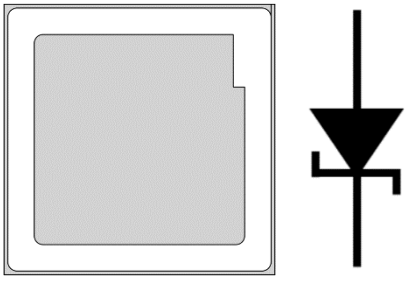
CPW6-1200-Z020A

Gen 6 Silicon Carbide Schottky Diode

Description

This is the 6th generation of high voltage, high performance Z-Rec© 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 high density DC to DC converters. 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,
Representative Image Only

Features

- Low Forward Voltage (VF) Drop with Positive Temperature Coefficient
- Zero Reverse Recovery Current / Forward Recovery Voltage
- Temperature-Independent Switching Behavior

Typical Applications

- Solar Inverters
- Motor Drives
- EV Chargers
- UPS
- Industrial Power Supplies

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}		1200	V
Continuous Forward Current	I_F	T_c = 25°C	65	A
		T_c = 125°C	34	
		T_c = 154°C	20	
Repetitive Peak Forward Surge Current, assumes t_p = 10ms, Half Sine Wave Pulse	I_{FRM}	T_c = 25°C	89	A
		T_c = 110°C	51	
Non-Repetitive Forward Surge Current, assumes t_p = 10ms, Half Sine Wave Pulse	I_{FSM}	T_c = 25°C	149	A
		T_c = 110°C	129	
Virtual Junction and Storage Temperature	T_{VJ}, T_{stg}		-55 to +175	°C
Maximum Processing Temperature, in non-reactive ambient	T_{proc}		325	°C

Note: All above notation to T_c specifies case temperature from die packaged in TO-247, with $R_{th(j-c)}$ < 0.51°C/W

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Electrical Characteristics (T_{VJ} = 25˚C)

Parameter	Symbol	Typ.	Max.	Unit	Test Conditions
Forward Voltage	V_f	1.3	1.8	V	I_F = 20A
		1.7			I_F = 20A, T_{VJ} = 175°C
Reverse Current	I_R	5		µA	V_R = 1200V
		29			V_R = 1200V, T_{VJ} = 175°C
Total Capacitive Charge	Q_C	118		nC	V_R = 800 V
Total Capacitance	C	2000		pF	V_R = 0 V, f = 1 Mhz
		99			V_R = 400 V, f = 1Mhz
		77			V_R = 800 V, f = 1Mhz
Capacitance Stored Energy	E_C	32		µJ	V_R = 800 V

Thermal Characteristics

Parameter	Symbol	Typical	Unit
Thermal Resistance from Junction to Case[1]	$R_{th(j-c)}$	0.51	°C/W

[1]Tested in TO-247 Package

Typical Performance

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

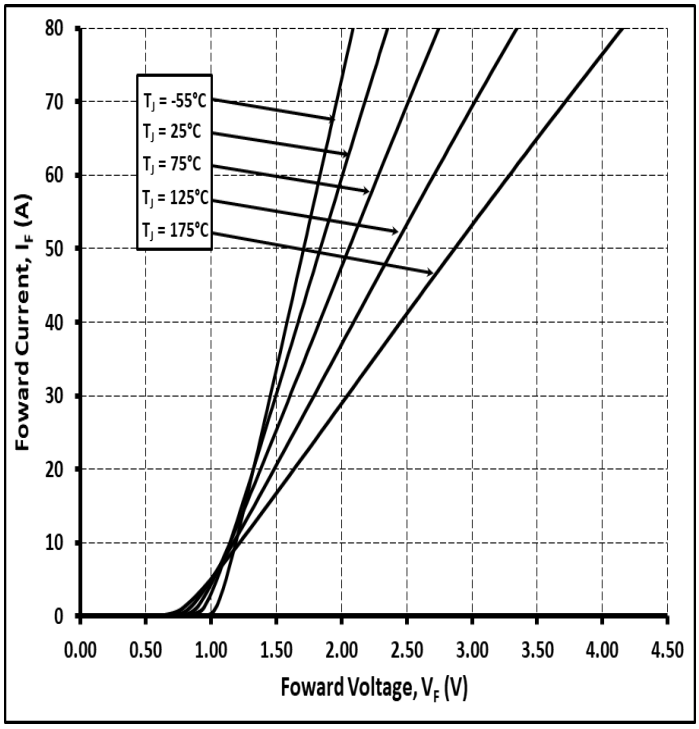

Figure 1.

