

## S4D02120T 1200V SIC POWER SCHOTTKY RECTIFIERS



SOD-123FL

### Features

- 175°C T<sub>J</sub> 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

### Circuit Diagram



### Description

This 1200V 2A diode is high voltage Schottky rectifier that has very low total conduction losses and very stable switching characteristics over temperature extremes. The S4D02120T is ideal for energy sensitive, high frequency applications in challenging environments.

### Applications

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

**Maximum Ratings@T<sub>A</sub>=25°C unless otherwise specified**

Characteristics	Symbol	Condition	Max.	Units
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V <sub>RRM</sub> V <sub>RWM</sub> V <sub>DC</sub>	-	1200	V
Average Rectified Forward Current	I <sub>F(AV)1</sub>	T <sub>c</sub> =25°C	5	A
	I <sub>F(AV)2</sub>	T <sub>c</sub> =145°C	2	A
Repetitive Peak Forward Surge Current	I <sub>FRM1</sub>	10ms, Half Sine pulse, T <sub>c</sub> =25°C	18	A
	I <sub>FRM2</sub>	10ms, Half Sine pulse, T <sub>c</sub> =110°C	12	A
Peak One Cycle Non-Repetitive Surge Current	I <sub>FSM1</sub>	10ms, Half Sine pulse, T <sub>c</sub> =25°C	10	A
	I <sub>FSM2</sub>	10ms, Half Sine pulse, T <sub>c</sub> =110°C	8	A
Power Dissipation	P <sub>tot1</sub>	T <sub>c</sub> =25°C	15	W
	P <sub>tot2</sub>	T <sub>c</sub> =110°C	6.5	W

**Electrical Characteristics@T<sub>A</sub>=25°C unless otherwise specified**

Characteristics	Symbol	Condition	Typ.	Max.	Units
Forward Voltage Drop*	V <sub>F1</sub>	@ 2A, Pulse, T <sub>J</sub> = 25 °C	1.4	1.8	V
	V <sub>F2</sub>	@ 2A, Pulse, T <sub>J</sub> = 175 °C	2.0	2.5	V
Reverse Current*	I <sub>R1</sub>	@V <sub>R</sub> = rated V <sub>R</sub> T <sub>J</sub> = 25 °C	1	10	uA
	I <sub>R2</sub>	@V <sub>R</sub> = rated V <sub>R</sub> T <sub>J</sub> = 175 °C	2	40	uA
Junction Capacitance	C <sub>T</sub>	V <sub>R</sub> =0V, T <sub>J</sub> =25°C, f=1MHz	160	-	pF
Reverse Recovery Charge	Q <sub>c</sub>	I <sub>F</sub> = 2A, di/dt = 200A/μs V <sub>R</sub> = 800 V, T <sub>J</sub> =25°C	12.33	-	nC
Capacitance Stored Energy	E <sub>c</sub>	V <sub>R</sub> = 800 V, T <sub>J</sub> =25°C	6.33	-	μJ

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

### Thermal-Mechanical Specifications:

Characteristics	Symbol	S4D02120T	Units
Junction Temperature	$T_J$	-55 to +175	°C
Storage Temperature	$T_{stg}$	-55 to +175	°C
Typical Thermal Resistance Junction to Case	$R_{qJC}$	10	°C/W

### Marking Diagram



Where XXXX is YYWWL

S = Device Type  
 12 = Reverse Voltage (1200V)  
 2 = Forward Current (2A)  
 T = Package type  
 YY = Year  
 WW = Week  
 L = Lot Number

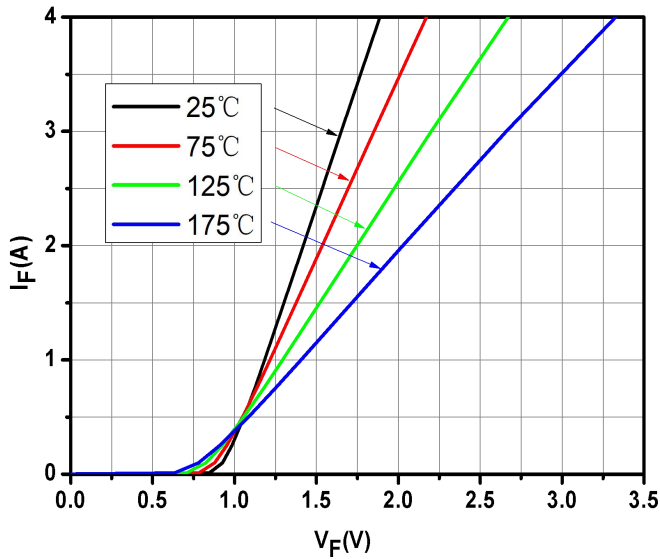
**Cautions:** Molding resin  
 Epoxy resin UL:94V-0

