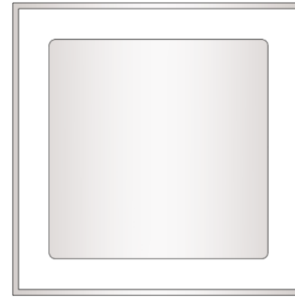


EPW4-1200-S010A

Automotive Gen 4 Silicon Carbide Schottky Diode

Description

This is the 4th generation of high voltage, high performance automotive 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 AC 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
PN's: EPW4-1200-S010A

Features

- Zero Reverse Recovery
- High-Frequency Operation
- Temperature-Independent Switching Behavior
- Extremely Fast Switching
- AEC-Q101 Qualified and PPAP Capable

Applications

- Boost diodes in PFC or DC/DC stages
- Free Wheeling Diodes in Inverter stages
- AC/DC converters
- Automotive and traction power conversion
- PV Inverters

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	$T_c = 175^{\circ}\text{C}$	10	A
Repetitive Peak Forward Surge Current, assumes $t_p = 10\text{ms}$, Half Sine Wave Pulse	I_{FRM}	$T_c = 25^{\circ}\text{C}$	44	A
		$T_c = 110^{\circ}\text{C}$	26	
Diode dV/dt ruggedness, $V_r = 0-960\text{V}$	dV/dt		250	V/ns
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 $R_{th(j-c)} < 0.9^{\circ}\text{C/W}$

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

Parameter	Symbol	Typ.	Max.	Unit	Test Conditions
Forward Voltage	V _f	1.5	1.8	V	I _F = 10 A
		1.9			I _F = 10 A, T _{VJ} = 175°C
Reverse Current	I _R	30	250	μA	V _R = 1200 V
		55			V _R = 1200 V, T _{VJ} = 175°C
Total Capacitive Charge	Q _C	56		nC	V _R = 800 V, I _F = 10 A, di/dt = 200 A/μs
Total Capacitance	C	777		pF	V _R = 0 V, f = 1Mhz
		51			V _R = 400 V, f = 1Mhz
		44			V _R = 800 V, f = 1Mhz
Capacitance Stored Energy	E _C	17		μJ	V _R = 800 V

Thermal Characteristics

Parameter	Symbol	Typical	Unit
Thermal Resistance from Junction to Case ¹	R _{th(j-c)}	0.9	°C/W

Note:

¹Tested in TO-247 Package

Typical Performance

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

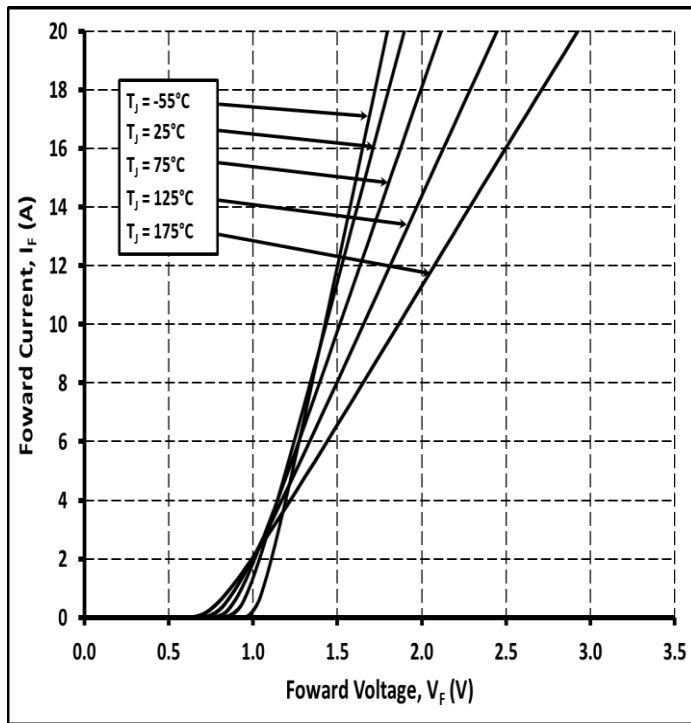


Figure 1.

