

## 碳化硅肖特基二极管

## Silicon Carbide Schottky Diode

## KS10065-B

|                          |   |       |
|--------------------------|---|-------|
| $V_{RRM}$                | = | 650 V |
| $I_F (T_C=160^{\circ}C)$ | = | 10 A  |
| $Q_C$                    | = | 33 nC |

## 特点 / Features

- 肖特基整流器 / 650-Volt Schottky Rectifier
- 零反向恢复电流 / Zero Reverse Recovery Current
- 零正向恢复电压 / Zero Forward Recovery Voltage
- 高工作频率 / High-Frequency Operation
- 不受温度影响的开关特性 / Temperature-Independent Switching Behavior
- 高速开关 / Extremely Fast Switching
- $V_F$ 正温度特性 / Positive Temperature Coefficient on  $V_F$

## 优势 / Benefits

- 单极器件 / Replace Bipolar with Unipolar Rectifiers
- 零开关损耗 / Essentially No Switching Losses
- 高效率 / Higher Efficiency
- 减小散热器 / Reduction of Heat Sink Requirements
- 易于并联使用 / Ease of Paralleling

## 应用领域 / Applications

- 开关电源 / Switch Mode Power Supplies (SMPS)
- 功率因数校正 / Power Factor Correction
- 电机驱动 / Motor Drives

## 封装 / Package



PIN 2

PIN 1

TO-252-2L



| Part Number | Package   | Marking  |
|-------------|-----------|----------|
| KS10065-B   | TO-252-2L | KS10065B |

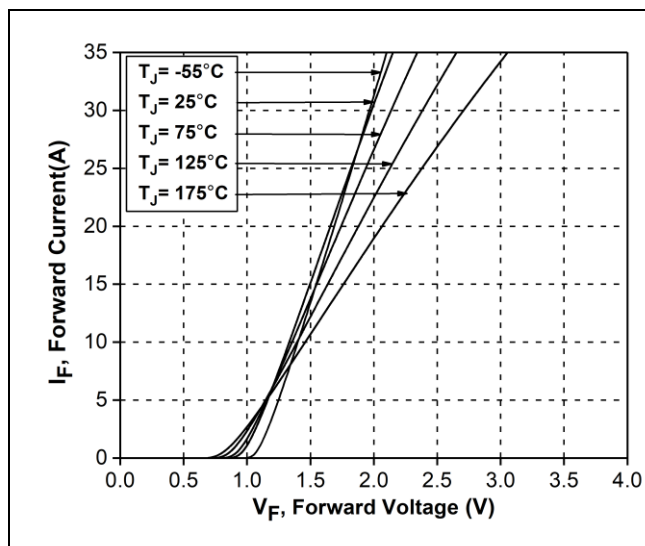
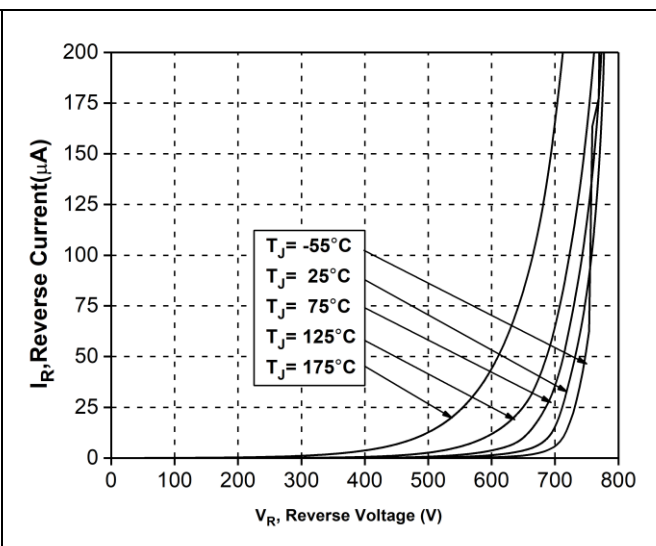
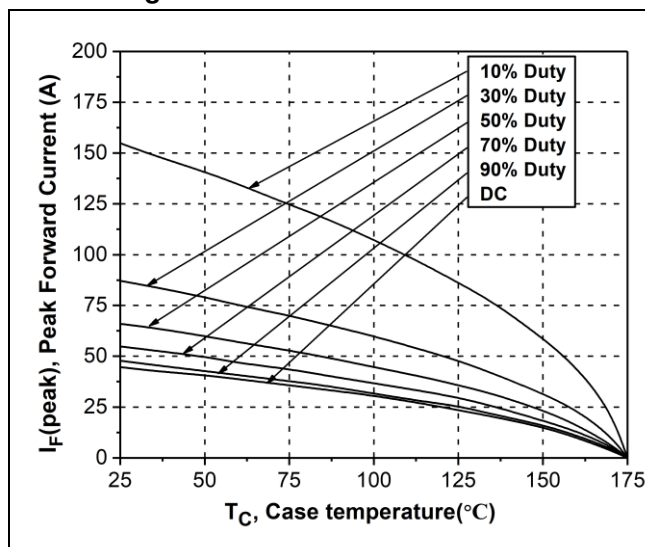
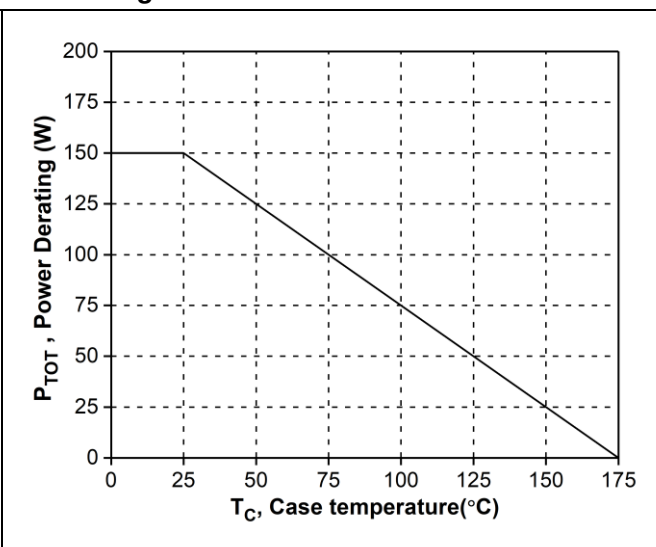
**最大额定值 / Maximum Rated Values ( $T_C=25^{\circ}\text{C}$  unless otherwise specified)**

