS} = -3 V	T_{vj} = 25 °C		4.2	5.35	V
			T_{vj} = 125 °C		3.9		
			T_{vj} = 175 °C		3.8		

4 MOSFET, T2 / T3

表 8 最大标定值

特征参数	代号	标注或测试条件		数值	单位
漏源极电压	V_{DSS}		T_{vj} = 25 °C	1200	V
连续漏极直流电流	I_{DDC}	T_{vj} = 175 °C, V_{GS} = 18 V	T_H = 90 °C	25	A
漏极重复峰值电流	I_{DRM}	verified by design, t_p limited by T_{vjmax}		50	A
栅-源瞬态最大电压	V_{GS}	D < 0.01		-10/23	V
栅-源稳态最大电压	V_{GS}			-7/20	V

表 9 推荐值

特征参数	代号	标注或测试条件	[ZH]Values	单位
通态栅极电压	$V_{GS(on)}$		15...18	V
断态栅极电压	$V_{GS(off)}$		-5...0	V

表 10 特征值

特征参数	代号	标注或测试条件		数值			单位
				最小值	典型值	最大值	
漏源通态电阻	$R_{DS(on)}$	I_D = 25 A	V_{GS} = 18 V, T_{vj} = 25 °C		32.3	48	mΩ
			V_{GS} = 18 V, T_{vj} = 125 °C		52.2		
			V_{GS} = 18 V, T_{vj} = 175 °C		69.4		
			V_{GS} = 15 V, T_{vj} = 25 °C		38.8		
栅极阈值电压	$V_{GS(th)}$	I_D = 10 mA, V_{DS} = V_{GS}, T_{vj} = 25 °C, (tested after 1ms pulse at V_{GS} = +20 V)		3.45	4.3	5.15	V
栅极电荷	Q_G	V_{DD} = 800 V, V_{GS} = -3/18 V, T_{vj} = 25 °C			0.074		µC
内部栅极电阻	R_{Gint}	T_{vj} = 25 °C			8.2		Ω
输入电容	C_{ISS}	f = 100 kHz, V_{DS} = 800 V, V_{GS} = 0 V	T_{vj} = 25 °C		2.2		nF
输出电容	C_{OSS}	f = 100 kHz, V_{DS} = 800 V, V_{GS} = 0 V	T_{vj} = 25 °C		0.105		nF
反向传输电容	C_{rss}	f = 100 kHz, V_{DS} = 800 V, V_{GS} = 0 V	T_{vj} = 25 °C		0.007		nF
C_{OSS} 存储能量	E_{OSS}	V_{DS} = 800 V, V_{GS} = -3/18 V, T_{vj} = 25 °C			43		µJ
漏源泄漏电流	I_{DSS}	V_{DS} = 1200 V, V_{GS} = -3 V	T_{vj} = 25 °C		0.015	110	µA

(待续)

表 10　　(续) 特征值

特征参数	代号	标注或测试条件		数值			单位
				最小值	典型值	最大值	
栅极漏电流	I_{GSS}	V_{DS} = 0 V, T_{vj} = 25 °C	V_{GS} = 20 V			400	nA
开通延迟时间(感性负载)	$t_{d\,on}$	I_D = 25 A, R_{Gon} = 4.7 Ω, V_{DD} = 600 V, V_{GS} = -3/18 V, t_{dead} = 1000 ns, 0.1 V_{GS} to 0.1 I_D	T_{vj} = 25 °C		29		ns
			T_{vj} = 125 °C		30		
			T_{vj} = 175 °C		30		
上升时间(感性负载)	t_r	I_D = 25 A, R_{Gon} = 4.7 Ω, V_{DD} = 600 V, V_{GS} = -3/18 V, t_{dead} = 1000 ns, 0.1 I_D to 0.9 I_D	T_{vj} = 25 °C		21		ns
			T_{vj} = 125 °C		22		
			T_{vj} = 175 °C		23		
关断延迟时间(感性负载)	$t_{d\,off}$	I_D = 25 A, R_{Goff} = 0.24 Ω, V_{DD} = 600 V, V_{GS} = -3/18 V, 0.9 V_{GS} to 0.9 I_D	T_{vj} = 25 °C		46		ns
			T_{vj} = 125 °C		49		
			T_{vj} = 175 °C		51		
下降时间(感性负载)	t_f	I_D = 25 A, R_{Goff} = 0.24 Ω, V_{DD} = 600 V, V_{GS} = -3/18 V, 0.9 I_D to 0.1 I_D	T_{vj} = 25 °C		11		ns
			T_{vj} = 125 °C		10		
			T_{vj} = 175 °C		10		
开通损耗能量 (每脉冲)	E_{on}	I_D = 25 A, V_{DD} = 600 V, L_σ = 15 nH, V_{GS} = -3/18 V, R_{Gon} = 4.7 Ω, di/dt = 4.65 kA/µs (T_{vj} = 175 °C), t_{dead} = 1000 ns	T_{vj} = 25 °C		0.3		mJ
			T_{vj} = 125 °C		0.39		
			T_{vj} = 175 °C		0.46		
开通损耗能量 (每脉冲), 优化条件下	$E_{on,o}$	I_D = 25 A, V_{DD} = 600 V, L_σ = 15 nH, V_{GS} = -3/18 V, $R_{Gon,o}$ = 4.3 Ω, di/dt = 4.51 kA/µs (T_{vj} = 175 °C), t_{dead} = 100 ns	T_{vj} = 25 °C		0.29		mJ
			T_{vj} = 125 °C		0.34		
			T_{vj} = 175 °C		0.39		
关断损耗能量 (每脉冲）	E_{off}	I_D = 25 A, V_{DD} = 600 V, L_σ = 15 nH, V_{GS} = -3/18 V, R_{Goff} = 0.24 Ω, dv/dt = 46.8 kV/µs (T_{vj} = 175 °C)	T_{vj} = 25 °C		0.049		mJ
			T_{vj} = 125 °C		0.049		
			T_{vj} = 175 °C		0.049		
结－散热器热阻	R_{thJH}	每个 MOSFET, λ_{grease} = 1 W/(m·K)			1.42		K/W
允许开关的温度范围	$T_{vj\,op}$			-40		175	°C

注: *The selection of positive and negative gate-source voltages impacts losses and the long-term behavior of the MOSFET and body diode. The design guidelines described in Application Notes AN 2018-09 and AN 2021-13 must be considered to ensure sound operation of the device over the planned lifetime.*

$T_{vj,op}$ > 150°C is allowed for operation at overload conditions for MOSFET and body diode. For detailed specifications, please refer to AN 2021-13.

5 Body diode (MOSFET, T2 / T3)

表 11 最大标定值

特征参数	代号	标注或测试条件		数值	单位
体二极管正向直流电流	I_{SD}	T_{vj} = 175 °C, V_{GS} = -3 V	T_H = 90 °C	14	A

表 12 特征值

特征参数	代号	标注或测试条件		数值			单位
				最小值	典型值	最大值	
正向电压	V_{SD}	I_{SD} = 25 A, V_{GS} = -3 V	T_{vj} = 25 °C		4.2	5.35	V
			T_{vj} = 125 °C		3.9		
			T_{vj} = 175 °C		3.8		
反向恢复峰值电流	I_{rrm}	I_{SD} = 25 A, di_s/dt = 4.65 kA/µs, V_{DD} = 600 V, V_{GS}=-3 V, t_{dead} = 1000 ns	T_{vj} = 25 °C		36		A
			T_{vj} = 125 °C		44		
			T_{vj} = 175 °C		51		
恢复电荷	Q_{rr}	I_{SD} = 25 A, di_s/dt = 4.65 kA/µs, V_{DD} = 600 V, V_{GS}=-3 V, t_{dead} = 1000 ns	T_{vj} = 25 °C		0.66		µC
			T_{vj} = 125 °C		0.86		
			T_{vj} = 175 °C		1		
反向恢复损耗（每脉冲）	E_{rec}	I_{SD} = 25 A, di_s/dt = 4.65 kA/µs (T_{vj} = 175 °C), V_{DD} = 600 V, V_{GS}=-3 V, t_{dead} = 1000 ns	T_{vj} = 25 °C		0.027		mJ
			T_{vj} = 125 °C		0.094		
			T_{vj} = 175 °C		0.14		
反向恢复损耗（每脉冲），优化条件下	$E_{rec,o}$	I_{SD} = 25 A, di_s/dt = 4.51 kA/µs (T_{vj} = 175 °C), V_{DD} = 600 V, V_{GS} = -3 V, t_{dead} = 100 ns	T_{vj} = 25 °C		0.023		mJ
			T_{vj} = 125 °C		0.058		
			T_{vj} = 175 °C		0.09		

6 Diode, 轉換器

表 13 最大标定值

特征参数	代号	标注或测试条件		数值	单位
反向重复峰值电压	V_{RRM}		T_{vj} = 25 °C	1200	V
连续正向直流电流	I_F			40	A
正向重复峰值电流	I_{FRM}	t_P = 1 ms		80	A
I2t-值	I^2t	t_P = 10 ms, V_R = 0 V	T_{vj} = 125 °C	320	A^2s
			T_{vj} = 150 °C	295	

表 14 特征值

特征参数	代号	标注或测试条件		数值			单位
				最小值	典型值	最大值	
正向电压	V_F	I_F = 40 A, V_{GE} = 0 V	T_{vj} = 25 °C		1.40	1.85	V
			T_{vj} = 125 °C		1.70		
			T_{vj} = 150 °C		1.85		
结－散热器热阻	R_{thJH}	每个二极管, λ_{grease} = 1 W/(m·K)			0.836		K/W
允许开关的温度范围	$T_{vj\,op}$			-40		150	°C

7 旁路二极管

表 15 最大标定值

特征参数	代号	标注或测试条件		数值	单位
反向重复峰值电压	V_{RRM}		T_{vj} = 25 °C	1200	V
最大正向均方根电流(每芯片)	I_{FRMSM}	T_H = 100 °C		50	A
最大整流器输出均方根电流	I_{RMSM}	T_H = 100 °C		50	A
正向浪涌电流	I_{FSM}	t_p = 10 ms	T_{vj} = 25 °C	450	A
			T_{vj} = 150 °C	360	
I2t-值	I^2t	t_p = 10 ms	T_{vj} = 25 °C	1010	A^2s
			T_{vj} = 150 °C	648	

表 16 特征值

特征参数	代号	标注或测试条件		数值			单位
				最小值	典型值	最大值	
正向电压	V_F	I_F = 30 A	T_{vj} = 150 °C		0.95		V
反向电流	I_r	T_{vj} = 150 °C, V_R = 1200 V			0.1		mA
结－散热器热阻	R_{thJH}	每个二极管, λ_{grease} = 1 W/(m·K)			0.859		K/W
允许开关的温度范围	$T_{vj,\,op}$			-40		150	°C

8 反极性保护二极管

表 17 最大标定值

特征参数	代号	标注或测试条件		数值	单位
反向重复峰值电压	V_{RRM}		T_{vj} = 25 °C	1200	V

(待续)

表 17　　(续) 最大标定值

特征参数	代号	标注或测试条件		数值	单位
最大正向均方根电流(每芯片)	I_{FRMSM}	T_H = 100 °C		50	A
最大整流器输出均方根电流	I_{RMSM}	T_H = 100 °C		50	A
正向浪涌电流	I_{FSM}	t_p = 10 ms	T_{vj} = 25 °C	450	A
			T_{vj} = 150 °C	360	
I2t-值	I^2t	t_p = 10 ms	T_{vj} = 25 °C	1010	A^2s
			T_{vj} = 150 °C	648	

表 18　　特征值

特征参数	代号	标注或测试条件		数值			单位
				最小值	典型值	最大值	
正向电压	V_F	I_F = 30 A	T_{vj} = 150 °C		0.95		V
反向电流	I_r	T_{vj} = 150 °C, V_R = 1200 V			0.1		mA
结－散热器热阻	R_{thJH}	每个二极管, λ_{grease} = 1 W/(m·K)			0.928		K/W
允许开关的温度范围	$T_{vj, op}$			-40		150	°C

