CPW3-0600-S003B

Gen 3 Silicon Carbide Schottky Diode

Description

This is the 3rd generation of high voltage, high performance Z-Rec© silicon carbide Schottky diode in a packageless bare die format to be implemented into any custom module design. The lower forward voltage, smaller reverse leakage current, zero reverse recovery, and high thermal conductivity make this Schottky diode ideal for high frequency switching applications including solar inverters and UPS. This Schottky diode can be used in conjunction with either IGBT or MOSFET as an anti-parallel diode, or as a rectifier.

Package Type: Bare Die
PN's: CPW3-0600-S003B

Features

- 600V Schottky Rectifier
- Zero Reverse Recovery
- Zero Forward Recovery
- High-Frequency Operation
- Temperature-Independent Switching Behavior
- Extremely Fast Switching
- Positive Temperature Coefficient on V_F

Applications

- Solar Inverters
- Motor Drives
- UPS
- Industrial Power Supplies

Absolute Maximum Ratings

Stress beyond those listed under absolute maximum ratings may damage the device.

Parameter	Symbol		Rating	Unit
Repetitive Peak Reverse Voltage	V_{RRM}		600	V
Continuous Forward Current	I_F	T_c = 175°C	3	A
Repetitive Peak Forward Surge Current, assumes t_p = 10ms, Half Sine Wave Pulse	I_{FRM}	T_c = 25°C	20	A
Virtual Junction and Storage Temperature	T_{VJ}, T_{stg}		-55 to +175	°C
Maximum Processing Temperature, in non-reactive ambient	T_{proc}		325	°C

Note: All above notation to T_c specifies case temperature from die packaged in TO-247, with Rth(j-c) < 2.5°C/W

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Electrical Characteristics (T_{VJ} = 25˚C)

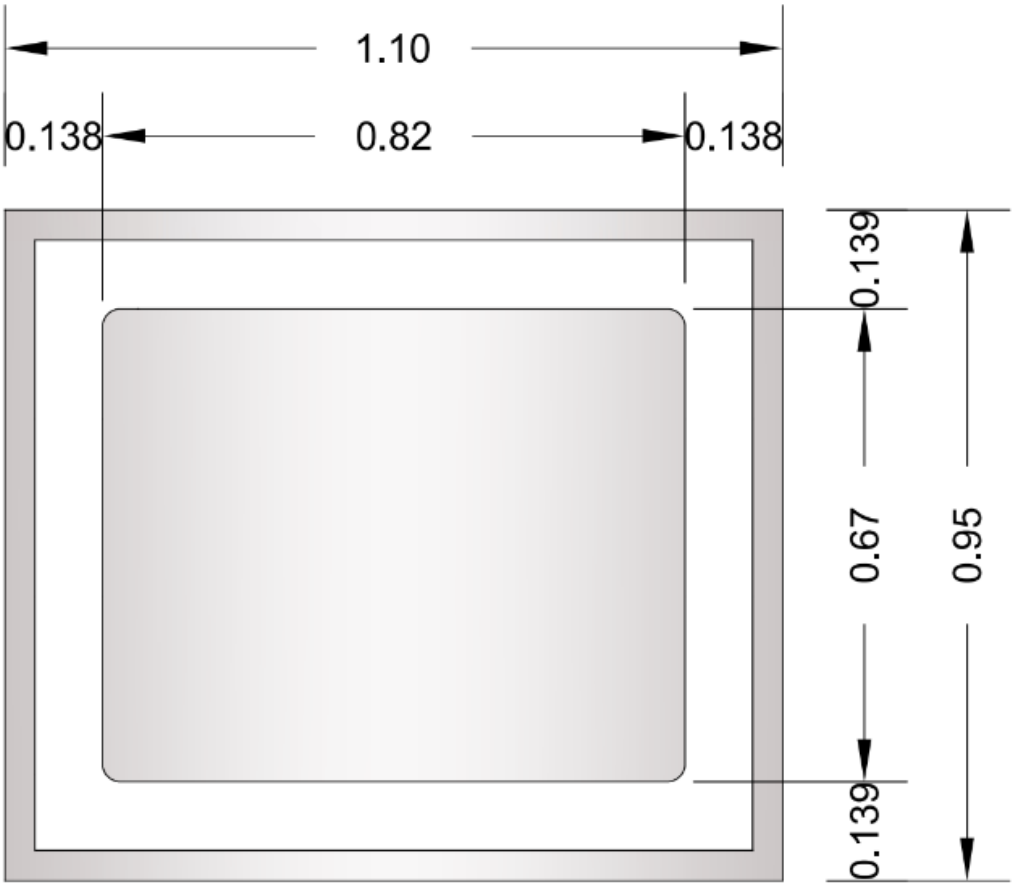
Parameter	Symbol	Typ.	Max.	Unit	Test Conditions
Forward Voltage	V_f	1.5	1.8	V	I_F = 3 A
		1.8	2.4		I_F = 3 A, T_{VJ} = 175°C
Reverse Current	I_R	10	50	µA	V_R = 600 V
		20	100		V_R = 600 V, T_{VJ} = 175°C
Total Capacitive Charge	Q_C	6.7		nC	V_R = 600 V, I_F = 3 A, di/dt =500 A/µs
Total Capacitance	C	155		pF	V_R = 0 V, f = 1Mhz
		13			V_R = 200 V, f = 1Mhz
		12			V_R = 400 V, f = 1Mhz

Thermal Characteristics

Parameter	Symbol	Typical	Unit
Thermal Resistance from Junction to Case[1]	$R_{th(j-c)}$	2.5	°C/W

Note:
[1]Tested in TO-247 Package

Product Dimensions CPW3-0600-S003B



Product Dimensions CPW3-0600-S003B

Parameter	Typical	Units
Die Size (L x W)	1.10 x 0.95	mm
Anode Pad Opening	0.82 x 0.67	mm
Die Thickness[1]	377 ± 10%	µm
Topside Anode Metalization (Al)	4	µm
Backside Cathode Metalization (Ni/Ag)	1.8	µm
Frontside Passivation (polymide)	Polyimide	

Product Ordering Information

[1]SiC Thickness

Order Number	Description	Package
CPW3-0600-S003B-FU6	SiC Diode G3 IND 600V/3A FULL MLT	Bare Die Product

Revision History

Revision History	Date of Change	Brief Summary
1		Initial Release
2	9/12/2023	Template updated

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