Surface Mount TMBS® (Trench MOS Barrier Schottky) Rectifier

SMA (DO-214AC)

Cathode ○—▶|—○ Anode

ADDITIONAL RESOURCES

3D Models

FEATURES

AUTOMOTIVE GRADE Available

RoHS COMPLIANT HALOGEN FREE

- 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

TYPICAL APPLICATIONS

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

MECHANICAL DATA

Case: SMA (DO-214AC)
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

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	SMA (DO-214AC)
Circuit configuration	Single

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_A = 25 °C unless otherwise noted)						
PARAMETER	**TEST CONDITIONS**		**SYMBOL**	**TYP.**	**MAX.**	**UNIT**
Breakdown voltage	I_R = 1.0 mA	T_A = 25 °C	V_{BR}	100 (minimum)	-	V
Instantaneous forward voltage	I_F = 3.0 A	T_A = 25 °C	V_F (1)	0.71	0.80	V
		T_A = 125 °C		0.62	0.70	
Reverse current	V_R = 70 V	T_A = 25 °C	I_R (2)	1.0	-	µA
		T_A = 125 °C		0.95	-	mA
	V_R = 100 V	T_A = 25 °C		3.5	150	µA
		T_A = 125 °C		2.2	15	mA
Typical junction capacitance	4.0 V, 1 MHz		C_J	175	-	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**	**VSSA310S**	**UNIT**
Typical thermal resistance	$R_{\theta JA}$ (1)	135	°C/W
	$R_{\theta JM}$ (2)	25	

Notes
(1) Free air, mounted on recommended PCB 1 oz. pad area; thermal resistance $R_{\theta JA}$ - junction to ambient
(2) Units mounted on P.C.B. with 10 mm x 10 mm copper pad areas; $R_{\theta JM}$ - 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_A = 25 °C unless otherwise noted)

