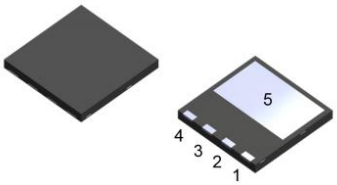
Technical Data
Data Sheet N2447, REV.A

S4D10120L1
1200V SIC POWER SCHOTTKY RECTIFIER

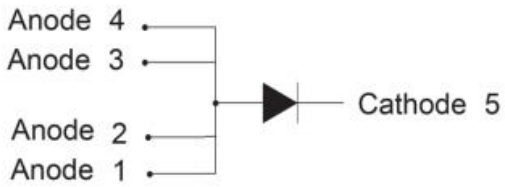


DFN8×8

Description

S4D10120L1 is a SiC Schottky rectifier packaged in DFN8×8 case. The device is a high voltage Schottky rectifier that has very low total conduction losses and very stable switching characteristics over temperature extremes. The S4D10120L1 is ideal for energy sensitive, high frequency applications in challenging environments.

Circuit Diagram



Features

- 175°C T_J operation
- Ultra-low switching loss
- Switching speeds independent of operating temperature
- Low total conduction losses
- High forward surge current capability
- High package isolation voltage
- Terminals finish: 100% Pure Tin
- "-A" is an AEC-Q101 qualified device
- Pb − Free Device
- All SMC parts are traceable to the wafer lot
- Additional electrical and life testing can be performed upon request

Applications

- Alternative energy inverters
- Power Factor Correction (PFC)
- Free-Wheeling diodes
- Switching supply output rectification
- Reverse polarity protection

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Maximum Ratings

Characteristics	Symbol	Condition	Max.	Units
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V_{RRM} V_{RWM} V_R	-	1200	V
Average Rectified Forward Current	$I_{F\ (AV)1}$	Tc=25°C	27	A
	$I_{F\ (AV)2}$	Tc=145°C	10	A
Repetitive Peak Forward Surge Current	I_{FRM1}	10 ms, Half Sine pulse , T_C =25°C	46	A
	I_{FRM2}	10 ms, Half Sine pulse , T_C =110°C	30	A
Peak One Cycle Non-Repetitive Surge Current	I_{FSM1}	10ms, Half Sine pulse, T_C =25°C	105	A
	I_{FSM2}	10ms, Half Sine pulse, T_C =110°C	80	A
Non-Repetitive Peak Forward Surge Current	$I_{F,Max1}$	10μs. Pulse, T_C =25℃	750	A
	$I_{F,Max2}$	10μs. Pulse, T_C =110℃	620	A
Power Dissipation	P_{tot1}	T_C =25℃	107.1	W
	P_{tot2}	T_C =110℃	46.4	W

Electrical Characteristics:

Characteristics	Symbol	Condition	Typ.	Max.	Units
Forward Voltage Drop*	V_{F1}	@ 10A, Pulse, T_J = 25 °C	1.45	1.8	V
	V_{F2}	@ 10A, Pulse, T_J = 175 °C	2.2	3.0	V
Reverse Current*	I_{R1}	@V_R = rated V_R T_J = 25 °C	2	30	uA
	I_{R2}	@V_R = rated V_R T_J = 175 °C	8	40	uA
Junction Capacitance	C_T	V_R=0V, T_J=25℃, f=1MHz	772	-	pF
Reverse Recovery Charge	Q_c	I_F = 10A, di/dt =200A/μs V_R = 800 V, T_J =25°C	59.46	-	nC
Capacitance Stored Energy	E_C	V_R = 800 V, T_J = 25 °C	30.51	-	μJ

* Pulse width < 300 μs, duty cycle < 2%

Thermal-Mechanical Specifications:

Characteristics	Symbol	Condition	Specification	Units
Junction Temperature	T_J	-	-55 to +175	°C
Storage Temperature	T_{stg}	-	-55 to +175	°C
Typical Thermal Resistance Junction to Case	$R_{\theta JC}$	DC operation	1.4	°C/W

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Marking Diagram

Where XXXXX is YYWWL

S4D = Device Type
L1 = Package type
10 = Forward Current (10A)
120 = Reverse Voltage (1200V)
SSG = SSG
YY = Year
WW = Week
L = Lot Number

Cautions: Molding resin
Epoxy resin UL:94V-0

Ordering Information

Device	Package	Shipping
S4D10120L1	DFN 8×8	3000/Reel
S4D10120L1TR	DFN 8×8	3000/Reel

For information on tape and reel specifications, including part orientation and tape sizes, please refer to our tape and reel packaging Specification.

