SEMICONDUCTOR

SC0665 SC0665F SC0665D2 SC0665M2

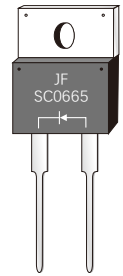
SILICON CARBIDE SCHOTTKY DIODE
Reverse Voltage - 650 Volts
Forward Current - 6.0Amperes

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.

TO-220AC

SC0665



ITO-220AC

SC0665F



FEATURES

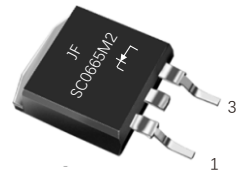
- Max Junction Temperature 175°C
- High Surge Current Capacity
- Positive Temperature Coefficient
- Ease of Paralleling
- No Reverse Recovery/No Forward Recovery

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

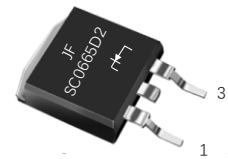
TO-252

SC0665M2



TO-263

SC0665D2



TYPICAL APPLICATIONS

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

KEY PERFORMANCE AND PACKAGE PARAMETERS

Type	V_{DC}	I_F	Qc	Tj,MAX	Pakage
SC0665	650V	6A	18nC	175℃	TO-220AC
SC0665F	650V	6A	18nC	175℃	ITO-220AC
SC0665D2	650V	6A	18nC	175℃	TO-263
SC0665M2	650V	6A	18nC	175℃	TO-252

MAXIMUM RATINGS

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

Parameters	Symbol	Value	Units
Maximum Repetitive Peak Reverse Voltage	V_{RRM}	650	V
Continuous Forward Current for Rth(j-c)	I_F	6 (Tc≤162℃ TO-220AC/TO-263) 6 (Tc≤149℃ TO-252/ITO-220AC) 11 (Tc≤135℃ TO-220AC/TO-263) 8 (Tc≤135℃ TO-252/ITO-220AC) 20 (Tc≤25℃ TO-220AC/TO-263) 16 (Tc≤25℃ TO-252/ITO-220AC)	A
Non-Repetitive Forward Surge Current (Half-Sine Pulse,tp=8.3mS)	I_{FSM}	60(25℃) 52(150℃)	A
I^2t Value	$\int i^2t$	15(25℃) 11.2(150℃)	A^2S
Diode dv/dt Ruggedndss(VR=0...650V)	dv/dt	80	V/ns
Power Dissipation for Rth(j-c,max)(Tc=25℃)	P_{tot}	125 (TO-220AC/TO-263) 60(TO-252/ITO-220AC)	W
Operating Junction Temperature Range	Tj	-55...175	℃
Storage Temperature Range	Tstg	-55...175	℃

THERMAL CHARACTERISTCS (TA=25℃ Unless otherwise noted)

Parameters	Symbol	ITO-220AC (Typ)	TO-220AC (Typ)	TO-263 (Typ)	TO-252 (Typ)	Units
Diode Thermal Resistance Junction-case	$R_{th(j-c)}$	2.5	1.2	1.2	2.5	K/W

ELECTRICAL CHARACTERISTCS (TA=25°C Unless otherwise noted)

Parameter	Symbol	Conditions	Value			Unit
			Min	Typ	Max	
DC blocking voltage	V_{DC}	Tj=25...175℃	650			V
Diode forward voltage	V_F 1)	IF=6A Tj=25℃ IF=6A Tj=125℃ IF=6A Tj=175℃		1.4 1.5 1.7	1.7 1.8 2.0	V
Reverse current	I_r 2)	VR=650V Tj=25℃ VR=650V Tj=125℃ VR=650V Tj=175℃			20 70 100	uA

Notes: 1.Pulse Test:300μS pulse width,1% duty cycle
2.Pulse test:pulse width≤40ms

DYNAMIC CHARACTERISTICS(at Tj=25℃,unless otherwise specified)

Parameter	Symbol	conditions	Value			Unit
			min	typ	max	
Total capacitive charge	Qc	VR=650V,IF=6A di/dt=200A/uS Tj=25℃		18		nC
Total capacitance	C	V_R=0V,f=1MHz V_R=200V,f=1MHz V_R=400V,f=1MHz Tj=25℃		300 34 30		pF

