



1200V SiC Schottky Diode

GP3D010A120S

VDC	1200 V
Q _C	53 nC
I _F	10 A
T _{j,max}	175 °C

Amp+™ Features

- Unipolar rectifier with surge current
- Zero reverse recovery current
- Fast, temperature-independent switching
- All parts tested to 1400V

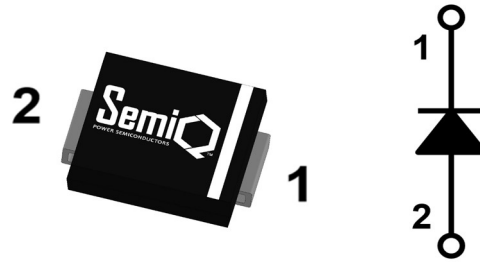
Amp+™ Benefits

- Near zero switching loss
- Higher efficiency
- Smaller heat sink
- Easy to parallel

Amp+™ Applications

- Pulsed Power Generator/Converter
- Switch mode power supplies
- Anti-Parallel / Free-Wheeling Diode
- LED and HID Lighting

Package



Part #	Package	Marking
GP3D010A120S	SMC (DO-214AB)	S10A12



Maximum Ratings, at T_j=25 °C, unless otherwise specified

Characteristics	Symbol	Conditions	Values	Unit
Continuous forward current	I _F **	T _L =25 °C, T _j =175 °C	6	A
		T _L =125 °C, T _j =175 °C	3	
		T _L =150 °C, T _j =175 °C	2	
Surge non-repetitive forward current sine halfwave	I _{F,SM}	T _L =25 °C, t _p =8.3 ms	112	A
		T _L =110 °C, t _p =8.3 ms	100	
Non-repetitive peak forward current	I _{F,max}	T _L =25 °C, t _p =10 μs	650	A
i ² t value	∫i ² dt	T _L =25 °C, t _p =8.3 ms	52	A ² s
		T _L =110 °C, t _p =8.3 ms	42	
Repetitive peak reverse voltage	V _{RRM}	T _j =25 °C	1200	V
Diode dv/dt ruggedness	dv/dt	Turn-on slew rate, repetitive	200	V/ns
Power dissipation	P _{tot} **	T _L =25 °C	10	W
Operating junction & storage temperature	T _j , T _{storage}	Continuous	-55...175	°C
Soldering temperature	T _{solder}	Wave soldering leads	260	°C
Mounting torque		M3 Screw	1	N-m

Note: T_L - Lead Temperature

Electrical Characteristics, at T_j=25 °C, unless otherwise specified

Characteristics	Symbol	Conditions	Values			Unit
			min.	typ.	max.	
DC blocking voltage	V _{DC}	T _j =25 °C	1200	-	-	V
Breakdown voltage	V _{BR}	I _R =1,000μA, T _j =25°C	1400	-	-	V
Diode forward voltage	V _F	I _F =20A, T _j =25 °C	-	1.50	1.65	V
		I _F =20A, T _j =125 °C	-	1.84	-	
		I _F =20A, T _j =175 °C	-	2.12	2.70	
Reverse current	I _R	V _R =1,200V, T _j =25 °C	-	1	20	μA
		V _R =1,400V, T _j =25 °C	-	3	-	
		V _R =1,200V, T _j =125 °C	-	5	-	
		V _R =1,200V, T _j =175 °C	-	20	300	
Total capacitive charge	Q _C	V _R =800V, T _j =25 °C	-	53	-	nC
Total capacitance	C	V _R =1V, f=1 MHz	-	589	-	pF
		V _R =400V, f=1 MHz	-	51	-	
		V _R =800V, f=1 MHz	-	37	-	

Thermal Characteristics

Characteristics	Symbol	Conditions	Values			Unit
			min.	typ.	max.	
Thermal resistance, junction-lead	R _{thJL}	minimum recommended pad size	-	14.5	-	°C/W
Thermal resistance, junction-ambient	R _{thJA}		-	115	-	°C/W
Thermal resistance, junction-ambient	R _{thJA}	1" square pad, 2oz Cu	-	73	-	°C/W

