SEMICONDUCTOR

SC10120 SC10120F SC10120D2 SC10120M2

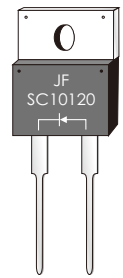
SILICON CARBIDE SCHOTTKY DIODE
Reverse Voltage - 1200 Volts
Forward Current - 10Amperes

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

Sc10120



ITO-220AC

SC10120F



FEATURES

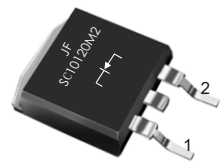
- Max Junction Temperature 175° C
- High Surge Current Capacity
- Positive Temperature Coefficient
- Ease of Paralleling
- No Reverse Recovery/No Forward Recovery

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

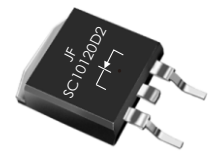
TO-252

SC10120M2



TO-263AC

SC10120D2



TYPICAL APPLICATIONS

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

KEY PERFORMANCE AND PACKAGE PARAMETERS

Type	V_{DC}	I_F	Qc	T_j,max	Package
Sc10120	1200V	10A	30nC	175℃	TO-220AC
SC10120F	1200V	10A	30nC	175℃	ITO-220AC
SC10120D2	1200V	10A	30nC	175℃	TO-263AC
SC10120M2	1200V	10A	30nC	175℃	TO-252AC

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RATINGS AND CHARACTERISTIC OF SC10120XX

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 $Rth_{(j-c)}$	I_F	10（T_C≤145℃ TO-220/TO-263） 10（Tc≤110℃ TO-252/ITO-220）	A
Non-Repetitive Forward Surge Current （Half-Sine Pulse,tp=8.3mS)	$I_{F,SM}$	154（25℃） 140（150℃）	A
I^2t value	$\int i^2t$	98（25℃） 81（150℃）	A^2S
Diode dv/dt ruggedness(VR=0…650V)	dv/dt	80	V/nS
Power dissipation for $R_{th(j-c,max)}$ （Tc=25℃）	P_{tot}	125(TO-220/TO-263) 60(TO-252/ITO-220)	W
Operating junction temperature range	Tj	-55. ..175	℃
Storage temperature range	Tstg	-55...175	℃

THERMAL CHARACTERISTCS（TA=25℃ Unless otherwise noted）

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

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RATINGS AND CHARACTERISTIC OF SC10120XX

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

Parameter	Symbol	Conditions	Value			Unit
			min	typ	max	
DC blocking voltage	V_{DC}	Tj=25...175℃	1200			V
Diode forward voltage	V_F	IF=10A Tj=25℃ IF=10A Tj=125℃ IF=10A Tj=175℃		1.7 2. 3 2. 8	1.9 2.5 3. 2	V
Reverse current	I_R	VR=1200V Tj=25℃ VR=1200V Tj=125℃ VR=1200V Tj=175℃			20 100 200	uA

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

Parameter	Symbol	conditions	Value			Unit
			min	typ	max	
Total capacitive charge	Qc	VR=1200V,IF=5A di/dt=200A/uS Tj=25℃		30		nC
Total capacitance	C	V_R=0V,f=1MHz V_R=400V,f=1MHz V_R=800V,f=1MHz Tj=25℃		650 49 40		pF

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RATINGS AND CHARACTERISTIC OF SC10120XX