9　负温度系数热敏电阻

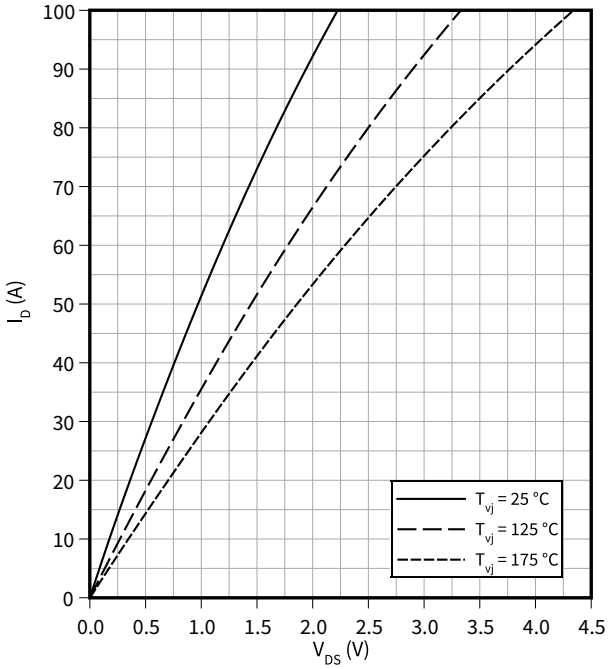
表 19　　特征值

特征参数	代号	标注或测试条件	数值			单位
			最小值	典型值	最大值	
额定电阻值	R_{25}	T_{NTC} = 25 °C		5		kΩ
R_{100} 偏差	$\Delta R/R$	T_{NTC} = 100 °C, R_{100} = 493 Ω	-5		5	%
耗散功率	P_{25}	T_{NTC} = 25 °C			20	mW
B-值	$B_{25/50}$	$R_2 = R_{25} \exp[B_{25/50}(1/T_2-1/(298{,}15\ K))]$		3375		K
B-值	$B_{25/80}$	$R_2 = R_{25} \exp[B_{25/80}(1/T_2-1/(298{,}15\ K))]$		3411		K
B-值	$B_{25/100}$	$R_2 = R_{25} \exp[B_{25/100}(1/T_2-1/(298{,}15\ K))]$		3433		K

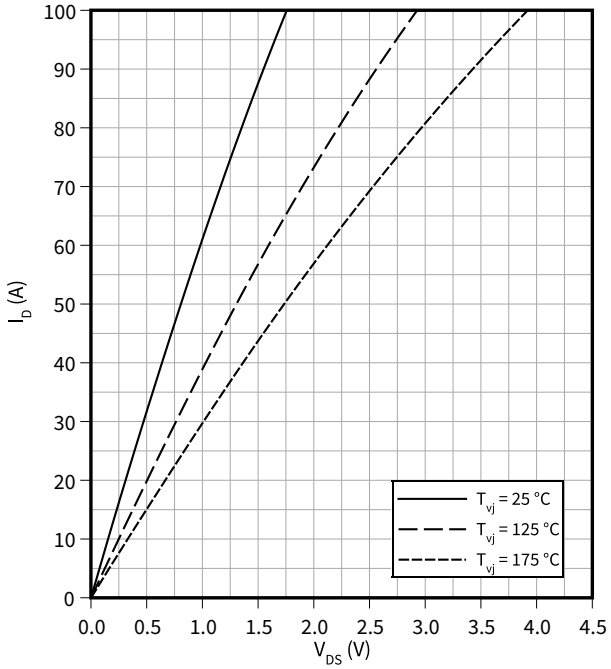
注:　NTC 的具体参数分析请见 AN2009-10, 第 4 章

10 特征参数图表

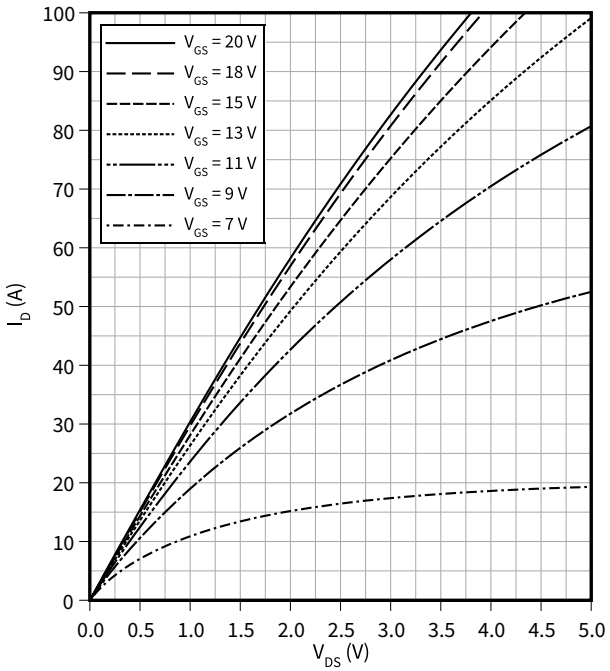
输出特性 （典型), MOSFET
$I_D = f(V_{DS})$
V_{GS} = 15 V



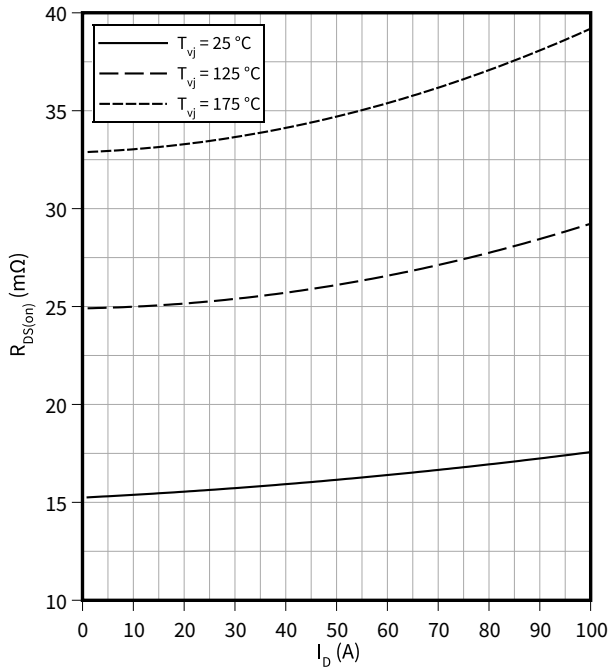
输出特性 （典型), MOSFET
$I_D = f(V_{DS})$
V_{GS} = 18 V



输出特性 （典型), MOSFET
$I_D = f(V_{DS})$
T_{vj} = 175 °C

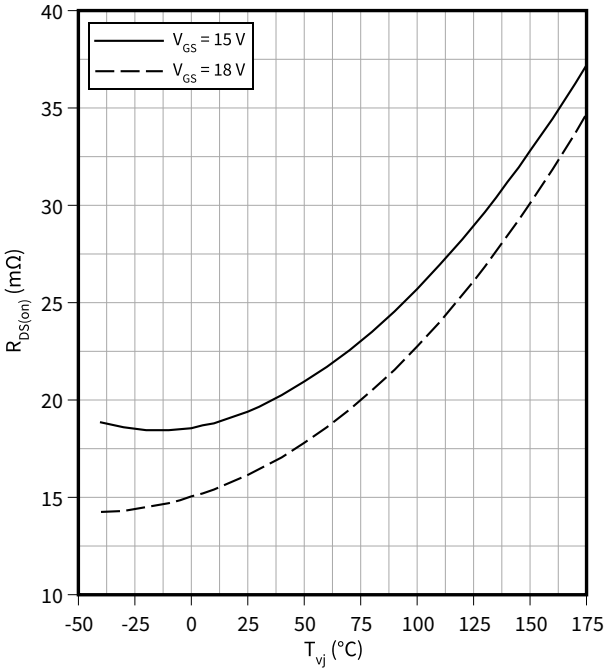


漏源通态电阻 （典型), MOSFET
$R_{DS(on)} = f(I_D)$
V_{GS} = 18 V



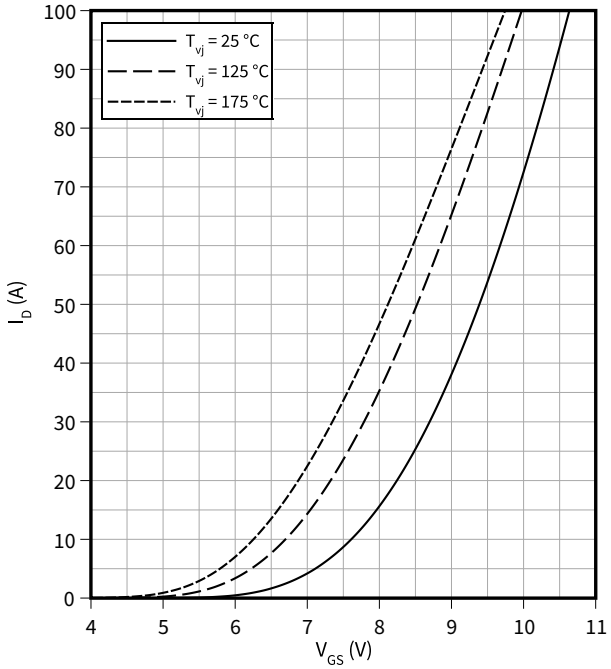
漏源通态电阻 （典型), MOSFET

$R_{DS(on)} = f(T_{vj})$
$I_D = 50$ A



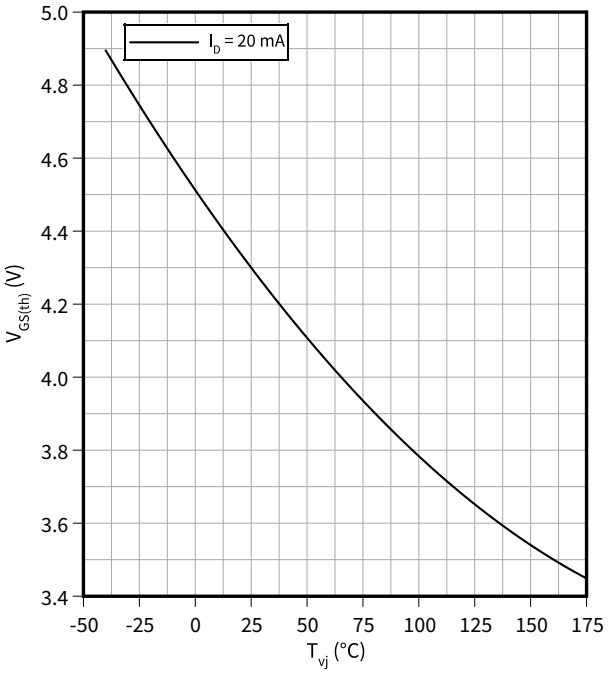
传输特性 （典型), MOSFET

$I_D = f(V_{GS})$
$V_{DS} = 20$ V



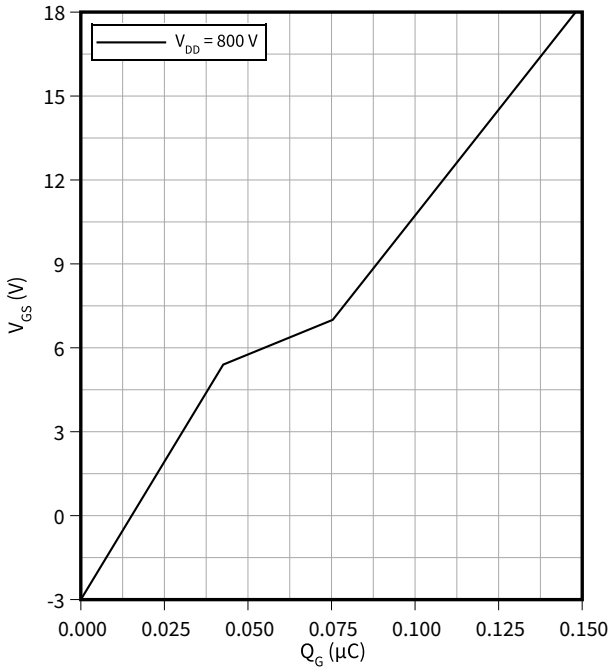
栅-源阈值电压（典型）, MOSFET

$V_{GS(th)} = f(T_{vj})$
$V_{GS} = V_{DS}$



栅极电荷特性 （典型), MOSFET

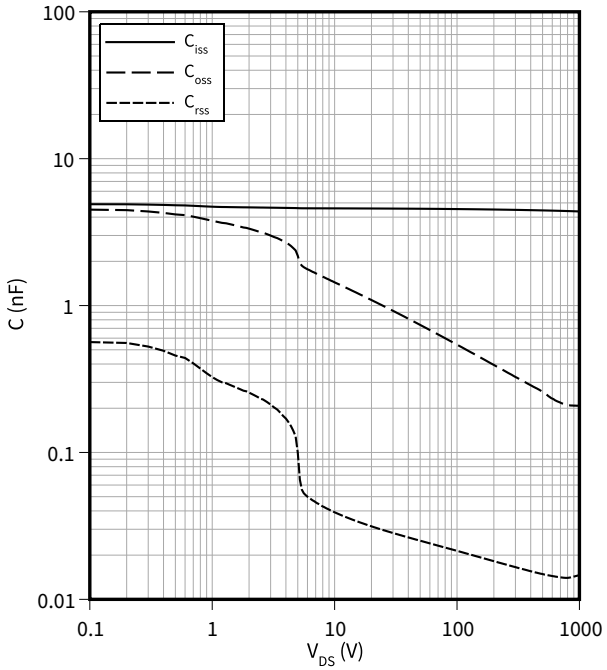
$V_{GS} = f(Q_G)$
$I_D = 50$ A, $T_{vj} = 25$ °C



