CPW4-1200-S010B

Silicon Carbide Schottky Diode Chip

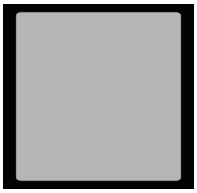
Z-Rec® Rectifier

V_{RRM}	=	1200 V
$I_{F(AVG)}$	=	10 A
Q_c	=	52 nC

Features

- 1.2kV 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
CPW4-1200-S010B	2.26 x 2.26 mm^2	Al	Ni/Ag

Maximum Ratings

Symbol	Parameter	Value	Unit	Test Conditions	Note
V_{RRM}	Repetitive Peak Reverse Voltage	1200	V		
V_{RSM}	Surge Peak Reverse Voltage	1300	V		
V_R	DC Peak Blocking Voltage	1200	V		
I_F	Continuous Forward Current	33 16 10	A	T_C=25°C T_C=135°C T_C=156°C	1
I_{FRM}	Repetitive Peak Forward Surge Current	47 31.5	A	T_C=25°C, t_P=10 ms, Half Sine Pulse T_C=110°C, t_P=10 ms, Half Sine Pulse	1
I_{FSM}	Non-Repetitive Forward Surge Current	71 59.5	A	T_C=25°C, t_P=10 ms, Half Sine Pulse T_C=110°C, t_P=10 ms, Half Sine Pulse	1
$I_{F,Max}$	Non-Repetitive Peak Forward Current	750 620	A	T_C=25°C, t_P=10 µs, Pulse T_C=110°C, t_P=10 µs, Pulse	
dV/dt	Diode dV/dt ruggedness	200	V/ns	V_R=0-600V	
T_J , T_{stg}	Operating Junction and Storage Temperature	-55 to +175	°C		
T_{Proc}	Maximum Processing Temperature	325	°C	10 min. maximum	

1. Assumes $R_{\theta JC}$ Thermal Resistance of 0.9°C/W or less

Electrical Characteristics

Symbol	Parameter	Typ.	Max.	Unit	Test Conditions	Note
V_F	Forward Voltage	1.5 2.2	1.8 3	V	I_F = 10 A T_J=25°C I_F = 10 A T_J=175°C	Fig. 1
I_R	Reverse Current	30 55	250 350	µA	V_R = 1200 V T_J=25°C V_R = 1200 V T_J=175°C	Fig. 2
Q_C	Total Capacitive Charge	52		nC	V_R = 800 V, I_F = 10A di/dt = 200 A/µs T_J = 25°C	Fig. 3
C	Total Capacitance	754 45 38		pF	V_R = 0 V, T_J = 25°C, f = 1 MHz V_R = 400 V, T_J = 25˚C, f = 1 MHz V_R = 800 V, T_J = 25˚C, f = 1 MHz	Fig. 4
E_C	Capacitance Stored Energy	14.5		µJ	V_R = 400 V	

Mechanical Parameters

Parameter	Typ.	Unit
Die Size	2.26 x 2.26	mm
Anode Pad Size	1.98 x 1.98	mm
Anode Pad Opening	1.70 x 1.70	mm
Thickness	377 ± 10%	µm
Wafer Size	100	mm
Anode Metalization (Al)	4	µm
Cathode Metalization (Ni/Ag)	1.4	µm
Frontside Passivation	Polyimide	

