

# 英飞凌 IMZC120R017M2H

## CoolSiC™ 1200 V SiC MOSFET G2

采用 .XT 互连技术的碳化硅 MOSFET

### 特性

- $V_{DS} = 1200\text{ V}$  时  $T_{vj} = 25^\circ\text{C}$
- $I_{DDC} = 69\text{ A}$  时  $T_C = 100^\circ\text{C}$
- $R_{DS(on)} = 17\text{ m}\Omega$  时  $V_{GS} = 18\text{ V}$ ,  $T_{vj} = 25^\circ\text{C}$
- 开关损耗非常低
- 过载运行最高结温可达  $T_{vj} = 200^\circ\text{C}$
- 短路耐受时间  $2\text{ }\mu\text{s}$
- 基准栅极阈值电压,  $V_{GS(th)} = 4.2\text{ V}$
- 具有抗寄生导通能力, 可应用  $0\text{ V}$  关断栅极电压
- 坚固的体二极管, 适用于硬换向
- .XT 互连技术, 实现、行业领先的热性能
- 合适的英飞凌栅极驱动器可在 <https://www.infineon.com/gdfinder> 找到

### 潜在应用

- 通用驱动器 (GPD)
- 电动汽车充电桩
- 在线式UPS/工业UPS
- 组串式逆变器
- 储能系统(ESS)
- 焊接

### 产品验证

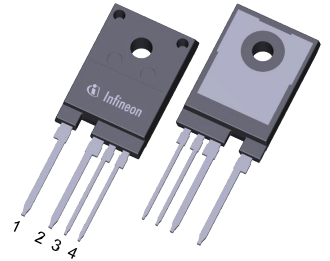
- 符合JEDEC47/20/22相关测试的工业应用要求

### 描述

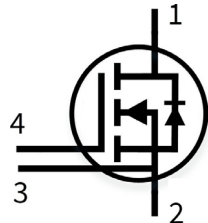
引脚定义:

- 引脚 1 - 漏极
- 引脚 2 - 源
- 引脚 3 - 开尔文检测触点
- 引脚 4 - 栅极

注: 源极引脚和检测引脚不可互换, 互换可能会导致故障



-  Halogen-free
-  Green
-  Lead-free
-  RoHS



Type	Package	Marking
IMZC120R017M2H	PG-TO247-4-U07	12M2H017

本数据手册的原文使用英文撰写。为方便起见, 英飞凌提供了译文; 由于翻译过程中可能使用了自动化工具, 英飞凌不保证译文的准确性。为确认准确性, 请务必访问 [infineon.com](http://infineon.com) 参考最新的英文版本 (控制文档)。

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1封装

## 1 封装

表1 特征值

Parameter	Symbol	Note or test condition	Values			Unit
			Min.	Typ.	Max.	
Storage temperature	$T_{stg}$		-55		150	°C
Soldering temperature	$T_{sold}$	Wave soldering only allowed at leads 1.6 mm (0.063 in.) from case for 10 s			260	°C
Mounting torque	$M$	M3 screw, Maximum of mounting processes: 3			0.6	Nm
Thermal resistance, junction-ambient	$R_{th(j-a)}$				62	K/W
MOSFET/body diode thermal resistance, junction-case	$R_{th(j-c)}$			0.3	0.39	K/W

## 2 MOSFET

表2 最大额定值

Parameter	Symbol	Note or test condition	Values	Unit	
Drain-source voltage	$V_{DSS}$	$T_{vj} \geq 25\text{ °C}$	1200	V	
Continuous DC drain current for $R_{th(j-c,max)}$ , limited by $T_{vj(max)}$	$I_{DCC}$	$V_{GS} = 18\text{ V}$	$T_c = 25\text{ °C}$	97	A
			$T_c = 100\text{ °C}$	69	
Peak drain current, $t_p$ limited by $T_{vj(max)}$ <sup>1)</sup>	$I_{DM}$	$V_{GS} = 18\text{ V}$	345	A	
Gate-source voltage, max. transient voltage	$V_{GS}$	$t_p \leq 0.5\ \mu\text{s}, D < 0.01$	-10...25	V	
Gate-source voltage, max. static voltage <sup>2)</sup>	$V_{GS}$		-7...23	V	
Avalanche energy, single pulse	$E_{AS}$	$I_D = 40\text{ A}, V_{DD} = 50\text{ V}, L = 0.6\text{ mH}, T_{vj(start)} = 25\text{ °C}$	508	mJ	
Avalanche energy, repetitive	$E_{AR}$	$I_D = 40\text{ A}, V_{DD} = 50\text{ V}, L = 3.2\ \mu\text{H}, T_{vj(start)} = 25\text{ °C}$	2.54	mJ	
Short-circuit withstand time	$t_{SC}$	$V_{DD} \leq 800\text{ V}, V_{DS,peak} < 1200\text{ V}, V_{GS(on)} = 15\text{ V}, T_{vj(start)} = 25\text{ °C}$	2	$\mu\text{s}$	
Power dissipation, limited by $T_{vj(max)}$	$P_{tot}$		$T_c = 25\text{ °C}$	382	W
			$T_c = 100\text{ °C}$	191	

1) 已通过设计验证。

2) 应用设计中的最大栅源电压应符合IPC-9592B的规定。

表3 建议值

Parameter	Symbol	Note or test condition	Values	Unit
Recommended turn-on gate voltage	$V_{GS(on)}$		15...18	V
Recommended turn-off gate voltage	$V_{GS(off)}$		-5...0	V

表4 特征值

Parameter	Symbol	Note or test condition	Values			Unit	
			Min.	Typ.	Max.		
Drain-source on-state resistance	$R_{DS(on)}$	$I_D = 40\text{ A}$	$T_{vj} = 25\text{ °C}, V_{GS(on)} = 18\text{ V}$		17		mΩ
			$T_{vj} = 150\text{ °C}, V_{GS(on)} = 18\text{ V}$		35	45	
			$T_{vj} = 175\text{ °C}, V_{GS(on)} = 18\text{ V}$		41		
			$T_{vj} = 25\text{ °C}, V_{GS(on)} = 15\text{ V}$		21		
Gate-source threshold voltage	$V_{GS(th)}$	$I_D = 12.7\text{ mA}, V_{DS} = V_{GS}$ (tested after 1 ms pulse at $V_{GS} = 20\text{ V}$ )	$T_{vj} = 25\text{ °C}$	3.5	4.2	5.1	V
			$T_{vj} = 175\text{ °C}$		3.2		
Zero gate-voltage drain current	$I_{DSS}$	$V_{DS} = 1200\text{ V}, V_{GS} = 0\text{ V}$	$T_{vj} = 25\text{ °C}$			350	μA
			$T_{vj} = 175\text{ °C}$		6		
Gate leakage current	$I_{GSS}$	$V_{DS} = 0\text{ V}$	$V_{GS} = 23\text{ V}$			120	nA
			$V_{GS} = -10\text{ V}$			-120	
Forward transconductance	$g_{fs}$	$I_D = 40\text{ A}, V_{DS} = 20\text{ V}$		27		S	
Internal gate resistance	$R_{G,int}$	$f = 1\text{ MHz}, V_{AC} = 25\text{ mV}$		3		Ω	
Input capacitance	$C_{iss}$	$V_{DS} = 800\text{ V}, V_{GS} = 0\text{ V}, f = 100\text{ kHz}, V_{AC} = 25\text{ mV}$		2910		pF	
Output capacitance	$C_{oss}$	$V_{DS} = 800\text{ V}, V_{GS} = 0\text{ V}, f = 100\text{ kHz}, V_{AC} = 25\text{ mV}$		126		pF	
Reverse transfer capacitance	$C_{rss}$	$V_{DS} = 800\text{ V}, V_{GS} = 0\text{ V}, f = 100\text{ kHz}, V_{AC} = 25\text{ mV}$		11		pF	
$C_{oss}$ stored energy	$E_{oss}$	Calculated based on $C_{oss} = f(V_{DD})$		53		μJ	
Output charge	$Q_{oss}$	Calculated based on $C_{oss} = f(V_{DD})$		196		nC	
Effective output capacitance, energy related	$C_{o(er)}$	$V_{DS} = 0...800\text{ V}, V_{GS} = 0\text{ V},$ Calculated based on $E_{oss}$		166		pF	
Effective output capacitance, time related	$C_{o(tr)}$	$I_D = \text{constant}, V_{DS} = 0...800\text{ V}, V_{GS} = 0\text{ V},$ Calculated based on $Q_{oss}$		245		pF	
Total gate charge	$Q_G$	$V_{DD} = 800\text{ V}, I_D = 40\text{ A}, V_{GS} = 0/18\text{ V},$ turn-on pulse		89		nC	

