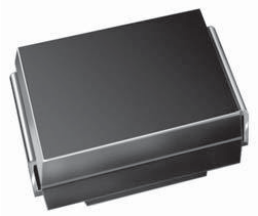
Avalanche Surface Mount Rectifiers



DO-214AA (SMB)

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	3.0 A
V_{RRM}	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

TYPICAL APPLICATIONS

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

FEATURES

RoHS COMPLIANT
HALOGEN FREE

- Low profile package
- Ideal for automated placement
- Glass passivated chip junction
- Controlled avalanche characteristics
- Low leakage current
- High forward surge capability
- AEC-Q101 qualified
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC
- **Halogen-free according to IEC 61249-2-21 definition**

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

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	AS3BJ	UNIT
Device marking code			A3J	
Maximum repetitive peak reverse voltage		V_{RRM}	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, T_J = 25 °C		I_{FSM}	90	A
Non-repetitive avalanche energy at T_J = 25 °C	I_{AS} = 2.0 A max.	E_{AS}	20	mJ
	I_{AS} = 1.0 A typ.		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 °C unless otherwise noted)						
PARAMETER	**TEST CONDITIONS**		**SYMBOL**	**TYP.**	**MAX.**	**UNIT**
Instantaneous forward voltage	I_F = 1.5 A	T_A = 25 °C	V_F (1)	0.90	-	V
	I_F = 3.0 A			0.98	1.05	
	I_F = 1.5 A	T_A = 125 °C		0.78	-	
	I_F = 3.0 A			0.86	0.95	
Reverse current	V_R = 600 V	T_A = 25 °C	I_R (2)	0.5	20	µA
		T_A = 125 °C		40	150	
Typical reverse recovery time	I_F = 0.5 A, I_R = 1.0 A, I_{rr} = 0.25 A		t_{rr}	1.5	-	µs
Typical junction capacitance per diode	Rated V_R = 4.0 V, 1 MHz		C_J	40	-	pF

Notes

(1) Pulse test: 300 µs pulse width, 1 % duty cycle

(2) Pulse test: Pulse width ≤ 40 ms

THERMAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)			
PARAMETER	**SYMBOL**	**AS3BJ**	**UNIT**
Typical thermal resistance	$R_{\theta JA}$ (1)	100	°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
AS3BJHM3/52T (1)	0.096	52T	750	7" diameter plastic tape and reel
AS3BJHM3/5BT (1)	0.096	5BT	3200	13" diameter plastic tape and reel

Note

(1) AEC-Q101 qualified

RATINGS AND CHARACTERISTICS CURVES

(T_A = 25 °C unless otherwise noted)

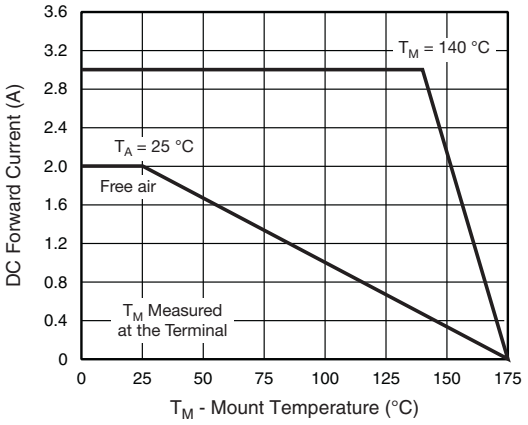


Fig. 1 - Maximum Forward Current Derating Curve

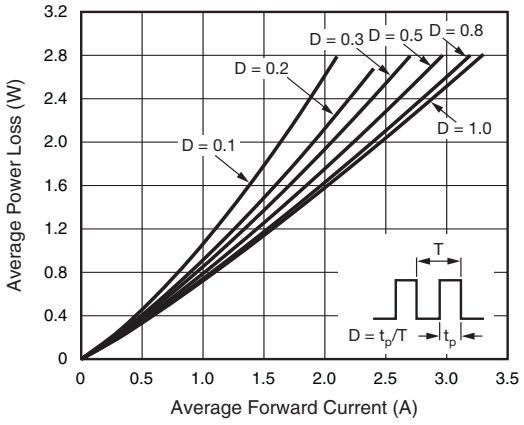


Fig. 2 - Forward Power Loss Characteristics

For technical questions within your region, please contact one of the following:
DiodesAmericas@vishay.com, DiodesAsia@vishay.com, DiodesEurope@vishay.com