### Ordering Information

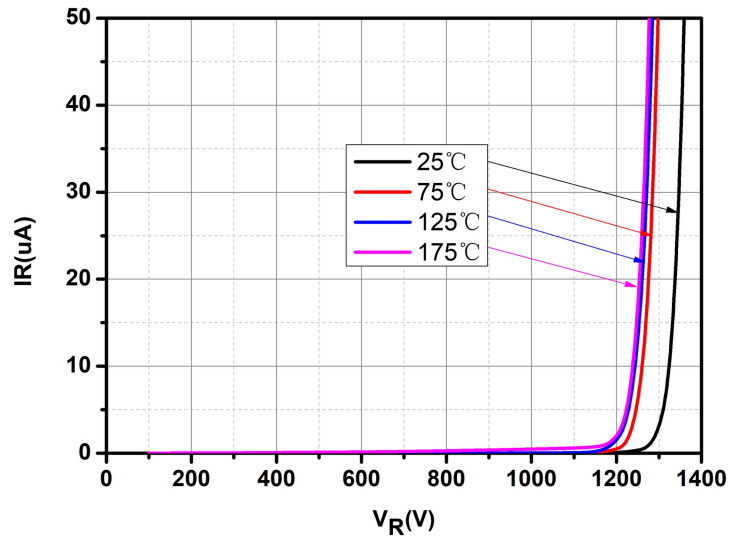
Device	Package	Shipping
S4D02120T	SOD-123FL	3000pcs / reel

