

## Final datasheet

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

### 特性

- 电气特性
  - $V_{DS} = 1200\text{ V}$
  - $I_{DN} = 200\text{ A} / I_{DRM} = 400\text{ A}$
  - 低开关损耗
  - 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
  - 集成的安装夹使安装坚固
  - PressFIT 压接技术
  - 集成 NTC 温度传感器
  - 预涂导热介质



Typical appearance

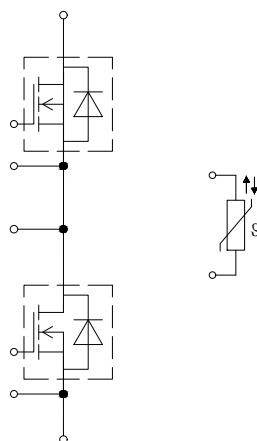
### 可选应用

- 太阳能应用
- 高频开关应用
- DC/DC 变换器
- UPS 系统
- 电机传动

### 产品认证

- Qualified according to AQC 324, release no.: 03.1/2021

### 描述





内容

|   |                                  |    |
|---|----------------------------------|----|
|   | 描述.....                          | 1  |
|   | 特性.....                          | 1  |
|   | 可选应用.....                        | 1  |
|   | 产品认证.....                        | 1  |
|   | 内容.....                          | 2  |
| 1 | 封装.....                          | 3  |
| 2 | <b>MOSFET</b> .....              | 3  |
| 3 | <b>Body diode (MOSFET)</b> ..... | 5  |
| 4 | 负温度系数热敏电阻.....                   | 6  |
| 5 | 特征参数图表.....                      | 7  |
| 6 | 电路拓扑图.....                       | 14 |
| 7 | 封装尺寸.....                        | 15 |
| 8 | 模块标签代码.....                      | 16 |
|   | 修订历史.....                        | 17 |
|   | 免责声明.....                        | 18 |

## 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, $f = 50 \text{ Hz}$ , $t = 1 \text{ min}$ | 3.0       | kV |
| NTC 绝缘测试电压 | $V_{ISOL(NTC)}$ | RMS, $f = 50 \text{ Hz}$ , $t = 1 \text{ min}$ | 2.5       | 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) | $RTI$           | housing                                        | 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                 | $L_{sCE}$     |                              |     | 8   |     | nH |
| 模块引线电阻, 端子-芯片            | $R_{CC'+EE'}$ | $T_H = 25 \text{ °C}$ , 每个开关 |     | 1   |     | mΩ |
| 储存温度                     | $T_{stg}$     |                              | -40 |     | 125 | °C |
| 最高基板工作温度                 | $T_{BPmax}$   |                              |     |     | 125 | °C |
| Mounting force per clamp | $F$           |                              | 40  |     | 80  | N  |
| 重量                       | $G$           |                              |     | 39  |     | g  |

注: The current under continuous operation is limited to 25 A rms per connector pin.  
Storage and shipment of modules with TIM => see AN 2012-07

## 2 MOSFET

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     | $V_{DSS}$ | $T_{vj} = 25 \text{ °C}$                                                  | 1200   | V  |
| 植入漏极电流    | $I_{DN}$  |                                                                           | 200    | A  |
| 连续漏极直流电流  | $I_{DDC}$ | $T_{vj} = 150 \text{ °C}$ , $V_{GS} = 18 \text{ V}$ $T_H = 65 \text{ °C}$ | 160    | A  |
| 漏极重复峰值电流  | $I_{DRM}$ | verified by design, $t_p$ limited by $T_{vjmax}$                          | 400    | 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         | $R_{DS(on)}$       | $I_D = 200\text{ A}$                                                                                                                                                      | $V_{GS} = 18\text{ V}, T_{vj} = 25\text{ }^{\circ}\text{C}$  |      | 4     | 5.5  | $\text{m}\Omega$ |
|                |                    |                                                                                                                                                                           | $V_{GS} = 18\text{ V}, T_{vj} = 125\text{ }^{\circ}\text{C}$ |      | 6.5   |      |                  |
|                |                    |                                                                                                                                                                           | $V_{GS} = 18\text{ V}, T_{vj} = 150\text{ }^{\circ}\text{C}$ |      | 7.5   |      |                  |
|                |                    |                                                                                                                                                                           | $V_{GS} = 15\text{ V}, T_{vj} = 25\text{ }^{\circ}\text{C}$  |      | 4.9   |      |                  |
| 栅极阈值电压         | $V_{GS(th)}$       | $I_D = 80\text{ mA}, V_{DS} = V_{GS}, T_{vj} = 25\text{ }^{\circ}\text{C}, (\text{tested after } 1\text{ms pulse at } V_{GS} = +20\text{ V})$                             |                                                              | 3.45 | 4.3   | 5.15 | V                |
| 栅极电荷           | $Q_G$              | $V_{DD} = 800\text{ V}, V_{GS} = -3/18\text{ V}, T_{vj} = 25\text{ }^{\circ}\text{C}$                                                                                     |                                                              |      | 0.594 |      | $\mu\text{C}$    |
| 内部栅极电阻         | $R_{Gint}$         | $T_{vj} = 25\text{ }^{\circ}\text{C}$                                                                                                                                     |                                                              |      | 1     |      | $\Omega$         |
| 输入电容           | $C_{ISS}$          | $f = 100\text{ kHz}, V_{DS} = 800\text{ V}, V_{GS} = 0\text{ V}$                                                                                                          | $T_{vj} = 25\text{ }^{\circ}\text{C}$                        |      | 17.6  |      | nF               |
| 输出电容           | $C_{OSS}$          | $f = 100\text{ kHz}, V_{DS} = 800\text{ V}, V_{GS} = 0\text{ V}$                                                                                                          | $T_{vj} = 25\text{ }^{\circ}\text{C}$                        |      | 0.84  |      | nF               |
| 反向传输电容         | $C_{rss}$          | $f = 100\text{ kHz}, V_{DS} = 800\text{ V}, V_{GS} = 0\text{ V}$                                                                                                          | $T_{vj} = 25\text{ }^{\circ}\text{C}$                        |      | 0.056 |      | nF               |
| $C_{OSS}$ 存储能量 | $E_{OSS}$          | $V_{DS} = 800\text{ V}, V_{GS} = -3/18\text{ V}, T_{vj} = 25\text{ }^{\circ}\text{C}$                                                                                     |                                                              |      | 344   |      | $\mu\text{J}$    |
| 漏源泄漏电流         | $I_{DSS}$          | $V_{DS} = 1200\text{ V}, V_{GS} = -3\text{ V}$                                                                                                                            | $T_{vj} = 25\text{ }^{\circ}\text{C}$                        |      | 0.12  | 660  | $\mu\text{A}$    |
| 栅极漏电流          | $I_{GSS}$          | $V_{DS} = 0\text{ V}, T_{vj} = 25\text{ }^{\circ}\text{C}$                                                                                                                | $V_{GS} = 20\text{ V}$                                       |      |       | 400  | nA               |
| 开通延迟时间(感性负载)   | $t_{d\text{ on}}$  | $I_D = 200\text{ A}, R_{Gon} = 2.4\text{ }\Omega, V_{DD} = 600\text{ V}, V_{GS} = -3/18\text{ V}, t_{dead} = 1000\text{ ns}, 0.1\text{ }V_{GS}\text{ to } 0.1\text{ }I_D$ | $T_{vj} = 25\text{ }^{\circ}\text{C}$                        |      | 33    |      | ns               |
|                |                    |                                                                                                                                                                           | $T_{vj} = 125\text{ }^{\circ}\text{C}$                       |      | 33    |      |                  |
|                |                    |                                                                                                                                                                           | $T_{vj} = 150\text{ }^{\circ}\text{C}$                       |      | 32    |      |                  |
| 上升时间(感性负载)     | $t_r$              | $I_D = 200\text{ A}, R_{Gon} = 2.4\text{ }\Omega, V_{DD} = 600\text{ V}, V_{GS} = -3/18\text{ V}, t_{dead} = 1000\text{ ns}, 0.1\text{ }I_D\text{ to } 0.9\text{ }I_D$    | $T_{vj} = 25\text{ }^{\circ}\text{C}$                        |      | 47    |      | ns               |
|                |                    |                                                                                                                                                                           | $T_{vj} = 125\text{ }^{\circ}\text{C}$                       |      | 46    |      |                  |
|                |                    |                                                                                                                                                                           | $T_{vj} = 150\text{ }^{\circ}\text{C}$                       |      | 46    |      |                  |
| 关断延迟时间(感性负载)   | $t_{d\text{ off}}$ | $I_D = 200\text{ A}, R_{Goff} = 0.22\text{ }\Omega, V_{DD} = 600\text{ V}, V_{GS} = -3/18\text{ V}, 0.9\text{ }V_{GS}\text{ to } 0.9\text{ }I_D$                          | $T_{vj} = 25\text{ }^{\circ}\text{C}$                        |      | 47    |      | ns               |
|                |                    |                                                                                                                                                                           | $T_{vj} = 125\text{ }^{\circ}\text{C}$                       |      | 51    |      |                  |
|                |                    |                                                                                                                                                                           | $T_{vj} = 150\text{ }^{\circ}\text{C}$                       |      | 52    |      |                  |

