Surface-Mount Schottky Barrier Rectifier

SMA-1 (DO-214AC)

Cathode ○—|◀—○ Anode

FEATURES

- Guardring for overvoltage protection
- Low power losses, high efficiency
- Low forward voltage drop
- 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 low voltage, high frequency inverters, freewheeling, DC/DC converters, and polarity protection applications.

MECHANICAL DATA

Case: SMA-1 (DO-214AC)
Molding compound meets UL 94 V-0 flammability rating

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

Base P/NHM3_X - halogen-free, RoHS-compliant, and AEC-Q101 qualified

("X" denotes revision code e,g, A, B,...)

Terminals: matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

Polarity: color band denotes the cathode end

M3 and HM3 suffix meet JESD 201 class 2 whisker test

LINKS TO ADDITIONAL RESOURCES

Related Documents

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	1.0 A
V_{RRM}	40 V
I_{FSM}	40 A
V_F	0.5 V
T_J max.	150 °C
Package	SMA-1 (DO-214AC)
Circuit configuration	Single

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

PARAMETER	SYMBOL	SS14	UNIT
Device marking code		S4	
Maximum repetitive peak reverse voltage	V_{RRM}	40	V
Maximum average forward rectified current (fig. 1)	$I_{F(AV)}$ (1)	1	A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I_{FSM}	40	A
Operating junction temperature range	T_J (2)	-55 to +150	°C
Storage temperature range	T_{STG}	-55 to +150	°C

Notes

(1) Free air, mounted on FR4 PCB, 2 oz., standard footprint

(2) 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_J = 25 °C unless otherwise noted)

PARAMETER	TEST CONDITIONS		SYMBOL	MAX.	UNIT
Instantaneous forward voltage	I_F = 1.0 A	T_J = 25 °C	V_F (1)	0.5	V
Reverse current	V_R = 40 V	T_J = 25 °C	I_R (2)	0.2	mA
		T_J = 100 °C		6	

Notes

(1) Pulse test: 300 µs pulse width, 1 % duty cycle

(2) Pulse test: pulse width ≤ 5 ms

THERMAL - MECHANICAL SPECIFICATIONS (T_A = 25 °C unless otherwise specified)			
PARAMETER	**SYMBOL**	**TYP.**	**UNIT**
Thermal resistance	$R_{\theta JA}$ (1)(2)	105	°C/W
	$R_{\theta JM}$ (3)	10	

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**
SS14-M3/IA	0.064	IA	7500	13" diameter plastic tape and reel
SS14HM3_B/IA (1)	0.064	IA	7500	13" diameter plastic tape and reel