Typical Performance

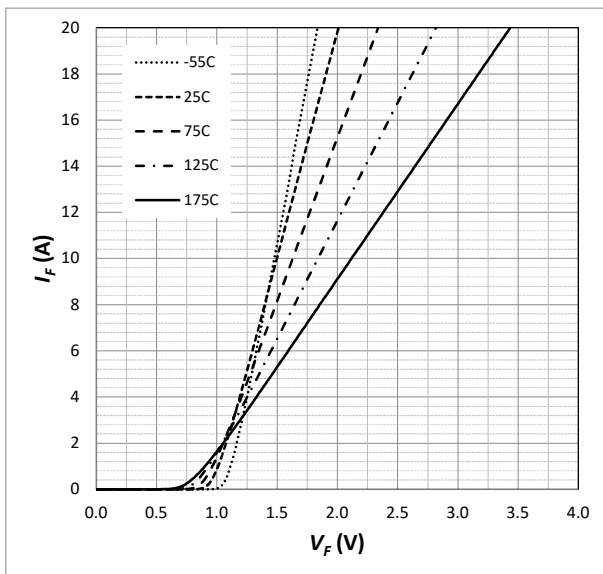


Fig. 1 Forward Characteristics (parameterized on T_j)

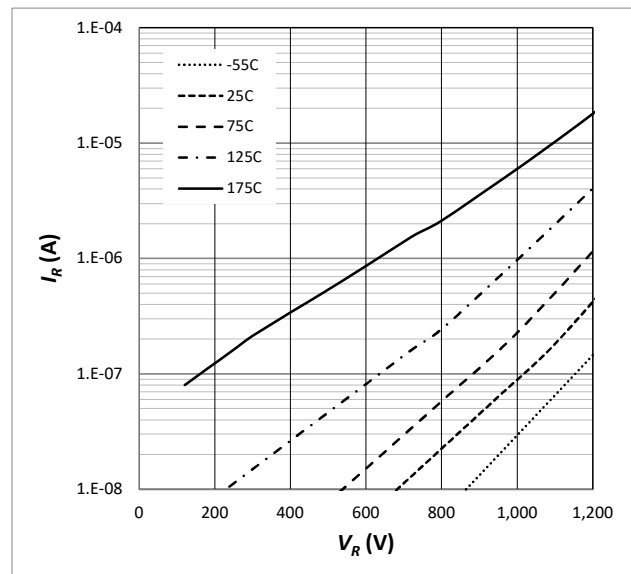


Fig. 2 Reverse Characteristics (parameterized on T_j)

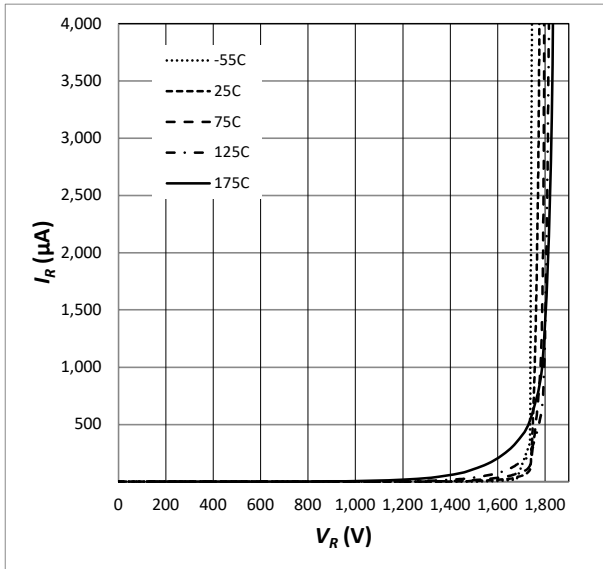


Fig. 3 Reverse Characteristics (parameterized on T_j)

