

# CPW5-0650-Z030B

## Silicon Carbide Schottky Diode Chip

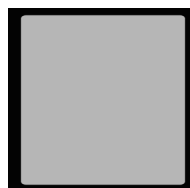
### Z-REC™ RECTIFIER

$V_{RRM}$	=	650 V
$I_F$	=	30 A
$Q_c$	=	65 nC

#### Features

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

#### Chip Outline



Part Number	Die Size	Anode	Cathode
CPW5-0650-Z030B	2.8 x 2.8 mm <sup>2</sup>	Al	Ni/Ag

#### Maximum Ratings ( $T_C = 25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter	Value	Unit	Test Conditions	Note
$V_{RRM}$	Repetitive Peak Reverse Voltage	650	V		
$V_{RSM}$	Surge Peak Reverse Voltage	650	V		
$V_R$	DC Peak Blocking Voltage	650	V		
$I_F$	Maximum DC Current	30	A	$T_J = 150^\circ\text{C}$	1
$T_J, T_{stg}$	Operating Junction and Storage Temperature	-55 to +175	$^\circ\text{C}$		
$T_{Proc}$	Maximum Processing Temperature	325	$^\circ\text{C}$	10 min Maximum	

Note:

1. Assumes  $\theta_{JC}$  Thermal Resistance <  $0.53^\circ\text{C/W}$  and  $T_C = 110^\circ\text{C}$

## Electrical Characteristics

Symbol	Parameter	Typ.	Max.	Unit	Test Conditions	Note
$V_F$	DC Forward Voltage	1.60 1.37	1.70	V	$I_F = 30\text{ A } T_J = 25^\circ\text{C}$ $I_F = 20\text{ A } T_J = 25^\circ\text{C}$	Fig 1
		2.20 1.67		V	$I_F = 30\text{ A } T_J = 175^\circ\text{C}$ $I_F = 20\text{ A } T_J = 175^\circ\text{C}$	
$I_R$	Reverse Current	20 0.4	80	$\mu\text{A}$	$V_R = 650\text{ V } , T_J = 25^\circ\text{C}$ $V_R = 400\text{ V } , T_J = 25^\circ\text{C}$	Fig 2
		60 2		$\mu\text{A}$	$V_R = 650\text{ V } , T_J = 175^\circ\text{C}$ $V_R = 400\text{ V } , T_J = 175^\circ\text{C}$	
$Q_C$	Total Capacitive Charge	65		nC	$V_R = 400\text{ V } , T_J = 25^\circ\text{C}$	Fig 4
C	Total Capacitance	1137 116 110		pF	$V_R = 0\text{ V } , T_J = 25^\circ\text{C} , f = 1\text{ MHz}$ $V_R = 200\text{ V } , T_J = 25^\circ\text{C} , f = 1\text{ MHz}$ $V_R = 400\text{ V } , T_J = 25^\circ\text{C} , f = 1\text{ MHz}$	Fig 3

## Mechanical Parameters

Parameter	Typ.	Unit
Die Size	2.8 x 2.8	mm
Anode Pad Opening	1.9 x 1.9	mm
Thickness	180 ± 10%	$\mu\text{m}$
Wafer Size	100	mm
Anode Metalization (Al)	4	$\mu\text{m}$
Cathode Metalization (Ni/Ag)	1.8	$\mu\text{m}$
Frontside Passivation	Polyimide	

