

## DESCRIPTION

SiC Schottky Diode has no switching loss, provides improved system efficiency against Si diodes by utilizing new semiconductor material-Silicon Carbide, enables higher operating frequency, and helps increasing power density and reduction of system size /cost. Its high reliability ensures robust operation during surge or over\_voltage conditions.

## FEATURES

- Max Junction Temperature 175°C
- High Surge Current Capacity
- Zero Reverse Recovery Current
- Zero Forward Recovery Voltage
- Replace Bipolar with Unipolar Device
- Reduction of Heat Sink Size
- Parallel Devices Without Thermal Runaway
- Essentially No Switching Losses

## MECHANICAL DATA

- Case: JEDEC TO-247AC
- Molding compound meets UL94V-0 flammability rating
- Terminals: Lead solderable per J-STD-002 and JESD22-B102
- Polarity: As marked

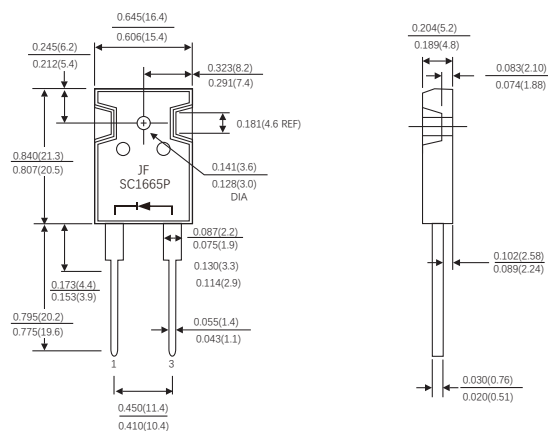
## TYPICAL APPLICATIONS

- Switch Mode Power Supplies
- Power Factor Correction
- Motor drive, PV Inverter, Wind Power Station

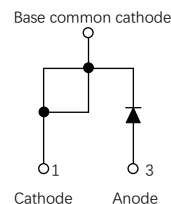
## KEY PERFORMANCE AND PACKAGE PARAMETERS

Type	V <sub>DC</sub>	I <sub>F</sub>	Q <sub>c</sub>	T <sub>j</sub> max	Package
SC1665P	650V	16A	36nC	175°C	TO-247AC

## TO-247AC



Dimensions in inches and (millimeters)



## MAXIMUM RATINGS (Ratings at 25°C ambient temperature unless otherwise specified )

Symbol	Parameter	Value	Unit	Test Conditions	Note
$V_{RRM}$	Repetitive Peak Reverse Voltage	650	V	$T_c=25^{\circ}\text{C}$	
$V_{RSM}$	Surge Peak Reverse Voltage	650	V	$T_c=25^{\circ}\text{C}$	
$V_R$	DC Blocking Voltage	650	V	$T_c=25^{\circ}\text{C}$	
$I_F$	Forward Current	53 16	A	$T_c=25^{\circ}\text{C}$ $T_c=150^{\circ}\text{C}$	
$I_{FSM}$	Non- Repetitive Forward Surge Current	135	A	$T_c= 25^{\circ}\text{C}$ ,8.3ms, Half Sine Wave	
$P_{tot}$	Power Dissipation	125	W	$T_c= 25^{\circ}\text{C}$	Fig. 3
$T_j$	Operating Junction Temperature	-55 to 175	$^{\circ}\text{C}$		
$T_{STG}$	Storage Temperature	-55 to 175	$^{\circ}\text{C}$		
	TO-247 Mounting Torque	1	Nm	M3 Screw	

## ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Typ.	Max.	Unit	Test Conditions	Note
$V_F$	Forward Voltage	1.35 1.70	1.50 2.00	V	$I_F=16\text{A}, T_j=25^{\circ}\text{C}$ $I_F=16\text{A}, T_j=150^{\circ}\text{C}$	Fig.1
$I_R$	Reverse Current	- -	50 160	$\mu\text{A}$	$V_R= 650\text{V}, T_j=25^{\circ}\text{C}$ $V_R= 650\text{V}, T_j=150^{\circ}\text{C}$	Fig.2
C	Total Capacitance	865 88 72	/	pF	$V_R=0\text{V}, T_j=25^{\circ}\text{C}, f=1\text{MHz}$ $V_R=200\text{V}, T_j=25^{\circ}\text{C}, f=1\text{MHz}$ $V_R=400\text{V}, T_j=25^{\circ}\text{C}, f=1\text{MHz}$	Fig.5
Qc	Total Capacitive Charge	36	/	nC	$V_R=650\text{V}, I_F=16\text{A}$ $di/dt=200\text{A}/\mu\text{s}, T_j=25^{\circ}\text{C}$	Fig.4