(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)          | $t_f$       | $I_D = 200\text{ A}$ , $R_{Goff} = 0.22\ \Omega$ ,<br>$V_{DD} = 600\text{ V}$ , $V_{GS} = -3/18\text{ V}$ ,<br>$0.9\ I_D$ to $0.1\ I_D$                                                                                                               | $T_{vj} = 25\text{ }^\circ\text{C}$                              | 11    |       | ns               |
|                     |             |                                                                                                                                                                                                                                                       | $T_{vj} = 125\text{ }^\circ\text{C}$                             | 11    |       |                  |
|                     |             |                                                                                                                                                                                                                                                       | $T_{vj} = 150\text{ }^\circ\text{C}$                             | 11    |       |                  |
| 开通损耗能量 (每脉冲)        | $E_{on}$    | $I_D = 200\text{ A}$ , $V_{DD} = 600\text{ V}$ ,<br>$L_\sigma = 8\text{ nH}$ , $V_{GS} = -3/18\text{ V}$ ,<br>$R_{Gon} = 2.4\ \Omega$ , $di/dt = 13.8\text{ kA}/\mu\text{s}$ ( $T_{vj} = 150\text{ }^\circ\text{C}$ ),<br>$t_{dead} = 1000\text{ ns}$ | $T_{vj} = 25\text{ }^\circ\text{C}$                              | 3.09  |       | mJ               |
|                     |             |                                                                                                                                                                                                                                                       | $T_{vj} = 125\text{ }^\circ\text{C}$                             | 3.65  |       |                  |
|                     |             |                                                                                                                                                                                                                                                       | $T_{vj} = 150\text{ }^\circ\text{C}$                             | 3.85  |       |                  |
| 开通损耗能量 (每脉冲), 优化条件下 | $E_{on,o}$  | $I_D = 200\text{ A}$ , $V_{DD} = 600\text{ V}$ ,<br>$L_\sigma = 8\text{ nH}$ , $V_{GS} = -3/18\text{ V}$ ,<br>$R_{Gon,o} = 1.5\ \Omega$ , $di/dt = 16.9\text{ kA}/\mu\text{s}$ ( $T_{vj} = 150\text{ }^\circ\text{C}$ )                               | $T_{vj} = 25\text{ }^\circ\text{C}$                              | 2.25  |       | mJ               |
|                     |             |                                                                                                                                                                                                                                                       | $T_{vj} = 125\text{ }^\circ\text{C}$                             | 2.26  |       |                  |
|                     |             |                                                                                                                                                                                                                                                       | $T_{vj} = 150\text{ }^\circ\text{C}$                             | 2.3   |       |                  |
| 关断损耗能量 (每脉冲)        | $E_{off}$   | $I_D = 200\text{ A}$ , $V_{DD} = 600\text{ V}$ ,<br>$L_\sigma = 8\text{ nH}$ , $V_{GS} = -3/18\text{ V}$ ,<br>$R_{Goff} = 0.22\ \Omega$ , $dv/dt = 44.7\text{ kV}/\mu\text{s}$ ( $T_{vj} = 150\text{ }^\circ\text{C}$ )                               | $T_{vj} = 25\text{ }^\circ\text{C}$                              | 0.67  |       | mJ               |
|                     |             |                                                                                                                                                                                                                                                       | $T_{vj} = 125\text{ }^\circ\text{C}$                             | 0.67  |       |                  |
|                     |             |                                                                                                                                                                                                                                                       | $T_{vj} = 150\text{ }^\circ\text{C}$                             | 0.68  |       |                  |
| 短路数据                | $I_{SC}$    | $V_{DD} = 800\text{ V}$ , $V_{DSmax} = V_{DSS} - L_{SDS} \cdot di/dt$ ,<br>$R_G = 10\ \Omega$                                                                                                                                                         | $t_P = 2\ \mu\text{s}$ ,<br>$T_{vj} = 25\text{ }^\circ\text{C}$  | 1680  |       | A                |
|                     |             |                                                                                                                                                                                                                                                       | $t_P = 2\ \mu\text{s}$ ,<br>$T_{vj} = 150\text{ }^\circ\text{C}$ | 1640  |       |                  |
| 结-散热器热阻             | $R_{thJH}$  | 每个 MOSFET, Valid with IFX pre-applied Thermal Interface Material                                                                                                                                                                                      |                                                                  | 0.269 | 0.317 | K/W              |
| 允许开关的温度范围           | $T_{vj,op}$ |                                                                                                                                                                                                                                                       | -40                                                              |       | 150   | $^\circ\text{C}$ |

**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.

### 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 | $I_{SD}$ | $T_{vj} = 150\text{ }^\circ\text{C}$ , $V_{GS} = -3\text{ V}$ $T_H = 65\text{ }^\circ\text{C}$ | 70 | 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                  | $V_{SD}$    | $I_{SD} = 200\text{ A}$ , $V_{GS} = -3\text{ V}$                                                                                                                              | $T_{vj} = 25\text{ °C}$  | 4.2  | 5.35 | V             |
|                       |             |                                                                                                                                                                               | $T_{vj} = 125\text{ °C}$ | 3.9  |      |               |
|                       |             |                                                                                                                                                                               | $T_{vj} = 150\text{ °C}$ | 3.85 |      |               |
| 反向恢复峰值电流              | $I_{rrm}$   | $I_{SD} = 200\text{ A}$ , $di_s/dt = 13.8\text{ kA}/\mu\text{s}$ , $V_{DD} = 600\text{ V}$ , $V_{GS} = -3\text{ V}$ , $t_{dead} = 1000\text{ ns}$                             | $T_{vj} = 25\text{ °C}$  | 115  |      | A             |
|                       |             |                                                                                                                                                                               | $T_{vj} = 125\text{ °C}$ | 180  |      |               |
|                       |             |                                                                                                                                                                               | $T_{vj} = 150\text{ °C}$ | 200  |      |               |
| 恢复电荷                  | $Q_{rr}$    | $I_{SD} = 200\text{ A}$ , $di_s/dt = 13.8\text{ kA}/\mu\text{s}$ , $V_{DD} = 600\text{ V}$ , $V_{GS} = -3\text{ V}$ , $t_{dead} = 1000\text{ ns}$                             | $T_{vj} = 25\text{ °C}$  | 1.9  |      | $\mu\text{C}$ |
|                       |             |                                                                                                                                                                               | $T_{vj} = 125\text{ °C}$ | 3.4  |      |               |
|                       |             |                                                                                                                                                                               | $T_{vj} = 150\text{ °C}$ | 3.9  |      |               |
| 反向恢复损耗（每脉冲）           | $E_{rec}$   | $I_{SD} = 200\text{ A}$ , $di_s/dt = 13.8\text{ kA}/\mu\text{s}$ ( $T_{vj} = 150\text{ °C}$ ), $V_{DD} = 600\text{ V}$ , $V_{GS} = -3\text{ V}$ , $t_{dead} = 1000\text{ ns}$ | $T_{vj} = 25\text{ °C}$  | 0.53 |      | mJ            |
|                       |             |                                                                                                                                                                               | $T_{vj} = 125\text{ °C}$ | 0.92 |      |               |
|                       |             |                                                                                                                                                                               | $T_{vj} = 150\text{ °C}$ | 1.06 |      |               |
| 反向恢复损耗（每脉冲），<br>优化条件下 | $E_{rec,o}$ | $I_{SD} = 200\text{ A}$ , $di_s/dt = 16.9\text{ kA}/\mu\text{s}$ ( $T_{vj} = 150\text{ °C}$ ), $V_{DD} = 600\text{ V}$ , $V_{GS} = -3\text{ V}$ , $t_{dead} = 100\text{ ns}$  | $T_{vj} = 25\text{ °C}$  | 0.38 |      | mJ            |
|                       |             |                                                                                                                                                                               | $T_{vj} = 125\text{ °C}$ | 0.51 |      |               |
|                       |             |                                                                                                                                                                               | $T_{vj} = 150\text{ °C}$ | 0.58 |      |               |

## 4 负温度系数热敏电阻

表 8 特征值

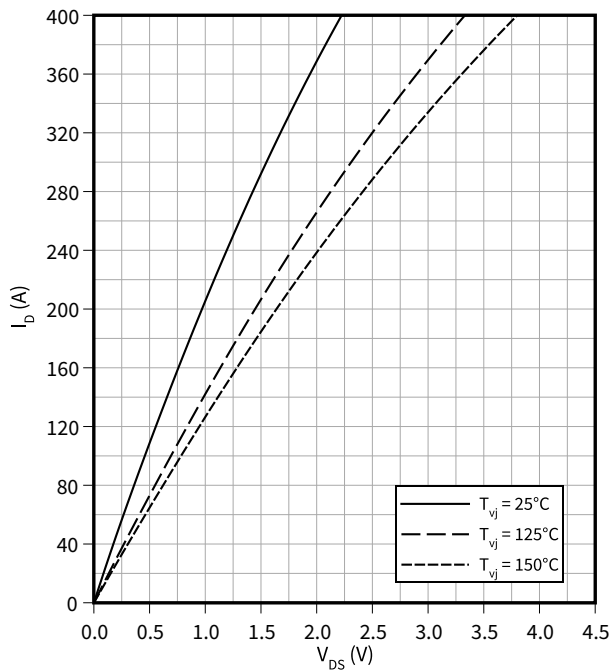
| 特征参数         | 代号           | 标注或测试条件                                                      | 数值  |      |     | 单位         |
|--------------|--------------|--------------------------------------------------------------|-----|------|-----|------------|
|              |              |               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

