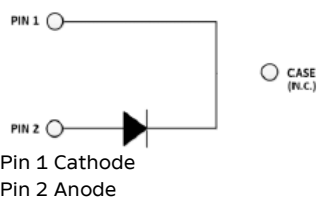
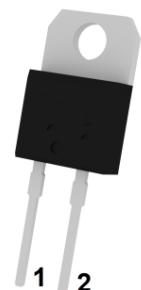


## SCD006TM065S23F

4th Generation 650V/6A SiC Schottky Barrier Diode

第四代 650V/6A 碳化硅肖特基二极管

Package Type: TO-220N-2L



$V_{RRM} = 650 \text{ V}$

$I_F (135^\circ\text{C}) = 8 \text{ A}$

$V_F (25^\circ\text{C}) = 1.27 \text{ V}$

- High-speed switching performance  
高速开关表现
- No reverse recovery  
无反向恢复

Maximum ratings 最大额定值<sup>1 2</sup>

| PARAMETER<br>参数                                   | SYMBOL<br>符号  | CONDITIONS<br>条件                                                               | MIN<br>最小 | MAX<br>最大 | UNIT<br>单位           |
|---------------------------------------------------|---------------|--------------------------------------------------------------------------------|-----------|-----------|----------------------|
| Repetitive peak reverse voltage<br>重复反向峰值电压       | $V_{RRM}$     | $T_{vj} \geq 25^\circ\text{C}$                                                 |           | 650       | V                    |
| Surge peak reverse voltage<br>浪涌峰值反向电压            | $V_{RSM}$     |                                                                                |           | 650       | V                    |
| DC reverse voltage 直流反向电压                         | $V_{DC}$      |                                                                                |           | 650       | V                    |
| Continuous forward current<br>连续正向电流              | $I_F$         | $T_C = 25^\circ\text{C}$                                                       |           | 17        | A                    |
|                                                   |               | $T_C = 135^\circ\text{C}$                                                      |           | 8         | A                    |
|                                                   |               | $T_C = 154^\circ\text{C}$                                                      |           | 6         | A                    |
| Surge non-repetitive forward current<br>非重复正向浪涌电流 | $I_{FSM}$     | $T_C = 25^\circ\text{C}$ ,<br>$t_p = 10 \text{ ms}$ , half sine pulse          |           | 46        | A                    |
| Repetitive peak forward current<br>重复峰值正向电流       | $I_{FRM}$     | $T_C = 25^\circ\text{C}$ ,<br>$t_p = 10 \text{ ms}$ , half sine wave $D = 0.1$ |           | 31        | A                    |
| Power dissipation 耗散功率                            | $P_{tot}$     |                                                                                |           | 63        | W                    |
| $i^2t$ value 安秒平方值                                | $\int i^2 dt$ | $T_C = 25^\circ\text{C}$ , $t_p = 10 \text{ ms}$                               |           | 10        | $\text{A}^2\text{s}$ |
| Operation junction temperature<br>工作结温范围          | $T_{vj}$      |                                                                                | -55       | 175       | $^\circ\text{C}$     |
| Storage temperature 存储温度范围                        | $T_{stg}$     |                                                                                | -55       | 175       | $^\circ\text{C}$     |



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<sup>1</sup> Maximum rated values indicate limits beyond which damage to the device may occur per IEC 60747<sup>1</sup> 根据标准 IEC 60747 要求，最大额定值表示超过该限值可能会对器件造成损坏<sup>2</sup>  $T_{vj} = 25^\circ\text{C}$ , unless otherwise specified / 除非另有规定,  $T_{vj} = 25^\circ\text{C}$