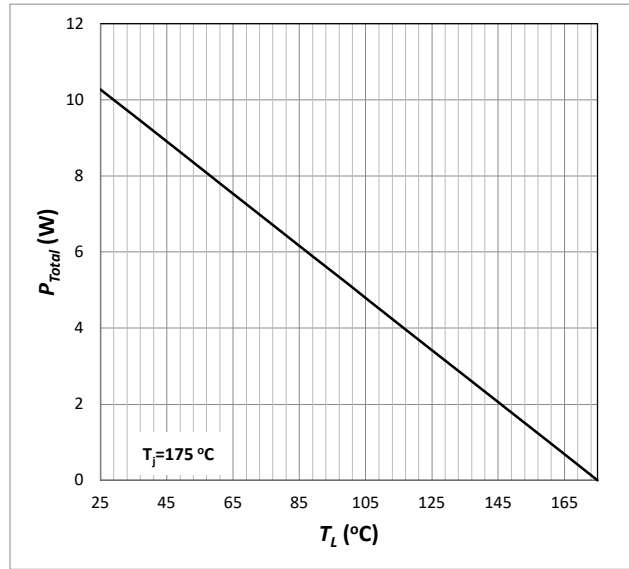


Fig. 4 Power Derating

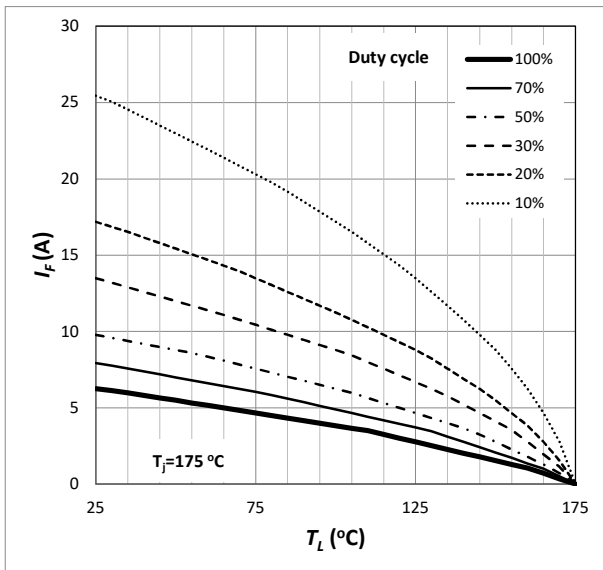


Fig. 5 Current Derating

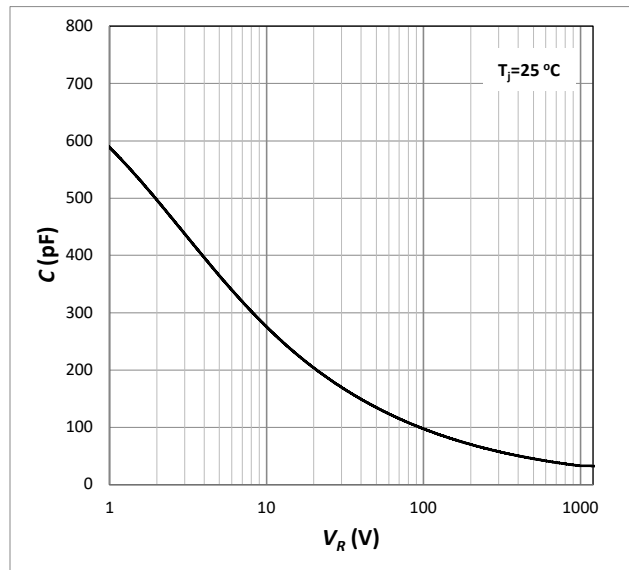


Fig. 6 Capacitance

1200V SiC Schottky Diode

Amp+™

GP3D010A120S

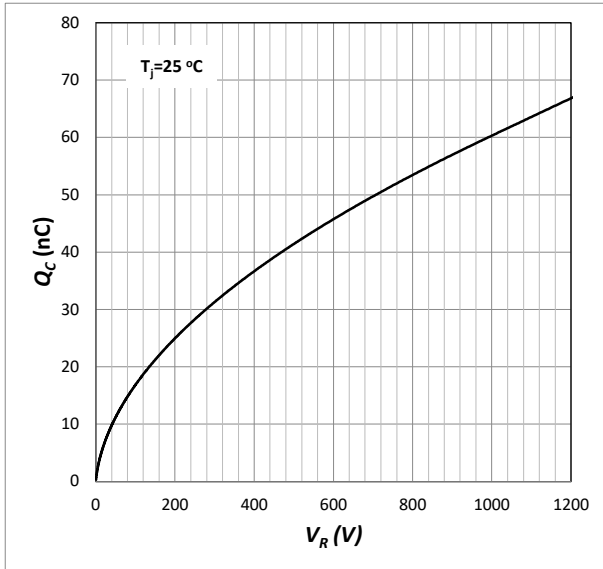


Fig. 7 Capacitive Charge

