

## SILICON CARBIDE SCHOTTKY DIODE

**Voltage**

**650 V**

**Current**

**8 A**

### Features

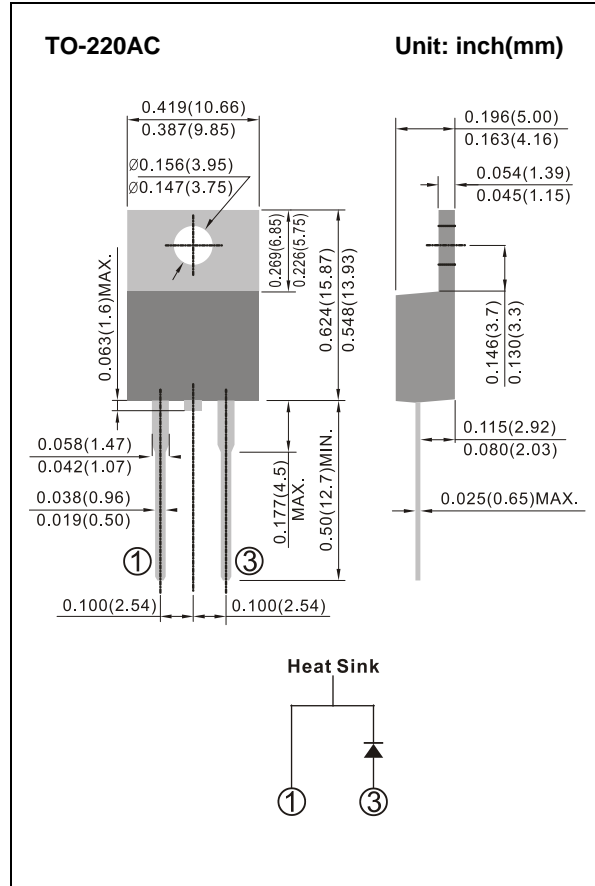
- Temperature Independent Switching Behavior
- Low Conduction and Switching Loss
- High Surge Current Capability
- Positive Temperature Coefficient on  $V_F$
- Fast Reverse Recovery

### Mechanical Data

- Case: Molded plastic, TO-220AC
- Marking: 08A650

### Benefits

- High Frequency Operation
- Higher System Efficiency
- Environmental Protection
- Parallel Device Convenience
- Hard Switching & High Reliability
- High Temperature Application



### Maximum Ratings

PARAMETER	SYMBOL	TEST CONDITIONS	VALUE	UNITS
Maximum Repetitive Peak Reverse Voltage	$V_{RRM}$	$T_J=25^{\circ}C$	650	V
Maximum RMS Voltage	$V_{RSM}$	$T_J=25^{\circ}C$	650	V
Maximum DC Blocking Voltage	$V_R$	$T_J=25^{\circ}C$	650	V
Continuous Forward Current	$I_{F(AV)}$	$T_C=25^{\circ}C$	21	A
		$T_C=125^{\circ}C$	10	A
		$T_C=150^{\circ}C$	8	A
Repetitive Peak Forward Surge Current ( $T_P=10mS$ , Half Sine Wave, $D=0.1$ )	$I_{FRM}$	$T_C=25^{\circ}C$	47	A
		$T_C=125^{\circ}C$	39	A



# SiCSK8A650

## Maximum Ratings

PARAMETER	SYMBOL	TEST CONDITIONS	VALUE	UNITS
Non-Repetitive Peak Forward Surge Current ( $T_P=10\text{mS}$ , Half Sine Wave)	$I_{FSM}$	$T_C=25^\circ\text{C}$	62	A
		$T_C=125^\circ\text{C}$	54	A
Non-Repetitive Peak Forward Surge Current ( $T_P=10\mu\text{S}$ , Pulse)		$T_C=25^\circ\text{C}$	250	A
Power Dissipation	$P_D$	$T_C=25^\circ\text{C}$	100	W
		$T_C=125^\circ\text{C}$	33	W
Operating Junction Temperature	$T_J$		175	$^\circ\text{C}$
Storage Temperature	$T_{STG}$		-55 to 175	$^\circ\text{C}$
Thermal Resistance Junction to Case	$R_{\theta JC}$		1.5	$^\circ\text{C/W}$

## Electrical Characteristics

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
DC Blocking Voltage	$V_{DC}$	$I_R=100\mu\text{A}$ , $T_J=25^\circ\text{C}$	650	770	-	V
Forward Voltage	$V_F$	$I_F=8\text{A}$ , $T_J=25^\circ\text{C}$	-	1.5	1.8	V
		$I_F=8\text{A}$ , $T_J=175^\circ\text{C}$	-	1.9	2.2	V
Reverse Current	$I_R$	$V_R=650\text{V}$ , $T_J=25^\circ\text{C}$	-	3	60	$\mu\text{A}$
		$V_R=650\text{V}$ , $T_J=175^\circ\text{C}$	-	20	190	$\mu\text{A}$
Total Capacitive Charge	$Q_C$	$I_F=8\text{A}$ , $di/dt=300\text{A}/\mu\text{S}$ , $V_R=400\text{V}$ , $T_J=25^\circ\text{C}$	-	15.5	-	nC
Total Capacitance	C	$V_R=1\text{V}$ , $T_J=25^\circ\text{C}$ , $f=1\text{MHz}$	-	306	-	pF
		$V_R=200\text{V}$ , $T_J=25^\circ\text{C}$ , $f=1\text{MHz}$	-	47	-	pF
		$V_R=400\text{V}$ , $T_J=25^\circ\text{C}$ , $f=1\text{MHz}$	-	47	-	pF

