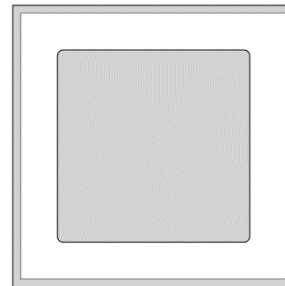


# CPW2-0600-S006B

## Gen 2 Silicon Carbide Schottky Diode

### Description

This is the 2nd 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. 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: CPW2-0600-S006B

### Features

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

### Applications

- Power factor correction
- Solar inverter
- UPS
- SMPS

### 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	$I_F$	$T_c = 25^\circ\text{C}$	19
		$T_c = 135^\circ\text{C}$	9
		$T_c = 154^\circ\text{C}$	6
Repetitive Peak Forward Surge Current, assumes $t_p = 10\text{ms}$ , Half Sine Wave Pulse	$I_{FRM}$	$T_c = 25^\circ\text{C}$	30
		$T_c = 110^\circ\text{C}$	20
Non-Repetitive Forward Surge Current, assumes $t_p = 10\text{ms}$ , Half Sine Wave Pulse	$I_{FSM}$	$T_c = 25^\circ\text{C}$	63
		$T_c = 110^\circ\text{C}$	49
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  $R_{th(j-c)} < 1.7^\circ\text{C/W}$



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

Parameter	Symbol	Typ.	Max.	Unit	Test Conditions
Forward Voltage	$V_f$	1.5	1.7	V	$I_F = 6\text{ A}$
		2	2.4		$I_F = 6\text{ A}, T_{VJ} = 175^{\circ}\text{C}$
Reverse Current	$I_R$	6.5	33	$\mu\text{A}$	$V_R = 600\text{ V}$
		13	132		$V_R = 600\text{ V}, T_{VJ} = 175^{\circ}\text{C}$
Total Capacitive Charge	$Q_C$	15		nC	$V_R = 400\text{ V}$
Total Capacitance	C	295		pF	$V_R = 0\text{ V}, f = 1\text{ Mhz}$
		28.5			$V_R = 200\text{ V}, f = 1\text{ Mhz}$
		25.5			$V_R = 400\text{ V}, f = 1\text{ Mhz}$
Capacitance Stored Energy	$E_C$	2.3		$\mu\text{J}$	$V_R = 400\text{ V}$

## Thermal Characteristics

Parameter	Symbol	Typical	Unit
Thermal Resistance from Junction to Case <sup>1</sup>	$R_{th(j-c)}$	1.7	$^{\circ}\text{C}/\text{W}$

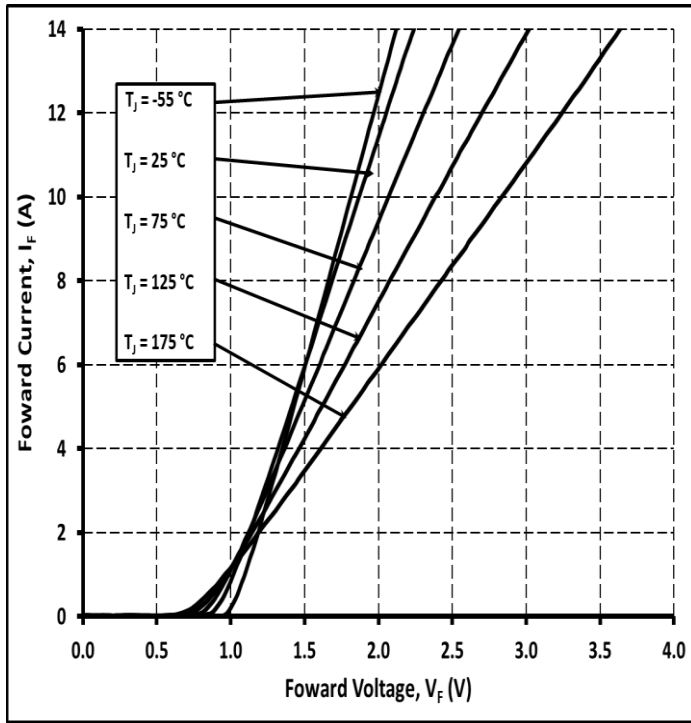
Note:

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



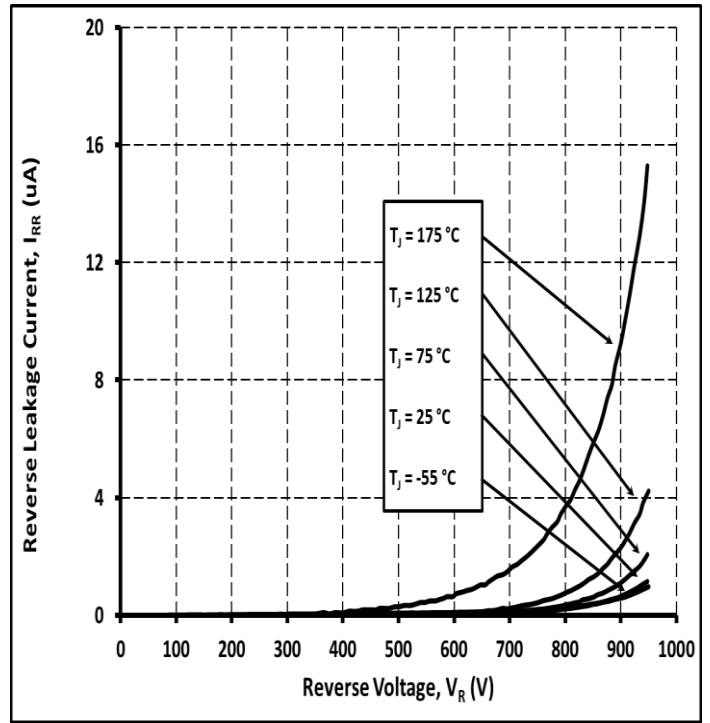
### Typical Performance

All the graphs are based on a die placed in a TO-247 package.