FIG.1-FORWARD CURRENT DERATING CURVE

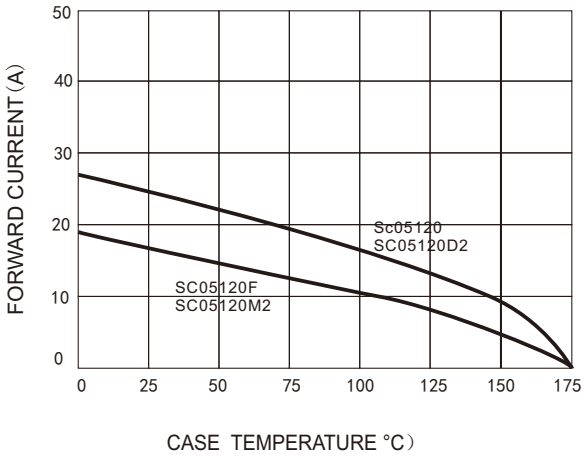


FIG.2-TYPICAL JUNCTION CAPACITANCE

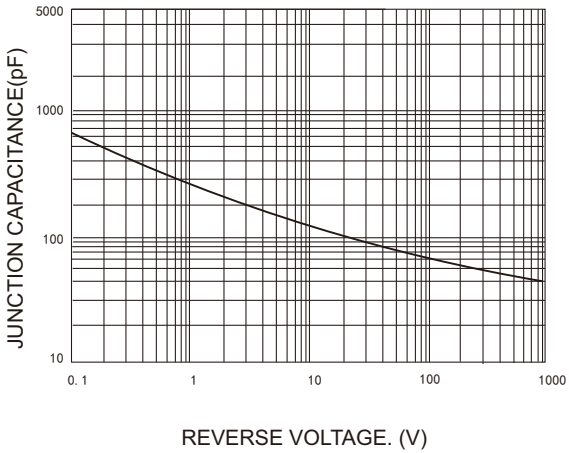


FIG.3-FORWARD CURRENT DERATING CURVE

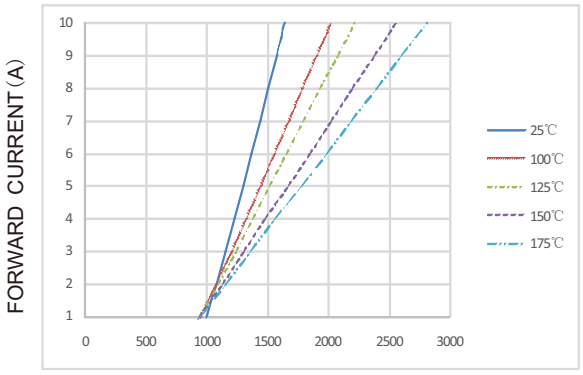
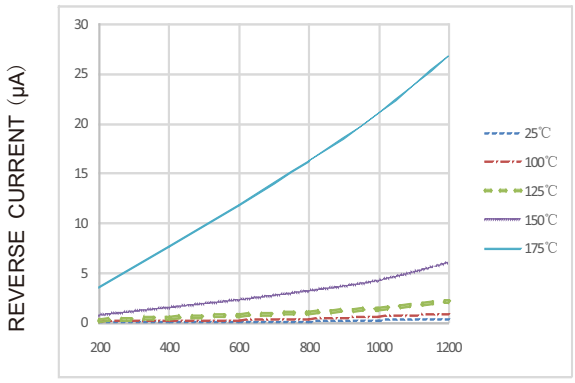


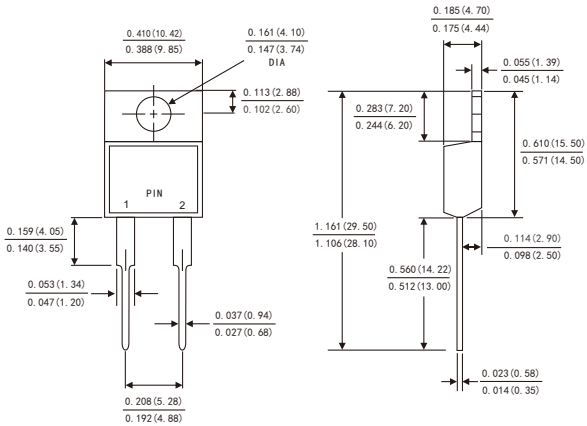
FIG.4-REVERSE CHARACTERISTICS



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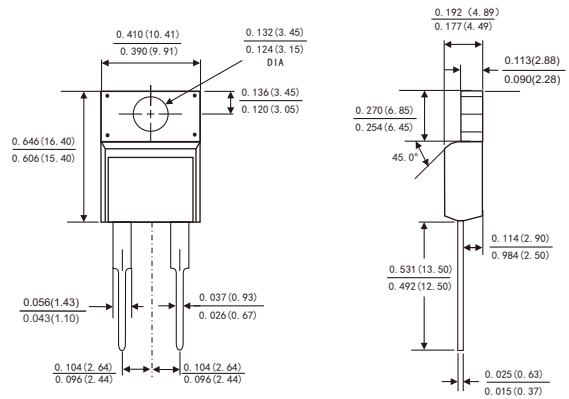
PACKAGE OUTLINE DIMENSIONS

TO-220AC



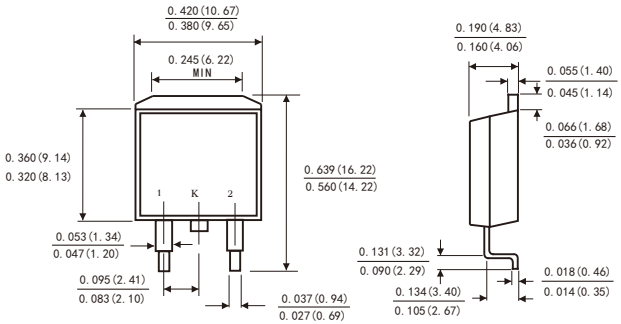
Dimensions in inches and (millimeters)

ITO-220AC

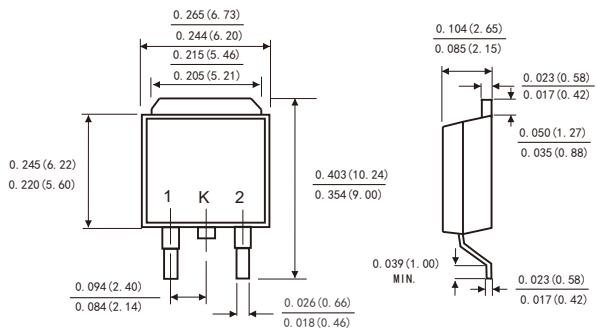


Dimensions in inches and (millimeters)

TO-263

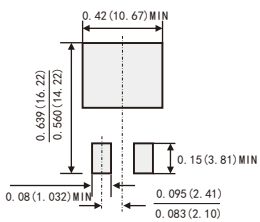


TO-252



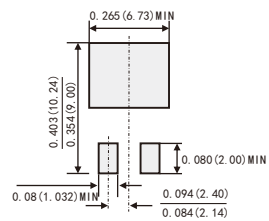
Suggested Pad Layout

（TO-263）



Suggested Pad Layout

（TO-252）



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