## THERMAL CHARACTERISTICS

Symbol	Parameter	Typ.	Max.	Unit	Note
$R_{\theta JC}$	Thermal Resistance from Junction to Case	0.90	1.20	$^{\circ}\text{C}/\text{W}$	Fig.6
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient	-	62	$^{\circ}\text{C}/\text{W}$	

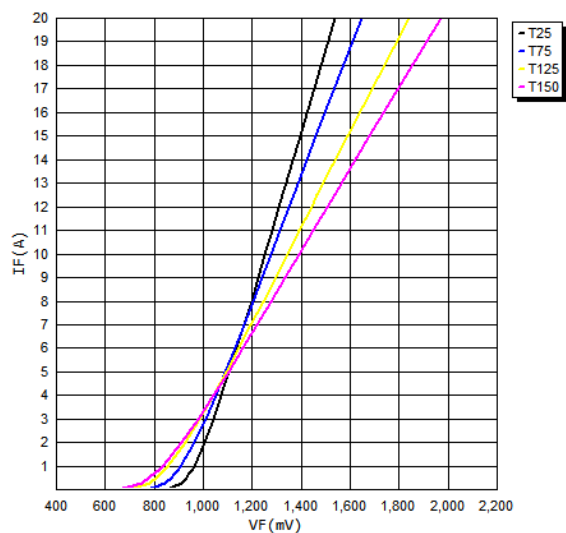


Figure 1. Forward Characteristics

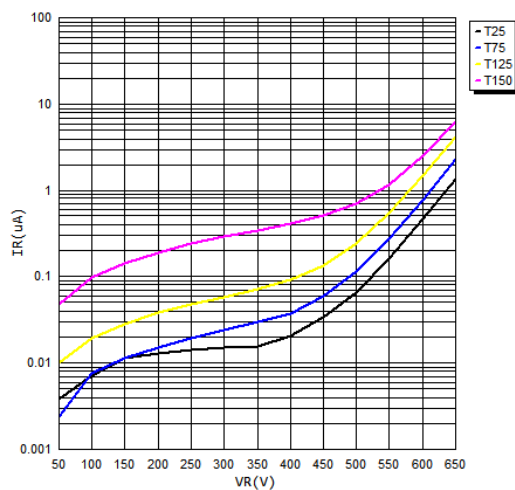


Figure 2. Reverse Characteristics