| 符号<br>Symbol | 参数<br>Parameter                                   | 值<br>Value     | 单位<br>Unit         | 测试条件<br>Test Conditions                                                                                                                   | 备注<br>Note |
|--------------|---------------------------------------------------|----------------|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------|------------|
| $V_{RRM}$    | 反向重复峰值电压<br>Repetitive peak reverse voltage       | 650            | V                  |                                                                                                                                           |            |
| $V_R$        | 直流反向阻断电压<br>DC Peak Reverse Voltage               | 650            | V                  |                                                                                                                                           |            |
| $I_F$        | 正向电流<br>Continuous Forward Current                | 44<br>20<br>10 | A                  | $T_C=25^{\circ}\text{C}$<br>$T_C=135^{\circ}\text{C}$<br>$T_C=160^{\circ}\text{C}$                                                        | Figure 3   |
| $I_{FRM}$    | 正向重复峰值电流<br>Repetitive Peak Forward Surge Current | 80<br>63       | A                  | $T_C=25^{\circ}\text{C}$ , $t_P=10\text{ms}$ , Half Sine Pulse<br>$T_C=110^{\circ}\text{C}$ , $t_P=10\text{ms}$ , Half Sine Pulse         |            |
| $I_{FSM}$    | 正向浪涌电流<br>Non-Repetitive Forward Surge Current    | 105<br>93      | A                  | $T_C=25^{\circ}\text{C}$ , $t_P=10\text{ms}$ , Half Sine Pulse<br>$T_C=110^{\circ}\text{C}$ , $t_P=10\text{ms}$ , Half Sine Pulse         | Figure 9   |
| $I_{F,MAX}$  | 非重复正向峰值电流<br>Non-Repetitive Peak Forward Current  | 783<br>652     | A                  | $T_C=25^{\circ}\text{C}$ , $t_P=10\mu\text{s}$ , Square Wave Pulse<br>$T_C=110^{\circ}\text{C}$ , $t_P=10\mu\text{s}$ , Square Wave Pulse | Figure 9   |
| $P_{tot}$    | 耗散功率<br>Power Dissipation                         | 150<br>65      | W                  | $T_C=25^{\circ}\text{C}$<br>$T_C=110^{\circ}\text{C}$                                                                                     | Figure 4   |
| $T_J$        | 工作结温<br>Operating Temperature                     | -55 to<br>+175 | $^{\circ}\text{C}$ |                                                                                                                                           |            |
| $T_{stg}$    | 储存温度<br>Storage Temperature                       | -55 to<br>+175 | $^{\circ}\text{C}$ |                                                                                                                                           |            |

