



# 1200V SiC Schottky Diode

## GP3D010A120S

VDC	1200 V
Q <sub>C</sub>	53 nC
I <sub>F</sub>	10 A
T <sub>j,max</sub>	175 °C

### Amp+™ Features

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

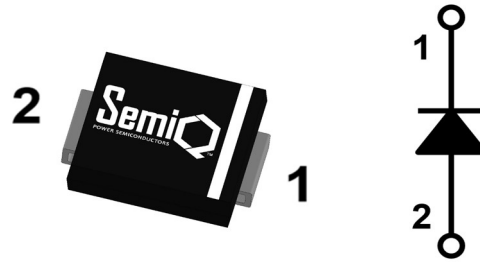
### Amp+™ Benefits

- 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<sub>j</sub>=25 °C, unless otherwise specified

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

Note: T<sub>L</sub> - Lead Temperature

Electrical Characteristics, at T<sub>j</sub>=25 °C, unless otherwise specified

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

Thermal Characteristics

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

Typical Performance

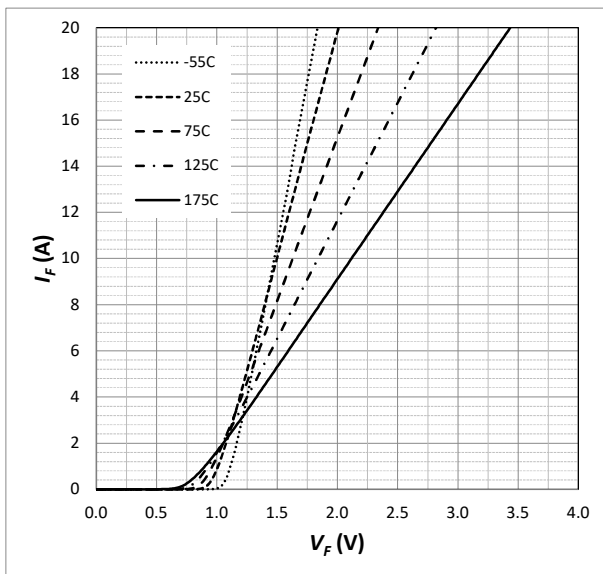


Fig. 1 Forward Characteristics (parameterized on T<sub>j</sub>)

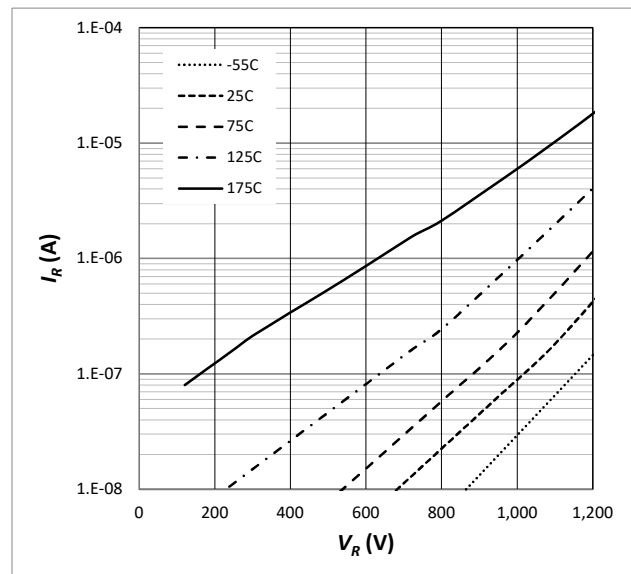


Fig. 2 Reverse Characteristics (parameterized on T<sub>j</sub>)

