UH1PB, UH1PC, UH1PD

Vishay General Semiconductor

Surface Mount Ultrafast Rectifier

eSMP® Series

DO-220AA (SMP)

FEATURES

- Very low profile - typical height of 1.0 mm
- Ideal for automated placement
- Oxide planar chip junction
- Ultrafast recovery times for high frequency
- 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

MECHANICAL DATA

Case: DO-220AA (SMP)
Molding compound meets UL 94 V-0 flammability rating
Base P/N-M3 - halogen-free, RoHS compliant, and 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 cathode end

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	1.0 A
V_{RRM}	100 V, 150 V, 200 V
I_{FSM}	30 A
t_{rr}	25 ns
V_F at I_F = 1.0 A	0.75 V
T_J max.	175 °C

TYPICAL APPLICATIONS

For use in secondary rectification and freewheeling for ultrafast switching speeds of AC/AC and DC/DC converters in high temperature conditions for both consumer and automotive applications.

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

PARAMETER	SYMBOL	UH1PB	UH1PC	UH1PD	UNIT
Device marking code		HB	HC	HD	
Maximum repetitive peak reverse voltage	V_{RRM}	100	150	200	V
Maximum average forward rectified current (fig. 1)	$I_{F(AV)}$	1.0			A
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	I_{FSM}	30			A
Operating junction and storage temperature range	T_J, T_{STG}	- 55 to + 175			°C

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ELECTRICAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage	I_F = 0.6 A	T_A = 25 °C	V_F (1)	0.88	-	V
	I_F = 1.0 A			0.95	1.05	
	I_F = 0.6 A	T_A = 125 °C		0.69	-	
	I_F = 1.0 A			0.75	0.85	
Reverse current	Rated V_R	T_A = 25 °C	I_R (2)	-	1.0	µA
		T_A = 125 °C		5.0	25	
Maximum reverse recovery time	I_F = 0.5 A, I_R = 1.0 A, I_{rr} = 0.25 A	T_A = 25 °C	t_{rr}	19	25	ns
	I_F = 1.0 A, dI/dt = 50 A/µs, V_R = 30 V, I_{rr} = 0.1 I_{RM}			27	40	
Typical softness factor (t_b/t_a)	I_F = 1.0 A, dI/dt = 200 A/µs, V_R = 200 V	T_A = 125 °C	S	0.4	-	-
Maximum reverse recovery current			I_{RM}	3.7	5.5	A
Typical stored charge			Q_{rr}	48	-	nC
Typical junction capacitance	4.0 V, 1 MHz		C_J	16	-	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	UH1PB	UH1PC	UH1PD	UNIT	
Typical thermal resistance	$R_{\theta JA}$ (1)	120			°C/W	
	$R_{\theta JM}$ (1)	20				

Note

(1) Free air, mounted on recommended copper pad area. Thermal resistance $R_{\theta JA}$ - junction to ambient, $R_{\theta JM}$ junction to mount at the terminal cathode band

ORDERING INFORMATION (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
UH1PD-M3/84A	0.024	84A	3000	7" diameter plastic tape and reel
UH1PD-M3/85A	0.024	85A	10 000	13" diameter plastic tape and reel

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RATINGS AND CHARACTERISTICS CURVES

(T_A = 25 °C unless otherwise noted)

