

# RS1A, RS1B, RS1D, RS1G, RS1J, RS1K

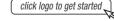
Vishay General Semiconductor

# Surface Mount Fast Switching Rectifier



SMA (DO-214AC)

**DESIGN SUPPORT TOOLS** 





PRIMARY CHARACTERISTICS							
I <sub>F(AV)</sub>	1.0 A						
V <sub>RRM</sub>	50 V, 100 V, 200 V, 400 V, 600 V, 800 V						
I <sub>FSM</sub>	30 A						
t <sub>rr</sub>	150 ns, 250 ns, 500 ns						
V <sub>F</sub>	1.3 V						
T <sub>J</sub> max.	150 °C						
Package	SMA (DO-214AC)						
Circuit configuration	Single						

### **FEATURES**

- Low profile package
- · Ideal for automated placement
- Glass passivated pellet chip junction
- · Fast switching for high efficiency
- High forward surge capability
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- AEC-Q101 qualified available
  - Automotive ordering code: base P/NHE3 or P/NHM3
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

## **TYPICAL APPLICATIONS**

For use in fast switching rectification of power supply, inverters, converters, and freewheeling diodes for consumer, automotive and telecommunication.

### **MECHANICAL DATA**

### Case: SMA (DO-214AC)

Molding compound meets UL 94 V-0 flammability rating Base P/N-E3 - RoHS-compliant, commercial grade

Base P/N-M3 - halogen-free, RoHS-compliant, commercial grade

Base P/NHE3 X - RoHS-compliant and AEC-Q101 gualified Base P/NHM3\_X - halogen-free, RoHS-compliant and AEC-Q101 gualified

("\_X" denotes revision code e.g. A, B, ....)

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

E3, M3, HE3 and HM3 suffix meets JESD 201 class 2 whisker test

Polarity: color band denotes cathode end

<b>MAXIMUM RATINGS</b> ( $T_A = 25 \text{ °C}$ unless otherwise noted)								
PARAMETER	SYMBOL	RS1A	RS1B	RS1D	RS1G	RS1J	RS1K	UNIT
Device marking code		RA	RB	RD	RG	RJ	RK	
Maximum repetitive peak reverse voltage	V <sub>RRM</sub>	50	100	200	400	600	800	V
Maximum RMS voltage	V <sub>RMS</sub>	35	70	140	280	420	500	V
Maximum DC blocking voltage	V <sub>DC</sub>	50	100	200	400	600	800	V
Maximum average forward rectified current at $T_L = 90$ °C	I <sub>F(AV)</sub>	1.0						А
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I <sub>FSM</sub>	30					А	
Operating junction and storage temperature range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150					°C	

Revision: 03-Aug-2018

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RoHS COMPLIANT

HALOGEN FREE



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ELECTRICAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted)										
PARAMETER	TEST CONDITIONS		SYMBOL	RS1A	RS1B	RS1D	RS1G	RS1J	RS1K	UNIT
Maximum instantaneous forward voltage	1.0 A		V <sub>F</sub>	1.3						V
Maximum DC reverse current at		T <sub>A</sub> = 25 °C	I <sub>B</sub>			5.0				μA
rated DC blocking voltage		T <sub>A</sub> = 125 °C		50						
Maximum reverse recovery time	$I_F = 0.5 \text{ A}, I_R = 1.0 \text{ A}, I_{rr} = 0.25 \text{ A}$		t <sub>rr</sub>	150			250	500	ns	
Typical junction capacitance	4.0 V, 1 MHz		CJ	10			7	pF		

<b>THERMAL CHARACTERISTICS</b> ( $T_A = 25 \text{ °C}$ unless otherwise noted)								
PARAMETER	SYMBOL	BOL RS1A RS1B RS1D RS1G RS1J RS1K				UNIT		
Typical thermal resistance	$R_{\theta JA}$ <sup>(1)</sup>	105						°C/W
Typical thermal resistance	R <sub>0JL</sub> <sup>(1)</sup>	32						0/10

Note

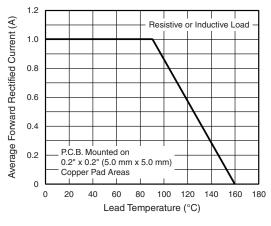
(1) Thermal resistance from junction to ambient and from junction to lead mounted on PCB with 0.2" x 0.2" (5.0 mm x 5.0 mm) copper pad areas

ORDERING INFORMATION (Example)								
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE				
RS1J-E3/61T	0.064	61T	1800	7" diameter plastic tape and reel				
RS1J-E3/5AT	0.064	5AT	7500	13" diameter plastic tape and reel				
RS1JHE3_A/H <sup>(1)</sup>	0.064	Н	1800	7" diameter plastic tape and reel				
RS1JHE3_A/I <sup>(1)</sup>	0.064	I	7500	13" diameter plastic tape and reel				
RS1J-M3/61T	0.064	61T	1800	7" diameter plastic tape and reel				
RS1J-M3/5AT	0.064	5AT	7500	13" diameter plastic tape and reel				
RS1JHM3_A/H <sup>(1)</sup>	0.064	Н	1800	7" diameter plastic tape and reel				
RS1JHM3_A/I <sup>(1)</sup>	0.064		7500	13" diameter plastic tape and reel				

### Note

(1) AEC-Q101 qualified

## **RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25 \text{ °C}$ unless otherwise noted)





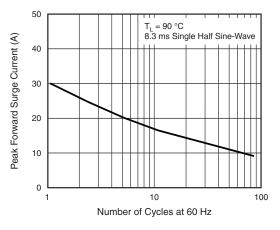


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

Revision: 03-Aug-2018

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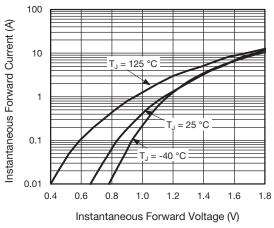
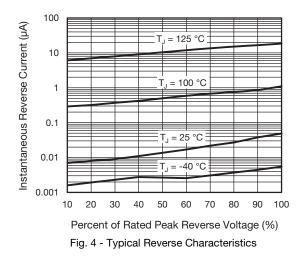
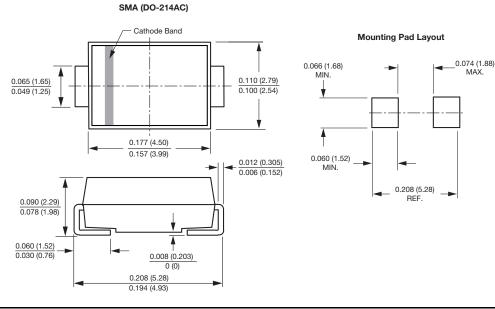
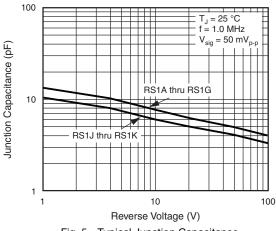


Fig. 3 - Typical Instantaneous Forward Characteristics











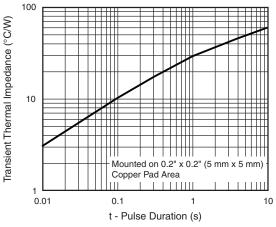


Fig. 6 - Typical Transient Thermal Impedance

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