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

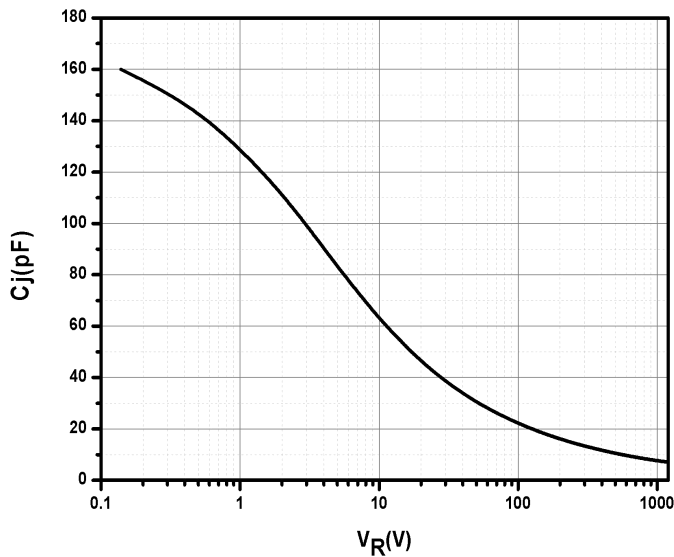
**Ratings and Characteristics Curves**



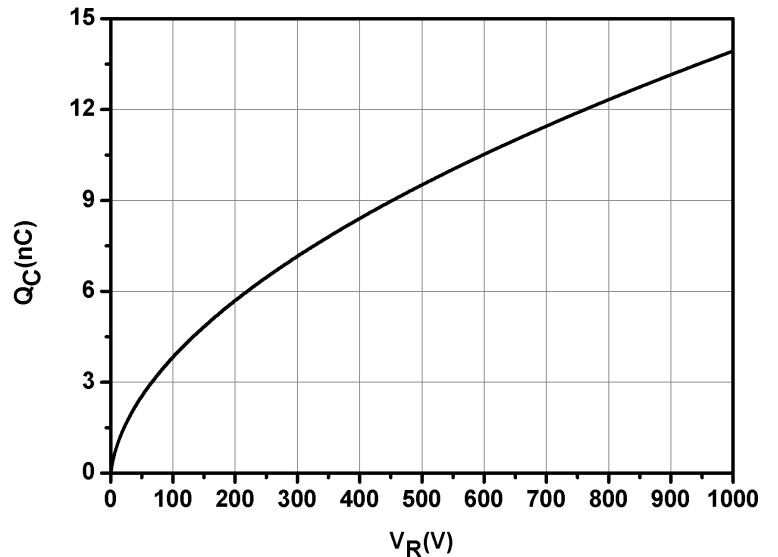
**Fig.1-Typical Forward Voltage Characteristics**



