

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

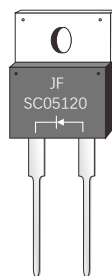
- Boost diodes in PFC or DC/DC stages
- SMPS, Solar inverter, UPS
- Power Switching Circuits

KEY PERFORMANCE AND PACKAGE PARAMETERS

Type	V _{DC}	I _F	Q _c	T _{j,max}	Package
SC05120	1200V	5A	19nC	175°C	TO-220AC
SC05120F	1200V	5A	19nC	175°C	ITO-220AC
SC05120D2	1200V	5A	19nC	175°C	TO-263
SC05120M2	1200V	5A	19nC	175°C	TO-252

TO-220AC

SC05120



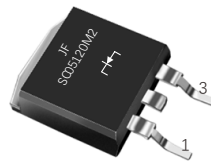
ITO-220AC

SC05120F



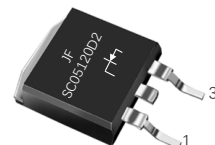
TO-252

SC05120M2



TO-263

SC05120D2



MAXIMUM RATINGS

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

Parameter	Symbol	Value	Unit
Maximum repetitive peak reverse voltage	V_{RRM}	1200	V
Continuous Forward Current for $R_{th(j-c)}$	I_F	19 ($T_c \leq 25^\circ\text{C}$ TO-220/TO-263/TO-252) 11 ($T_c \leq 25^\circ\text{C}$ ITO-220) 5 ($T_c \leq 158^\circ\text{C}$ TO-220/TO-263/TO-252) 5 ($T_c \leq 129^\circ\text{C}$ ITO-220)	A
Non-Repetitive Forward Surge Current (Half-Sine Pulse, $t_p = 8.3\text{ms}$)	I_{FSM}	45(25°C) 36(150°C)	A
I^2t value	$\int i^2 t$	8.4(25°C) 5.3(150°C)	A^2S
Power dissipation for $R_{th(j-c)}$ ($T_c = 25^\circ\text{C}$)	P_D	100 (TO-220/TO-263/TO-252) 37.5 (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

Parameter	Symbol	ITO-220AC	TO-220AC	TO-263	TO-252	Unit
Diode thermal resistance junction-case	$R_{th(j-c)}$	4.0	1.5	1.5	1.5	$^\circ\text{C/W}$

RATINGS AND CHARACTERISTIC OF SC05120XX

ELECTRICAL CHARACTERISTICS (T_A=25°C Unless otherwise noted)

Parameter	Symbol	Conditions	Value			Unit
			min	typ	max	
DC blocking voltage	V _{DC}	I _R =20uA, T _J =25°C	1200	-	-	V
Forward voltage	V _F	I _F =5A T _J =25°C	-	1.5	1.8	V
		I _F =5A T _J =125°C	-	1.7	2.0	
		I _F =5A T _J =175°C	-	2.0	2.3	
Reverse current	I _R	V _R =1200V T _J =25°C	-	-	20	uA
		V _R =1200V T _J =125°C	-	-	100	
		V _R =1200V T _J =175°C	-	-	200	

Dynamic Characteristics (T_A=25°C Unless otherwise noted)

Parameter	Sym bol	conditions	Value			Unit
			min	typ	max	
Total capacitive charge	Q _C	V _R =1200V, I _F =5A di/dt=200A/uS	-	19	-	nC
Total capacitance	C	V _R =0V, f=1MHz	-	385	-	pF
		V _R =400V, f=1MHz	-	28	-	
		V _R =800V, f=1MHz	-	22	-	

