

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


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 _J = 25 °C unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage ⁽¹⁾	I _F = 4 A	T _J = 25 °C	V _F	0.45	0.49	V
		T _J = 125 °C		0.38	0.42	
Reverse current at rated V _R ⁽²⁾	V _R = 40 V	T _J = 25 °C	I _R	-	0.4	mA
		T _J = 125 °C		23	40	

Notes

(1) Pulse test: 300 μ 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 ⁽¹⁾	0.096	IA	3200	13" diameter plastic tape and reel

Note

- (1) AEC-Q101 qualified

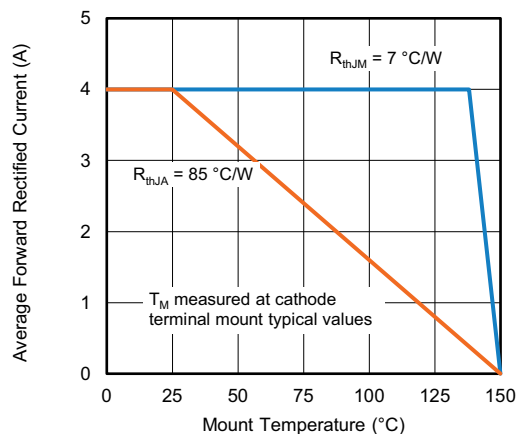
RATINGS AND CHARACTERISTICS CURVES ($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)

