

SILICON CARBIDE SCHOTTKY DIODE

Features:

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

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.

Mechanical Data:

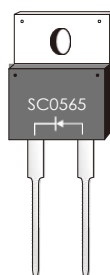
- Case: JEDEC TO-220AC/ITO-220AC/TO-263AC/TO-252AC
- Molding compound meets UL94V-0 flammability rating
- Terminals: Lead solderable per J-STD-002 and JESD22-B102
- Polarity: As marked
- Mounting Torque: 10 in-lbs maximum

Typical Applications:

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

TO-220AC

KWSC0565



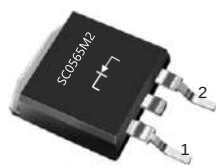
ITO-220AC

KWSC0565F



TO-252

KWSC0565M2



TO-263AC

KWSC0565D2



KEY PERFORMANCE AND PACKAGE PARAMETERS

Type	V_{DC}	I_F	Q_C	$T_{j,max}$	Package
KWSC0565	650V	5A	18nC	175°C	TO-220AC
KWSC0565F	650V	5A	18nC	175°C	ITO-220AC
KWSC0565D2	650V	5A	18nC	175°C	TO-263AC
KWSC0565M2	650V	5A	18nC	175°C	TO-252AC

RATINGS AND CHARACTERISTIC OF KWSC0565XX

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 ($T_c \leq 156^\circ\text{C}$ TO-220/TO-263) 5 ($T_c \leq 135^\circ\text{C}$ TO-252/ITO-220)	A
Non-Repetitive Forward Surge Current (Half-Sine Pulse, $t_p=8.3\text{ms}$)	$I_{F, SM}$	60(25°C) 52(150°C)	A
I^2t value	$\int i^2 t$	15 (25°C) 11.2 (150°C)	A^2S
Diode dv/dt ruggedness($V_R=0\ldots 650\text{V}$)	dv/dt	80	V/nS
Power dissipation for $R_{th(j-c, max)}$ ($T_c=25^\circ\text{C}$)	P_{tot}	125(TO-220/TO-263) 60(TO-252/ITO-220)	W
Operating junction temperature range	T_j	$-55 \ldots 175$	$^\circ\text{C}$
Storage temperature range	T_{stg}	$-55 \ldots 175$	$^\circ\text{C}$

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

Parameter	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 KWSC0565XX

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

Parameter	Symbol	Conditions	Value			Unit
			min	typ	max	
DC blocking voltage	V _{DC}	T _j =25...175°C	650			V
Diode forward voltage	V _F	IF= 5A T _j =25°C IF=5A T _j =125°C IF=5A T _j =175°C		1.4 1.5 1.6	1.7 1.8 2.0	V
Reverse current	I _R	VR=650V T _j =25°C VR=650V T _j =125°C VR=650V T _j =175°C			20 70 100	uA

DYNAMIC CHARACTERISTICS(at T_j= 25°C,unless otherwise specified)

Parameter	Symbol	conditions	Value			Unit
			min	typ	max	
Total capacitive charge	Q _c	VR=650V,IF=10A di/dt=200A/uS T _j =25°C		18		nC
Total capacitance	C	V _R =0V,f=1MHz V _R =200V,f=1MHz V _R =400V,f=1MHz T _j =25°C		300 34 30		pF

