

## 1200V SiC Schottky Diode

VDC	1200 V
Q <sub>C</sub>	269 nC
I <sub>F</sub>	50 A
T <sub>j,max</sub>	175 °C

### Amp+™ Features

- Unipolar rectifier with surge current
- Zero reverse recovery current
- Fast, temperature-independent switching
- Avalanche tested to 666mJ\*
- All parts tested to greater than 1,400V

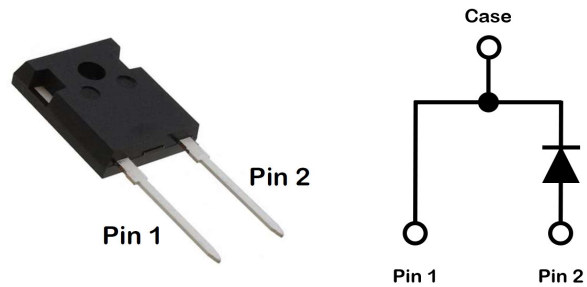
### Amp+™ Benefits

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

### Amp+™ Applications

- Solar Inverters
- Switch mode power supplies, UPS
- Power factor correction
- EV charging stations

### Package



Part #	Package	Marking
GP3D050A120B	TO-247-2L	3D050A120



### 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>C</sub> =25 °C, T <sub>J</sub> =175 °C	136	A
		T <sub>C</sub> =125 °C, T <sub>J</sub> =175 °C	74	
		T <sub>C</sub> =150 °C, T <sub>J</sub> =175 °C	48	
Surge non-repetitive forward current sine halfwave	I <sub>FSM</sub>	T <sub>C</sub> =25 °C, t <sub>p</sub> =8.3 ms	390	A
		T <sub>C</sub> =110 °C, t <sub>p</sub> =8.3 ms	340	
Non-repetitive peak forward current	I <sub>F,max</sub>	T <sub>C</sub> =25 °C, t <sub>p</sub> =10 μs	2000***	A
i <sup>2</sup> t value	∫i <sup>2</sup> dt	T <sub>C</sub> =25 °C, t <sub>p</sub> =8.3 ms	631	A <sup>2</sup> s
		T <sub>C</sub> =110 °C, t <sub>p</sub> =8.3 ms	480	
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>C</sub> =25 °C	600	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

**Notes:**

\* EAS of 666 mJ is based on starting T<sub>j</sub> = 25°C, L = 1.0 mH, I<sub>AS</sub> = 36.50 A, V = 50 V.

\*\* Typical R<sub>thJC</sub> used

\*\*\* Limited by testing equipment

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> =2.00mA, T <sub>j</sub> =25 °C	1400	-	-	V
Diode forward voltage	V <sub>F</sub>	I <sub>F</sub> =50A, T <sub>j</sub> =25 °C	-	1.50	1.70	V
		I <sub>F</sub> =50A, T <sub>j</sub> =125 °C	-	1.82	-	
		I <sub>F</sub> =50A, T <sub>j</sub> =175 °C	-	2.10	2.70	
Reverse current	I <sub>R</sub>	V <sub>R</sub> =1,200V, T <sub>j</sub> =25 °C	-	6	100	μA
		V <sub>R</sub> =1,400V, T <sub>j</sub> =25 °C	-	35	-	
		V <sub>R</sub> =1,200V, T <sub>j</sub> =125 °C	-	49	-	
		V <sub>R</sub> =1,200V, T <sub>j</sub> =175 °C	-	193	750	
Total capacitive charge	Q <sub>C</sub>	V <sub>R</sub> =800V, T <sub>j</sub> =25 °C	-	269	-	nC
Total capacitance	C	V <sub>R</sub> =1V, f=1 MHz	-	3040	-	pF
		V <sub>R</sub> =400V, f=1 MHz	-	253	-	
		V <sub>R</sub> =800V, f=1 MHz	-	181	-	