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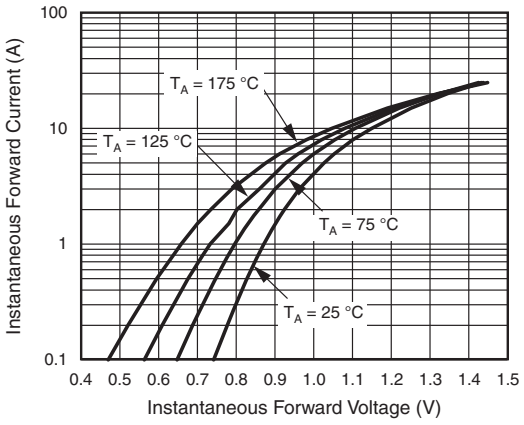


Fig. 3 - Typical Instantaneous Forward Characteristics

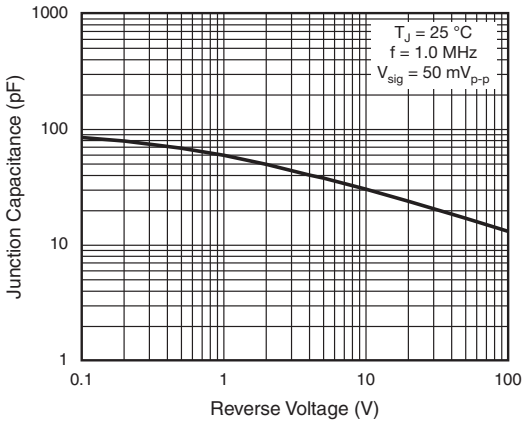


Fig. 5 - Typical Junction Capacitance

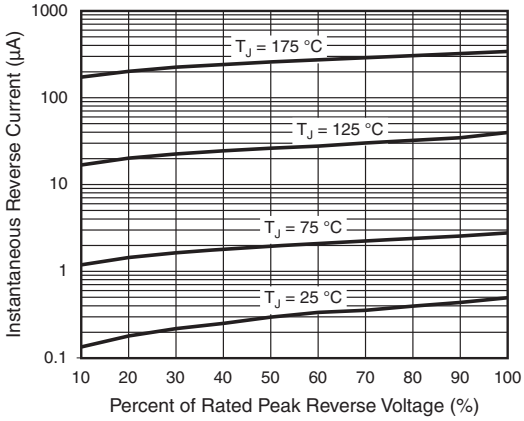


Fig. 4 - Typical Reverse Characteristics

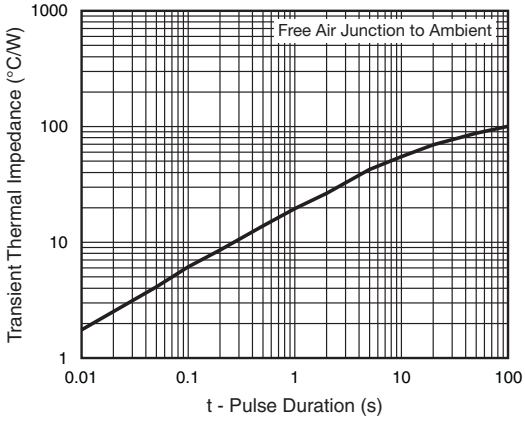
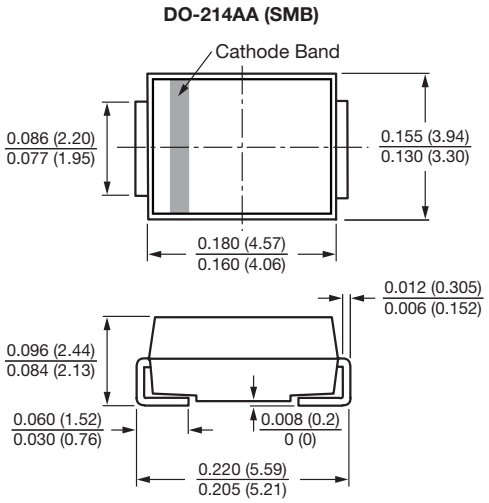
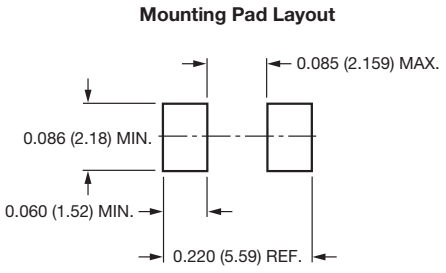


Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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