

SILICON CARBIDE SCHOTTKY DIODE

Voltage

650 V

Current

6 A

Features

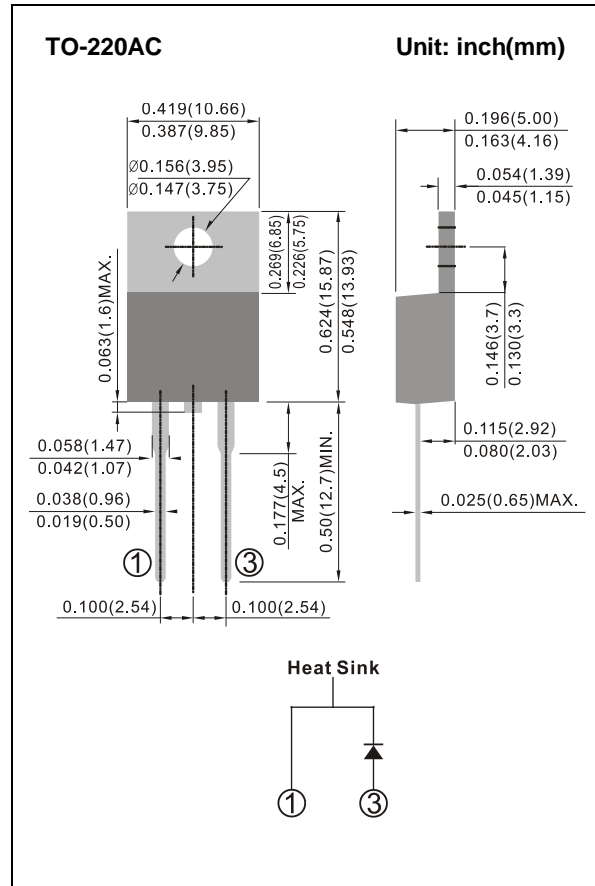
- Temperature Independent Switching Behavior
- Low Conduction and Switching Loss
- High Surge Current Capability
- Positive Temperature Coefficient on V_F
- Fast Reverse Recovery
- Acquire quality system certificate : TS16949
- AEC-Q101 qualified

Mechanical Data

- Case: Molded plastic, TO-220AC
- Marking: 06A650F

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	$I_{F(AV)}$	$T_C=25^{\circ}C$	18	A
		$T_C=125^{\circ}C$	8	A
		$T_C=150^{\circ}C$	6	A
Repetitive Peak Forward Surge Current ($T_P=10mS$, Half Sine Wave, $D=0.1$)	I_{FRM}	$T_C=25^{\circ}C$	42	A
		$T_C=125^{\circ}C$	37	A



SiCSK6A650F

Maximum Ratings

PARAMETER	SYMBOL	TEST CONDITIONS	VALUE	UNITS
Non-Repetitive Peak Forward Surge Current ($T_P=10\text{mS}$, Half Sine Wave)	I_{FSM}	$T_C=25^\circ\text{C}$	50	A
		$T_C=125^\circ\text{C}$	44	A
Non-Repetitive Peak Forward Surge Current ($T_P=10\mu\text{S}$, Pulse)		$T_C=25^\circ\text{C}$	210	A
Power Dissipation	P_D	$T_C=25^\circ\text{C}$	88	W
		$T_C=125^\circ\text{C}$	29	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	$R_{\theta JC}$		1.7	$^\circ\text{C/W}$

Electrical Characteristics

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
DC Blanking Voltage	V_{DC}	$I_R = 100\mu\text{A}$, $T_J=25^\circ\text{C}$	650	770	-	V
Forward Voltage	V_F	$I_F = 6\text{A}$, $T_J=25^\circ\text{C}$	-	1.5	1.8	V
		$I_F = 6\text{A}$, $T_J=175^\circ\text{C}$	-	1.9	2.2	V
Reverse Current	I_R	$V_R = 650\text{V}$, $T_J=25^\circ\text{C}$	-	3	50	μA
		$V_R = 650\text{V}$, $T_J=175^\circ\text{C}$	-	17	190	μA
Total Capacitive Charge	Q_C	$I_F = 6\text{A}$, $di/dt=300\text{A}/\mu\text{S}$, $V_R = 400\text{V}$, $T_J=25^\circ\text{C}$	-	12	-	nC
Total Capacitance	C	$V_R = 1\text{V}$, $T_J=25^\circ\text{C}$, $f=1\text{MHz}$	-	234	-	pF
		$V_R = 200\text{V}$, $T_J=25^\circ\text{C}$, $f=1\text{MHz}$	-	36	-	pF
		$V_R = 400\text{V}$, $T_J=25^\circ\text{C}$, $f=1\text{MHz}$	-	36	-	pF