## Typical Performance

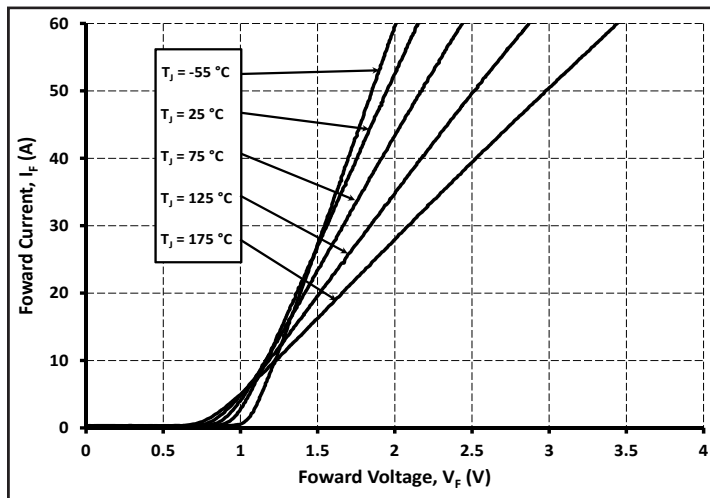


Figure 1. Typical Forward Characteristics

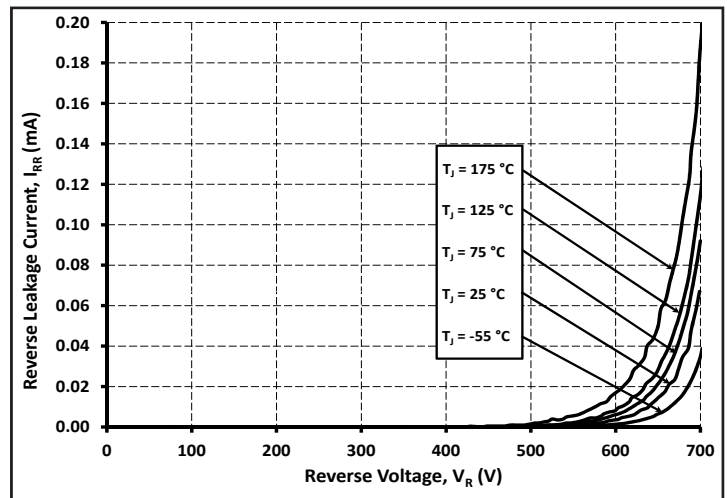


Figure 2. Typical Reverse Characteristics

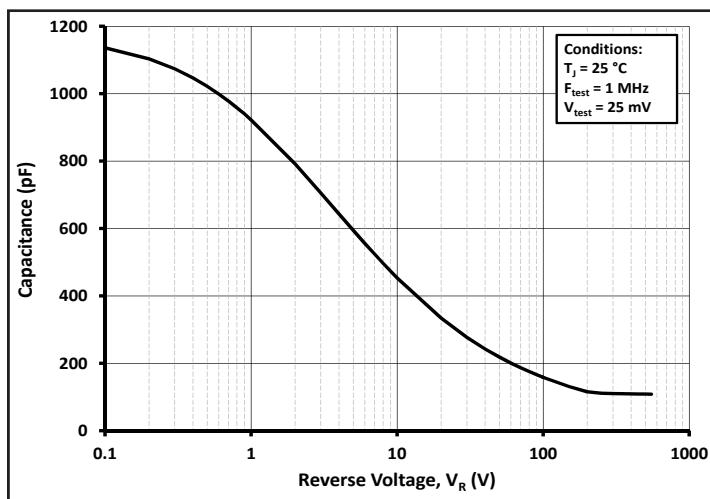


Figure 3. Typical Capacitance vs. Reverse Voltage

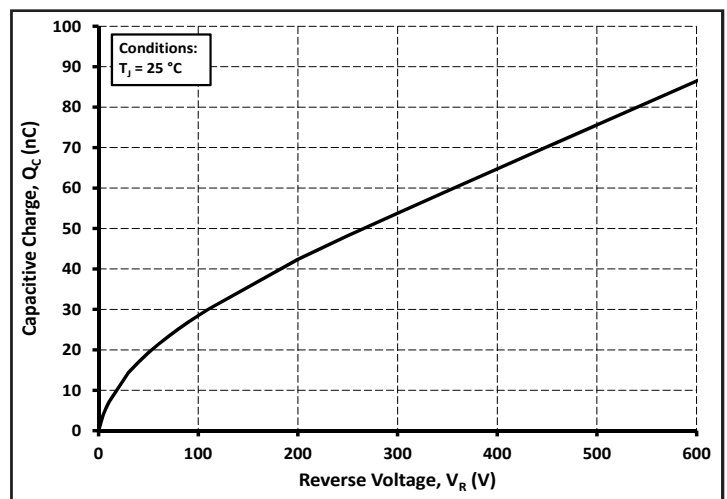
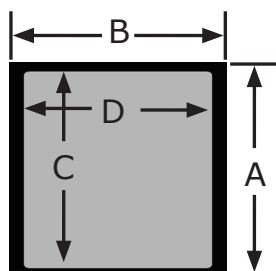


Figure 4. Typical Recovery Charge vs. Reverse Voltage

## Chip Dimensions



symbol	dimension	
	mm	inch
A	2.8	0.110
B	2.8	0.110
C	1.9	0.075
D	1.9	0.075

## Notes

- RoHS Compliance**

The levels of RoHS restricted materials in this product are below the maximum concentration values (also referred to as the threshold limits) permitted for such substances, or are used in an exempted application, in accordance with EU Directive 2011/65/EC (RoHS2), as implemented January 2, 2013. RoHS Declarations for this product can be obtained from your Cree representative or from the Product Documentation sections of [www.cree.com](http://www.cree.com).

- REACH Compliance**

REACH substances of high concern (SVHCs) information is available for this product. Since the European Chemical Agency (ECHA) has published notice of their intent to frequently revise the SVHC listing for the foreseeable future, please contact a Cree representative to insure you get the most up-to-date REACH SVHC Declaration. REACH banned substance information (REACH Article 67) is also available upon request.

- This product has not been designed or tested for use in, and is not intended for use in, applications implanted into the human body nor in applications in which failure of the product could lead to death, personal injury or property damage, including but not limited to equipment used in the operation of nuclear facilities, life-support machines, cardiac defibrillators or similar emergency medical equipment, aircraft navigation or communication or control systems, air traffic control systems, or weapons systems.