电容特性 （典型), MOSFET

$C = f(V_{DS})$

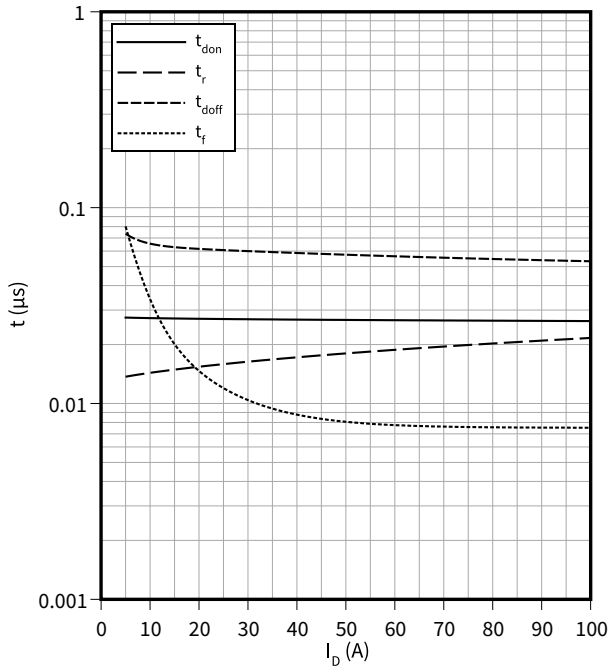
$f = 100\ kHz, T_{vj} = 25\ °C, V_{GS} = 0\ V$



开关时间 （典型), MOSFET

$t = f(I_D)$

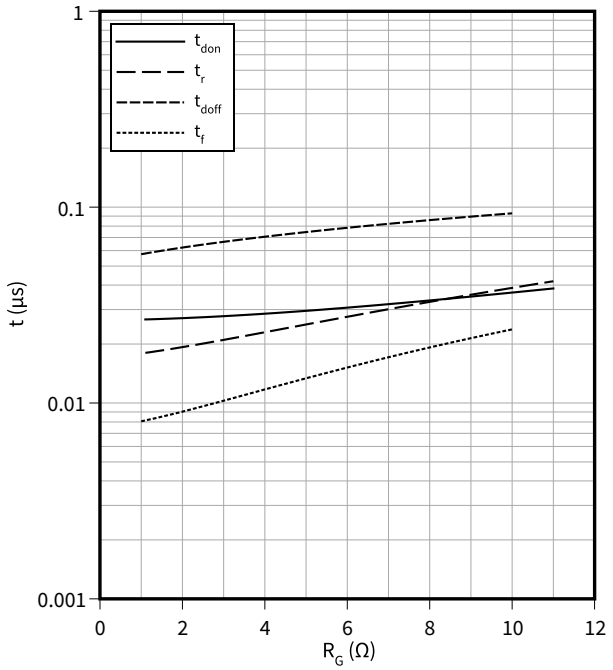
$R_{Goff} = 1\ \Omega, R_{Gon} = 1.1\ \Omega, V_{DD} = 600\ V, T_{vj} = 175\ °C, V_{GS} = -3/18\ V$



开关时间 （典型), MOSFET

$t = f(R_G)$

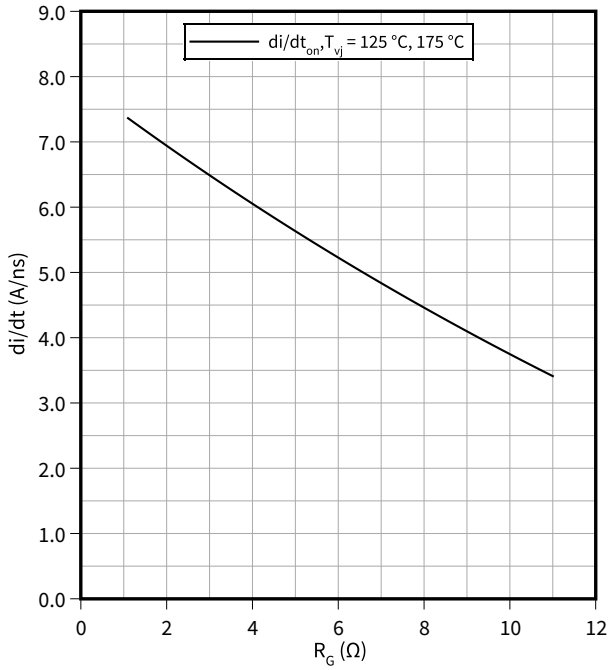
$V_{DD} = 600\ V, I_D = 50\ A, T_{vj} = 175\ °C, V_{GS} = -3/18\ V$



电流变化斜率 （典型), MOSFET

$di/dt = f(R_G)$

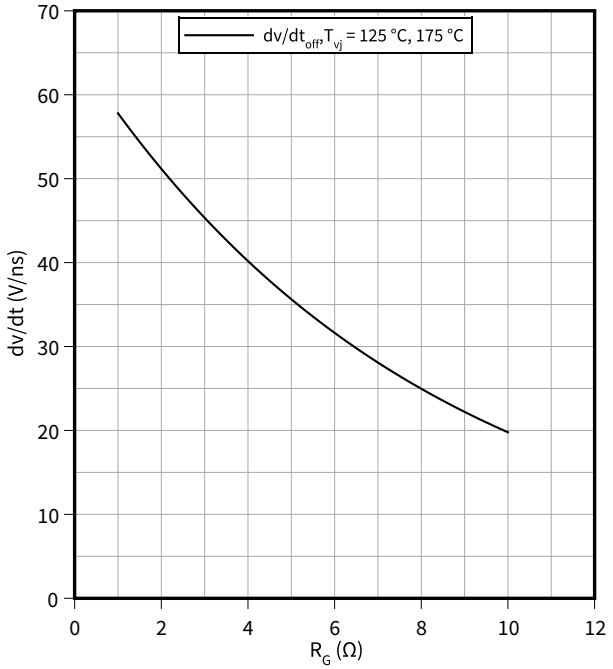
$V_{DD} = 600\ V, I_D = 50\ A, V_{GS} = -3/18\ V$



电压变化斜率 （典型), MOSFET

$dv/dt = f(R_G)$

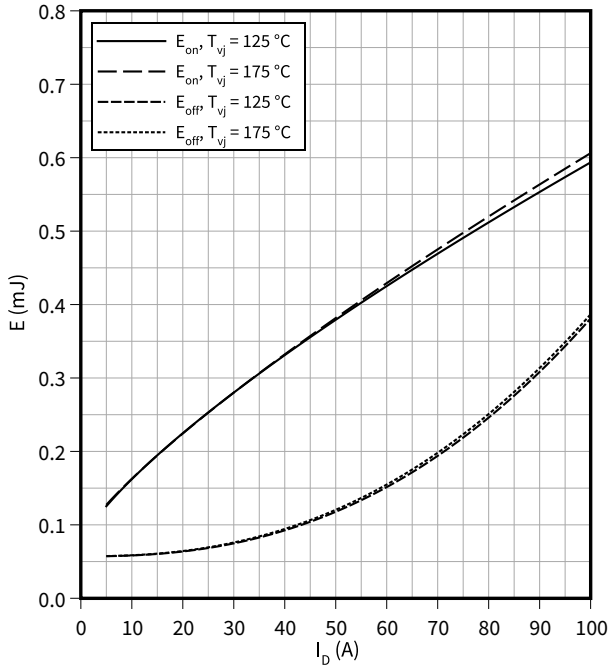
V_{DD} = 600 V, I_D = 50 A, V_{GS} = -3/18 V



开关损耗 （典型), MOSFET

$E = f(I_D)$

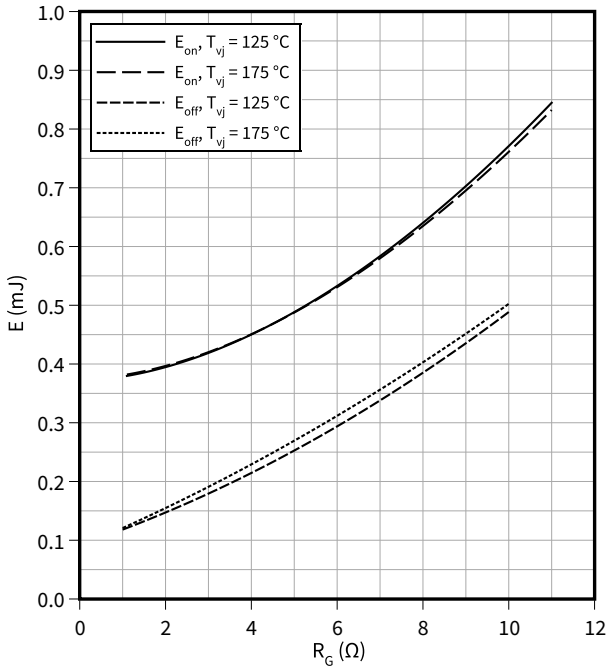
R_{Goff} = 1 Ω, R_{Gon} = 1.1 Ω, V_{DD} = 600 V, V_{GS} = -3/18 V



开关损耗 （典型), MOSFET

$E = f(R_G)$

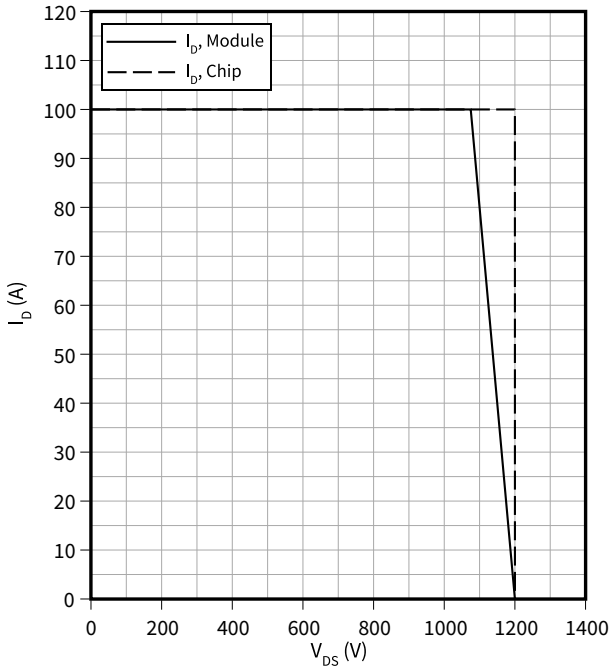
V_{DD} = 600 V, I_D = 50 A, V_{GS} = -3/18 V



