

# SILICON CARBIDE SCHOTTKY DIODE

# Voltage

650 V

## Current

6 A

## Features

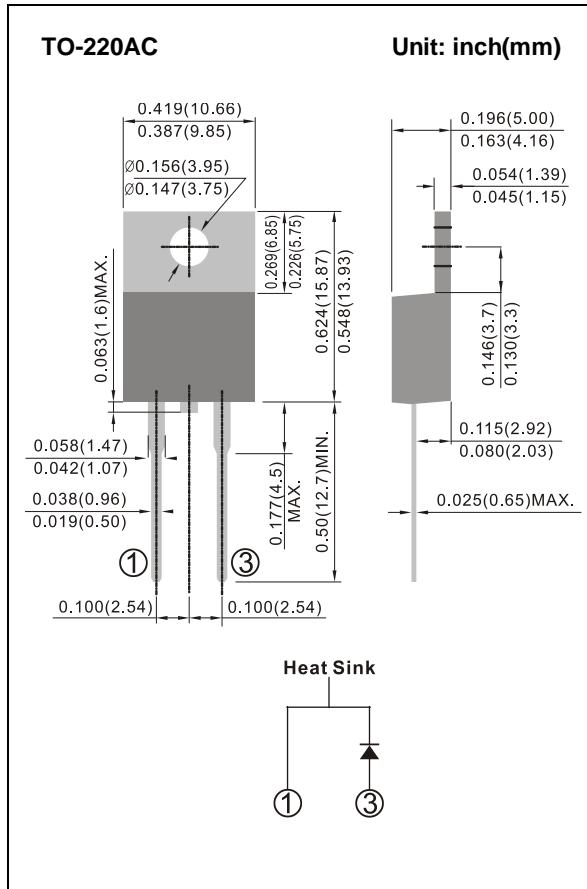
- Temperature Independent Switching Behavior
  - Low Conduction and Switching Loss
  - High Surge Current Capability
  - Positive Temperature Coefficient on  $V_F$
  - Fast Reverse Recovery
  - Acquire quality system certificate : TS16949
  - AEC-Q101 qualified