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表 4 (续) 特征值

Parameter	Symbol	Note or test condition	Values			Unit
			Min.	Typ.	Max.	
Plateau gate charge	$Q_{GS(pl)}$	$V_{DD} = 800\text{ V}$ , $I_D = 40\text{ A}$ , $V_{GS} = 0/18\text{ V}$ , turn-on pulse		19		nC
Gate-drain charge	$Q_{GD}$	$V_{DD} = 800\text{ V}$ , $I_D = 40\text{ A}$ , $V_{GS} = 0/18\text{ V}$ , turn-on pulse		24		nC
Turn-on delay time	$t_{d(on)}$	$V_{DD} = 800\text{ V}$ , $I_D = 40\text{ A}$ , $V_{GS} = 0/18\text{ V}$ , $R_{G,ext} = 2.3\ \Omega$ , $L_\sigma = 12\text{ nH}$ , diode: body diode at $V_{GS} = 0\text{ V}$	$T_{vj} = 25\text{ }^\circ\text{C}$	10		ns
			$T_{vj} = 175\text{ }^\circ\text{C}$	7.5		
Rise time	$t_r$	$V_{DD} = 800\text{ V}$ , $I_D = 40\text{ A}$ , $V_{GS} = 0/18\text{ V}$ , $R_{G,ext} = 2.3\ \Omega$ , $L_\sigma = 12\text{ nH}$ , diode: body diode at $V_{GS} = 0\text{ V}$	$T_{vj} = 25\text{ }^\circ\text{C}$	6.1		ns
			$T_{vj} = 175\text{ }^\circ\text{C}$	5.4		
Turn-off delay time	$t_{d(off)}$	$V_{DD} = 800\text{ V}$ , $I_D = 40\text{ A}$ , $V_{GS} = 0/18\text{ V}$ , $R_{G,ext} = 2.3\ \Omega$ , $L_\sigma = 12\text{ nH}$ , diode: body diode at $V_{GS} = 0\text{ V}$	$T_{vj} = 25\text{ }^\circ\text{C}$	21.2		ns
			$T_{vj} = 175\text{ }^\circ\text{C}$	24.8		
Fall time	$t_f$	$V_{DD} = 800\text{ V}$ , $I_D = 40\text{ A}$ , $V_{GS} = 0/18\text{ V}$ , $R_{G,ext} = 2.3\ \Omega$ , $L_\sigma = 12\text{ nH}$ , diode: body diode at $V_{GS} = 0\text{ V}$	$T_{vj} = 25\text{ }^\circ\text{C}$	9.1		ns
			$T_{vj} = 175\text{ }^\circ\text{C}$	10.7		
Turn-on energy	$E_{on}$	$V_{DD} = 800\text{ V}$ , $I_D = 40\text{ A}$ , $V_{GS} = 0/18\text{ V}$ , $R_{G,ext} = 2.3\ \Omega$ , $L_\sigma = 12\text{ nH}$ , diode: body diode at $V_{GS} = 0\text{ V}$	$T_{vj} = 25\text{ }^\circ\text{C}$	310		$\mu\text{J}$
			$T_{vj} = 175\text{ }^\circ\text{C}$	550		
Turn-off energy	$E_{off}$	$V_{DD} = 800\text{ V}$ , $I_D = 40\text{ A}$ , $V_{GS} = 0/18\text{ V}$ , $R_{G,ext} = 2.3\ \Omega$ , $L_\sigma = 12\text{ nH}$ , diode: body diode at $V_{GS} = 0\text{ V}$	$T_{vj} = 25\text{ }^\circ\text{C}$	120		$\mu\text{J}$
			$T_{vj} = 175\text{ }^\circ\text{C}$	180		
Total switching energy <sup>1)</sup>	$E_{tot}$	$V_{DD} = 800\text{ V}$ , $I_D = 40\text{ A}$ , $V_{GS} = 0/18\text{ V}$ , $R_{G,ext} = 2.3\ \Omega$ , $L_\sigma = 12\text{ nH}$ , diode: body diode at $V_{GS} = 0\text{ V}$	$T_{vj} = 25\text{ }^\circ\text{C}$	590		$\mu\text{J}$
			$T_{vj} = 175\text{ }^\circ\text{C}$	1200		

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表 4 (续) 特征值

Parameter	Symbol	Note or test condition	Values			Unit
			Min.	Typ.	Max.	
Turn-on energy at -5 V	$E_{on}$	$V_{DD} = 800\text{ V}$ , $I_D = 40\text{ A}$ , $V_{GS} = -5/18\text{ V}$ , $R_{G,ext} = 2.3\ \Omega$ , $L_\sigma = 12\text{ nH}$ , diode: body diode at $V_{GS} = -5\text{ V}$	$T_{vj} = 25\text{ }^\circ\text{C}$	288		$\mu\text{J}$
			$T_{vj} = 175\text{ }^\circ\text{C}$	513		
Turn-off energy at -5 V	$E_{off}$	$V_{DD} = 800\text{ V}$ , $I_D = 40\text{ A}$ , $V_{GS} = -5/18\text{ V}$ , $R_{G,ext} = 2.3\ \Omega$ , $L_\sigma = 12\text{ nH}$ , diode: body diode at $V_{GS} = -5\text{ V}$	$T_{vj} = 25\text{ }^\circ\text{C}$	53		$\mu\text{J}$
			$T_{vj} = 175\text{ }^\circ\text{C}$	53		
Total switching energy at -5 V <sup>1)</sup>	$E_{tot}$	$V_{DD} = 800\text{ V}$ , $I_D = 40\text{ A}$ , $V_{GS} = -5/18\text{ V}$ , $R_{G,ext} = 2.3\ \Omega$ , $L_\sigma = 12\text{ nH}$ , diode: body diode at $V_{GS} = -5\text{ V}$	$T_{vj} = 25\text{ }^\circ\text{C}$	506		$\mu\text{J}$
			$T_{vj} = 175\text{ }^\circ\text{C}$	1122		
Virtual junction temperature	$T_{vj}$		-55		175	$^\circ\text{C}$
Virtual junction temperature	$T_{vj(over)}$	overload, cumulative max. 100 h <sup>2)</sup>			200	$^\circ\text{C}$

1) 包括  $E_{fr}$

2) 最多 5000 次循环。最大  $\Delta T$  限制为 100 K。

注：芯片技术的特征是高达 200 kV/ $\mu\text{s}$ 。测量的  $dV/dt$  受到测量测试设置和封装的限制。

除非另有规定，特性均为  $T_{vj} = 25\text{ }^\circ\text{C}$ 。

### 3 体二极管 (MOSFET)

表 5 最大额定值

Parameter	Symbol	Note or test condition	Values	Unit	
Drain-source voltage	$V_{DSS}$	$T_{vj} \geq 25\text{ }^\circ\text{C}$	1200	V	
Continuous reverse drain current for $R_{th(j-c,max)}$ , limited by $T_{vj(max)}$	$I_{SDC}$	$V_{GS} = 0\text{ V}$	$T_c = 25\text{ }^\circ\text{C}$	72	A
			$T_c = 100\text{ }^\circ\text{C}$	40	
Peak reverse drain current, $t_p$ limited by $T_{vj(max)}$	$I_{SM}$	$V_{GS} = 0\text{ V}$	207	A	

表6 特征值

Parameter	Symbol	Note or test condition	Values			Unit
			Min.	Typ.	Max.	
Drain-source reverse voltage	$V_{SD}$	$I_{SD} = 40 \text{ A}, V_{GS} = 0 \text{ V}$	$T_{vj} = 25 \text{ }^\circ\text{C}$	4.2	5.5	V
			$T_{vj} = 100 \text{ }^\circ\text{C}$	4.11		
			$T_{vj} = 175 \text{ }^\circ\text{C}$	4.05		
MOSFET forward recovery charge	$Q_{fr}$	$V_{DD} = 800 \text{ V}, I_{SD} = 40 \text{ A}, V_{GS} = 0 \text{ V}, R_{GS(on)} = 2.3 \text{ } \Omega, Q_{fr}$ includes also $Q_C$	$T_{vj} = 25 \text{ }^\circ\text{C}$	0.34		$\mu\text{C}$
			$T_{vj} = 175 \text{ }^\circ\text{C}$	0.97		
MOSFET peak forward recovery current	$I_{frm}$	$V_{DD} = 800 \text{ V}, I_{SD} = 40 \text{ A}, V_{GS} = 0 \text{ V}, R_{GS(on)} = 2.3 \text{ } \Omega, Q_{fr}$ includes also $Q_C$	$T_{vj} = 25 \text{ }^\circ\text{C}$	41.7		A
			$T_{vj} = 175 \text{ }^\circ\text{C}$	71.2		
MOSFET forward recovery energy	$E_{fr}$	$V_{DD} = 800 \text{ V}, I_{SD} = 40 \text{ A}, V_{GS} = 0 \text{ V}, R_{GS(on)} = 2.3 \text{ } \Omega, Q_{fr}$ includes also $Q_C$	$T_{vj} = 25 \text{ }^\circ\text{C}$	160		$\mu\text{J}$
			$T_{vj} = 175 \text{ }^\circ\text{C}$	470		
MOSFET forward recovery energy at -5 V	$E_{fr}$	$V_{DD} = 800 \text{ V}, I_{SD} = 40 \text{ A}, V_{GS} = -5 \text{ V}, R_{GS(on)} = 2.3 \text{ } \Omega, Q_{fr}$ includes also $Q_C$	$T_{vj} = 25 \text{ }^\circ\text{C}$	165		$\mu\text{J}$
			$T_{vj} = 175 \text{ }^\circ\text{C}$	556		
Virtual junction temperature	$T_{vj}$		-55		175	$^\circ\text{C}$
Virtual junction temperature	$T_{vj(over)}$	overload, cumulative max. 100 h <sup>1)</sup>			200	$^\circ\text{C}$

