

Surface-Mount Glass Passivated Rectifier

eSMP® Series



Top View

Bottom View

SlimSMA (DO-221AC)

Cathode  Anode

LINKS TO ADDITIONAL RESOURCES



3D Models

PRIMARY CHARACTERISTICS

$I_{F(AV)}$	3 A
V_{RRM}	400 V, 600 V
I_{FSM}	50 A
I_R	10 μ A
V_F at $I_F = 3$ A (125 °C)	0.9
T_J max.	175 °C
Package	SlimSMA (DO-221AC)
Circuit configuration	Single

FEATURES

- Very low profile - typical height of 0.95 mm
- Ideal for automated placement
- Glass passivated pellet chip junction
- Low forward voltage drop
- Low leakage current
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- AEC-Q101 qualified available
- 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, and industrial applications

MECHANICAL DATA

Case: SlimSMA (DO-221AC)

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 and HM3 suffix meet JESD 201 class 2 whisker test

Polarity: color band denotes cathode end

MAXIMUM RATINGS ($T_A = 25$ °C unless otherwise noted)

PARAMETER	SYMBOL	S3AFG	S3AFJ	UNIT
Device marking code		3G	3J	
Maximum repetitive peak reverse voltage	V_{RRM}	400	600	V
Maximum average forward rectified current	$I_{F(AV)}^{(1)}$	3		A
	$I_{F(AV)}^{(2)}$	1.3		A
Peak forward surge current 10 ms single half sine-wave	I_{FSM}	50		A
Operating junction and storage temperature range	T_J, T_{STG}	-55 to +175		°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

**ELECTRICAL CHARACTERISTICS** ($T_J = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)

PARAMETER	TEST CONDITIONS	SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage	$I_F = 1.5\text{ A}$	$V_F^{(1)}$	0.93	-	V
	$I_F = 3.0\text{ A}$		1	1.1	
	$I_F = 1.5\text{ A}$		0.81	-	
	$I_F = 3.0\text{ A}$		0.9	-	
Max. reverse current	Rated V_R	$I_R^{(2)}$	-	10	μA
			-	100	
Typical reverse recovery time	$I_F = 0.5\text{ A}$, $I_R = 1.0\text{ A}$, $I_{rr} = 0.25\text{ A}$	t_{rr}	2.7	-	μs
Typical junction capacitance	4.0 V, 1 MHz	C_J	28	-	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 specified)

PARAMETER	SYMBOL	S3AFG	S3AFJ	UNIT
Typical thermal resistance	$R_{\theta JA}^{(1)(2)}$	130		°C/W
	$R_{\theta JM}^{(3)}$	7.3		

Notes(1) The heat generated must be less than 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
S3AFJ-M3/I	0.0307	I	14 000	13" diameter plastic tape and reel
S3AFJHM3/I ⁽¹⁾	0.0307	I	14 000	13" diameter plastic tape and reel

Note

(1) AEC-Q101 qualified

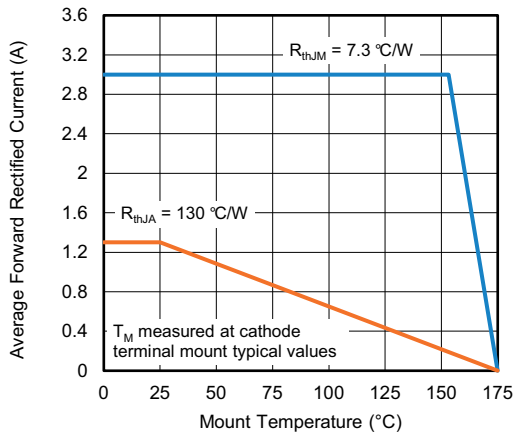
RATINGS AND CHARACTERISTICS CURVES ($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise specified)