FIG.1-FORWARD CURRENT DERATING CURVE

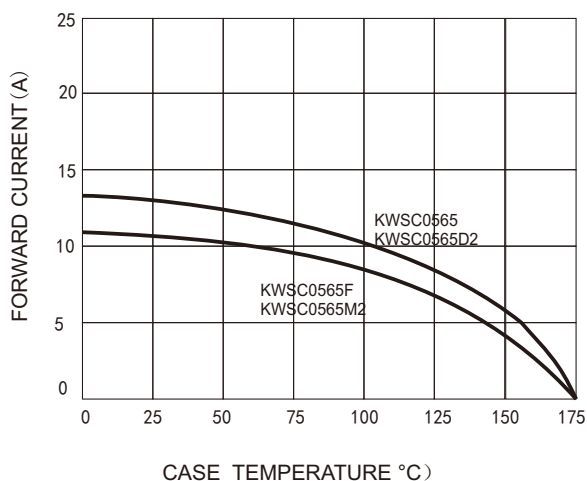


FIG.2-TYPICAL JUNCTION CAPACITANCE

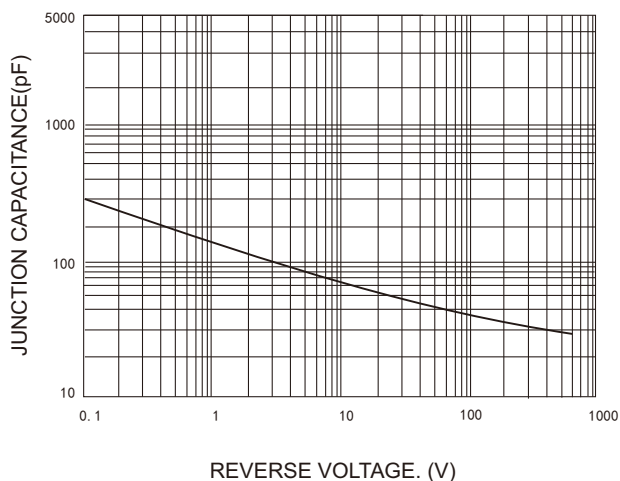


FIG.3-FORWARD CHARACTERISTICS

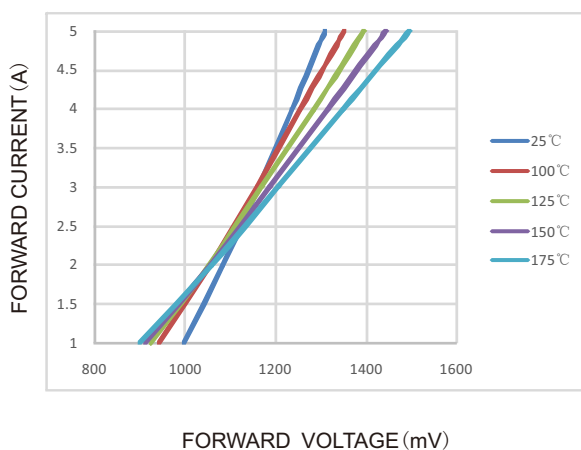
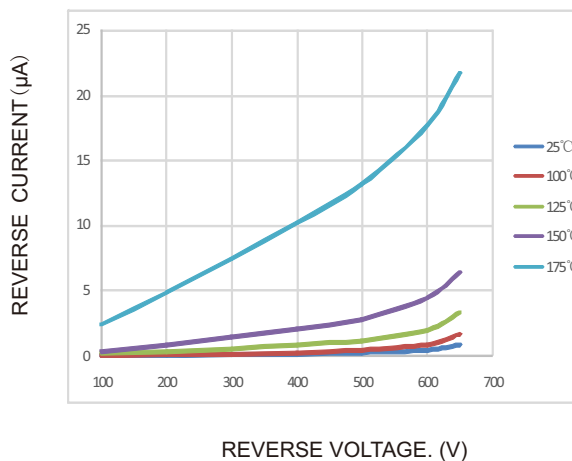
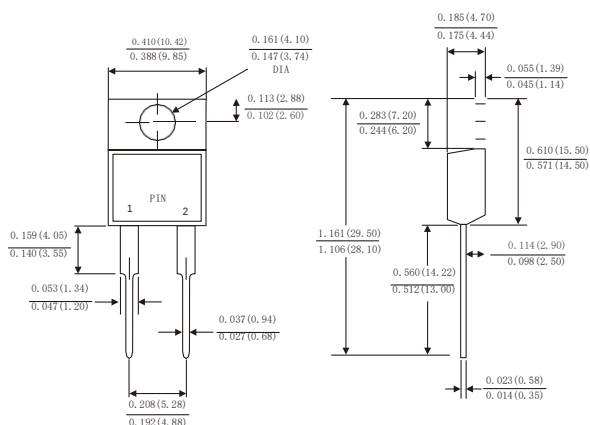


FIG.4-REVERSE CHARACTERISTICS



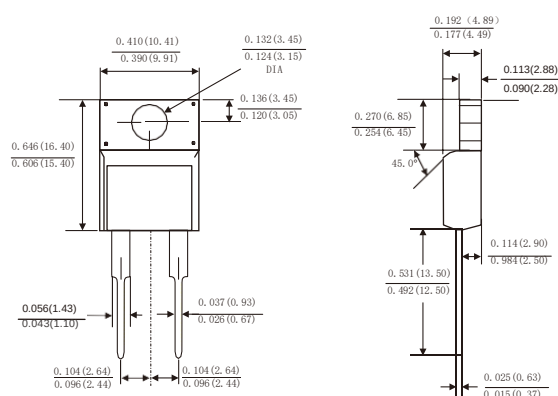
PACKAGE OUTLINE DIMENSIONS

TO-220AC



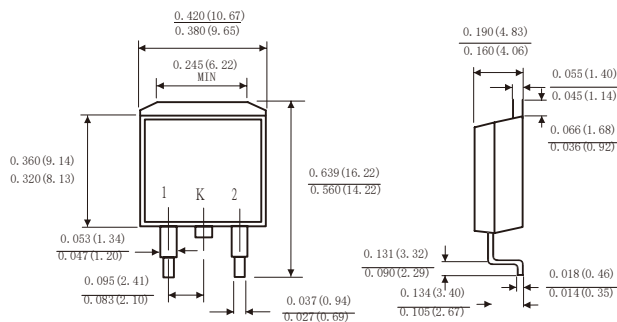
Dimensions in inches and (millimeters)

ITO-220AC



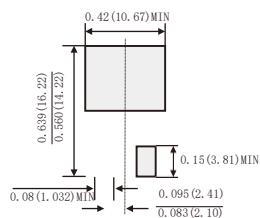
Dimensions in inches and (millimeters)

TO-263

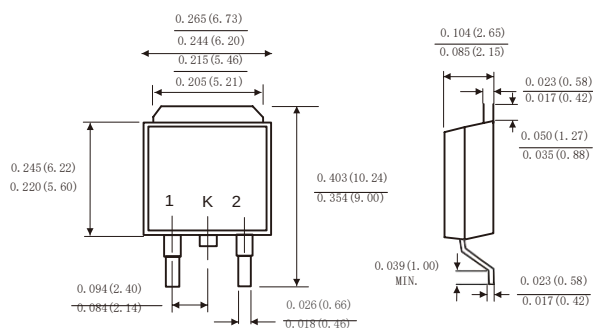


Suggested Pad Layout

(TO-263)



TO-252



Suggested Pad Layout

(TO-252)