1) 最多 5000 次循环。最大 $\Delta T$  限制为 100 K。

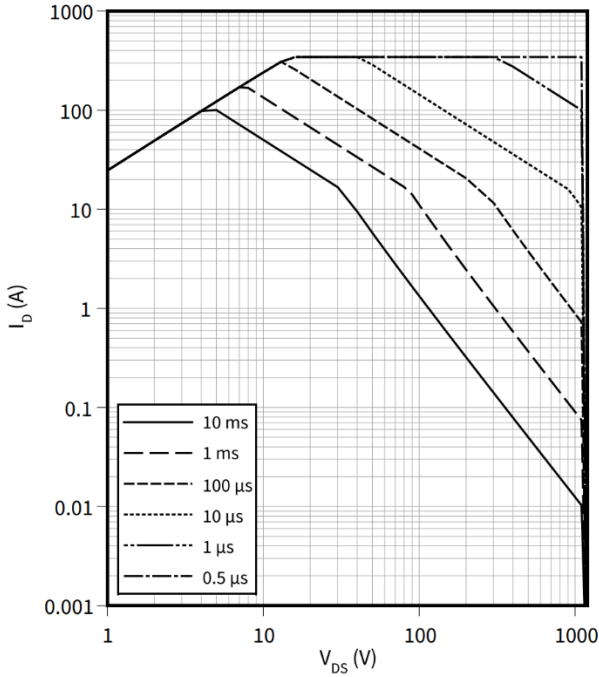
4 特性图

4 特性图

Safe operating area (SOA)

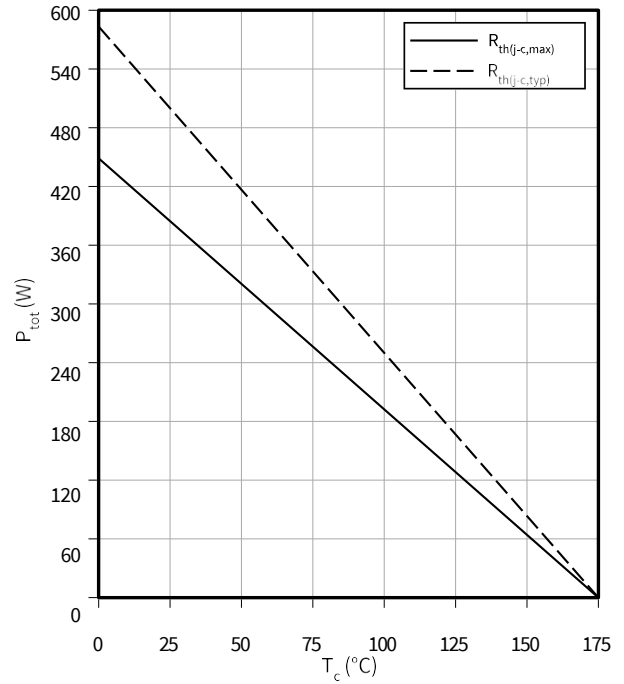
$I_D = f(V_{DS})$

$T_c = 25\text{ }^\circ\text{C}$ ,  $T_{vj} \leq 175\text{ }^\circ\text{C}$



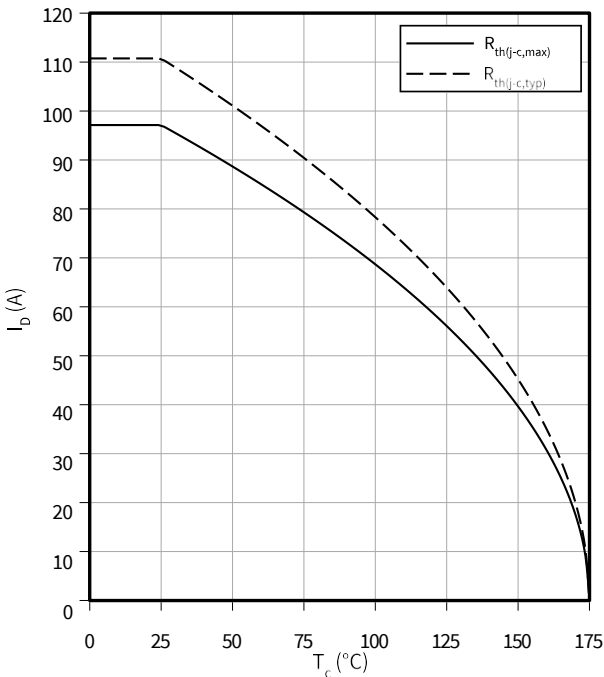
Power dissipation as a function of case temperature

$P_{tot} = f(T_c)$



Maximum DC drain to source current as a function of case temperature limited by bond wire

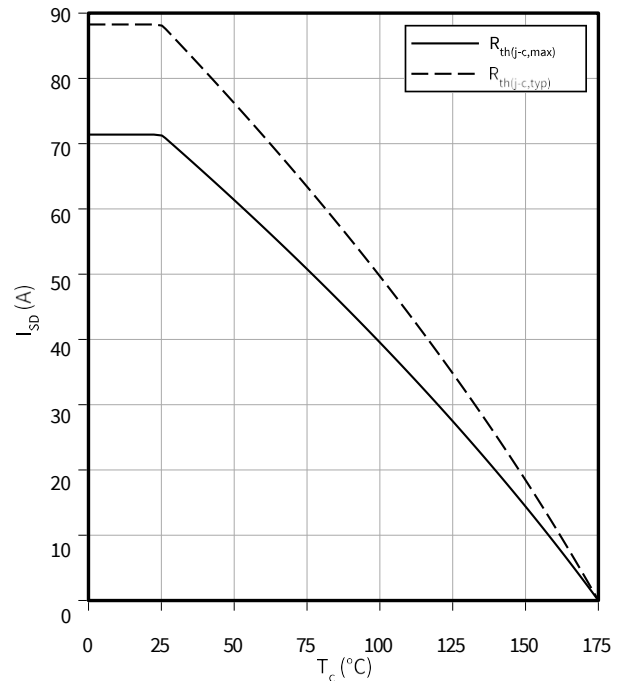
$I_D = f(T_c)$



Maximum source to drain current as a function of case temperature limited by bond wire

$I_{SD} = f(T_c)$

$V_{GS} = 0\text{ V}$

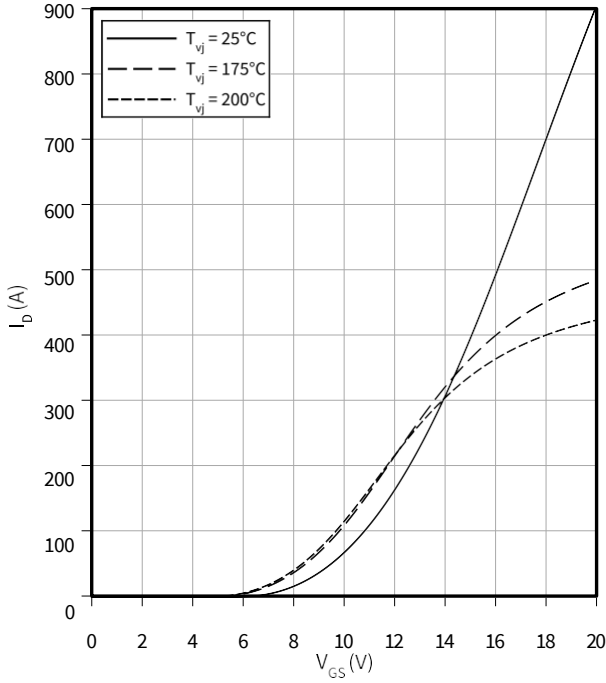


4 特性图

**Typical transfer characteristic**

$I_D = f(V_{GS})$

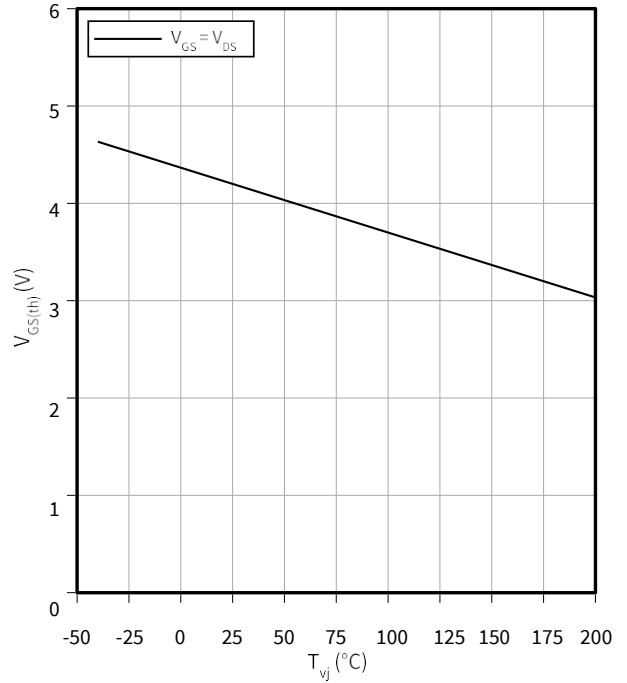
$V_{DS} = 20 \text{ V}$ ,  $t_p = 20 \mu\text{s}$



