

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

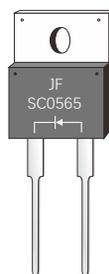
- Boost diodes in PFC or DC/DC stages
- SMPS, Solar inverter, UPS
- Power Switching Circuits

Key Performance And Package Parameters

Type	V _{DC}	I _F	Q _c	T _{j,max}	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 ($T_c \leq 158^\circ\text{C}$, TO-220AC/TO-263/TO-252) 5 ($T_c \leq 130^\circ\text{C}$, ITO-220AC)	A
Non-Repetitive Forward Surge Current (Half-Sine Pulse, $t_p = 8.3\text{ms}$)	I_{FSM}	45(25°C)	A
I^2t value	$\int i^2 t$	8.4(25°C)	A^2S
Power dissipation for $R_{th(j-c)}$ ($T_c = 25^\circ\text{C}$)	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	μA
		$V_R=650\text{V}, T_J=175^\circ\text{C}$	-	-	150	

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

Parameter	Symbol	conditions	Value			Unit
			min	typ	max	
Total capacitive charge	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

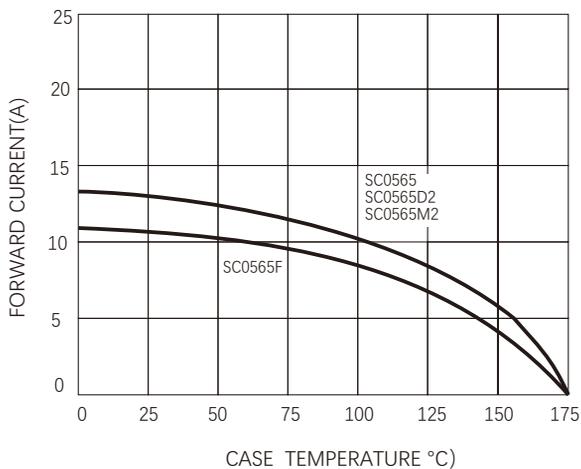


FIG.2-TYPICAL JUNCTION CAPACITANCE

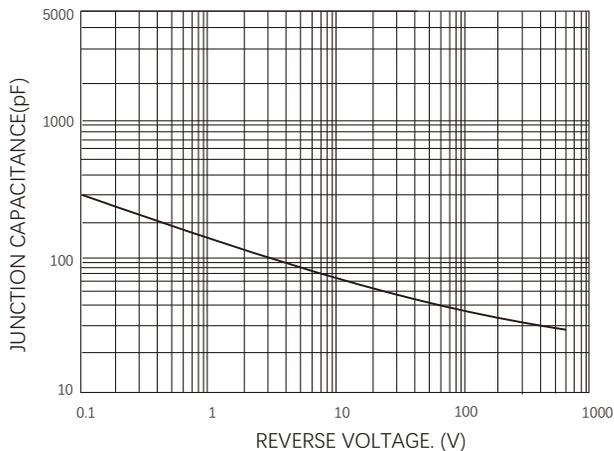


FIG.3-FORWARD CHARACTERISTICS

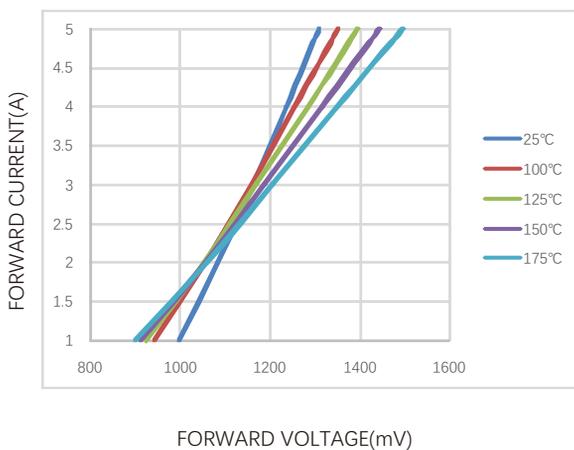
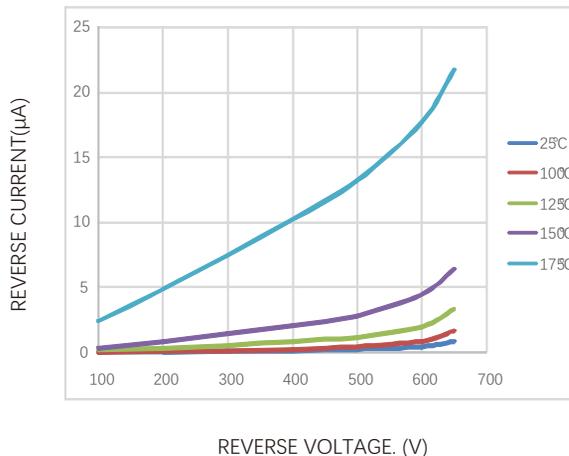
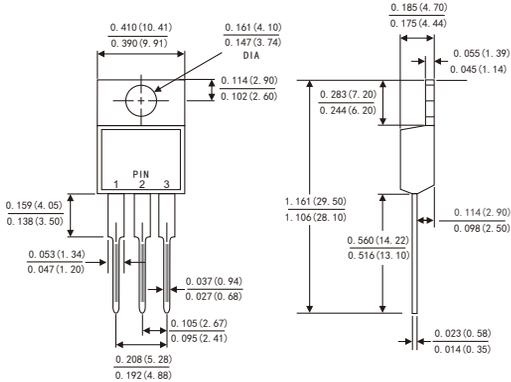


FIG.4-REVERSE CHARACTERISTICS

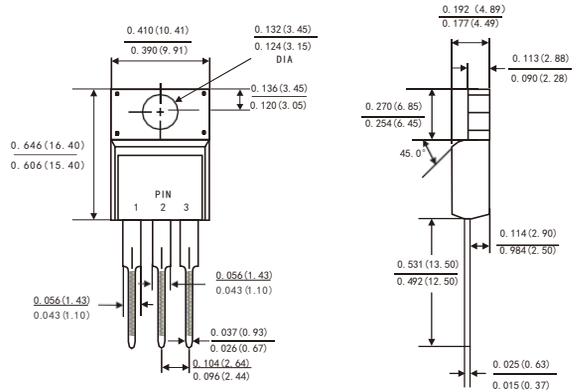


Dimensions in inches and (millimeters)

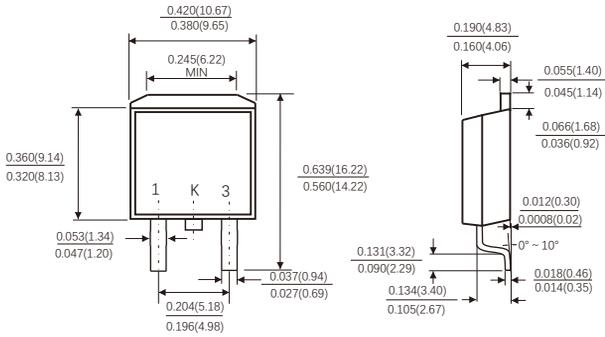
TO-220AB



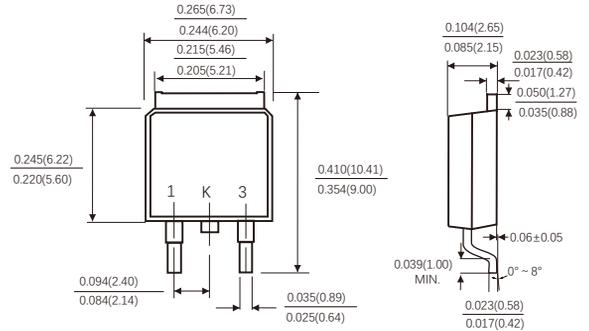
ITO-220AB



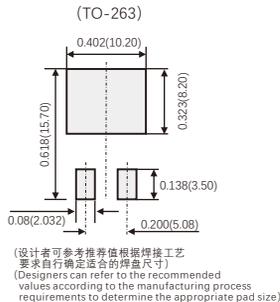
TO-263



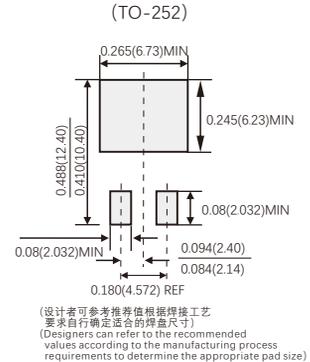
TO-252



Suggested Pad Layout



Suggested Pad Layout



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