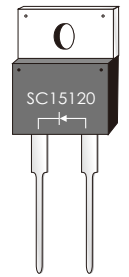
SILICON CARBIDE SCHOTTKY DIODE
Reverse Voltage - 1200 Volts Forward Current - 15 Amperes

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.

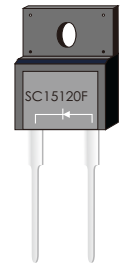
TO-220AC

KWSC15120



ITO-220AC

KWSC15120F



FEATURES

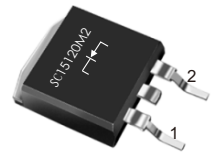
- Max Junction Temperature 175°C
- High Surge Current Capacity
- Positive Temperature Coefficient
- Ease of Paralleling
- No Reverse Recovery/No Forward Recovery

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-Ibs maximum

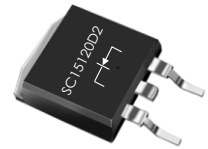
TO-252

KWSC15120M2



TO-263AC

KWSC15120D2



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
KWSC15120	1200V	15A	48nC	175℃	TO-220AC
KWSC15120F	1200V	15A	48nC	175℃	ITO-220AC
KWSC15120D2	1200V	15A	48nC	175℃	TO-263AC
KWSC15120M2	1200V	15A	48nC	175℃	TO-252AC

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	**15（Tc≤138℃ TO-220/TO-263）** **15（Tc≤100℃ TO-252/ITO-220）**	A
Non-Repetitive Forward Surge Current （Half-Sine Pulse,tp=8.3mS)	$I_{F,SM}$	**135（25℃）** **125（150℃）**	A
I^2t value	$\int i^2 dt$	**75（25℃）** **64（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	Tst g	**-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

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℃		1.57 2. 2 2. 25	1.8 2.5 2.5	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℃		48		nC
Total capacitance	C	V_R=0V,f=1MHz V_R=400V,f=1MHz V_R=800V,f=1MHz Tj=25℃		940 70 57		pF