**Typical gate-source threshold voltage as a function of junction temperature**

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

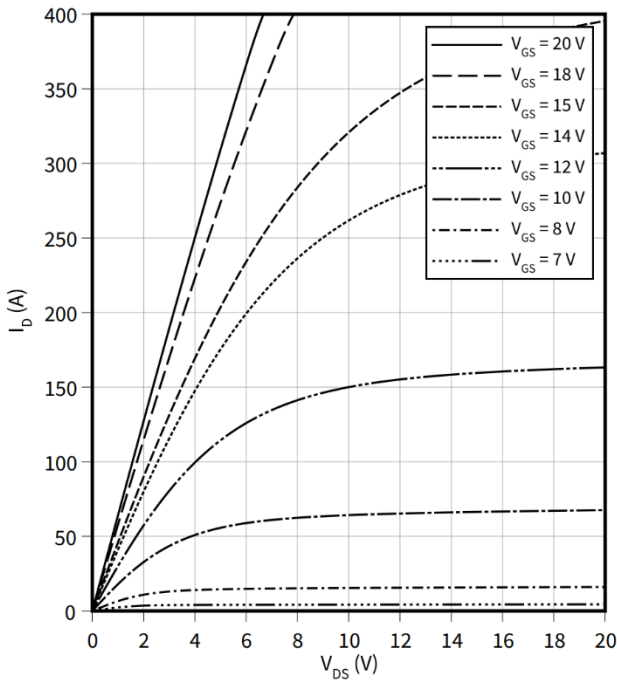
$I_D = 12.7 \text{ mA}$



**Typical output characteristic,  $V_{GS}$  as a parameter**

$I_D = f(V_{DS})$

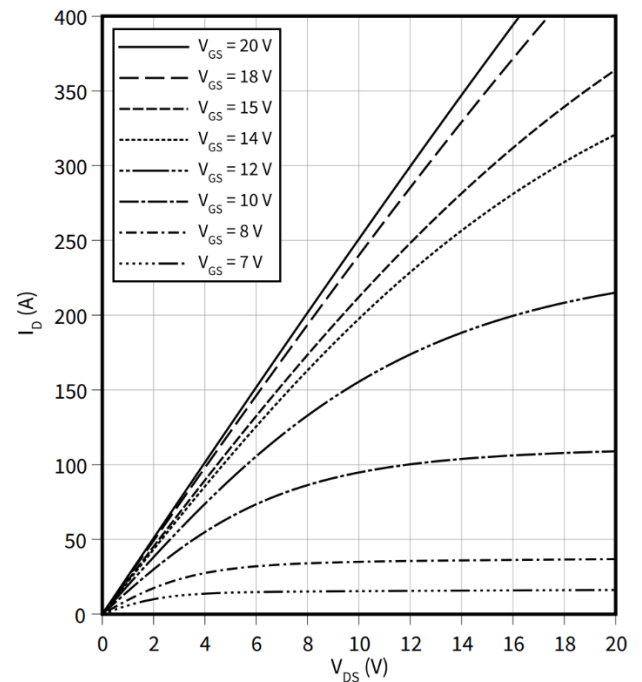
$T_{vj} = 25 \text{ }^\circ\text{C}$ ,  $t_p = 20 \mu\text{s}$



**Typical output characteristic,  $V_{GS}$  as a parameter**

$I_D = f(V_{DS})$

$T_{vj} = 175 \text{ }^\circ\text{C}$ ,  $t_p = 20 \mu\text{s}$

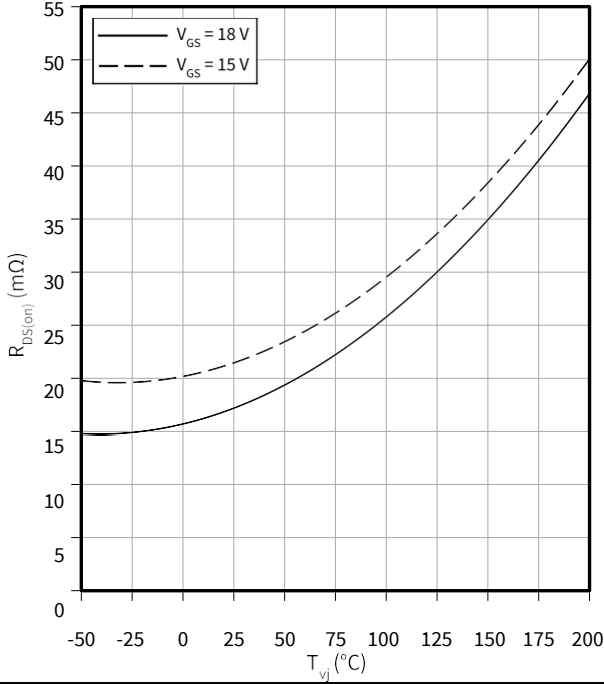


4 特性图

**Typical on-state resistance as a function of junction temperature**

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

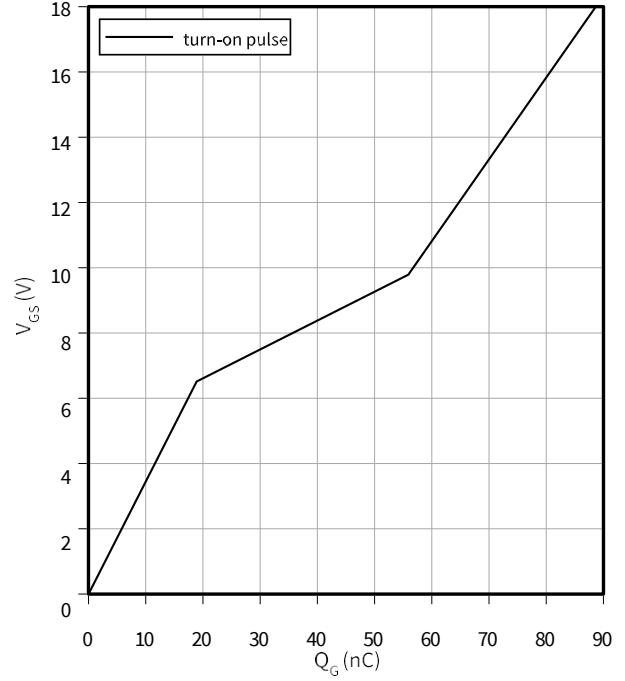
$I_D = 40\text{ A}$



**Typical gate charge**

$V_{GS} = f(Q_G)$

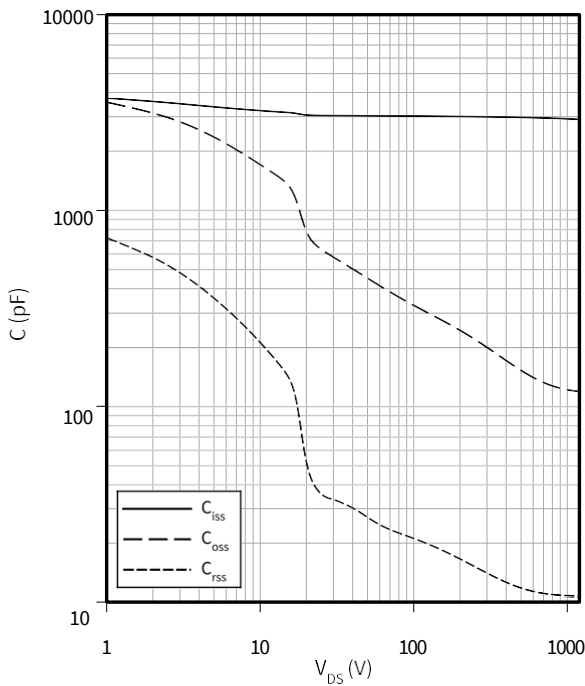
$I_D = 40\text{ A}, V_{DS} = 800\text{ V}$