## SiC Diode<sup>3 4</sup>

| PARAMETER<br>参数                     | SYMBOL<br>符号    | CONDITIONS<br>条件                               | MIN<br>最小 | TYP<br>典型 | MAX<br>最大 | UNIT<br>单位 |
|-------------------------------------|-----------------|------------------------------------------------|-----------|-----------|-----------|------------|
| DC blocking voltage 直流击穿电压          | V <sub>DC</sub> | I <sub>R</sub> = 100 µA                        | 650       |           |           | V          |
| Forward voltage 正向导通压降              | V <sub>F</sub>  | I <sub>F</sub> = 6 A                           |           | 1.27      | 1.45      | V          |
|                                     |                 |                                                |           | 1.50      | 1.70      | V          |
| Reverse current 反向电流                | I <sub>R</sub>  | V <sub>R</sub> = 650 V                         |           | 3         | 48        | µA         |
|                                     |                 |                                                |           | 10        | 192       | µA         |
| Total capacitance 总电容               | C               | f = 1 MHz                                      |           | 353       |           | pF         |
|                                     |                 |                                                |           | 39        |           | pF         |
|                                     |                 |                                                |           | 31        |           | pF         |
| Total capacitive charge 总电容电荷       | Q <sub>C</sub>  | V <sub>R</sub> = 400 V (∫C(V)dV)               |           | 20        |           | nC         |
| Capacitance stored energy<br>电容储存能量 | E <sub>C</sub>  | V <sub>R</sub> = 400 V (∫Q <sub>C</sub> (V)dV) |           | 3         |           | µJ         |

## Package properties 封装特性

| PARAMETER<br>参数                                   | SYMBOL<br>符号         | CONDITIONS<br>条件 | MIN<br>最小 | TYP<br>典型 | MAX<br>最大 | UNIT<br>单位 |
|---------------------------------------------------|----------------------|------------------|-----------|-----------|-----------|------------|
| Thermal resistance from junction to case<br>结到壳热阻 | R <sub>th(j-c)</sub> |                  |           | 2.40      |           | K/W        |

<sup>3</sup> Characteristic values according to IEC 60747-2 / 特性值依据 IEC 60747-2

<sup>4</sup> T<sub>vj</sub> = 25 °C, unless otherwise specified / 除非另有规定, T<sub>vj</sub> = 25 °C

