

## 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-263AC/TO-252AC
- 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

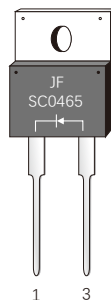
- General Purpose
- SMPS, Solar inverter, UPS
- Power Switching Circuits

## KEY PERFORMANCE AND PACKAGE PARAMETERS

Type	V <sub>DC</sub>	I <sub>F</sub>	Qc	T <sub>j,max</sub>	Package
SC0465	650V	4A	9nC	175°C	TO-220AC
SC0465F	650V	4A	9nC	175°C	ITO-220AC
SC0465D2	650V	4A	9nC	175°C	TO-263AC
SC0465M2	650V	4A	9nC	175°C	TO-252AC

### TO-220AC

SC0465



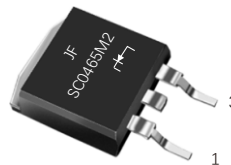
### ITO-220AC

SC0465F



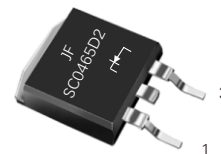
### TO-252

SC0465M2



### TO-263

SC0465D2



## MAXIMUM RATINGS

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

Parameter	Symbol	Value	Unit
Maximum repetitive peak reverse voltage	$V_{RRM}$	650	V
Cont inuous Forward Current for $R_{th(j-c)}$	$I_F$	4 ( $T_c \leq 160^\circ\text{C}$ TO-220/TO-263 ) 4 ( $T_c \leq 143^\circ\text{C}$ TO-252/ITO-220 )	A
Non-Repetitive Forward Surge Current (Half-Sine Pulse, $t_p=8.3\text{ms}$ )	$I_{F,SM}$	40(25 °C) 32(150 °C)	A
$I^2t$ value	$\int i^2t$	6.6 (25°C) 4.2 (150°C)	$\text{A}^2\text{S}$
Diode dv/dt ruggedness ( $V_R=0\dots650\text{V}$ )	dv/dt	80	V/nS
Power dissipation for $R_{th(j-c,max)}$ ( $T_c=25^\circ\text{C}$ )	$P_{tot}$	125(TO-220/TO-263) 60 (TO-252/ITO-220)	W
Operating junction temperature range	$T_j$	-55...175	°C
Storage temperature range	$T_{stg}$	-55...175	°C

## THERMAL CHARACTERISTICS (TA=25°C Unless otherwise noted)

Parameter	Symbol	ITO-220AC	TO-220AC	TO-263	TO-252	Unit
Diode thermal resistance junction-case	$R_{th(j-c)}$	2.5	1.2	1.2	2.5	K/W

## ELECTRICAL CHARACTERISTICS (T<sub>A</sub>=25°C Unless otherwise noted)

Parameter	Symbol	Conditions	Value			Unit
			min	typ	max	
DC blocking voltage	V <sub>DC</sub>	T <sub>j</sub> =25...175 °C	650			V
Diode forward voltage	V <sub>F</sub>	IF=4A T <sub>j</sub> =25°C IF=4A T <sub>j</sub> =125°C IF=4A T <sub>j</sub> =175°C		1.4 1.6 1.7	1.65 2.1 2.3	V
Reverse current	I <sub>R</sub>	VR=650V T <sub>j</sub> =25 °C VR=650V T <sub>j</sub> =125°C VR=650V T <sub>j</sub> =175°C			10 50 100	uA

## DYNAMIC CHARACTERISTICS (at T<sub>j</sub>=25°C , unless otherwise specified)

Parameter	Symbol	conditions	Value			Unit
			min	typ	max	
Total capacitive charge	Q <sub>c</sub>	VR=650V,IF=5A di/dt=200A/uS T <sub>j</sub> =25°C		9		nC
Total capacitance	C <sub>j</sub>	V <sub>R</sub> =0V,f=1MHz V <sub>R</sub> =200V,f=1MHz V <sub>R</sub> =400V,f=1MHz T <sub>j</sub> =25°C		230 24 20		pF

