

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/ μ 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	-	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

THERMAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)			
PARAMETER	SYMBOL	VSSC520S	UNIT
Typical thermal resistance	R _{θJA} ⁽¹⁾	95	°C/W
	R _{θJM} ⁽²⁾	9	

Notes

- (1) Free air, mounted on recommended PCB 1 oz. pad area; thermal resistance R_{θJA} - junction to ambient
- (2) Units mounted on PCB with 25 mm x 25 mm copper pad areas; thermal resistance R_{θJM} - 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)

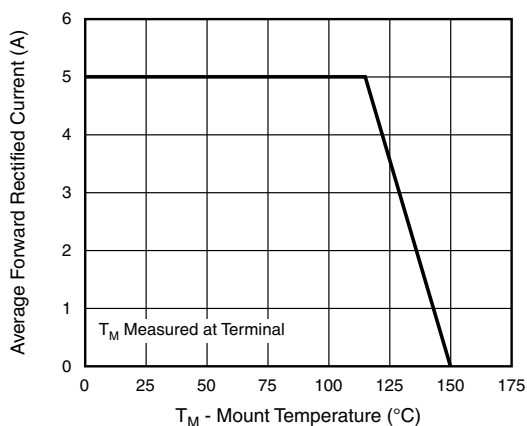


Fig. 1 - Maximum Forward Current Derating Curve

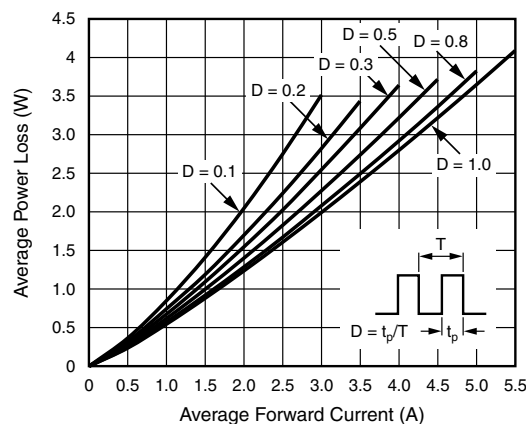


Fig. 2 - Forward Power Loss Characteristics

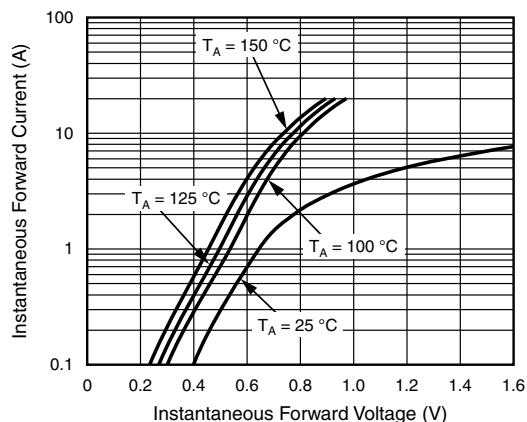


Fig. 3 - Typical Instantaneous Forward Characteristics

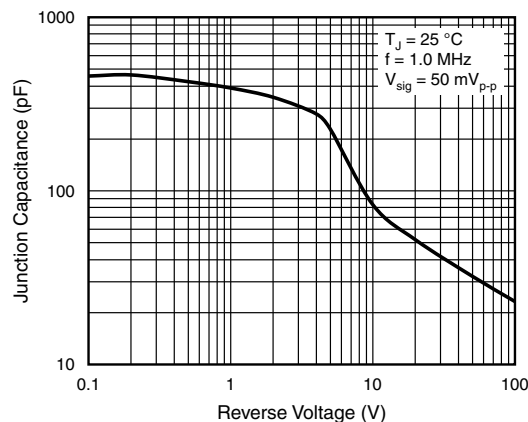


Fig. 5 - Typical Junction Capacitance

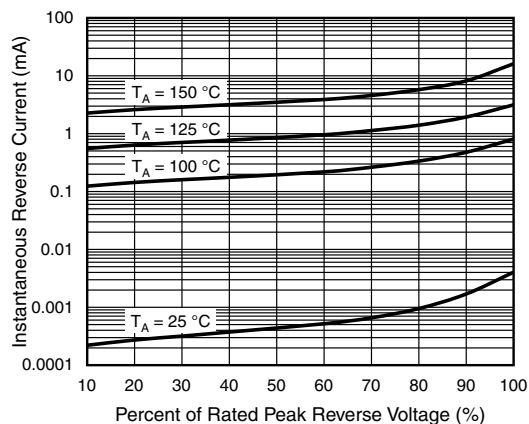


Fig. 4 - Typical Reverse Characteristics

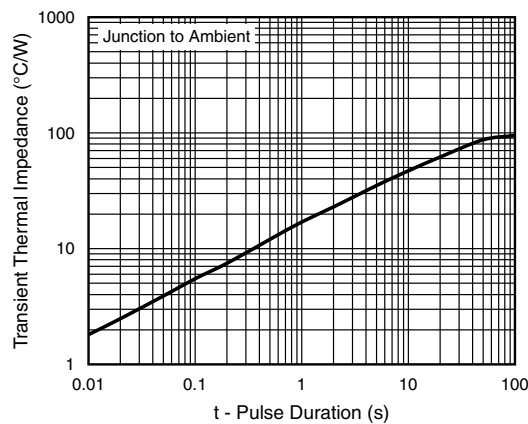
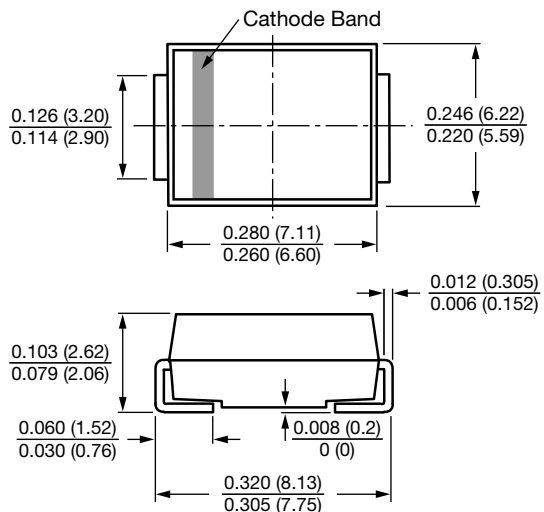


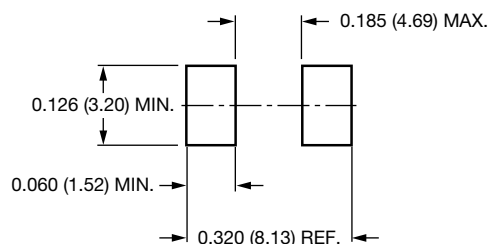
Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-214AB (SMC)



Mounting Pad Layout





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