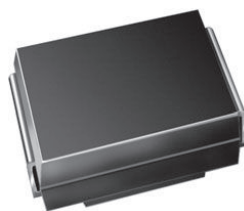


# Surface-Mount Schottky Barrier Rectifier


**SMB-1 (DO-214AA)**

Cathode  Anode

## LINKS TO ADDITIONAL RESOURCES



PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	4 A
$V_{RRM}$	40 V
$I_{FSM}$	100 A
$V_F$	0.42 V
$T_J$ max.	150 °C
Package	SMB-1 (DO-214AA)
Circuit configuration	Single

## 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](http://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:** 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\_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

MAXIMUM RATINGS ( $T_A = 25\text{ °C}$ unless otherwise noted)			
PARAMETER	SYMBOL	SSB44	UNIT
Device marking code		S44	
Maximum repetitive peak reverse voltage	$V_{RRM}$	40	V
Maximum average forward rectified current (fig. 1)	$I_{F(AV)}^{(1)}$	4	A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	$I_{FSM}$	100	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 <sub>J</sub> = 25 °C unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage <sup>(1)</sup>	I <sub>F</sub> = 4 A	T <sub>J</sub> = 25 °C	V <sub>F</sub>	0.45	0.49	V
		T <sub>J</sub> = 125 °C		0.38	0.42	
Reverse current at rated V <sub>R</sub> <sup>(2)</sup>	V <sub>R</sub> = 40 V	T <sub>J</sub> = 25 °C	I <sub>R</sub>	-	0.4	mA
		T <sub>J</sub> = 125 °C		23	40	

### Notes

(1) Pulse test: 300  $\mu$ s pulse width, 1 % duty cycle

(2) Pulse test: pulse width  $\leq 5\text{ ms}$

**THERMAL - MECHANICAL SPECIFICATIONS** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise specified)

PARAMETER	SYMBOL	TYP.	UNIT
Thermal resistance	$R_{\theta JA}^{(1)(2)}$	85	$^{\circ}\text{C/W}$
	$R_{\theta JM}^{(3)}$	7	

**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
SSB44-M3/IA	0.096	IA	3200	13" diameter plastic tape and reel
SSB44HM3_A/IA <sup>(1)</sup>	0.096	IA	3200	13" diameter plastic tape and reel

**Note**

- (1) AEC-Q101 qualified

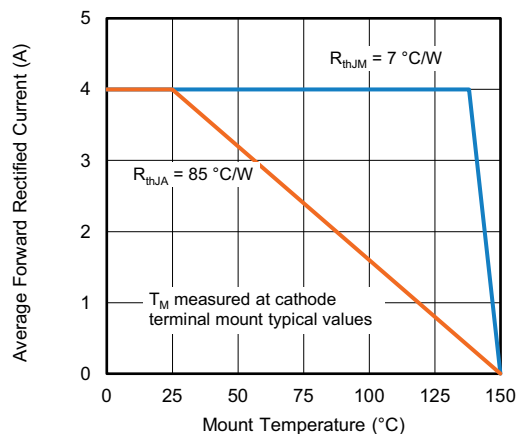
**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)

