Low Voltage Trench MOS Barrier Schottky Rectifier

Ultra Low V_F = 0.30 V at I_F = 5 A

DO-201AD

FEATURES

- Trench MOS Schottky technology
- Low forward voltage drop, low power losses
- High efficiency operation
- High forward surge capability
- Solder dip 275 °C max. 10 s, per JESD 22-B106
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912

RoHS COMPLIANT

TYPICAL APPLICATION

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

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	10 A
V_{RRM}	45 V
I_{FSM}	160 A
V_F at I_F = 10 A	0.33 V
T_J max.	150 °C
Package	DO-201AD
Diode variations	Single die

MECHANICAL DATA

Case: DO-201AD
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 cathode end

MAXIMUM RATINGS (T_A = 25 °C unless otherwise noted)

PARAMETER	SYMBOL	VSB1045	UNIT
Device marking code		V1045	
Maximum repetitive peak reverse voltage	V_{RRM}	45	V
Maximum DC forward current (fig. 1)	$I_{F(DC)}$ (1)	10	A
	$I_{F(DC)}$ (2)	7.0	
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I_{FSM}	160	A
Operating junction and storage temperature range	T_J, T_{STG}	-40 to +150	°C

Notes
(1) With heatsink
(2) Without heatsink, free air

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)	0.42	-	V
	I_F = 10 A			0.46	0.56	
	I_F = 5.0 A	T_A = 125 °C		0.30	-	
	I_F = 10 A			0.33	0.41	
Reverse current	V_R = 45 V	T_A = 25 °C	I_R (2)	-	1000	µA
		T_A = 125 °C		13.8	30	mA
Typical junction capacitance	4.0 V, 1 MHz		C_J	1995	-	pF

Notes

(1) Pulse test: 300 µs pulse width, 1 % duty cycle

(2) Pulse test: 40 ms pulse width

THERMAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)			
PARAMETER	**SYMBOL**	**VSB1045**	**UNIT**
Thermal resistance	$R_{\theta JA}$ (1)	45	°C/W
	$R_{\theta JL}$ (1)	9	
Typical thermal resistance	$R_{\theta JL}$ (2)	4	

Notes

(1) Without heatsink, free air; units mounted on PCB with 2 mm x 2 mm copper pad areas at 9.5 mm lead length

(2) Leads clipped at 3 mm lead length from plastic body on 7.0 cm x 2.2 cm x 1.9 cm x 2 heatsink

ORDERING INFORMATION (Example)				
PREFERRED P/N	**UNIT WEIGHT (g)**	**PREFERRED PACKAGE CODE**	**BASE QUANTITY**	**DELIVERY MODE**
VSB1045-E3/54	1.20	54	1400	13" diameter paper tape and reel
VSB1045-E3/73	1.20	73	1000	Ammo pack packaging

RATINGS AND CHARACTERISTICS CURVES (T_A = 25 °C unless otherwise noted)

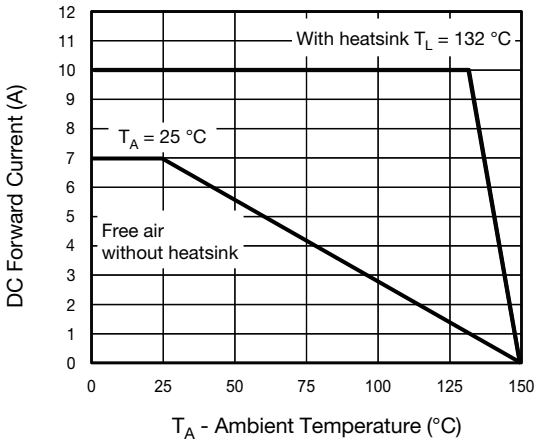


Fig. 1 - Forward Current Derating Curve

Notes

(1) Free air mounted on recommended copper pad area ($R_{\theta JA}$ = 45 °C/W)

(2) With heatsink ($R_{\theta JL}$ = 4 °C/W)