注: NTC 的具体参数分析请见 AN2009-10, 第 4 章

5 特征参数图表

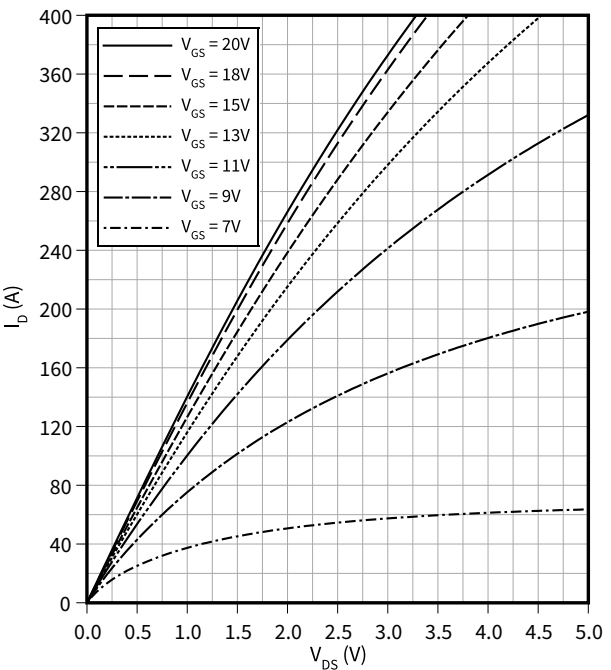
输出特性 (典型), MOSFET

$I_D = f(V_{DS})$   
 $V_{GS} = 15\text{ V}$



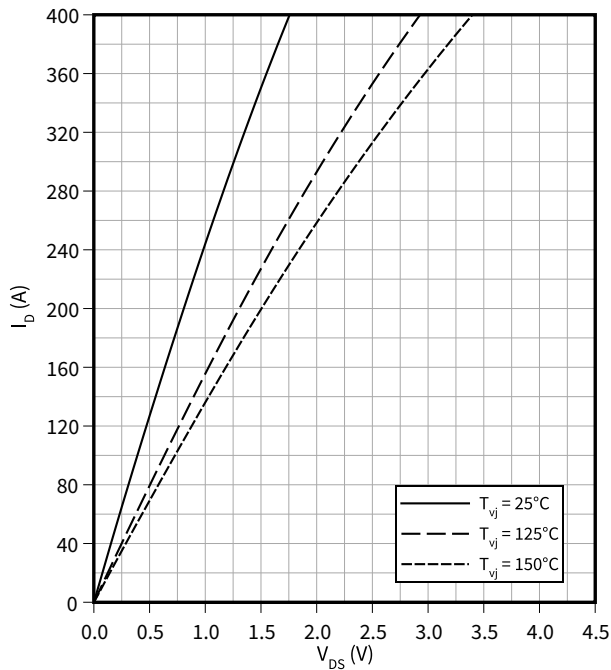
输出特性 (典型), MOSFET

$I_D = f(V_{DS})$   
 $T_{vj} = 150\text{ °C}$



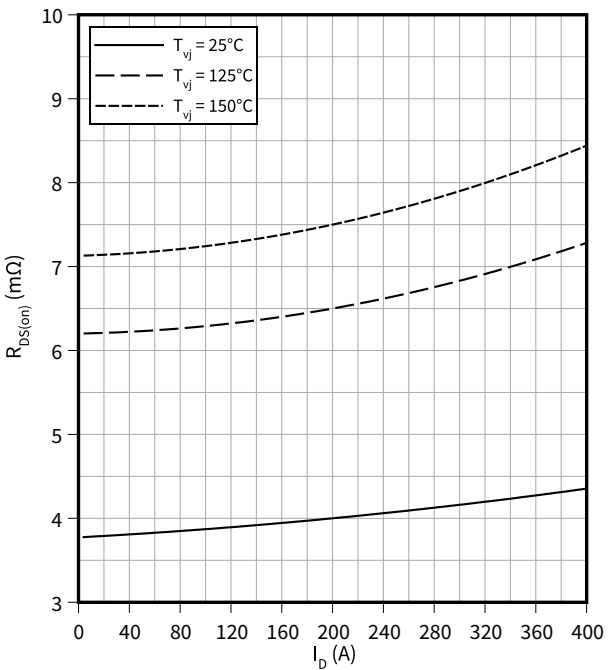
输出特性 (典型), MOSFET

$I_D = f(V_{DS})$   
 $V_{GS} = 18\text{ V}$



漏源通态电阻 (典型), MOSFET

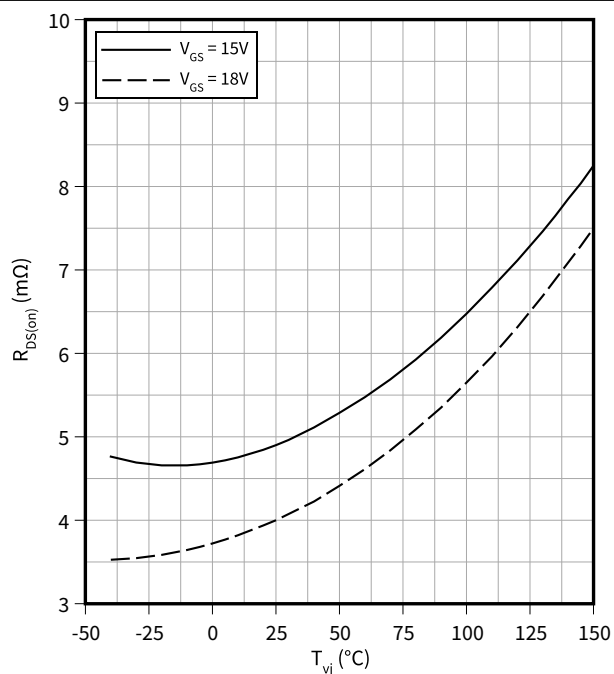
$R_{DS(on)} = f(I_D)$   
 $V_{GS} = 18\text{ V}$