Typical Forward Characteristics

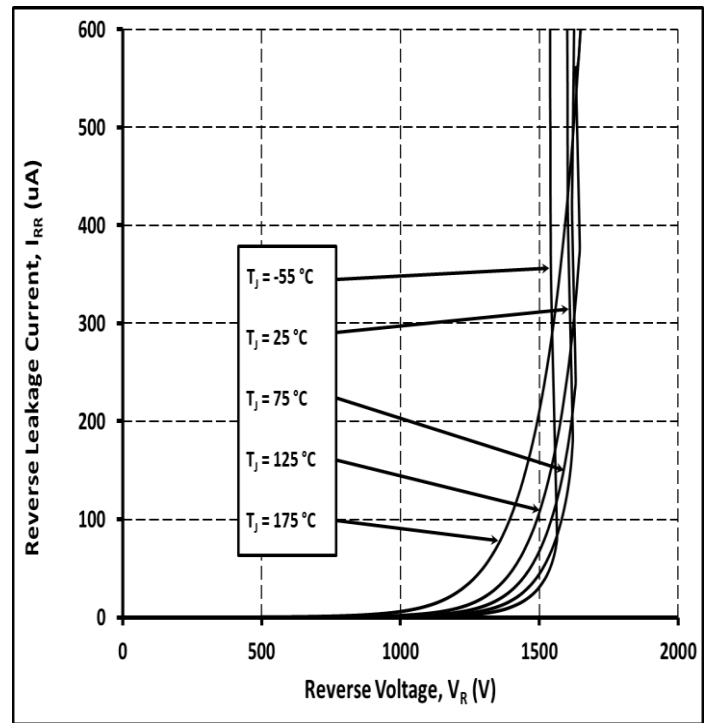


Figure 2.

Typical Reverse Characteristics

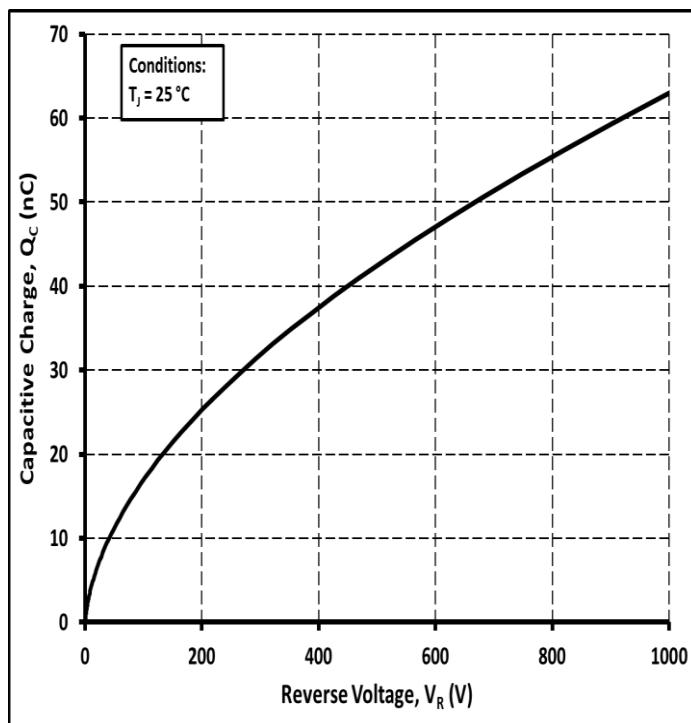


Figure 3.