**Typical capacitance as a function of drain-source voltage**

$C = f(V_{DS})$

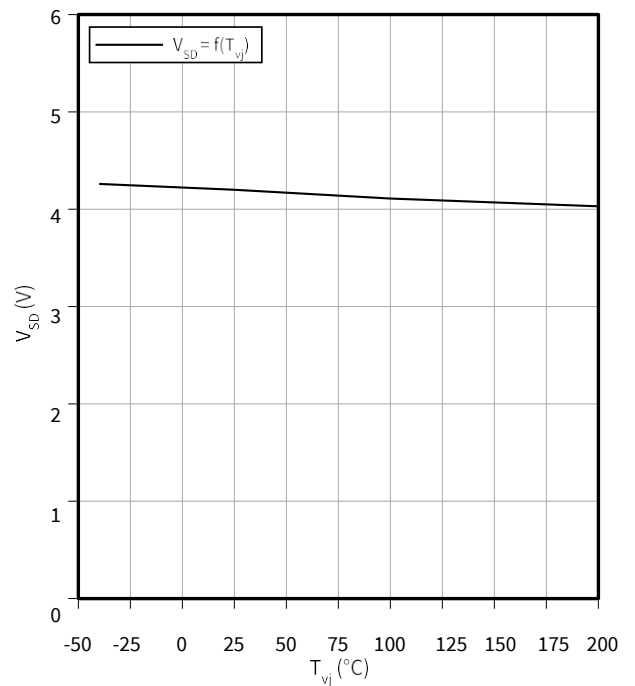
$f = 100\text{ kHz}, V_{GS} = 0\text{ V}$



**Typical reverse drain voltage as a function of junction temperature**

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

$I_{SD} = 40\text{ A}, V_{GS} = 0\text{ V}$

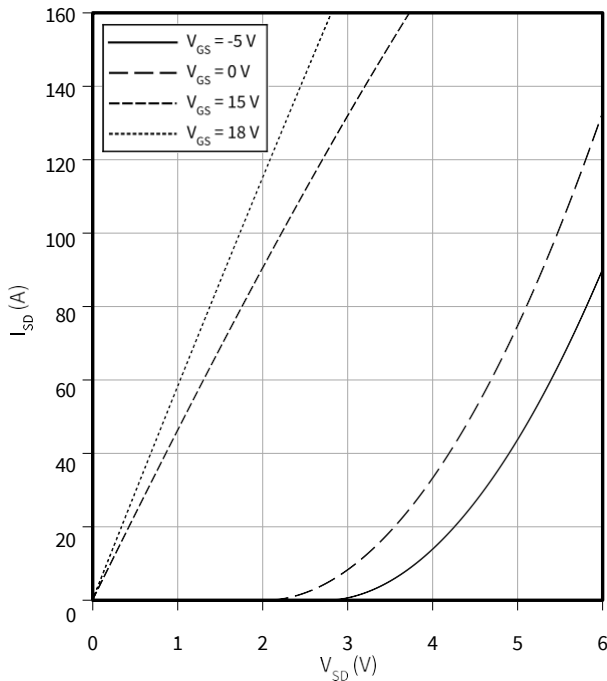


4 特性图

**Typical reverse drain current as a function of reverse drain voltage,  $V_{GS}$  as a parameter**

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

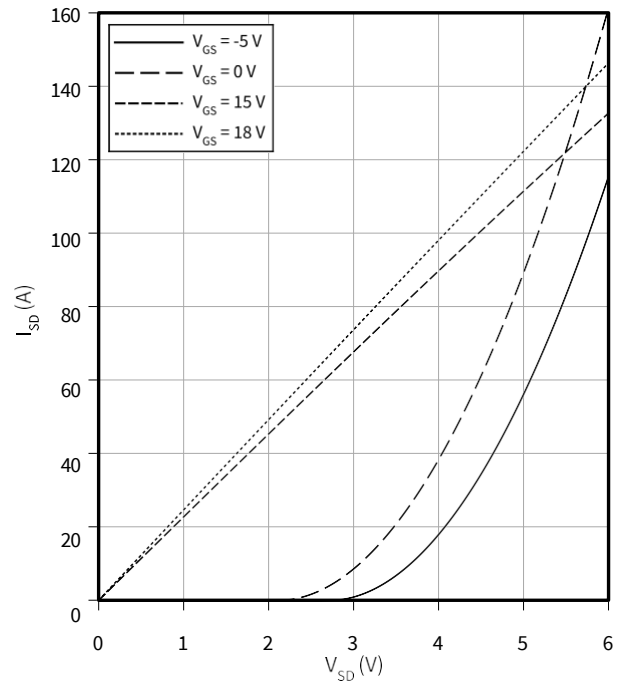
$T_{vj} = 25\text{ }^{\circ}\text{C}$ ,  $t_p = 20\text{ }\mu\text{s}$



**Typical reverse drain current as a function of reverse drain voltage,  $V_{GS}$  as a parameter**

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

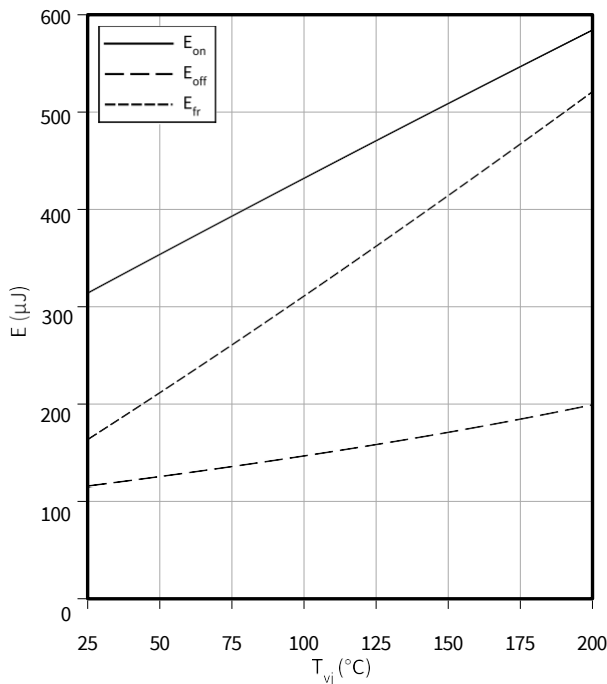
$T_{vj} = 175\text{ }^{\circ}\text{C}$ ,  $t_p = 20\text{ }\mu\text{s}$



**Typical switching energy as a function of junction temperature, test circuit in Fig. F, 2nd device own body diode:  $V_{GS} = 0\text{ V}$**

$E = f(T_{vj})$

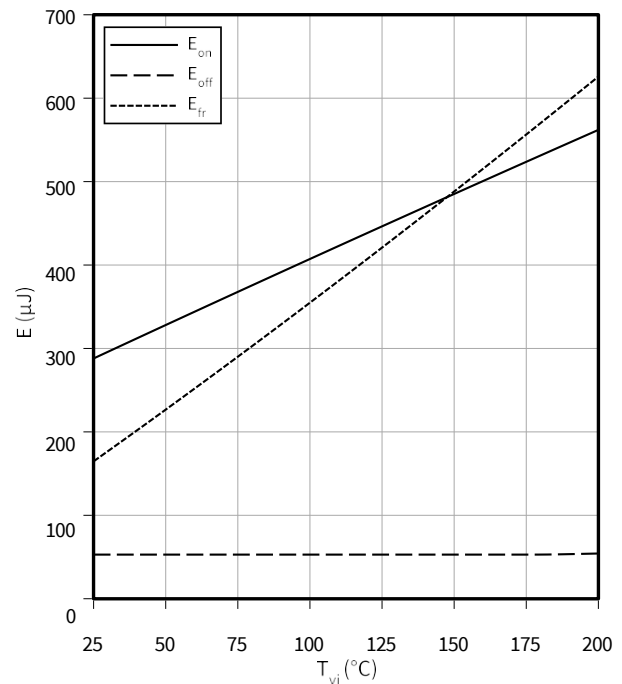
$V_{GS} = 0/18\text{ V}$ ,  $I_D = 40\text{ A}$ ,  $R_{G,ext} = 2.3\text{ }\Omega$ ,  $V_{DD} = 800\text{ V}$



**Typical switching energy as a function of junction temperature, test circuit in Fig. F, 2nd device own body diode:  $V_{GS} = -5\text{ V}$**

$E = f(T_{vj})$

$V_{GS} = -5/18\text{ V}$ ,  $I_D = 40\text{ A}$ ,  $R_{G,ext} = 2.3\text{ }\Omega$ ,  $V_{DD} = 800\text{ V}$

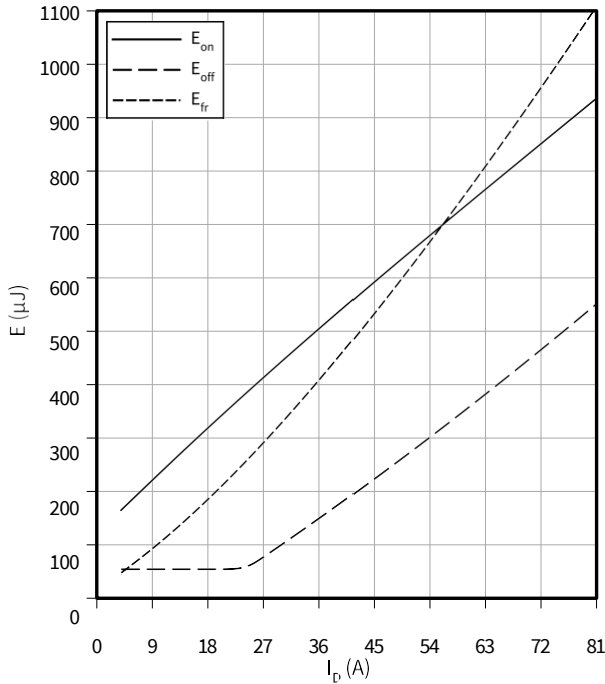


4 特性图

**Typical switching energy as a function of drain current, test circuit in Fig. F, 2nd device own body diode:  $V_{GS} = 0$  V**