反偏安全工作区 （RBSOA）, MOSFET

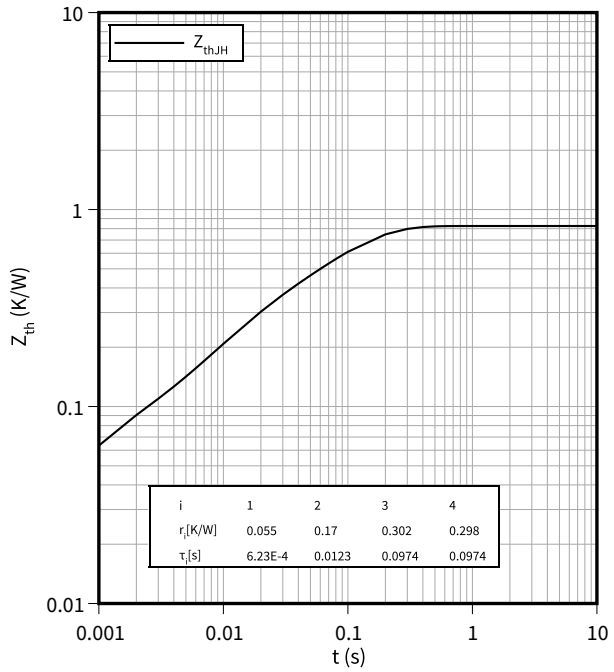
$I_D = f(V_{DS})$

R_{Goff} = 1 Ω, T_{vj} = 175 °C, V_{GS} = -3/18 V



瞬态热阻抗, MOSFET

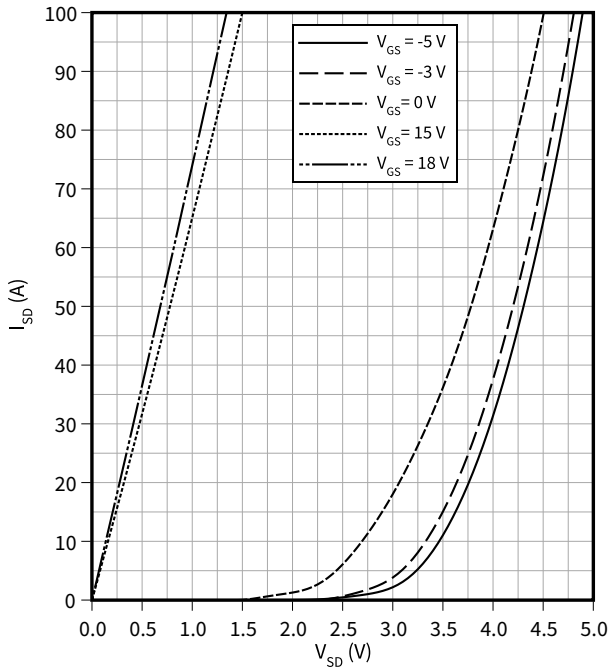
$Z_{th} = f(t)$



正向特性 体二极管（典型), MOSFET

$I_{SD} = f(V_{SD})$

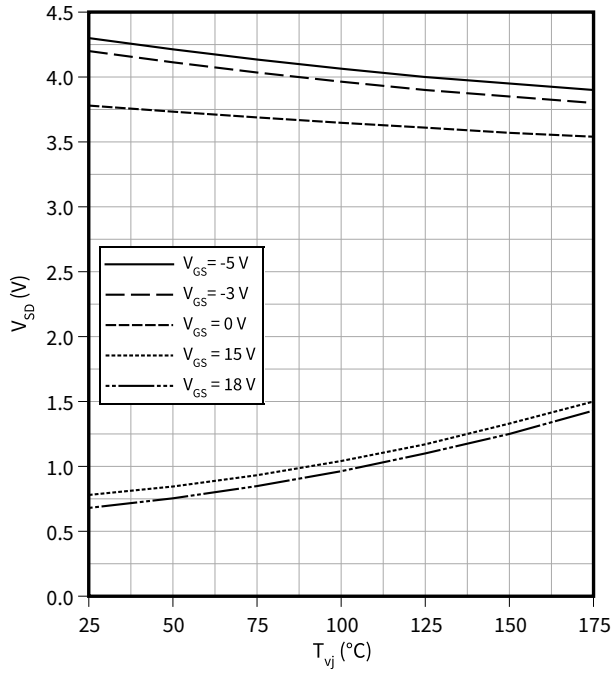
$T_{vj} = 25\ °C$



正向特性 体二极管（典型), MOSFET

$V_{SD} = f(T_{vj})$

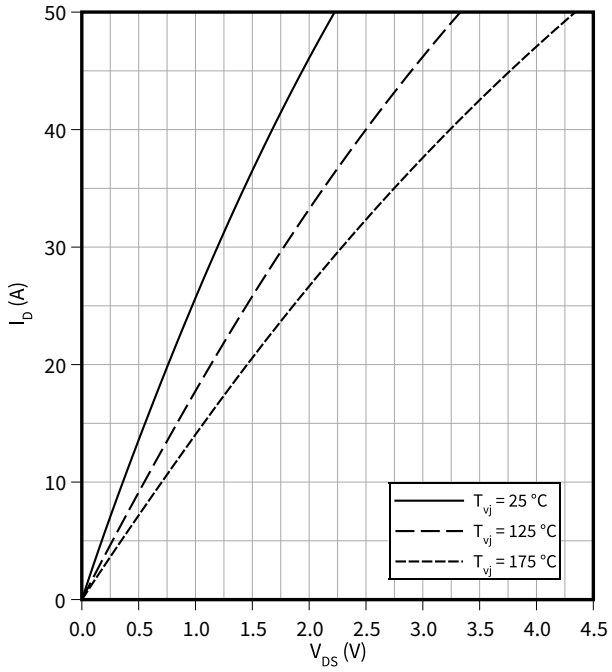
$I_{SD} = 50\ A$



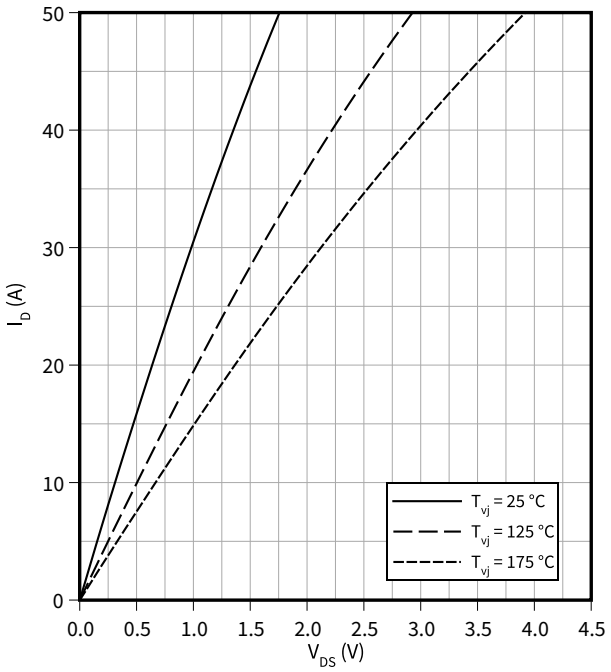
输出特性 （典型), MOSFET, T2 / T3

$I_D = f(V_{DS})$

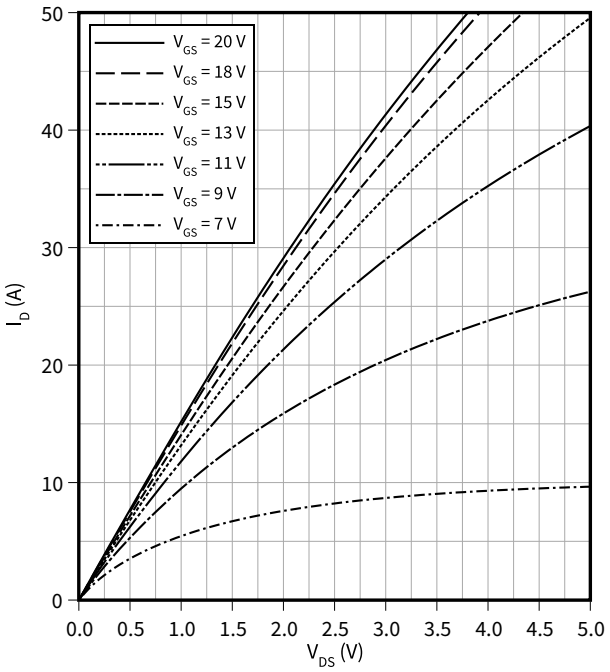
$V_{GS} = 15\ V$



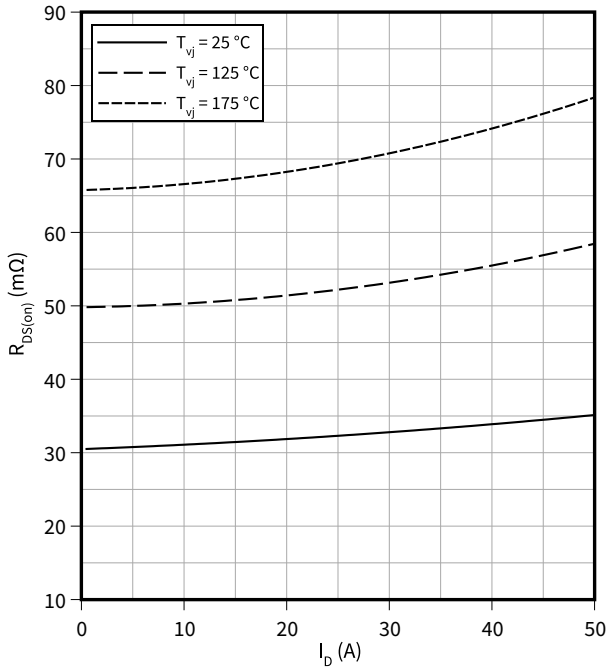
输出特性 （典型), MOSFET, T2 / T3
$I_D = f(V_{DS})$
$V_{GS} = 18\ V$



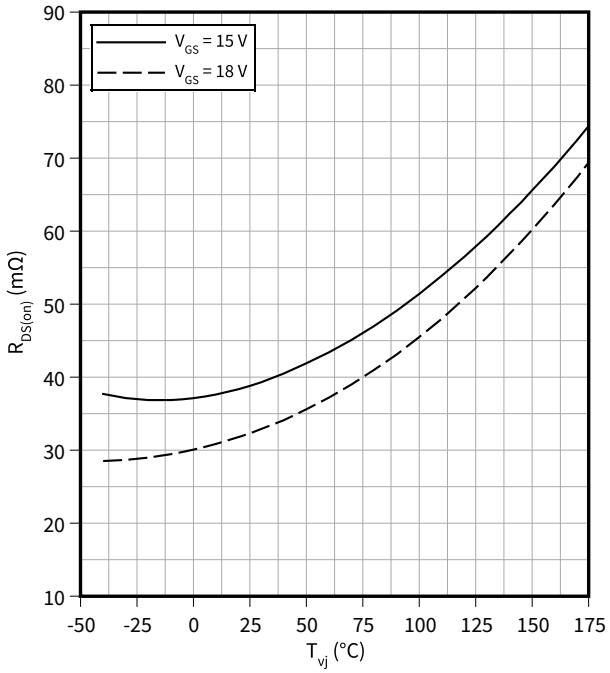
输出特性 （典型), MOSFET, T2 / T3
$I_D = f(V_{DS})$
$T_{vj} = 175\ °C$