FIG.1-FORWARD CURRENT DERATING CURVE

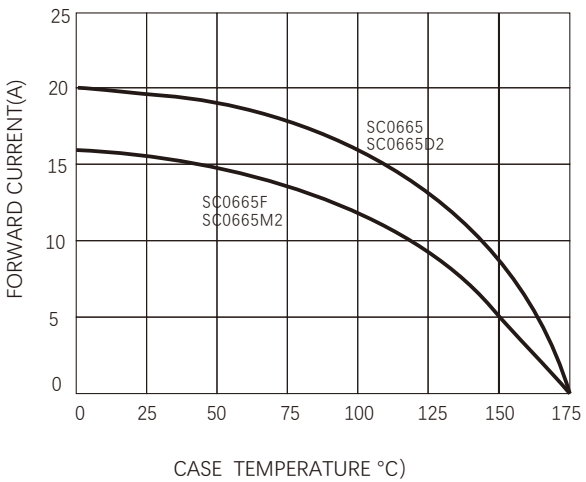


FIG.2-TYPICAL JUNCTION CAPACITANCE

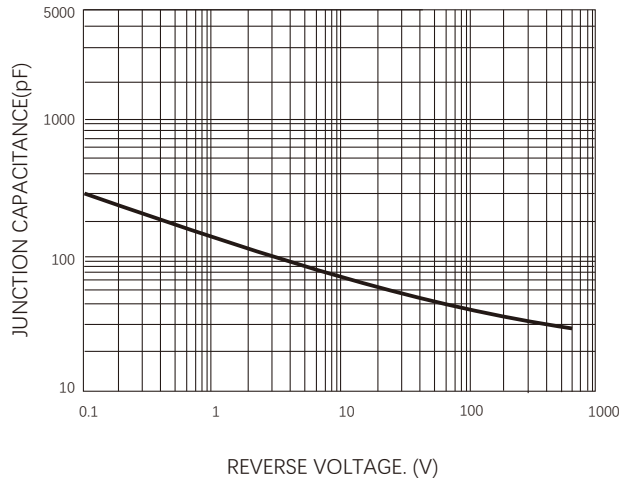


FIG.3-FORWARD CHARACTERISTICS

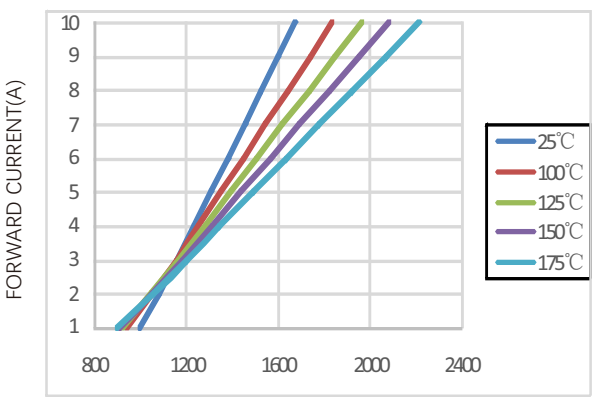


FIG.4-REVERSE CHARACTERISTICS

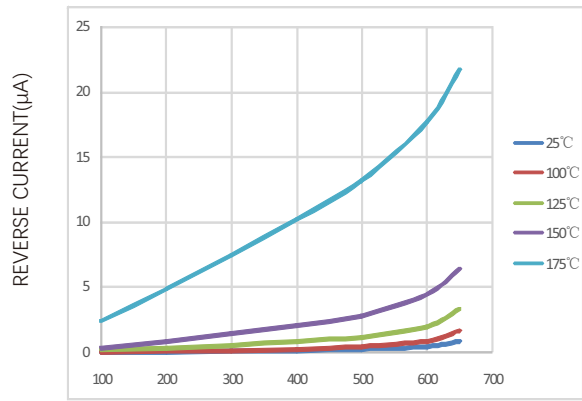
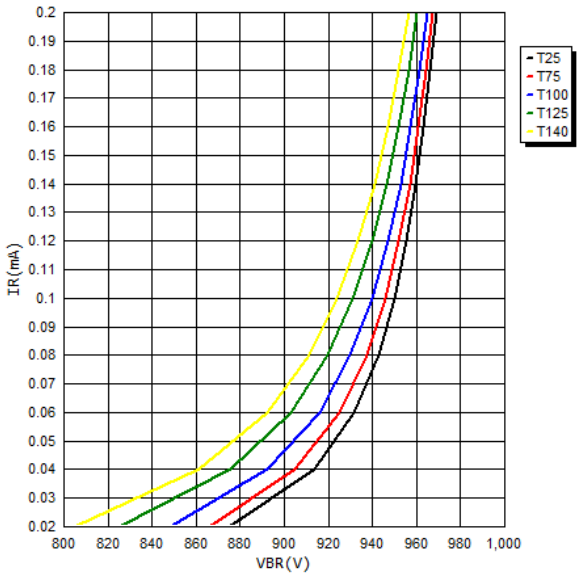