$E = f(I_D)$

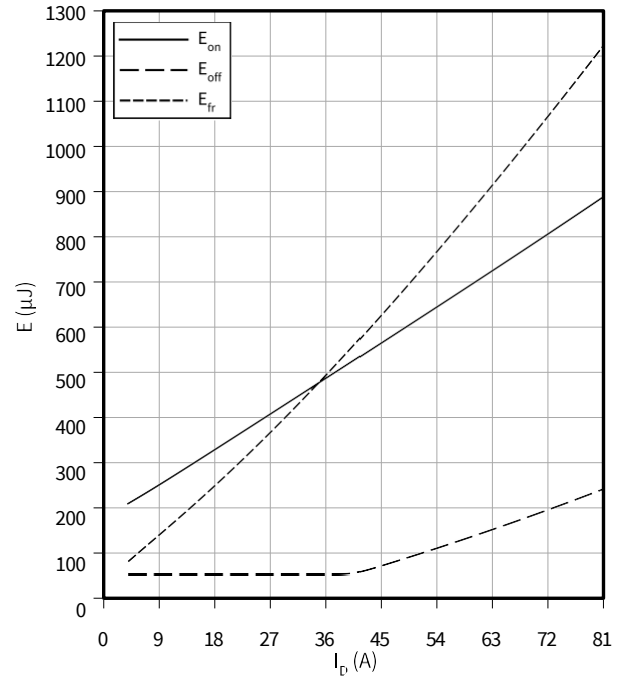
$V_{GS} = 0/18$  V,  $T_{vj} = 175$  °C,  $R_{G,ext} = 2.3$   $\Omega$ ,  $V_{DD} = 800$  V



**Typical switching energy as a function of drain current, test circuit in Fig. F, 2nd device own body diode:  $V_{GS} = -5$  V**

$E = f(I_D)$

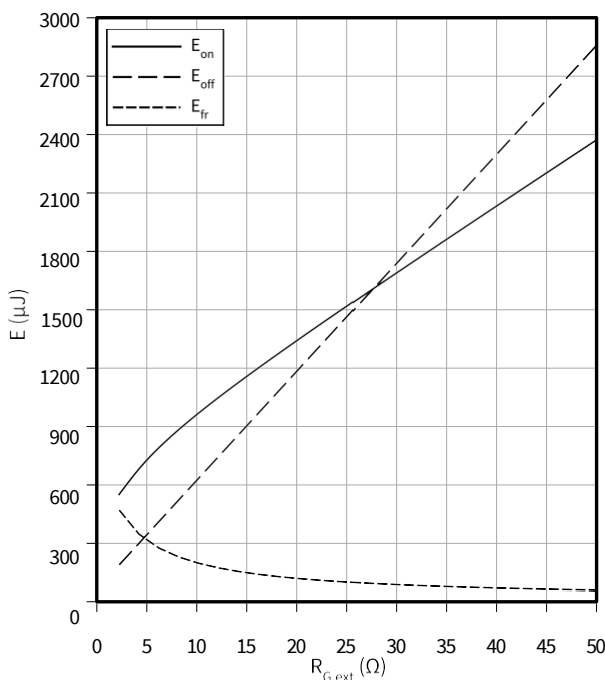
$V_{GS} = -5/18$  V,  $T_{vj} = 175$  °C,  $R_{G,ext} = 2.3$   $\Omega$ ,  $V_{DD} = 800$  V



**Typical switching energy as a function of gate resistance, test circuit in Fig. F, 2nd device own body diode:  $V_{GS} = 0$  V**

$E = f(R_{G,ext})$

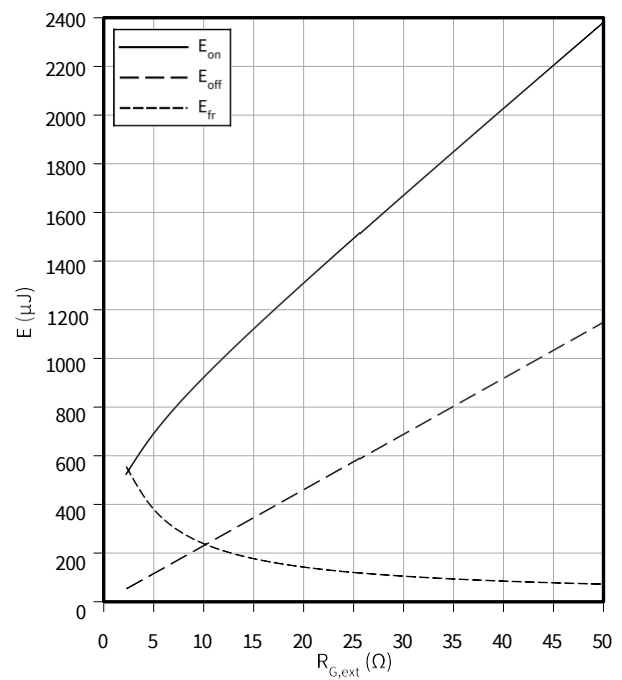
$V_{GS} = 0/18$  V,  $I_D = 40$  A,  $T_{vj} = 175$  °C,  $V_{DD} = 800$  V



**Typical switching energy as a function of gate resistance, test circuit in Fig. F, 2nd device own body diode:  $V_{GS} = -5$  V**

$E = f(R_{G,ext})$

$V_{GS} = -5/18$  V,  $I_D = 40$  A,  $T_{vj} = 175$  °C,  $V_{DD} = 800$  V

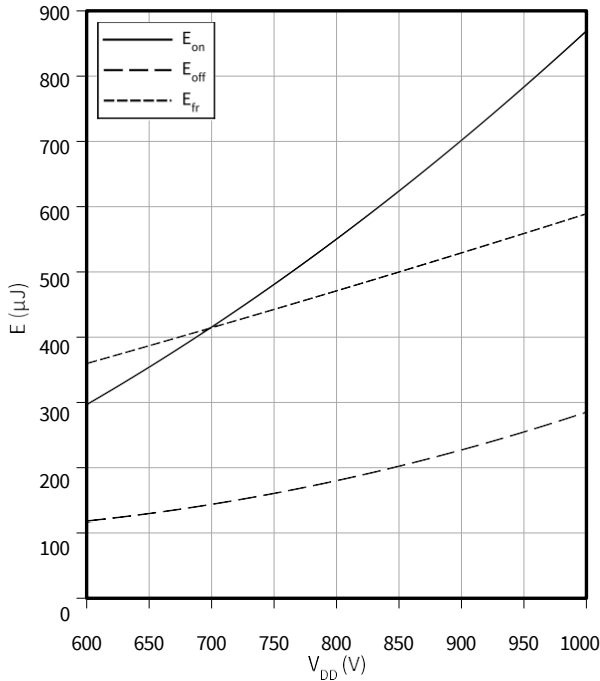


4 特性图

**Typical switching energy as a function of DC link voltage, test circuit in Fig. F, 2nd device own body diode:  $V_{GS} = 0$  V**

$E = f(V_{DD})$

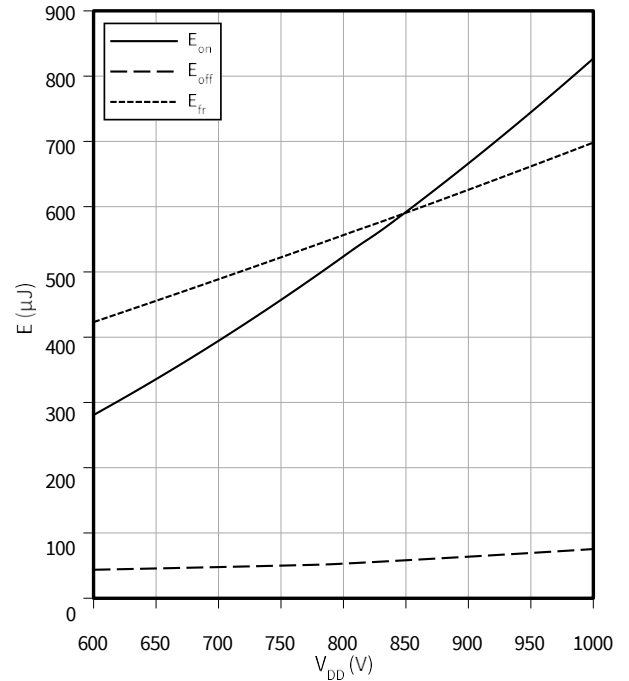
$V_{GS} = 0/18$  V,  $I_D = 40$  A,  $T_{vj} = 175$  °C,  $R_{G,ext} = 2.3$   $\Omega$