FIG.1-FORWARD CURRENT DERATING CURVE

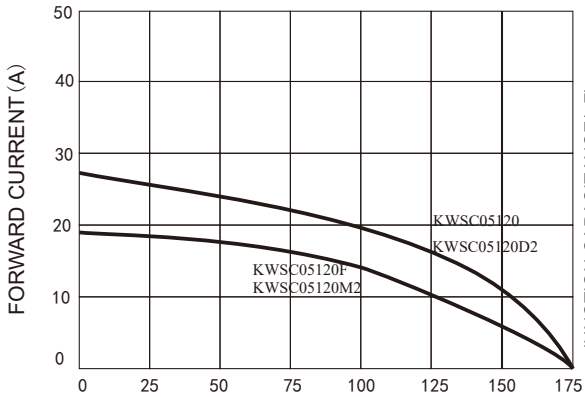


FIG.2-TYPICAL JUNCTION CAPACITANCE

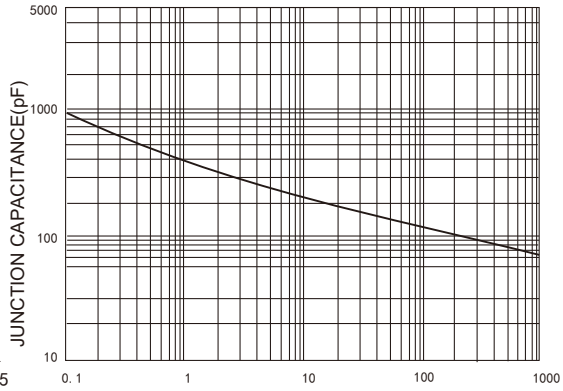


FIG.3-FORWARD CURRENT DERATING CURVE

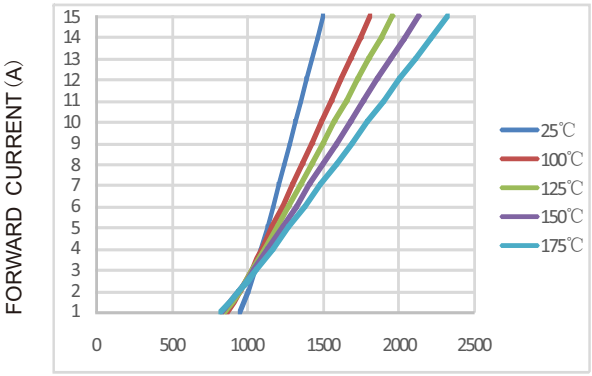
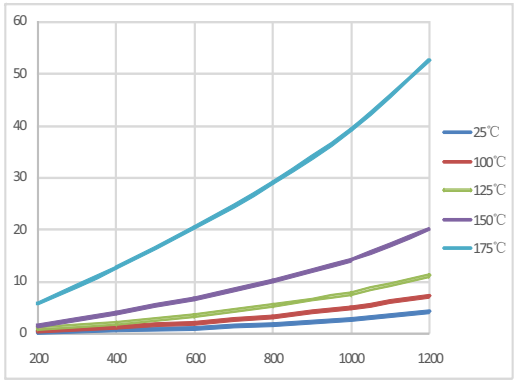
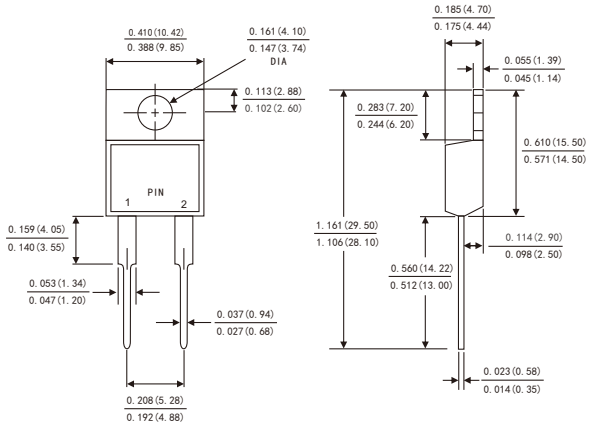


FIG.4-REVERSE CHARACTERISTICS

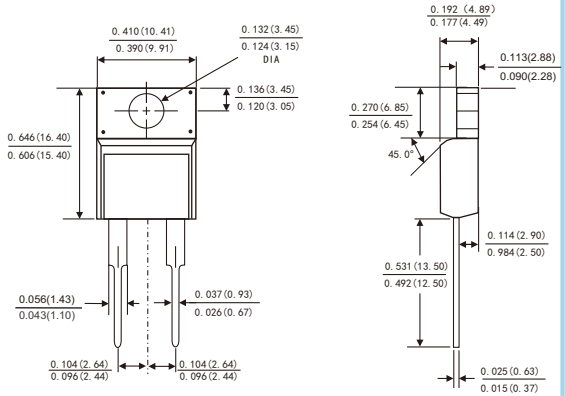


TO-220AC



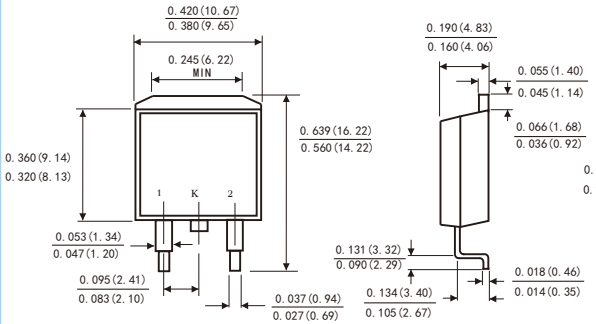
Dimensions in inches and (millimeters)

ITO-220AC

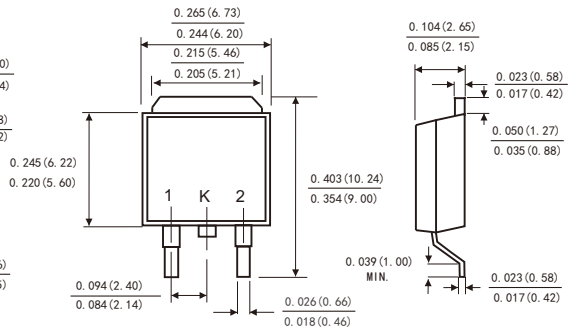


Dimensions in inches and (millimeters)

TO-263

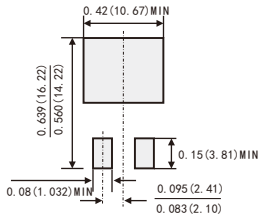


TO-252



Suggested Pad Layout

（TO-263）



Suggested Pad Layout

（TO-252）