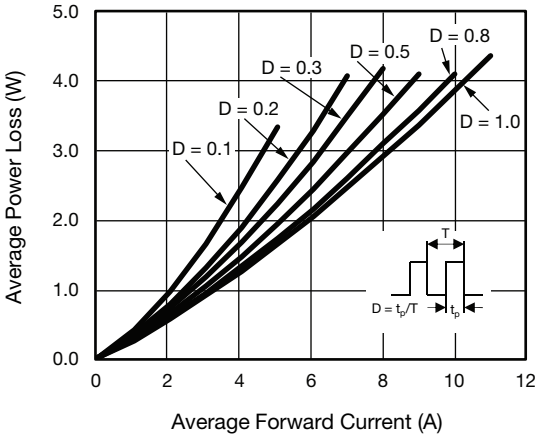


Fig. 2 - Forward Power Loss Characteristics

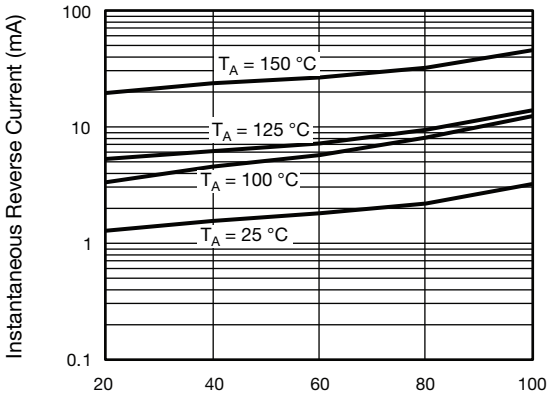


Fig. 4 - Typical Reverse Leakage Characteristics

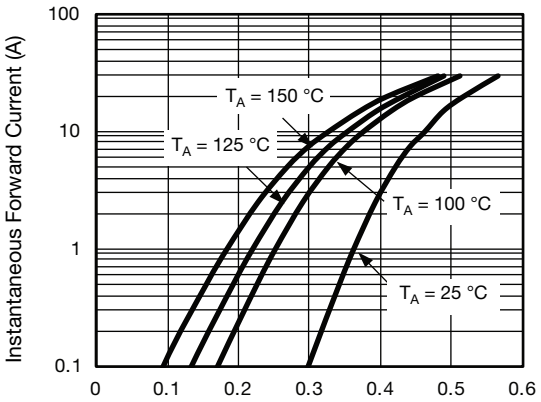


Fig. 3 - Typical Instantaneous Forward Characteristics

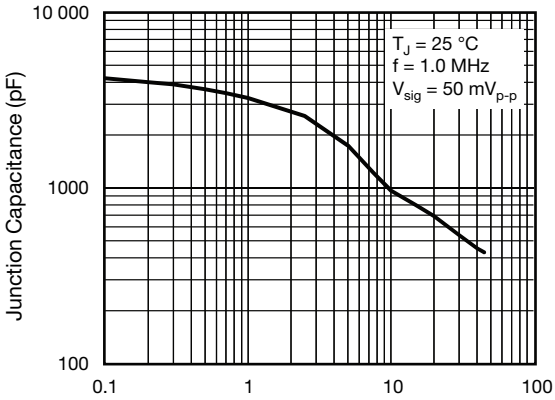
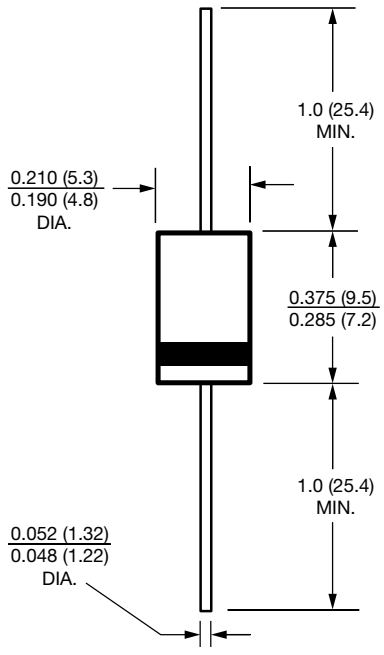


Fig. 5 - Typical Junction Capacitance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-201AD



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