FIG.1-FORWARD CURRENT DERATING CURVE

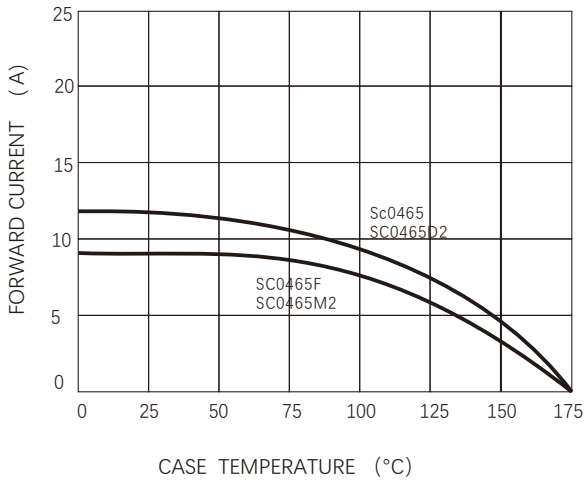


FIG.2-TYPICAL JUNCTION CAPACITANCE

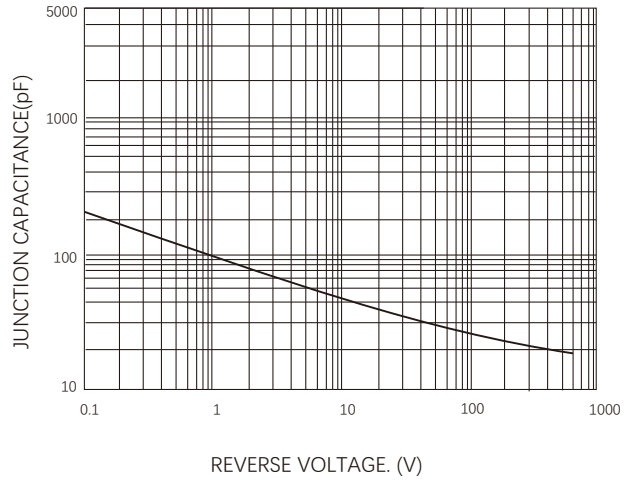


FIG.3-FORWARD CHARACTERISTICS

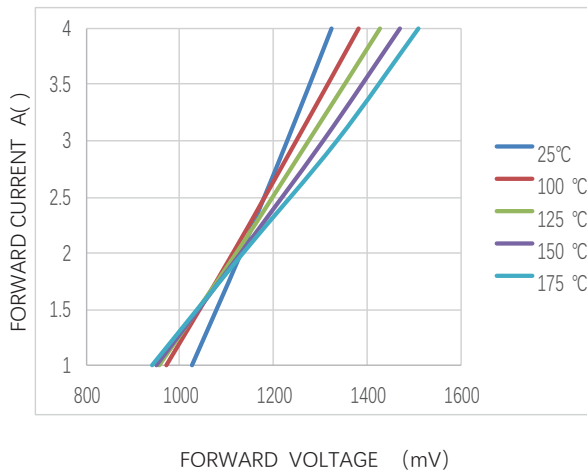
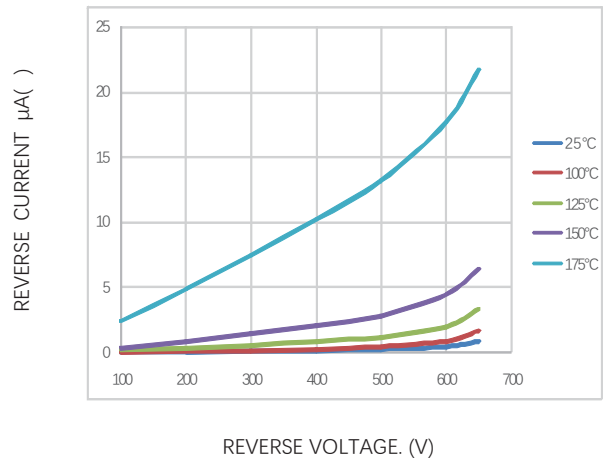
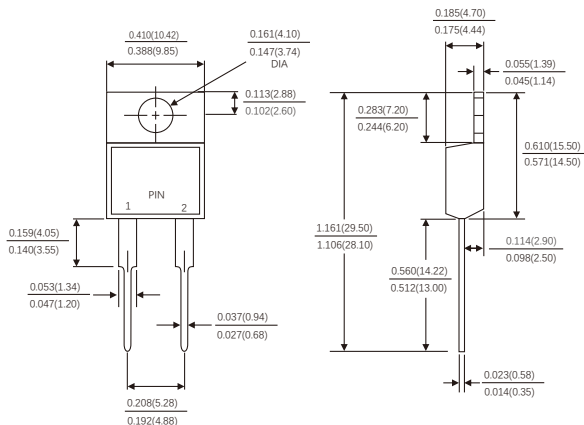