漏源通态电阻 （典型), MOSFET, T2 / T3
$R_{DS(on)} = f(I_D)$
$V_{GS} = 18\ V$

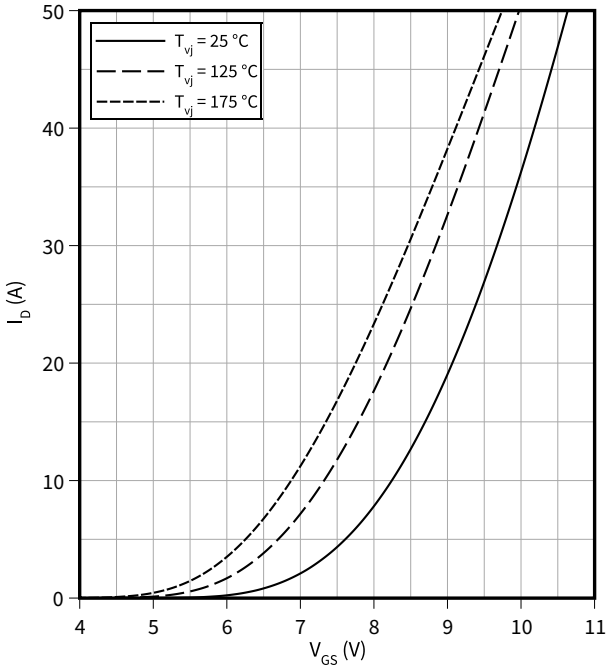


漏源通态电阻 （典型), MOSFET, T2 / T3
$R_{DS(on)} = f(T_{vj})$
$I_D = 25\ A$



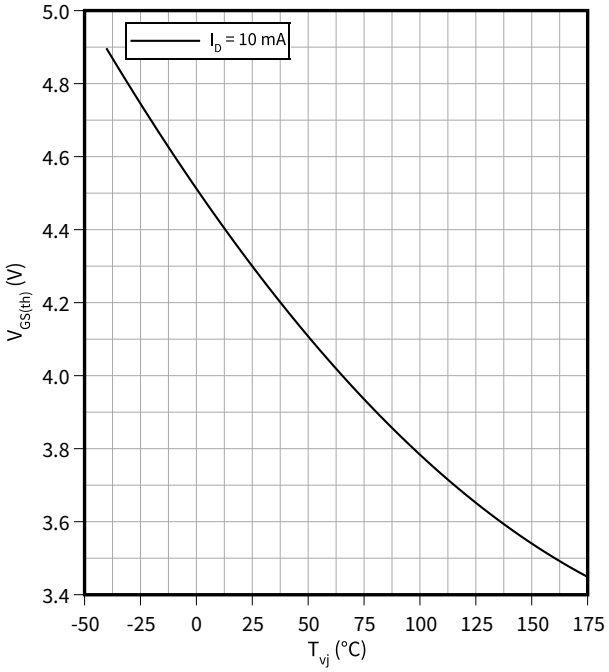
传输特性 （典型), MOSFET, T2 / T3

$I_D = f(V_{GS})$
$V_{DS} = 20\ V$



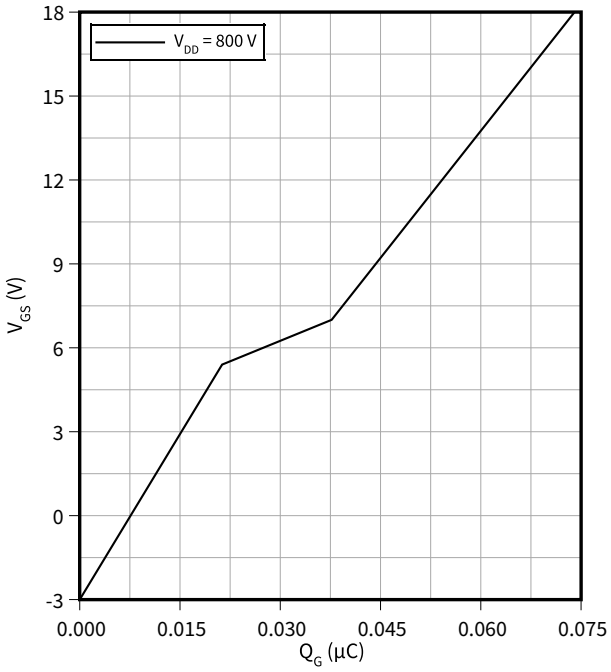
栅-源阀值电压（典型）, MOSFET, T2 / T3

$V_{GS(th)} = f(T_{vj})$
$V_{GS} = V_{DS}$



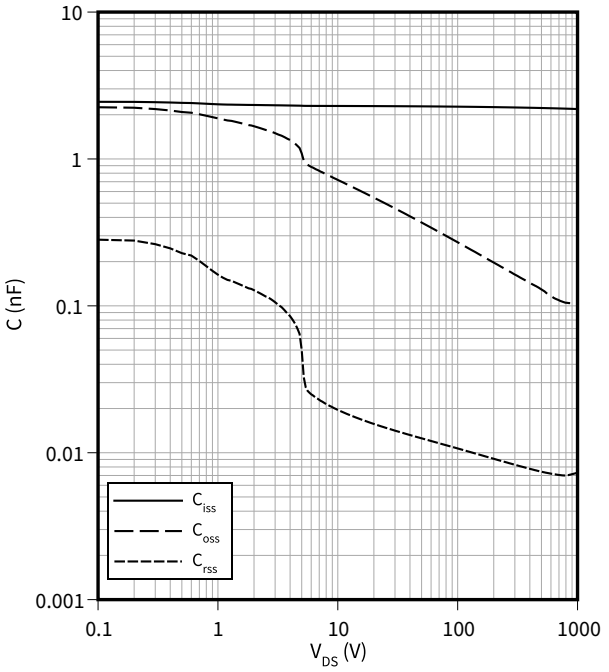
栅极电荷特性 （典型), MOSFET, T2 / T3

$V_{GS} = f(Q_G)$
$I_D = 25\ A$, $T_{vj} = 25\ °C$



电容特性 （典型), MOSFET, T2 / T3

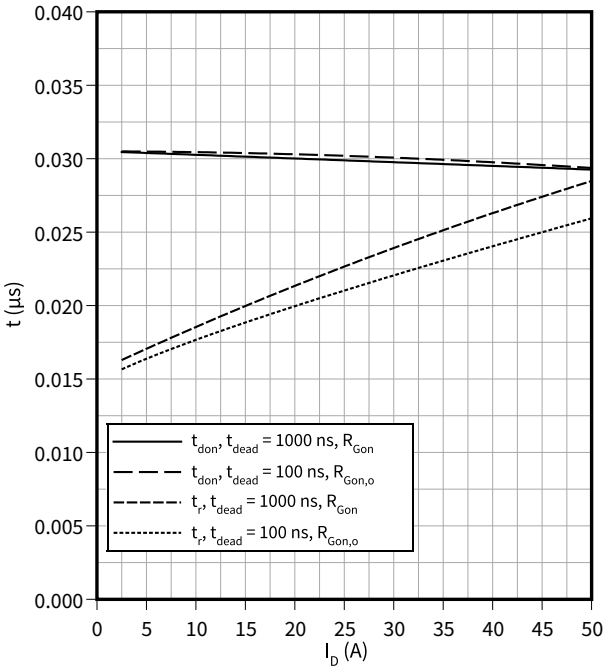
$C = f(V_{DS})$
$f = 100\ kHz$, $T_{vj} = 25\ °C$, $V_{GS} = 0\ V$



开关时间 （典型), MOSFET, T2 / T3

$t = f(I_D)$

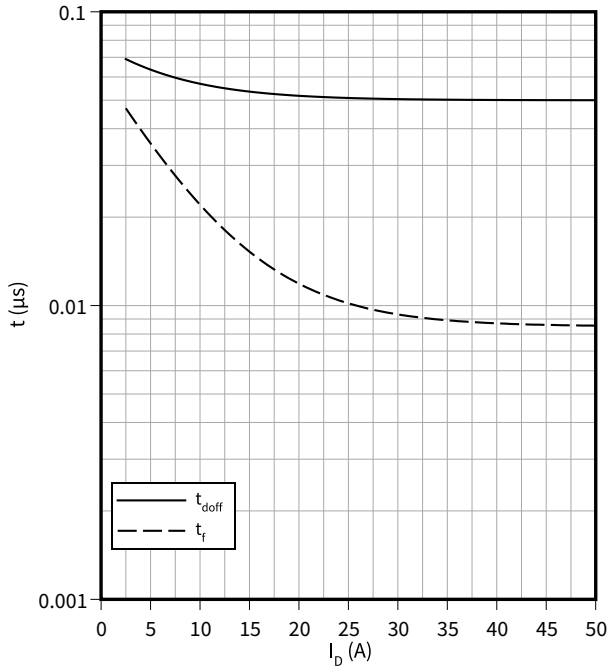
V_{DD} = 600 V, R_{Gon} = 4.7 Ω, $R_{Gon,o}$ = 4.3 Ω, T_{vj} = 175 °C, V_{GS} = -3/18 V



开关时间 （典型), MOSFET, T2 / T3

$t = f(I_D)$

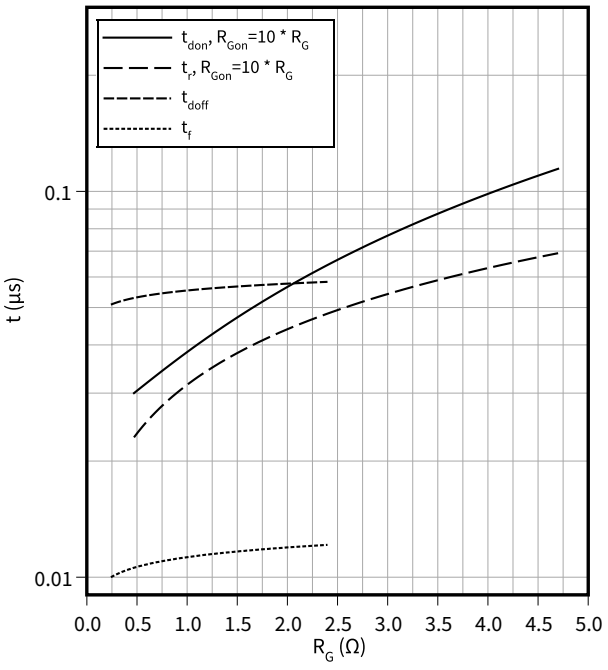
R_{Goff} = 0.24 Ω, V_{DD} = 600 V, T_{vj} = 175 °C, V_{GS} = -3/18 V



开关时间 （典型), MOSFET, T2 / T3

$t = f(R_G)$

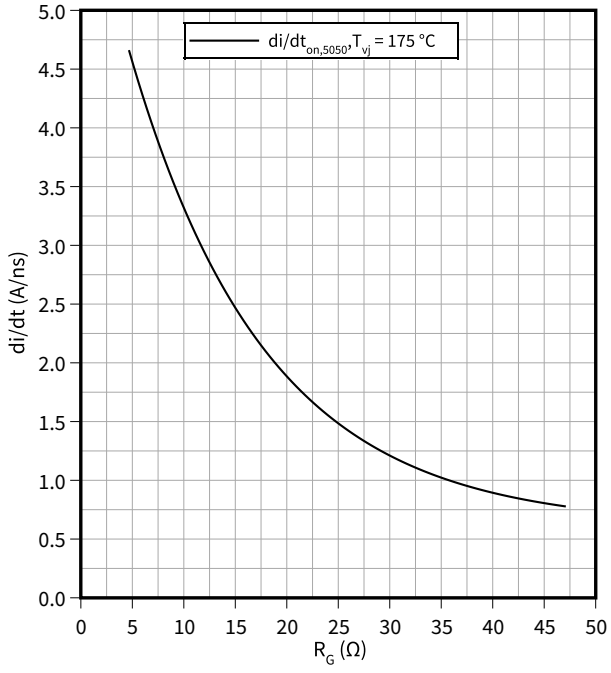
V_{DD} = 600 V, t_{dead} = 1000 ns, I_D = 25 A, T_{vj} = 175 °C, V_{GS} = -3/18 V



电流变化斜率 （典型), MOSFET, T2 / T3

$di/dt = f(R_G)$

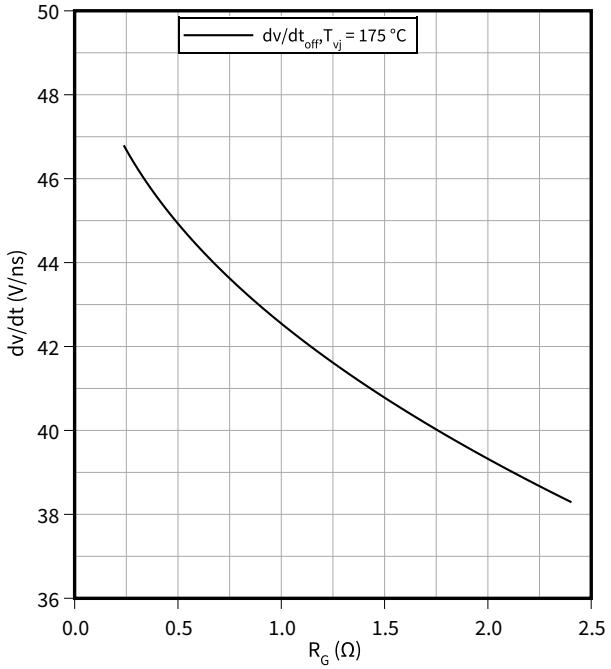
V_{DD} = 600 V, t_{dead} = 1000 ns, I_D = 25 A, V_{GS} = -3/18 V



电压变化斜率 （典型), MOSFET, T2 / T3

dv/dt = f(R_G)

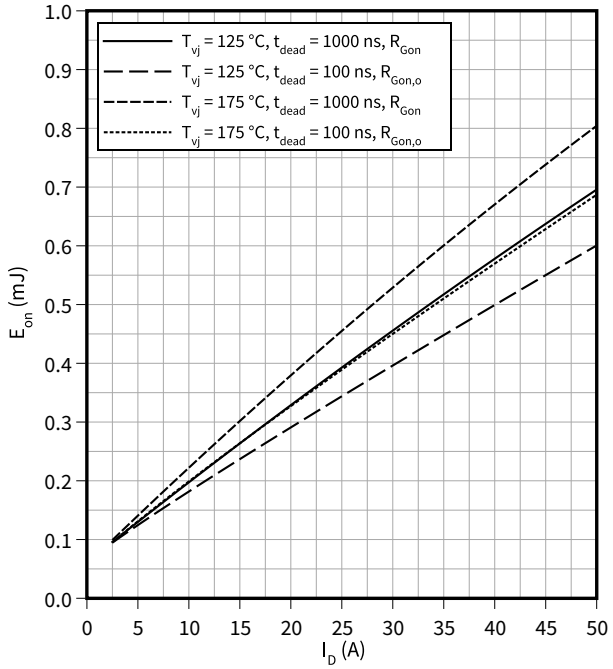
V_{DD} = 600 V, I_D = 25 A, V_{GS} = -3/18 V



开关损耗 （典型), MOSFET, T2 / T3

E_{on} = f(I_D)