Fig. 1 - Maximum Forward Current Derating Curve

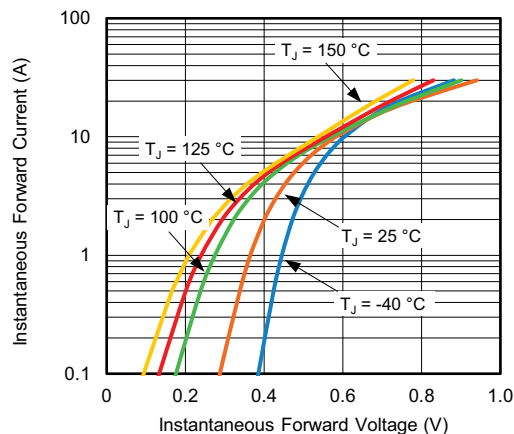


Fig. 3 - Typical Instantaneous Forward Characteristics

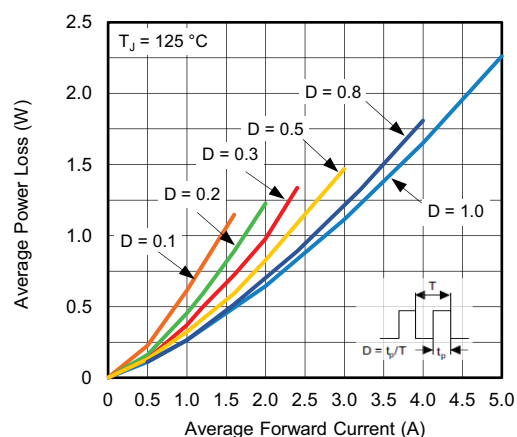


Fig. 2 - Forward Power Loss Characteristics

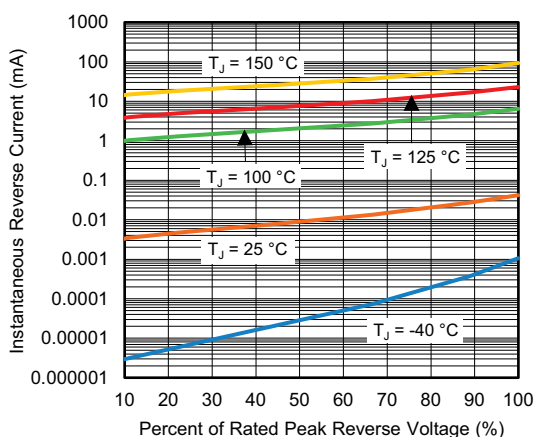


Fig. 4 - Typical Reverse Characteristics

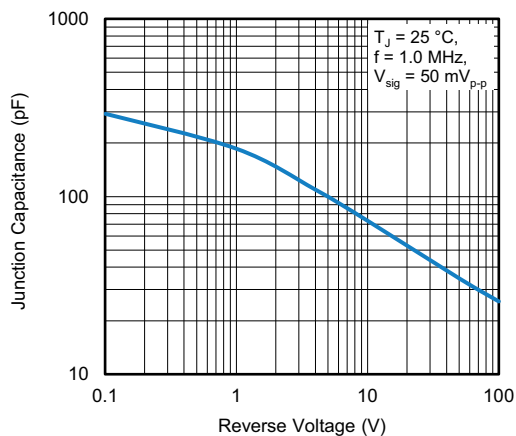


Fig. 5 - Typical Junction Capacitance

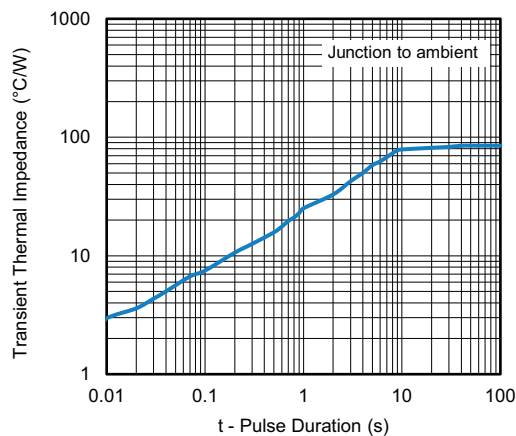
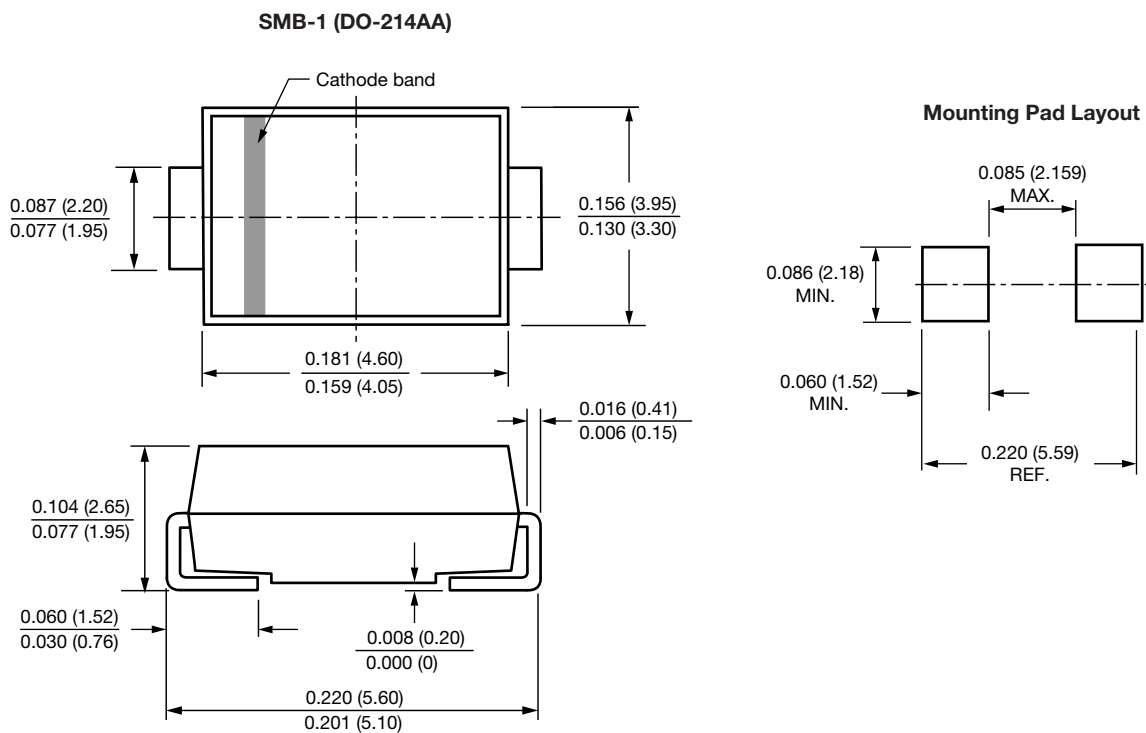


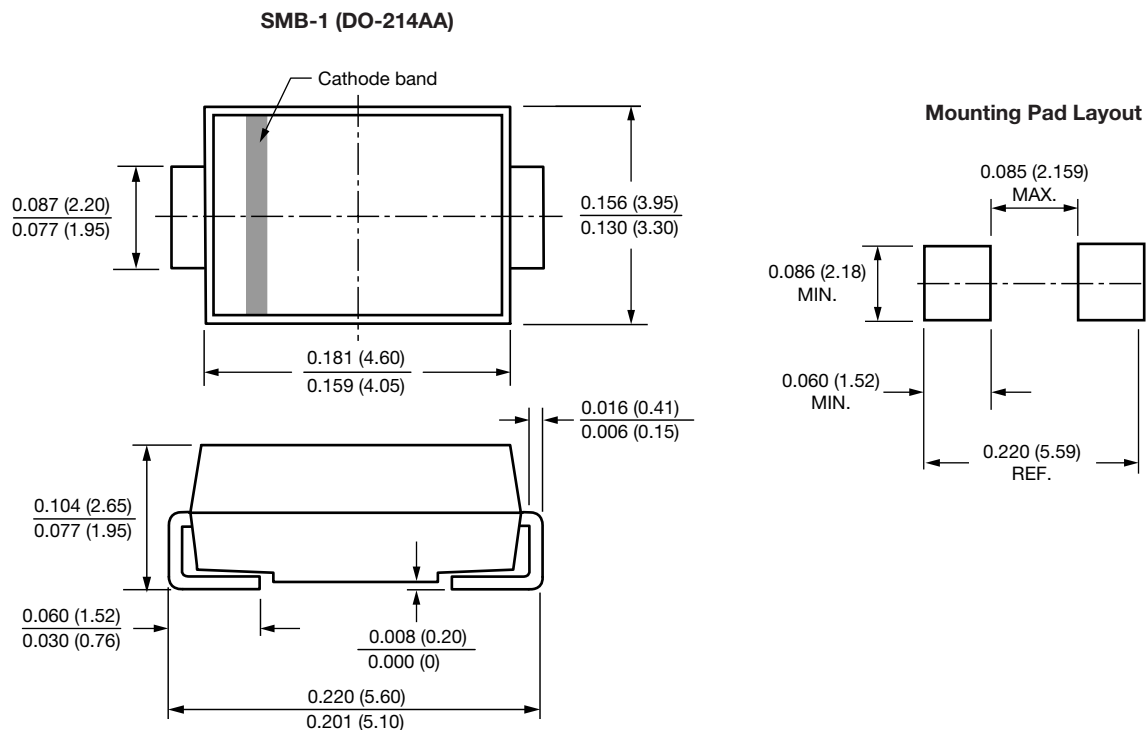
Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

LINKS TO RELATED DOCUMENTS

Dimensions	www.vishay.com/doc?97362
Part marking information	www.vishay.com/doc?98657
Packaging information	www.vishay.com/doc?98659

SMB-1 (DO-214AA)

DIMENSIONS in inches (millimeters)





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