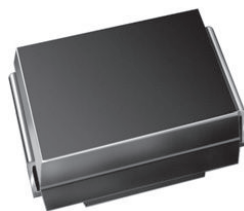


Surface-Mount Glass Passivated Rectifier


SMB-1 (DO-214AA)

Cathode  Anode

LINKS TO ADDITIONAL RESOURCES



PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	5.0 A
V_{RRM}	400 V, 600 V, 800 V, 1000 V
I_{FSM}	120 A
I_R	5.0 μ A
V_F at $I_F = 5.0$ A ($T_J = 125$ °C)	0.88 V
T_J max.	150 °C
Package	SMB-1 (DO-214AA)
Circuit configuration	Single

FEATURES

- Low profile package
- Ideal for automated placement
- Glass passivated 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
- AEC-Q101 qualified available
- Automotive ordering code: base P/NHM3
- 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, medical 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, and commercial grade
Base P/NHM3 - halogen-free, RoHS compliant, and AEC-Q101 qualified

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

M3 and HM3 suffix meets JESD 201 class 1A whisker test

Polarity: color band denotes the cathode end

MAXIMUM RATINGS ($T_A = 25$ °C unless otherwise noted)						
PARAMETER	SYMBOL	S5BG	S5BJ	S5BK	S5BM	UNIT
Device marking code		5G	5J	5K	5M	
Maximum repetitive peak reverse voltage	V_{RRM}	400	600	800	1000	V
Maximum RMS voltage	V_{RMS}	280	420	560	700	V
Maximum DC forward current (fig. 1)	$I_F^{(1)}$	5.0				A
	$I_F^{(2)}$	1.5				A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I_{FSM}	120				A
Operating and storage temperature range	$T_J^{(3)}, T_{STG}$	-55 to +150				°C

Notes

(1) Mounted on 15 mm x 15 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 °C unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage	I _F = 2.5 A	T _J = 25 °C	V _F ⁽¹⁾	0.92	-	V
	I _F = 5.0 A			0.98	1.15	
	I _F = 2.5 A	T _J = 125 °C		0.80	-	
	I _F = 5.0 A			0.88	1.1	
Reverse current	Rated V _R	T _J = 25 °C	I _R ⁽²⁾	0.43	5.0	μA
		T _J = 125 °C		60	150	
Typical reverse recovery time	I _F = 0.5 A, I _R = 1.0 A, I _{rr} = 0.25 A		t _{rr}	3.0	-	μs
Typical junction capacitance	Rated V _R = 4.0 V, 1 MHz		C _J	27	-	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
Typical thermal resistance	$R_{\theta JA}^{(1)(2)}$	107	$^{\circ}\text{C/W}$
	$R_{\theta JM}^{(3)}$	6.5	

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
S5BJ-M3/IA	0.1	IA	3200	13" diameter plastic tape and reel
S5BJHM3/IA	0.1	IA	3200	13" diameter plastic tape and reel



