

SiC Schottky Diode

Features:

- ✦ Positive temperature coefficient, great for parallel connection.
- ✦ Switching is not affected by temperature.
- ✦ Max operational temperature: 175°C.
- ✦ 0 Reverse recovery current.
- ✦ 0 Forward recovery voltage.

Benefits:

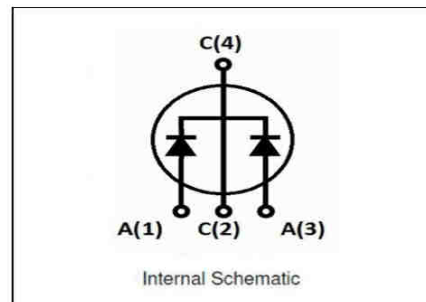
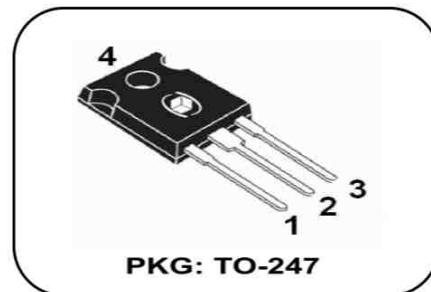
- ✦ Unipolar device.
- ✦ Greatly reduce switching loss.
- ✦ No thermal breakdown in parallel devices.
- ✦ Reduce system dependence on heat sink.

Applications:

- ✦ Switching Mode Power Supply (SMPS)
- ✦ Power Factor Correction (PFC)
- ✦ Motor drive, PV inverter, Uninterruptible power supply.
- ✦ Wind driven electricity generator, Train hauling system, Electric automobiles.

Maximum Ratings:

| | | |
|--------------------------------------|-----------------|----|
| V_{RRM} | 650 | V |
| I_F , $T_c \leq 135^\circ\text{C}$ | 14 (per leg) | A |
| Q_c | 55 | nC |



| Parameter | Symbol | Value | Unit | Test Condition |
|---|-----------|----------------|------|--|
| Repetitive Peak Reverse Voltage | V_{RRM} | 650 | V | $T_j = 25^\circ\text{C}$ |
| Surge Peak Reverse Voltage | V_{RSM} | 650 | V | $T_j = 25^\circ\text{C}$ |
| DC Blocking Voltage | V_{DC} | 650 | V | $T_j = 25^\circ\text{C}$ |
| Continuous Forward Current | I_F | 29* | A | $T_c = 25^\circ\text{C}$ |
| | | 14* | | $T_c = 135^\circ\text{C}$ |
| | | 10* | | $T_c = 155^\circ\text{C}$ |
| Repetitive Peak Forward Surge Current | I_{FRM} | 50* | A | $T_c = 25^\circ\text{C}$, $t_p = 10\text{ms}$, Half Sine Wave, $D = 0.3$ |
| Non-repetitive Peak Forward Surge Current | I_{FSM} | 70* | A | $T_c = 25^\circ\text{C}$, $t_p = 10\text{ms}$, Half Sine Wave |
| Power Dissipation | P_{TOT} | 53.2* | W | $T_c = 25^\circ\text{C}$ |
| | | 24* | | $T_c = 110^\circ\text{C}$ |
| Operating Junction Temperature | T_j | -55°C to 175°C | °C | |
| Storage Temperature | T_{stg} | -55°C to 175°C | °C | |