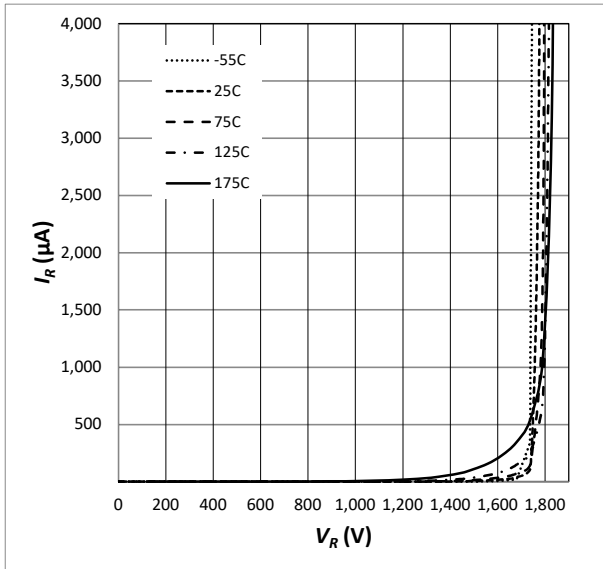


Fig. 3 Reverse Characteristics (parameterized on  $T_j$ )

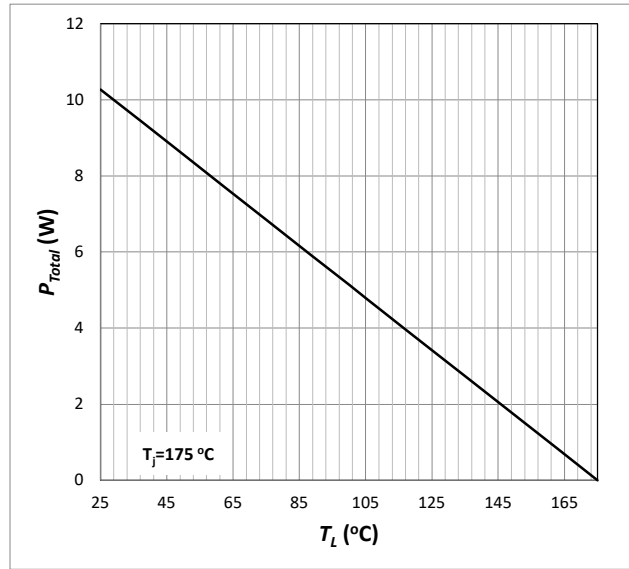


Fig. 4 Power Derating

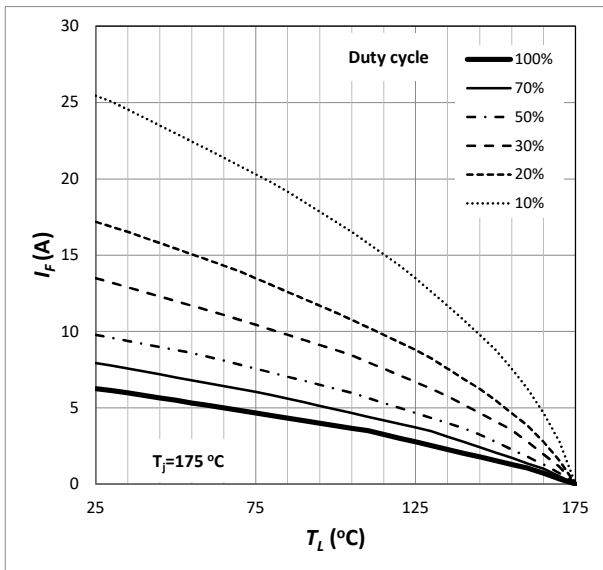


Fig. 5 Current Derating

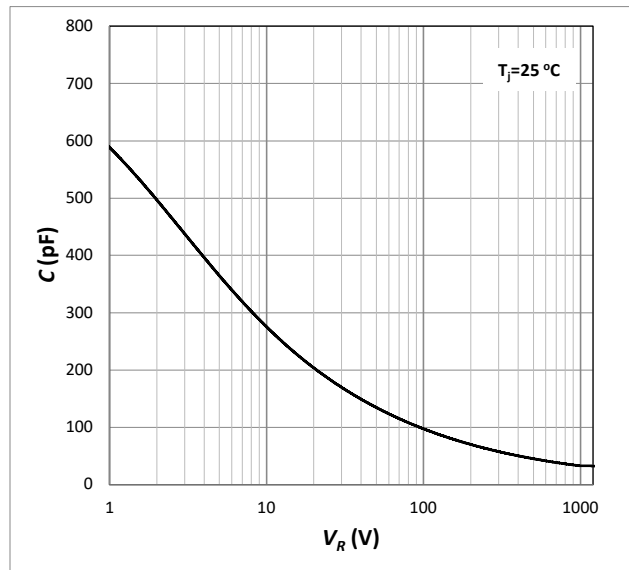


Fig. 6 Capacitance

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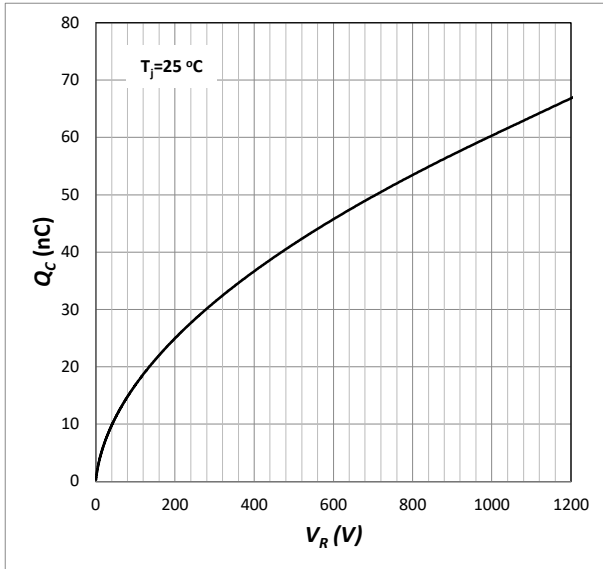


