

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.

Features:

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

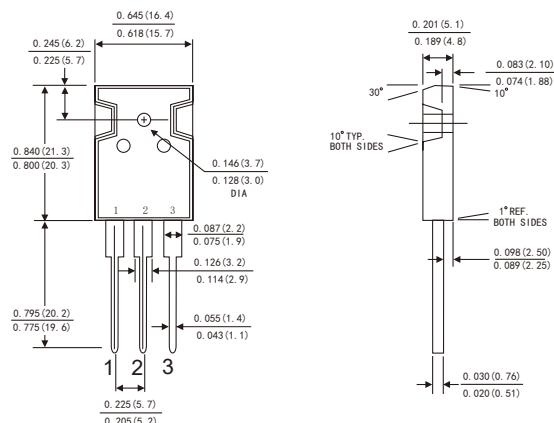
Mechanical Data:

- Case: JEDEC TO-247AB
- 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

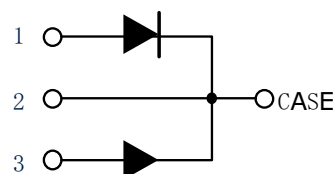
Applications:

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

TO-247AB



Dimensions in inches and (millimeters)



KEY PERFORMANCE AND PACKAGE PARAMETERS (leg/device)

Type	V _{DC}	I _F	Qc	T _{J,max}	Package
KWSC4065PT	650V	20A/40A	40nC/80nC	175°C	TO-247AB

RATINGS AND CHARACTERISTIC OF KWSC4065PT

MAXIMUM RATINGS

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

Parameter	Symbol	Value (leg/device)	Unit
Maximum repetitive peak reverse voltage	V_{RRM}	650	V
Continuous Forward Current for $R_{th(j-c)}$	I_F	20/40 ($T_c \leq 148^\circ\text{C}$) 26/52 ($T_c = 135^\circ\text{C}$) 55/110 ($T_c = 25^\circ\text{C}$)	A
Non-Repetitive Forward Surge Current (Half-Sine Pulse, $t_p = 8.3\text{ms}$)	$I_{F,SM}$	170/340 ($T_c = 25^\circ\text{C}$) 155/310 ($T_c = 150^\circ\text{C}$)	A
I^2t value	$\int i^2 t$	119/238 ($T_c = 25^\circ\text{C}$) 99/198 ($T_c = 150^\circ\text{C}$)	A^2S
Diode dv/dt ruggedness ($V_R = 0 \dots 960\text{V}$)	dv/dt	80	V/nS
Power dissipation for $R_{th(j-c,max)}$ ($T_c = 25^\circ\text{C}$)	P_{tot}	250/300	W
Operating junction temperature range	T_j	-55...175	$^\circ\text{C}$
Storage temperature range	T_{stg}	-55...175	$^\circ\text{C}$

THERMAL CHARACTERISTICS (TA=25°C Unless otherwise noted)

Parameter	Symbol	Value(leg/device)		Unit
		Typ	Max	
Diode thermal resistance junction-case	$R_{th(j-c)}$	0.6/0.5	0.8/0.7	K/W

RATINGS AND CHARACTERISTIC OF KWSC4065PT

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

Parameter	Symbol	Conditions	Value(leg/device)			Unit
			min	typ	max	
DC blocking voltage	V _{DC}	T _j =25...175°C	650			V
Diode forward voltage	V _F	IF= 20A/40A T _j =25°C IF= 20A/40A T _j =125°C IF= 20A/40A T _j =175°C		1.4 1.5 1.75	1.65 1.8 2.3	V
Reverse current	I _R	VR=650V T _j =25°C VR=650V T _j =125°C VR=650V T _j =175°C			20/40 50/100 100/200	uA

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

Parameter	Symbol	conditions	Value(leg/device)			Unit
			min	typ	max	
Total capacitive charge	Q _c	VR=1200V,IF=20A di/dt=200A/uS T _j =25°C		4080		nC
Total capacitance	C	V _R =0V,f=1MHz V _R =200V,f=1MHz V _R =400V,f=1MHz T _j =25°C		1190/2380 115/230 96/192		pF

RATINGS AND CHARACTERISTIC OF KWSC4065PT

FIG.1-FORWARD CURRENT DERATING CURVE(device)

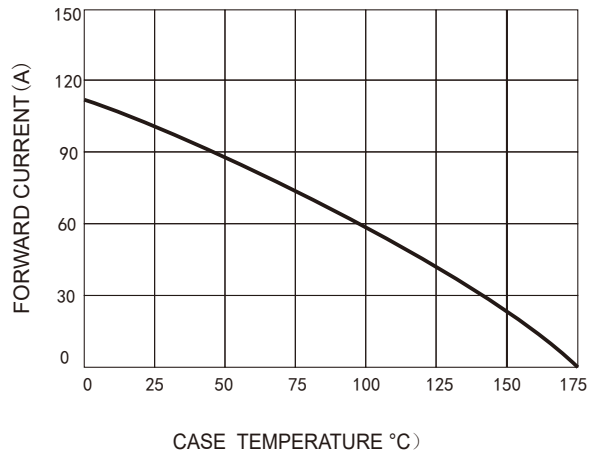


FIG.2-TYPICAL JUNCTION CAPACITANCE(device)

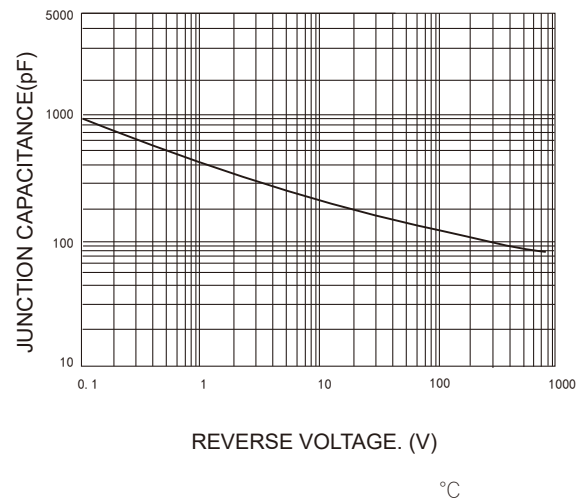


FIG.3-FORWARD CURRENT DERATING CURVE(per leg)

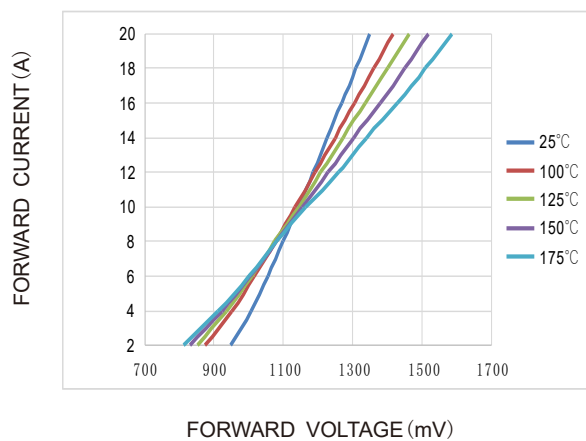


FIG.4-REVERSE CHARACTERISTICS(per leg)