**电气参数 / Electrical Characteristics ( $T_J=25^{\circ}\text{C}$  unless otherwise specified)**

| 符号<br>Symbol | 参数<br>Parameter                     | 值 / Value |                 |            | 单位<br>Unit    | 测试条件<br>Test Conditions                                                                                                                                                                          | 备注<br>Note |
|--------------|-------------------------------------|-----------|-----------------|------------|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
|              |                                     | Min.      | Typ.            | Max.       |               |                                                                                                                                                                                                  |            |
| $V_{DC}$     | 击穿电压<br>DC blocking voltage         | 650       |                 |            | V             | $I_R=200\mu\text{A}$                                                                                                                                                                             |            |
| $V_F$        | 正向电压<br>Forward Voltage             |           | 1.33<br>1.5     | 1.7<br>2.0 | V             | $I_F=10\text{A}$ , $T_J=25^{\circ}\text{C}$<br>$I_F=10\text{A}$ , $T_J=175^{\circ}\text{C}$                                                                                                      | Figure 1   |
| $I_R$        | 反向电流<br>Reverse Current             |           | 1<br>80         | 20<br>160  | $\mu\text{A}$ | $V_R=650\text{V}$ , $T_J=25^{\circ}\text{C}$<br>$V_R=650\text{V}$ , $T_J=175^{\circ}\text{C}$                                                                                                    | Figure 2   |
| $Q_C$        | 容性电荷<br>Total Capacitive Charge     |           | 33              |            | nC            | $V_R=400\text{V}$ , $T_J=25^{\circ}\text{C}$                                                                                                                                                     | Figure 5   |
| $C$          | 总电容<br>Total Capacitance            |           | 655<br>61<br>54 |            | pF            | $V_R=0\text{V}$ , $T_J=25^{\circ}\text{C}$ , $f=1\text{MHz}$<br>$V_R=200\text{V}$ , $T_J=25^{\circ}\text{C}$ , $f=1\text{MHz}$<br>$V_R=400\text{V}$ , $T_J=25^{\circ}\text{C}$ , $f=1\text{MHz}$ | Figure 6   |
| $E_C$        | 电容存储能量<br>Capacitance Stored Energy |           | 4.8             |            | $\mu\text{J}$ | $V_R=400\text{V}$                                                                                                                                                                                | Figure 7   |

| 符号<br>Symbol    | 参数<br>Parameter                               | 值<br>Value | 单位<br>Unit                  | 备注<br>Note |
|-----------------|-----------------------------------------------|------------|-----------------------------|------------|
| $R_{\theta JC}$ | 结壳热阻<br>Thermal Resistance (Junction to Case) | 1          | $^{\circ}\text{C}/\text{W}$ | Figure 8   |

