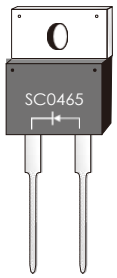
SILICON CARBIDE SCHOTTKY DIODE

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

KSC0465



ITO-220AC

KSC0465F

Features:

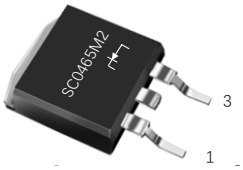
Max Junction Temperature 175° C
- High Surge Current Capacity
- Positive Temperature Coefficient
- Ease of Paralleling
- No Reverse Recovery/No Forward Recovery

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

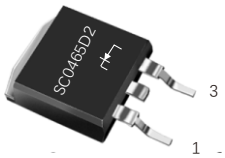
TO-252

KSC0465M2



TO-263AC

KSC0465D2



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
KSC0465	650V	4A	9nC	175℃	TO-220AC
KSC0465F	650V	4A	9nC	175℃	ITO-220AC
KSC0465D2	650V	4A	9nC	175℃	TO-263AC
KSC0465M2	650V	4A	9nC	175℃	TO-252AC

RATINGS AND CHARACTERISTIC OF KSC0465XX

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 $Rth_{(j-c)}$	I_F	4（T_c≤160℃ TO-220/TO-263） 4（Tc≤143℃ TO-252/ITO-220）	A
Forward rms current	$I_{F(RMS)}$	5.56 (δ= 0.5,f=20KHz)	A
Non-Repetitive Forward Surge Current （Half-Sine Pulse,tp=8.3mS)	$I_{F,SM}$	40(25℃) 32(150℃)	A
I^2t value	$\int i^2t$	6.6（25℃ ） 4.2（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

RATINGS AND CHARACTERISTIC OF KSC0465XX

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℃	650			V
Diode forward voltage	V_F	IF=4A Tj=25℃ IF=4A Tj=125℃ IF=4A Tj=175℃		1.4 1.5 1.6	1.65 1.1 2.3	V
Reverse current	I_R	VR=650V Tj=25℃ VR=650V Tj=125℃ VR=650V Tj=175℃			10 50 100	uA

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

Parameter	Symbol	conditions	Value			Unit
			min	typ	max	
Total capacitive charge	Qc	VR=650V,IF=10A di/dt=200A/uS Tj=25℃		9		nC
Total capacitance	C	V_R=0V,f=1MHz V_R=200V,f=1MHz VR =400V,f=1MHz Tj=25℃		230 24 20		pF

