

# Surface-Mount TMBS<sup>®</sup> (Trench MOS Barrier Schottky) Rectifier


**SMC (DO-214AB)**

Cathode Anode

**LINKS TO ADDITIONAL RESOURCES**

**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](http://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/ $\mu$ s
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	-	$\mu$ A
		$T_A = 125$ °C		2.0	-	mA
	$V_R = 200$ V	$T_A = 25$ °C		4	200	$\mu$ A
		$T_A = 125$ °C		3.2	25	mA
Typical junction capacitance	4.0 V, 1 MHz		$C_J$	280	-	pF

**Notes**

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

 (2) Pulse test: Pulse width  $\leq$  40 ms



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

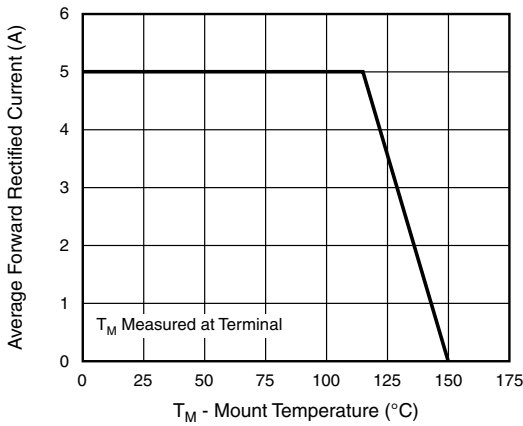


Fig. 1 - Maximum Forward Current Derating Curve

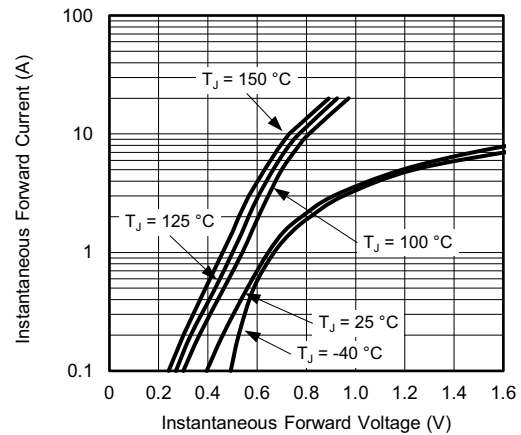


Fig. 3 - Typical Instantaneous Forward Characteristics

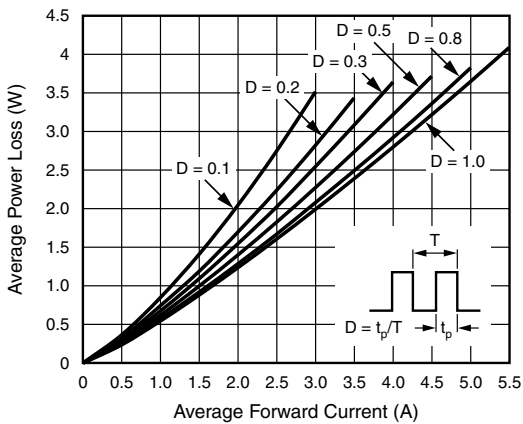


Fig. 2 - Forward Power Loss Characteristics

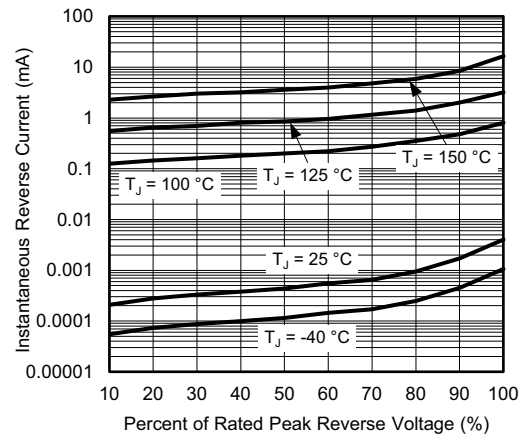


Fig. 4 - Typical Reverse Characteristics

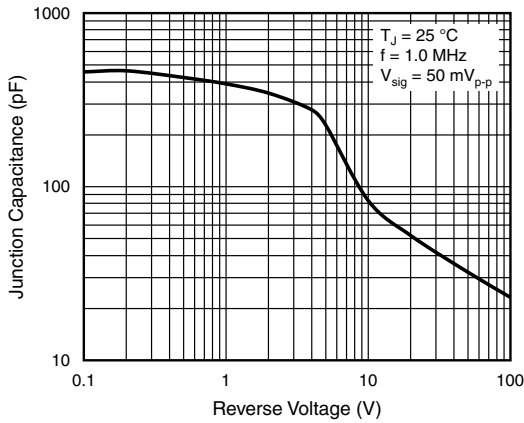


Fig. 5 - Typical Junction Capacitance

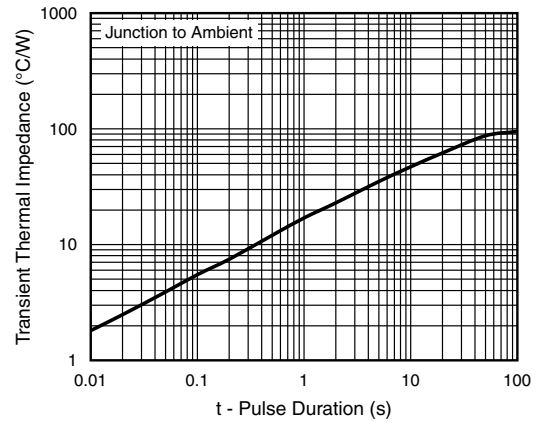
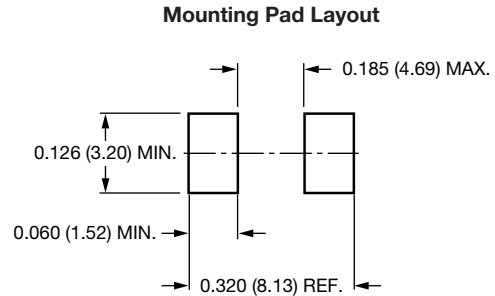
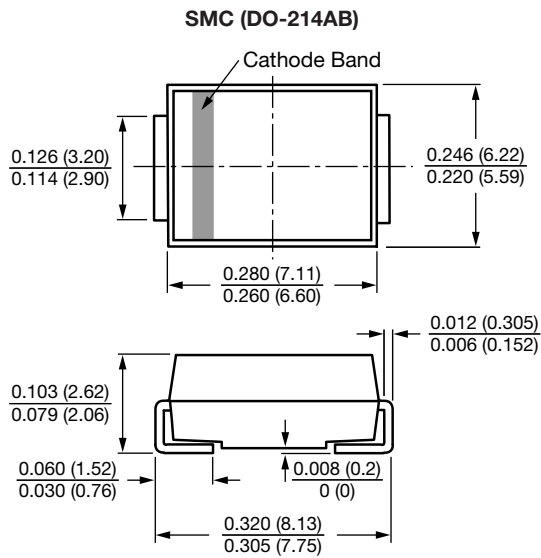


Fig. 6 - Typical Transient Thermal Impedance

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





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