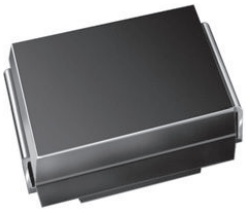
Surface-Mount TMBS® (Trench MOS Barrier Schottky) Rectifier



SMB (DO-214AA)

Cathode ○—|◀—○ Anode

FEATURES

- Low profile package
- Ideal for automated placement
- Trench MOS Schottky technology
- Low power losses, high efficiency
- Low forward voltage drop
- 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 low voltage, high frequency inverters, freewheeling, DC/DC converters, and polarity protection applications.

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	7.0 A
V_{RRM}	45 V
I_{FSM}	120 A
V_F at I_F = 7.0 A (T_A = 125 °C)	0.40 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-M3 - halogen-free, RoHS-compliant, and commercial grade

Terminals: matte tin plated leads, solderable per J-STD-002 and JESD 22-B102
M3 suffix meets JESD 201 class 2 whisker test

Polarity: color band denotes the cathode end

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

PARAMETER	SYMBOL	VSSB7L45	UNIT
Device marking code		7L45	
Maximum repetitive peak reverse voltage	V_{RRM}	45	V
Maximum DC forward current	I_F (1)	7.0	A
	I_F (2)	3.8	
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	I_{FSM}	120	A
Operating junction and storage temperature range	T_J, T_{STG}	-40 to +150	°C

Notes
(1) Mounted on 3 cm x 3 cm pad areas, 2 oz. PCB
(2) Free air, mounted on recommended copper pad area

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ELECTRICAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)						
PARAMETER	**TEST CONDITIONS**		**SYMBOL**	**TYP.**	**MAX.**	**UNIT**
Instantaneous forward voltage	I_F = 3.5 A	T_A = 25 °C	V_F (1)	0.43	-	V
	I_F = 7.0 A			0.49	0.57	
	I_F = 3.5 A	T_A = 125 °C		0.32	-	
	I_F = 7.0 A			0.40	0.48	
Reverse current	V_R = 45 V	T_A = 25 °C	I_R (2)	-	1.6	mA
		T_A = 125 °C		10	30	
Typical junction capacitance	4.0 V, 1 MHz		C_J	1068	-	pF

Notes

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

(2) Pulse test: Pulse width ≤ 5 ms

THERMAL CHARACTERISTICS (T_A = 25 °C unless otherwise specified)			
PARAMETER	**SYMBOL**	**VSSB7L45**	**UNIT**
Typical thermal resistance	$R_{\theta JA}$ (1)	90	°C/W
	$R_{\theta JM}$ (2)	10	

Notes

(1) Free air, mounted on recommended PCB, 2 oz. pad area; thermal resistance $R_{\theta JA}$ - junction to ambient

(2) Units mounted on 3 cm x 3 cm Aluminum, 2 oz. pad area; thermal resistance $R_{\theta JM}$ - junction to mount

ORDERING INFORMATION (Example)				
PREFERRED P/N	**UNIT WEIGHT (g)**	**PREFERRED PACKAGE CODE**	**BASE QUANTITY**	**DELIVERY MODE**
VSSB7L45-M3/52T	0.096	52T	750	7" diameter plastic tape and reel
VSSB7L45-M3/5BT	0.096	5BT	3200	13" diameter plastic tape and reel

