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



SMC (DO-214AB)

Cathode ○—▶|—○ Anode

LINKS TO ADDITIONAL RESOURCES

3D Models

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

TYPICAL APPLICATIONS

For use in high frequency converters, freewheeling diodes, DC/DC converters and polarity protection applications.

MECHANICAL DATA

Case: SMC (DO-214AB)
Molding compound meets UL 94 V-0 flammability rating Base P/N-M3 - halogen-free and RoHS-compliant, 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

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	5.0 A
V_{RRM}	200 V
I_{FSM}	100 A
V_F at I_F = 5.0 A	0.67 V
T_J max.	150 °C
Package	SMC (DO-214AB)
Circuit configuration	Single

MAXIMUM RATINGS (T_A = 25 °C unless otherwise noted)			
PARAMETER	**SYMBOL**	**VSSC520S**	**UNIT**
Device marking code		V5D	
Maximum repetitive peak reverse voltage	V_{RRM}	200	V
Maximum DC forward current	I_F (1)	5.0	A
	I_F (2)	2.2	
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	I_{FSM}	100	A
Voltage rate of change (rated V_R)	dV/dt	10 000	V/µs
Operating junction and storage temperature range	T_J, T_{STG}	-40 to +150	°C

Notes
(1) Units mounted on PCB with 25 mm x 25 mm copper pad areas, 1 oz. FR4 PCB
(2) Free air, mounted on recommended PCB 1 oz. pad area

ELECTRICAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)						
PARAMETER	**TEST CONDITIONS**		**SYMBOL**	**TYP.**	**MAX.**	**UNIT**
Instantaneous forward voltage	I_F = 5.0 A	T_A = 25 °C	V_F (1)	1.19	1.70	V
		T_A = 125 °C		0.67	0.75	
Reverse current per diode	V_R = 180 V	T_A = 25 °C	I_R (2)	2.0	-	µA
		T_A = 125 °C		2.0	-	mA
	V_R = 200 V	T_A = 25 °C		4	200	µA
		T_A = 125 °C		3.2	25	mA
Typical junction capacitance	4.0 V, 1 MHz		C_J	280	-	pF

Notes
(1) Pulse test: 300 µs pulse width, 1 % duty cycle
(2) Pulse test: Pulse width ≤ 40 ms

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THERMAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)			
PARAMETER	**SYMBOL**	**VSSC520S**	**UNIT**
Typical thermal resistance	$R_{\theta JA}$ (1)	95	°C/W
	$R_{\theta JM}$ (2)	9	

Notes

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

(2) Units mounted on PCB with 25 mm x 25 mm copper pad areas; thermal resistance $R_{\theta JM}$ - junction to mount

ORDERING INFORMATION (Example)				
PREFERRED P/N	**UNIT WEIGHT (g)**	**PREFERRED PACKAGE CODE**	**BASE QUANTITY**	**DELIVERY MODE**
VSSC520S-M3/57T	0.235	57T	850	7" diameter plastic tape and reel
VSSC520S-M3/9AT	0.235	9AT	3500	13" diameter plastic tape and reel