## 漏源通态电阻 (典型), MOSFET

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

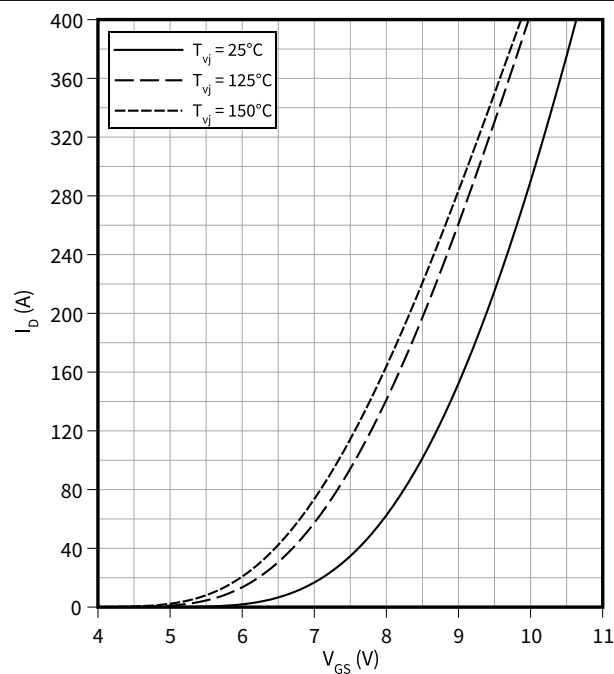
$$I_D = 200 \text{ A}$$



## 传输特性 (典型), MOSFET

$$I_D = f(V_{GS})$$

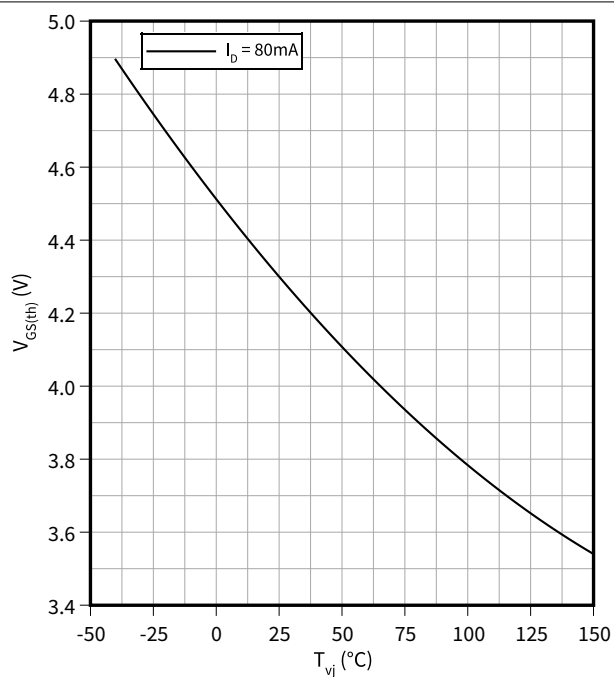
$$V_{DS} = 20 \text{ V}$$



## 栅-源阈值电压 (典型), MOSFET

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

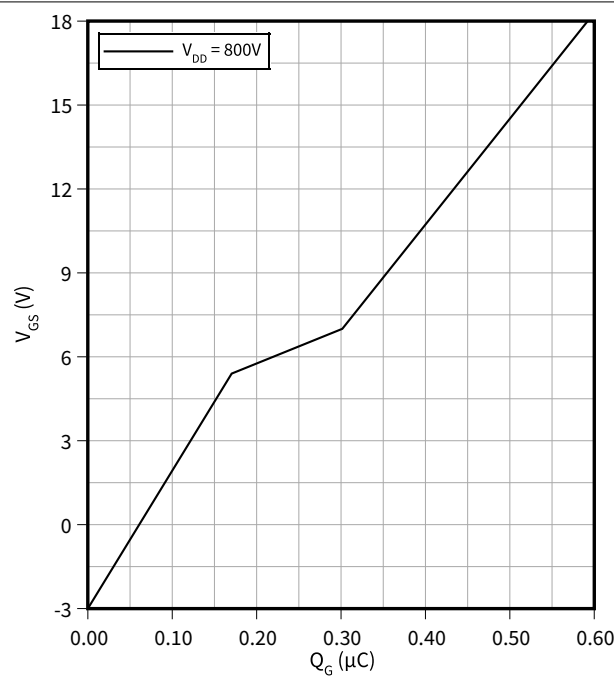
$$V_{GS} = V_{DS}$$



## 栅极电荷特性 (典型), MOSFET

$$V_{GS} = f(Q_G)$$

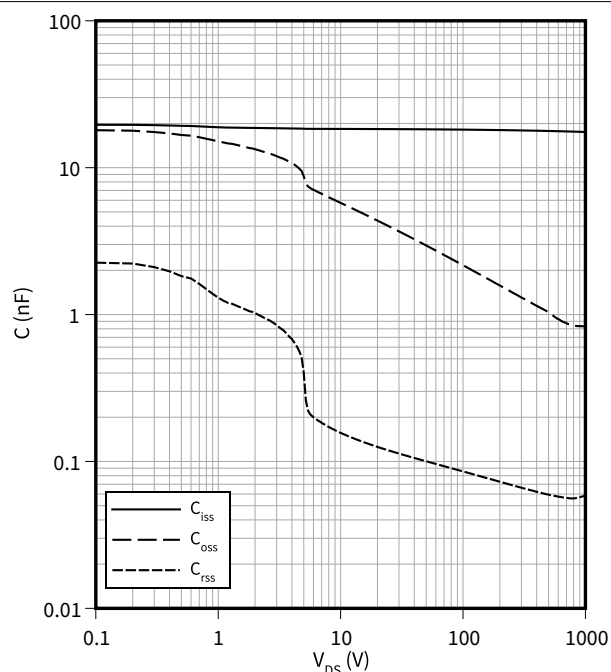
$$I_D = 200 \text{ A}, T_{vj} = 25^\circ \text{C}$$



## 5 特征参数图表

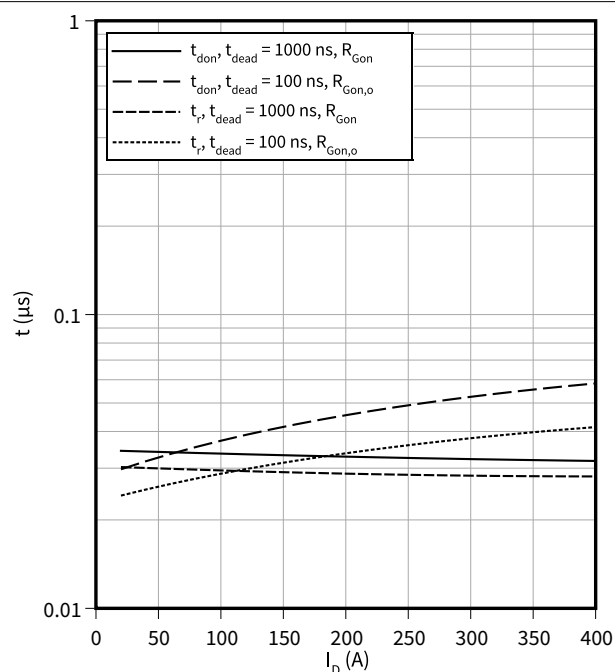
## 电容特性 (典型), MOSFET

$$C = f(V_{DS})$$

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


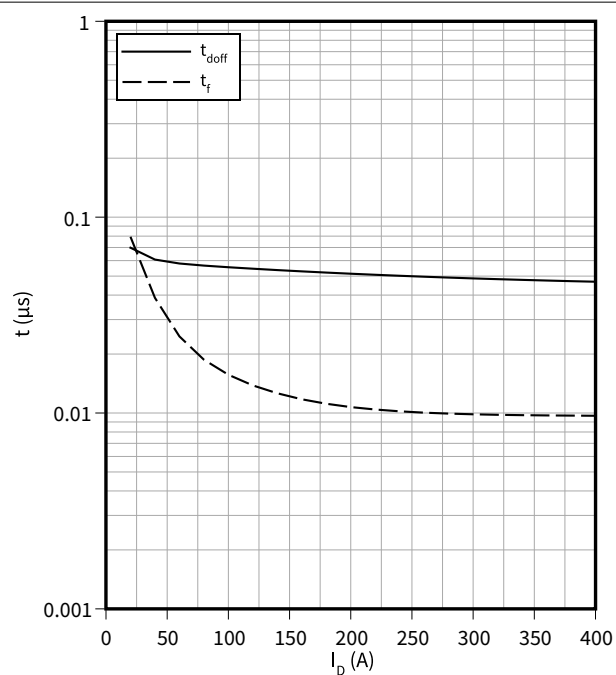
## 开关时间 (典型), MOSFET

$$t = f(I_D)$$

 $V_{DD} = 600\text{ V}, R_{Gon} = 2.4\text{ }\Omega, R_{Gon,o} = 1.5\text{ }\Omega, T_{vj} = 150\text{ }^{\circ}\text{C}, V_{GS} = -3/18\text{ V}$ 


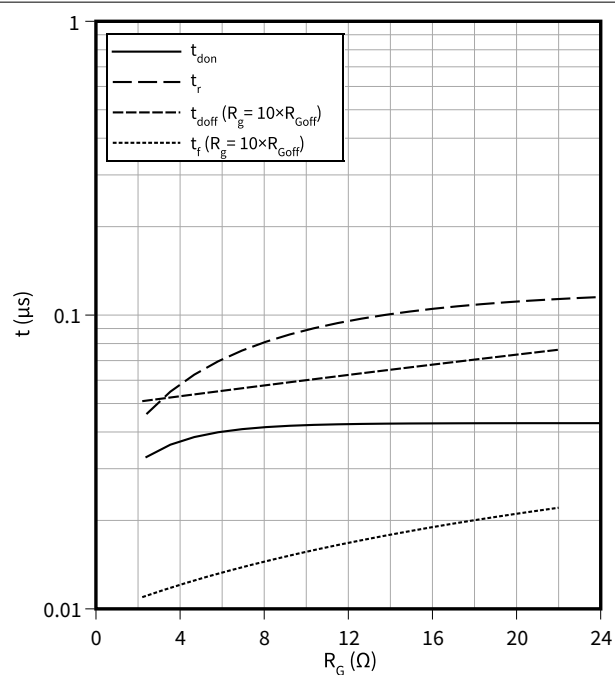
## 开关时间 (典型), MOSFET

$$t = f(I_D)$$

 $R_{Goff} = 0.22\text{ }\Omega, V_{DD} = 600\text{ V}, T_{vj} = 150\text{ }^{\circ}\text{C}, V_{GS} = -3/18\text{ V}$ 