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

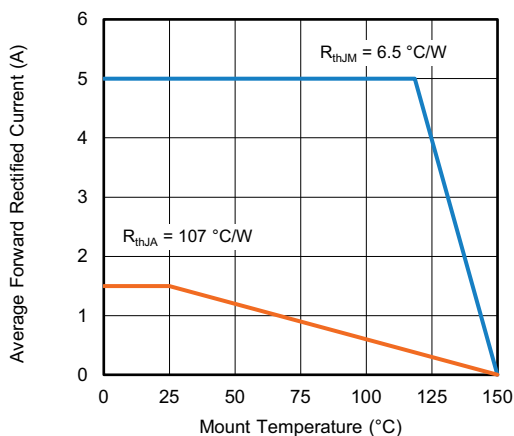


Fig. 1 - Maximum Forward Current Derating Curve

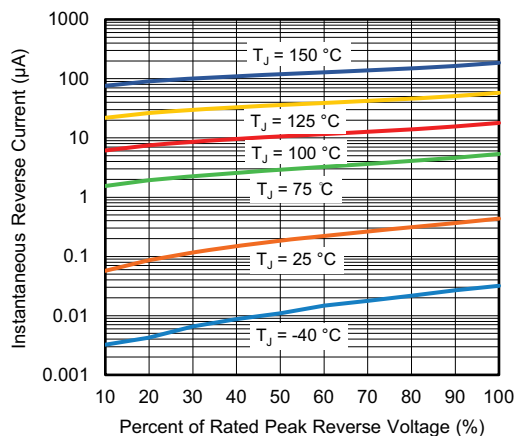


Fig. 4 - Typical Reverse Characteristics

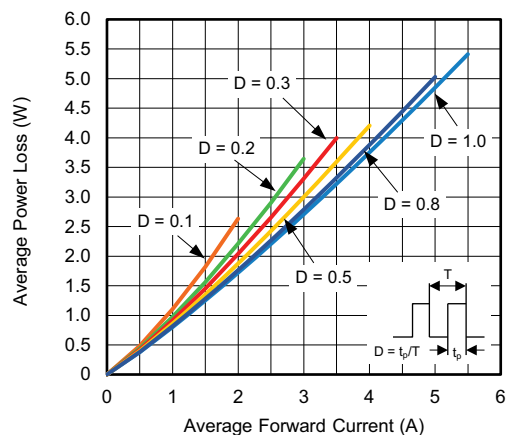


Fig. 2 - Forward Power Loss Characteristics

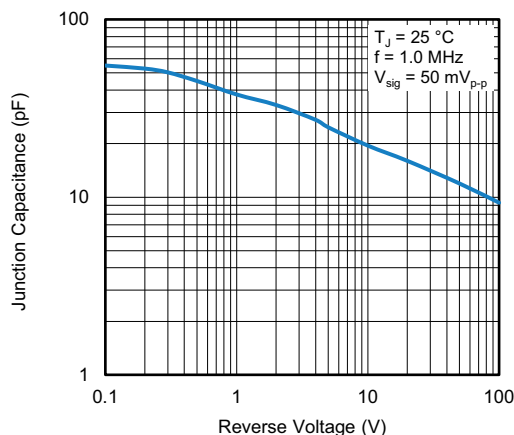


Fig. 5 - Typical Junction Capacitance

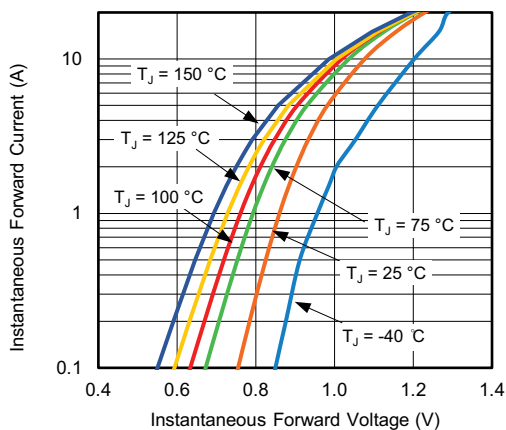


Fig. 3 - Typical Instantaneous Forward Characteristics

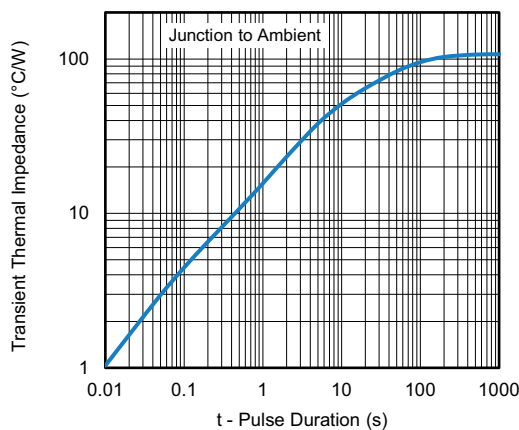
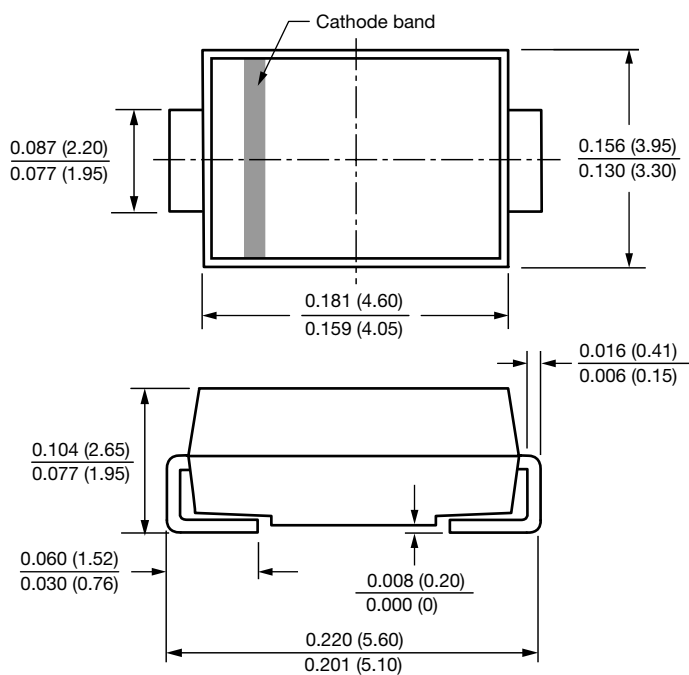


Fig. 6 - Typical Transient Thermal Impedance

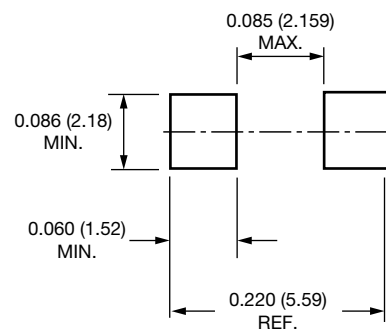


PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SMB-1 (DO-214AA)



Mounting Pad Layout





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