RATINGS AND CHARACTERISTIC OF KSC0465XX

FIG.1-FORWARD CURRENT DERATING CURVE

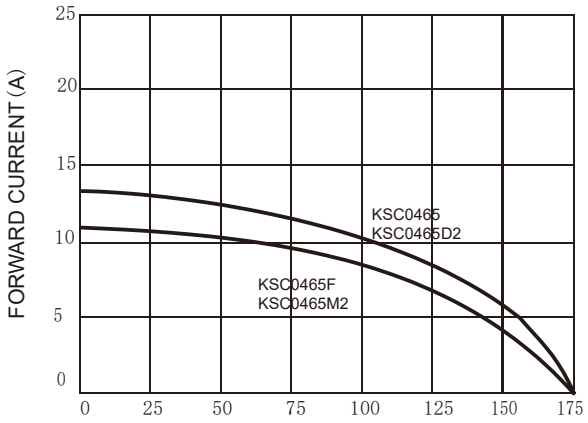


FIG.2-TYPICAL JUNCTION CAPACITANCE

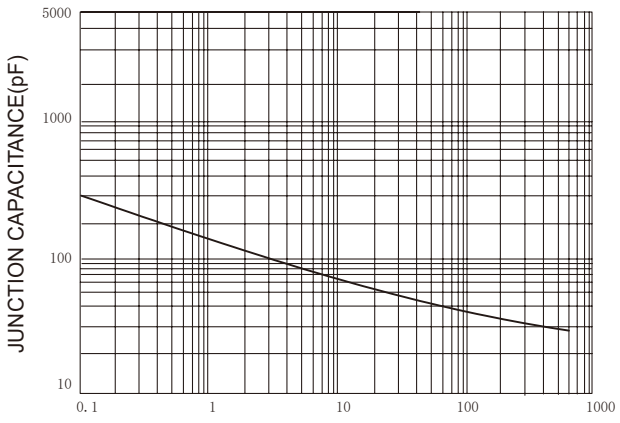


FIG.3-FORWARD CHARACTERISTICS

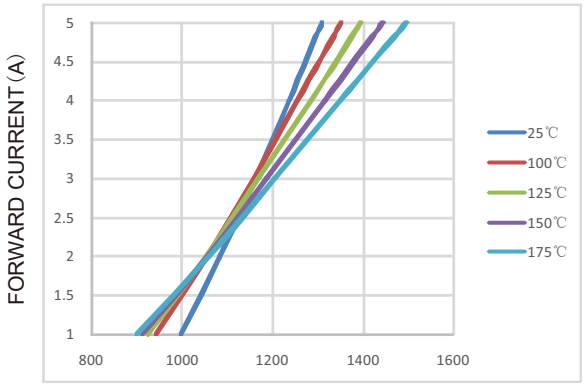
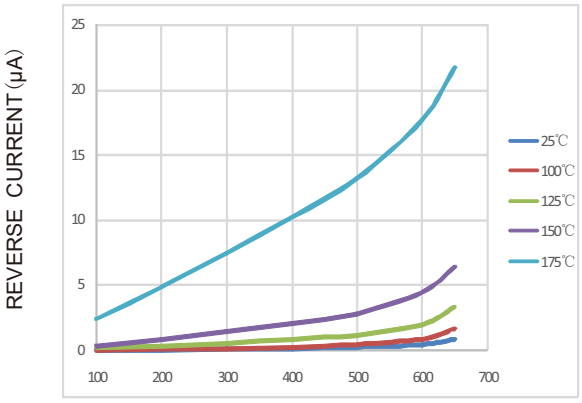
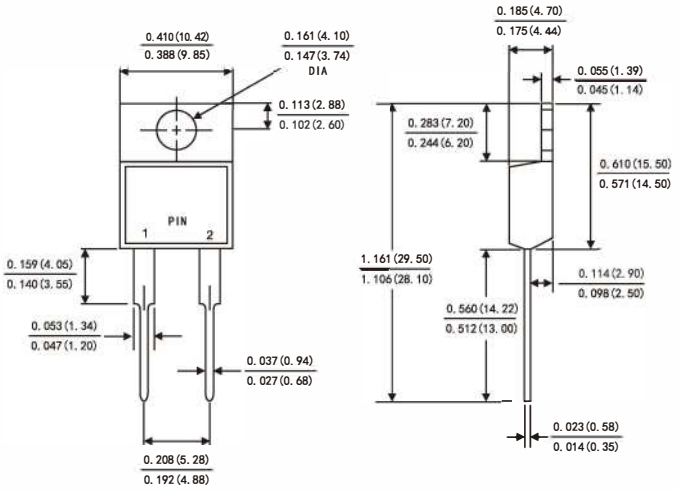


FIG.4-REVERSE CHARACTERISTICS



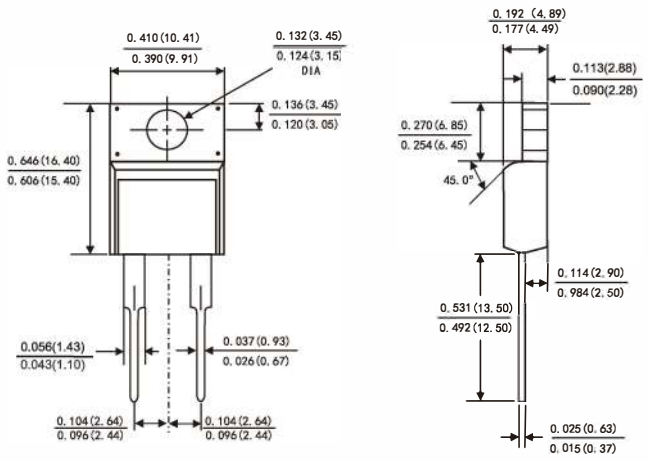
PACKAGE OUTLINE DIMENSIONS

TO-220AC



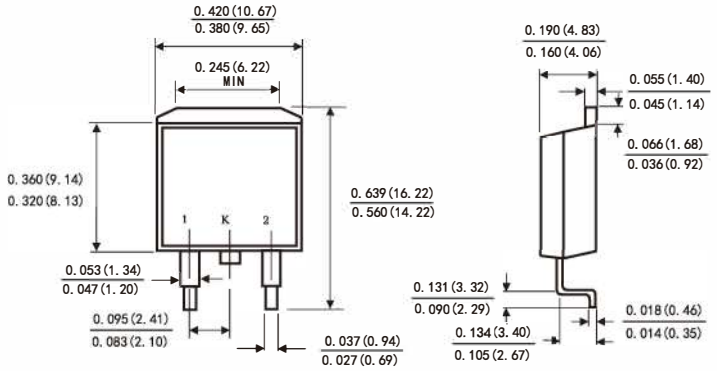
Dimensions in inches and (millimeters)

ITO-220AC

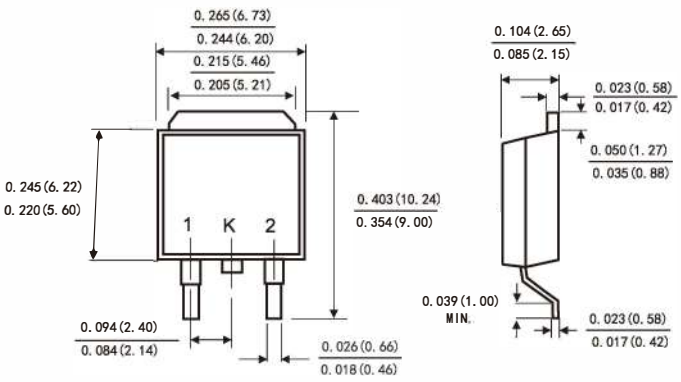


Dimensions in inches and (millimeters)

TO-263

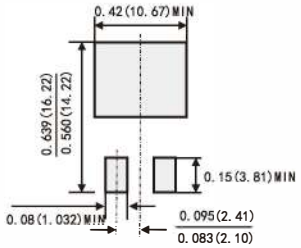


TO-252



Suggested Pad Layout

（TO-263）



Suggested Pad Layout

（TO-252）