Ratings and Characteristics Curves

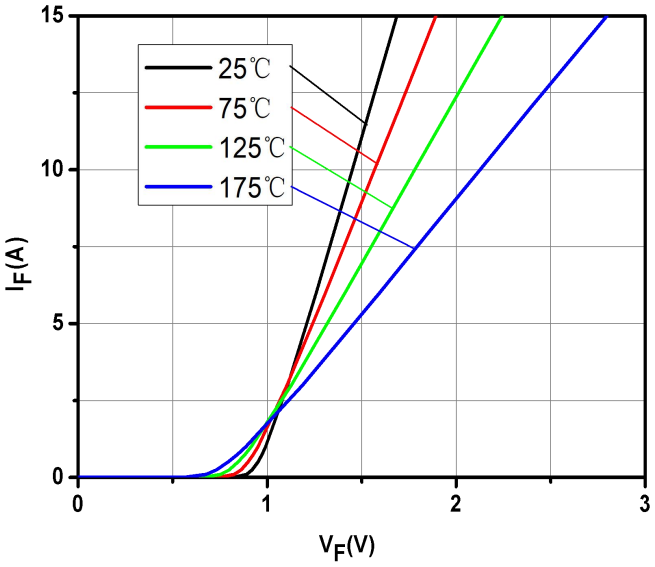


Fig.1-Typical Forward Voltage Characteristics

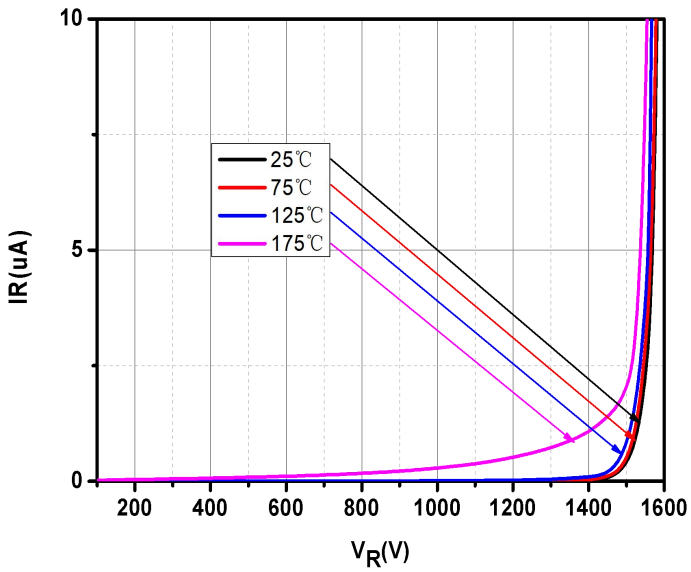


Fig.2-Typical Reverse Characteristics

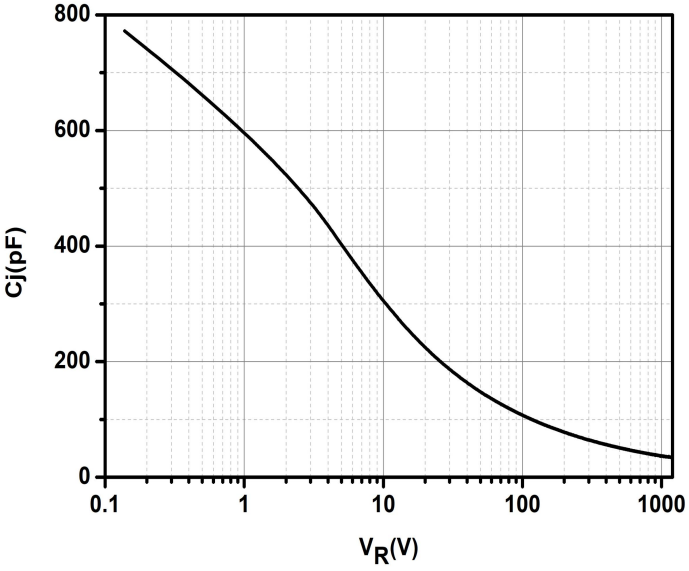


Fig.3-Capacitance vs. Reverse Voltage

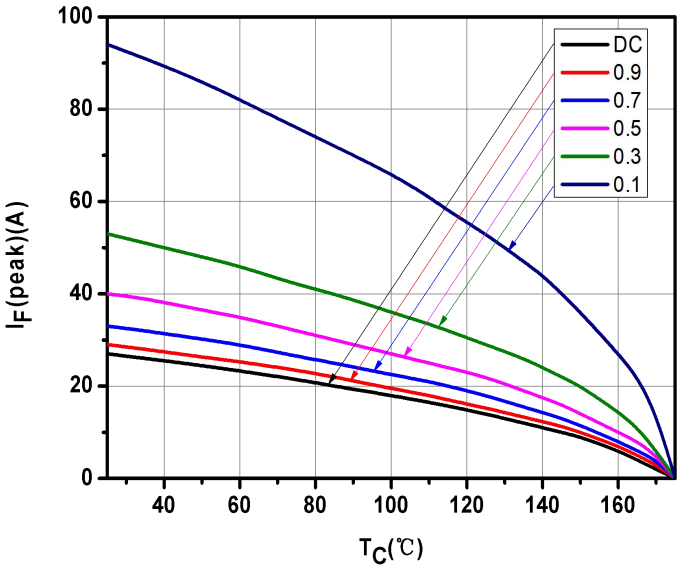


Fig.4-Current Derating

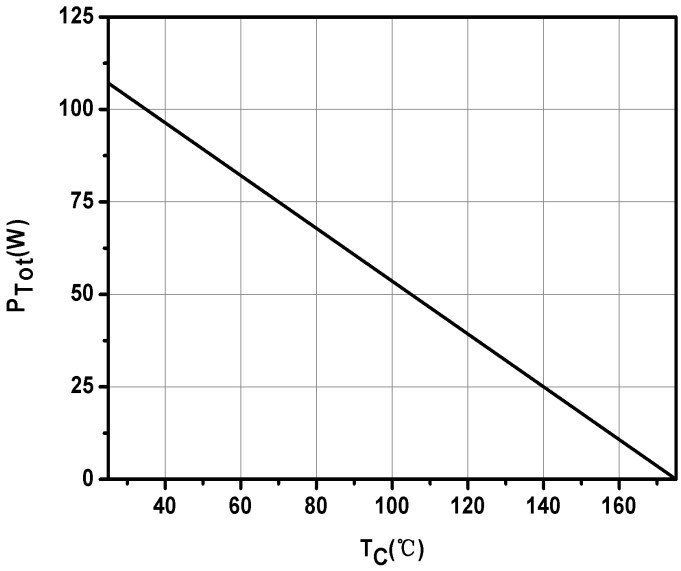


Fig.5-Power Derating

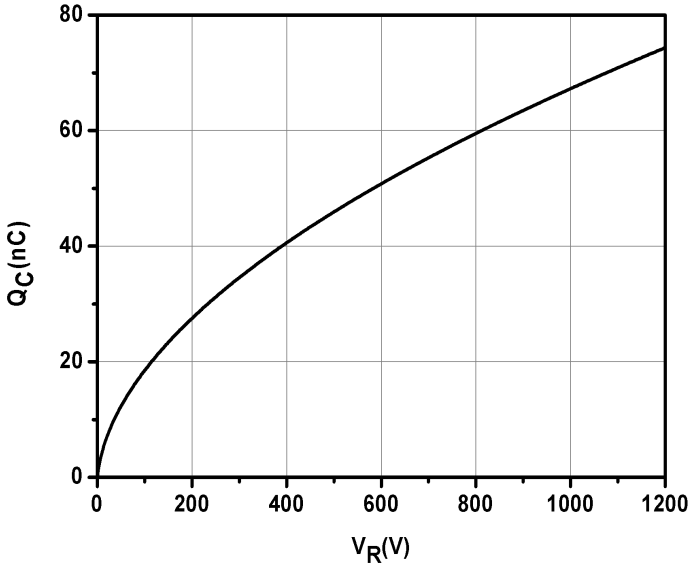


