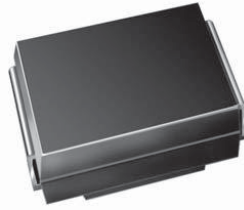


## Avalanche Surface Mount Rectifiers


**DO-214AA (SMB)**

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

### 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)

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	3.0 A
$V_{RRM}$	600 V
$I_{FSM}$	90 A
$t_{rr}$	140 ns
$E_{AS}$	20 mJ
$V_F$ at $I_F = 3.0$ A ( $T_A = 125$ °C)	0.86 V
$T_J$ max.	175 °C
Package	TO-277A (SMB)
Diode variation	Single die

### 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-214AA (SMB)

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

Base P/NHM3 - halogen-free, 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

M3 suffix meets JESD 201 class 1A whisker test, HM3 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	AS3BD	AS3BG	AS3BJ	UNIT
Device marking code		A3D	A3G	A3J	
Maximum repetitive peak reverse voltage	$V_{RRM}$	200	400	600	V
Maximum DC forward current (fig. 1)	$I_F^{(1)}$	3.0			A
	$I_F^{(2)}$	2.0			
Peak forward surge current 10 ms single half sine-wave, non-repetitive, cool junction	$I_{FSM}$	90			A
Non-repetitive avalanche energy at $T_J = 25$ °C	$E_{AS}$	$I_{AS} = 2.0$ A max.			mJ
		$I_{AS} = 1.0$ A typ.			
Operating junction and storage temperature range	$T_J, T_{STG}$	-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	$I_F = 1.5\text{ A}$	$T_A = 25\text{ }^\circ\text{C}$	$V_F^{(1)}$	0.90	-	V
	$I_F = 3.0\text{ A}$			0.98	1.05	
	$I_F = 1.5\text{ A}$	$T_A = 125\text{ }^\circ\text{C}$		0.78	-	
	$I_F = 3.0\text{ A}$			0.86	0.95	
Reverse current	$V_R = 600\text{ V}$	$T_A = 25\text{ }^\circ\text{C}$	$I_R^{(2)}$	0.5	20	$\mu\text{A}$
		$T_A = 125\text{ }^\circ\text{C}$		40	150	
Typical reverse recovery time	$I_F = 0.5\text{ A}, I_R = 1.0\text{ A}, I_{rr} = 0.25\text{ A}$	$t_{rr}$	1.5	-	$\mu\text{s}$	
Typical junction capacitance per diode	Rated $V_R = 4.0\text{ V}, 1\text{ MHz}$	$C_J$	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
AS3BJHM3/52T <sup>(1)</sup>	0.096	52T	750	7" diameter plastic tape and reel
AS3BJHM3/5BT <sup>(1)</sup>	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)