FIG.1-FORWARD CURRENT DERATING CURVE

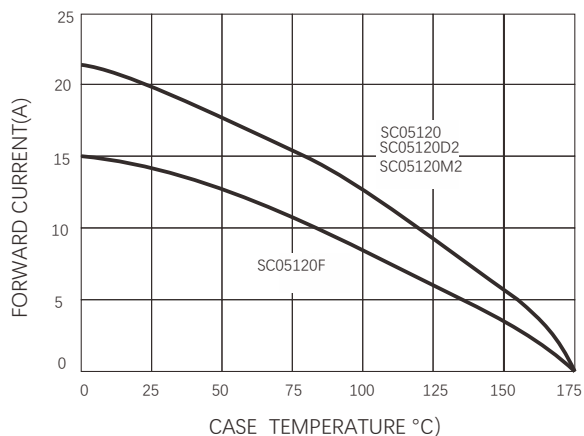


FIG.2-TYPICAL JUNCTION CAPACITANCE

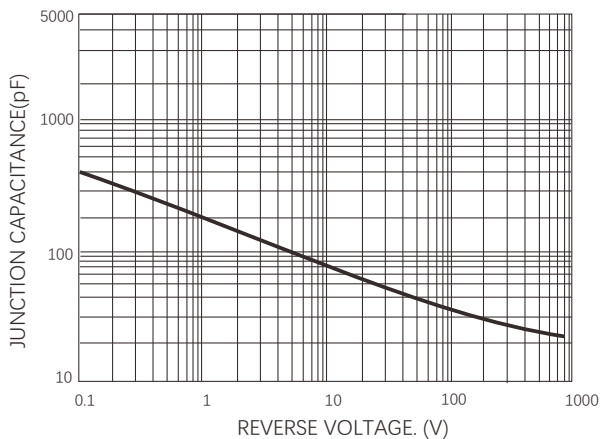


FIG.3-FORWARD CHARACTERISTICS

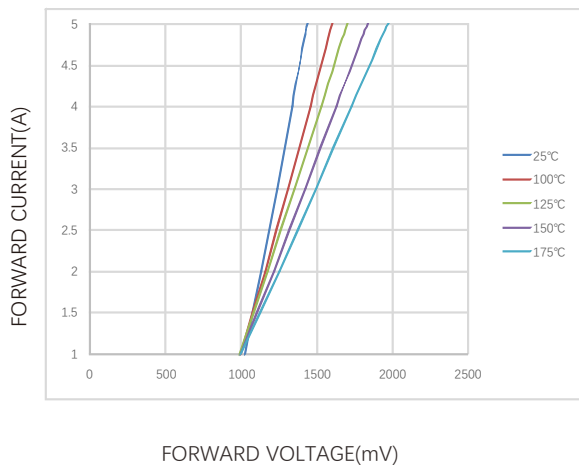
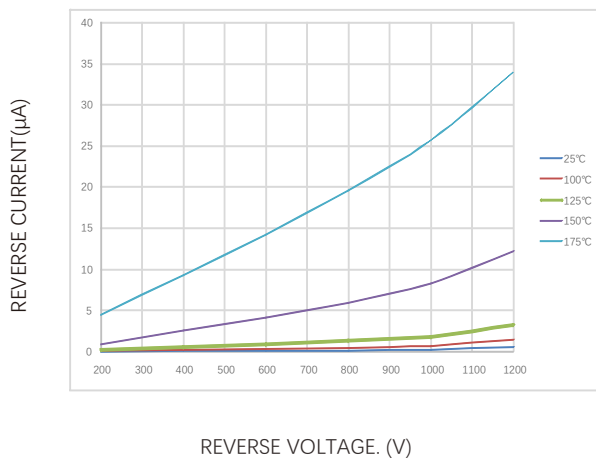
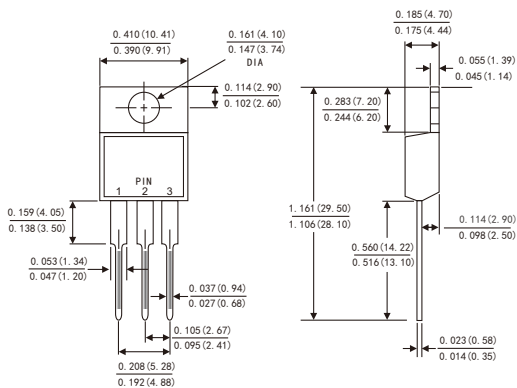


FIG.4-REVERSE CHARACTERISTICS

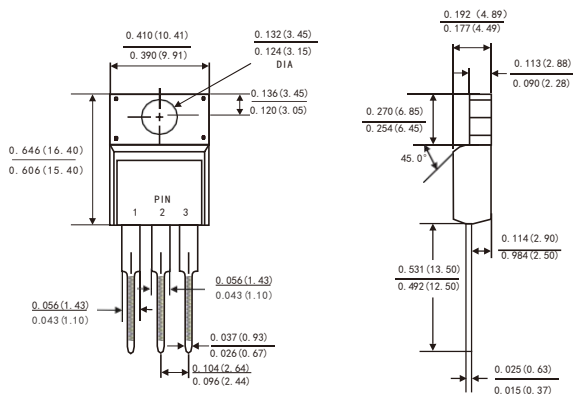


Dimensions in inches and (millimeters)

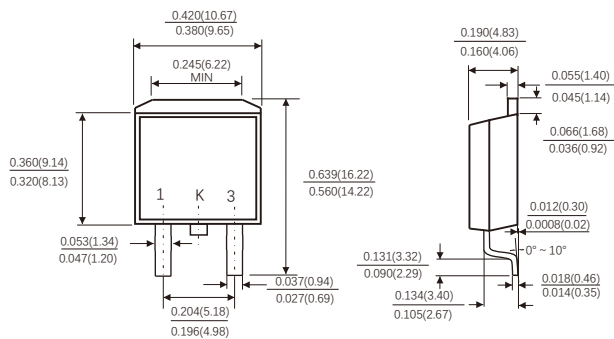
TO-220AB



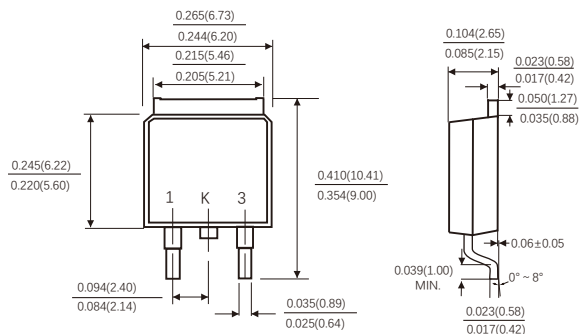
ITO-220AB



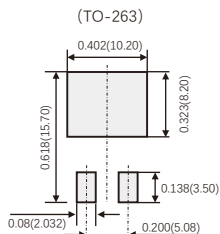
TO-263



TO-252

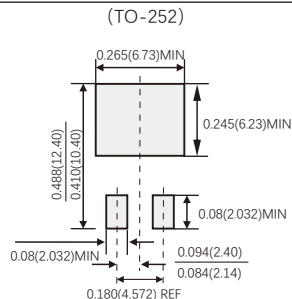


Suggested Pad Layout



(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)

Suggested Pad Layout



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