Fig.6-Total Capacitance Charge vs. Reverse Voltage

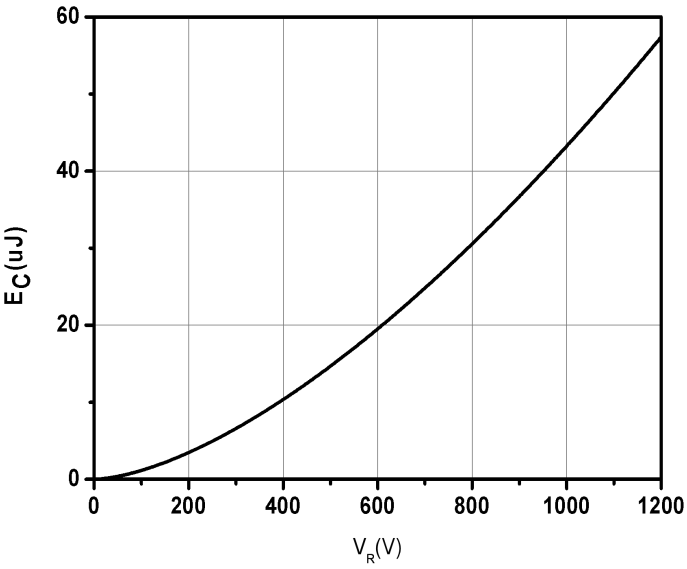


Fig.7-Capacitance Stored Energy

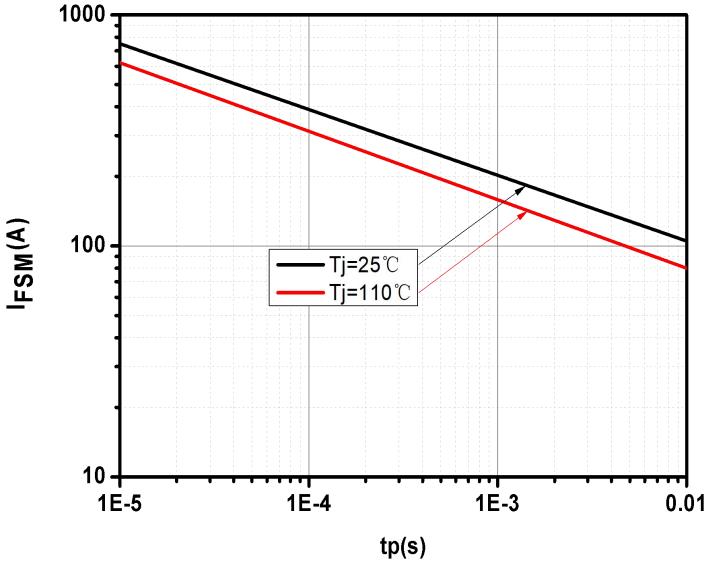
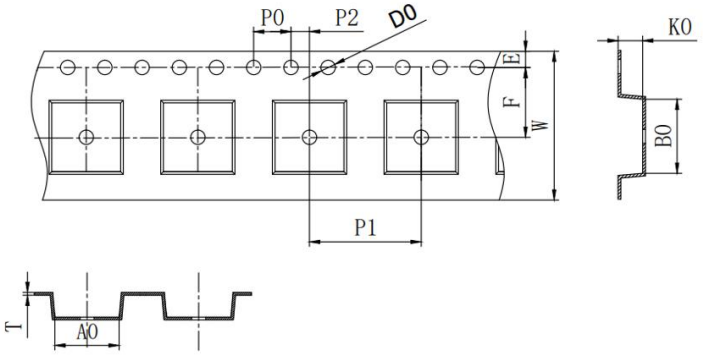


Fig.8-Non-repetitive peak forward surge current versus pulse duration (sinusoidal waveform)

Carrier Tape & Reel Specification DFN8×8



SYMBOL	Millimeters	
	Min.	Max.
A0	8.30	8.50
B0	8.40	8.60
K0	1.20	1.40
P0	3.90	4.10
P1	11.90	12.10