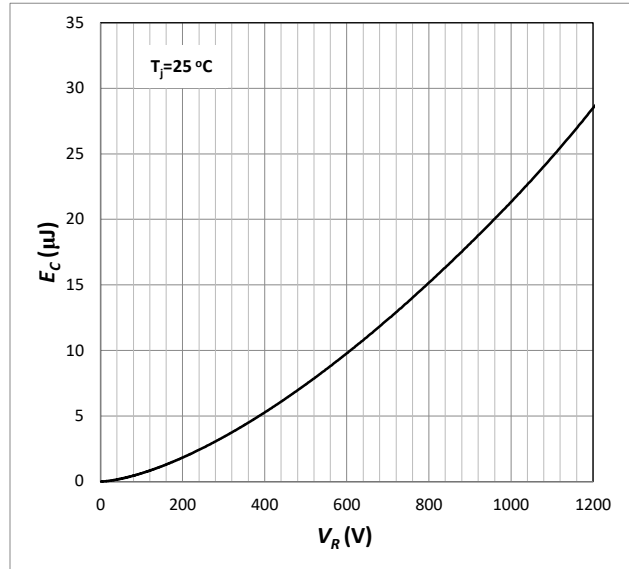


Fig. 8 Typical Capacitance Stored Energy

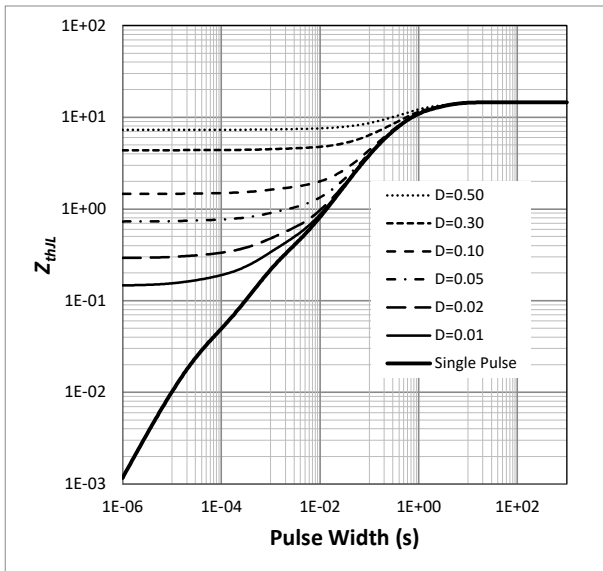


Fig. 9 Thermal Response, Junction to Lead

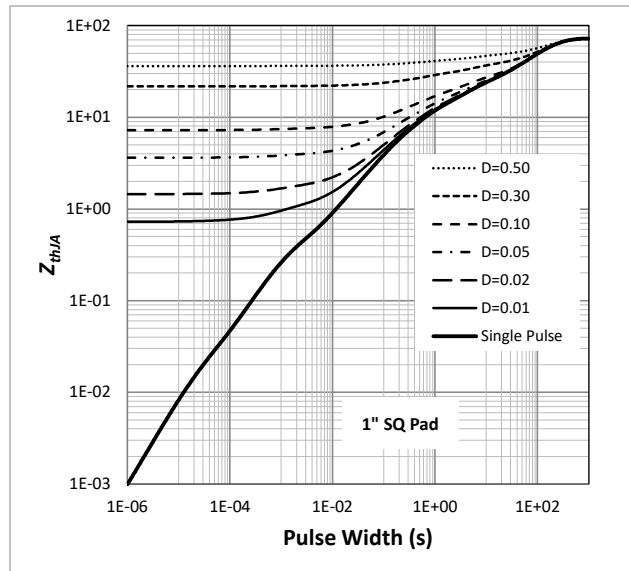


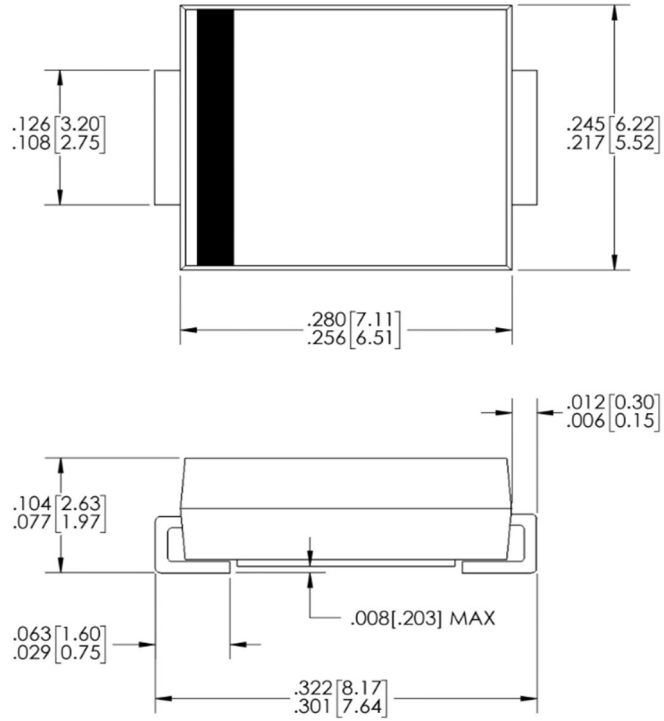
Fig. 10 Thermal Response, Junction to Ambient