Fig. 1 - Maximum Forward Current Derating Curve

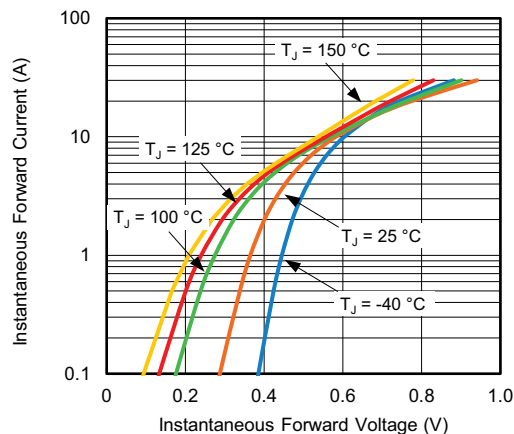


Fig. 3 - Typical Instantaneous Forward Characteristics

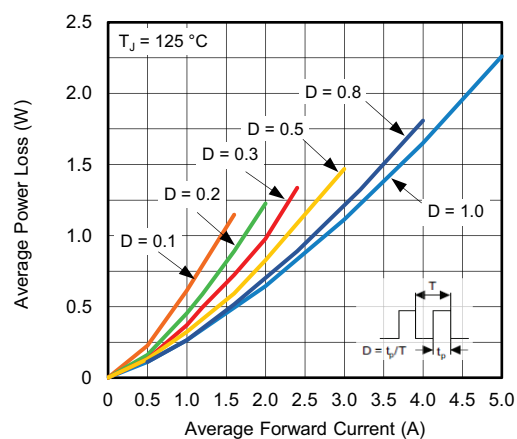


Fig. 2 - Forward Power Loss Characteristics

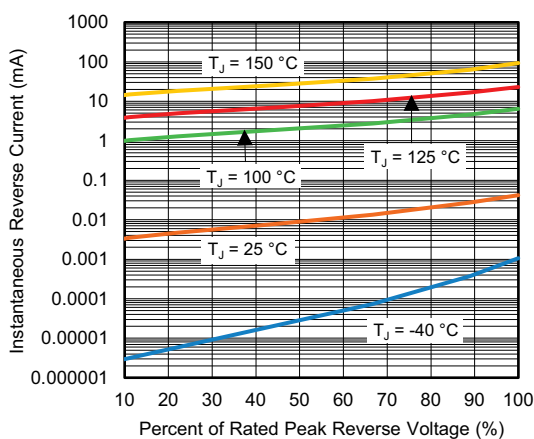


Fig. 4 - Typical Reverse Characteristics

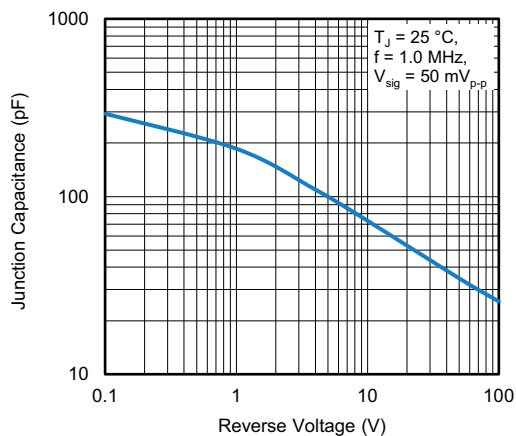


Fig. 5 - Typical Junction Capacitance

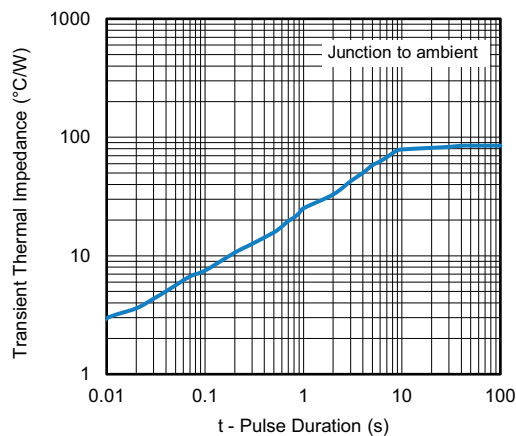
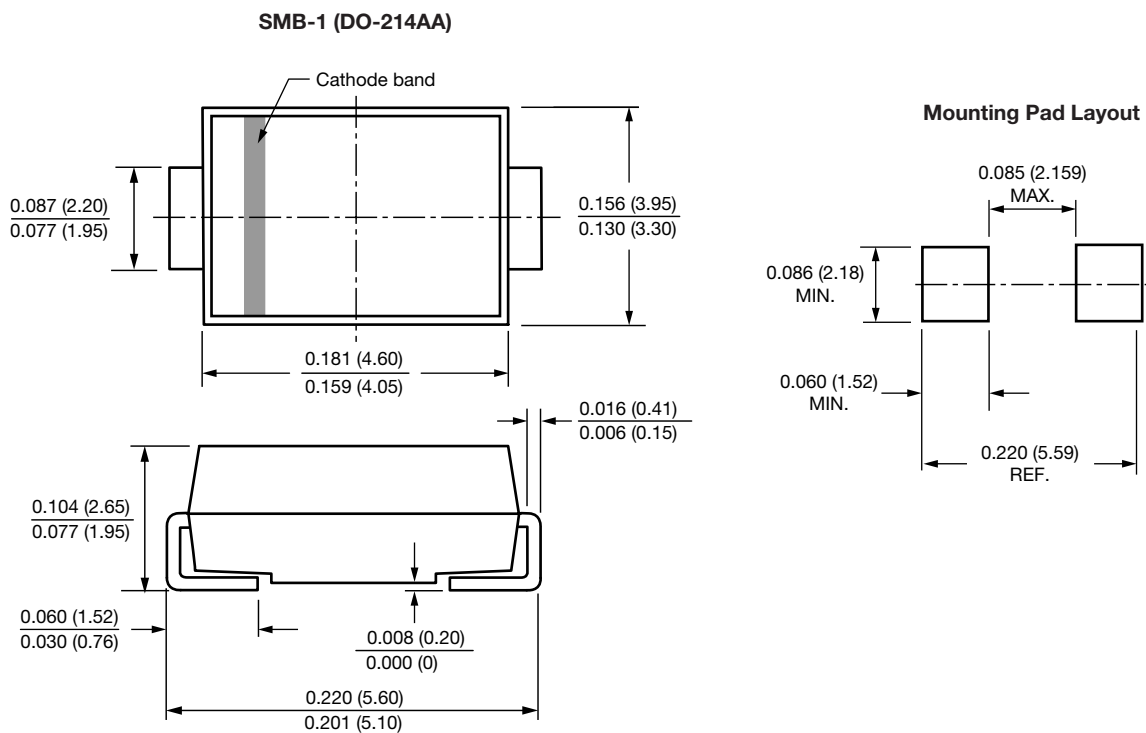