P2	1.95	2.05
T	0.20	0.30
E	1.65	1.85
F	7.40	7.60
D0	1.50	1.60
D1	1.50	
W	15.70	16.30

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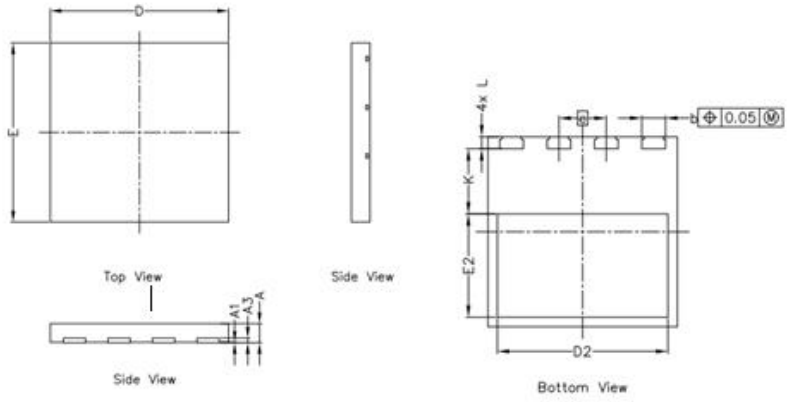
Mechanical Dimensions DFN8×8



SYMBOL	Millimeters	
	Min.	Max.
A	0.800	0.900
A1	-	0.050
A3	0.195	0.211
D	7.900	8.100
E	7.900	8.100
e	2.00 BSC	
b	0.950	1.050
D2	7.100	7.300
E2	4.250	4.450
L	0.400	0.600
K	2.650	2.850

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