Thermal Characteristics

Characteristics	Symbol	Conditions	Values			Unit
			min.	typ.	max.	
Thermal resistance, junction-case	R <sub>thJC</sub>	-	-	0.25	0.35	°C/W

Typical Performance

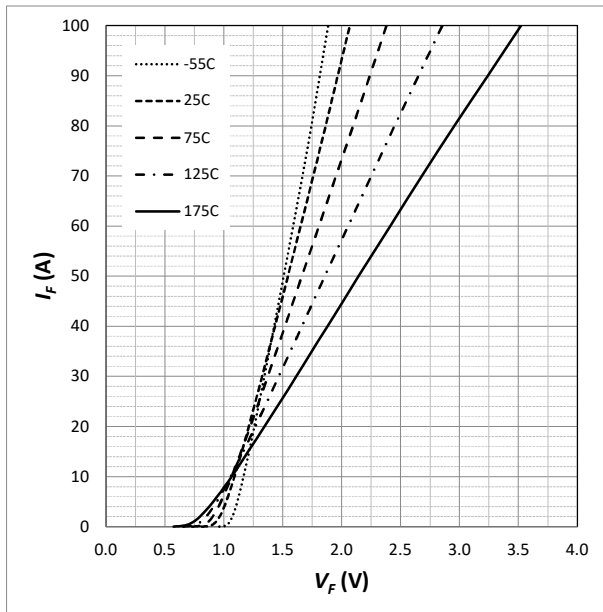


Fig. 1 Forward Characteristics (parameterized on T<sub>j</sub>)

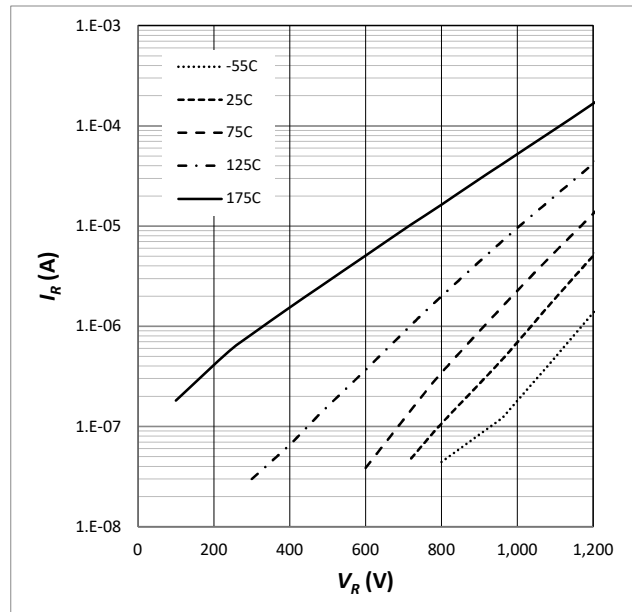


Fig. 2 Reverse Characteristics (parameterized on T<sub>j</sub>)

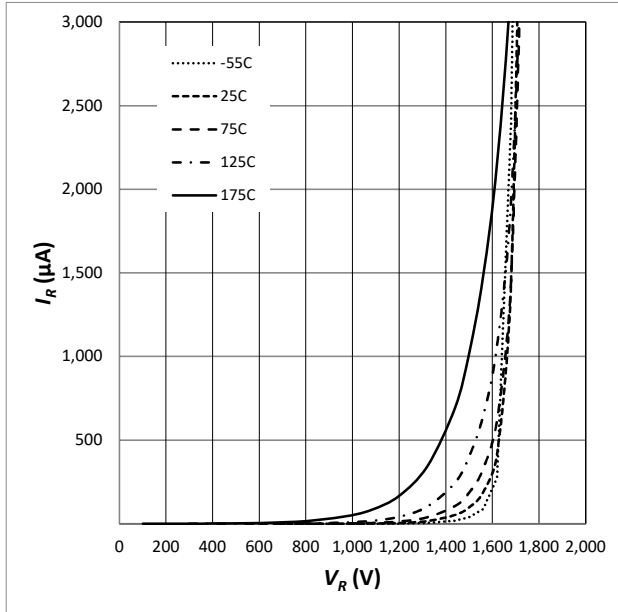


Fig. 3 Reverse Characteristics (parameterized on Tj)

