

CPW5-1700-Z010A

Silicon Carbide Schottky Diode Chip

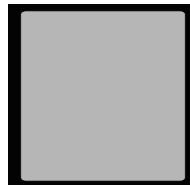
Z-REC[®] RECTIFIER

V_{RRM}	=	1700 V
$I_{F, Rated}$	=	10 A
Q_c	=	111 nC

Features

- 1700-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
CPW5-1700-Z010A	2.97 x 2.97 mm ²	Al	Ni/Au

Maximum Ratings

Symbol	Parameter	Value	Unit	Test Conditions	Note
V_{RRM}	Repetitive Peak Reverse Voltage	1700	V		
V_R	DC Peak Blocking Voltage	1700	V		
I_F	Continuous Forward Current	10	A	Limited by T_J	1
T_J, T_{stg}	Operating Junction and Storage Temperature	-55 to +175	°C		
T_{Proc}	Maximum Processing Temperature	325	°C	10 min Maximum	

Note 1: Assume $R_{\theta JC}$ Thermal Resistance = 0.81 °C/W

Electrical Characteristics

Symbol	Parameter	Typ.	Max.	Unit	Test Conditions	Note
V_F	Forward Voltage	1.5 2.2	1.8 2.5	V	$I_F = 10\text{ A}$ $T_J = 25^\circ\text{C}$ $I_F = 10\text{ A}$ $T_J = 175^\circ\text{C}$	Fig. 1
I_R	Reverse Current	20 120	200 300	μA	$V_R = 1700\text{ V}$ $T_J = 25^\circ\text{C}$ $V_R = 1700\text{ V}$ $T_J = 175^\circ\text{C}$	Fig. 2
Q_C	Total Capacitive Charge	111		nC	$V_R = 1700\text{ V}$, $I_F = 10\text{ A}$ $di/dt = 200\text{ A}/\mu\text{s}$ $T_J = 25^\circ\text{C}$	Fig. 3
C	Total Capacitance	830 51 50		pF	$V_R = 0\text{ V}$, $T_J = 25^\circ\text{C}$, $f = 100\text{ KHz}$ $V_R = 800\text{ V}$, $T_J = 25^\circ\text{C}$, $f = 100\text{ KHz}$ $V_R = 1700\text{ V}$, $T_J = 25^\circ\text{C}$, $f = 100\text{ KHz}$	Fig. 4
E_C	Capacitance Stored Energy	76		μJ	$V_R = 1700\text{ V}$	

Mechanical Parameters

Parameter	Typ.	Unit
Die Size	2.97 x 2.97	mm
Anode Pad opening	2.07 x 2.07	mm
Thickness	380 \pm 10%	μm
Wafer Size	150	mm
Anode Metalization (Al)	4	μm
Cathode Metalization (Ni/Au)	0.9	μm
Frontside Passivation	Polyimide	