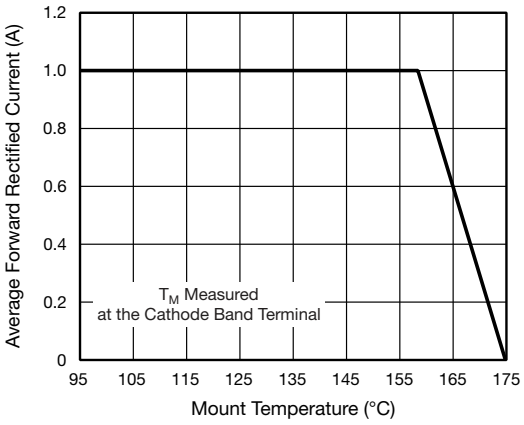

Fig. 1 - Maximum Forward Current Derating Curve

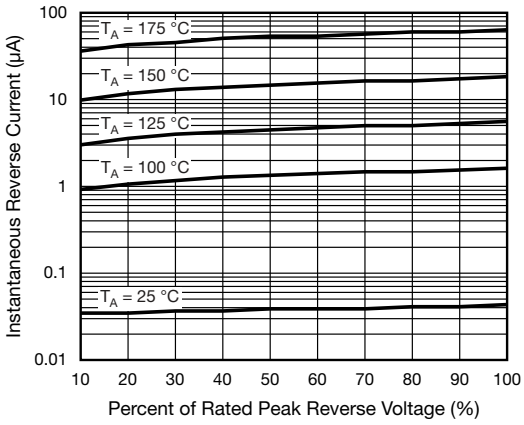

Fig. 4 - Typical Reverse Characteristics

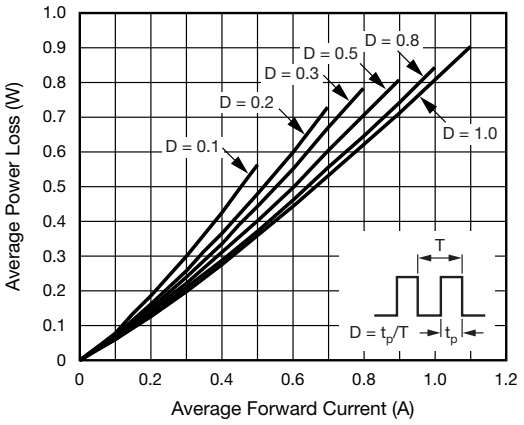

Fig. 2 - Forward Power Loss Characteristics

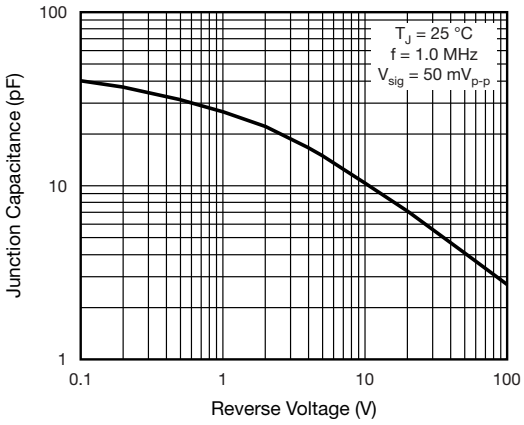

Fig. 5 - Typical Junction Capacitance

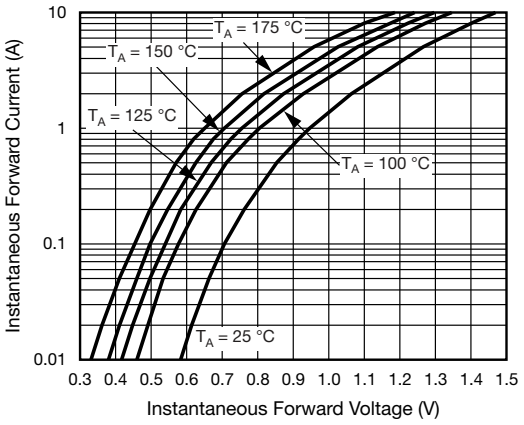

Fig. 3 - Typical Instantaneous Forward Characteristics

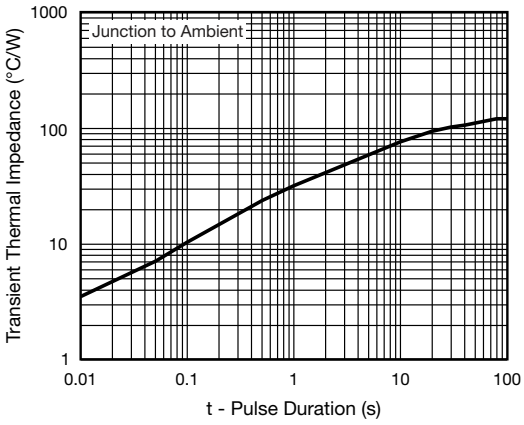

Fig. 6 - Typical Transient Thermal Impedance

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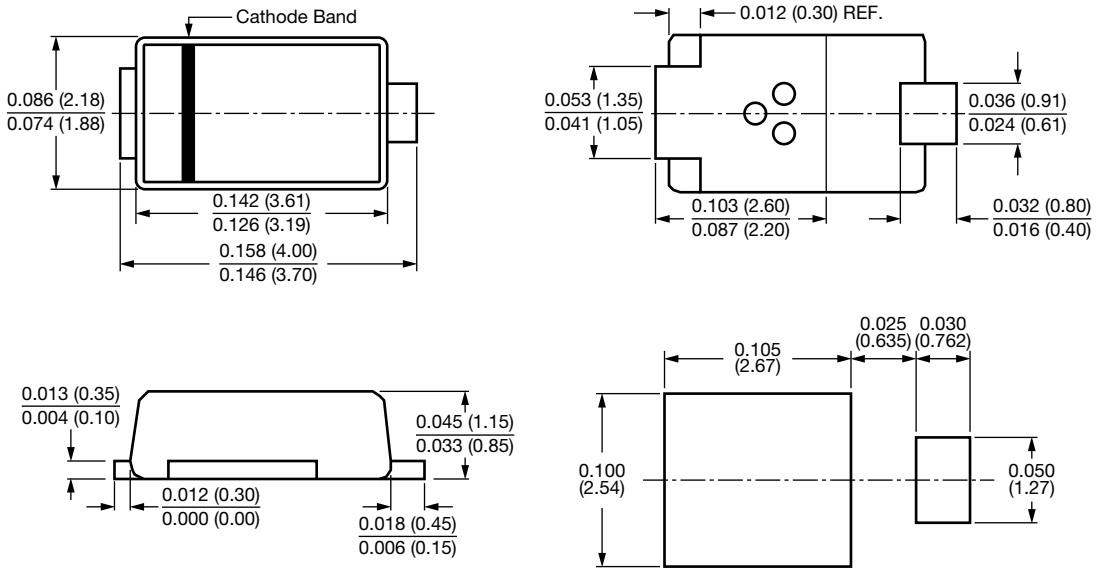
PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-220AA (SMP)



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