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

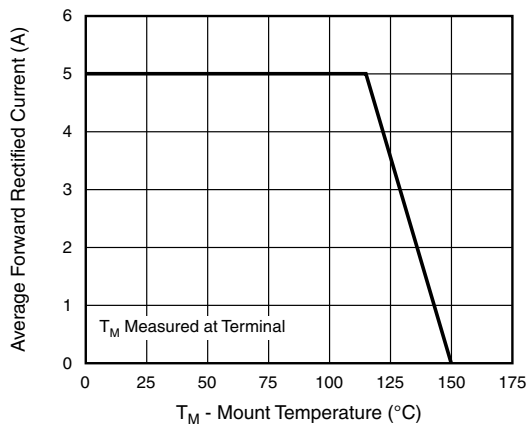


Fig. 1 - Maximum Forward Current Derating Curve

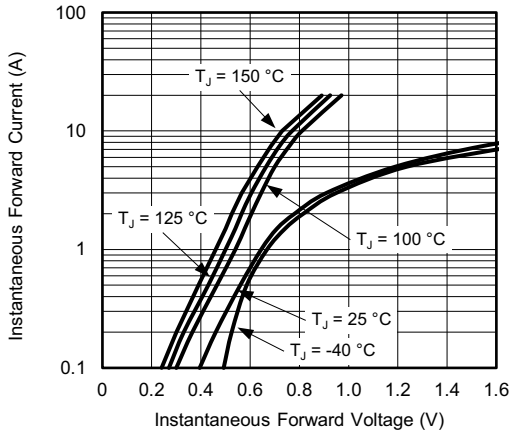


Fig. 3 - Typical Instantaneous Forward Characteristics

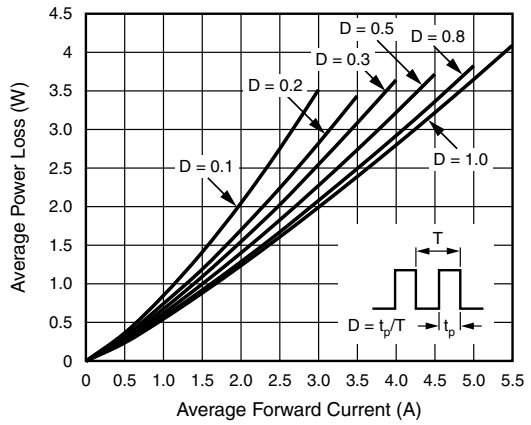


Fig. 2 - Forward Power Loss Characteristics

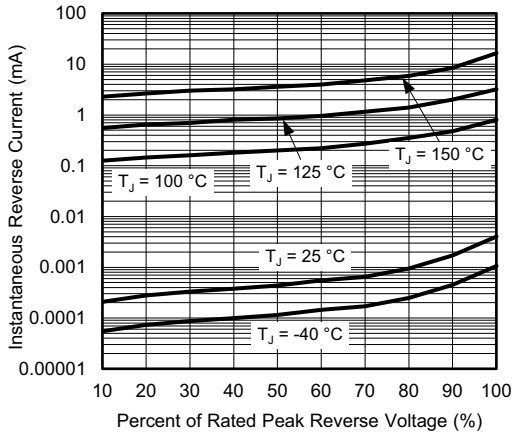


Fig. 4 - Typical Reverse Characteristics

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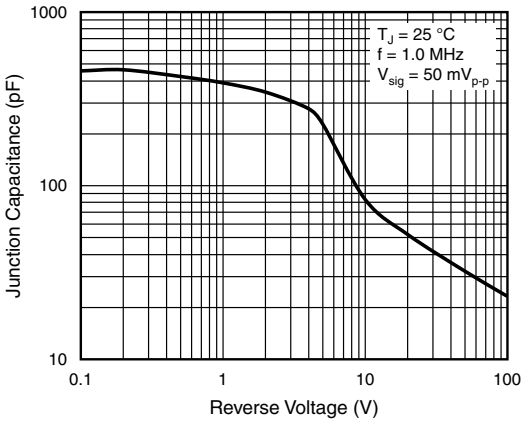


Fig. 5 - Typical Junction Capacitance

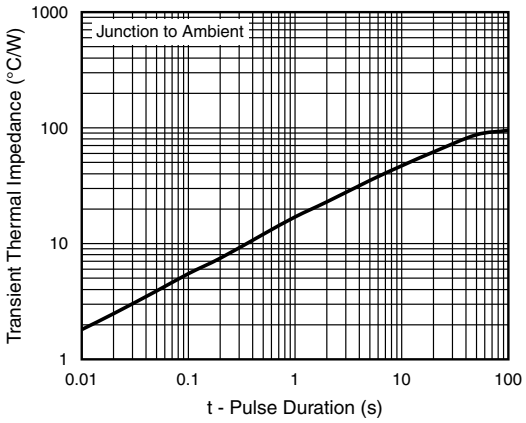
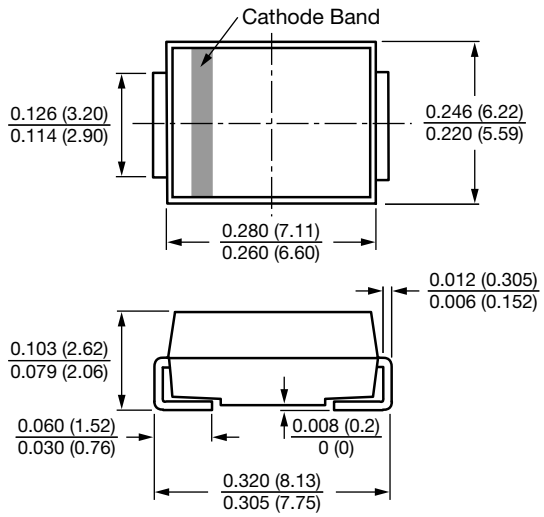


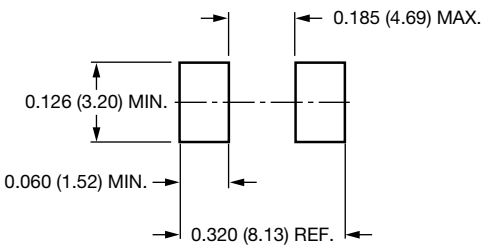
Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SMC (DO-214AB)



Mounting Pad Layout



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