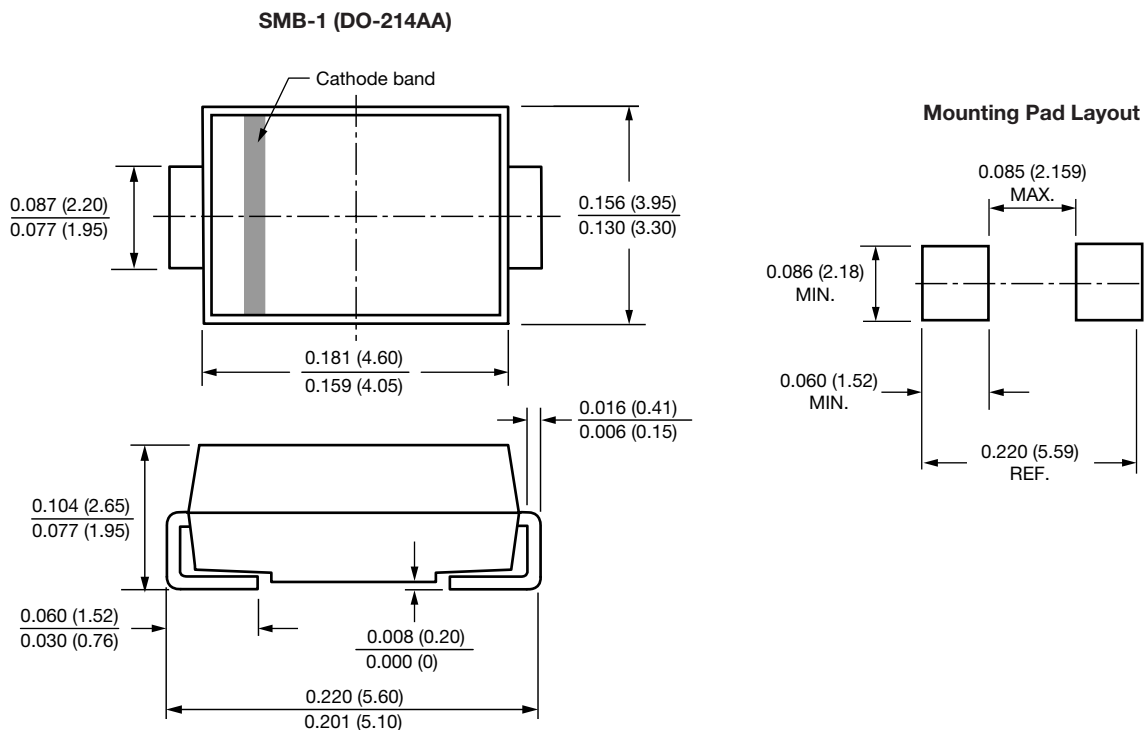
Fig. 6 - Typical Transient Thermal Impedance

**PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)

**LINKS TO RELATED DOCUMENTS**

Dimensions	<a href="http://www.vishay.com/doc?97362">www.vishay.com/doc?97362</a>
Part marking information	<a href="http://www.vishay.com/doc?98657">www.vishay.com/doc?98657</a>
Packaging information	<a href="http://www.vishay.com/doc?98659">www.vishay.com/doc?98659</a>

## SMB-1 (DO-214AA)

**DIMENSIONS** in inches (millimeters)





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