

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

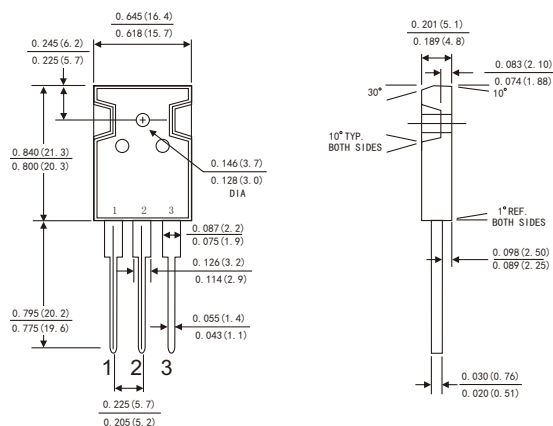
Applications :

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

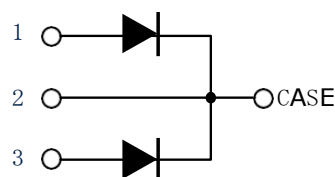
KEY PERFORMANCE AND PACKAGE PARAMETERS (leg/device)

Type	V _{DC}	I _F	Q _c	T _{J,max}	Package
KWSC2065PT	650V	10A/20A	25nC/50nC	175°C	TO- 247AB

TO-247AB



Dimensions in inches and (millimeters)



RATINGS AND CHARACTERISTIC OF KWSC2065PT

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	10/20 ($T_c \leq 140^\circ\text{C}$)	A
Non-Repetitive Forward Surge Current (Half-Sine Pulse, $t_p=8.3\text{ms}$)	$I_{F,SM}$	75/ 150($T_c=25^\circ\text{C}$) 60/120($T_c=150^\circ\text{C}$)	A
I^2t value	$\int i^2 t$	23/92 ($T_c=25^\circ\text{C}$) 15/60 ($T_c=150^\circ\text{C}$)	A^2S
Diode dv/dt ruggedness($V_R=0\ldots 960\text{V}$)	dv/dt	80	V/nS
Power dissipation for $R_{th(j-c, max)}$ ($T_c=25^\circ\text{C}$)	P_{tot}	150/180	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	Value (leg/device)		Unit
		Typ	Max	
Diode thermal resistance junction-case	$R_{th(j-c)}$	0.8/0.6	1.0/0.8	K/W

RATINGS AND CHARACTERISTIC OF KWSC2065PT

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= 10A/20A T _j =25°C IF=10A/20A T _j =125°C IF=10A/20A T _j =175°C		1.6 1.7 1.8	1.9 2.0 2.2	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=10A di/dt=200A/uS T _j =25°C		25/50		nC
Total capacitance	C	V _R =0V,f=1MHz V _R =200V,f=1MHz V _R =400V,f=1MHz T _j =25°C		440/880 57/114 46/ 92		pF

RATINGS AND CHARACTERISTIC OF KWSC2065PT

FIG.1-FORWARD CURRENT DERATING CURVE(device)

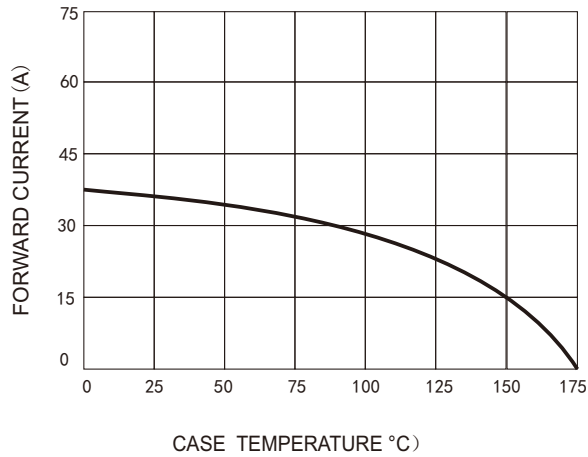


FIG.2-TYPICAL JUNCTION CAPACITANCE(per leg)

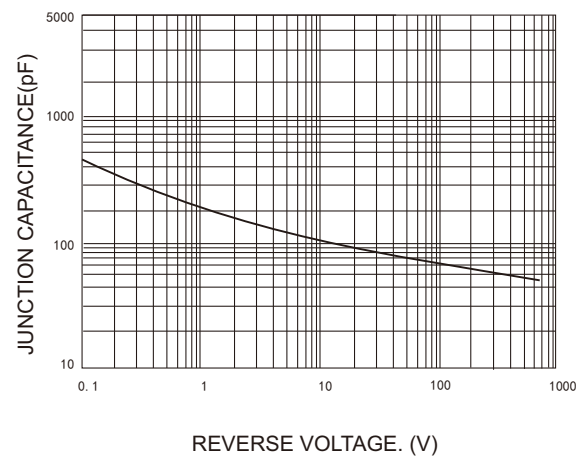


FIG.3-FORWARD CURRENT DERATING CURVE(per leg)

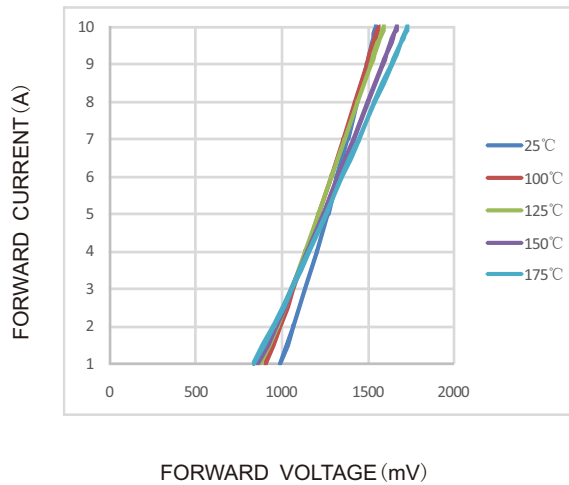


FIG.4-REVERSE CHARACTERISTICS(per leg)

