

## Surface Mount Trench MOS Barrier Schottky Rectifier



### 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
- Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC
- **Halogen-free according to IEC 61249-2-21 definition**



**RoHS**  
COMPLIANT  
HALOGEN  
**FREE**

### TYPICAL APPLICATIONS

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

### MECHANICAL DATA

**Case:** DO-214AB (SMC)

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 1A 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

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 <sub>A</sub> = 25 °C unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage	I <sub>F</sub> = 5.0 A	T <sub>A</sub> = 25 °C	V <sub>F</sub> <sup>(1)</sup>	1.19	1.70	V
		T <sub>A</sub> = 125 °C		0.67	0.75	
Reverse current per diode	V <sub>R</sub> = 180 V	T <sub>A</sub> = 25 °C	I <sub>R</sub> <sup>(2)</sup>	2.0	-	μA
		T <sub>A</sub> = 125 °C		2.0	-	mA
	V <sub>R</sub> = 200 V	T <sub>A</sub> = 25 °C		4	200	μA
		T <sub>A</sub> = 125 °C		3.2	25	mA
Typical junction capacitance	4.0 V, 1 MHz		C <sub>J</sub>	280	-	pF

**Notes**

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

THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted)			
PARAMETER	SYMBOL	VSSC520S	UNIT
Typical thermal resistance	R <sub>θJA</sub> <sup>(1)</sup>	95	°C/W
	R <sub>θJM</sub> <sup>(2)</sup>	9	

**Notes**

- (1) Free air, mounted on recommended PCB 1 oz. pad area; thermal resistance R<sub>θJA</sub> - junction to ambient
- (2) Units mounted on PCB with 25 mm x 25 mm copper pad areas; thermal resistance R<sub>θJM</sub> - 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<sub>A</sub> = 25 °C unless otherwise noted)