**特性曲线 / Typical Performance**

**Figure 1. Forward Characteristics**

**Figure 2. Reverse Characteristics**

**Figure 3. Current Derating**

**Figure 4. Power Derating**

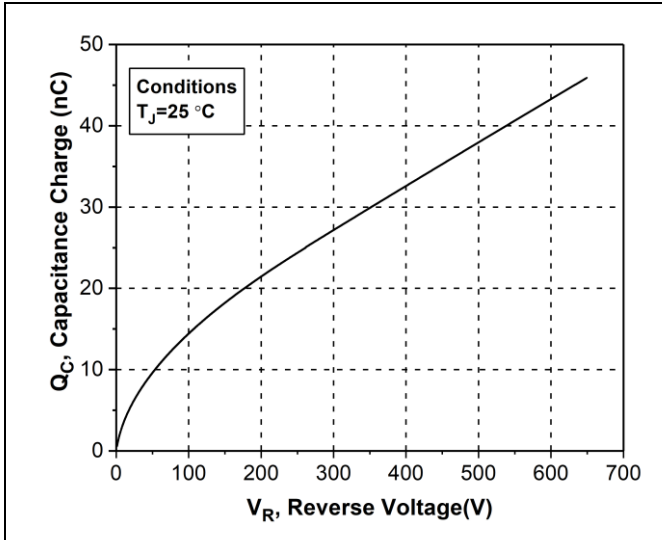


Figure 5. Capacitance Charge Vs. Reverse Voltage

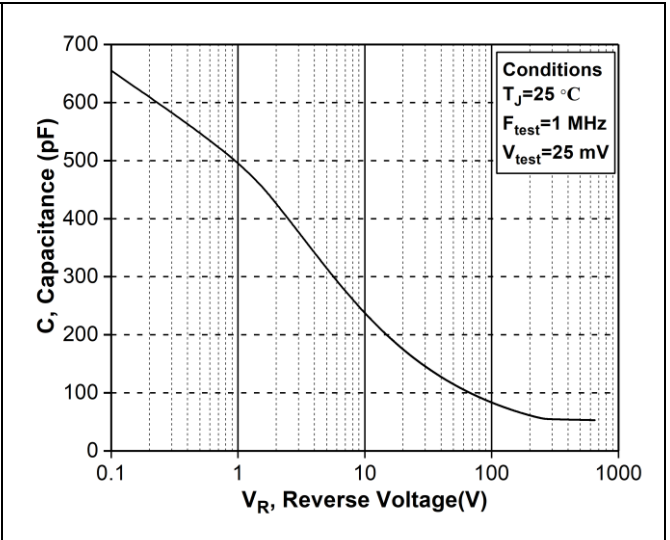


Figure 6. Capacitance Vs. Reverse Voltage

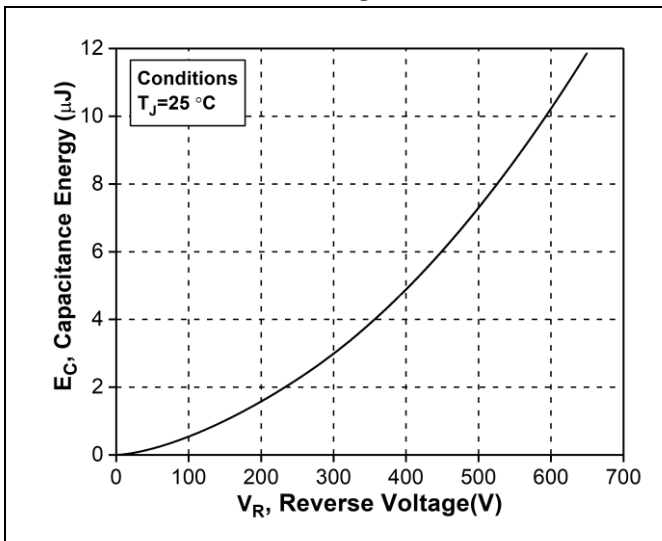


Figure 7. Capacitance Stored Energy

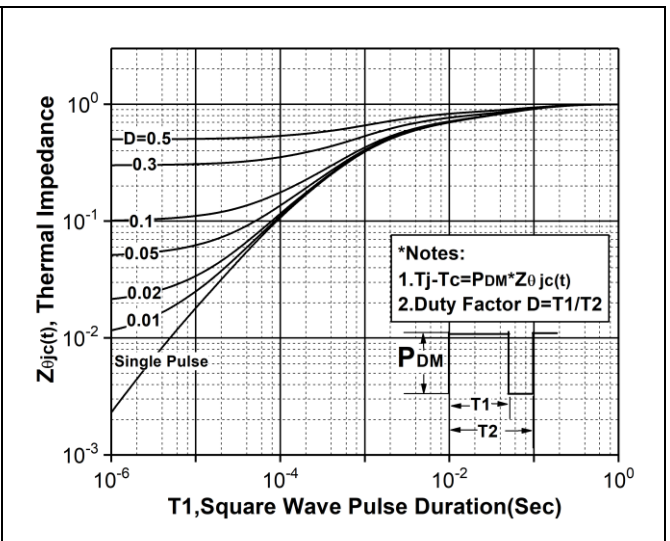


Figure 8. Transient Thermal Response Curve(Junction-to-Case)