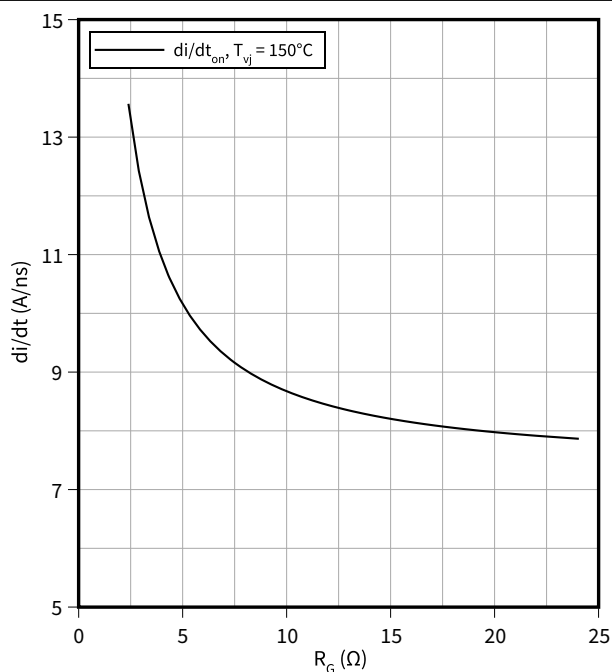
## 开关时间 (典型), MOSFET

$$t = f(R_G)$$

 $V_{DD} = 600\text{ V}, t_{dead} = 1000\text{ ns}, I_D = 200\text{ A}, T_{vj} = 150\text{ }^{\circ}\text{C}, V_{GS} = -3/18\text{ V}$ 


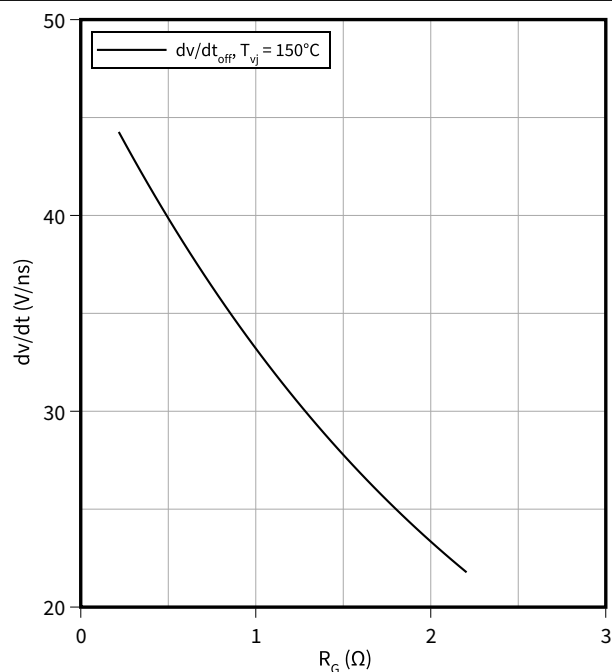
## 电流变化斜率 (典型), MOSFET

$$di/dt = f(R_G)$$

 $V_{DD} = 600 \text{ V}, t_{\text{dead}} = 1000 \text{ ns}, I_D = 200 \text{ A}, V_{GS} = -3/18 \text{ V}$ 


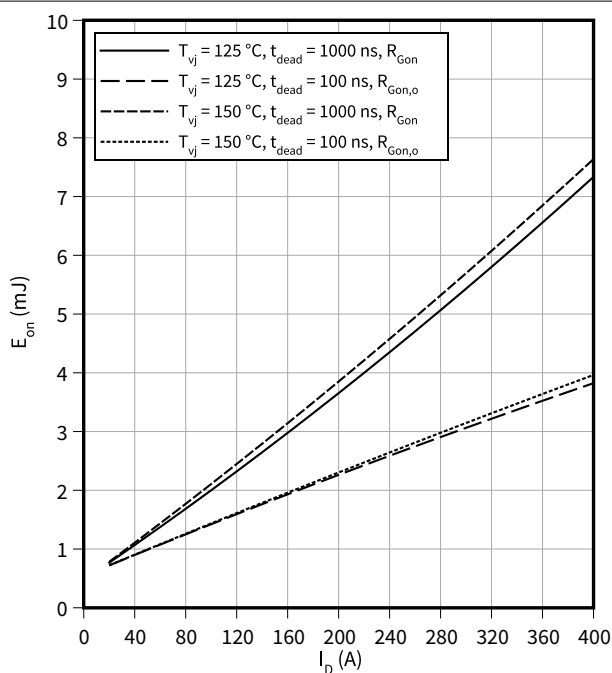
## 电压变化斜率 (典型), MOSFET

$$dv/dt = f(R_G)$$

 $V_{DD} = 600 \text{ V}, I_D = 200 \text{ A}, V_{GS} = -3/18 \text{ V}$ 


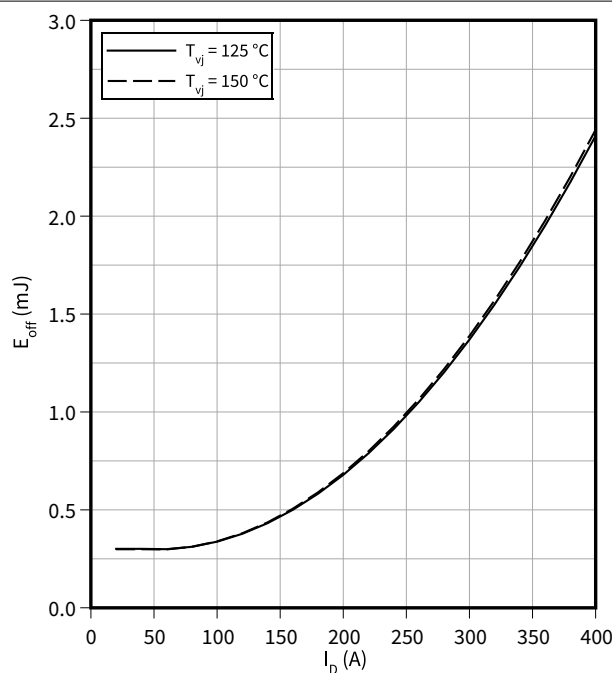
## 开关损耗 (典型), MOSFET

$$E_{\text{on}} = f(I_D)$$

 $V_{DD} = 600 \text{ V}, R_{G\text{on}} = 2.4 \text{ } \Omega, R_{G\text{on},o} = 1.5 \text{ } \Omega, V_{GS} = -3/18 \text{ V}$ 


## 开关损耗 (典型), MOSFET

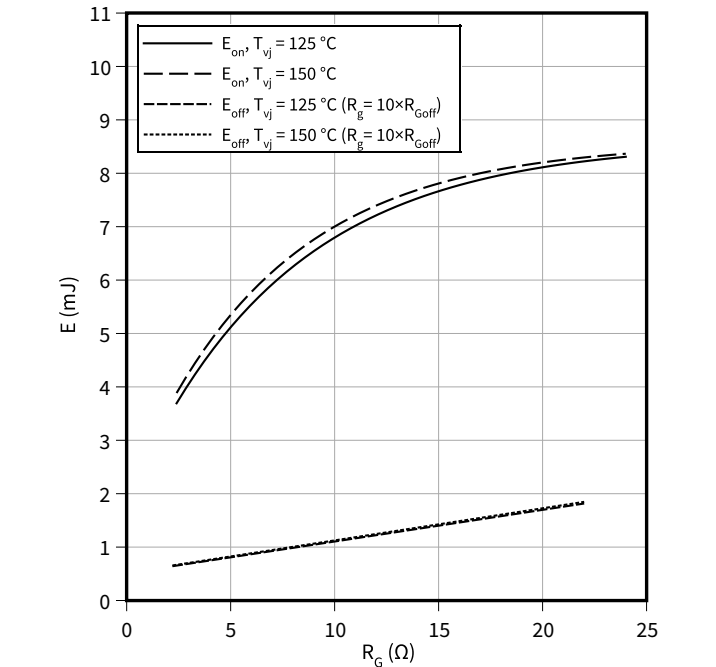
$$E_{\text{off}} = f(I_D)$$

 $R_{G\text{off}} = 0.22 \text{ } \Omega, V_{DD} = 600 \text{ V}, V_{GS} = -3/18 \text{ V}$ 


5 特征参数图表

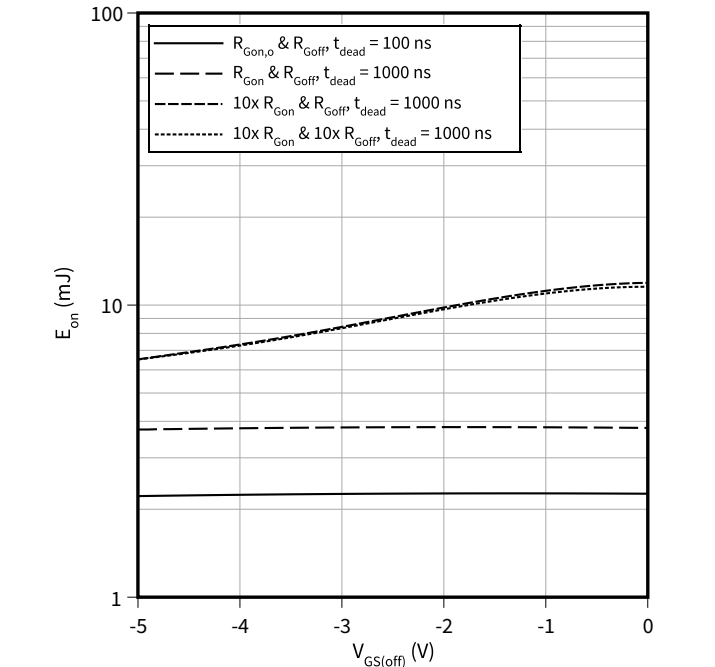
开关损耗（典型）, MOSFET

$E = f(R_G)$   
 $V_{DD} = 600\text{ V}$ ,  $t_{\text{dead}} = 1000\text{ ns}$ ,  $I_D = 200\text{ A}$ ,  $V_{GS} = -3/18\text{ V}$