1200V SiC Schottky Diode

Amp+™

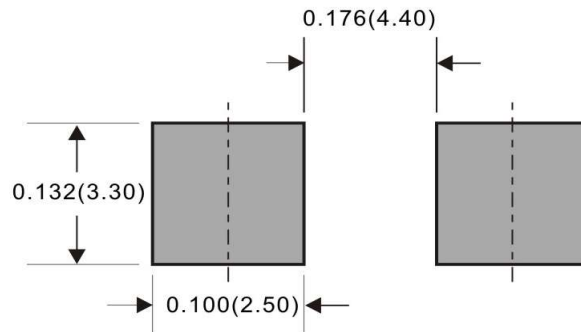
GP3D010A120S

Package Dimensions SMC (DO-214AB)



Dimensions in inches and (millimeters)

Recommended Minimum Pad Dimensions



Dimensions in inches and (millimeters)

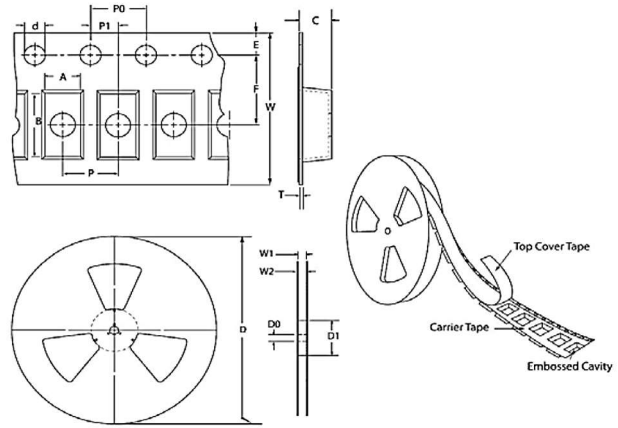
1200V SiC Schottky Diode

Amp+™

GP3D010A120S

Tape & Reel Specification

Item	Symbol	Dimensions (mm)
Carrier Width	A	6.3 (max)
Carrier Length	B	8.6 (max)
Carrier Depth	C	2.9 (max)
Sprocket Hole	d	1.50 ± 0.1
Reel Outside Diameter	D	330 ± 2.0
Feed Hole Diameter	D0	13.5 ± 1
Reel Inner Diameter	D1	50 (min)
Sprocket Hole Position	E	1.75 ± 0.1
Punch Hole Position	F	7.5 ± 0.05
Sprocket Hole Pitch	P	8.0 ± 0.1
Sprocket Hole Pitch	P0	4.0 ± 0.1
Embossment Center	P1	2.0 ± 0.1
Overall Tape Thickness	T	0.6 (max)
Tape Width	W	16.0 ± 0.3
Reel Width	W2	22.4 (max)
Reel Width	W1	18.4 (max)



Revision History

Date	Revision	Notes
5/7/2021	1.0	Initial release of datasheet

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 March, 2013. RoHS Declarations for this product can be obtained from the Product Documentation sections of www.SemiQ.com.

REACH Compliance

REACH substances of high concern (SVHC) information is available for this product. Since the European Chemicals Agency (ECHA) has published notice of their intent to frequently revise the SVHC listing for the foreseeable future, please contact our office at SemiQ Headquarters in Lake Forest, California to insure you get the most up-to-date REACH SVHC Declaration. REACH banned substance information (REACH Article 67) is also available upon request.

SemiQ Inc., reserves the right to make changes to the product specifications and data in this document without notice. SemiQ products are sold pursuant to SemiQ's terms and conditions of sale in place at the time of order acknowledgement.

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.

SemiQ makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does SemiQ assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. Buyer is responsible for its products and applications using SemiQ products.

To obtain additional technical information or to place an order for this product, please contact us. The information in this datasheet is provided by