

# CPW3-0600-S002B

## Gen 3 Silicon Carbide Schottky Diode

### Description

This is the 3rd generation of high voltage, high performance Z-Rec<sup>®</sup> 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-S002B

### 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

- Switch mode power supply
- Solar inverter
- Power Correction
- UPS

### 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	$I_F$	$T_c = 175^\circ\text{C}$	2	A
Repetitive Peak Forward Surge Current, assumes $t_p = 10\text{ms}$ , Half Sine Wave Pulse	$I_{FRM}$	$T_c = 25^\circ\text{C}$	12	A
Virtual Junction and Storage Temperature	$T_{VJ}, T_{stg}$		-55 to +175	$^\circ\text{C}$
Maximum Processing Temperature, in non-reactive ambient	$T_{proc}$		325	$^\circ\text{C}$

Note: All above notation to  $T_c$  specifies case temperature from die packaged in TO-247, with  $R_{th(j-c)} < 3.8^\circ\text{C/W}$



## Electrical Characteristics ( $T_{VJ} = 25^{\circ}\text{C}$ )

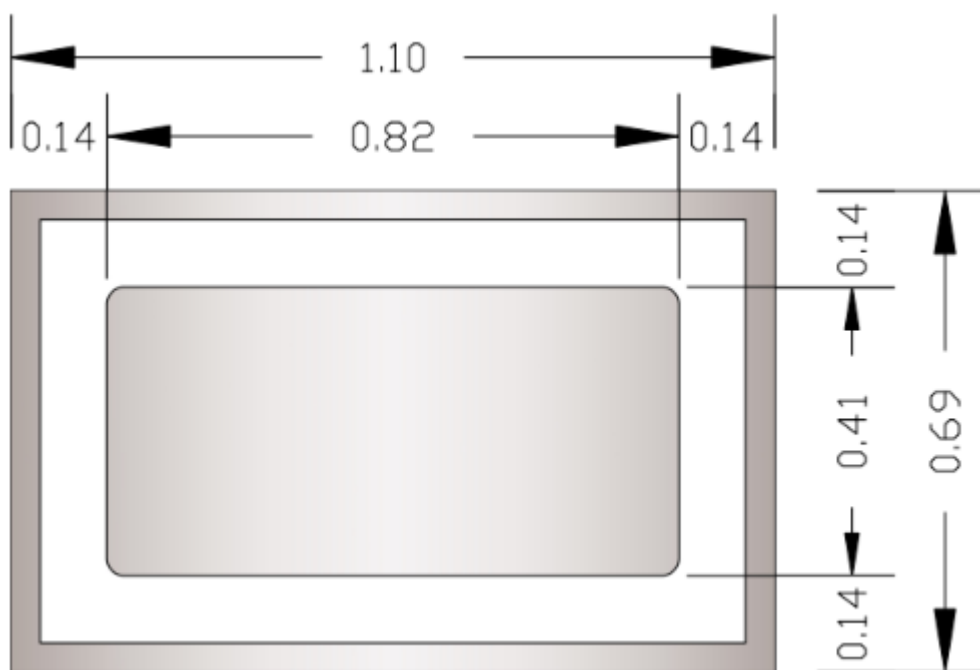
Parameter	Symbol	Typ.	Max.	Unit	Test Conditions
Forward Voltage	$V_F$	1.5	1.8	V	$I_F = 2\text{ A}$
		1.8	2.4		$I_F = 2\text{ A}$ , $T_{VJ} = 175^{\circ}\text{C}$
Reverse Current	$I_R$	10	50	$\mu\text{A}$	$V_R = 600\text{ V}$
		20	100		$V_R = 600\text{ V}$ , $T_{VJ} = 175^{\circ}\text{C}$
Total Capacitive Charge	$Q_C$	4.8		nC	$V_R = 600\text{ V}$ , $I_F = 2\text{ A}$ , $di/dt = 500\text{ A}/\mu\text{s}$
Total Capacitance	C	120		pF	$V_R = 0\text{ V}$ , $f = 1\text{ Mhz}$
		12			$V_R = 200\text{ V}$ , $f = 1\text{ Mhz}$
		11			$V_R = 400\text{ V}$ , $f = 1\text{ Mhz}$

## Thermal Characteristics

Parameter	Symbol	Typical	Unit
Thermal Resistance from Junction to Case <sup>1</sup>	$R_{th(j-c)}$	3.8	$^{\circ}\text{C}/\text{W}$

Note:

<sup>1</sup>Tested in TO-247 Package

**Product Dimensions CPW3-0600-S002B****Product Dimensions CPW3-0600-S002B**

Parameter	Typical	Units
Die Size (L x W)	1.10 x 0.69	mm
Anode Pad Opening	0.82 x 0.41	mm
Die Thickness <sup>1</sup>	377 ± 10%	μm
Topside Anode Metalization (Al)	4	μm
Backside Cathode Metalization (Ni/Ag)	1.8	μm
Frontside Passivation (polyimide)	Polyimide	

<sup>1</sup>SiC Thickness



## Product Ordering Information

Order Number	Description	Package
CPW3-0600-S002B-FU6	SiC Diode G3 IND 600V/2A FULL MLT	Bare Die Product

## Revision History

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



## Notes & Disclaimer

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