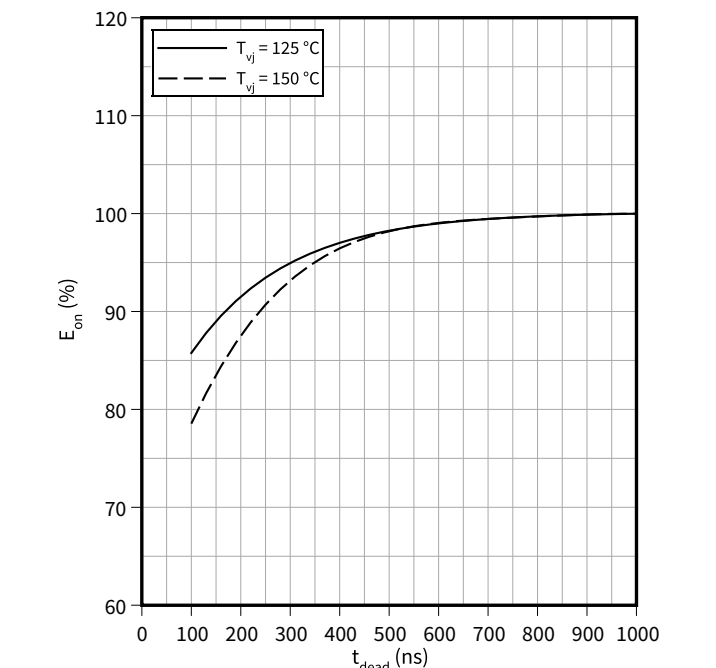
开关损耗（典型）, MOSFET

$E_{\text{on}} = f(V_{GS(\text{off})})$   
 $R_{G\text{off}} = 0.22\ \Omega$ ,  $V_{DD} = 600\text{ V}$ ,  $R_{G\text{on}} = 2.4\ \Omega$ ,  $V_{GS(\text{on})} = 18\text{ V}$ ,  
 $I_D = 200\text{ A}$ ,  $R_{G\text{on},o} = 1.5\ \Omega$ ,  $T_{vj} = 150\text{ °C}$



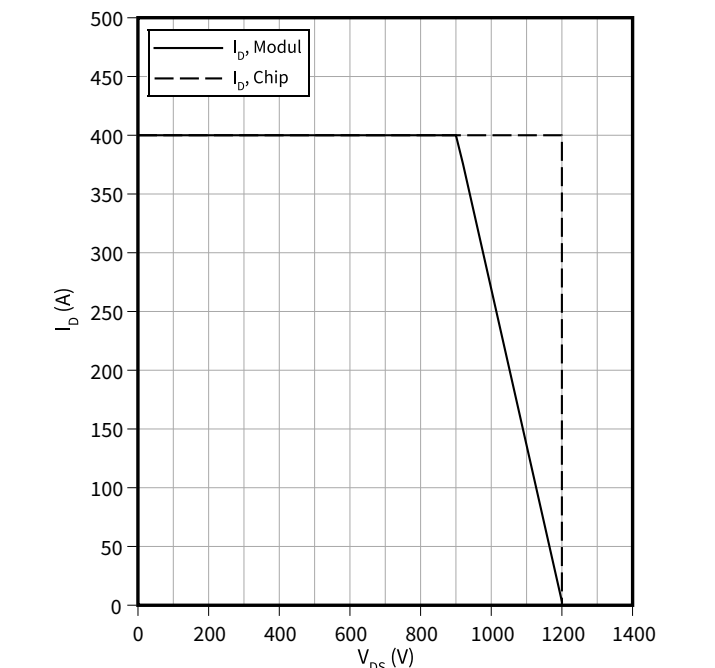
开关损耗（典型）, MOSFET

$E_{\text{on}} = f(t_{\text{dead}})$   
 $R_{G\text{on}} = 2.4\ \Omega$ ,  $I_D = 200\text{ A}$ ,  $V_{DD} = 600\text{ V}$ ,  $V_{GS} = -3/18\text{ V}$



Reverse bias safe operating area (RBSOA), MOSFET

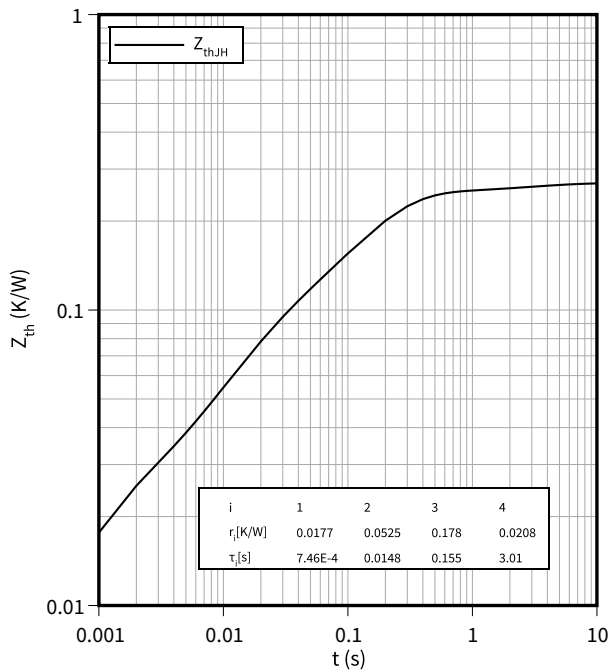
$I_D = f(V_{DS})$   
 $R_{G\text{off}} = 0.22\ \Omega$ ,  $T_{vj} = 150\text{ °C}$ ,  $V_{GS} = -3/18\text{ V}$