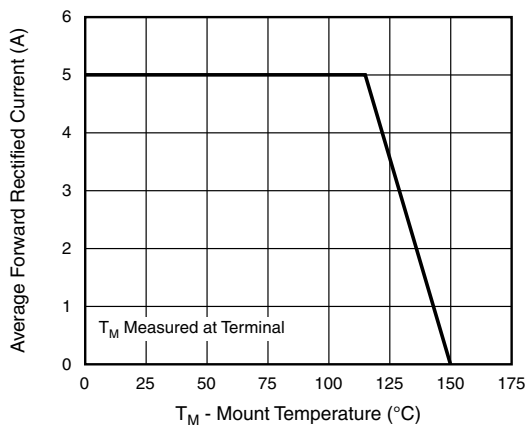


Fig. 1 - Maximum Forward Current Derating Curve

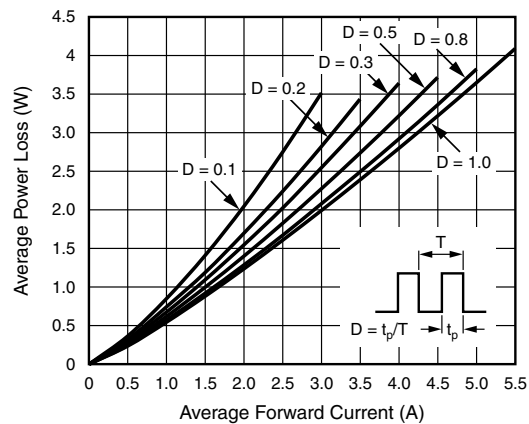


Fig. 2 - Forward Power Loss Characteristics

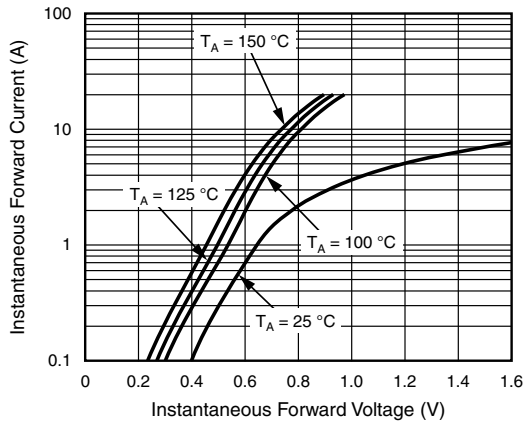


Fig. 3 - Typical Instantaneous Forward Characteristics

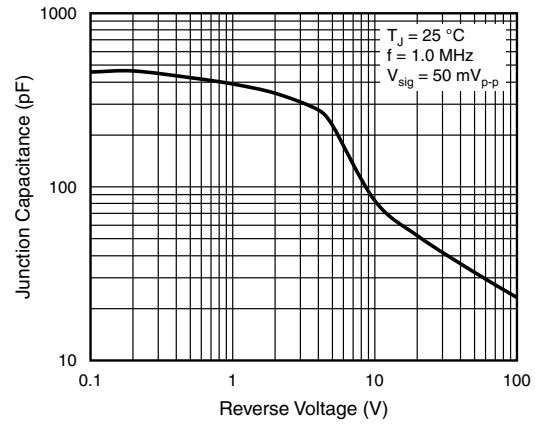


Fig. 5 - Typical Junction Capacitance

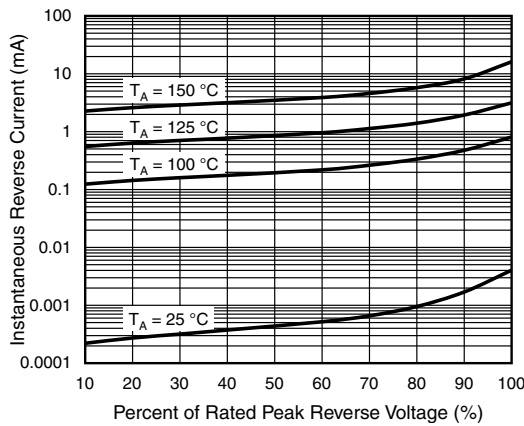


Fig. 4 - Typical Reverse Characteristics

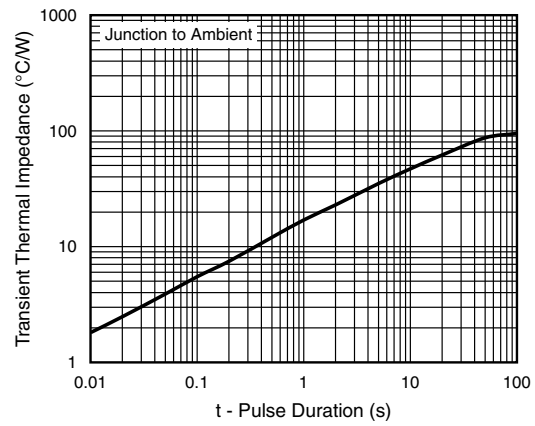
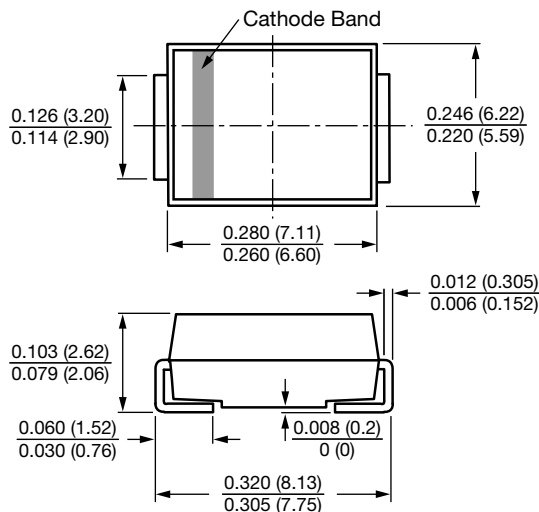


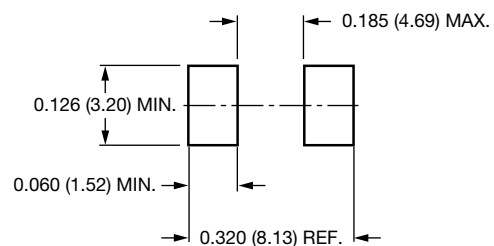
Fig. 6 - Typical Transient Thermal Impedance

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

**DO-214AB (SMC)**



**Mounting Pad Layout**





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