

## 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
- Positive Temperature Coefficient
- Ease of Paralleling
- No Reverse Recovery/No Forward Recovery

## Mechanical Data

- Case: JEDEC TO-220AC/ITO-220AC/TO-263/TO-252
- Molding compound meets UL94V-0 flammability rating
- Terminals: Lead solderable per J-STD-002 and JESD22-B102
- Polarity: As marked
- Mounting Torque: 10 in-lbs maximum

## Typical Applications

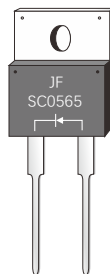
- Boost diodes in PFC or DC/DC stages
- SMPS, Solar inverter, UPS
- Power Switching Circuits

## Key Performance And Package Parameters

Type	V <sub>DC</sub>	I <sub>F</sub>	Q <sub>c</sub>	T <sub>j,max</sub>	Package
SC0565	650V	5A	18nC	175°C	TO-220AC
SC0565F	650V	5A	18nC	175°C	ITO-220AC
SC0565D2	650V	5A	18nC	175°C	TO-263
SC0565M2	650V	5A	18nC	175°C	TO-252

### TO-220AC

SC0565



### ITO-220AC

SC0565F



### TO-252

SC0565M2



### TO-263

SC0565D2



## Maximum Ratings

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

Parameter	Symbol	Value	Unit
Maximum repetitive peak reverse voltage	$V_{RRM}$	650	V
Continuous Forward Current for $R_{th(j-c)}$	$I_F$	5 (Tc≤158°C,TO-220AC/TO-263/TO-252) 5 (Tc≤130°C,ITO-220AC)	A
Non-Repetitive Forward Surge Current (Half-Sine Pulse,tp=8.3mS)	$I_{FSM}$	45(25°C)	A
$I^2t$ value	$\int i^2 t$	8.4(25°C)	A <sup>2</sup> S
Power dissipation for $R_{th(j-c)}$ (Tc=25°C)	$P_D$	88 (TO-220/TO-263/TO-252) 37.5 (ITO-220)	W
Operating junction temperature range	$T_J$	-55 ~ 175	°C
Storage temperature range	$T_{STG}$	-55 ~ 175	°C

## Thermal Characteristics

Parameter	Symbol	ITO-220AC	TO-220AC	TO-263	TO-252	Unit
Diode thermal resistance junction-case	$R_{th(j-c)}$	4.0	1.7	1.7	1.7	°C/W

## Electrical Characteristics( $T_A=25^{\circ}\text{C}$ Unless otherwise noted)

Parameter	Symbol	Conditions	Value			Unit
			min	typ	max	
DC blocking voltage	$V_{DC}$	$I_R=20\mu\text{A}, T_J=25^{\circ}\text{C}$	650	-	-	V
Forward voltage	$V_F$	$I_F=5\text{A}, T_J=25^{\circ}\text{C}$	-	1.4	1.7	V
		$I_F=5\text{A}, T_J=175^{\circ}\text{C}$	-	1.6	2.0	
Reverse current	$I_R$	$V_R=650\text{V}, T_J=25^{\circ}\text{C}$	-	-	20	$\mu\text{A}$
		$V_R=650\text{V}, T_J=175^{\circ}\text{C}$	-	-	150	

## Dynamic Characteristics ( $T_A=25^{\circ}\text{C}$ Unless otherwise noted)

Parameter	Symbol	conditions	Value			Unit
			min	typ	max	
Total capacitivecharge	$Q_C$	$V_R=650\text{V}, I_F=5\text{A}$ $di/dt=200\text{A}/\mu\text{S}$ $T_J=25^{\circ}\text{C}$	-	18	-	nC
Total capacitance	C	$V_R=0\text{V}, f=1\text{MHz}$	-	300	-	pF
		$V_R=200\text{V}, f=1\text{MHz}$	-	34	-	
		$V_R=400\text{V}, f=1\text{MHz}$ $T_J=25^{\circ}\text{C}$	-	30	-	