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



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### Maximum Ratings

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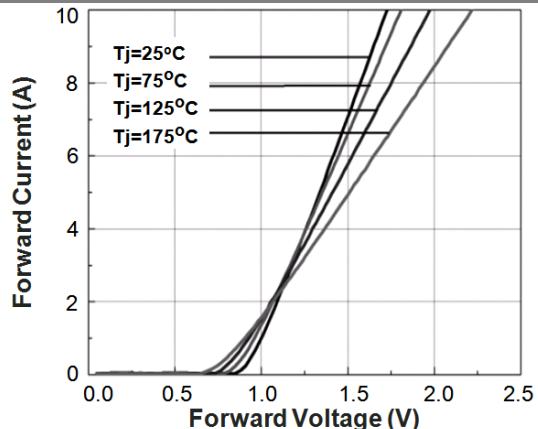
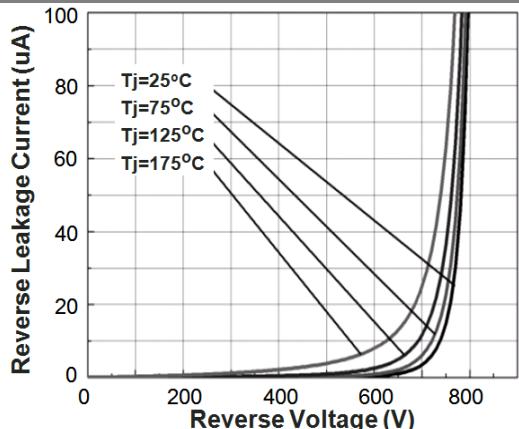
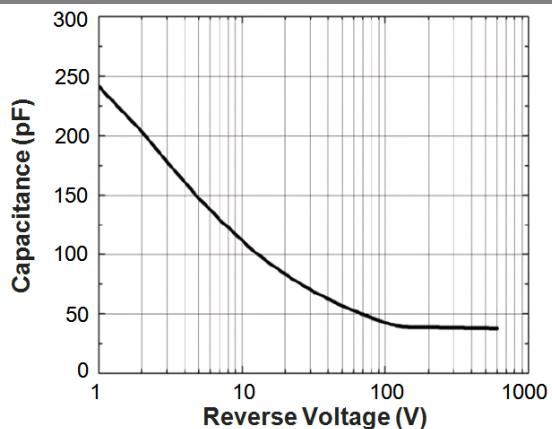
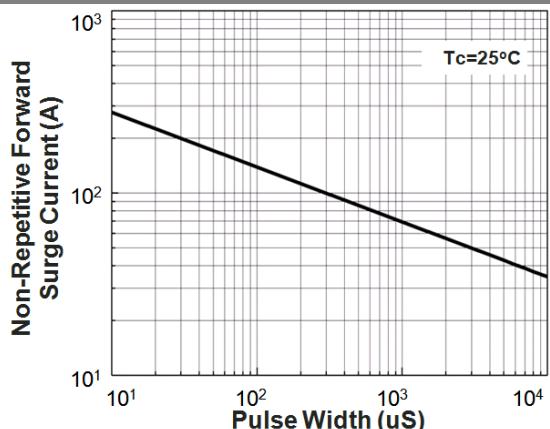
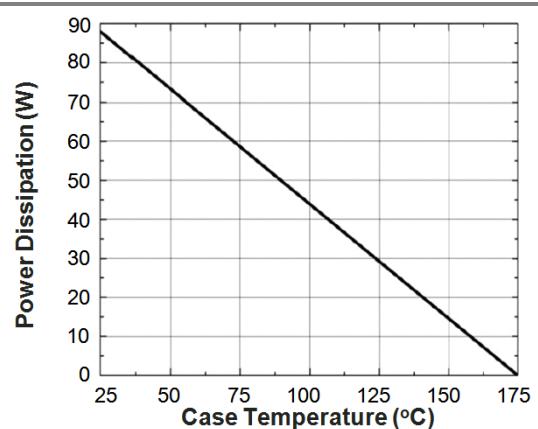
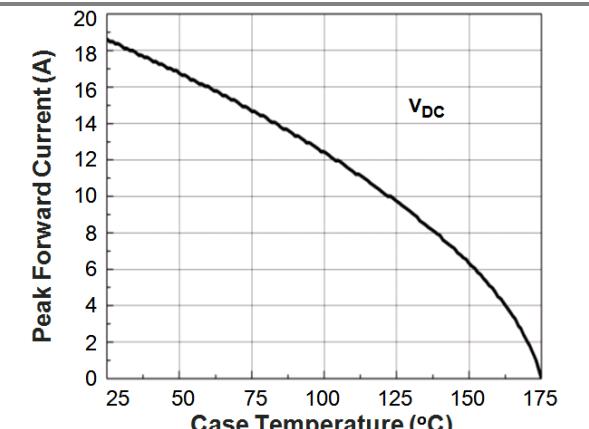
PARAMETER	SYMBOL	TEST CONDITIONS	VALUE	UNITS
Non-Repetitive Peak Forward Surge Current ( $T_P=10\text{mS}$ , Half Sine Wave)	$I_{FSM}$	$T_c=25^\circ\text{C}$	50	A
		$T_c=125^\circ\text{C}$	44	A
Non-Repetitive Peak Forward Surge Current ( $T_P=10\mu\text{s}$ , Pulse)		$T_c=25^\circ\text{C}$	210	A
Power 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	$^\circ\text{C}/\text{W}$

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### Electrical Characteristics

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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	$V_F$	$I_F = 6\text{A}, T_J=25^\circ\text{C}$	-	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	$\mu\text{A}$
		$V_R = 650\text{V}, T_J=175^\circ\text{C}$	-	17	190	$\mu\text{A}$
Total Capacitive Charge	$Q_C$	$I_F = 6\text{A}, dI/dt = 300\text{A/uS}, V_R = 400\text{V}, T_J=25^\circ\text{C}$	-	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**