**Fig.2-Typical Reverse Characteristics**



**Fig.3-Capacitance vs. Reverse Voltage**



**Fig.4-Total Capacitance Charge vs. Reverse Voltage**

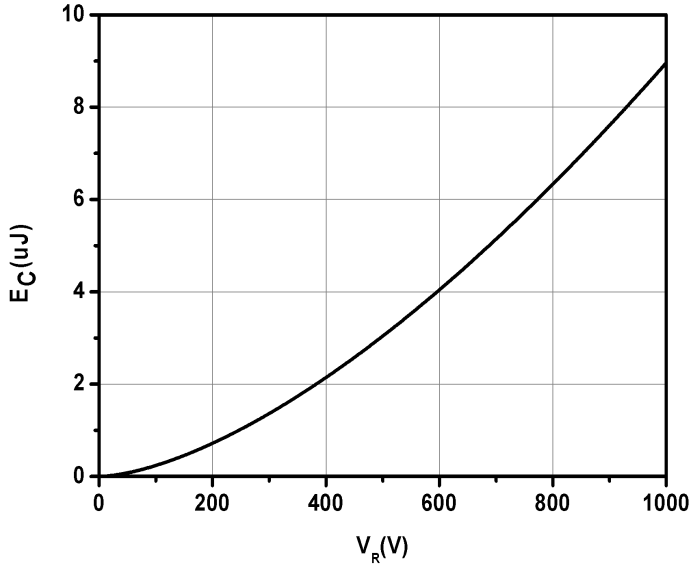


Fig.5-Capacitance Stored Energy

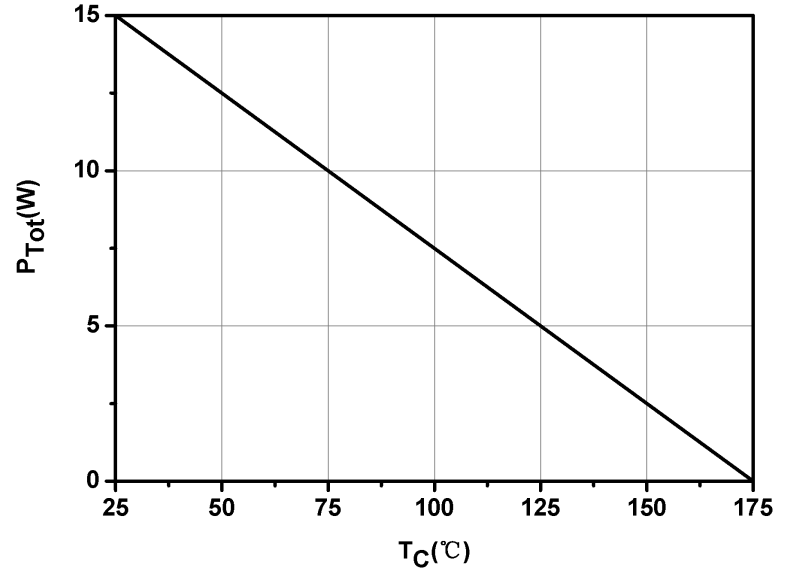


Fig.6-Power Derating

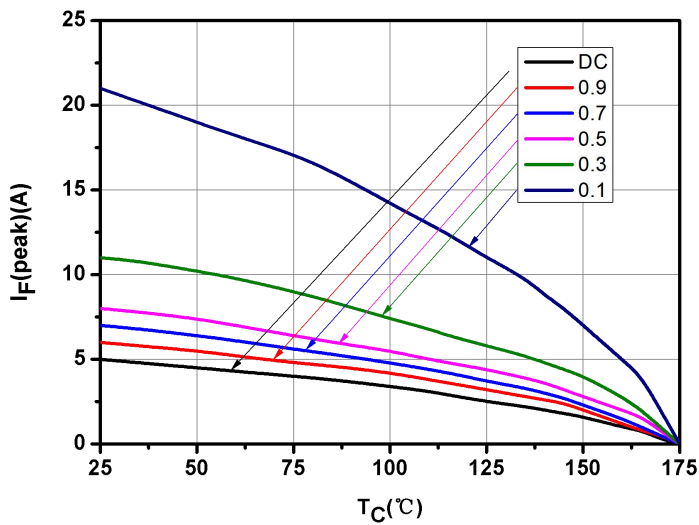
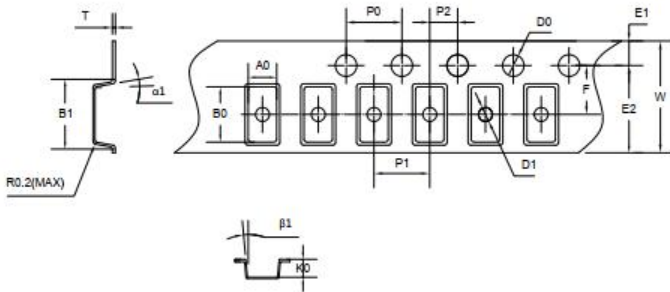


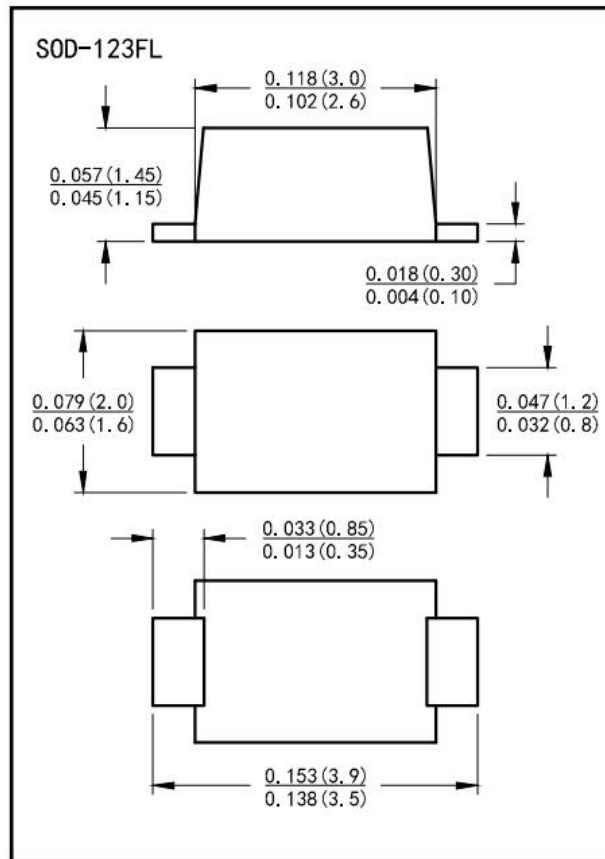
Fig.7-Current Derating

**Carrier Tape & Reel Specification SOD-123FL**



项目	规格(mm)	允差(mm)	项目	规格(mm)	允差(mm)
W	8.00	+0.30/-0.10	A0	2.05	±0.10
E1	1.75	±0.10	B0	3.95	±0.10
F	3.50	±0.05	K0	1.45	±0.10
D0	1.50	+0.1/-0.0	T	0.23	±0.02
D1	1.00	+0.25/-0.0	10*P0	40.00	±0.20
P0	4.00	±0.10	α1	4°max	
P1	4.00	±0.10	β1	8°max	
P2	2.00	±0.05	B1 <sub>max</sub>	4.35	
			E2 <sub>min</sub>	6.25	

**Mechanical Dimensions SOD-123FL**



**Technical Data**  
**Data Sheet N2749, REV.-**



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