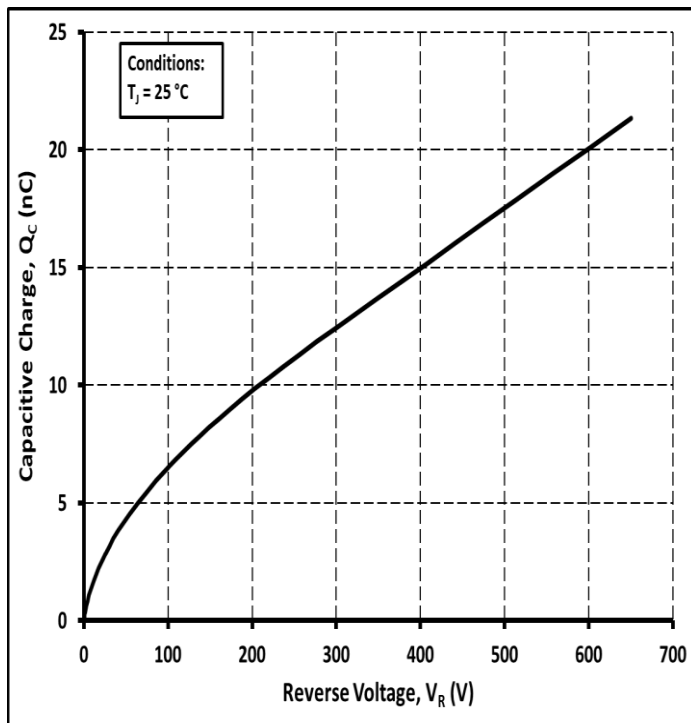
**Figure 1.**

Typical Forward Characteristics



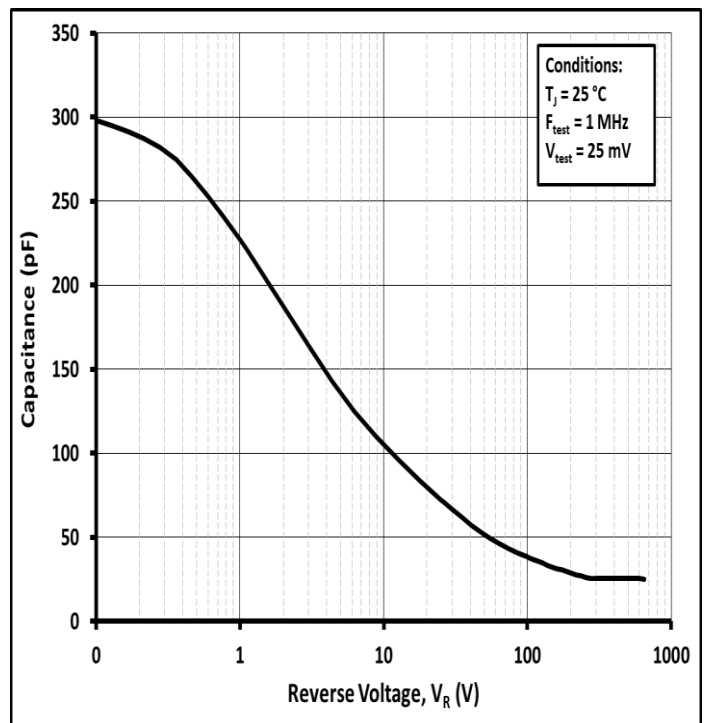
**Figure 2.**

Typical Reverse Characteristics



**Figure 3.**

Typical Capacitance vs Reverse Voltage

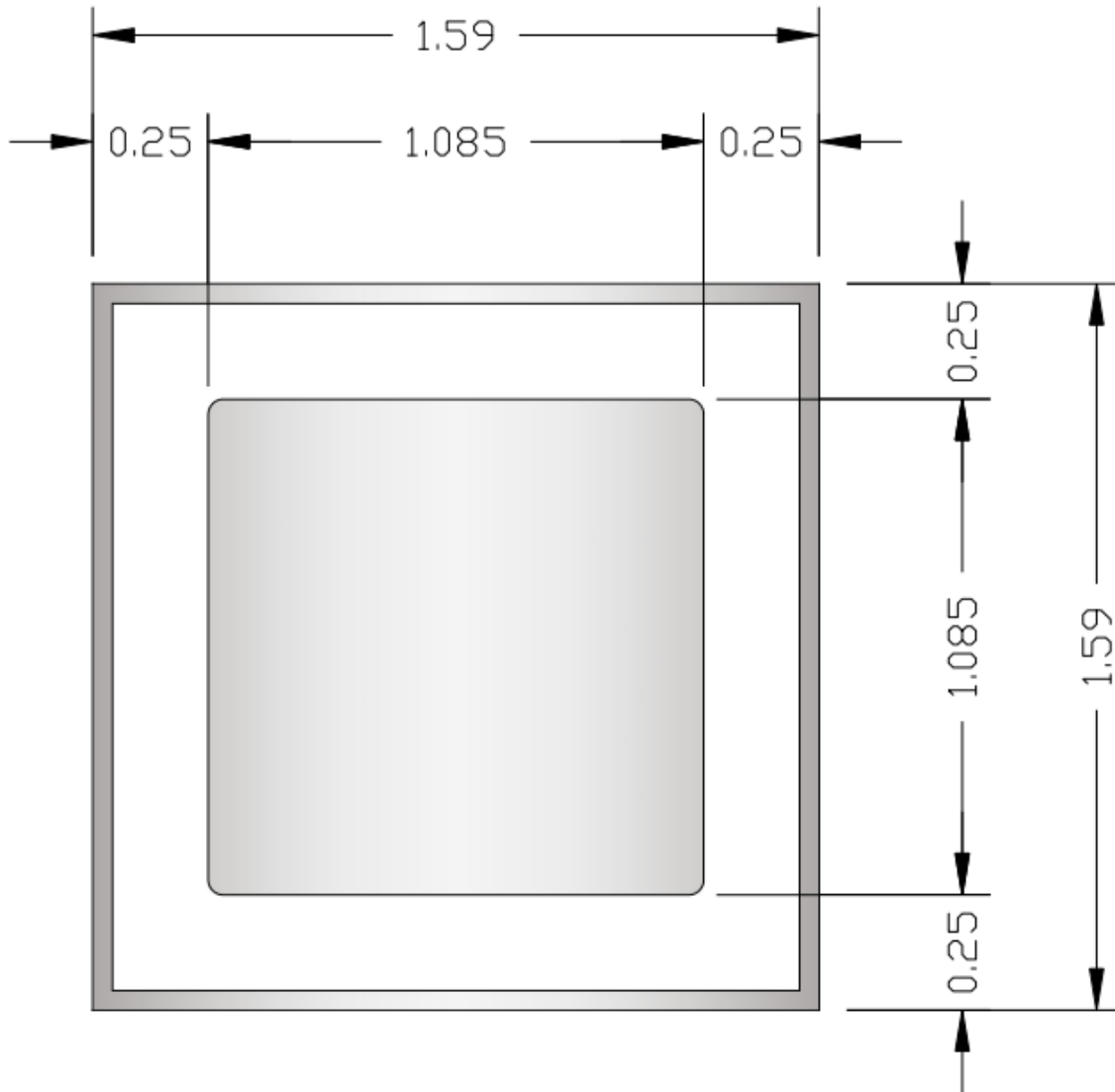


**Figure 4.**

Typical Recovery Charge vs Reverse Voltage



**Product Dimensions CPW2-0600-S006B**



**Product Dimensions CPW2-0600-S006B**

Parameter	Typical	Units
Die Size (L x W)	1.59 x 1.59	mm
Anode Pad Opening	1.08 x 1.08	mm
Die Thickness <sup>1</sup>	377 ± 10%	mm
Topside Anode Metalization (Al)	4	mm
Backside Cathode Metalization (Ni/Ag)	1.8	µm
Frontside Passivation (polyimide)	Polyimide	

<sup>1</sup>SiC Thickness



## Product Ordering Information

Order Number	Description	Package
CPW2-0600-S006B-FU6	SIC Diode G2 IND 600V/6A FULL MLT	Bare Die Product

## Revision History

Revision History	Date of Change	Brief Summary
1		Initial Release
4	9/1/2023	<ul style="list-style-type: none"><li>• Template updated</li></ul>



## Notes & Disclaimer

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