



**THE DATASHEET OF  
RS3K-E3/9AT**





## Surface-Mount Fast Switching Rectifier



SMC (DO-214AB)



### 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](http://www.vishay.com/doc?99912)



### ADDITIONAL RESOURCES



### TYPICAL APPLICATIONS

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

### MECHANICAL DATA

**Case:** SMC (DO-214AB)  
 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 qualified  
 Base P/NHM3\_X - halogen-free, 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, M3, HE3 and HM3 suffix meets JESD 201 class 2 whisker test  
**Polarity:** color band denotes cathode end

PRIMARY CHARACTERISTICS	
I <sub>F(AV)</sub>	3.0 A
V <sub>RRM</sub>	50 V, 100 V, 200 V, 400 V, 600 V, 800 V
I <sub>FSM</sub>	100 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	SMC (DO-214AB)
Circuit configuration	Single

MAXIMUM RATINGS (T <sub>A</sub> = 25 °C unless otherwise noted)								
PARAMETER	SYMBOL	RS3A	RS3B	RS3D	RS3G	RS3J	RS3K	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 <sub>L</sub> = 75 °C	I <sub>F(AV)</sub>	3.0						A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I <sub>FSM</sub>	100						A
Operating junction and storage temperature range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150						°C



ELECTRICAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted)									
PARAMETER	TEST CONDITIONS	SYMBOL	RS3A	RS3B	RS3D	RS3G	RS3J	RS3K	UNIT
Maximum instantaneous forward voltage	2.5 A	V <sub>F</sub>	1.3						V
Maximum DC reverse current at rated DC blocking voltage	T <sub>A</sub> = 25 °C	I <sub>R</sub>	10						μA
	T <sub>A</sub> = 125 °C		250						
Maximum reverse recovery time	I <sub>F</sub> = 0.5 A, I <sub>R</sub> = 1.0 A, I <sub>rr</sub> = 0.25 A	t <sub>rr</sub>	150				250	500	ns
Typical junction capacitance	4.0 V, 1 MHz	C <sub>J</sub>	44				34		pF

THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted)									
PARAMETER	SYMBOL	RS3A	RS3B	RS3D	RS3G	RS3J	RS3K	UNIT	
Typical thermal resistance	R <sub>θJA</sub> <sup>(1)</sup>	50						°C/W	
	R <sub>θJL</sub> <sup>(1)</sup>	15							

**Note**

<sup>(1)</sup> Thermal resistance from junction to ambient and from junction to lead mounted on PCB with 0.3" x 0.3" (8.0 mm x 8.0 mm) copper pad area

ORDERING INFORMATION (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
RS3J-E3/57T	0.211	57T	850	7" diameter plastic tape and reel
RS3J-E3/9AT	0.211	9AT	3500	13" diameter plastic tape and reel
RS3JHE3_A/H <sup>(1)</sup>	0.211	H	850	7" diameter plastic tape and reel
RS3JHE3_A/I <sup>(1)</sup>	0.211	I	3500	13" diameter plastic tape and reel
RS3J-M3/57T	0.211	57T	850	7" diameter plastic tape and reel
RS3J-M3/9AT	0.211	9AT	3500	13" diameter plastic tape and reel
RS3JHM3_A/H <sup>(1)</sup>	0.211	H	850	7" diameter plastic tape and reel
RS3JHM3_A/I <sup>(1)</sup>	0.211	I	3500	13" diameter plastic tape and reel