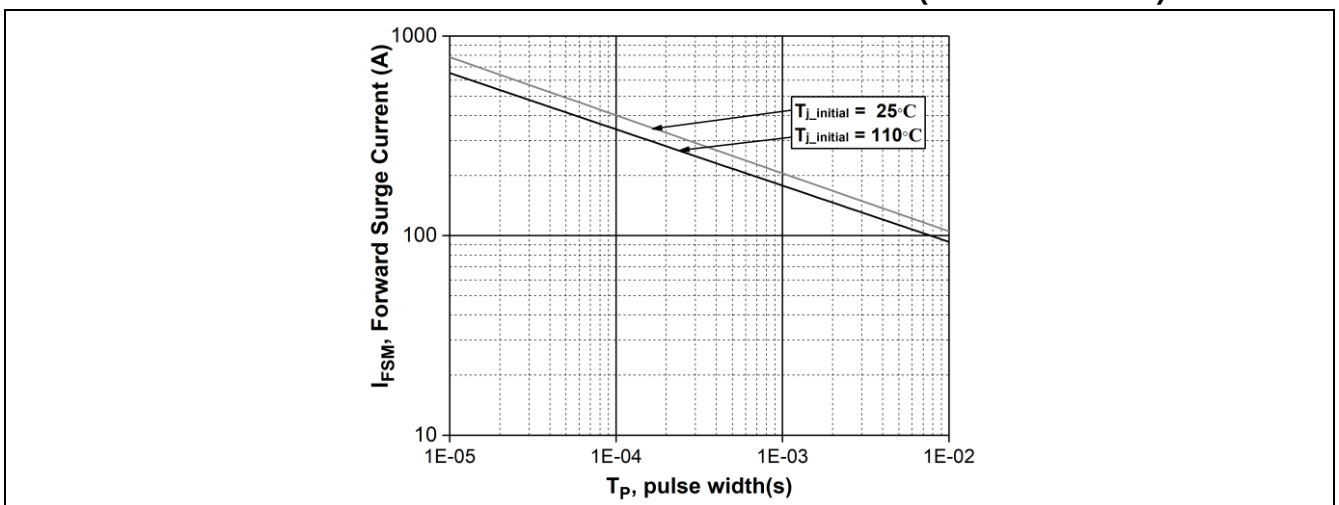
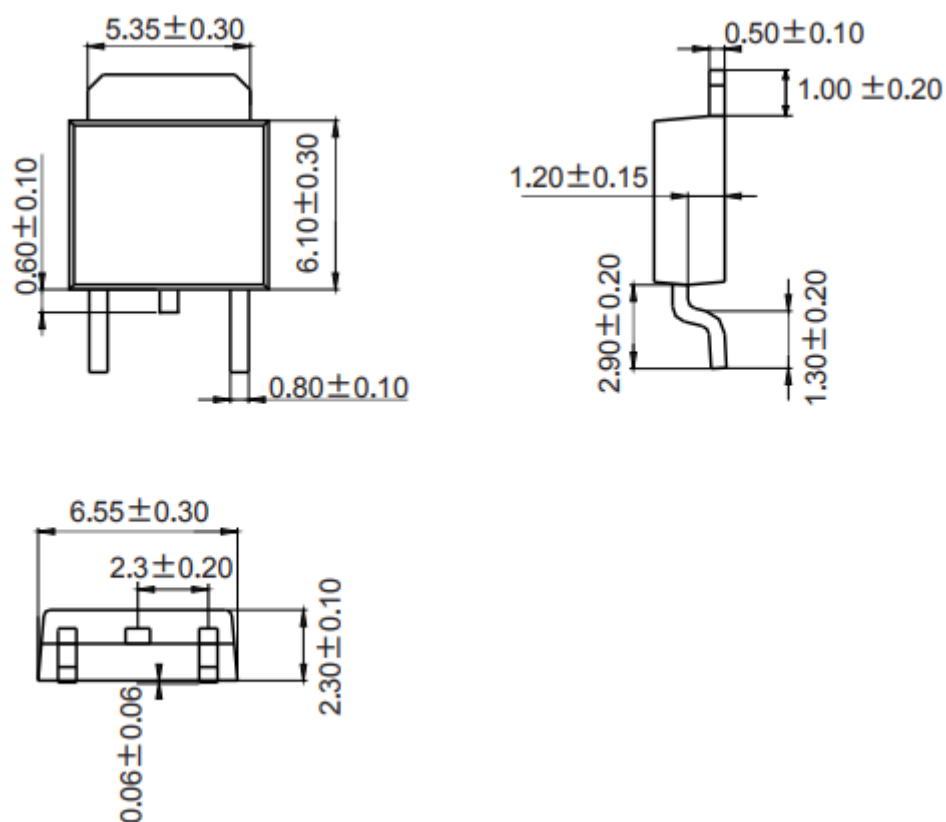
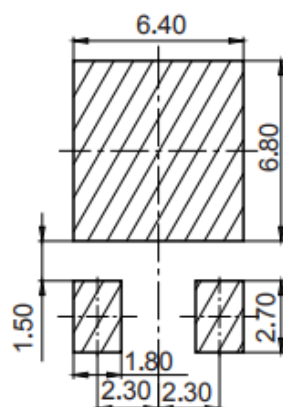


Figure 9. Non-repetitive peak forward surge current versus pulse duration (sinusoidal waveform)

Package TO-252-2L



参考焊盘图 / Recommended Solder Pad Layout



TO-252-2L

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