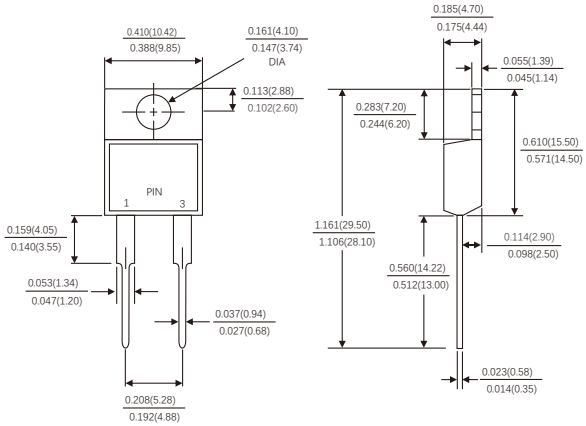
FIG.5-REVERSE CHARACTERISTICS



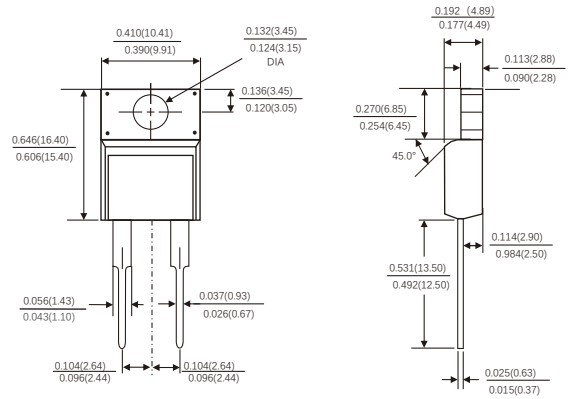
PACKAGE OUTLINE DIMENSIONS

Dimensions in inches and (millimeters)

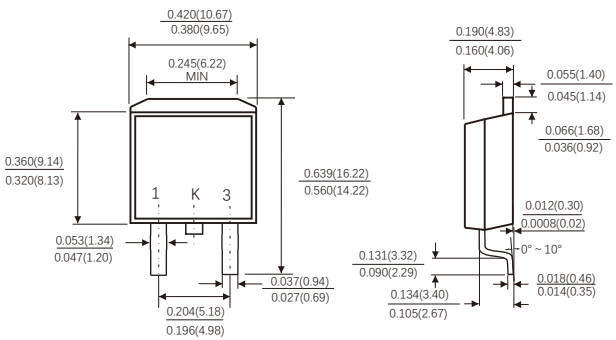
TO-220AC



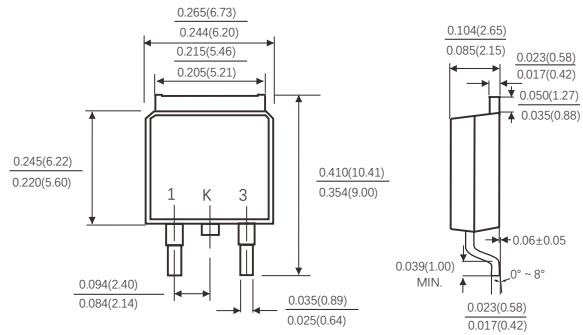
ITO-220AC



TO-263

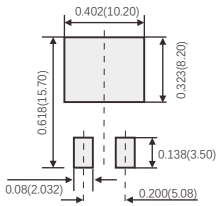


TO-252



Suggested Pad Layout

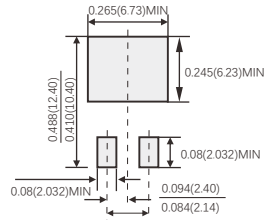
(TO-263)



(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)

Suggested Pad Layout

(TO-252)



(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
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requirements to determine the appropriate pad size)

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