

Surface Mount Glass Passivated Rectifier


SMB-1 (DO-214AA)

Cathode  Anode

LINKS TO ADDITIONAL RESOURCES



PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	2.0 A
V_{RRM}	400 V, 600 V, 800 V, 1000 V
I_{FSM}	70 A
I_R	5.0 μ A
V_F at $I_F = 2$ A ($T_J = 125$ °C)	0.83 V
T_J max.	150 °C
Package	SMB-1 (DO-214AA)
Circuit configuration	Single

FEATURES

- Low profile package
- Ideal for automated placement
- Glass passivated pellet chip junction
- Low forward voltage drop
- Low leakage current
- High forward surge capability
- 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-1 (DO-214AA)

Molding compound meets UL 94 V-0 flammability rating

Base P/N-M3 - halogen-free, RoHS-compliant, commercial grade

Terminals: matte tin plated leads, solderable per J-STD-002

M3 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	SB2G	SB2J	SB2K	SB2M	UNIT
Device marking code		B2G	B2J	B2K	B2M	
Maximum repetitive peak reverse voltage	V _{RRM}	400	600	800	1000	V
Maximum RMS voltage	V _{RMS}	280	420	560	700	V
Maximum DC blocking voltage	V _{DC}	400	600	800	1000	V
Maximum DC forward current (fig. 1)	I _F ⁽¹⁾	2.0				A
	I _F ⁽²⁾	1.5				
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I _{FSM}	70				A
Operating and storage temperature range	T _J , ⁽³⁾ T _{STG}	-55 to +150				°C

Notes

- (1) Mounted on 8 mm x 8 mm pad areas, 2 oz. FR4 PCB
- (2) Free air mounted on recommended copper pad area
- (3) The heat generated must be less than the thermal conductivity from junction-to-ambient: $dP_D/dT_J < 1/R_{\theta JA}$



ELECTRICAL CHARACTERISTICS ($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage	$I_F = 1\text{ A}$	$T_J = 25\text{ }^{\circ}\text{C}$	$V_F^{(1)}$	0.89	-	V
	$I_F = 2\text{ A}$			0.94	1.1	
	$I_F = 1\text{ A}$	$T_J = 125\text{ }^{\circ}\text{C}$	V_F	0.76	-	
	$I_F = 2\text{ A}$			0.83	1.05	
Reverse current	Rated V_R	$T_J = 25\text{ }^{\circ}\text{C}$	$I_R^{(2)}$	0.3	5	μA
		$T_J = 125\text{ }^{\circ}\text{C}$		40	125	
Typical reverse recovery time	$I_F = 0.5\text{ A}$, $I_R = 1.0\text{ A}$, $I_{rr} = 0.25\text{ A}$		t_{rr}	2.5	-	μs
Typical junction capacitance	4.0 V, 1 MHz		C_J	16.5	-	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	TYP.	UNIT
Thermal resistance ⁽¹⁾	$R_{\theta JA}^{(1)(2)}$	107	$^{\circ}\text{C/W}$
	$R_{\theta JL}^{(3)}$	6.8	

Notes

- (1) The heat generated must be less than the thermal conductivity from junction-to-ambient: $dP_D/dT_J < 1/R_{\theta JA}$
 (2) Thermal resistance junction-to-ambient to follow JEDEC® 51-2A, device mounted on FR4 PCB, 2 oz., standard footprint
 (3) Thermal resistance junction-to-mount to follow JEDEC 51-14 transient dual interface test method (TDIM)

ORDERING INFORMATION (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
SB2J-M3/IA	0.098	IA	3200	13" diameter plastic tape and reel



