

6A, 650V SiC Schottky Barrier Diode

Description

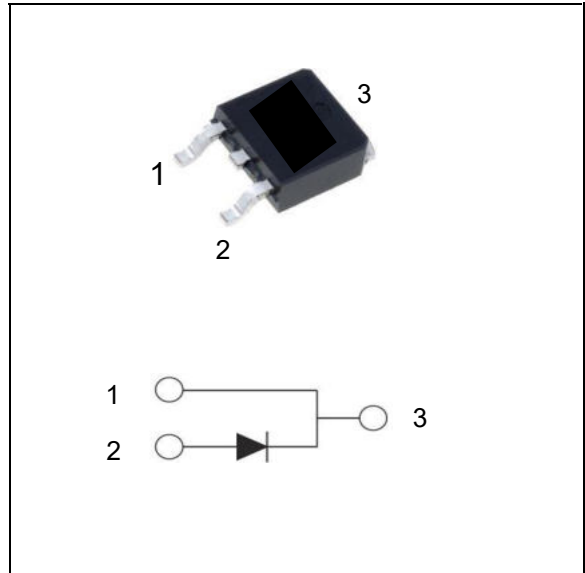
The AKC665SB is a SiC Schottky Barrier Diode. It is based on silicon carbide material, and its switching behavior is independent with temperature. The device has superfast recovery property and lower forward voltage drop, it can be used in switching power supply, solar inverter, PFC and UPS.

Features

- Low Forward Voltage Drop: $V_F=1.25V$ (typical @ $I_F=6A$)
- Reverse Voltage: $V_{RRM}=650V$
- Avalanche Energy Rated
- High Surge Capability
- Low Power Loss and High Efficiency
- Silicon Carbide Substrate

Applications

- Switching Power Supply
- Solar Inverter
- Power Factor Correction
- Uninterruptible Power Supply



Absolute Maximum Ratings per diode at $T_C=25^\circ C$ unless otherwise noted

| Symbol | Parameter | | Ratings | Unit |
|-------------|--------------------------------------|--------------------------------|----------|------------|
| V_{RRM} | Peak Repetitive Reverse Voltage | | 650 | V |
| V_{RWM} | Working Peak Reverse Voltage | | 650 | V |
| V_R | DC Blocking Voltage | | 650 | V |
| $I_{F(AV)}$ | Average Rectified Forward Current | per diode at $T_C=125^\circ C$ | 6 | A |
| I_{FSM} | Non-repetitive Peak Surge Current | $t_p=10ms$, half sine wave | 36 | A |
| | | $t_p=200\mu s$, square wave | 144 | A |
| P_D | Power Dissipation | | 93 | W |
| T_J | Operating Junction Temperature Range | | -55~+175 | $^\circ C$ |
| T_{STG} | Storage Temperature Range | | -55~+175 | $^\circ C$ |

Thermal Characteristics

| Symbol | Parameter | Ratings | Unit |
|---------------|--------------------------------------|---------|--------------|
| $R_{th(J-C)}$ | Thermal Resistance, Junction to case | 1.6 | $^\circ C/W$ |

Electrical Characteristics per diode at $T_C=25^\circ\text{C}$ unless otherwise noted

| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Unit |
|--------|-------------------------|--|------|------|------|---------------|
| V_F | Forward Voltage Drop | $I_F=6\text{A}$ | - | 1.25 | 1.50 | V |
| | | $I_F=6\text{A}, T_C=125^\circ\text{C}$ | - | - | 1.60 | V |
| I_R | Reverse Leakage Current | $V_R=650\text{V}$ | - | - | 200 | μA |
| C | Total Capacitance | $V_R=0\text{V}, f=1\text{MHz}$ | - | 230 | - | pF |
| | | $V_R=200\text{V}, f=1\text{MHz}$ | - | 39 | - | |
| | | $V_R=400\text{V}, f=1\text{MHz}$ | - | 28 | - | |
| Q_C | Total Capacitive Charge | $V_R=650\text{V}, I_F=6\text{A}, di/dt=-200\text{A}/\mu\text{s}$ | - | 17 | - | nC |

Typical Performance Characteristics

Fig. 1. Typical Characteristics: V_F vs. I_F

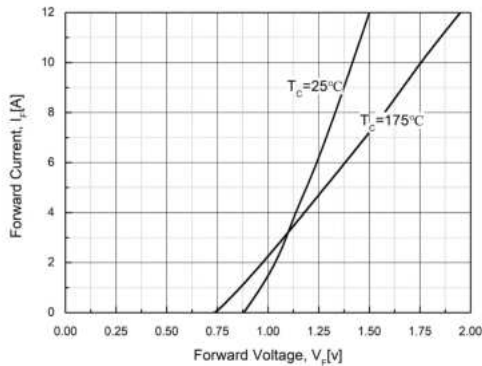


Fig. 2. Typical Characteristics: V_R vs. I_R

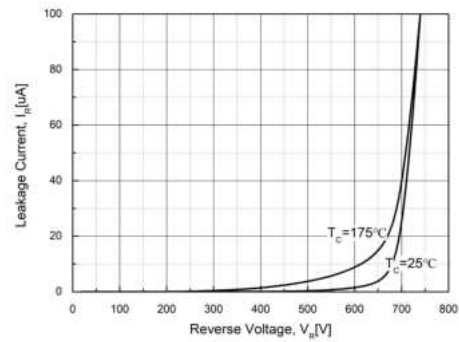


Fig. 3. Typical Characteristics: V_R vs. Q_C

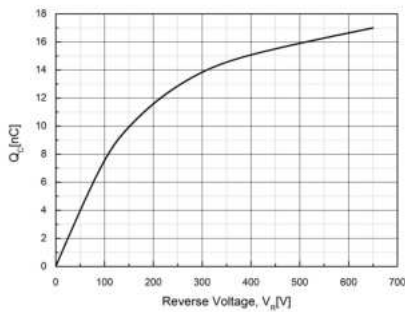
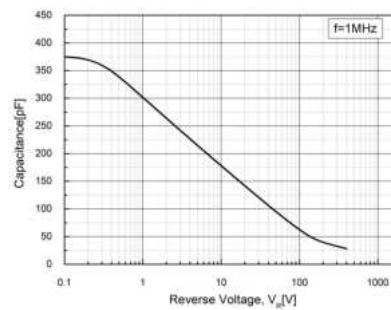


Fig. 4. Typical Characteristics: V_R vs. Capacitance



Package Dimensions

TO-252

(Dimensions in Millimeters)

