

40A, 650V SiC Schottky Barrier Diode

Description

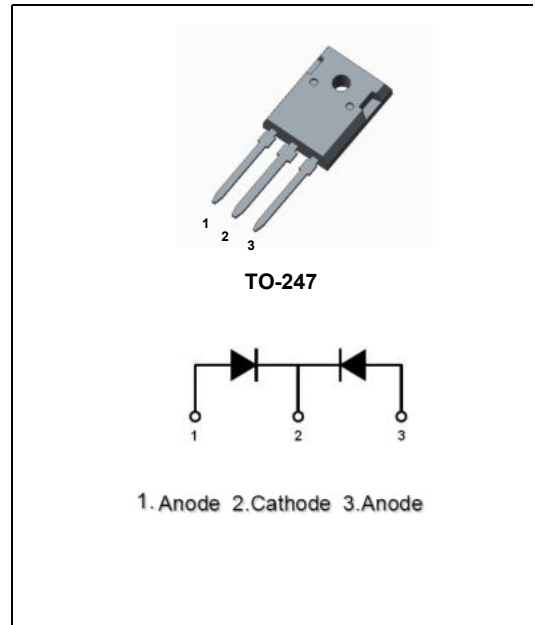
The AKC4065DNH is a SiC schottky barrier diode. It is based on silicon carbide material, and its switching behavior is independent with temperature. The device has superfast recovery property and lower forward voltage drop, it can be used in switching power supply, solar inverter, PFC and UPS.

Features

- Low Forward Voltage Drop: $V_F=1.45V$ (typical @ $I_F=20A$)
- 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 device at $T_C=125^\circ C$	20
I_{FSM}	Non-repetitive Peak Surge Current	$t_p=10ms$, half sine wave	120
		$t_p=200\mu s$, square wave	480
P_D	Power Dissipation	120	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	1.2	$^\circ C/W$

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	$I_F=20\text{A}$	-	1.45	1.80	V
		$I_F=20\text{A}, T_C=125^\circ\text{C}$	-	-	2.5	V
I_R	Reverse Leakage Current	$V_R=650\text{V}$	-	-	100	μA
C	Total Capacitance	$V_R=0\text{V}, f=1\text{MHz}$	-	580	-	pF
		$V_R=300\text{V}, f=1\text{MHz}$	-	78	-	
		$V_R=600\text{V}, f=1\text{MHz}$	-	73	-	
Q_C	Total Capacitive Charge	$V_R=300\text{V}, I_F=20\text{A}, di/dt=-200\text{A}/\mu\text{s}$	-	30	-	nC
t_c	Switching Time		-	20	-	ns

Typical Performance Characteristics

Fig. 1. Typical Characteristics: V_F vs. I_F

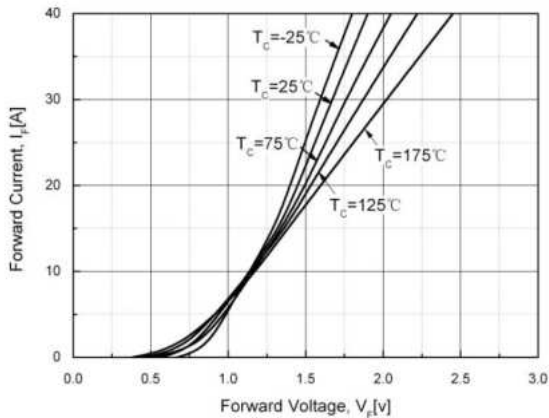


Fig. 2. Typical Characteristics: V_R vs. I_R

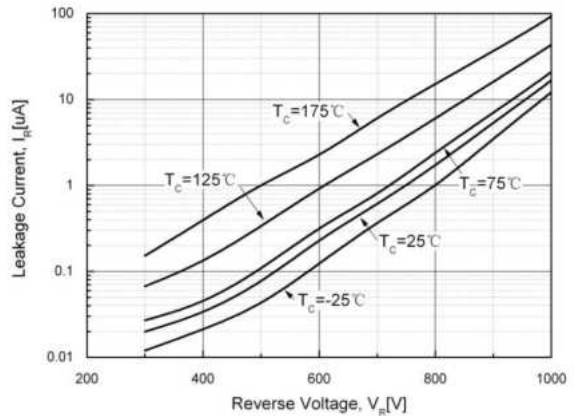


Fig. 3. Typical Characteristics: V_R vs. Q_C

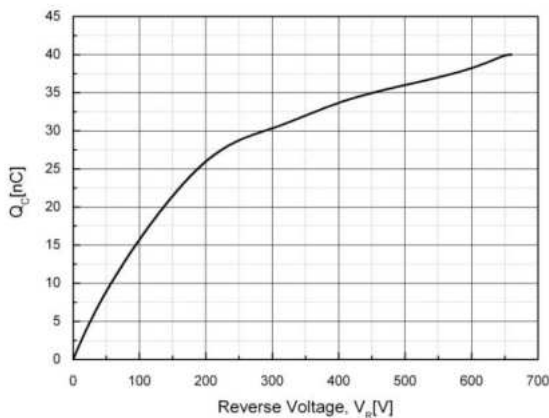
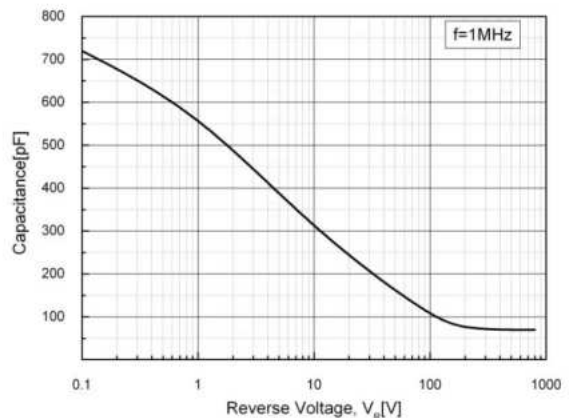


Fig. 4. Typical Characteristics: V_R vs. Capacitance



Package Dimensions

TO-247

(Dimensions in Millimeters)