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

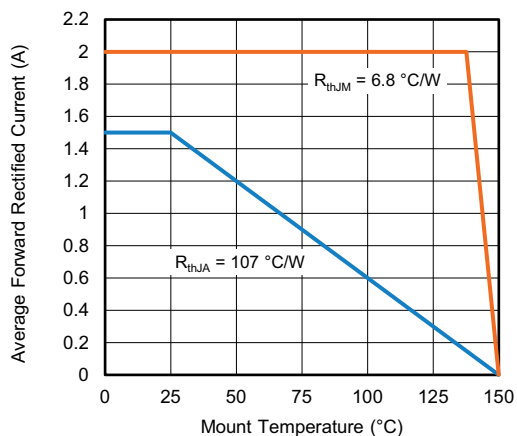


Fig. 1 - Forward Current Derating Curve

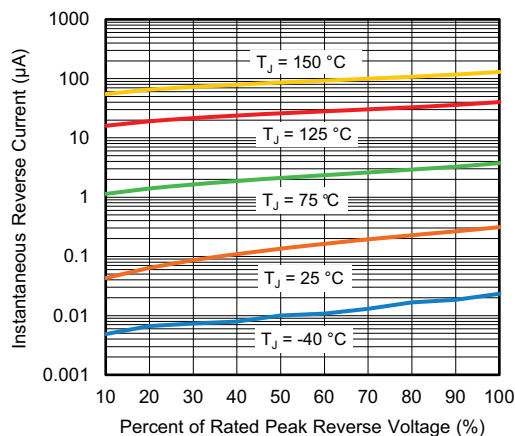


Fig. 4 - Typical Reverse Characteristics

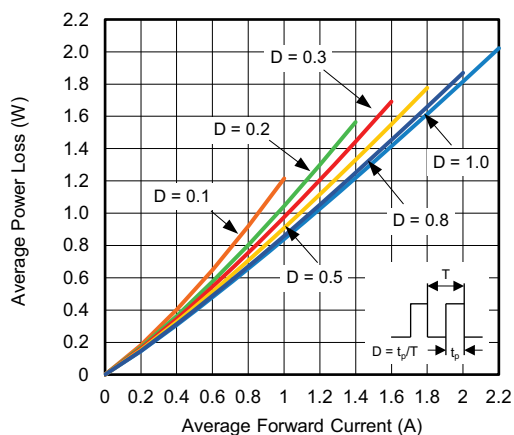


Fig. 2 - Max. Non-Repetitive Peak Forward Surge Current

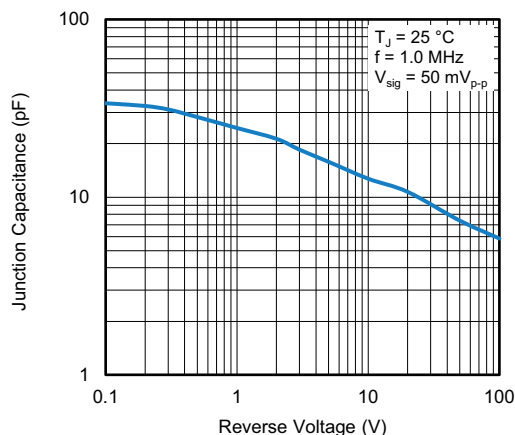


Fig. 5 - Typical Junction Capacitance

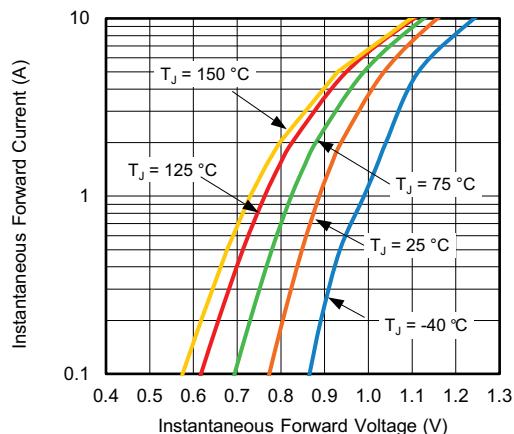


Fig. 3 - Typical Instantaneous Forward Characteristics

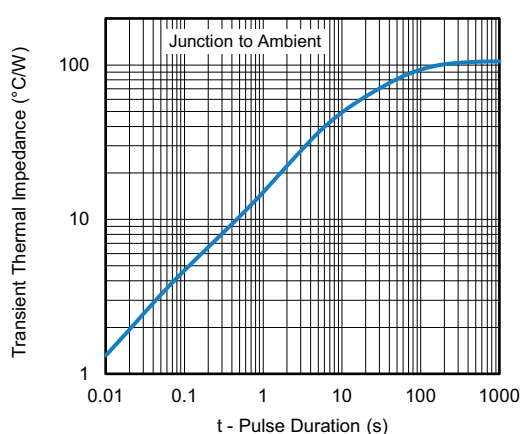
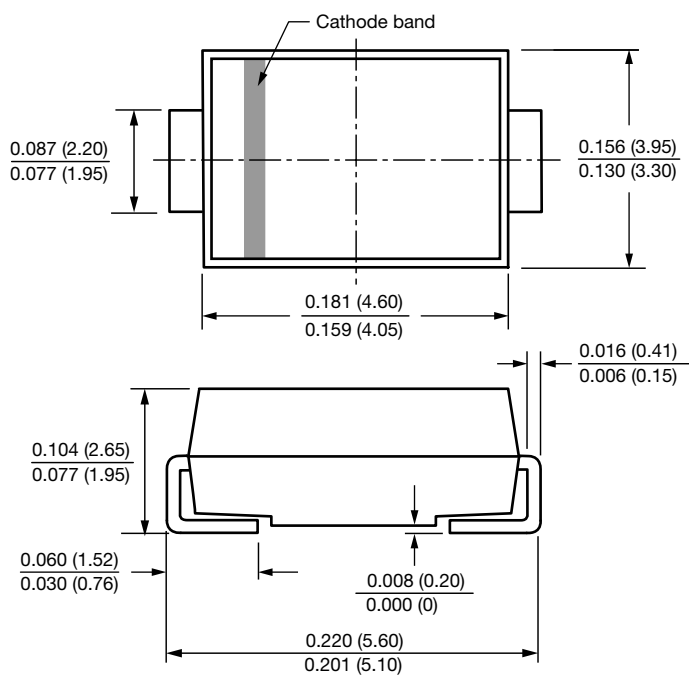


Fig. 6 - Typical Transient Thermal Impedance

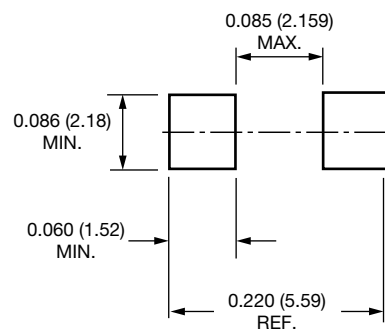


PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SMB-1 (DO-214AA)



Mounting Pad Layout





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