

# Standard Avalanche Surface-Mount Rectifiers


**SMB (DO-214AA)**

Cathode  Anode

## ADDITIONAL RESOURCES


[3D Models](#)

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	3.0 A
$V_{RRM}$	200 V, 400 V, 600 V
$I_{FSM}$	90 A
$E_{AS}$	20 mJ
$V_F$ at $I_F = 3.0$ A ( $T_A = 125$ °C)	0.86 V
$T_J$ max.	175 °C
Package	SMB (DO-214AA)
Circuit configuration	Single

## FEATURES

- Low profile package
- Ideal for automated placement
- Glass passivated chip junction
- Controlled avalanche characteristics
- Low leakage current
- High forward surge capability
- AEC-Q101 qualified available  
- Automotive ordering code: base P/NHM3
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)


**RoHS**  
COMPLIANT  
HALOGEN  
**FREE**

## TYPICAL APPLICATIONS

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

## MECHANICAL DATA

### Case: SMB (DO-214AA)

Molding compound meets UL 94 V-0 flammability rating  
Base P/N-M3 - halogen-free, RoHS compliant, and commercial grade

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

M3 and HM3 suffix meets JESD 201 class 2 whisker test

**Polarity:** color band denotes cathode end

MAXIMUM RATINGS (T <sub>A</sub> = 25 °C unless otherwise noted)					
PARAMETER	SYMBOL	AS3BD	AS3BG	AS3BJ	UNIT
Device marking code		A3D	A3G	A3J	
Maximum repetitive peak reverse voltage	V <sub>RRM</sub>	200	400	600	V
Maximum DC forward current (fig. 1)	I <sub>F</sub> <sup>(1)</sup>	3.0			A
	I <sub>F</sub> <sup>(2)</sup>	2.0			
Peak forward surge current 10 ms single half sine-wave, non-repetitive, cool junction	I <sub>FSM</sub>	90			A
Non-repetitive avalanche energy at T <sub>J</sub> = 25 °C	I <sub>AS</sub> = 2.0 A max.	E <sub>AS</sub>	20		mJ
	I <sub>AS</sub> = 1.0 A typ.		30		
Operating junction and storage temperature range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +175			°C

## Notes

(1) Mounted on 14 mm x 14 mm x 2 areas, 1 oz. FR4 PCB

(2) Free air, mounted on recommended 1.52 mm x 2.18 mm x 2 pad areas

<b>ELECTRICAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)					
PARAMETER	TEST CONDITIONS	SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage	$I_F = 1.5\text{ A}$	$V_F^{(1)}$	0.90	-	V
	$I_F = 3.0\text{ A}$		0.98	1.05	
	$I_F = 1.5\text{ A}$		0.78	-	
	$I_F = 3.0\text{ A}$		0.86	0.95	
Reverse current	$V_R = 600\text{ V}$	$I_R^{(2)}$	0.5	20	$\mu\text{A}$
			40	150	
Typical junction capacitance per diode	Rated $V_R = 4.0\text{ V}$ , 1 MHz	$C_J$	40	-	pF

**Notes**

(1) Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle

(2) Pulse test: Pulse width  $\leq 40\text{ ms}$ 

<b>THERMAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)			
PARAMETER	SYMBOL	AS3BJ	UNIT
Typical thermal resistance	$R_{\theta JA}^{(1)}$	100	$^{\circ}\text{C/W}$
	$R_{\theta JM}^{(2)}$	14	

**Notes**

(1) Free air, mounted on recommended PCB 1 oz. pad area; thermal resistance  $R_{\theta JA}$  - junction to ambient

(2) Units mounted on PCB with 14 mm x 14 mm x 2 areas, 1 oz. copper pad areas;  $R_{\theta JM}$  - junction to mount

<b>ORDERING INFORMATION</b> (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
AS3BJ-M3/52T	0.096	52T	750	7" diameter plastic tape and reel
AS3BJ-M3/5BT	0.096	5BT	3200	13" diameter plastic tape and reel
AS3BJHM3_A/H <sup>(1)</sup>	0.096	H	750	7" diameter plastic tape and reel
AS3BJHM3_A/I <sup>(1)</sup>	0.096	I	3200	13" diameter plastic tape and reel

**Note**

(1) AEC-Q101 qualified

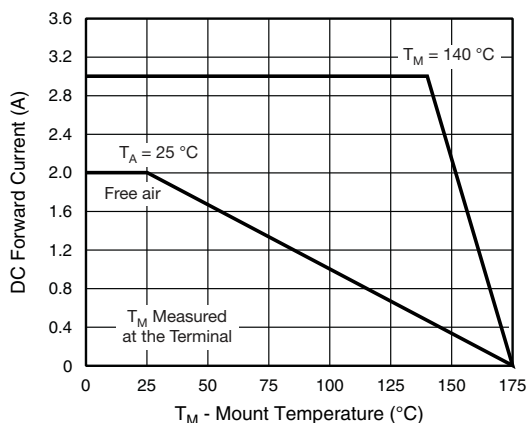
**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)