**Typical switching energy as a function of DC link voltage, test circuit in Fig. F, 2nd device own body diode:  $V_{GS} = -5$  V**

$E = f(V_{DD})$

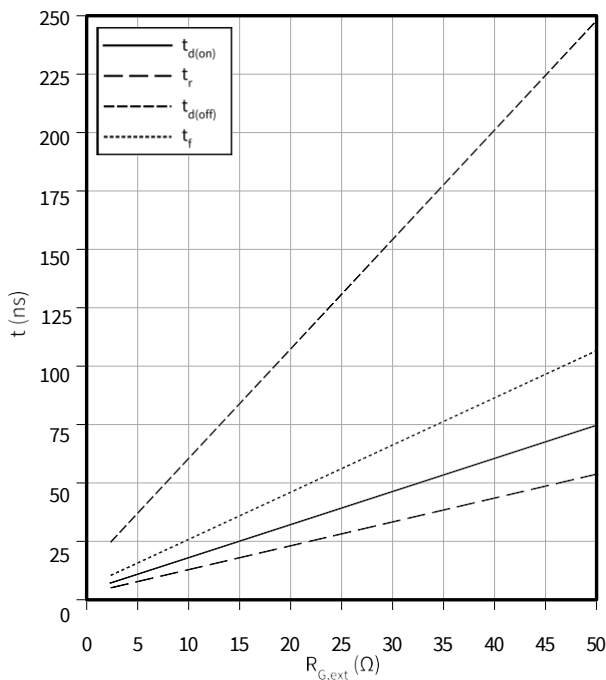
$V_{GS} = -5/18$  V,  $I_D = 40$  A,  $T_{vj} = 175$  °C,  $R_{G,ext} = 2.3$   $\Omega$



**Typical switching times as a function of gate resistance, test circuit in Fig. F, 2nd device own body diode:  $V_{GS} = 0$  V**

$t = f(R_{G,ext})$

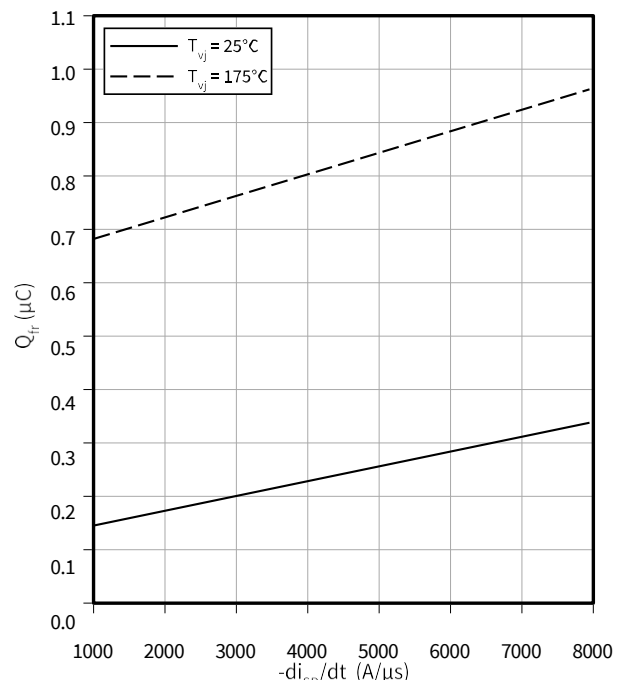
$V_{GS} = 0/18$  V,  $I_D = 40$  A,  $T_{vj} = 175$  °C,  $V_{DD} = 800$  V



**Typical reverse recovery charge as a function of reverse drain current slope, test circuit in Fig. F, 2nd device own body diode:  $V_{GS} = 0$  V**

$Q_{fr} = f(-di_{SD}/dt)$

$V_{GS} = 0/18$  V,  $I_{SD} = 40$  A,  $V_{DD} = 800$  V

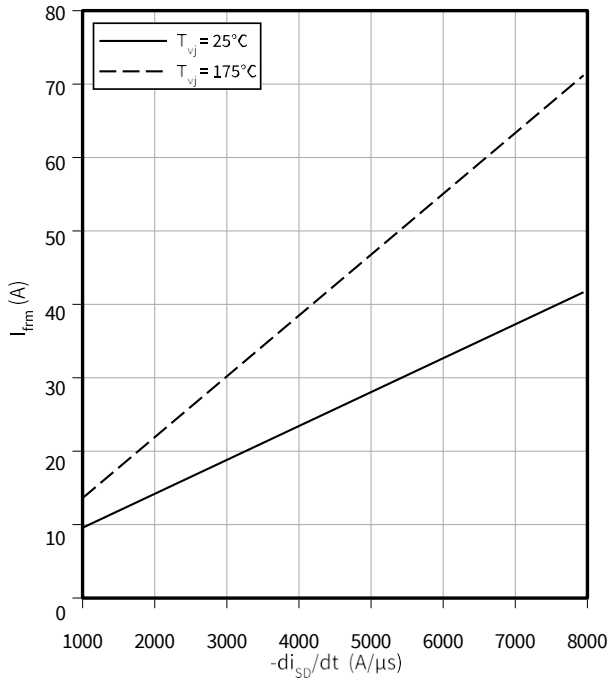


4 特性图

**Typical reverse recovery current as a function of reverse drain current slope, test circuit in Fig. F, 2nd device own body diode:  $V_{GS} = 0$  V**

$$I_{frm} = f(-di_{SD}/dt)$$

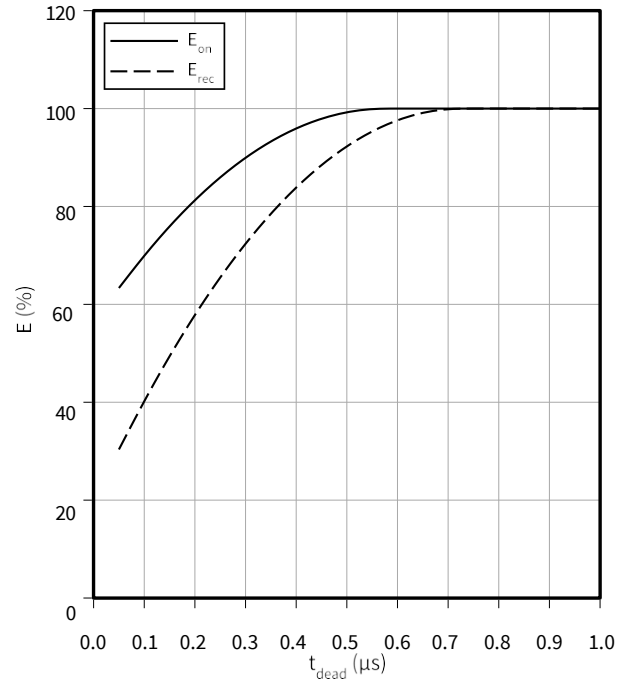
$V_{GS} = 0/18$  V,  $I_{SD} = 40$  A,  $V_{DD} = 800$  V



**Typical switching energy as a function of dead time / blanking time, test circuit in Fig. F, 2nd device own body diode:  $V_{GS} = 0$  V**

$$E = f(t_{dead})$$

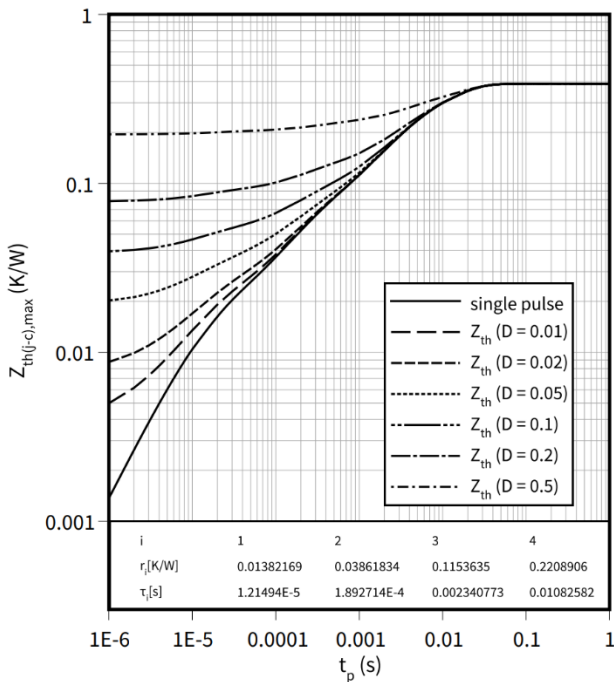
$I_D = 40$  A,  $V_{GS} = 0/18$  V,  $T_{vj} = 175$  °C,  $R_{G,ext} = 2.3$   $\Omega$   $V_{DD} = 800$  V