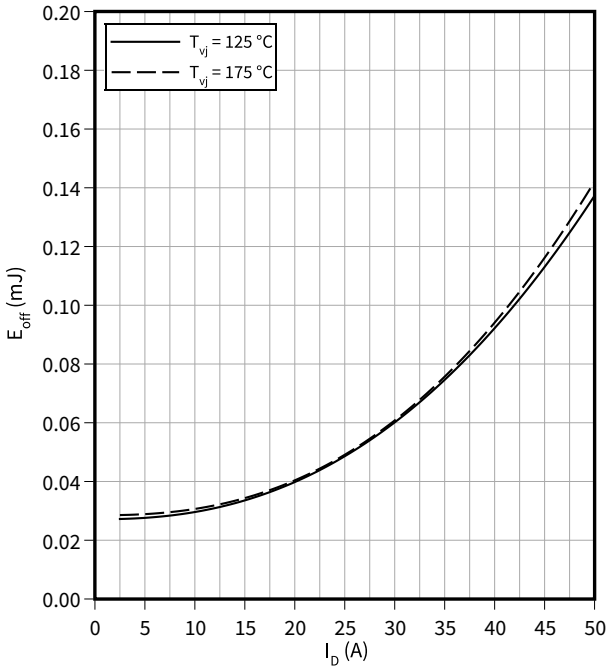
V_{DD} = 600 V, R_{Gon} = 4.7 Ω, $R_{Gon,o}$ = 4.3 Ω, V_{GS} = -3/18 V



开关损耗 （典型), MOSFET, T2 / T3

E_{off} = f(I_D)

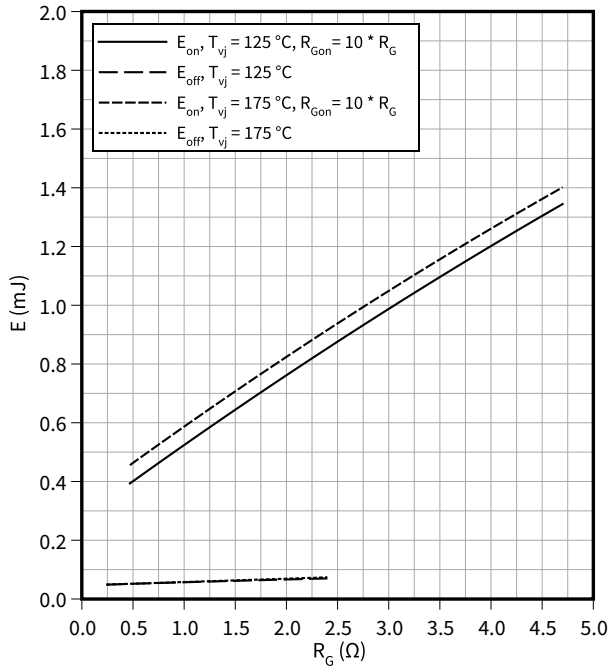
R_{Goff} = 0.24 Ω, V_{DD} = 600 V, V_{GS} = -3/18 V



开关损耗 （典型), MOSFET, T2 / T3

E = f(R_G)

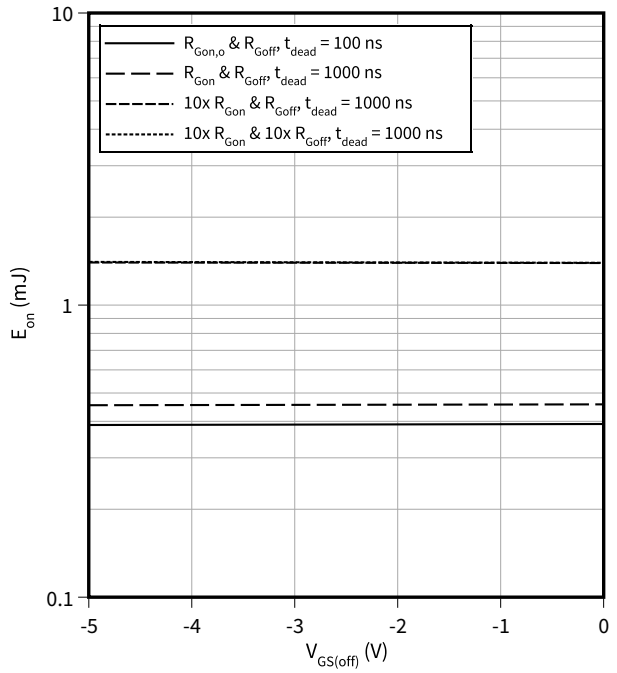
V_{DD} = 600 V, t_{dead} = 1000 ns, I_D = 25 A, V_{GS} = -3/18 V



开关损耗 （典型), MOSFET, T2 / T3

$E_{on} = f(V_{GS(off)})$

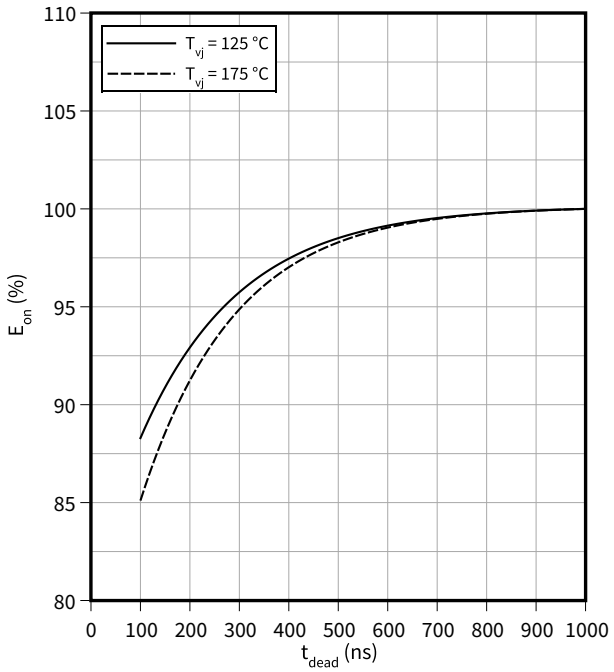
R_{Goff} = 0.24 Ω, V_{DD} = 600 V, R_{Gon} = 4.7 Ω, $V_{GS(on)}$ = 18 V, I_D = 25 A, $R_{Gon,o}$ = 4.3 Ω, T_{vj} = 175 °C



开关损耗 （典型), MOSFET, T2 / T3

$E_{on} = f(t_{dead})$

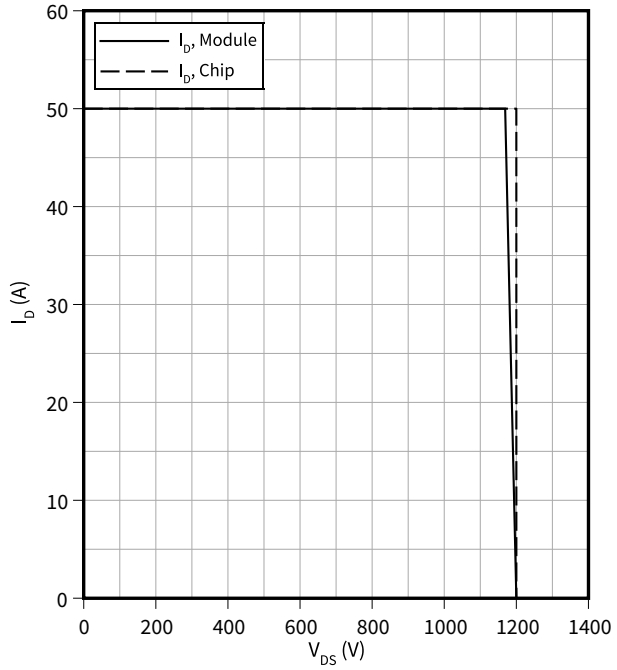
R_{Gon} = 4.7 Ω, I_D = 25 A, V_{DD} = 600 V, V_{GS} = -3/18 V



