S1A, S1B, S1D, S1G, S1J, S1K, S1M

Vishay General Semiconductor

RoHS

Surface Mount Glass Passivated Rectifier



DO-214AC (SMA)

PRIMARY CHARACTERISTICS								
I _{F(AV)}	1.0 A							
V _{RRM}	50 V, 100 V, 200 V, 400 V, 600 V, 800 V, 1000 V							
I _{FSM}	40 A, 30 A							
E _{AS}	5 mJ							
I _R	1.0 μΑ, 5.0 μΑ							
V _F	1.1 V							
T _J max.	150 °C							
Package	DO-214AC (SMA)							
Diode variations	Single die							

FEATURES

- Low profile package
- · Ideal for automated placement
- · Glass passivated pallet chip junction
- Low forward voltage drop
- · Low leakage current
- · High forward surge capability
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- AEC-Q101 qualified
- Material categorization: for definitions of compliance please see <u>www.vishav.com/doc?99912</u>

TYPICAL APPLICATIONS

For use in general purpose rectification of power supplies, inverters, converters and freewheeling diodes for consumer, automotive, and telecommunication.

MECHANICAL DATA

Case: DO-214AC (SMA)

Molding compound meets UL 94 V-0 flammability rating Base P/N-E3 - RoHS-compliant, commercial grade Base P/NHE3_X - RoHS-compliant and AEC-Q101 qualified ("_X" denotes revision code e.g. A, B,.....)

Terminals: Matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

E3 suffix meets JESD 201 class 2 whisker test, HE3 suffix meets JESD 201 class 2 whisker test

Polarity: Color band denotes cathode end

MAXIMUM RATINGS (T _A = 25 °C unless otherwise noted)									
PARAMETER	SYMBOL	S1A	S1B	S1D	S1G	S1J	S1K	S1M	UNIT
Device marking code		SA	SB	SD	SG	SJ	SK	SM	
Maximum recurrent peak reverse voltage	V _{RRM}	50	100	200	400	600	800	1000	V
Maximum RMS voltage	V _{RMS}	MS 35 70 140 280 420		560	700	V			
Maximum DC blocking voltage	V _{DC}	50 100 200 400 600		600	800	1000	V		
Maximum average forward rectified current (fig. 1)	I _{F(AV)}	1.0						Α	
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I _{FSM}	40 30					80	А	
Non-repetitive peak reverse avalanche energy at 25 °C, I _{AS} = 1 A, L = 10 mH	E _{AS}	5					mJ		
Operating junction and storage temperature range	T _J , T _{STG}	-55 to +150						°C	

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ELECTRICAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)										
PARAMETER	TEST CONDITIONS	SYMBOL	S1A	S1B	S1D	S1G	S1J	S1K	S1M	UNIT
Maximum instantaneous forward voltage	1.0 A	V _F	1.1					٧		
Maximum DC reverse current			1.0 5.0						.0	μА
at rated DC blocking voltage	T _A = 125 °C		50							
Typical reverse recovery time	$I_F = 0.5 \text{ A}, I_R = 1.0 \text{ A},$ $I_{rr} = 0.25 \text{ A}$	t _{rr}	t _{rr} 1.8			μs				
Typical junction capacitance	4.0 V, 1 MHz	CJ	C _J 12					pF		

THERMAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)									
PARAMETER	SYMBOL S1A S1B S1D S1G S1J S1K S1M UNIT						UNIT		
Typical thermal resistance (1)	$R_{\theta JA}$	75					85		°C/W
Typical thermal resistance (*)	$R_{\theta JL}$	27				30		C/VV	

Note

⁽¹⁾ Thermal resistance from junction to ambient and from junction to lead mounted on PCB with 0.2" x 0.2" (5.0 mm x 5.0 mm) copper pad areas

ORDERING INFORMATION (Example)								
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE				
S1J-E3/61T	0.064	61T	1800	7" diameter plastic tape and reel				
S1J-E3/5AT	0.064	5AT	7500	13" diameter plastic tape and reel				
S1JHE3_A/H (1)	0.064	Н	1800	7" diameter plastic tape and reel				
S1JHE3_A/I (1)	0.064	I	7500	13" diameter plastic tape and reel				

Note

RATINGS AND CHARACTERISTICS CURVES (T_A = 25 °C unless otherwise noted)

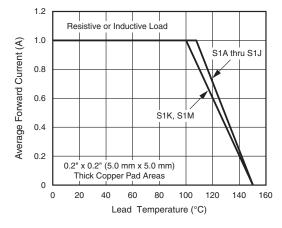


Fig. 1 - Forward Current Derating Curve

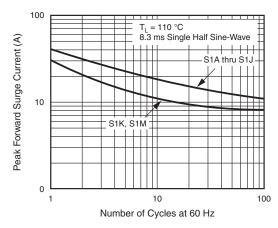


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

⁽¹⁾ AEC-Q101 qualified

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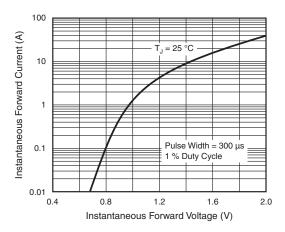


Fig. 3 - Typical Instantaneous Forward Characteristics

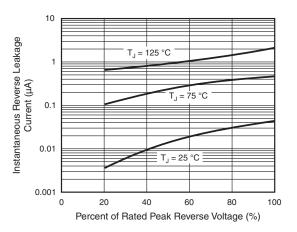


Fig. 4 - Typical Reverse Leakage Characteristics

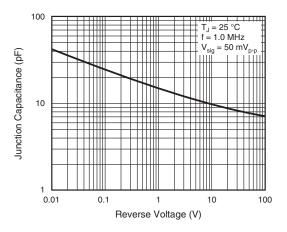


Fig. 5 - Typical Junction Capacitance

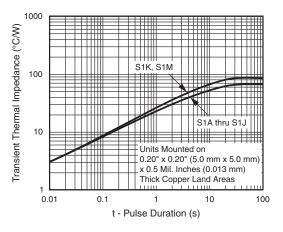


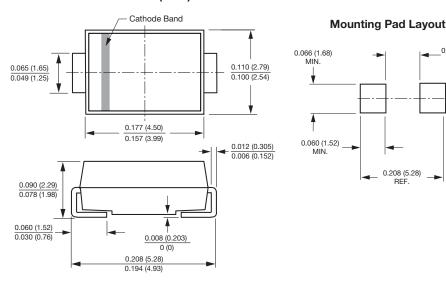
Fig. 6 - Typical Transient Thermal Impedance

0.074 (1.88)

MAX.

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-214AC (SMA)





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