**Note**

<sup>(1)</sup> AEC-Q101 qualified

**RATINGS AND CHARACTERISTICS CURVES (T<sub>A</sub> = 25 °C unless otherwise noted)**

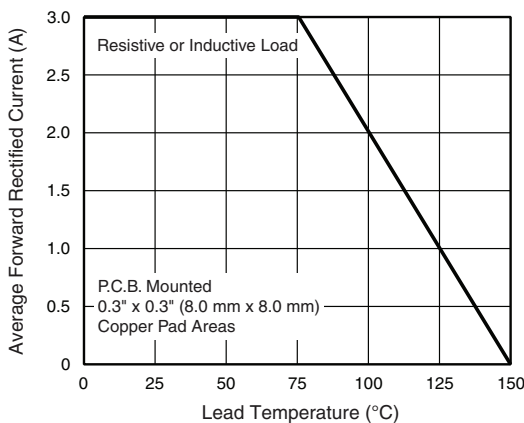


Fig. 1 - Forward Current Derating Curve

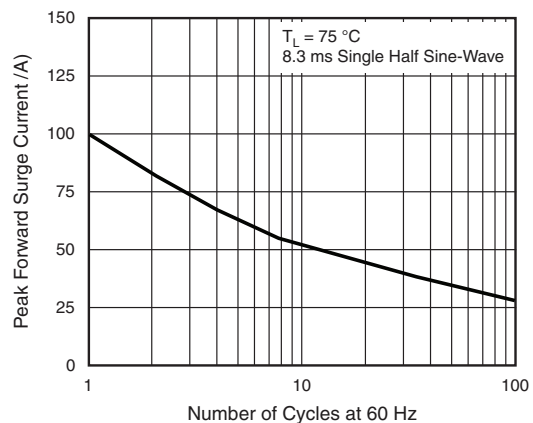


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

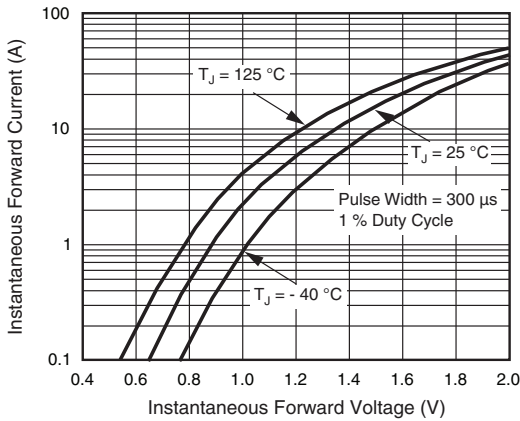


Fig. 3 - Typical Instantaneous Forward Characteristics

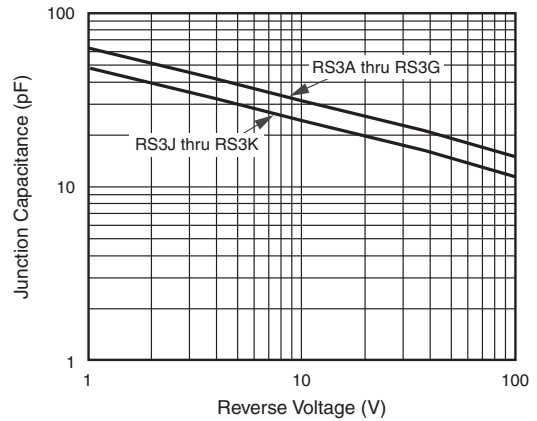


Fig. 5 - Typical Junction Capacitance

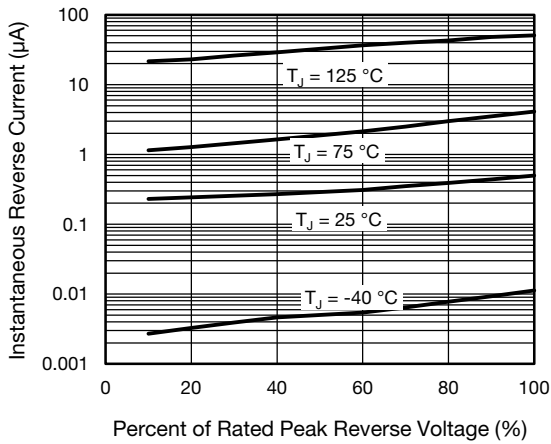


Fig. 4 - Typical Reverse Characteristics

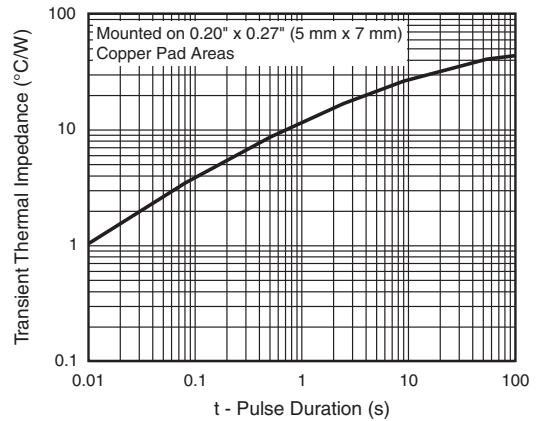
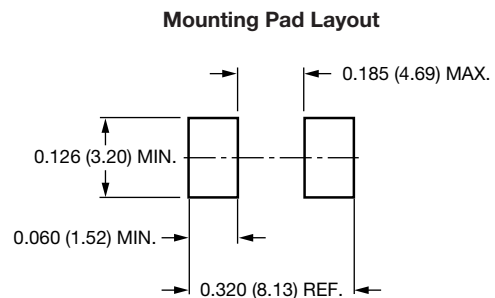
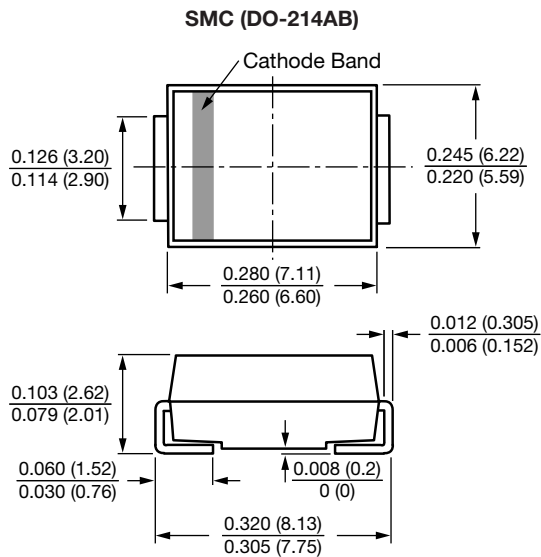


Fig. 6 - Typical Transient Thermal Impedance

**PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)





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