反偏安全工作区 （RBSOA）, MOSFET, T2 / T3

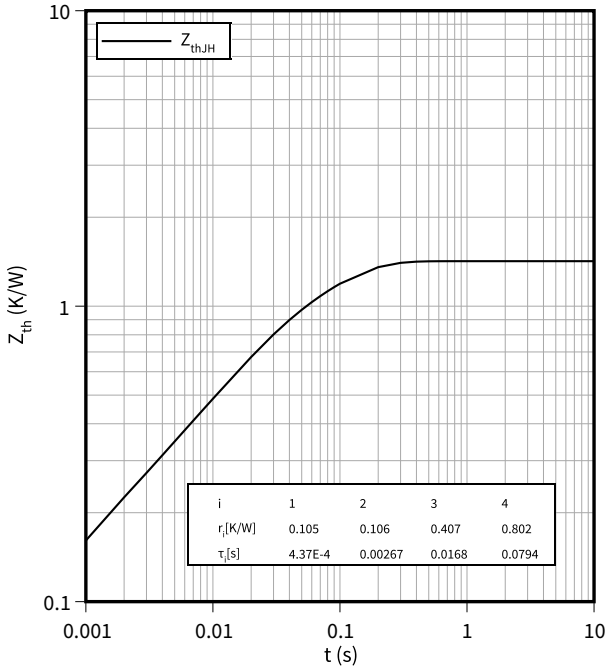
$I_D = f(V_{DS})$

R_{Goff} = 0.24 Ω, T_{vj} = 175 °C, V_{GS} = -3/18 V



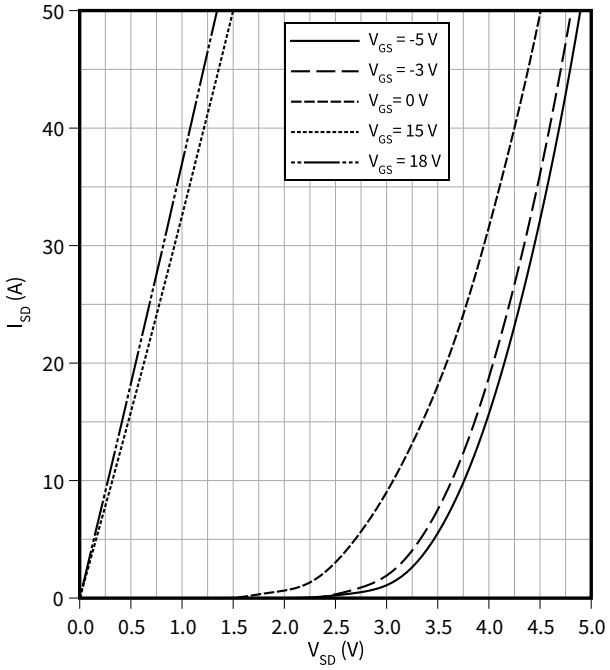
瞬态热阻抗, MOSFET, T2 / T3

$Z_{th} = f(t)$



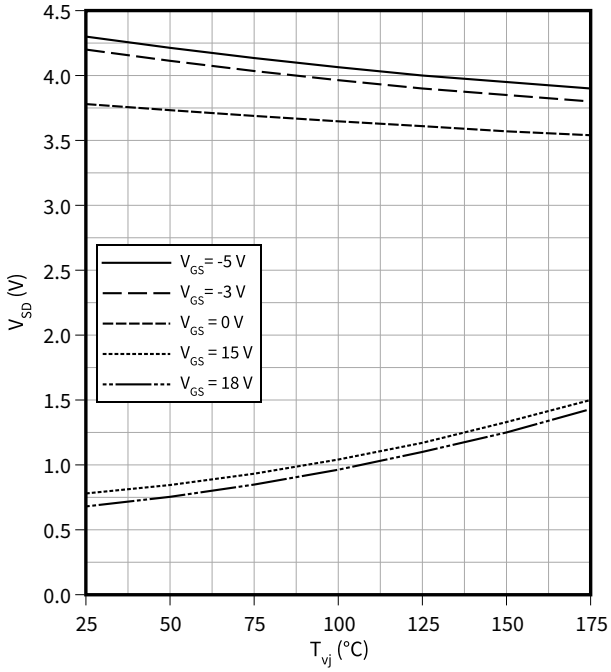
正向特性 体二极管（典型), MOSFET, T2 / T3

$I_{SD} = f(V_{SD})$
$T_{vj} = 25\ °C$



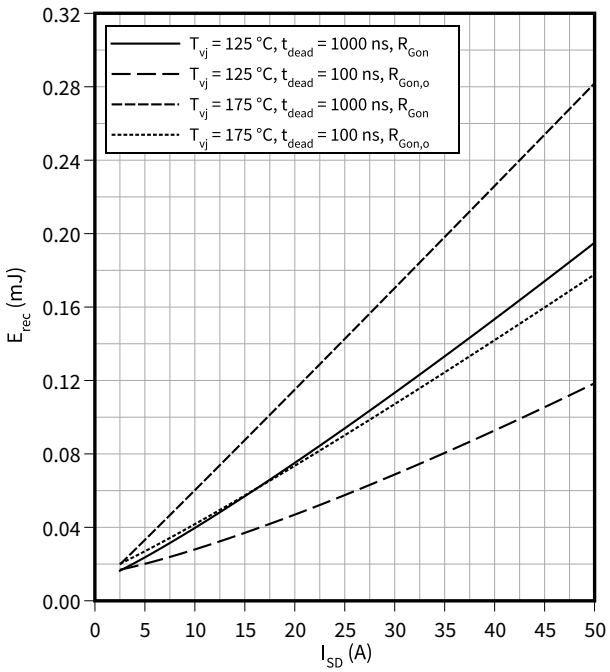
正向特性 体二极管（典型), MOSFET, T2 / T3

$V_{SD} = f(T_{vj})$
$I_{SD} = 25\ A$



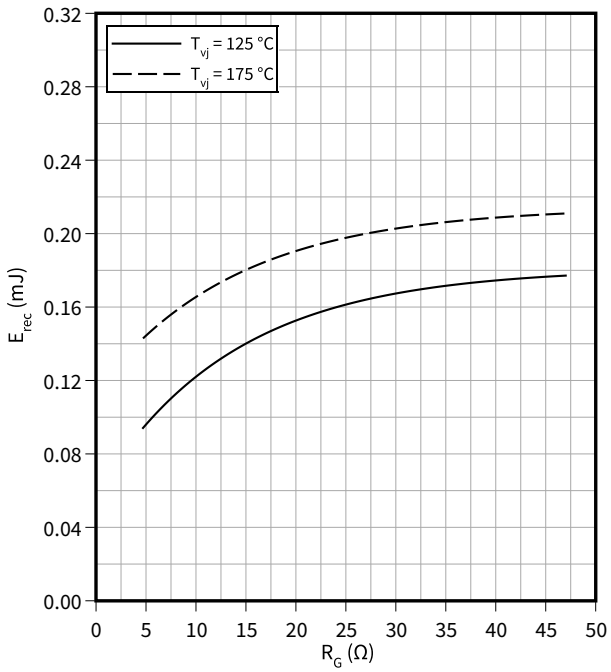
开关损耗 体二极管（典型), MOSFET, T2 / T3

$E_{rec} = f(I_{SD})$
$R_{Gon} = 4.7\ \Omega$, $R_{Gon,o} = 4.3\ \Omega$, $V_{DD} = 600\ V$



开关损耗 体二极管（典型), MOSFET, T2 / T3

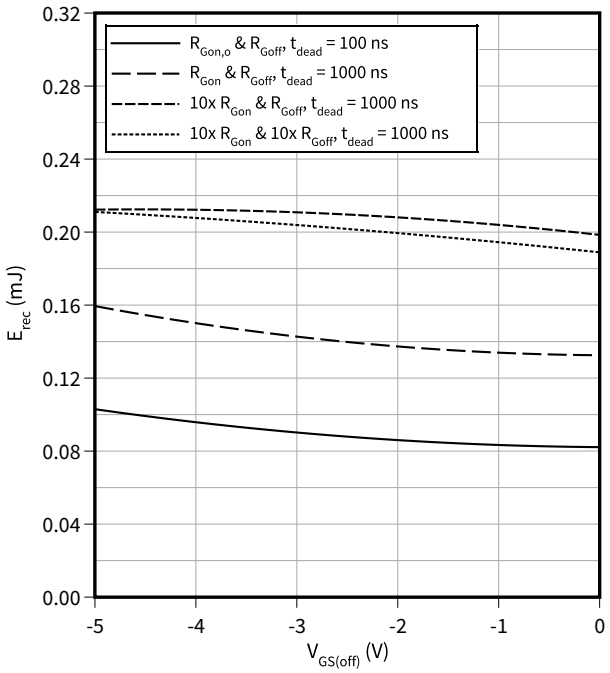
$E_{rec} = f(R_G)$
$t_{dead} = 1000\ ns$, $I_{SD} = 25\ A$, $V_{DD} = 600\ V$



开关损耗 体二极管（典型), MOSFET, T2 / T3

$E_{rec} = f(V_{GS(off)})$

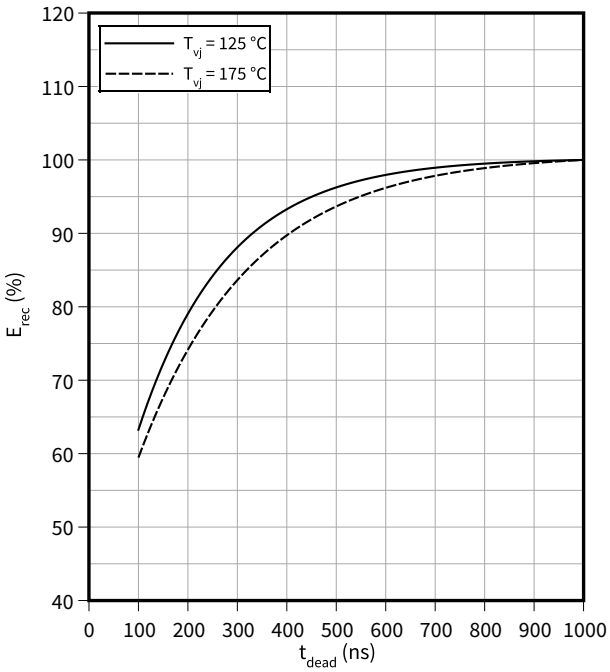
R_{Goff} = 0.24 Ω, R_{Gon} = 4.7 Ω, $V_{GS(on)}$ = 18 V, I_{SD} = 25 A, $R_{Gon,o}$ = 4.3 Ω, V_{DD} = 600 V, T_{vj} = 175 °C



