

## 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
- AEC-Q101 qualified available
  - Automotive ordering code; base P/NHM3
- 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**

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	3.0 A
$V_{RRM}$	100 V
$I_{FSM}$	60 A
$V_F$ at $I_F = 3.0$ A	0.62 V
$T_J$ max.	150 °C
Package	DO-214AC (SMA)
Diode variation	Single die

### TYPICAL APPLICATIONS

For use in low voltage, high frequency inverters, freewheeling, DC/DC converters, and polarity protection applications.

### MECHANICAL DATA

**Case:** DO-214AC (SMA)

Molding compound meets UL 94 V-0 flammability rating  
Base P/N-M3 - halogen-free, RoHS-compliant, and commercial grade

Base P/NHM3\_X - halogen-free, RoHS-compliant, and AEC-Q101 qualified

("\_X" denotes revision code e.g. A, B,.....)

**Terminals:** Matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

M3 and HM3 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	VSSA310S	UNIT
Device marking code		V3B	
Maximum repetitive peak reverse voltage	$V_{RRM}$	100	V
Maximum DC forward current	$I_F^{(1)}$	3.0	A
	$I_F^{(2)}$	1.7	
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	$I_{FSM}$	60	A
Operating junction and storage temperature range	$T_J, T_{STG}$	-40 to +150	°C

### Notes

(1) Mounted on 10 mm x 10 mm pad areas, 1 oz. FR4 PCB

(2) Free air, mounted on recommended copper pad area



ELECTRICAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Breakdown voltage	I <sub>R</sub> = 1.0 mA	T <sub>A</sub> = 25 °C	V <sub>BR</sub>	100 (minimum)	-	V
Instantaneous forward voltage	I <sub>F</sub> = 3.0 A	T <sub>A</sub> = 25 °C	V <sub>F</sub> (1)	0.71	0.80	V
		T <sub>A</sub> = 125 °C		0.62	0.70	
Reverse current	V <sub>R</sub> = 70 V	T <sub>A</sub> = 25 °C	I <sub>R</sub> (2)	1.0	-	μA
		T <sub>A</sub> = 125 °C		0.95	-	mA
	V <sub>R</sub> = 100 V	T <sub>A</sub> = 25 °C		3.5	150	μA
		T <sub>A</sub> = 125 °C		2.2	15	mA
Typical junction capacitance	4.0 V, 1 MHz		C <sub>J</sub>	175	-	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	VSSA310S	UNIT
Typical thermal resistance	R <sub>θJA</sub> (1)	135	°C/W
	R <sub>θJM</sub> (2)	25	

**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 P.C.B. with 10 mm x 10 mm copper pad areas; R<sub>θJM</sub> - junction to mount

ORDERING INFORMATION (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
VSSA310S-M3/61T	0.064	61T	1800	7" diameter plastic tape and reel
VSSA310S-M3/5AT	0.064	5AT	7500	13" diameter plastic tape and reel
VSSA310SHM3_A/H (1)	0.064	H	1800	7" diameter plastic tape and reel
VSSA310SHM3_A/I (1)	0.064	I	7500	13" diameter plastic tape and reel