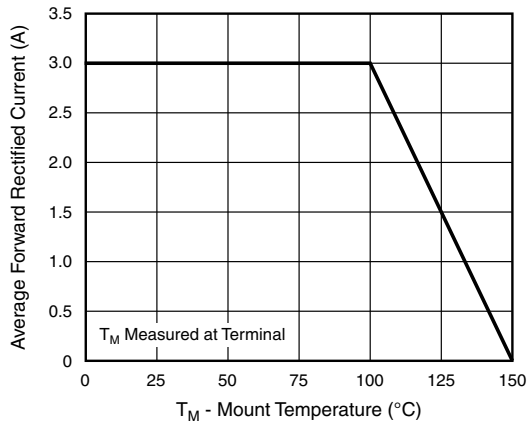


Fig. 1 - Maximum Forward Current Derating Curve

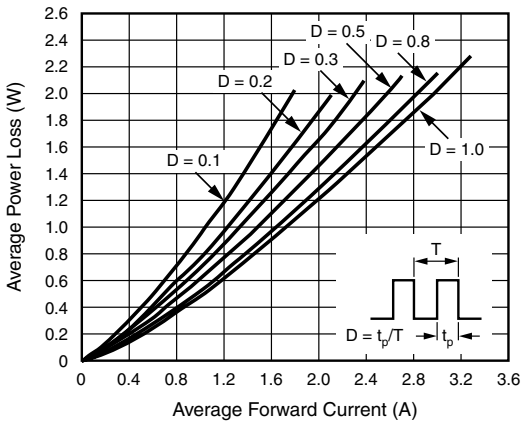


Fig. 2 - Forward Power Loss Characteristics

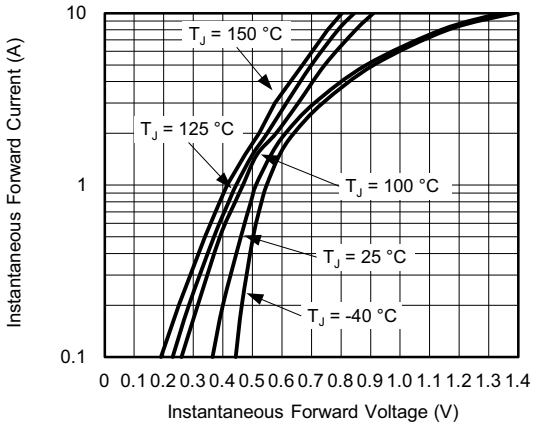


Fig. 3 - Typical Instantaneous Forward Characteristics

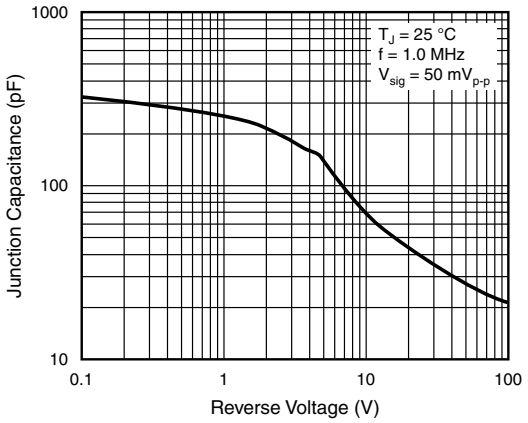


Fig. 5 - Typical Junction Capacitance

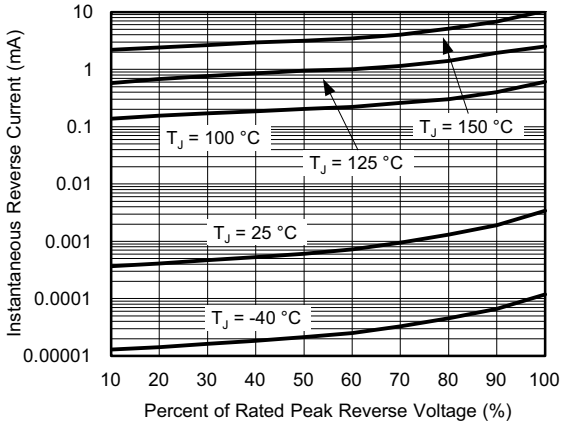


Fig. 4 - Typical Reverse Characteristics

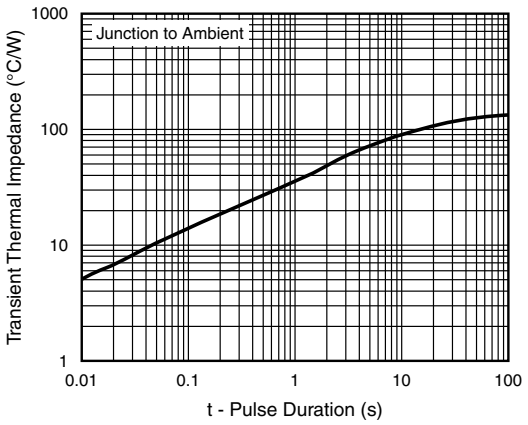
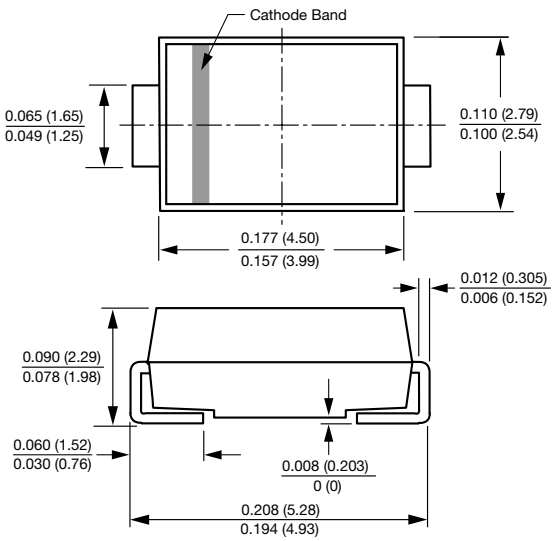


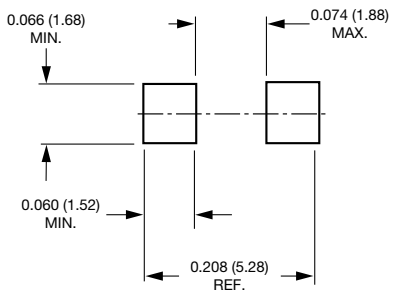
Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SMA (DO-214AC)



Mounting Pad Layout



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