Typical Characteristics

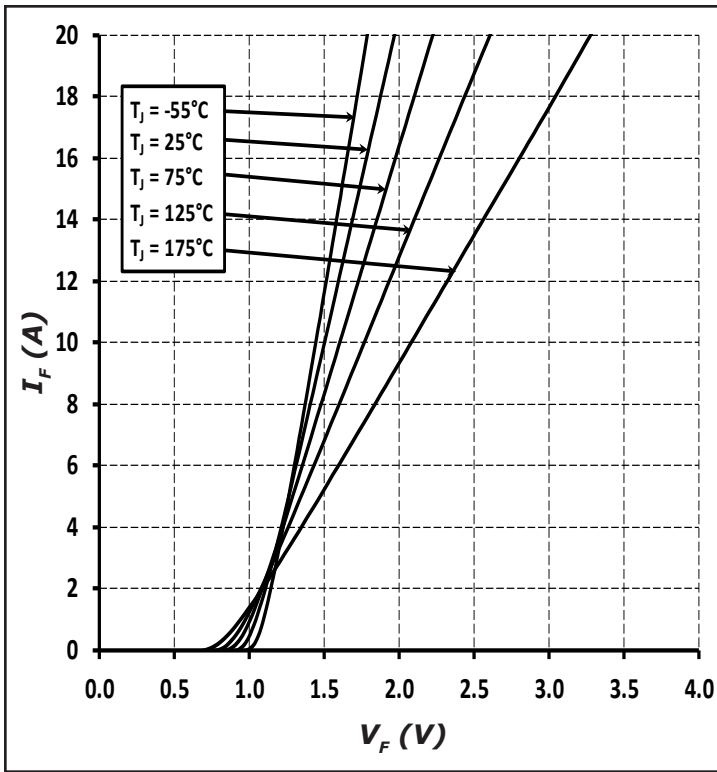


Figure 1. Forward Characteristics

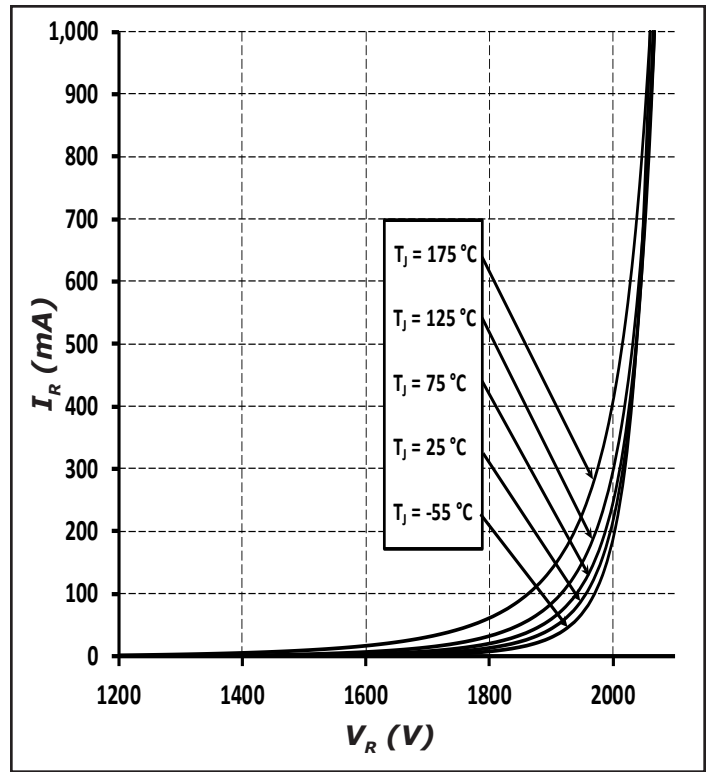


Figure 2. Reverse Characteristics

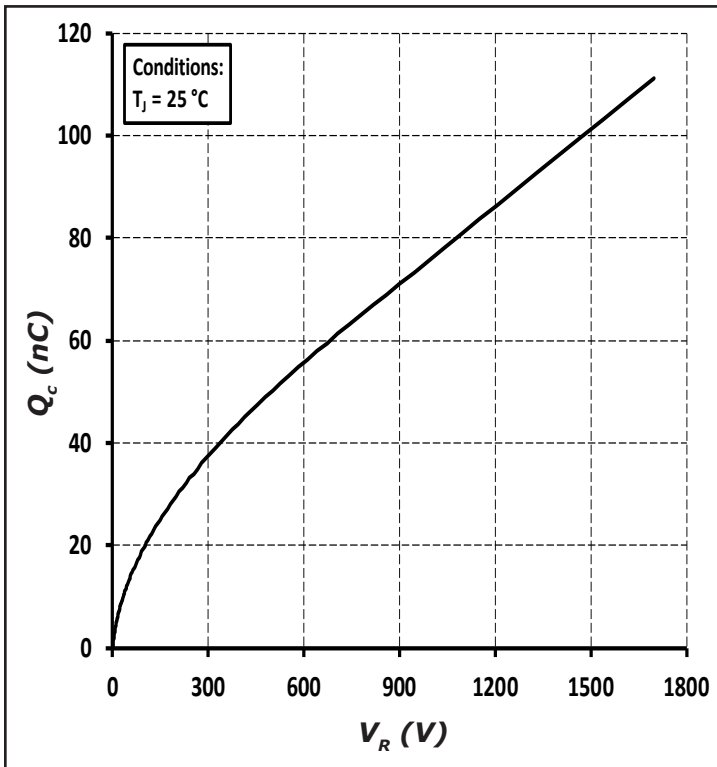


Figure 3. Total Capacitance Charge vs. Reverse Voltage

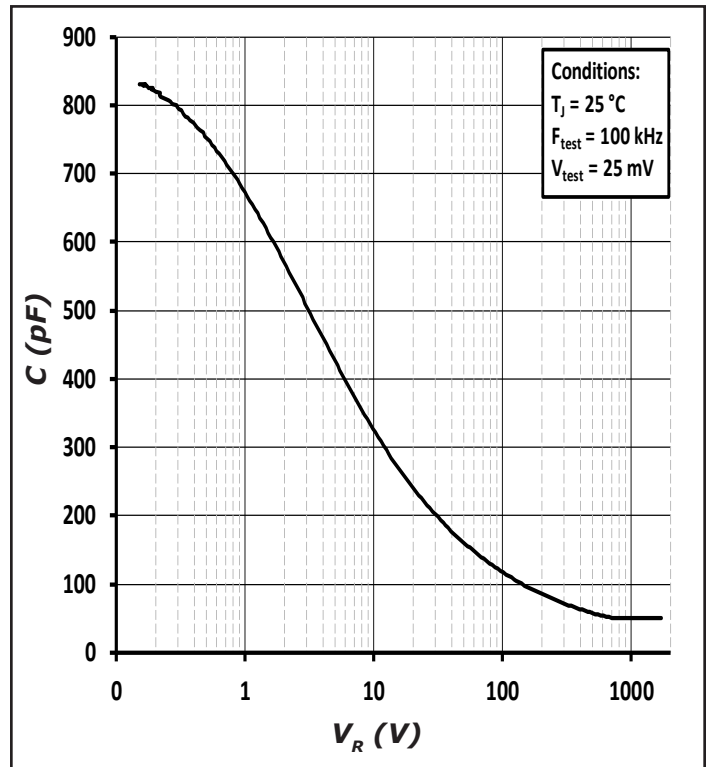
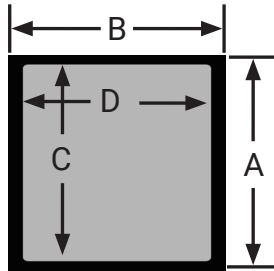


Figure 4. Capacitance vs. Reverse Voltage

Chip Dimensions



Symbol	Dimension	
	mm	inch
A	2.97	0.117
B	2.97	0.117
C	2.07	0.081
D	2.07	0.081

Product Ordering Part Numbers

Part Number	Wafer Size	Delivery Platform
CPW5-1700-Z010A-FR6	150mm	Sawn wafer on Adwill D-485H UV Tape with Black Frame (epak eOP0319 (FF-070 Size)) [E142 Wafer Map]

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.
- 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, or air traffic control systems.

Related Links

- Cree SiC Schottky diode portfolio: <http://www.wolfspeed.com/Power/Products#SiCSchottkyDiodes>
- Schottky diode Spice models: <http://www.wolfspeed.com/power/tools-and-support/DIODE-model-request2>
- SiC MOSFET and diode reference designs: <http://go.pardot.com/l/101562/2015-07-31/349i>