

Standard Avalanche Surface-Mount Rectifiers


SMB (DO-214AA)

Cathode  Anode

ADDITIONAL RESOURCES



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


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 _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 I_{AS} = 2.0 A max. I_{AS} = 1.0 A typ.	E _{AS}	20			mJ
		30			
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

ELECTRICAL CHARACTERISTICS ($T_A = 25\text{ }^{\circ}\text{C}$ 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	μA
			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 μs pulse width, 1 % duty cycle

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

THERMAL CHARACTERISTICS ($T_A = 25\text{ }^{\circ}\text{C}$ 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

ORDERING INFORMATION (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 ⁽¹⁾	0.096	H	750	7" diameter plastic tape and reel
AS3BJHM3_A/I ⁽¹⁾	0.096	I	3200	13" diameter plastic tape and reel

Note

(1) AEC-Q101 qualified

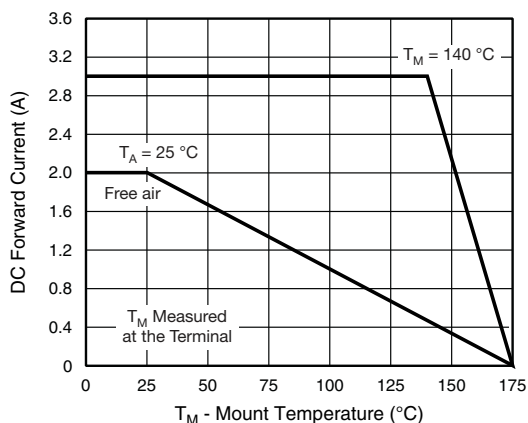
RATINGS AND CHARACTERISTICS CURVES ($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)


Fig. 1 - Maximum Forward Current Derating Curve

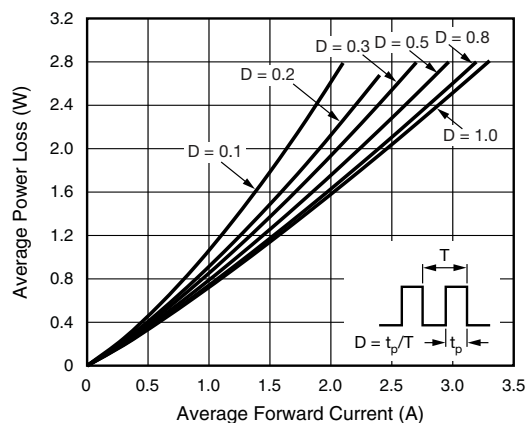


Fig. 2 - Forward Power Loss Characteristics

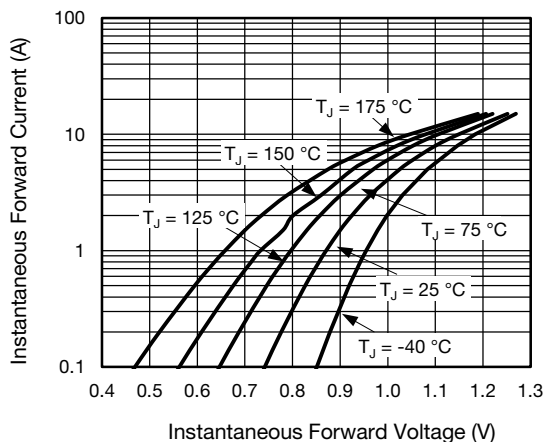


Fig. 3 - Typical Instantaneous Forward Characteristics

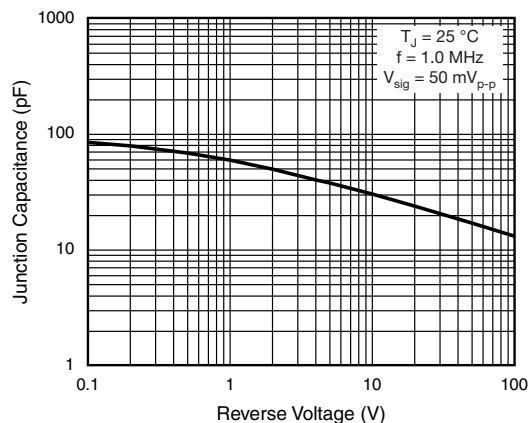


Fig. 5 - Typical Junction Capacitance

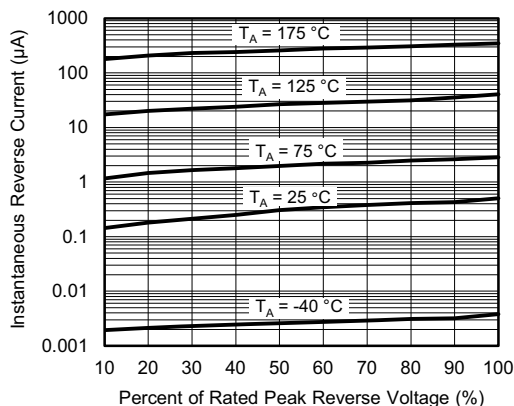


Fig. 4 - Typical Reverse Characteristics

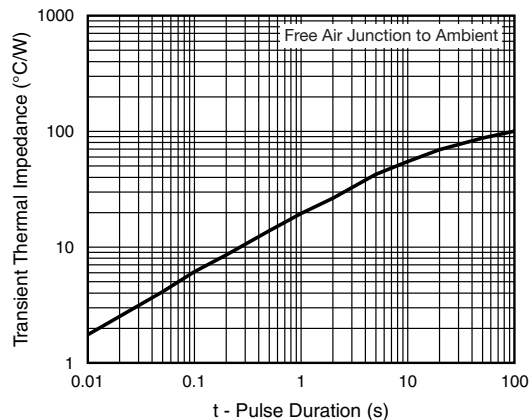
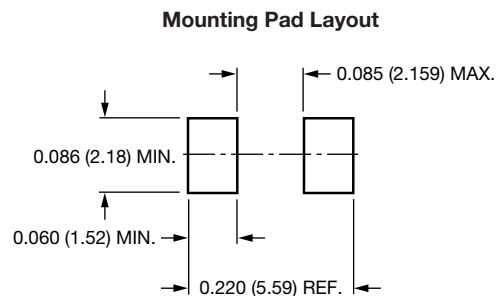
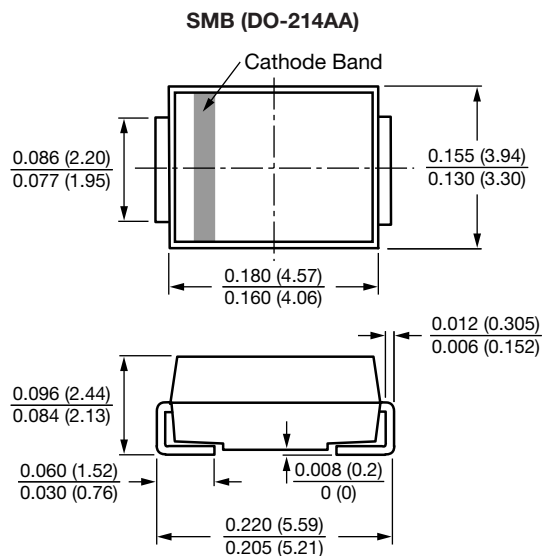


Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)




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