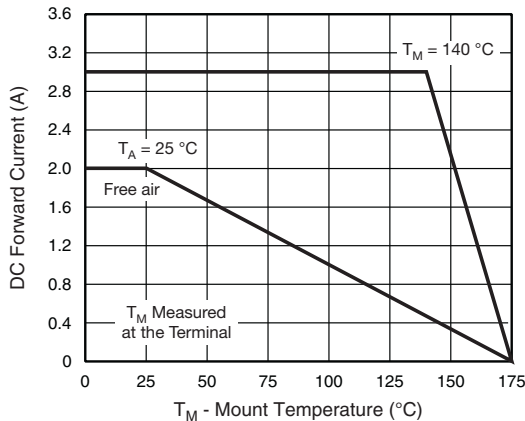


Fig. 1 - Maximum Forward Current Derating Curve

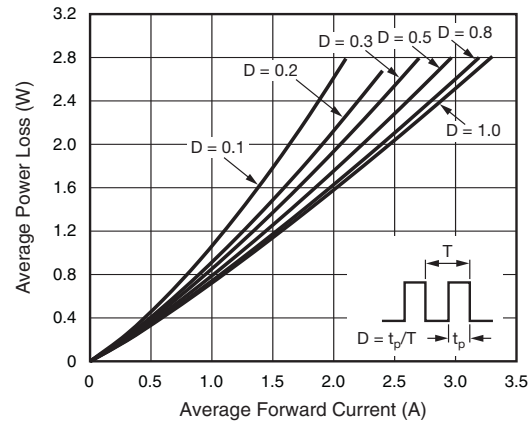


Fig. 2 - Forward Power Loss Characteristics

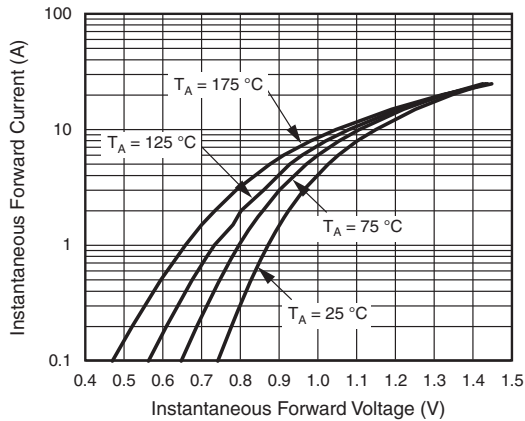


Fig. 3 - Typical Instantaneous Forward Characteristics

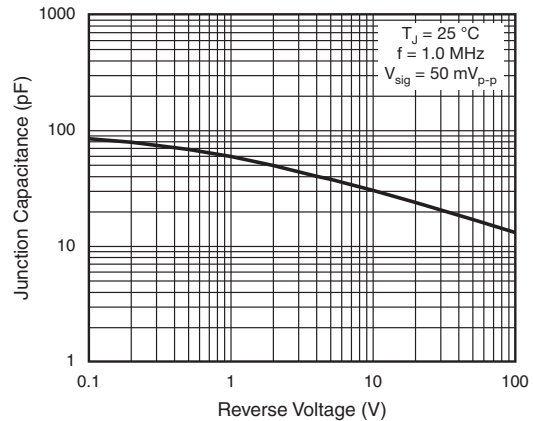


Fig. 5 - Typical Junction Capacitance

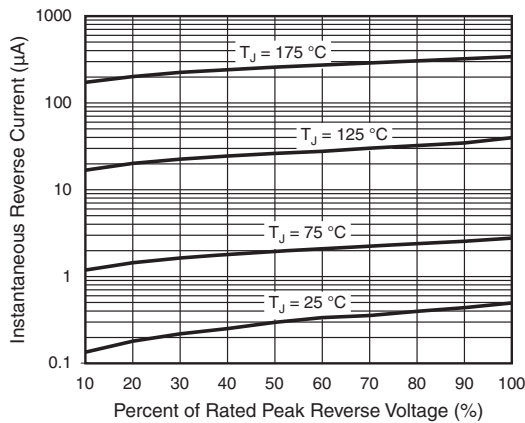


Fig. 4 - Typical Reverse Characteristics

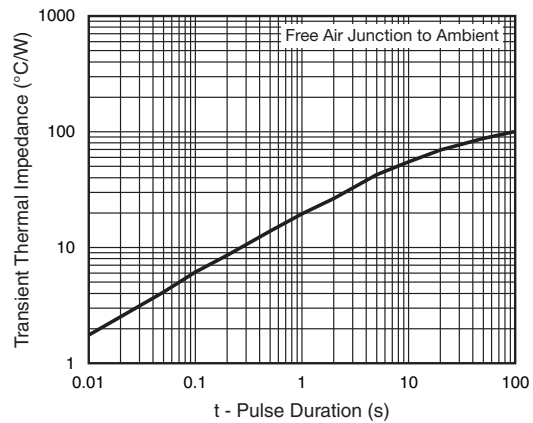
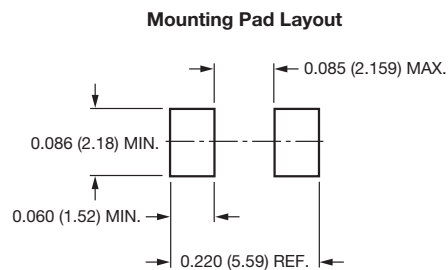
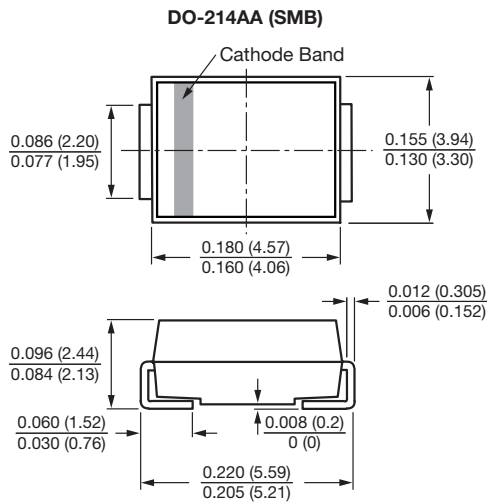


Fig. 6 - Typical Transient Thermal Impedance

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





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