Fig. 1 - Maximum Forward Current Derating Curve

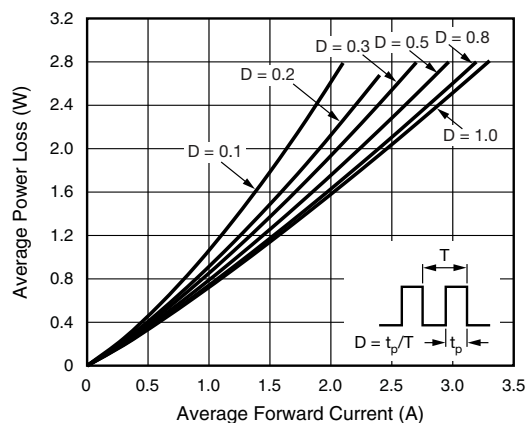


Fig. 2 - Forward Power Loss Characteristics

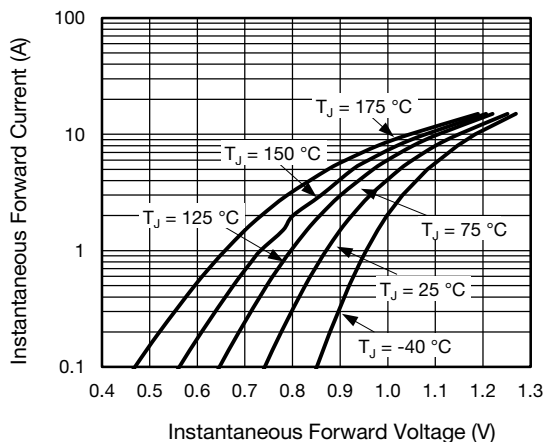


Fig. 3 - Typical Instantaneous Forward Characteristics

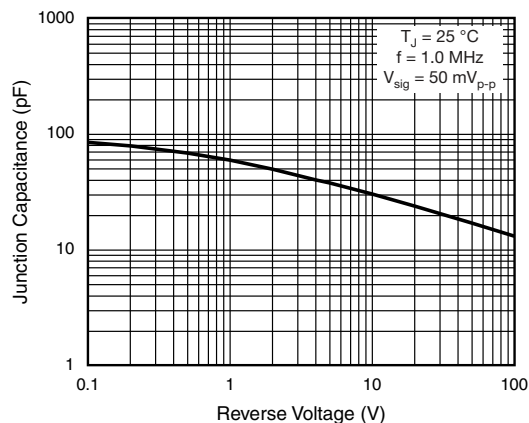


Fig. 5 - Typical Junction Capacitance

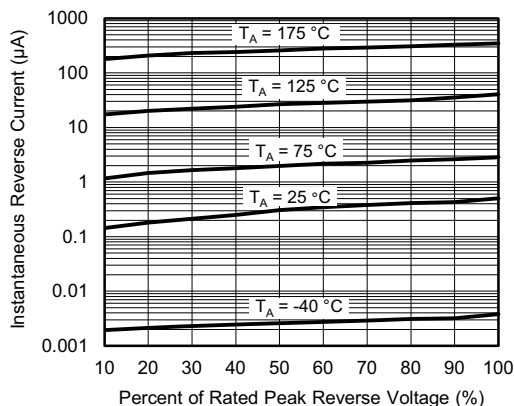


Fig. 4 - Typical Reverse Characteristics

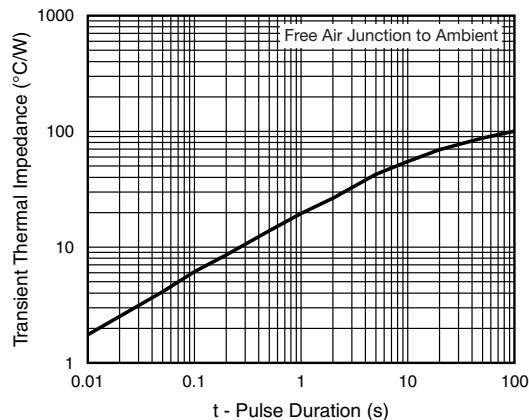
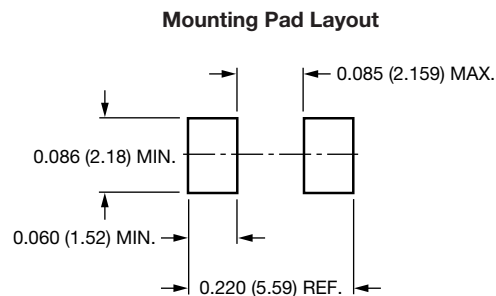
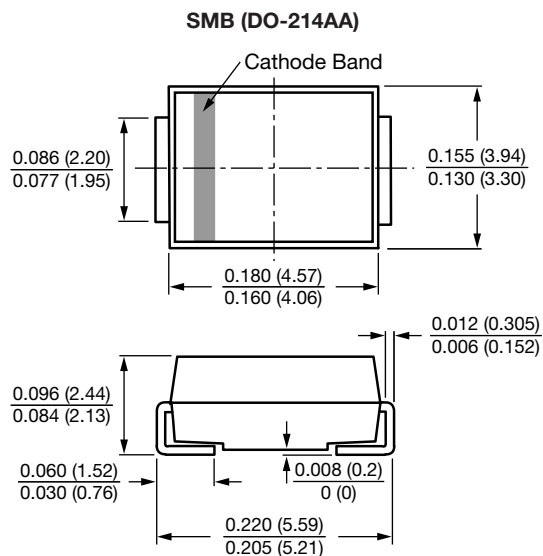


Fig. 6 - Typical Transient Thermal Impedance

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




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