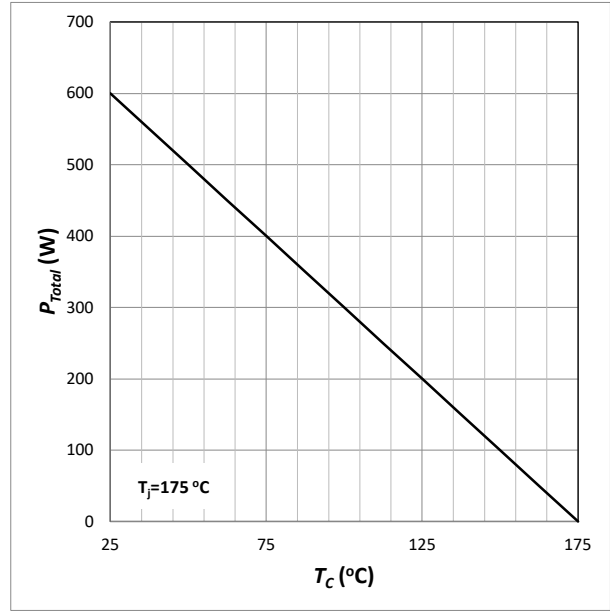


Fig. 4 Power Derating

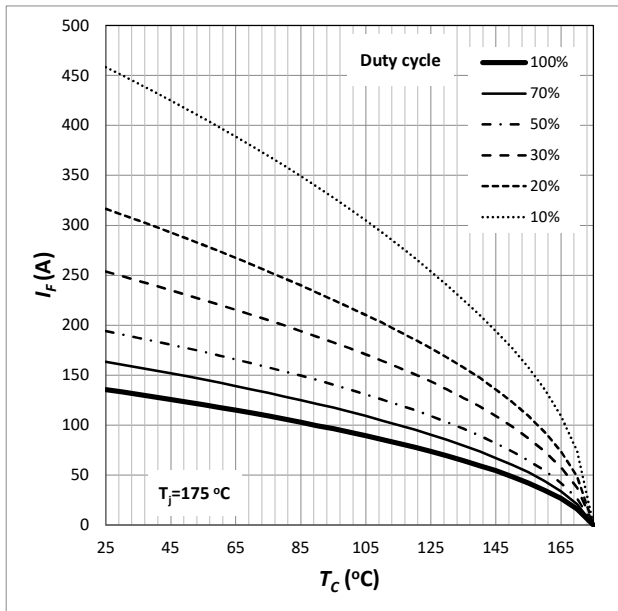


Fig. 5 Capacitance

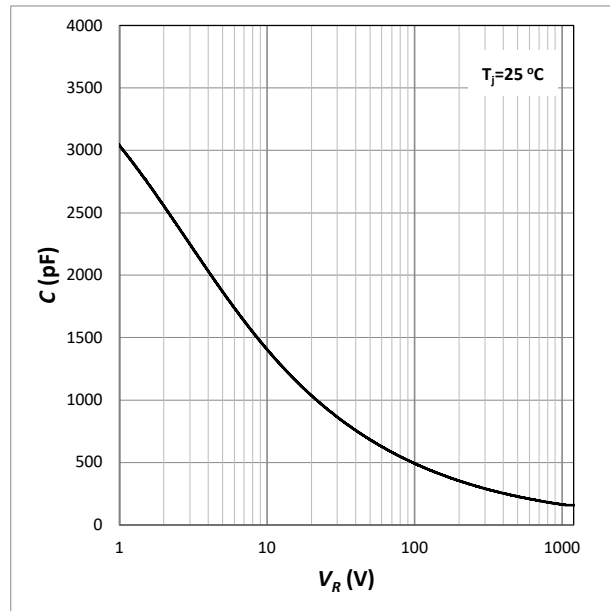


Fig. 6 Capacitance

