

## 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-220AB/ITO-220AB/TO-263AB
- 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

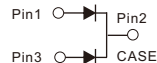
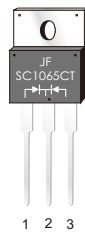
- General Purpose
- SMPS, Solar inverter, UPS
- Power Switching Circuits

## KEY PERFORMANCE AND PACKAGE PARAMETERS (leg/device)

Type	V <sub>oc</sub>	I <sub>F</sub>	Q <sub>c</sub>	T <sub>j,max</sub>	Package
SC1065CT	650V	5/10A	18nC/36nC	175°C	TO-220AB
SC1065FCT	650V	5/10A	18nC/36nC	175°C	ITO-220AB
SC1065D1	650V	5/10A	18nC/36nC	175°C	TO-263AB

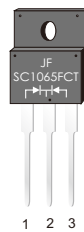
### TO-220AB

SC1065CT



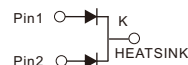
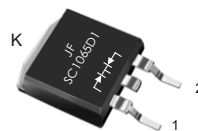
### ITO-220AB

SC1065FCT



### TO-263

SC1065D1



# RATINGS AND CHARACTERISTIC OF SC1065XX

## MAXIMUM RATINGS

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

Parameter	Symbol	Value (leg/device)	Unit
Maximum repetitive peak reverse voltage	$V_{RRM}$	650	V
Continuous Forward Current for $R_{th(j-c)}$	$I_F$	5/10 ( $T_c \leq 155^\circ\text{C}$ TO-220/TO-263) 5/10 ( $T_c \leq 135^\circ\text{C}$ ITO-220)	A
Non-Repetitive Forward Surge Current (Half-Sine Pulse, $t_p=8.3\text{ms}$ )	$I_{F,SM}$	60/120( $T_c=25^\circ\text{C}$ ) 50/120( $T_c=150^\circ\text{C}$ )	A
$I^2t$ value	$\int i^2t$	14.5/58 ( $T_c=25^\circ\text{C}$ ) 10.6/42.4 ( $T_c=150^\circ\text{C}$ )	$\text{A}^2\text{S}$
Diode dv/dt ruggedness( $V_R=0\dots960\text{V}$ )	dv/dt	∞	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	$^\circ\text{C}$
Storage temperature range	$T_{stg}$	-55...175	$^\circ\text{C}$

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

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

# RATINGS AND CHARACTERISTIC OF SC1065XX

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

Parameter	Symbol	Conditions	Value(leg/device)			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=5A/10A T <sub>j</sub> =25°C IF=5A/10A T <sub>j</sub> =125°C IF=5A/10A T <sub>j</sub> =175°C		1.4 1.5 1.6	1.7 1.8 2.0	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			20/40 70/140 100/200	μA

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

Parameter	Symbol	conditions	Value(leg/device)			Unit
			min	typ	max	
Total capacitive charge	Q <sub>c</sub>	VR=1200V, IF=10A di/dt=200A/μS T <sub>j</sub> =25°C		18/36		nC
Total capacitance	C	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		300/600 34/68 30/60		pF

# RATINGS AND CHARACTERISTIC OF SC1065XX

FIG.1-FORWARD CURRENT DERATING CURVE(device)

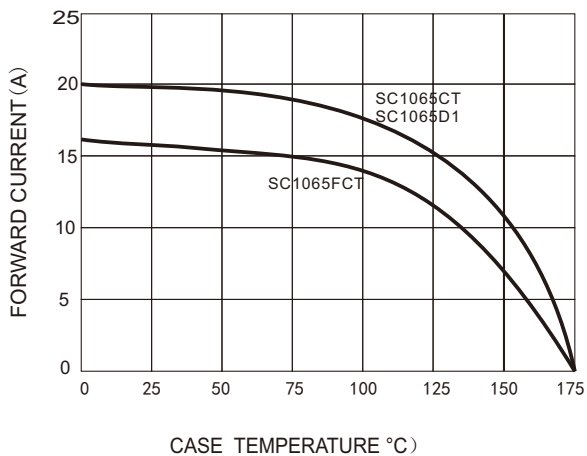


FIG.2-TYPICAL JUNCTION CAPACITANCE(device)

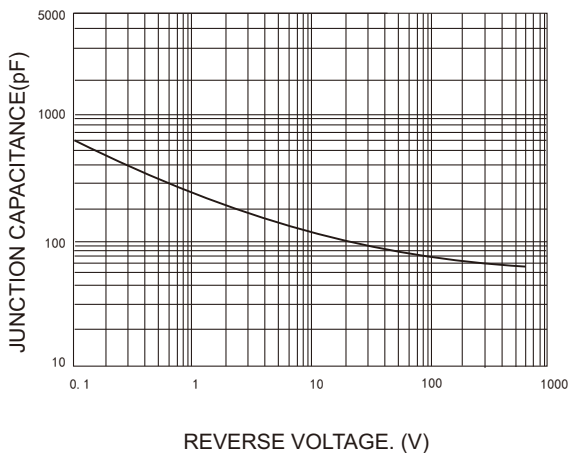


FIG.3-FORWARD CURRENT DERATING CURVE(per leg)

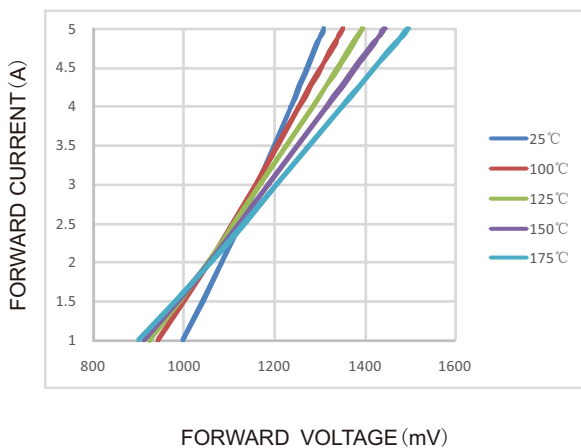
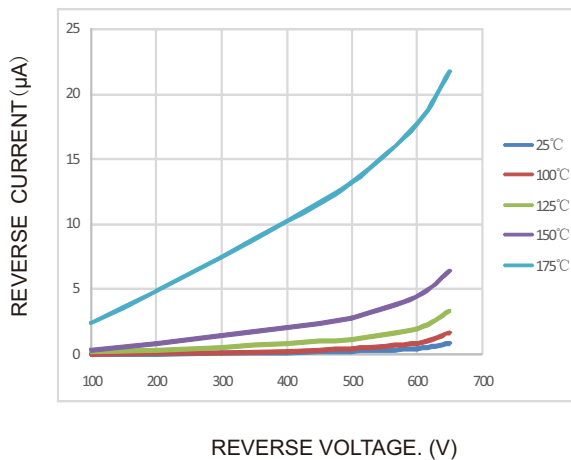


FIG.4-REVERSE CHARACTERISTICS(per leg)



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