Note

(1) AEC-Q101 qualified

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

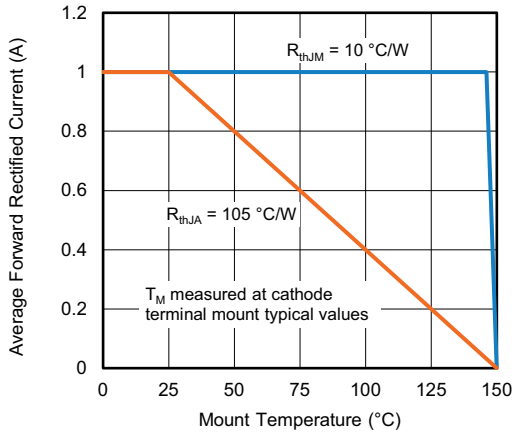


Fig. 1 - Maximum Forward Current Derating Curve

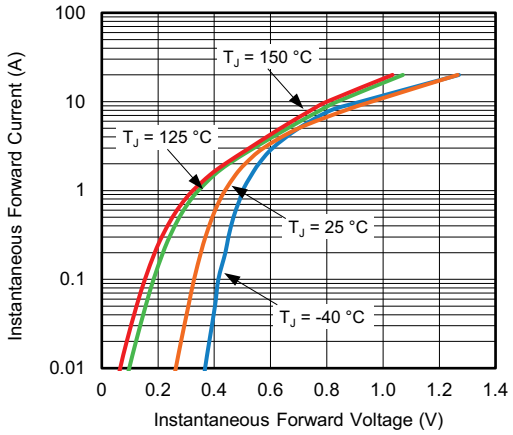


Fig. 3 - Typical Instantaneous Forward Characteristics

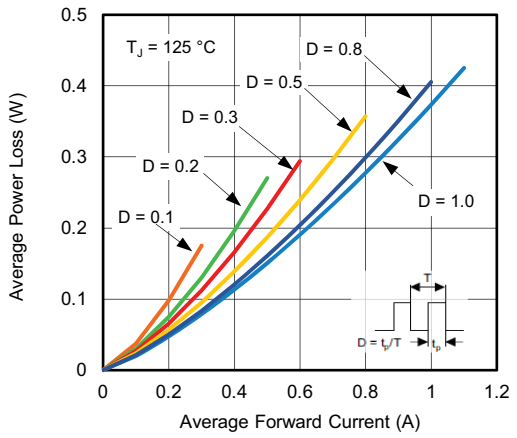


Fig. 2 - Forward Power Loss Characteristics

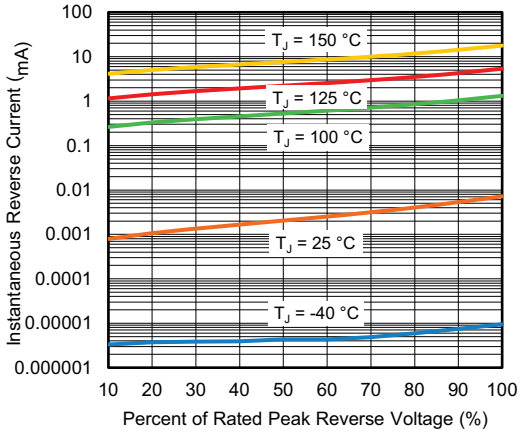


Fig. 4 - Typical Reverse Characteristics

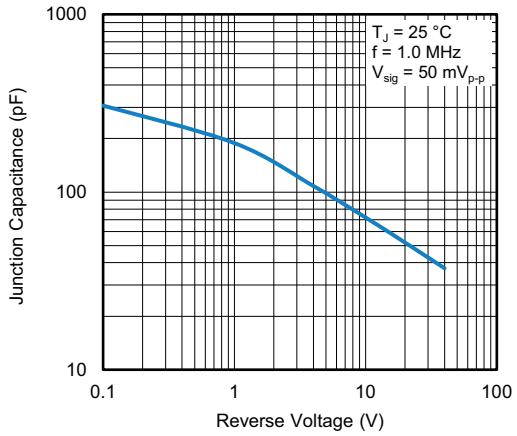


Fig. 5 - Typical Junction Capacitance

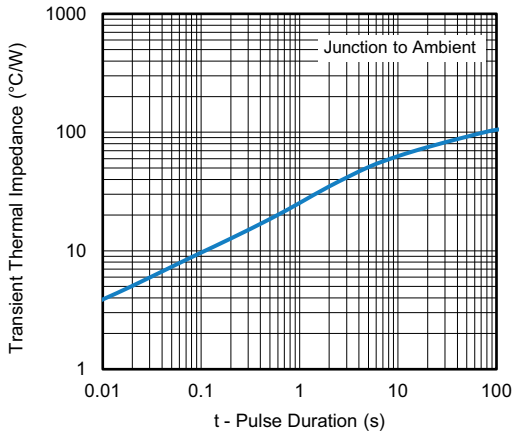


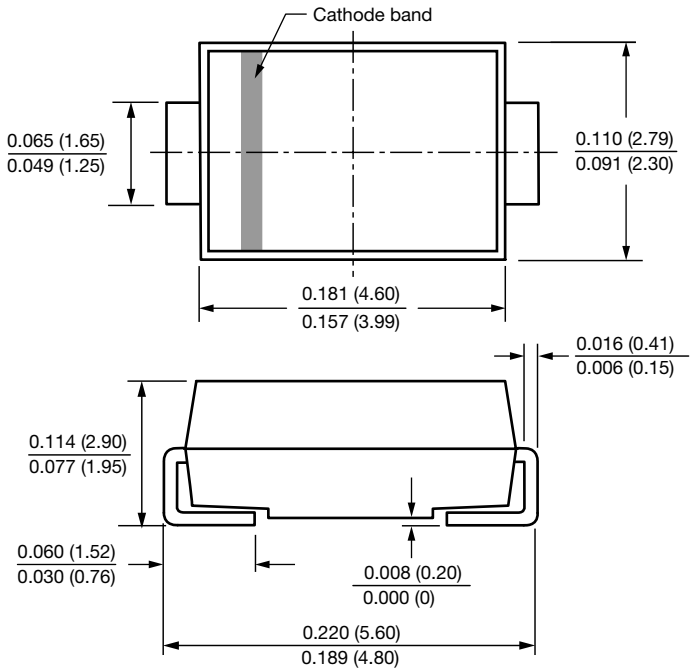
Fig. 6 - Typical Transient Thermal Impedance

LINKS TO RELATED DOCUMENTS	
Dimensions	www.vishay.com/doc?97292
Part marking information	www.vishay.com/doc?98657
Packaging information	www.vishay.com/doc?98659

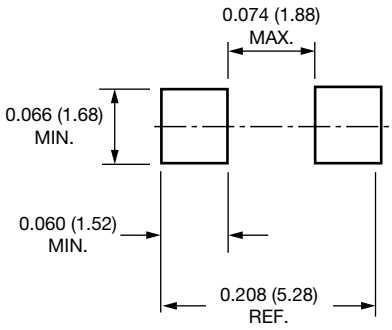
SMA-1 (DO-214AC)

DIMENSIONS in inches (millimeters)

SMA-1 (DO-214AC)



Mounting Pad Layout



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