**Max. transient thermal impedance (MOSFET/diode)**

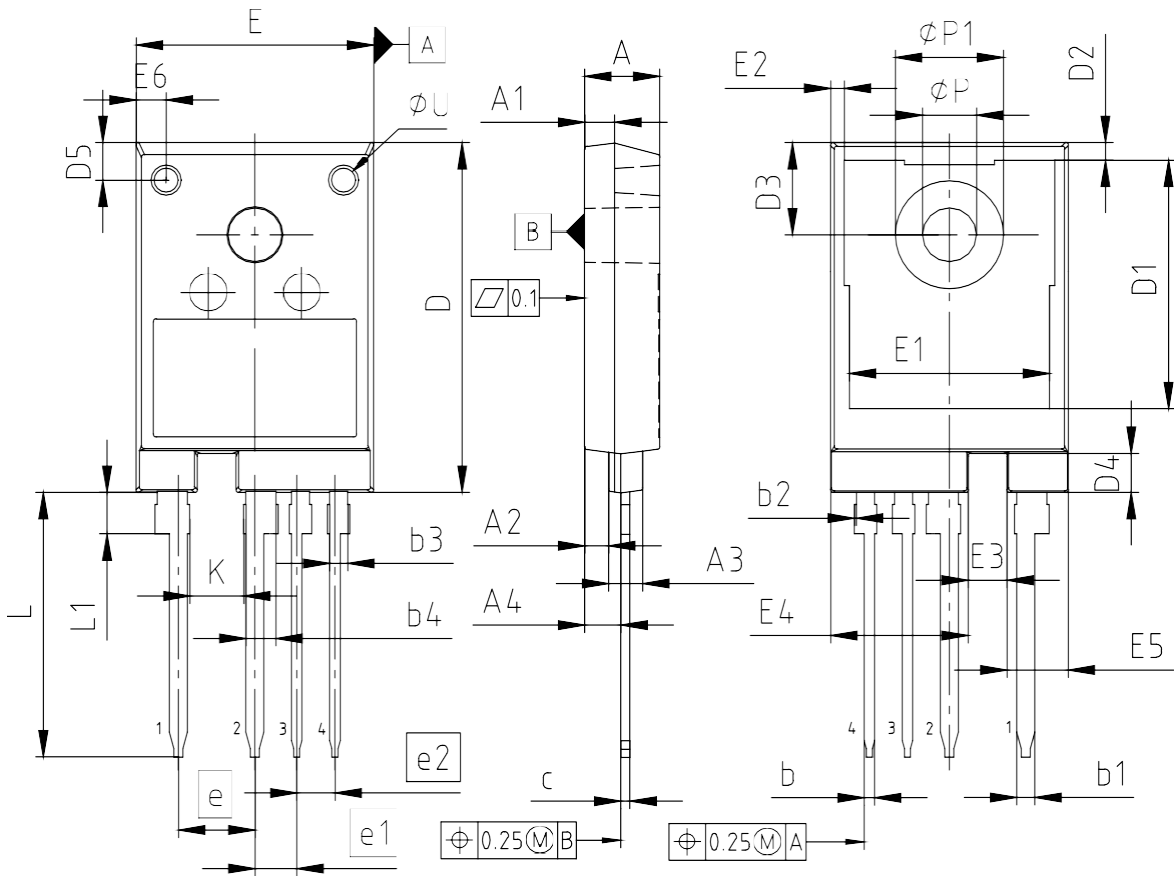
$$Z_{th(j-c),max} = f(t_p)$$

$$D = t_p/T$$



5 封装外形

5 封装外形



PACKAGE - GROUP NUMBER:		PG-TO247-4-U07			
DIMENSIONS	MILLIMETERS		DIMENSIONS	MILLIMETERS	
	MIN.	MAX.		MIN.	MAX.
A	4.90	5.10	E	15.60	16.00
A1	1.90	2.10	E1	13.10	13.50
A2	1.50	1.70	E2	0.60	1.20
A3	2.16	2.36	E3	2.48	2.68
A4	2.31	2.51	E4	9.05	9.25
b	0.60	0.80	E5	3.97	4.17
b1	1.10	1.30	E6	1.80	2.20
b2	---	0.15	e	5.08	
b3	1.10	1.30	e1	2.79	
b4	1.90	2.10	e2	2.54	
c	0.50	0.70	K	3.50	---
D	23.10	23.50	L	17.50	17.80
D1	16.25	16.85	L1	2.61	2.91
D2	0.97	1.37	N	4	
D3	6.00	6.30	ØP1	7.00	7.40
D4	2.50	2.70	ØP	3.50	3.70
D5	2.30	2.70	ØU	1.40	1.80

NOTES: DIMENSIONS DO NOT INCLUDE MOLD FLASH, PROTRUSION OR GATE BURRS  
N IS THE NUMBER OF LEADS

图 1

6 测试条件

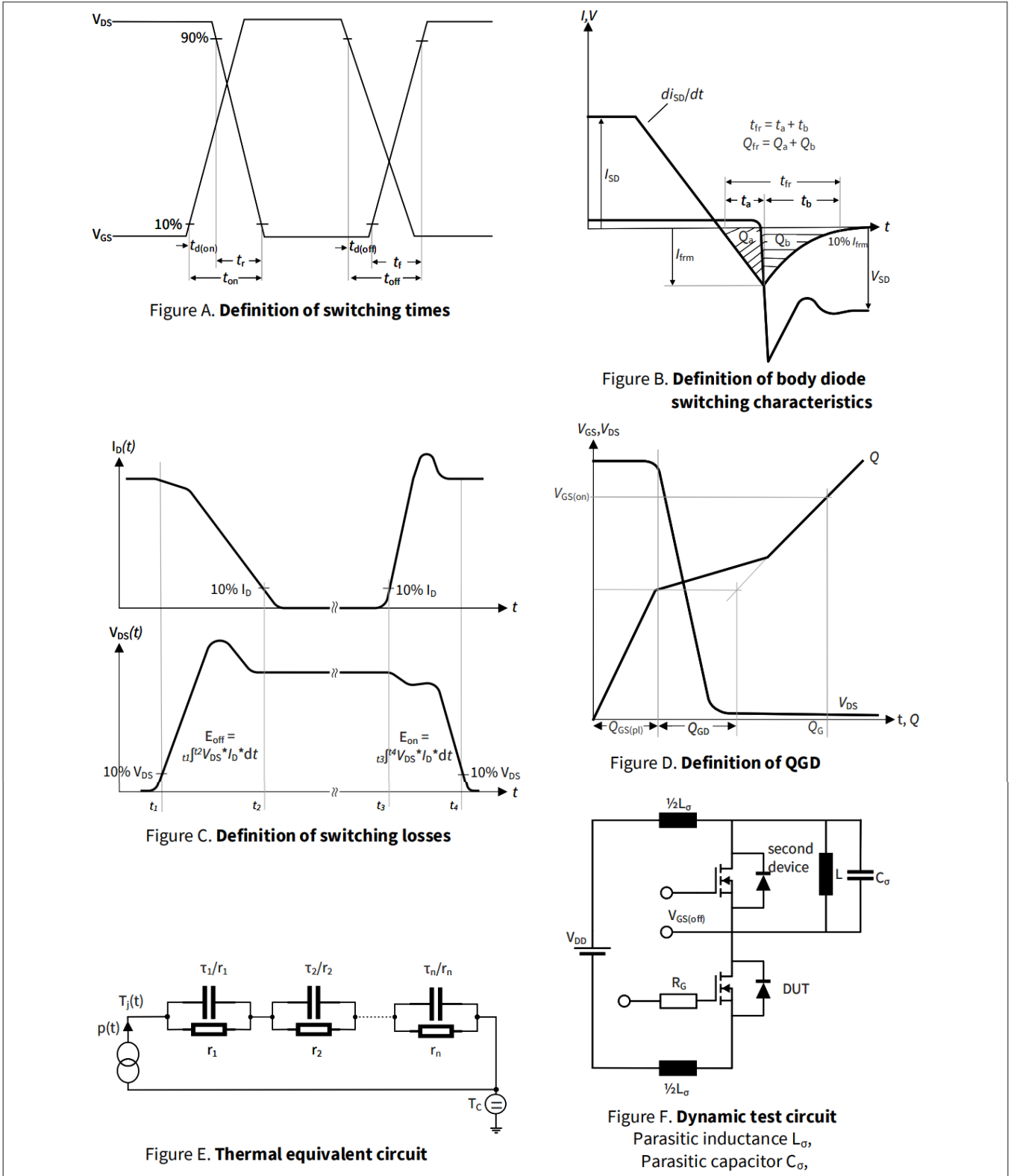


图 2

## 修订记录

Document revision	Date of release	Description of changes
0.10	2024-09-06	Preliminary datasheet
1.00	2024-09-27	Final datasheet
1.10	2025-02-04	Updated “Potential Applications” on Page 1 Correction of switching parameters in Table 4 and corresponding graphs Correction of body diode characteristic values in Table 6 and corresponding graphs Editorial changes
1.20	2025-07-04	Increased $I_{DM}$ in Table 2 Added switching information for $V_{GS} = -5/18\text{ V}$ in Table 5 and 6 and corresponding diagrams Added $I_{SDC}$ in Table 5 Added SOA diagram on page 8 Added diagram $E = f(V_{DD}) @ V_{GS} = 0/18\text{ V}$ Added diagram $E = f(V_{DD}) @ V_{GS} = -5/18\text{ V}$ Editorial changes



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