Typical Capacitance vs Reverse Voltage

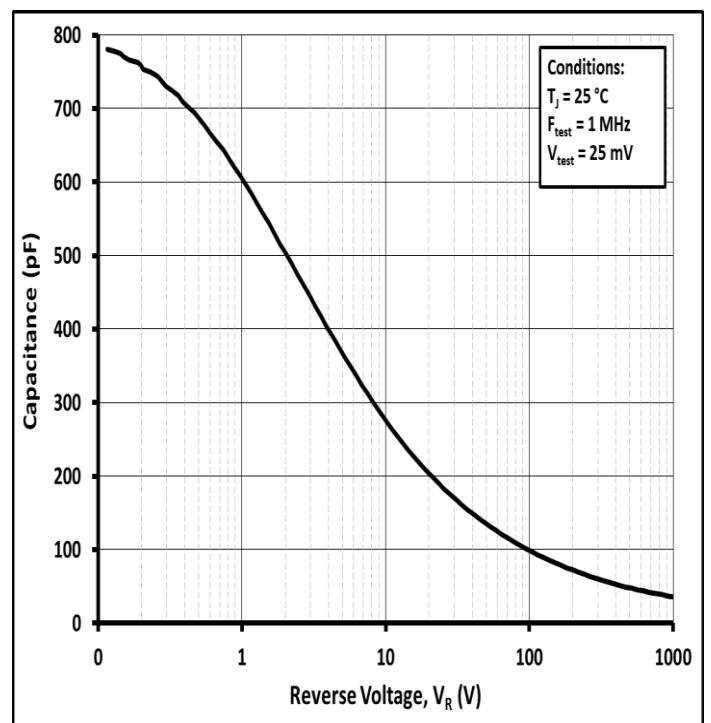
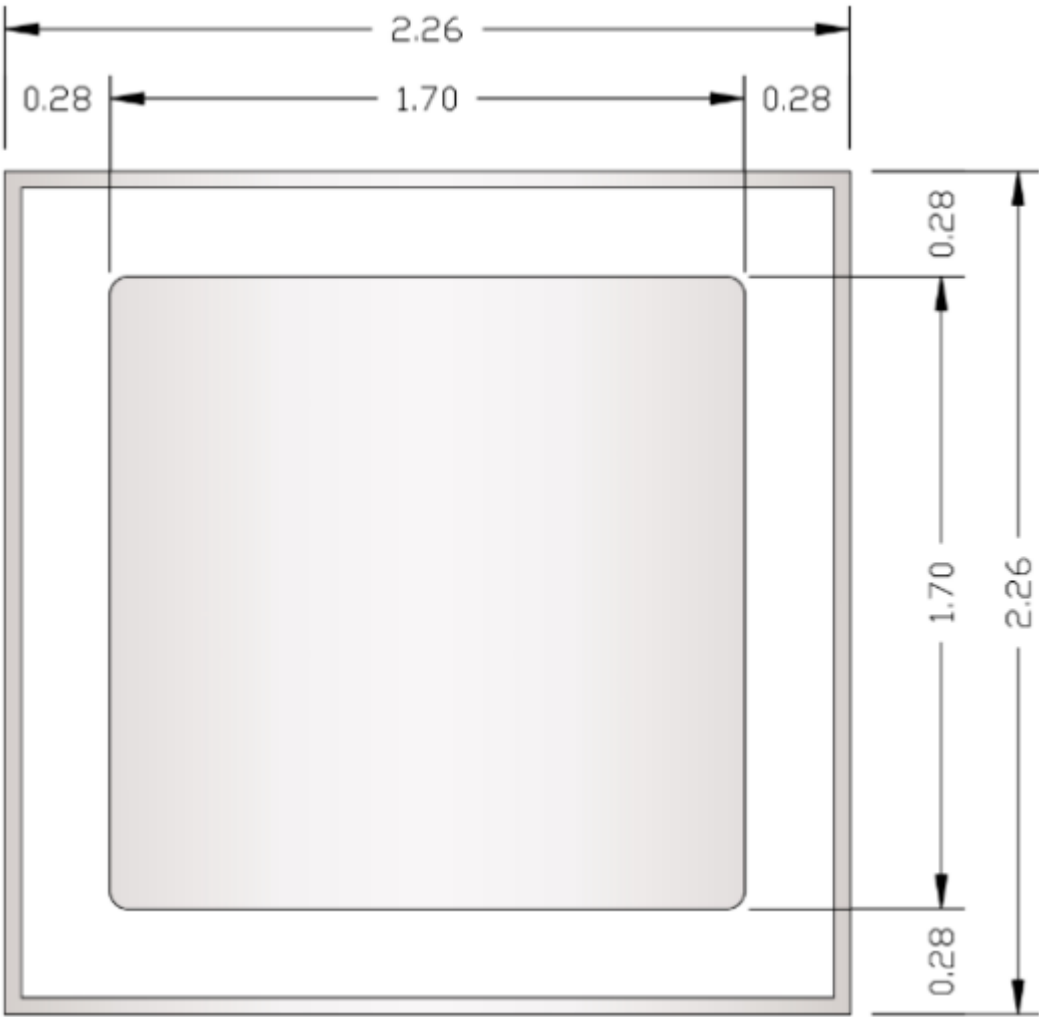


Figure 4.

Typical Recovery Charge vs Reverse Voltage



Product Dimensions EPW4-1200-S010A



Product Dimensions EPW4-1200-S010A

Parameter	Typical	Units
Die Size (L x W)	2.26 x 2.26	mm
Anode Pad Opening	1.70 x 1.70	mm
Die Thickness ¹	377 ± 10%	μm
Topside Anode Metalization (Al)	4	μm
Backside Cathode Metalization (Ni/Ag)	0.9	μm
Frontside Passivation (polymide)	Polyimide	

¹SiC Thickness



Product Ordering Information

Order Number	Description	Package
EPW4-1200-S010A-FU6	SiC Diode G4 AUTO 1200V/10A FULL MLT	Bare Die Product

Revision History

Revision History	Date of Change	Brief Summary
0		Initial Release
1	1/23/2024	Template updated

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