Typical Characteristics

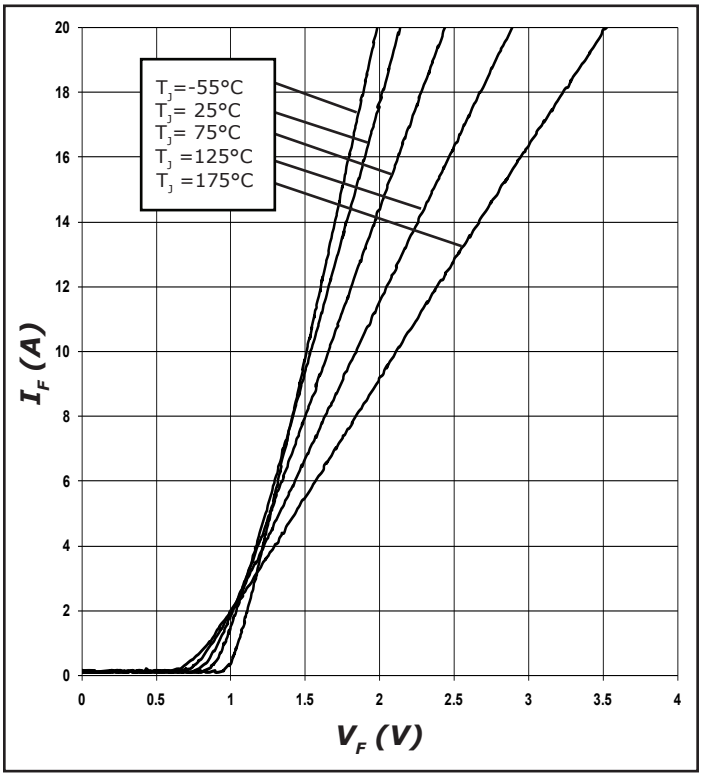


Figure 1. Forward Characteristics

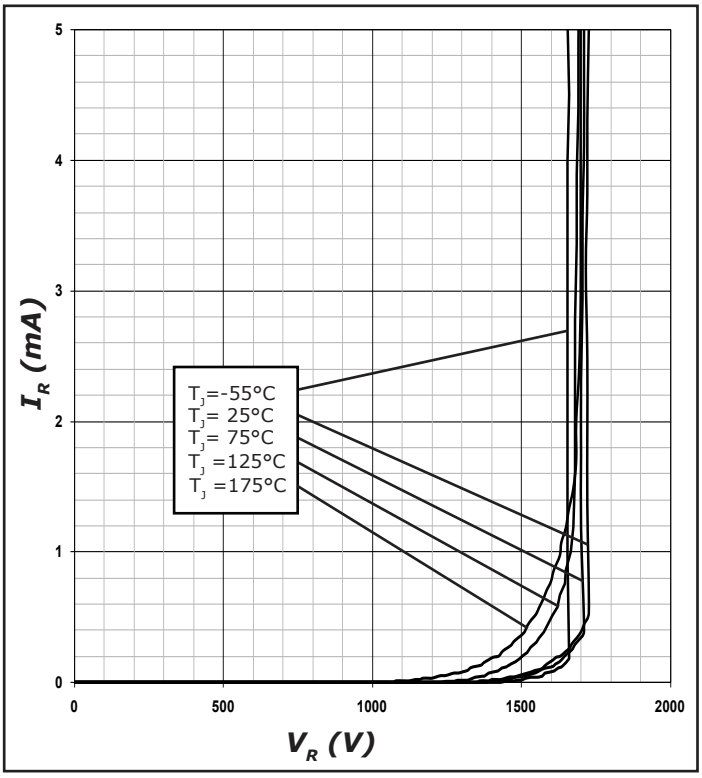


Figure 2. Reverse Characteristics

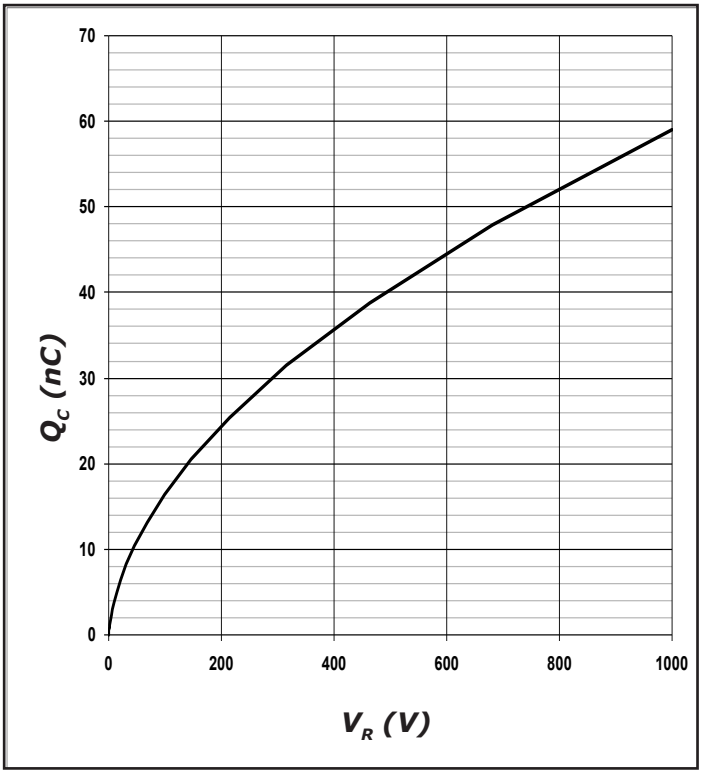


Figure 3. Total Capacitance Charge vs. Reverse Voltage

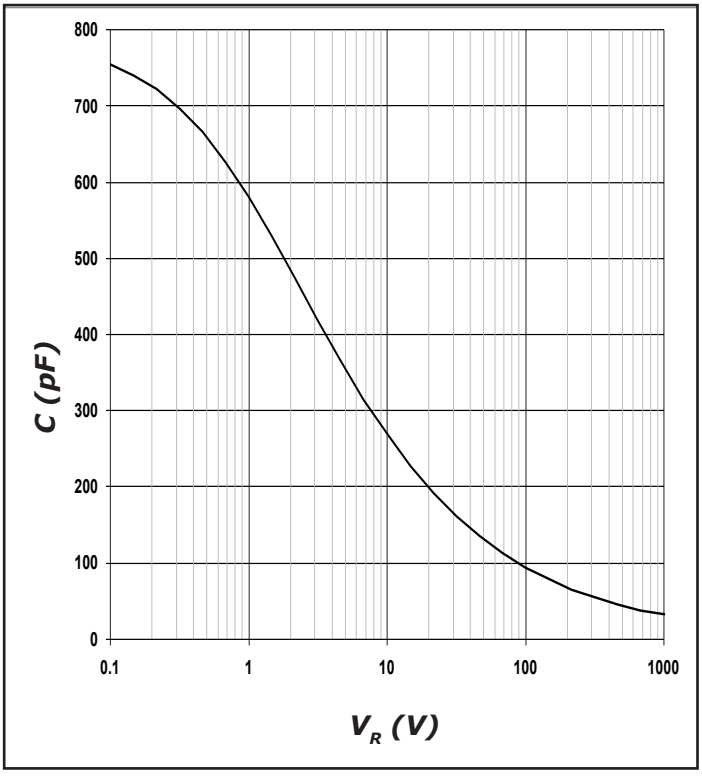
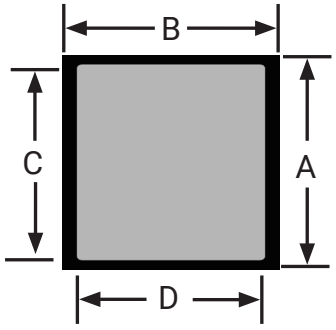


Figure 4. Capacitance vs. Reverse Voltage

Chip Dimensions



symbol	dimension	
	mm	inch
A	2.26	0.089
B	2.26	0.089
C	1.70	0.067
D	1.70	0.067

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

Cree, Inc.
4600 Silicon Drive
Durham, NC 27703
USA Tel: +1.919.313.5300
Fax: +1.919.313.5451
www.cree.com/power