

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

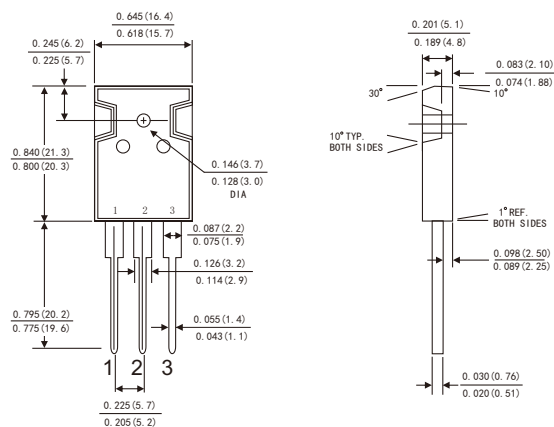
Mechanical Data :

- 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

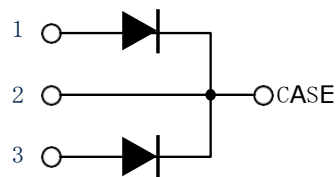
Applications :

- 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_{OC}	I_F	Q_C	$T_{j,max}$	Package
KWSC3065PT	650V	15A/30A	36nC/72nC	175°C	TO-247AB

RATINGS AND CHARACTERISTIC OF KWSC3065PT

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	15/30 (Tc≤151°C) 18/36 (Tc=135°C) 39/78 (Tc=25°C)	A
Non-Repetitive Forward Surge Current (Half-Sine Pulse, tp=8.3ms)	$I_{F, SM}$	135/270 (Tc=25°C) 120/240 (Tc=150°C)	A
I^2t value	$\int I^2 t$	75/150 (Tc=25°C) 59/118 (Tc=150°C)	A ² S
Diode dv/dt ruggedness (VR=0...960V)	dv/dt	80	V/nS
Power dissipation for $R_{th(j-c, max)}$ (Tc=25°C)	P_{tot}	250/300	W
Operating junction temperature range	Tj	-55...175	°C
Storage temperature range	Tstg	-55...175	°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 KWSC3065PT

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= 15A/30A T _j =25°C IF= 15A/30A T _j =125°C IF= 15A/30A 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		36/72		nC
Total capacitance	C	V _R =0V,f=1MHz V _R =200V,f=1MHz V _R =400V,f=1MHz T _j =25°C		865/1730 88/176 72/144		pF

RATINGS AND CHARACTERISTIC OF KWSC3065PT

FIG.1-FORWARD CURRENT DERATING CURVE(device)

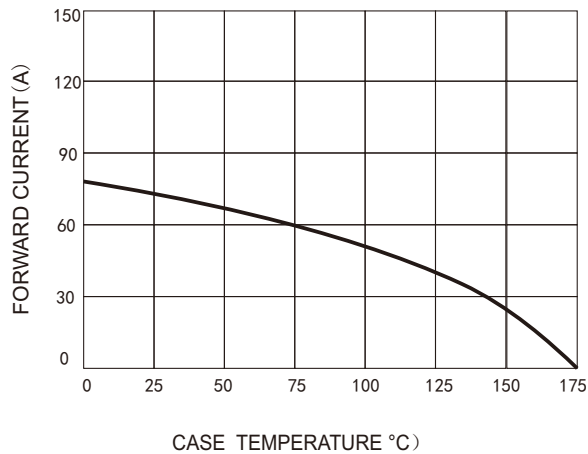


FIG.2-TYPICAL JUNCTION CAPACITANCE(device)

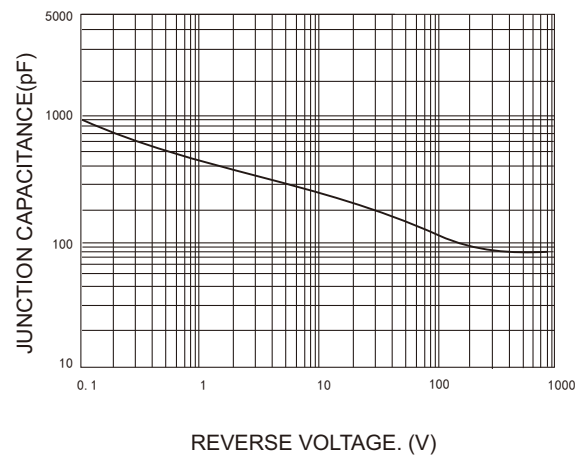


FIG.3-FORWARD CURRENT DERATING CURVE(per leg)

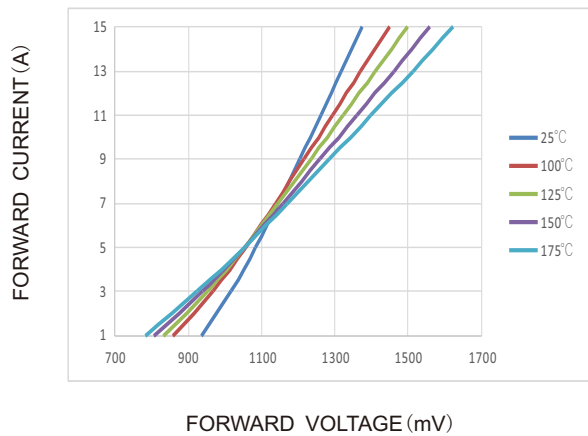


FIG.4-REVERSE CHARACTERISTICS(per leg)