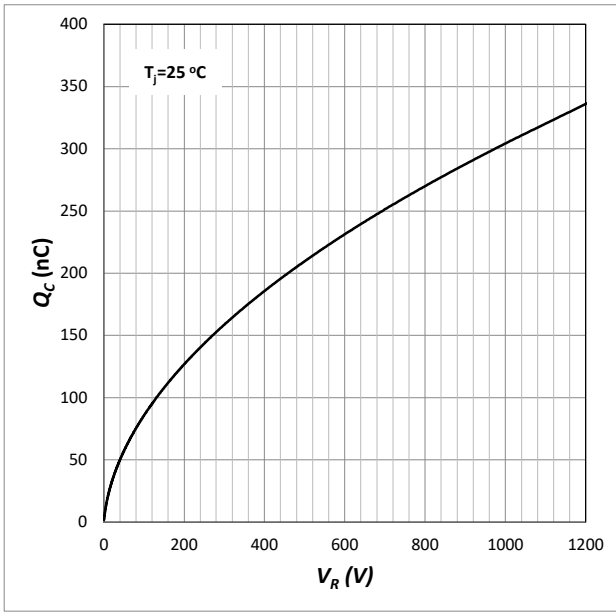


Fig. 7 Capacitive Charge

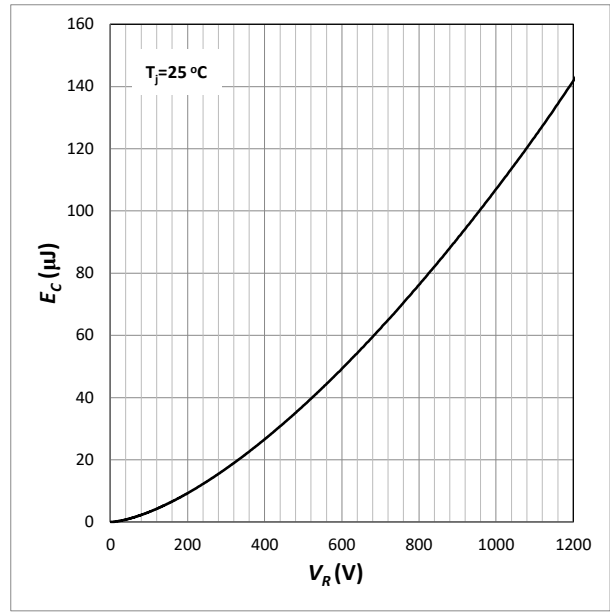


Fig. 8 Typical Capacitance Stored Energy

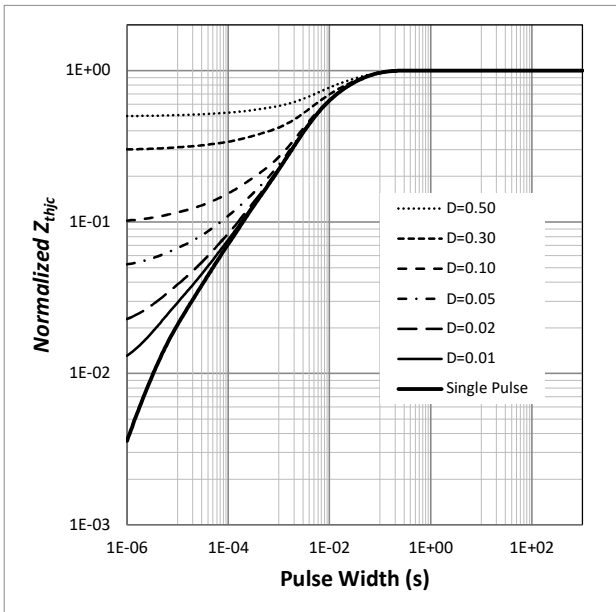


Fig. 9 Transient Thermal Impedance