5 特征参数图表

瞬态热阻抗, MOSFET

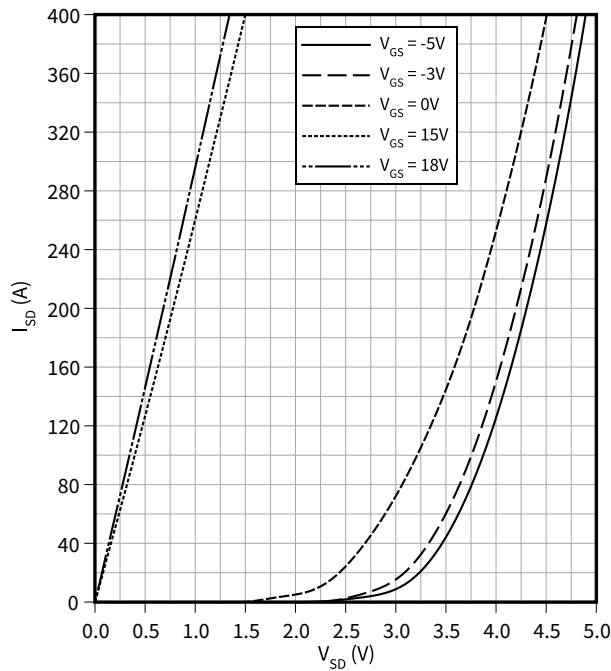
$Z_{th} = f(t)$



正向特性 体二极管 (典型), MOSFET

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

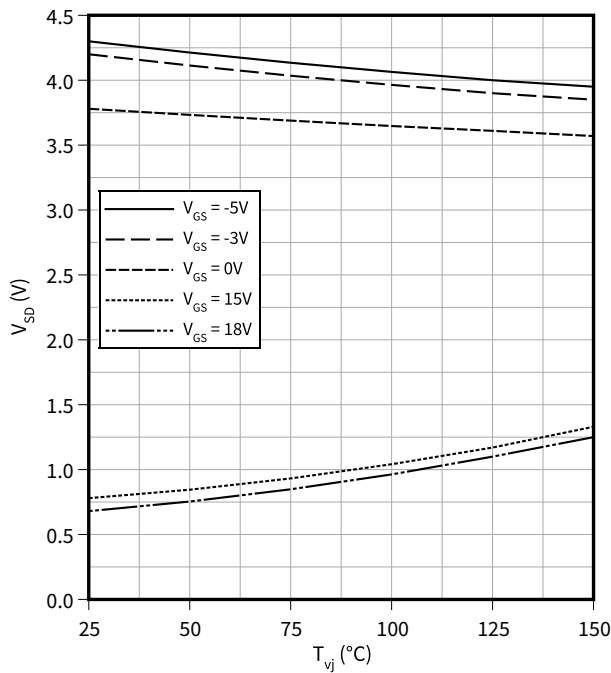
$T_{vj} = 25\text{ }^{\circ}\text{C}$



体二极管正向压降 (典型), MOSFET

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

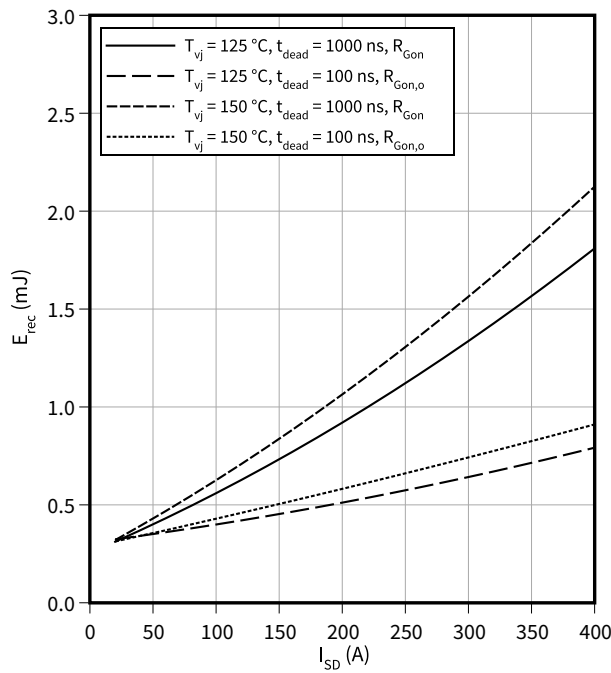
$I_{SD} = 200\text{ A}$



开关损耗 体二极管 (典型), MOSFET

$E_{rec} = f(I_{SD})$

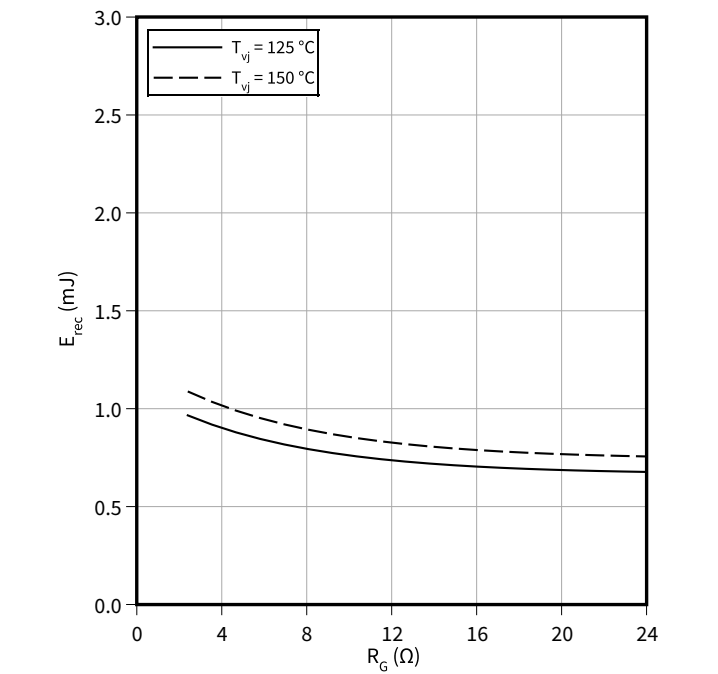
$R_{Gon} = 2.4\text{ }\Omega$ ,  $R_{Gon,o} = 1.5\text{ }\Omega$ ,  $V_{DD} = 600\text{ V}$



5 特征参数图表

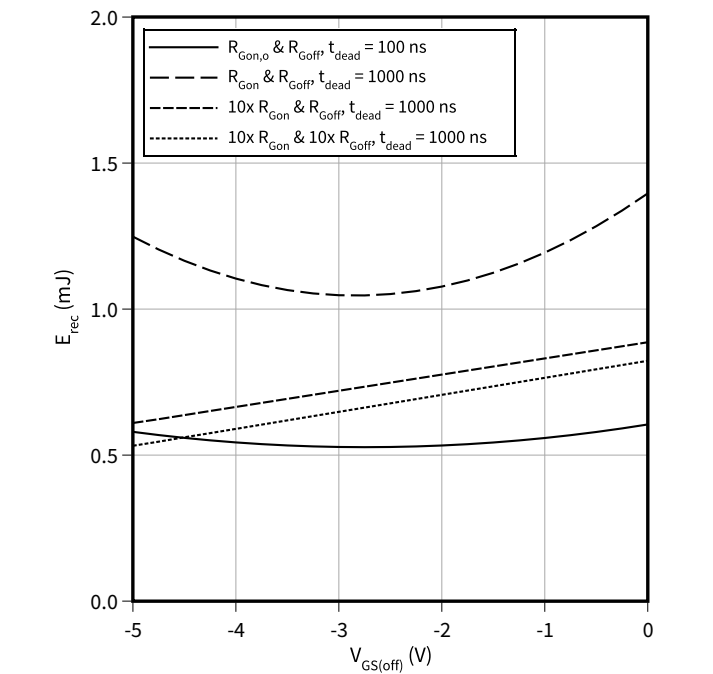
开关损耗 体二极管（典型）, MOSFET

$E_{rec} = f(R_G)$   
 $t_{dead} = 1000\text{ ns}$ ,  $I_{SD} = 200\text{ A}$ ,  $V_{DD} = 600\text{ V}$



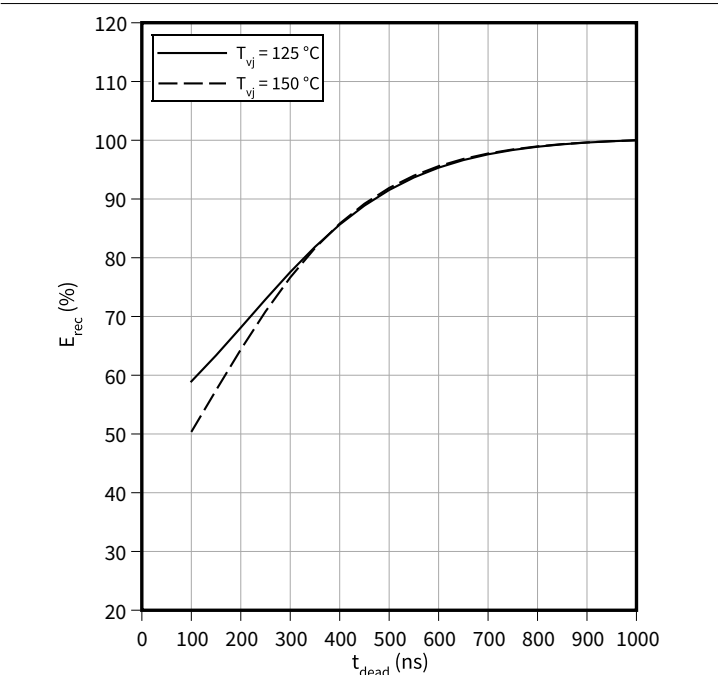
开关损耗 体二极管（典型）, MOSFET

$E_{rec} = f(V_{GS(off)})$   
 $R_{Goff} = 0.22\text{ }\Omega$ ,  $R_{Gon} = 2.4\text{ }\Omega$ ,  $V_{GS(on)} = 18\text{ V}$ ,  $I_{SD} = 200\text{ A}$ ,  
 $R_{Gon,o} = 1.5\text{ }\Omega$ ,  $V_{DD} = 600\text{ V}$ ,  $T_{vj} = 150\text{ }^\circ\text{C}$



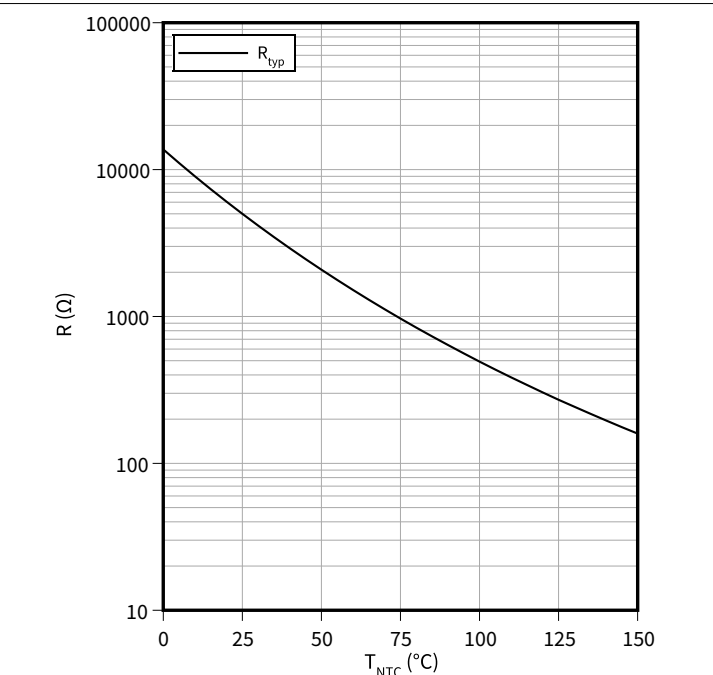
开关损耗 体二极管（典型）, MOSFET

$E_{rec} = f(t_{dead})$   
 $R_{Gon} = 2.4\text{ }\Omega$ ,  $I_D = 200\text{ A}$ ,  $V_{DD} = 600\text{ V}$ ,  $V_{GS} = -3/18\text{ V}$