**Note**

- (1) AEC-Q101 qualified

**RATINGS AND CHARACTERISTICS CURVES (T<sub>A</sub> = 25 °C unless otherwise noted)**

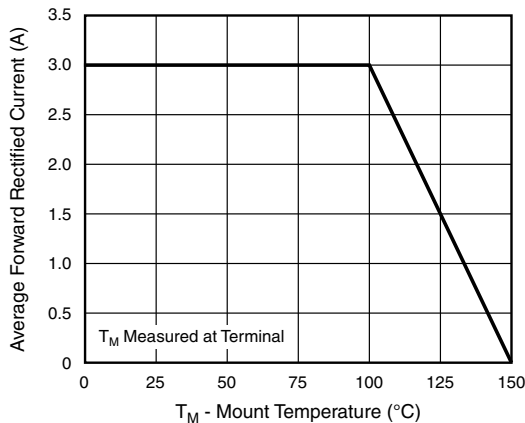


Fig. 1 - Maximum Forward Current Derating Curve

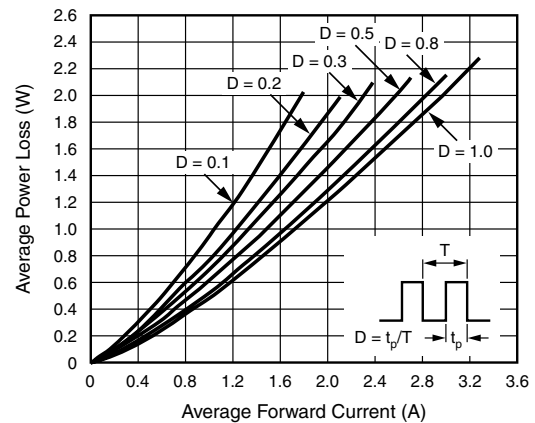


Fig. 2 - Forward Power Loss Characteristics

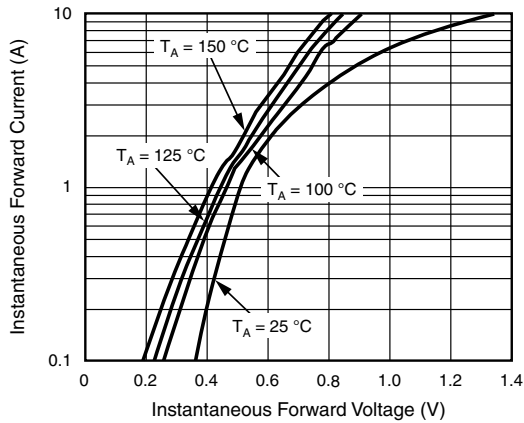


Fig. 3 - Typical Instantaneous Forward Characteristics

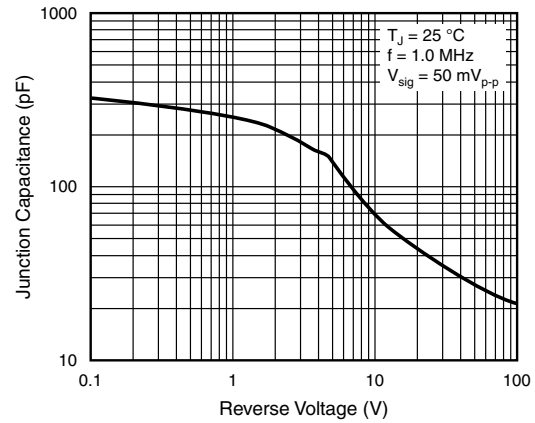


Fig. 5 - Typical Junction Capacitance

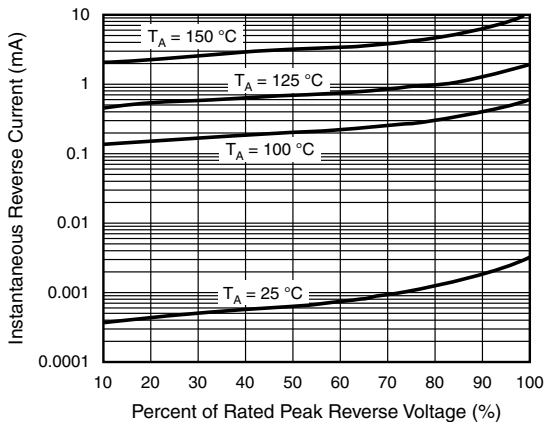


Fig. 4 - Typical Reverse Characteristics

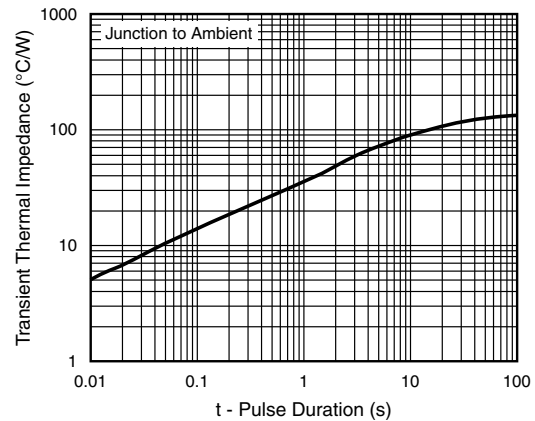
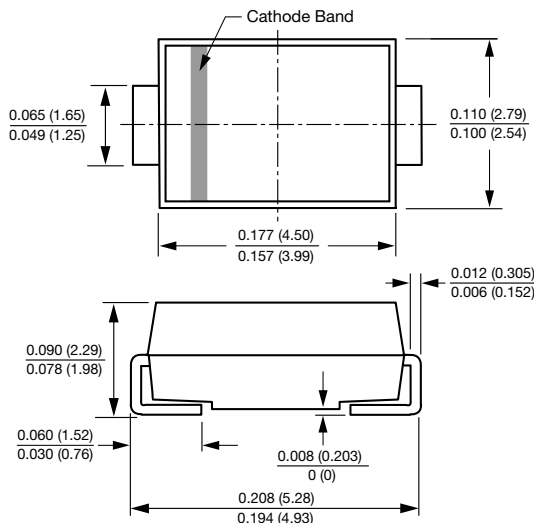


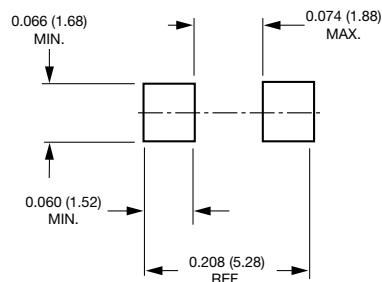
Fig. 6 - Typical Transient Thermal Impedance

## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

### DO-214AC (SMA)



### Mounting Pad Layout





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