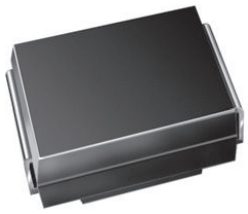
Surface-Mount Glass Passivated Rectifier



SMB (DO-214AA)

Cathode ○—|◀|—○ Anode

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
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

RoHS COMPLIANT
HALOGEN FREE

LINKS TO ADDITIONAL RESOURCES

3D Models

TYPICAL APPLICATIONS

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

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	3.0 A
V_{RRM}	400 V, 600 V, 800 V, 1000 V
I_{FSM}	90 A
I_R	5.0 µA
V_F at I_F = 3.0 A	0.88 V
T_J max.	150 °C
Package	SMB (DO-214AA)
Circuit configuration	Single

MECHANICAL DATA

Case: SMB (DO-214AA)
Molding compound meets UL 94 V-0 flammability rating
Base P/N-E3 - RoHS compliant, commercial grade
Base P/N-M3 - halogen-free, RoHS compliant, and commercial grade

Terminals: matte tin plated leads, solderable per J-STD-002 and JESD 22-B102
E3 and M3 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	S3BG	S3BJ	S3BK	S3BM	UNIT
Device marking code		3G	3J	3K	3M	
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)	3.0				A
	I_F (2)	1.4				A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I_{FSM}	90				A
Operating and storage temperature range	T_J (3), T_{STG}	-55 to +150				°C

Notes

(1) Mounted on 20 mm x 20 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 = 1.5 A	T_J = 25 °C	V_F (1)	0.90	-	V
	I_F = 3.0 A			0.97	1.1	
	I_F = 1.5 A	T_J = 125 °C		0.79	-	
	I_F = 3.0 A			0.88	1.0	
Reverse current	Rated V_R	T_J = 25 °C	I_R (2)	0.17	5.0	µA
		T_J = 125 °C		40	200	
Typical reverse recovery time	I_F = 0.5 A, I_R = 1.0 A, I_{rr} = 0.25 A		t_{rr}	2.5		µs
Typical junction capacitance	Rated V_R = 4.0 V, 1 MHz		C_J	22		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**	**S3BG**	**S3BJ**	**S3BK**	**S3BM**	**UNIT**
Typical thermal resistance	$R_{\theta JA}$ (1)(2)	107				°C/W
	$R_{\theta JM}$ (3)	7.2				

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**
S3BJ-M3/I	0.1	I	3200	13" diameter plastic tape and reel
S3BJ-E3/I	0.1	I	3200	13" diameter plastic tape and reel

RATINGS AND CHARACTERISTICS CURVES (T_A = 25 °C unless otherwise noted)