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

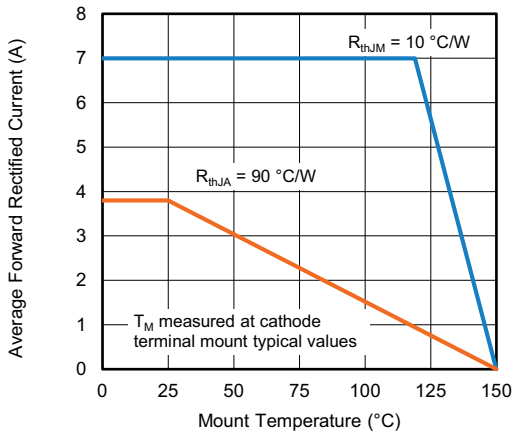

Fig. 1 - Maximum Forward Current Derating Curve

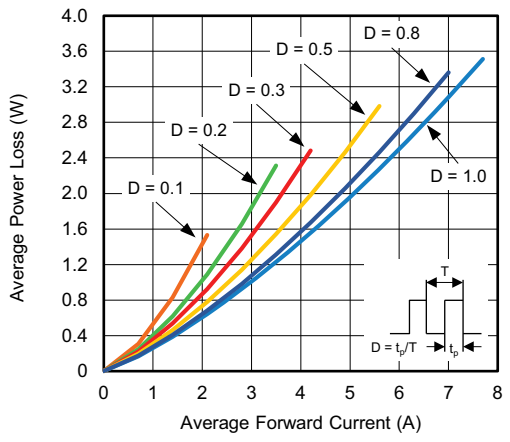

Fig. 2 - Forward Power Loss Characteristics

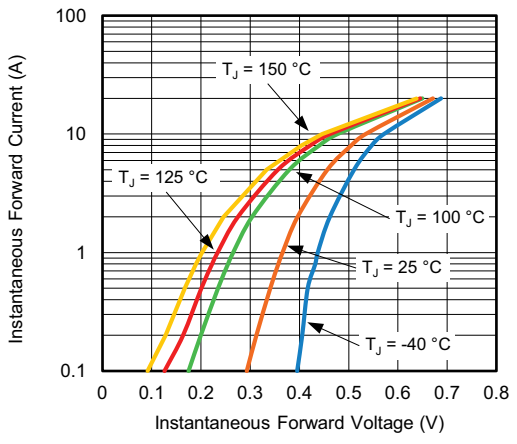

Fig. 3 - Typical Instantaneous Forward Characteristics

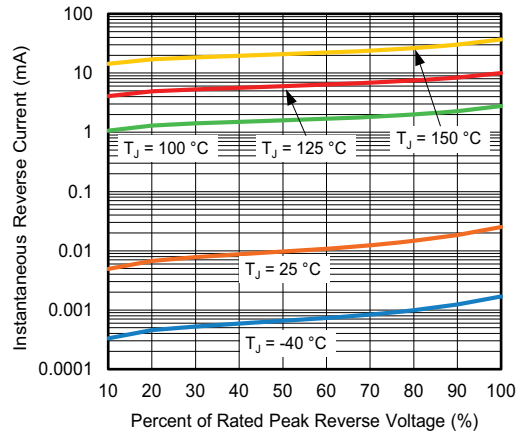

Fig. 4 - Typical Reverse Characteristics

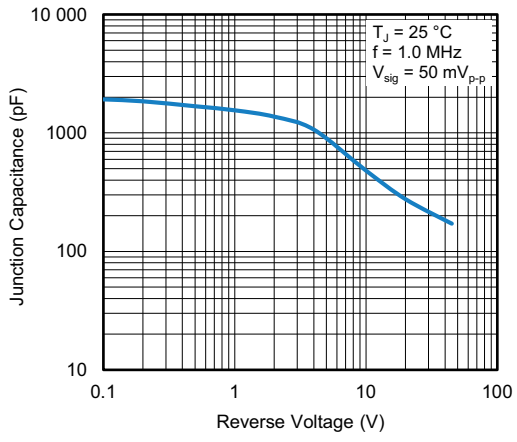

Fig. 5 - Typical Junction Capacitance

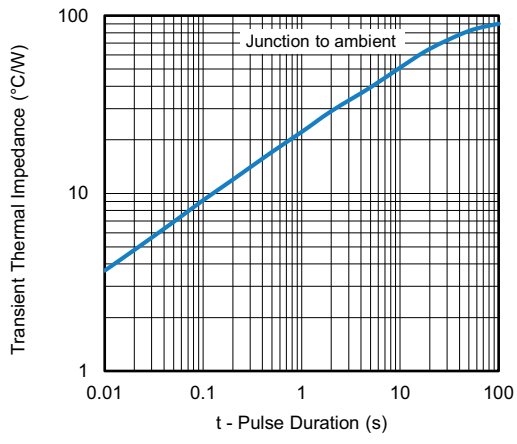

Fig. 6 - Typical Transient Thermal Impedance

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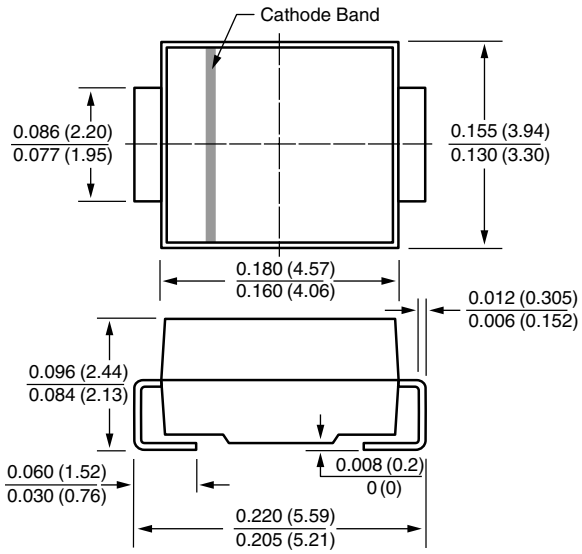
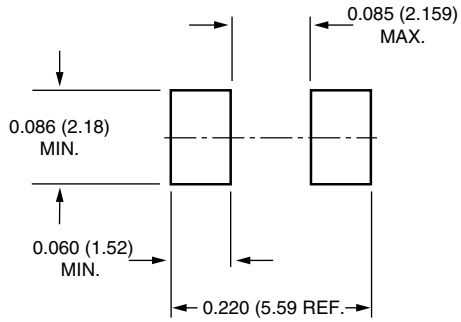
PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SMB (DO-214AA)



Mounting Pad Layout



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