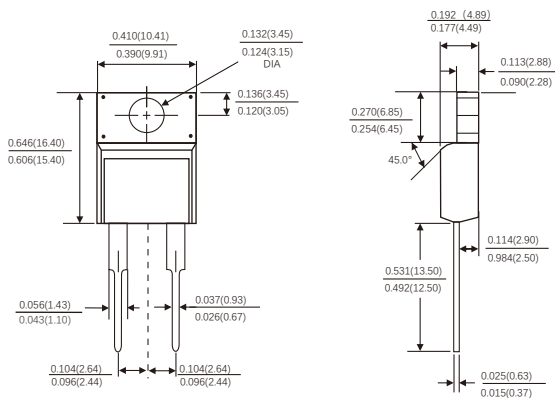
FIG.4-REVERSE CHARACTERISTICS



## TO-220AC

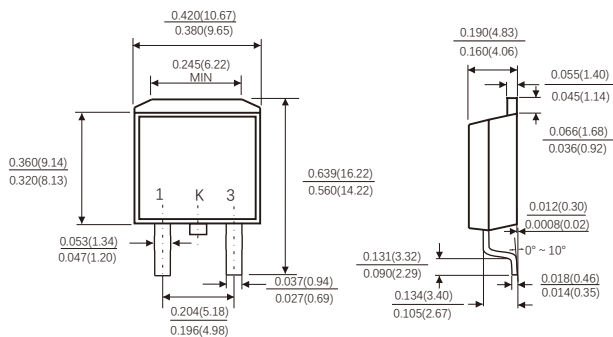


## ITO-220AC

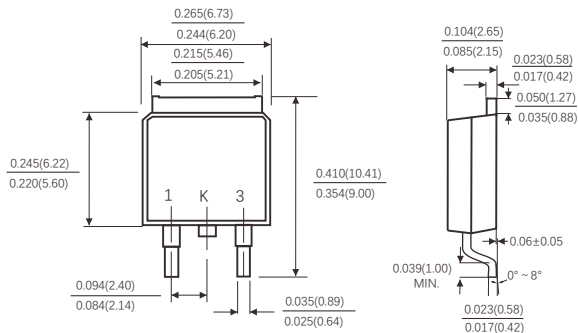


Dimensions in inches and (millimeters)

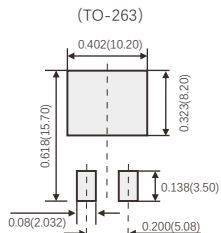
## TO-263



## TO-252

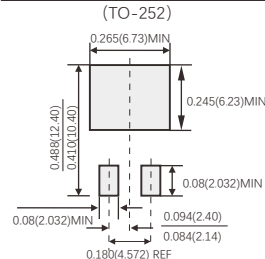


## Suggested Pad Layout



(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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