## Characteristics 特性曲线

Figure 1. Forward characteristics

图 1. 正向特性

$$I_F = f(V_F)$$

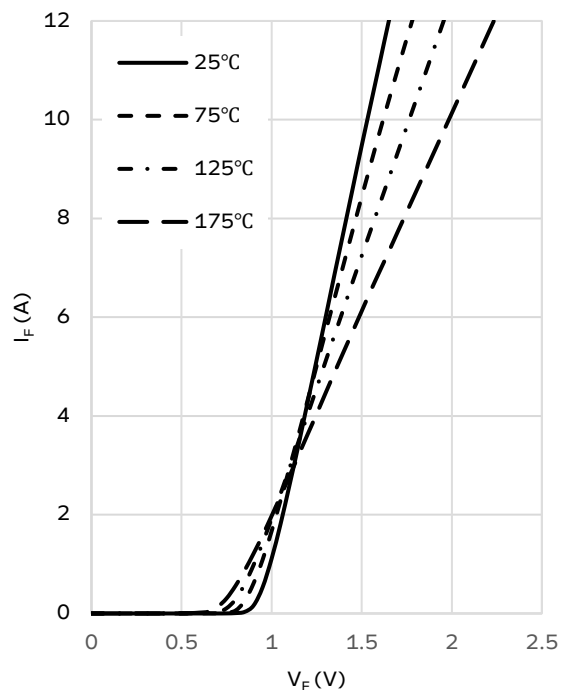


Figure 2. Reverse characteristics

图 2. 反向特性

$$I_R = f(V_R)$$

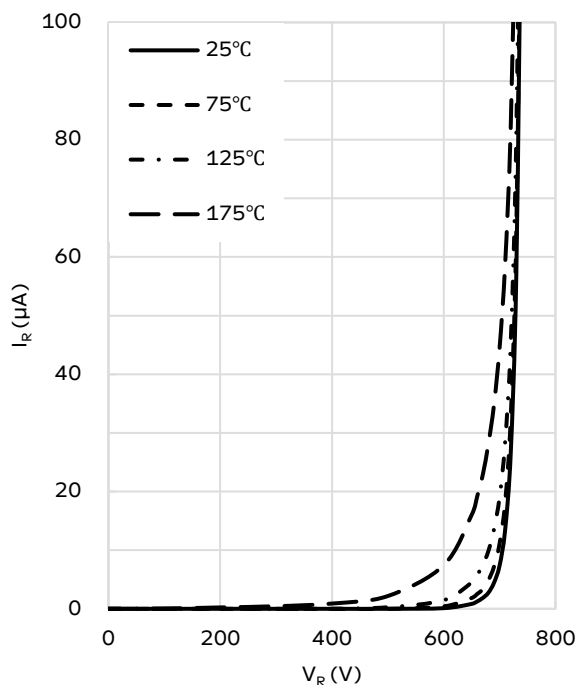


Figure 3. Current derating

图 3. 电流降额

$$I_{F(\text{peak})} = f(T_C)$$

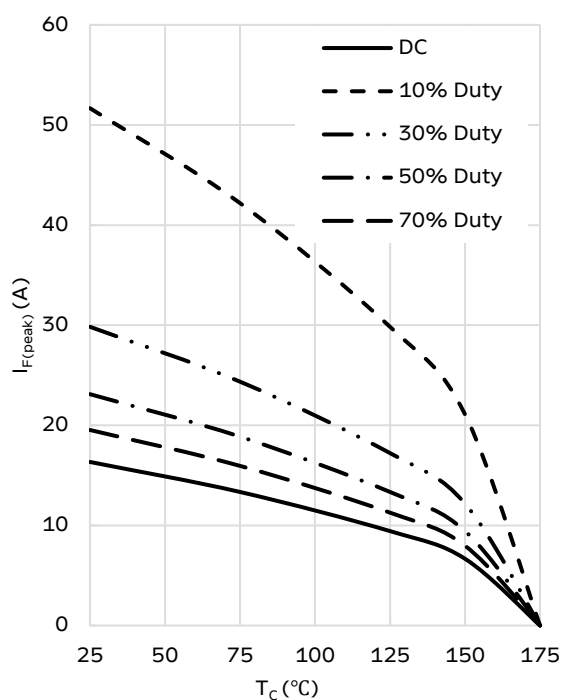
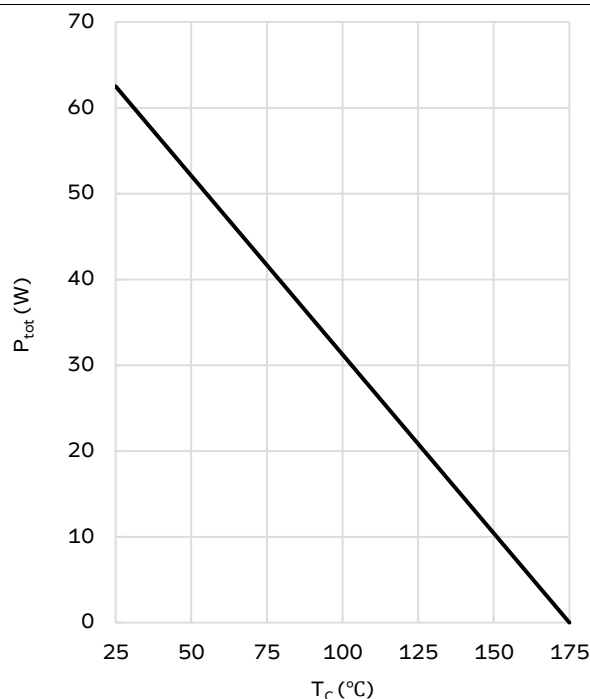