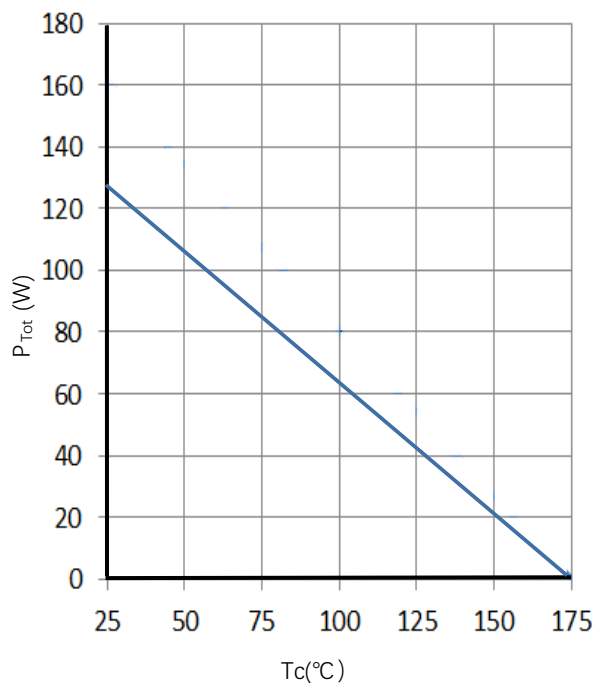


Figure 3 Power Derating

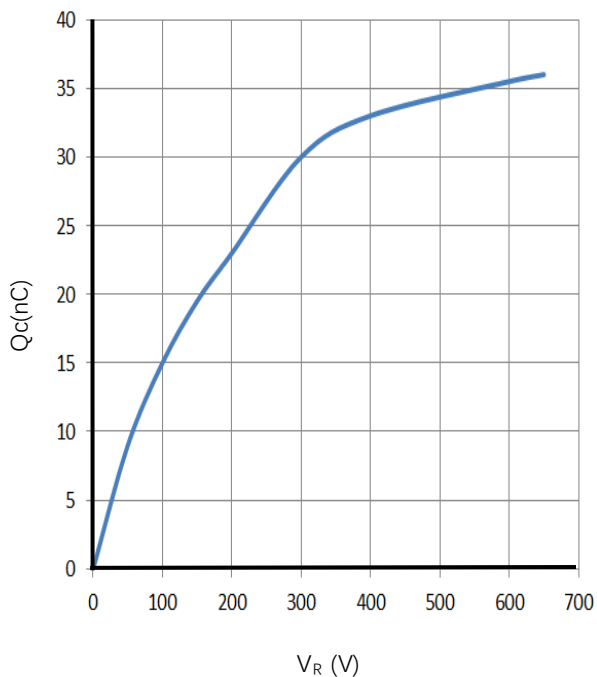


Figure 4 Total Capacitive Charge vs. Reverse Voltage

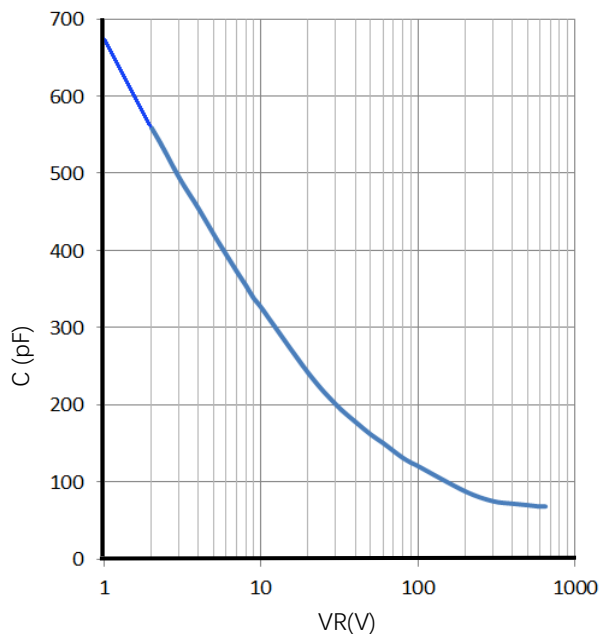


Figure 5. Total Capacitance vs. Reverse Voltage

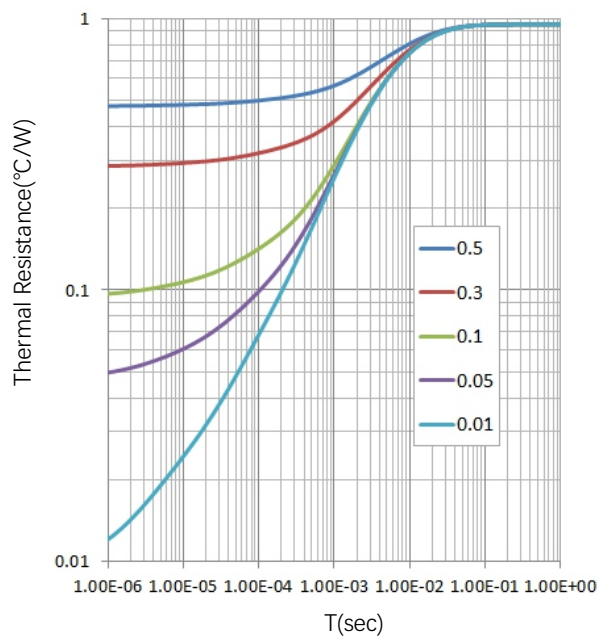


Figure 6. Transient Thermal Impedance

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