

## 6A, 650V SiC Schottky Barrier Diode

### Description

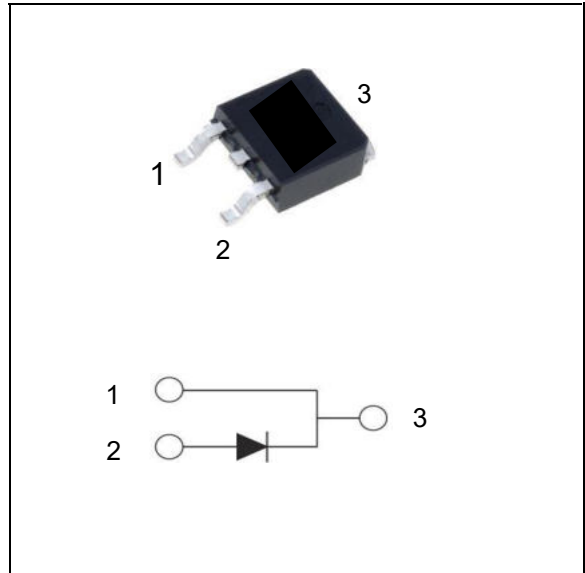
The AKC665SB is a SiC Schottky Barrier Diode. It is based on silicon carbide material, and its switching behavior is independent with temperature. The device has superfast recovery property and lower forward voltage drop, it can be used in switching power supply, solar inverter, PFC and UPS.

### 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	$\mu\text{A}$
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.  $I_F$

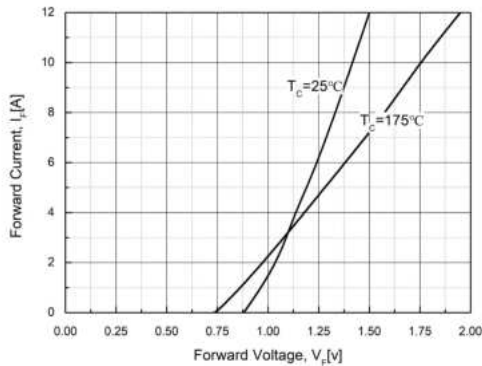


Fig. 2. Typical Characteristics:  $V_R$  vs.  $I_R$

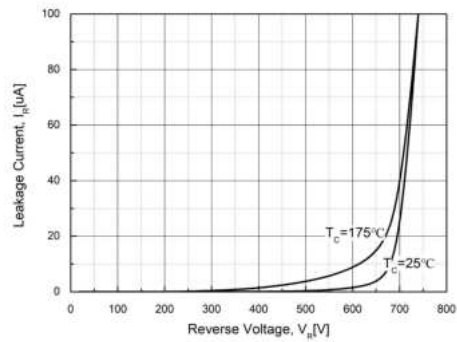


Fig. 3. Typical Characteristics:  $V_R$  vs.  $Q_C$

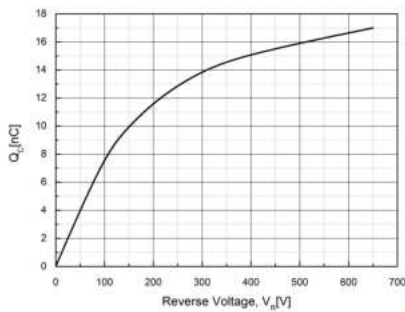
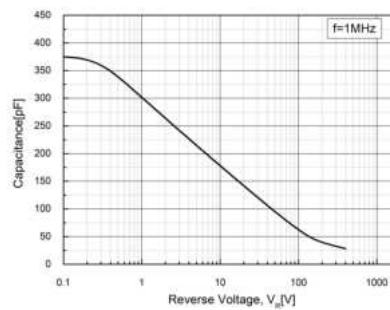


Fig. 4. Typical Characteristics:  $V_R$  vs. Capacitance



**Package Dimensions**

**TO-252**

(Dimensions in Millimeters)