Typical Forward Characteristics

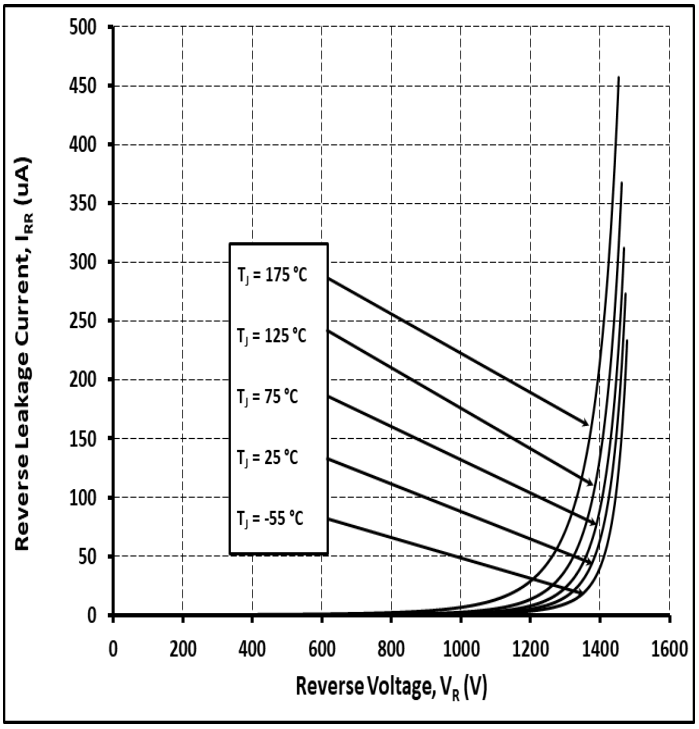

Figure 2.

Typical Reverse Characteristics

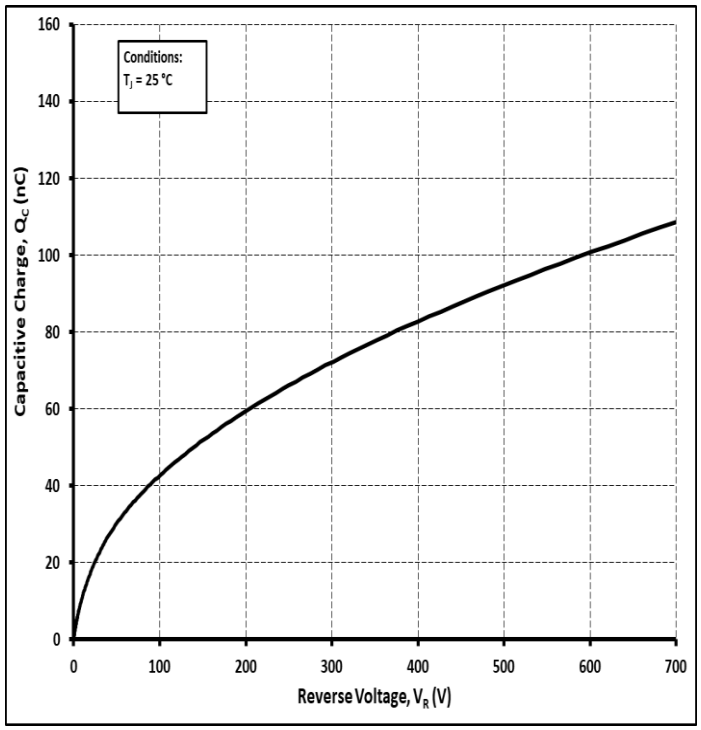

Figure 3.

Total Capacitance Charge vs Reverse Voltage

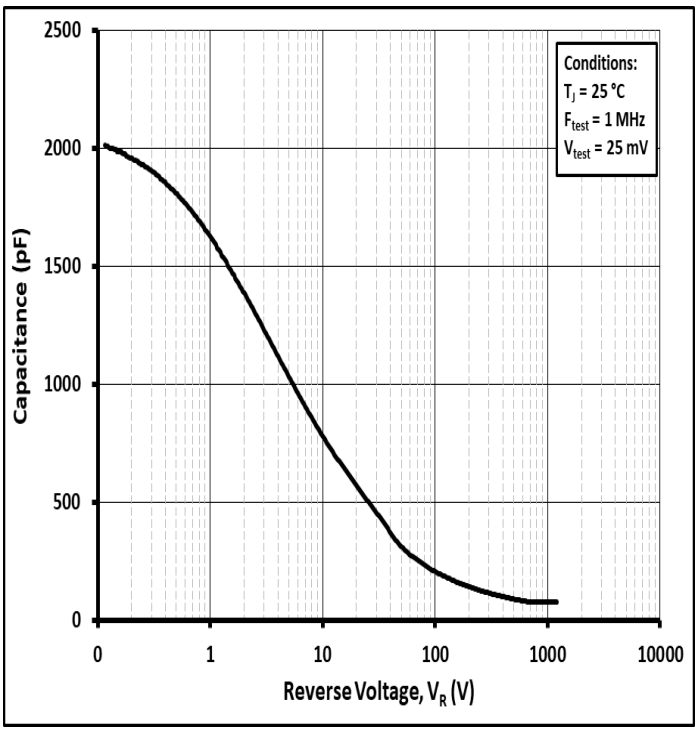

Figure 4.

Capacitance vs Reverse Voltage

Product Ordering Information

Order Number	Description	Package
CPW6-1200-Z020A-FU6	SiC DIODE G6 IND 1200V/20A FULL MLT	Bare Die Product

Revision History

Revision History	Date of Change	Brief Summary
0	8/10/2023	Pre-production datasheet release
1	8/6/2024	Initial release
2	11/5/2024	• Updated “Typical Applications” • Updated disclaimers • Updated Titles for Figures 3 and 4

Notes & Disclaimers

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