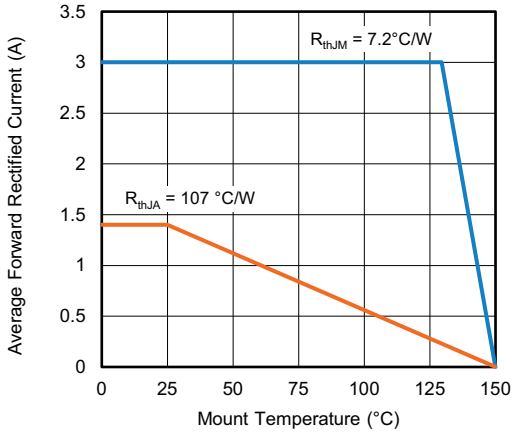


Fig. 1 - Maximum Forward Current Derating Curve

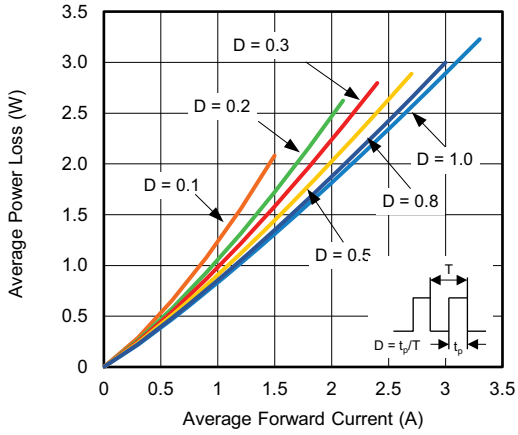


Fig. 2 - Forward Power Loss Characteristics

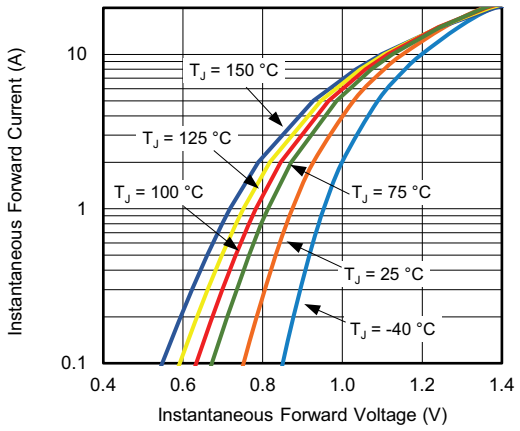


Fig. 3 - Typical Instantaneous Forward Characteristics

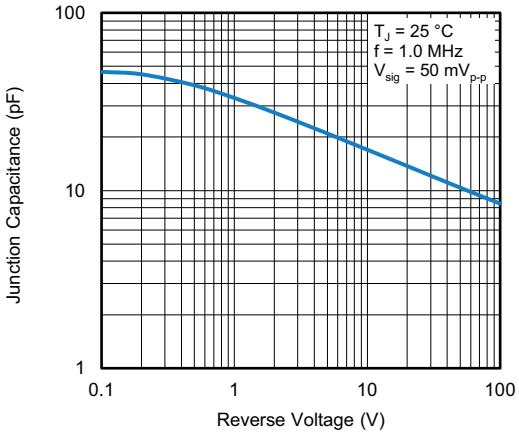


Fig. 5 - Typical Junction Capacitance

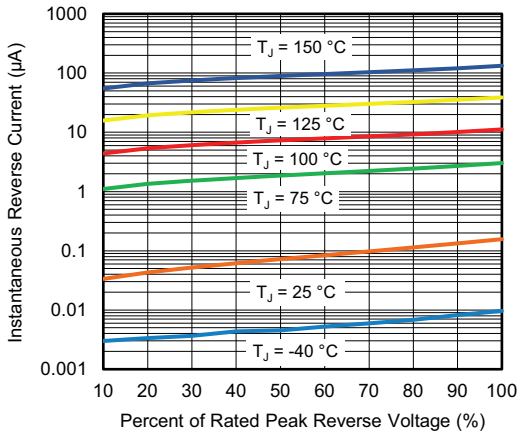


Fig. 4 - Typical Reverse Characteristics

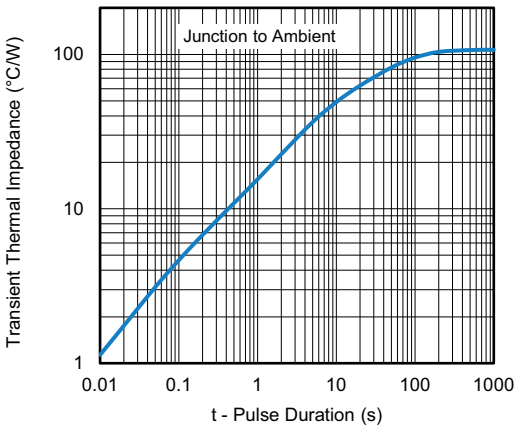
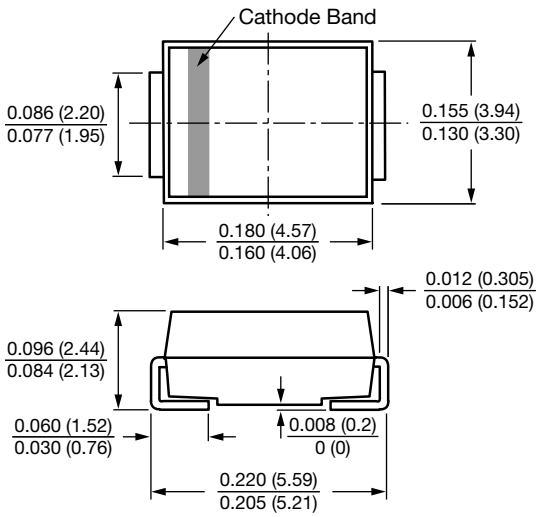


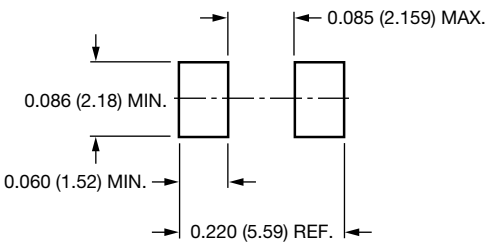
Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SMB (DO-214AA)



Mounting Pad Layout



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