*Single Leg

Thermal Characteristics

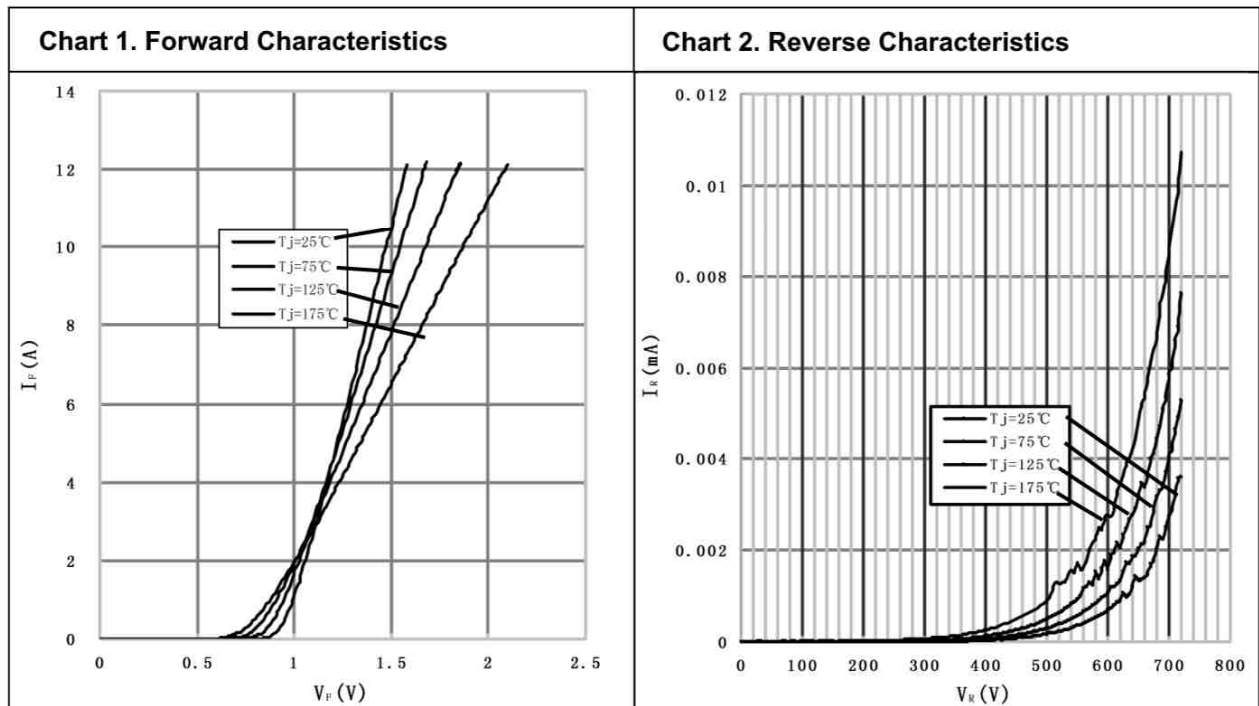
| Parameter | Symbol | Min. | Typ. | Max. | Unit |
|--|-----------------|------|-----------------|------|-----------------------------|
| Thermal Resistance from Junction to Case | $R_{\theta JC}$ | | 1.29* 0.65** | | $^{\circ}\text{C}/\text{W}$ |