Fig. 7 Capacitive Charge

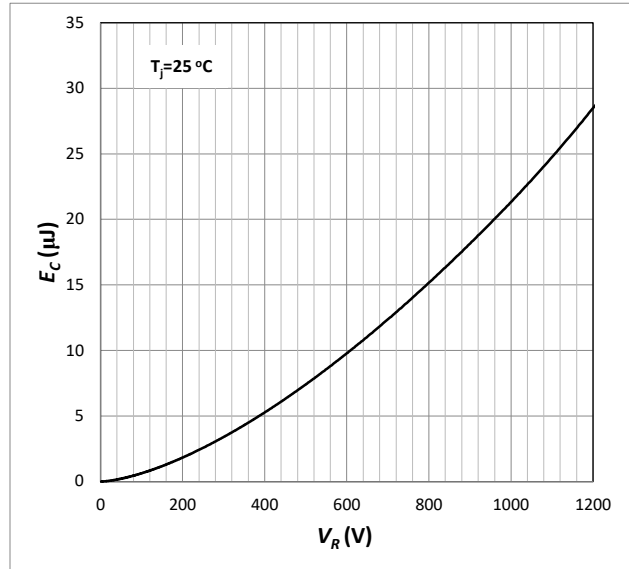


Fig. 8 Typical Capacitance Stored Energy

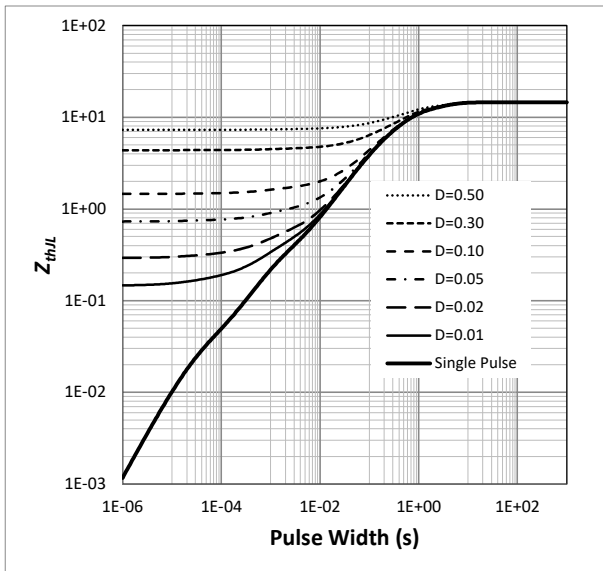


Fig. 9 Thermal Response, Junction to Lead

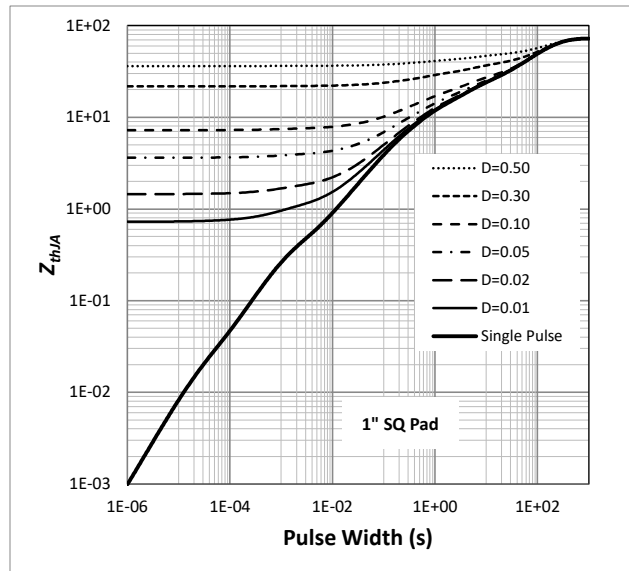


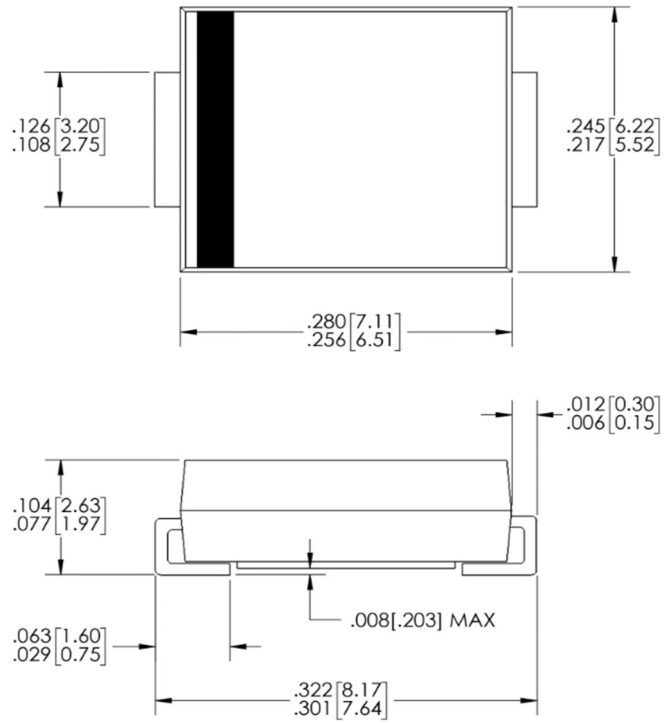
Fig. 10 Thermal Response, Junction to Ambient

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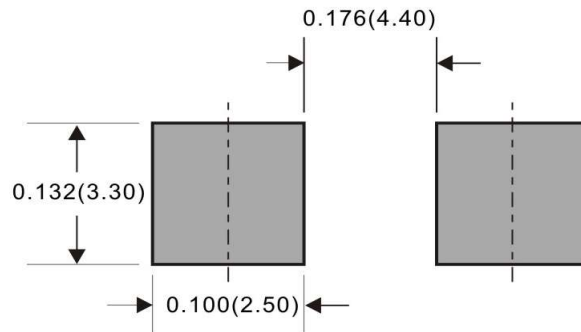
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## Package Dimensions SMC (DO-214AB)



Dimensions in inches and (millimeters)

## Recommended Minimum Pad Dimensions



Dimensions in inches and (millimeters)

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