## Typical Performance

FIG.1-FORWARD CURRENT DERATING CURVE

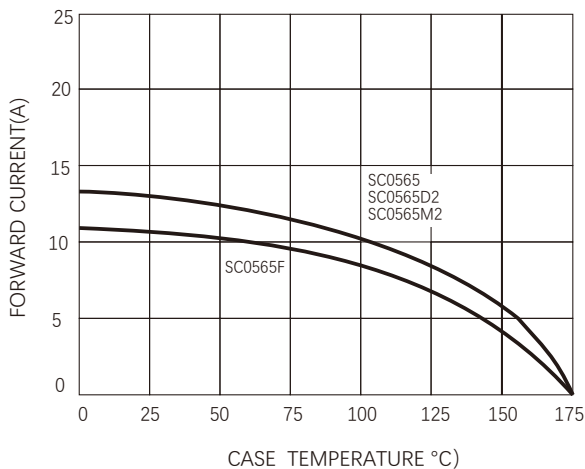


FIG.2-TYPICAL JUNCTION CAPACITANCE

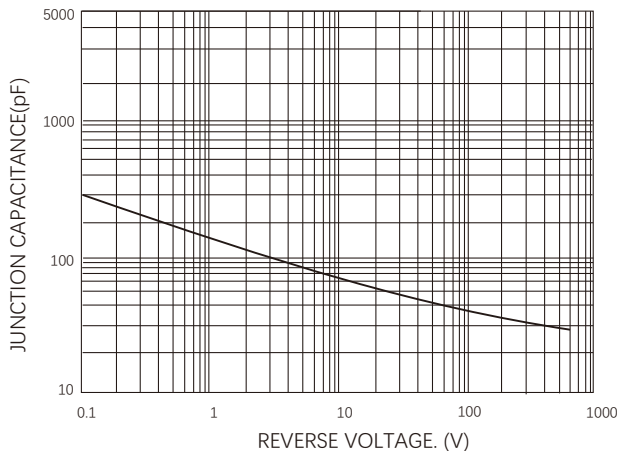


FIG.3-FORWARD CHARACTERISTICS

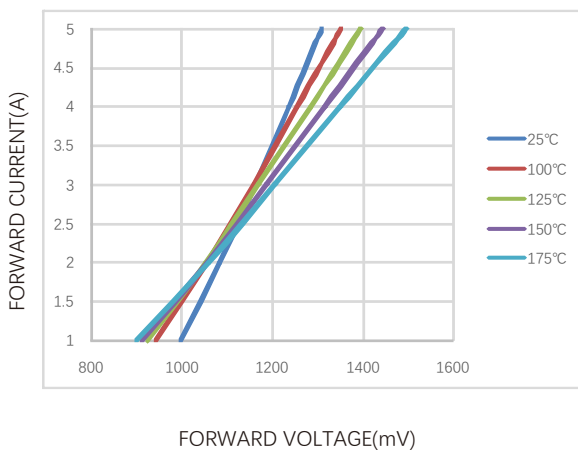
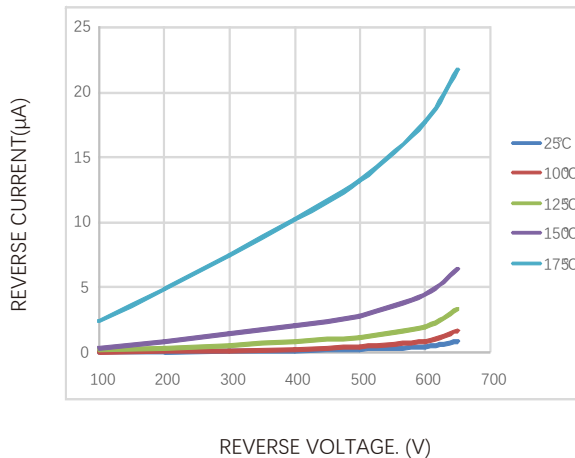
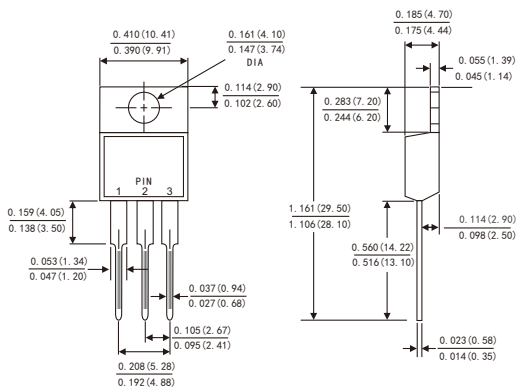


FIG.4-REVERSE CHARACTERISTICS

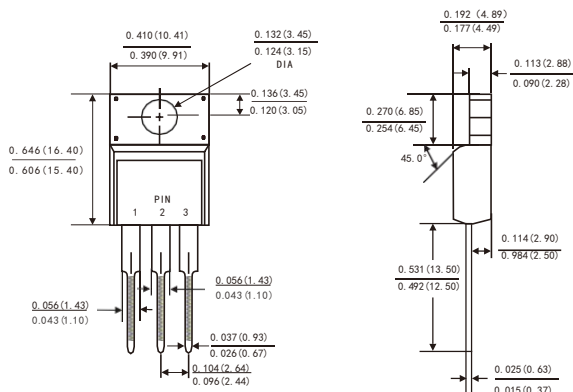


Dimensions in inches and (millimeters)

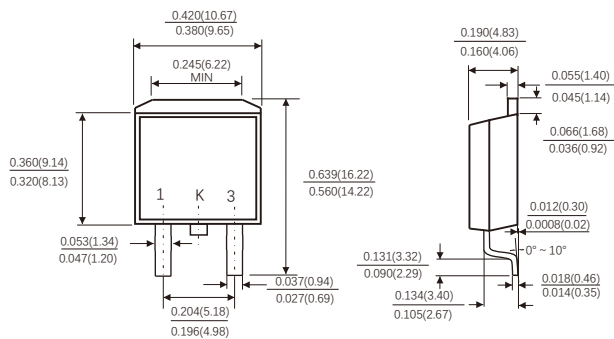
## TO-220AB



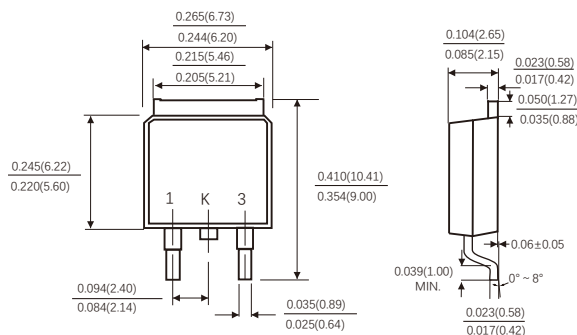
ITO-220AB



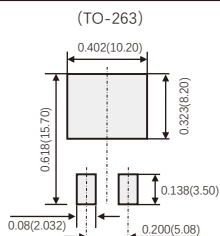
## TO-263



## TO-252

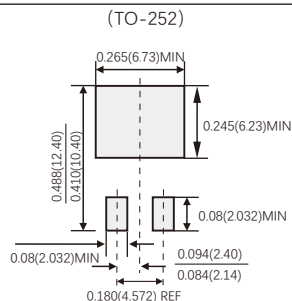


## Suggested Pad Layout



(设计者可参考推荐值根据焊接工艺要求自行确定适合的焊盘尺寸)  
(Designers can refer to the recommended values according to the manufacturing process requirements to determine the appropriate pad size)

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