*Single Leg
**Single Tube

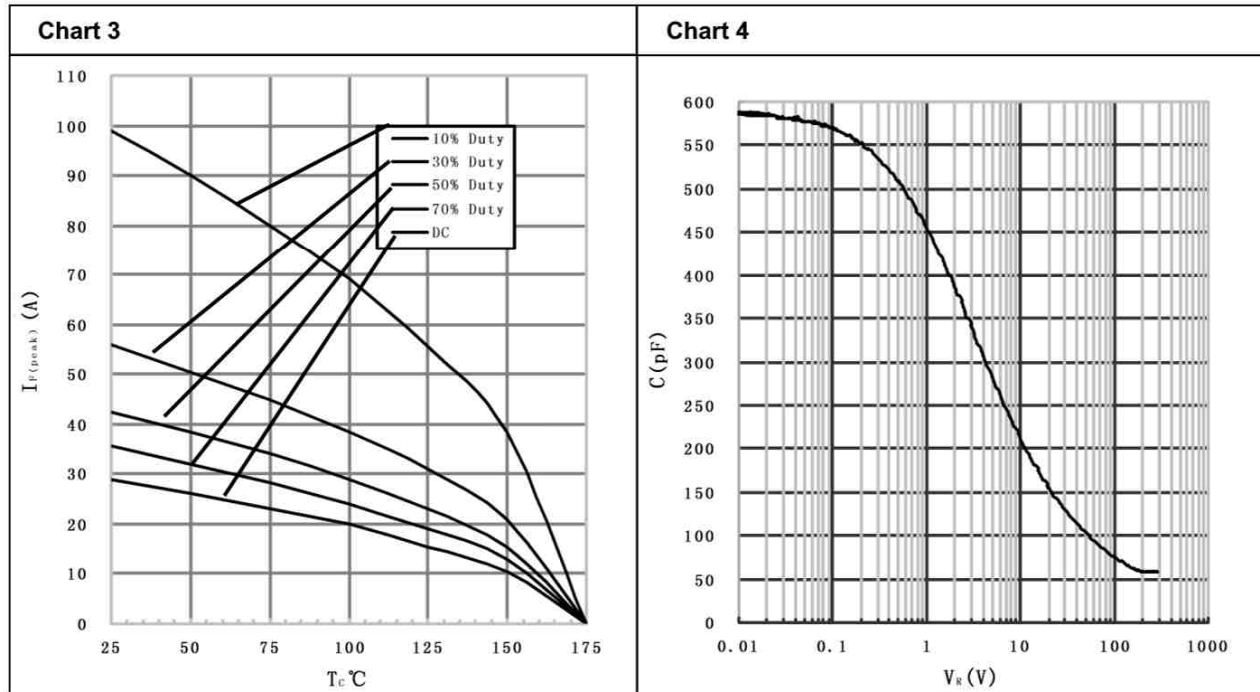
Electrical Characteristics

| Parameter | Symbol | Typ. | Max. | Unit | Test Condition |
|--------------------------|--------|-----------------|-----------------|---------------|--|
| Forward Voltage | V_F | 1.5 1.9 | 1.8 2.5 | V | $I_F=10\text{A}, T_j=25^{\circ}\text{C}$ $I_F=10\text{A}, T_j=175^{\circ}\text{C}$ |
| Reverse Current | I_R | 10 15 | 100 200 | μA | $V_R=650\text{V}, T_j=25^{\circ}\text{C}$ $V_R=650\text{V}, T_j=175^{\circ}\text{C}$ |
| Total Capacitance Charge | Q_C | 27.5 | - | nC | $V_R=650\text{V}, I_F=10\text{A},$ $di/dt=500\text{A}/\mu\text{s}, T_j=25^{\circ}\text{C}$ |
| Total Capacitance | C | 600 59 58 | 700 62 60 | pF | $V_R=0\text{V}, T_j=25^{\circ}\text{C}, f=1\text{MHz}$ $V_R=200\text{V}, T_j=25^{\circ}\text{C}, f=1\text{MHz}$ $V_R=400\text{V}, T_j=25^{\circ}\text{C}, f=1\text{MHz}$ |

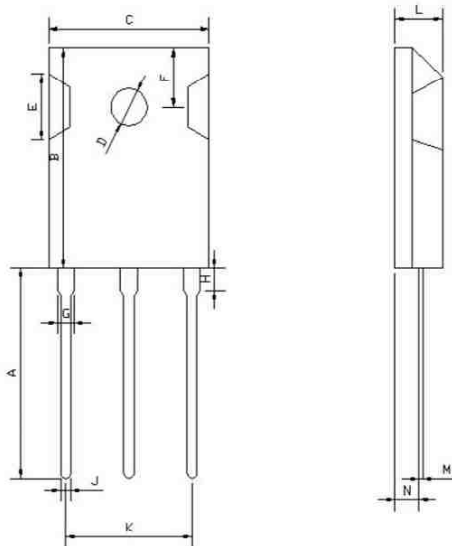
RATING AND CHARACTERISTICS CURVES (SC2S06520B)



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Package Outline: TO-247



| DIM | Millimeters | | Inches | |
|-----|-------------|-------|--------|-------|
| | Min. | Max. | Min. | Max. |
| A | 19.81 | 20.32 | 0.780 | 0.800 |
| B | 20.8 | 21.46 | 0.819 | 0.845 |
| C | 15.75 | 16.26 | 0.620 | 0.640 |
| D | 3.55 | 3.65 | 0.140 | 0.144 |
| E | 4.32 | 5.49 | 0.170 | 0.216 |
| F | 5.4 | 6.2 | 0.213 | 0.244 |
| G | 1.65 | 2.13 | 0.065 | 0.084 |
| H | | 4.5 | | 0.177 |
| J | 1 | 1.4 | 0.039 | 0.055 |
| K | 10.8 | 11 | 0.425 | 0.433 |
| L | 4.7 | 5.3 | 0.185 | 0.209 |
| M | 0.4 | 0.8 | 0.016 | 0.031 |
| N | 1.5 | 2.49 | 0.059 | 0.098 |

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