

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



RoHS
COMPLIANT

TYPICAL APPLICATIONS

For use in low voltage, high frequency inverters, freewheeling, dc-to-dc converters, and polarity protection applications.

MECHANICAL DATA

Case: DO-214AA (SMB)

Molding compound meets UL 94 V-0 flammability rating
Base P/N-E3 - RoHS compliant, commercial grade

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

E3 suffix meets JESD 201 class 1A whisker test

Polarity: Color band denotes the cathode end

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	3.0 A
V_{RRM}	100 V
I_{FSM}	80 A
E_{AS}	50 mJ
V_F at $I_F = 3.0$ A	0.56 V
T_J max.	150 °C

MAXIMUM RATINGS ($T_A = 25$ °C unless otherwise noted)			
PARAMETER	SYMBOL	VSSB310	UNIT
Device marking code		V3B	
Maximum repetitive peak reverse voltage	V_{RRM}	100	V
Maximum DC forward current	$I_F^{(1)}$	3.0	A
	$I_F^{(2)}$	1.9	
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	I_{FSM}	80	A
Non-repetitive avalanche energy at $T_J = 25$ °C, $L = 60$ mH	E_{AS}	50	mJ
Peak repetitive reverse current at $t_p = 2$ μ s, 1 kHz, $T_J = 38$ °C \pm 2 °C	I_{RRM}	1.0	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 P.C.B.

(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⁾	0.62	0.70	V
		T _A = 125 °C		0.56	0.65	
Reverse current	V _R = 70 V	T _A = 25 °C	I _R ⁽²⁾	1.5	-	μA
		T _A = 125 °C		1.2	-	mA
	V _R = 100 V	T _A = 25 °C		7.0	250	μA
		T _A = 125 °C		3.6	20	mA
Typical junction capacitance	4.0 V, 1 MHz		C _J	230	-	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	VSSB310	UNIT
Typical thermal resistance	R _{θJA} ⁽¹⁾	120	°C/W
	R _{θJM} ⁽²⁾	15	

Notes

(1) Free air, mounted on recommended P.C.B. 1 oz. pad area. Thermal resistance R_{θJA} - junction to ambient

(2) Units mounted on P.C.B. with 10 mm x 10 mm copper pad areas. R_{θJM} - junction to mount

ORDERING INFORMATION (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
VSSB310-E3/52T	0.096	52T	750	7" diameter plastic tape and reel
VSSB310-E3/5BT	0.096	5BT	3200	13" diameter plastic tape and reel

RATINGS AND CHARACTERISTICS CURVES

(T_A = 25 °C unless otherwise noted)