开关损耗 体二极管（典型), MOSFET, T2 / T3

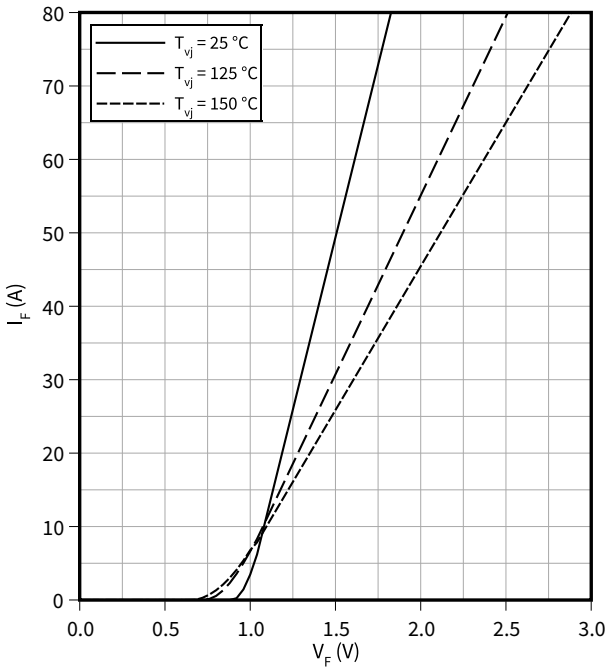
$E_{rec} = f(t_{dead})$

R_{Gon} = 4.7 Ω, I_D = 25 A, V_{DD} = 600 V, V_{GS} = -3/18 V



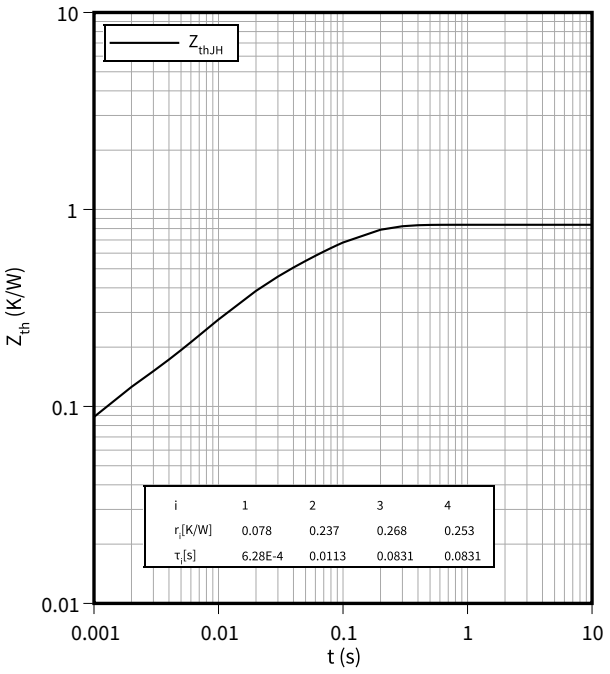
正向特性 （典型), Diode, 轉換器

$I_F = f(V_F)$

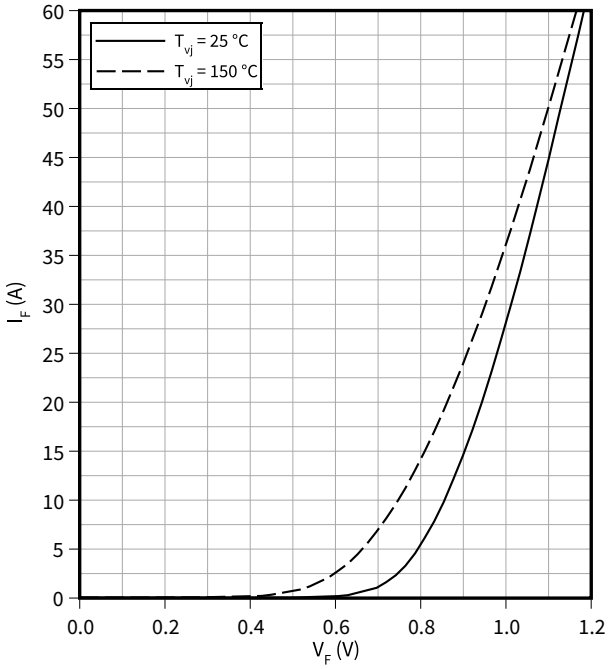


瞬态热阻抗, Diode, 轉換器

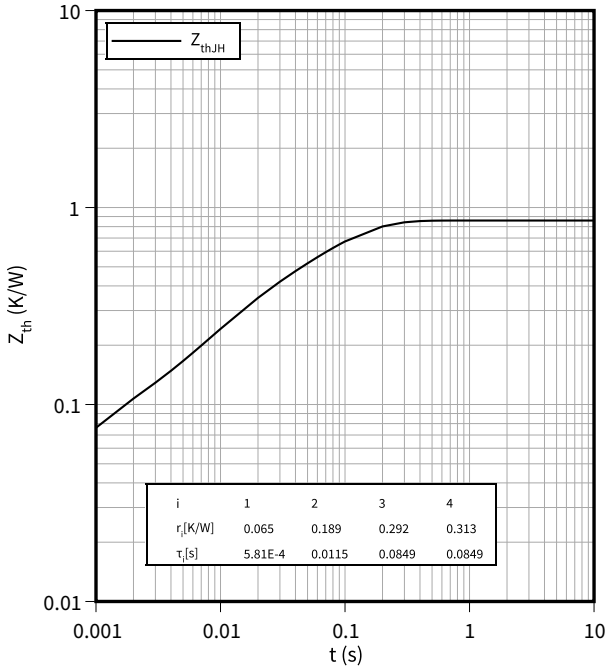
$Z_{th} = f(t)$



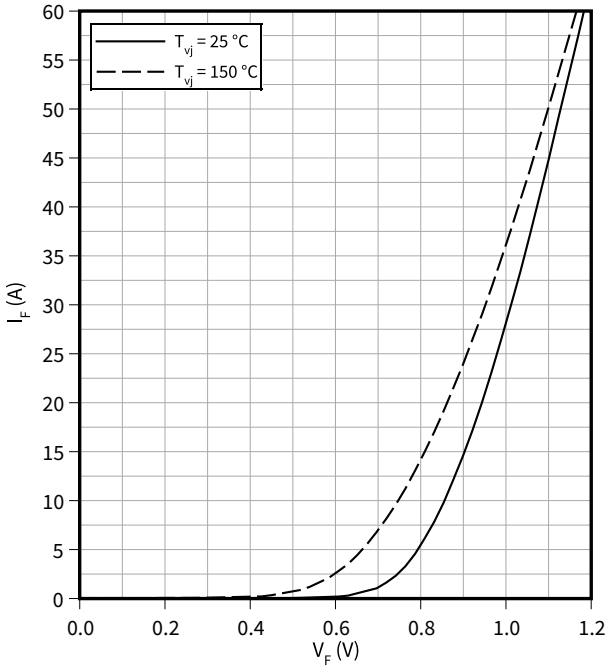
正向特性 （典型), 旁路二极管
$I_F = f(V_F)$



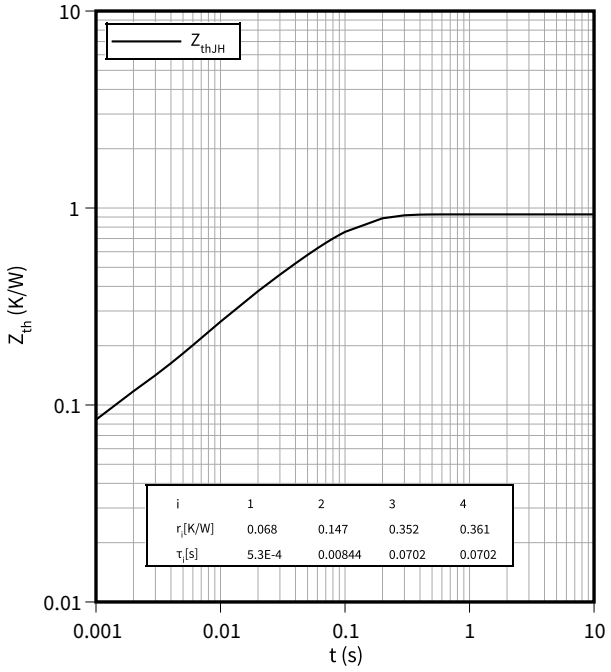
瞬态热阻抗, 旁路二极管
$Z_{th} = f(t)$



正向特性 （典型), 反极性保护二极管
$I_F = f(V_F)$

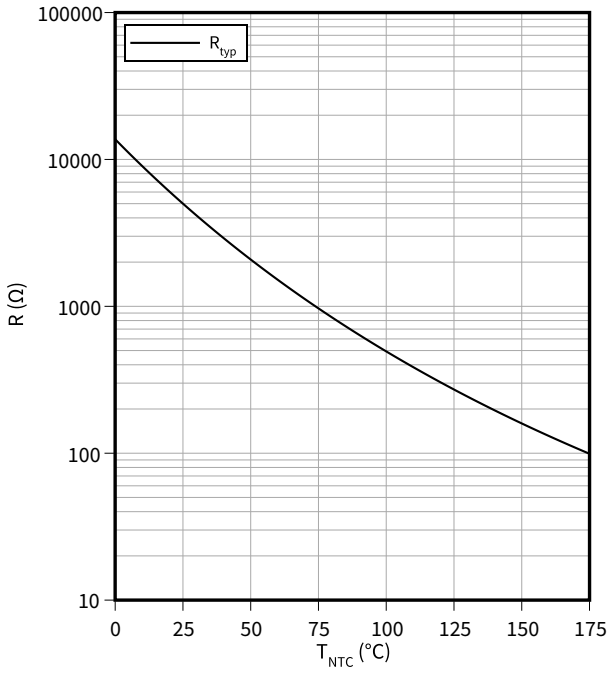


瞬态热阻抗, 反极性保护二极管
$Z_{th} = f(t)$



温度特性, 负温度系数热敏电阻

$R = f(T_{NTC})$



11 电路拓扑图

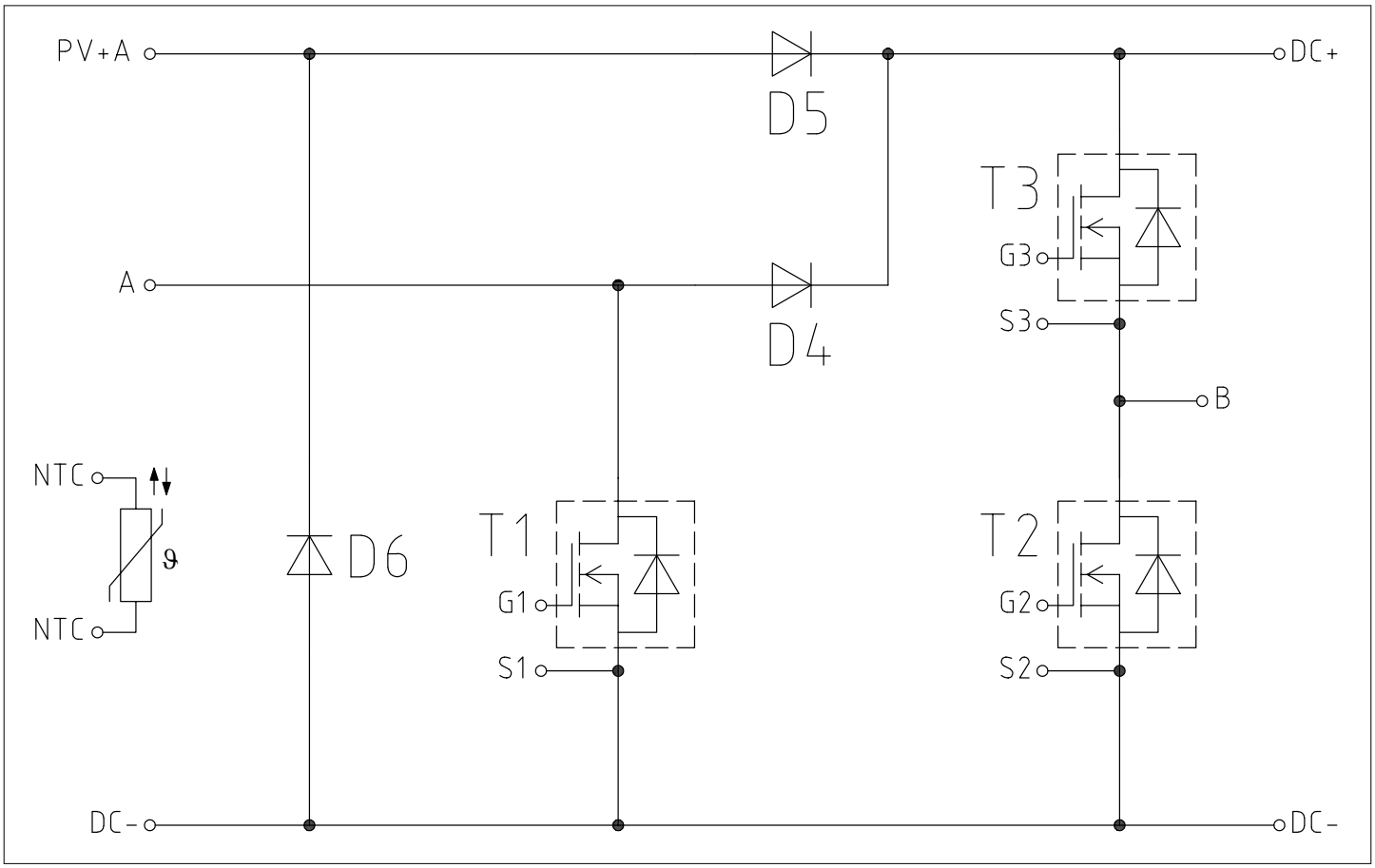


图 1

12 封装尺寸

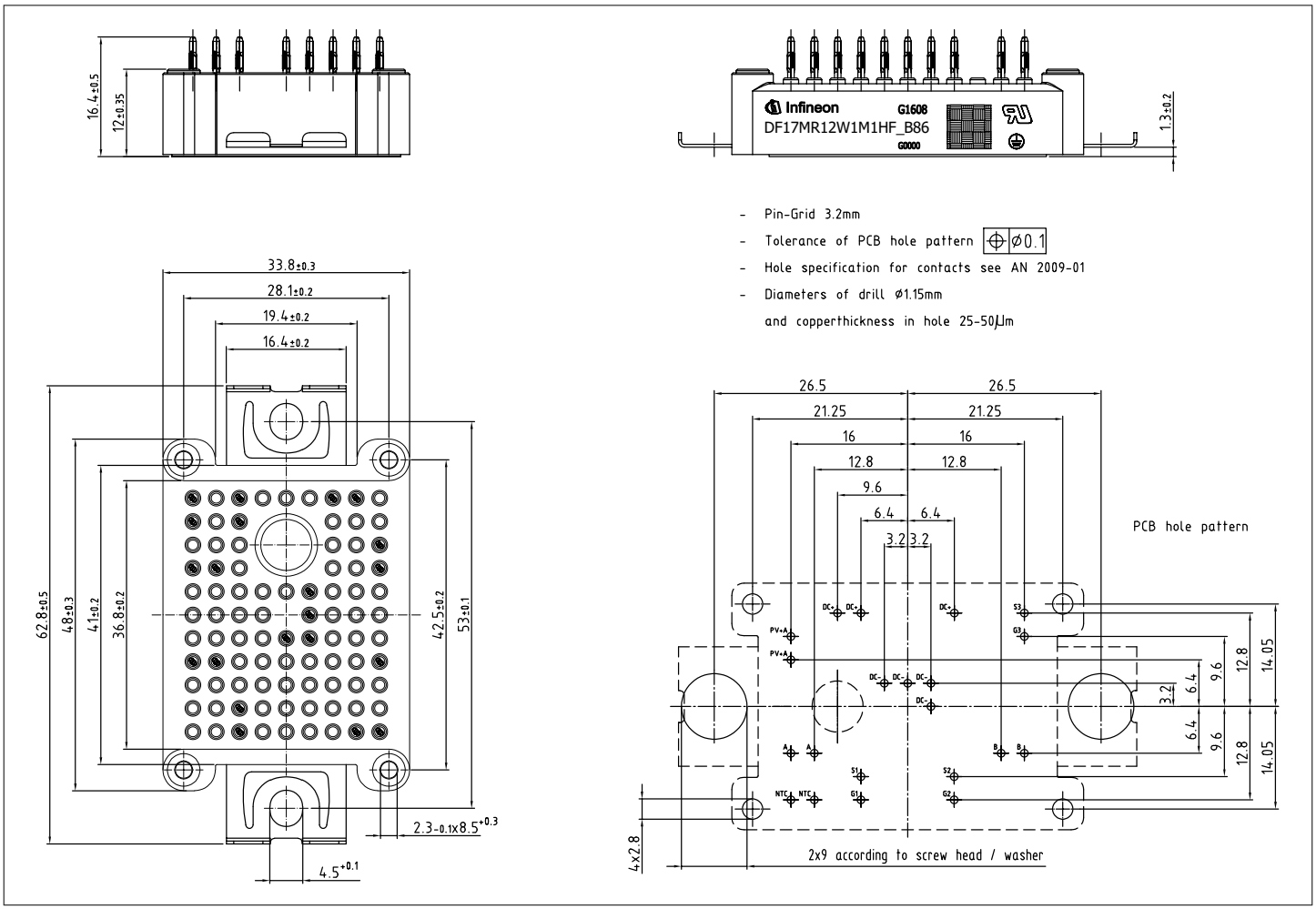

16.4±0.5
12±0.35
Infineon
G1608
DF17MR12W1M1HF_B86
G0000
1.3±0.2
- Pin-Grid 3.2mm
- Tolerance of PCB hole pattern Ø0.1
- Hole specification for contacts see AN 2009-01
- Diameters of drill Ø1.15mm
and copperthickness in hole 25-50µm
33.8±0.3
28.1±0.2
19.4±0.2
16.4±0.2
62.8±0.5
48±0.3
41±0.2
36.8±0.2
42.5±0.2
53±0.1
2.3-0.1x8.5+0.3
4.5+0.1
26.5
21.25
16
12.8
9.6
6.4
3.2
PCB hole pattern
4x2.8
2x9 according to screw head / washer

图 2

13 模块标签代码

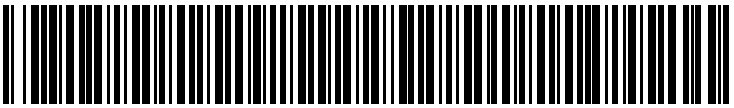
Module label code			
Code format	Data Matrix		Barcode Code128
Encoding	ASCII text		Code Set A
Symbol size	16x16		23 digits
Standard	IEC24720 and IEC16022		IEC8859-1
Code content	*Content* Module serial number Module material number Production order number Date code (production year) Date code (production week)	*Digit* 1 –5 6 - 11 12 - 19 20 –21 22 –23	*Example* 71549 142846 55054991 15 30
Example	 7154914284655054991530	 7154914284655054991530	

图 3

修订历史

修订版本	发布日期	变更说明
0.10	2024-07-03	Initial version
0.20	2024-10-01	Target datasheet
1.00	2024-12-12	Final datasheet

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