## TYPICAL CHARACTERISTIC CURVES

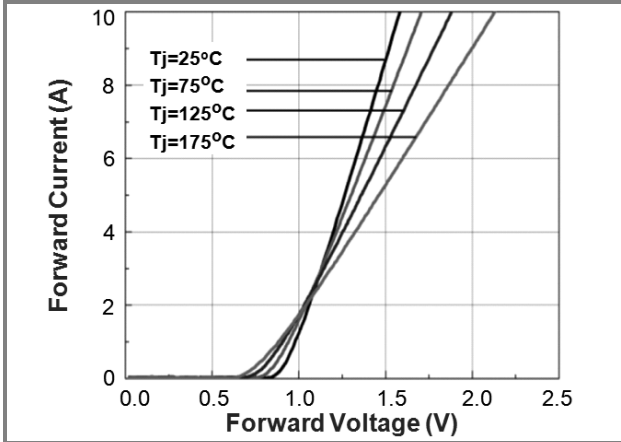


Fig.1 Forward Characteristics

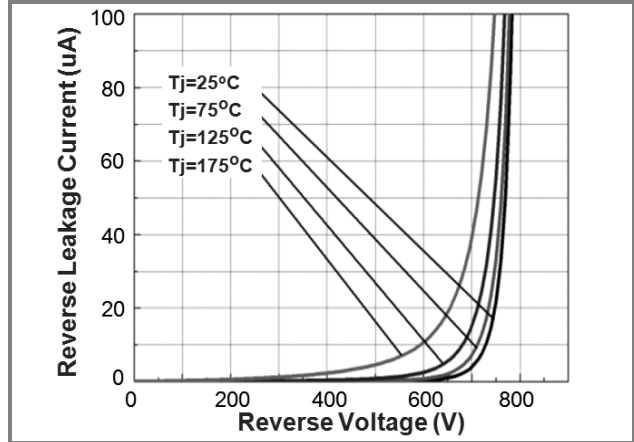


Fig.2 Reverse Characteristics

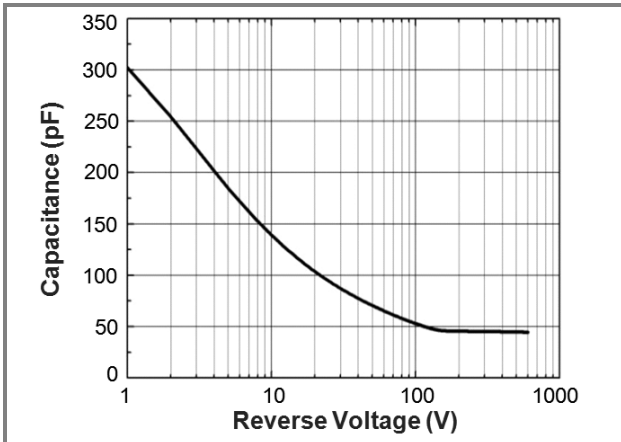


Fig.3 Capacitance vs. Reverse Voltage

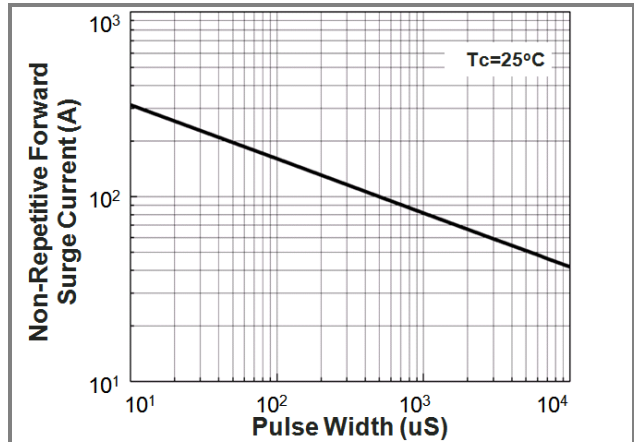


Fig.4 Non-Repetitive Peak Forward Surge Current (Pulse Mode)

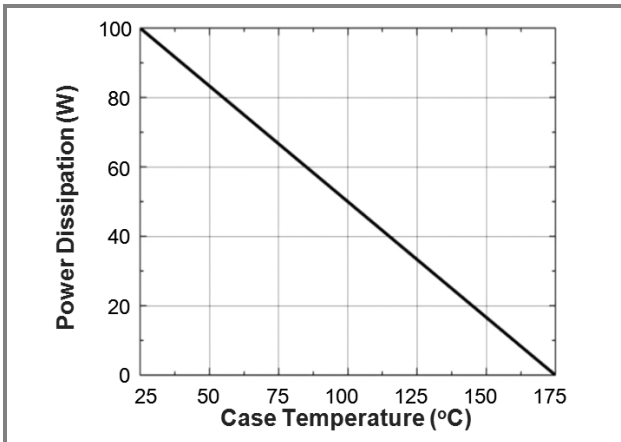


Fig.5 Power Derating

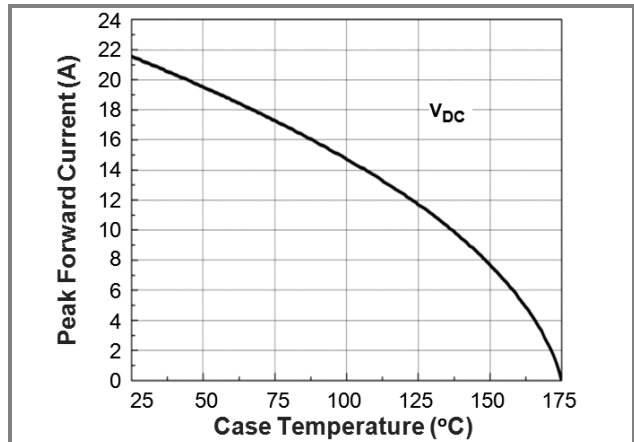


Fig.6 Current Derating