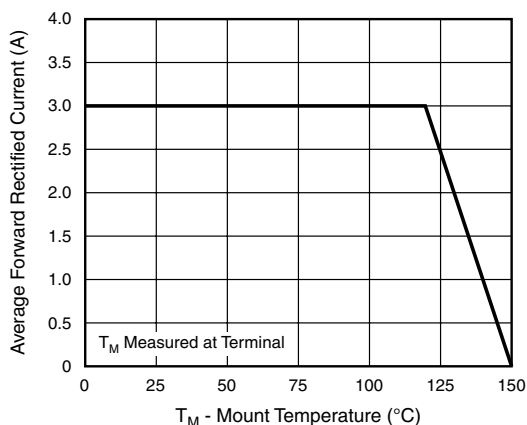


Fig. 1 - Maximum Forward Current Derating Curve

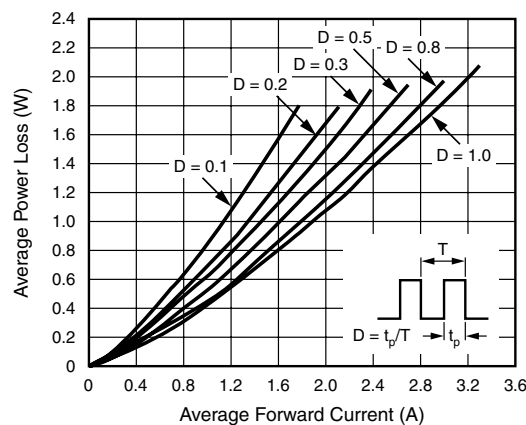


Fig. 2 - Forward Power Loss Characteristics

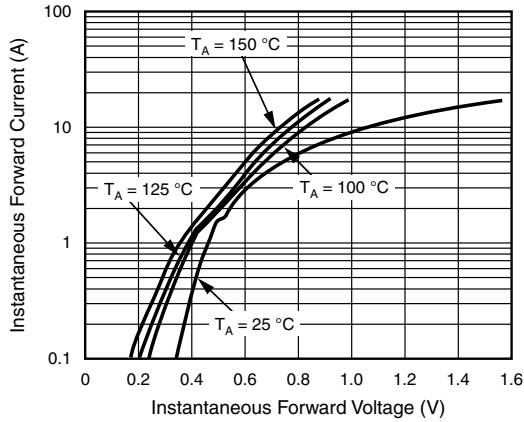


Fig. 3 - Typical Instantaneous Forward Characteristics

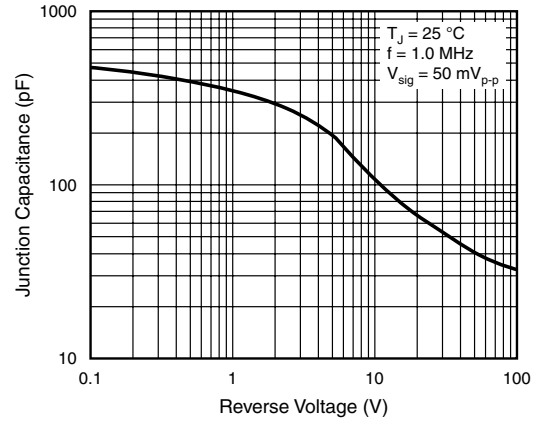


Fig. 5 - Typical Junction Capacitance

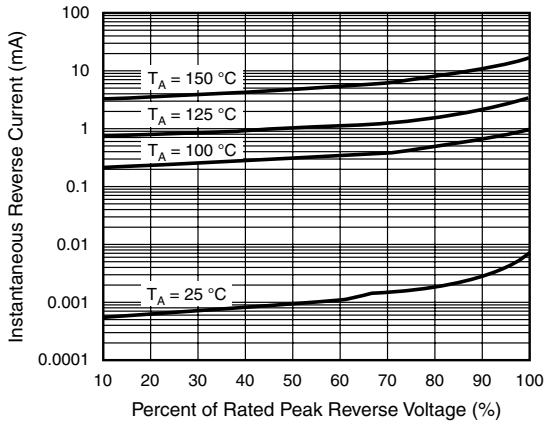


Fig. 4 - Typical Reverse Characteristics

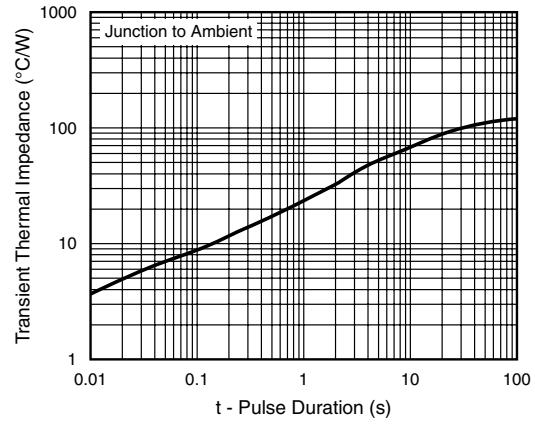
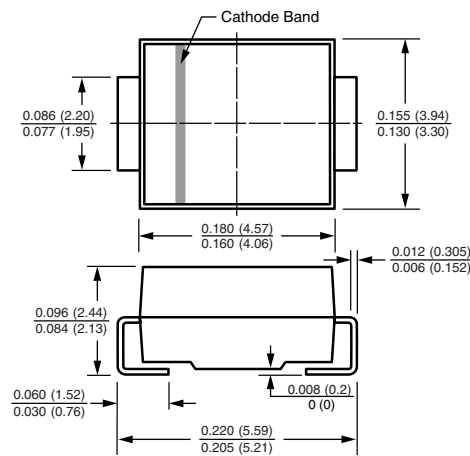


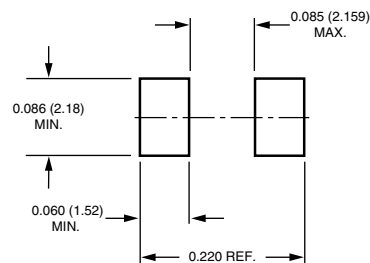
Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-214AA (SMB)



Mounting Pad Layout





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