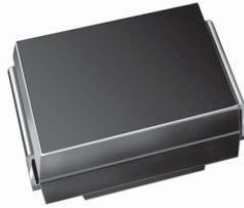


Avalanche Surface Mount Rectifiers


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

- 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**



RoHS
COMPLIANT
HALOGEN
FREE

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	E_{AS}	$I_{AS} = 2.0$ A max.	20
		$I_{AS} = 1.0$ 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 ($T_A = 25\text{ }^\circ\text{C}$ 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		
	$I_F = 1.5\text{ A}$	$T_A = 125\text{ }^\circ\text{C}$		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	μA
		$T_A = 125\text{ }^\circ\text{C}$		40	150	
Typical reverse recovery time	$I_F = 0.5\text{ A}$, $I_R = 1.0\text{ A}$, $t_{rr} = 0.25\text{ A}$	t_{rr}	1.5	-	μs	
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
AS3BJHM3/52T (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

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

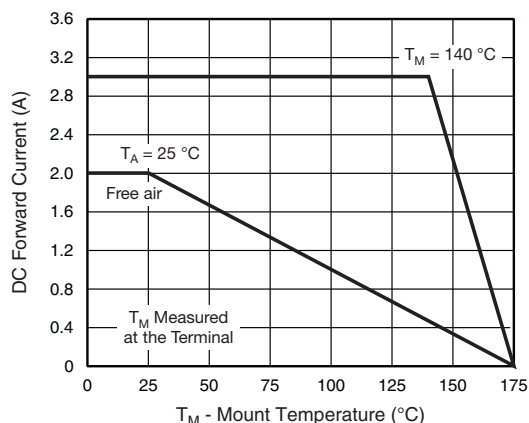


Fig. 1 - Maximum Forward Current Derating Curve

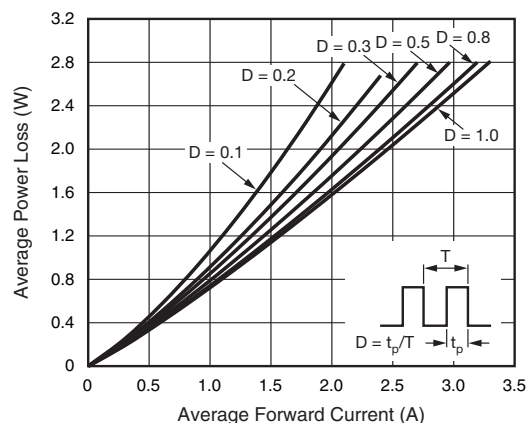


Fig. 2 - Forward Power Loss Characteristics

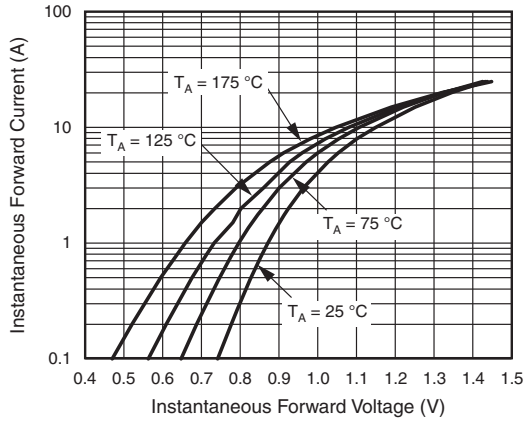


Fig. 3 - Typical Instantaneous Forward Characteristics

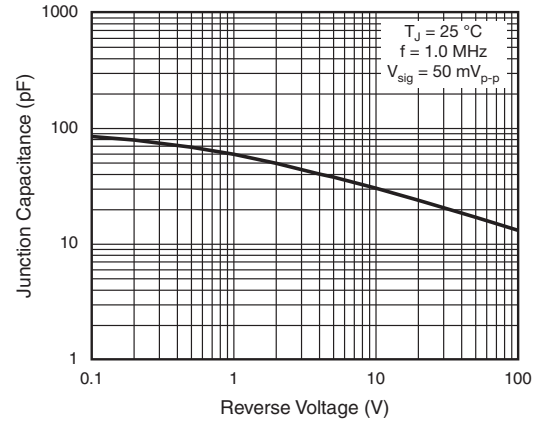


Fig. 5 - Typical Junction Capacitance

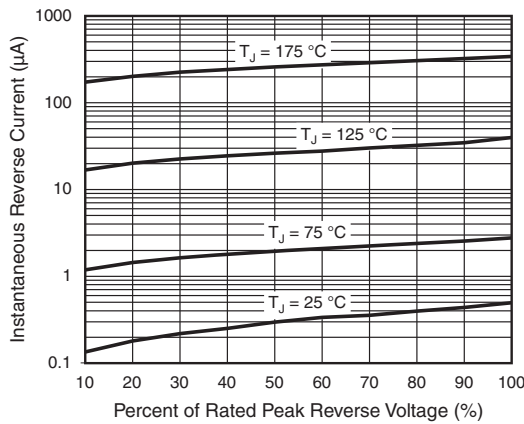


Fig. 4 - Typical Reverse Characteristics

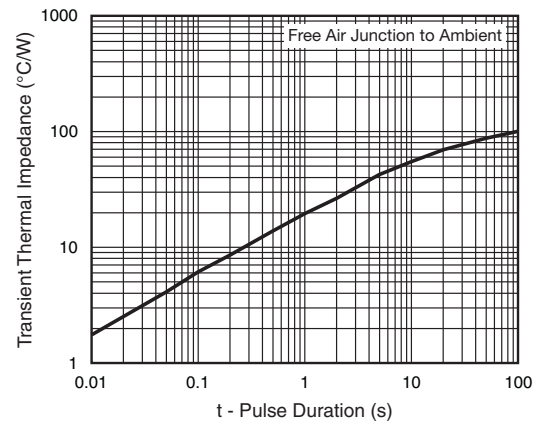
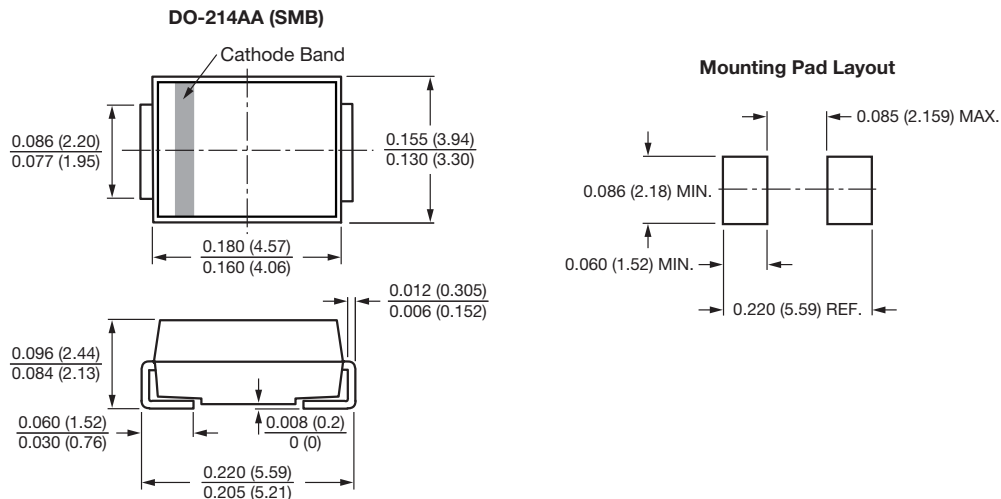


Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)




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