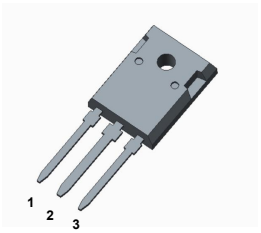
40A, 650V SiC Schottky Barrier Diode

Description

The AKC4065DNH is a SiC schottky barrier diode. It is base 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.



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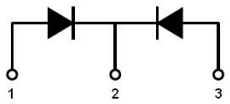


1. Anode 2.Cathode 3.Anode

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 ℃ 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℃	20	A
I_{FSM}	Non-repetitive Peak Surge Current	t_p=10ms, half sine wave	120	A
		t_p=200us, square wave	480	A
P_D	Power Dissipation		120	W
T_J	Operating Junction Temperature Range		-55~+175	℃
T_{STG}	Storage Temperature Range		-55~+175	℃

Thermal Characteristics

Symbol	Parameter	Ratings	Unit
$R_{th\ (J-C)}$	Thermal Resistance, Junction to case	1.2	℃/W

Electrical Characteristics per diode at T_C=25 ℃ unless otherwise noted

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V_F	Forward Voltage Drop	I_F=20A	-	1.45	1.80	V
		I_F=20A, T_C=125℃	-	-	2.5	V
I_R	Reverse Leakage Current	V_R=650V	-	-	100	uA
C	Total Capacitance	V_R=0V, f=1MHz	-	580	-	pF
		V_R=300V, f=1MHz	-	78	-	
		V_R=600V, f=1MHz	-	73	-	
Q_C	Total Capacitive Charge	V_R=300V, I_F=20A, di/dt=-200A/us	-	30	-	nC
t_c	Switching Time		-	20	-	ns

Typical Performance Characteristics

Fig. 1. Typical Characteristics: V_F vs. I_F

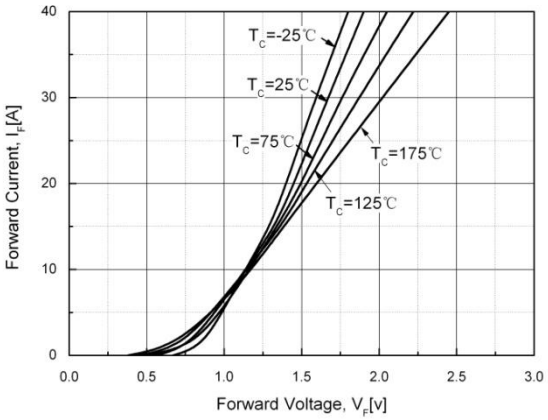


Fig. 2. Typical Characteristics: V_R vs. I_R

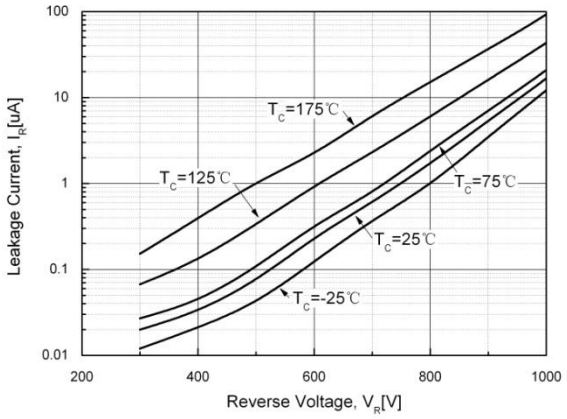


Fig. 3. Typical Characteristics: V_R vs. Q_C

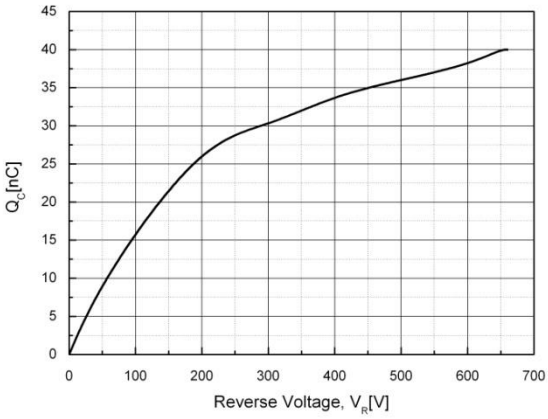
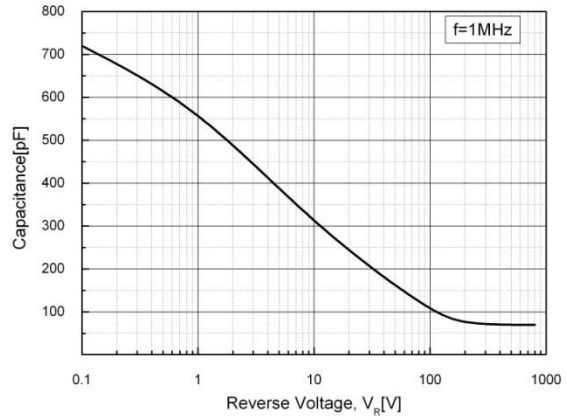


Fig. 4. Typical Characteristics: V_R vs. Capacitance



Package Dimensions

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(Dimensions in Millimeters)