Figure 4. Power derating

图 4. 功率降额

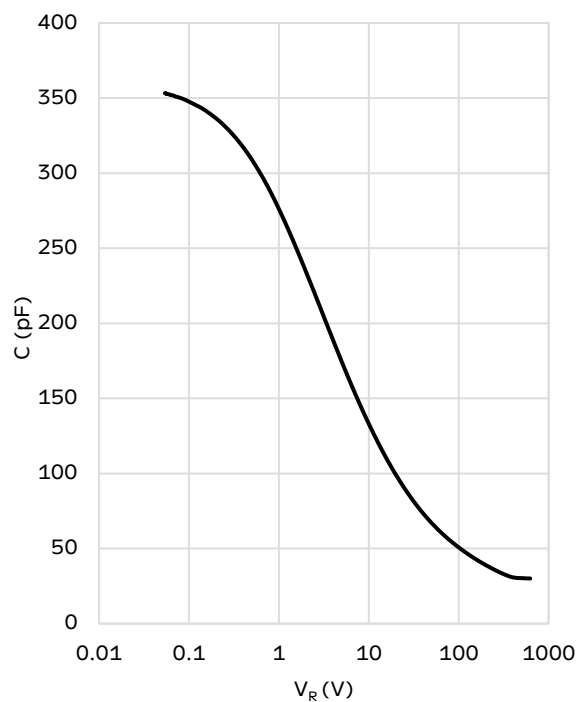
$$P_{\text{tot}} = f(T_C)$$



**Figure 5. Capacitance vs. reverse voltage**

图 5. 电容 vs 反向电压

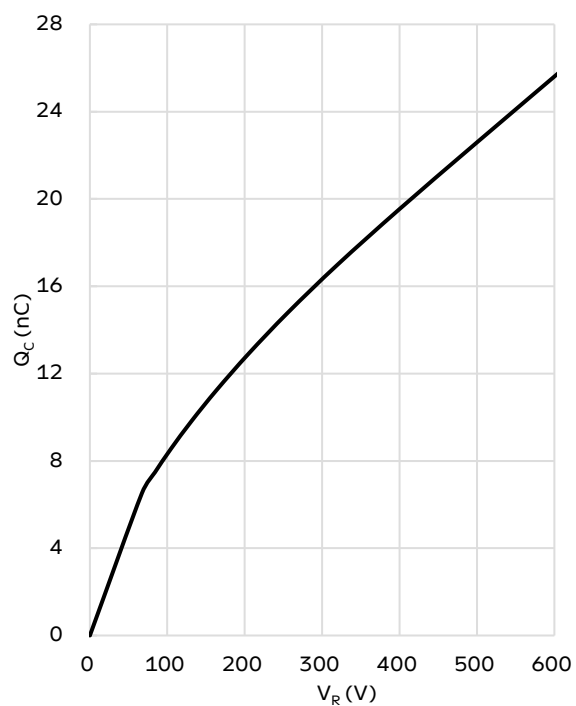
$$C = f(V_R)$$



**Figure 6. Total capacitance charge vs. reverse voltage**

图 6. 总电容电荷 vs 反向电压

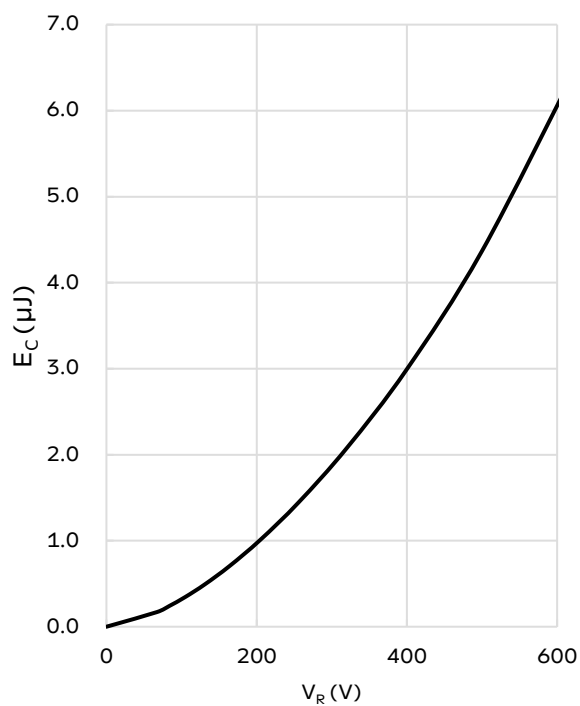
$$Q_C = f(V_R)$$



**Figure 7. Capacitance stored energy**

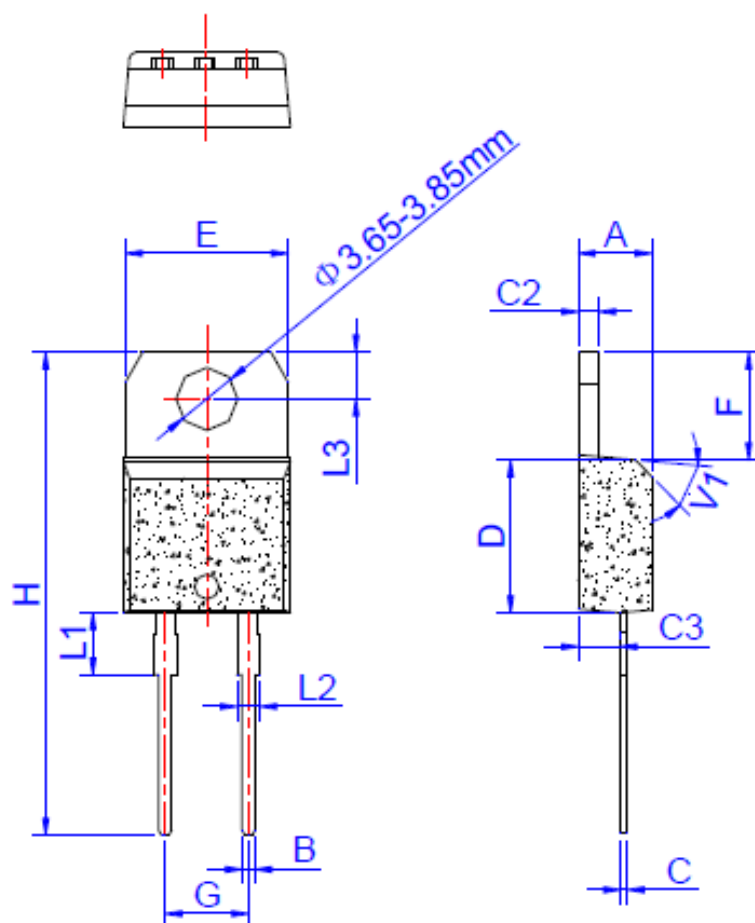
图 7. 电容储存能量

$$E_C = f(V_R)$$



## Outline drawing 外形图

Marking SCDS23F006TM065



| Sym-<br>bol | Dimensions In Milli-<br>meters |      |
|-------------|--------------------------------|------|
|             | Min.                           | Max. |
| A           | 4.40                           | 4.60 |
| B           | 0.61                           | 0.88 |
| C           | 0.46                           | 0.70 |
| C2          | 1.21                           | 1.32 |
| C3          | 2.40                           | 2.72 |
| D           | 8.60                           | 9.70 |
| E           | 9.80                           | 10.4 |
| F           | 6.55                           | 6.95 |
| G           | TYP 5.08                       |      |
| H           | 28.0                           | 29.8 |
| L1          | TYP 3.75                       |      |
| L2          | 1.14                           | 1.70 |
| L3          | 2.65                           | 2.95 |
| V1          | TYP 45°                        |      |

This is an electrostatic sensitive device. 本产品对静电特别敏感.

This product has been designed and qualified for industry Level. 本产品的的设计符合工业级标准.

Note: All dimensions are in mm



## Ordering Information 订购信息

| OPTION<br>选项          |              | ARTICLE NUMBER<br>商品编号 |
|-----------------------|--------------|------------------------|
| Qualification grade   | Consumer (C) | SCD006TM065S23F        |
| Packaging Method 包装方式 | Tube (_P20)  | SCD006TM065S23F_P20    |

## Revision History 修订历史

| Release 发布 | Version 版本 | Description 描述              |
|------------|------------|-----------------------------|
| 2026-07-23 | v1.0       | Preliminary Datasheet 初始规格书 |