





## S4D15120A S4D15120H 1200V SIC POWER SCHOTTKY RECTIFIERS



#### **Description**

S4D15120A/S4D15120H are SiC Schottky rectifiers packaged in TO-220AC(TO-220-2)/TO-247AC(TO-247-2) case. The devices are high voltage Schottky rectifiers that have very low total conduction losses and very stable switching characteristics over temperature extremes. The S4D15120A/S4D15120H are ideal for energy sensitive, high frequency applications in challenging environments.

### **Circuit Diagram**



### **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
- 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

### **Maximum Ratings**

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>R</sub>	-	1200	V
Average Rectified Forward Current	I <sub>F (AV)</sub>	Tc=150°C	15	А
Peak One Cycle Non-Repetitive Surge Current	I <sub>FSM</sub>	10ms, Half Sine pulse, T <sub>J</sub> =25°C	100	А
Repetitive Peak Forward Surge Current	$I_{FRM}$	10 ms, Half Sine pulse , T <sub>J</sub> =25°C	68	Α

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## **Electrical Characteristics:**

Characteristics	Symbol	Condition	Тур.	Max.	Units
Forward Voltage Drop*	$V_{F1}$	@ 15A, Pulse, T <sub>J</sub> = 25 °C	1.5	1.8	V
	$V_{F2}$	@ 15A, Pulse, T <sub>J</sub> = 175 °C	2.2	3.0	V
Reverse Current*	I <sub>R1</sub>	$@V_R = \text{rated } V_R$ $T_J = 25  ^{\circ}C$	35	200	uA
	I <sub>R2</sub>	$@V_R = \text{rated } V_R$ $T_J = 175  ^{\circ}\text{C}$	120	300	uA
Junction Capacitance	Ст	VR=0V, Tj=25℃,f=1MHz	1200	-	pF

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

# **Thermal-Mechanical Specifications:**

Characteristics	Symbol	S4D15120A	S4D15120H	Units
Junction Temperature	TJ	-55 to	+175	°C
Storage Temperature	T <sub>stg</sub>	-55 to +175		°C
Maximum Thermal Resistance Junction to Case	R <sub>qJC</sub>	1.7	0.61	°C/W

## **Ordering Information**

Device	Package	Shipping
S4D15120A	TO-220AC(TO-220-2)	50pcs / tube
S4D15120H	TO-247AC(TO-247-2)	25pcs / tube

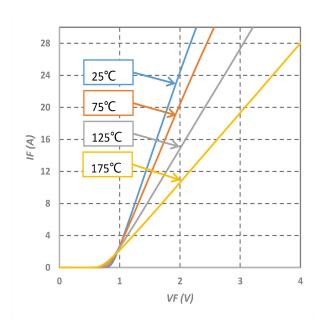
For information on tape and reel specifications, including part orientation and tape sizes, please refer to our tape and reel packaging specification.







### **Ratings and Characteristics Curves**



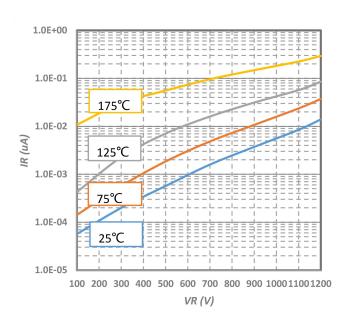


Fig.1-Typical Forward Voltage Characteristics

Fig.2-Typical Reverse Characteristics

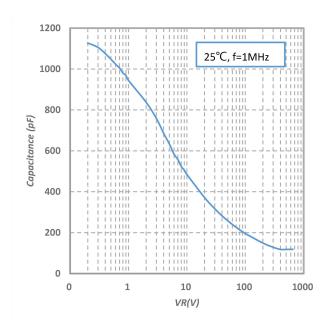


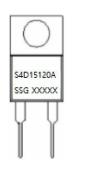
Fig.3-Capacitance vs. Reverse Voltage







## **Marking Diagram**





#### Where XXXXX is YYWWL

 S4D
 = Device Type

 A/H
 = Package type

 15
 = Forward Current (15A)

 120
 = Reverse Voltage (1200V)

 SSG
 = SSG

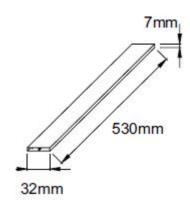
 YY
 = Year

YY = Year WW = Week L = Lot Number

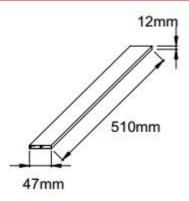
Cautions: Molding resin

Epoxy resin UL:94V-0

## **Tube Specification**



TO-220AC(TO-220-2)



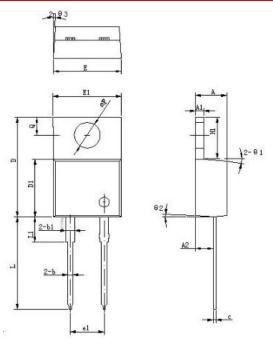
TO-247AC(TO-247-2)





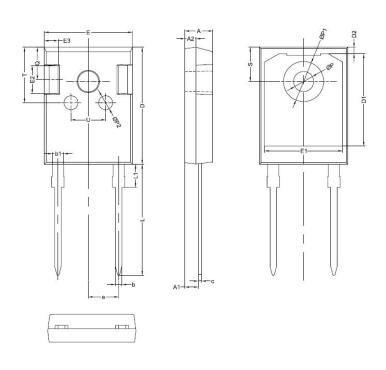


# **Mechanical Dimensions TO-220AC(TO-220-2)**



Symbol	Dimensions in millimeters			
	Min.	Typical	Max.	
Α	4.55	4.70	4.85	
A1	1.17	1.27	1.37	
A2	2.59	2.69	2.89	
b	0.71	0.81	0.96	
b1		1.27		
С	0.36	0.38	0.61	
D	14.64	14.94	15.24	
D1	8.55	8.70	8.90	
E	10.01	10.16	10.31	
E1	9.98	10.18	10.38	
e1		5.08		
H1	6.04	6.24	6.44	
L	13.00	13.86	14.08	
L1		3.80		
ФР	3.74	3.84	4.04	
Q	2.54	2.74	2.94	
Θ1		5°		
Θ2		4°		
Θ3		4°		

### **Mechanical Dimensions TO-247AC(TO-247-2)**



SYMBOL	Millimeters				
	MIN.	TYP.	MAX.		
Α	4.80	5.00	5.20		
A1	2.20	2.41	2.61		
A2	1.90	2.00	2.10		
b	1.10	1.20	1.35		
b1	1.80	2.00	2.20		
С	0.50	0.60	0.75		
D	20.30	21.00	21.20		
D1		16.58			
D2		1.17			
D2 E	15.60	15.80	16.00		
E1		14.02			
E2		5.00			
E3		2.50			
е		5.44			
L	19.42	19.92	20.42		
L1		4.13			
Р	3.50	3.60	3.70		
P1	7.1	7.19	7.40		
P2		2.50			
Q		5.80			
S	6.05	6.15	6.25		
P2 Q S T		10.00			
U		6.20			

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