Fig. 1 - Forward Current Derating Curve

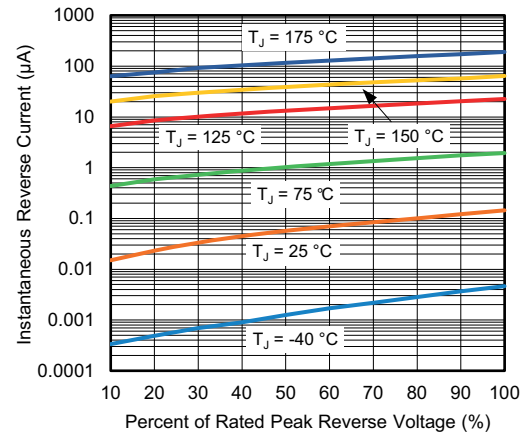


Fig. 4 - Typical Reverse Leakage Characteristics Per Diode

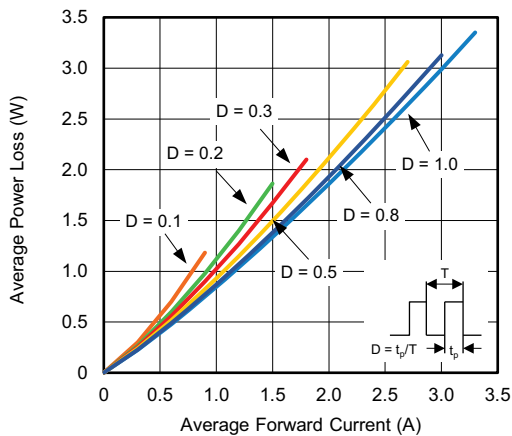


Fig. 2 - Forward Power Loss Characteristics

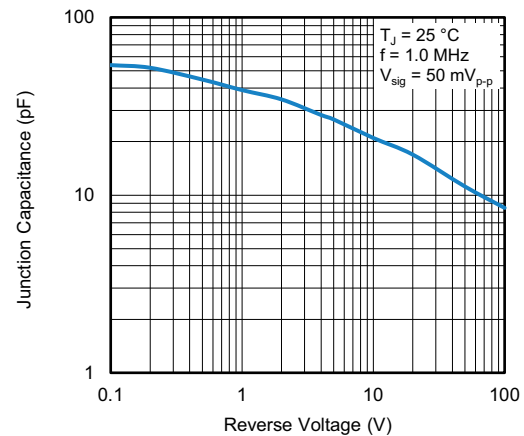


Fig. 5 - Typical Junction Capacitance

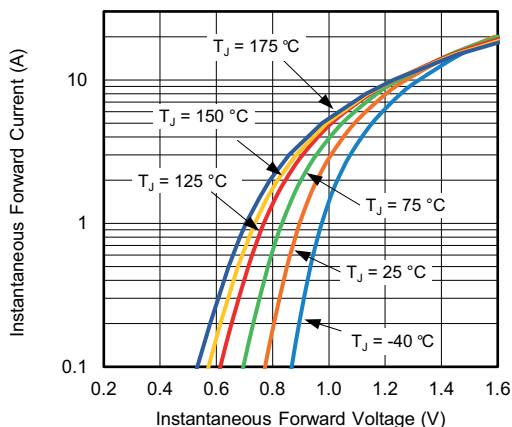


Fig. 3 - Typical Instantaneous Forward Characteristics

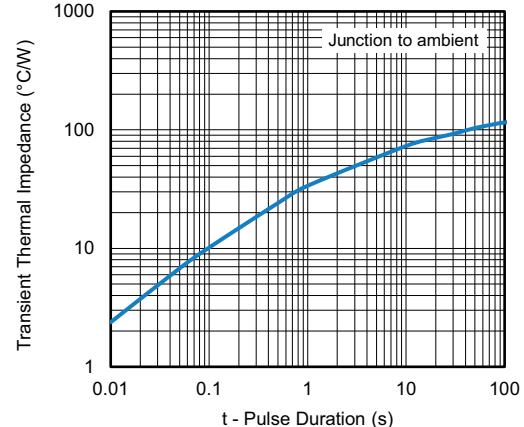
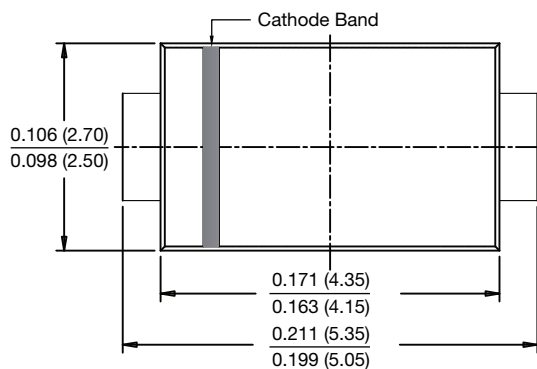


Fig. 6 - Typical Transient Thermal Impedance

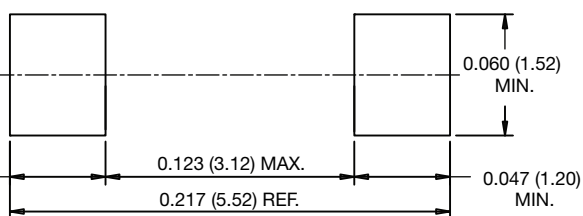
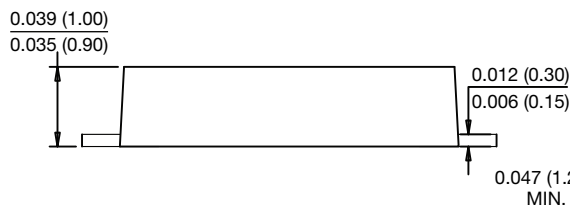


PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SlimSMA (DO-221AC)



Mounting Pad Layout





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