温度特性, 负温度系数热敏电阻

$R = f(T_{NTC})$



6 电路拓扑图

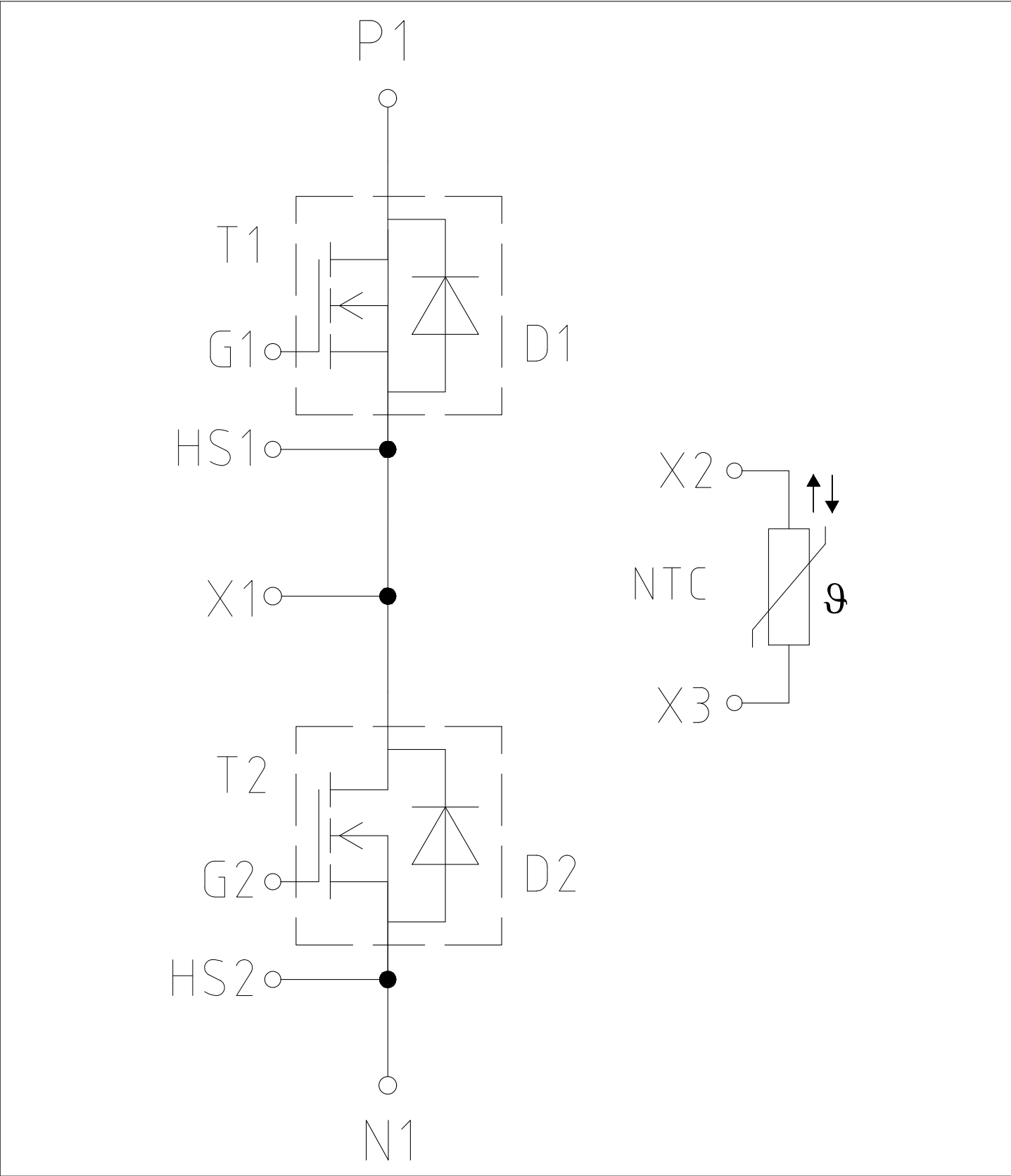


图 1

7 封装尺寸

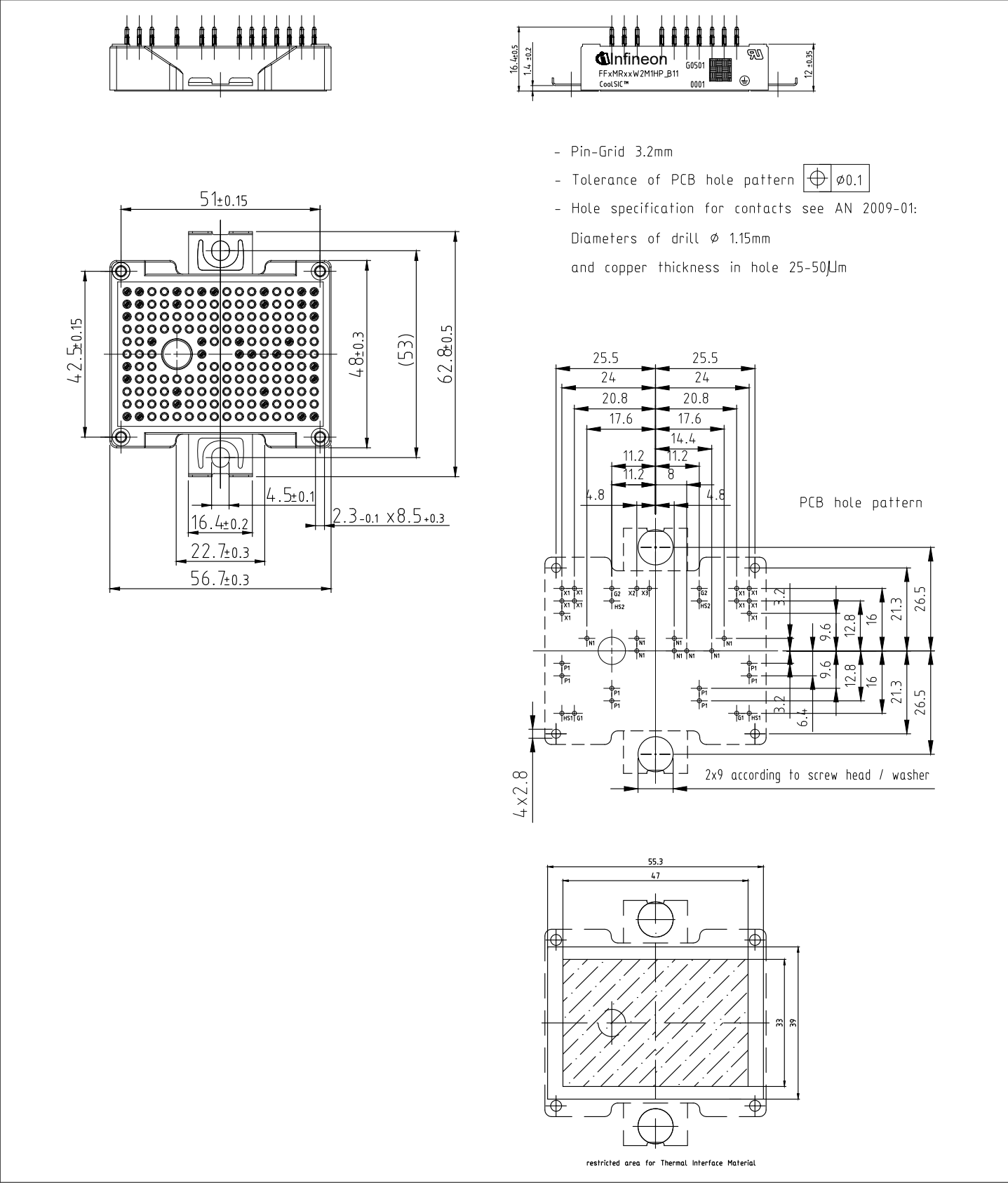


图 2

8 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                                                                                                                                                                                                                                    | Digit   | Example         |
|                   | Module serial number                                                                                                                                                                                                                       | 1 -5    | 71549           |
|                   | Module material number                                                                                                                                                                                                                     | 6 - 11  | 142846          |
|                   | Production order number                                                                                                                                                                                                                    | 12 - 19 | 55054991        |
|                   | Date code (production year)                                                                                                                                                                                                                | 20 -21  | 15              |
|                   | Date code (production week)                                                                                                                                                                                                                | 22 -23  | 30              |
| Example           | <div></div> <div>7154914284655054991153071549142846550549911530</div> |         |                 |

图 3



修订历史

修订历史

| 修订版本 | 发布日期       | 变更说明                  |
|------|------------|-----------------------|
| 0.10 | 2025-04-15 | Preliminary datasheet |
| 0.20 | 2025-06-06 | Preliminary datasheet |
| 1.00 | 2025-10-06 | Final datasheet       |
| 1.10 | 2025-11-18 | Final datasheet       |

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