TYPICAL CHARACTERISTIC CURVES

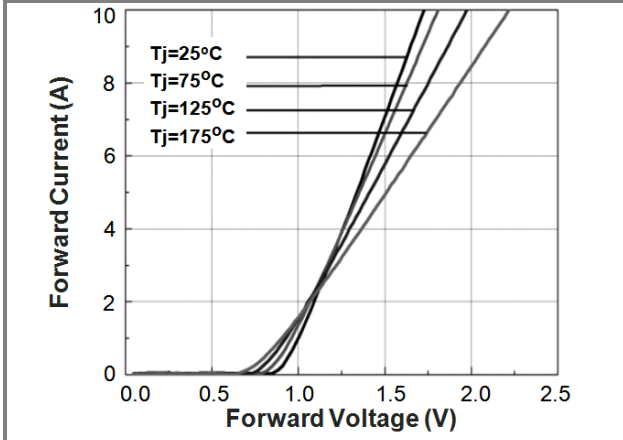


Fig.1 Forward Characteristics

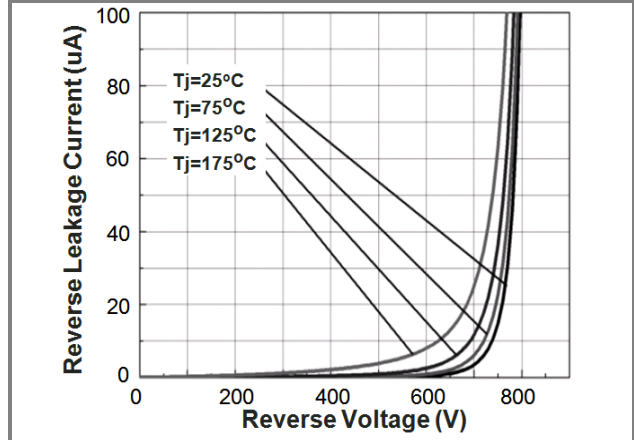


Fig.2 Reverse Characteristics

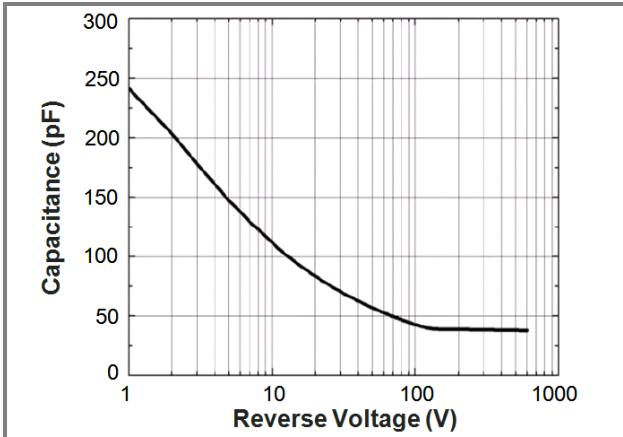


Fig.3 Capacitance vs. Reverse Voltage

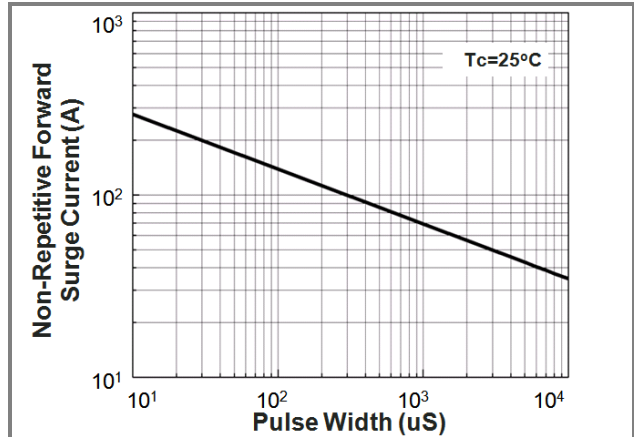


Fig.4 Non-Repetitive Peak Forward Surge Current (Pulse Mode)

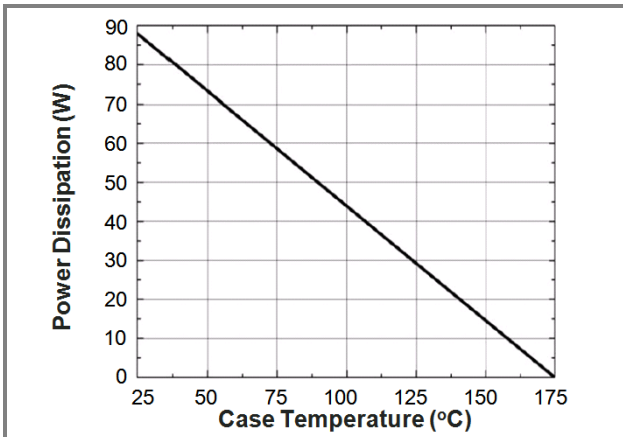


Fig.5 Power Derating

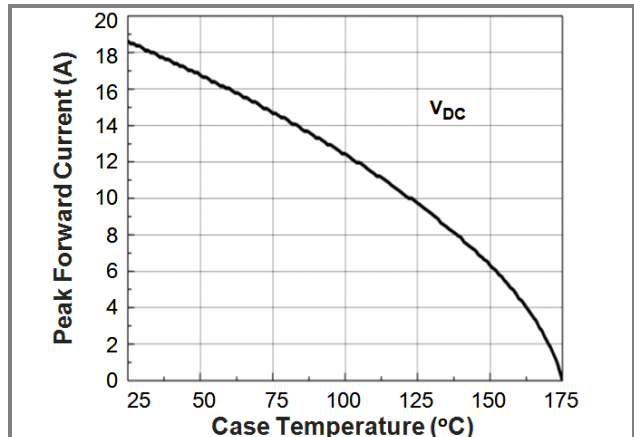


Fig.6 Current Derating