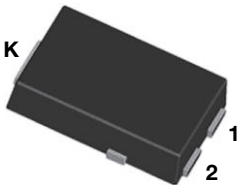
UH6PD

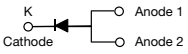
Vishay General Semiconductor

High Current Density Surface Mount Ultrafast Rectifier

eSMP® Series



TO-277A (SMPC)



FEATURES

- Very low profile - typical height of 1.1 mm
- Ideal for automated placement
- Oxide planar chip junction
- Ultrafast recovery times for high frequency
- Low forward voltage drop
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- AEC-Q101 qualified
- Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC
- **Halogen-free according to IEC 61249-2-21 definition**

AUTOMOTIVE GRADE Available

RoHS COMPLIANT

HALOGEN FREE

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	6.0 A
V_{RRM}	200 V
I_{FSM}	90 A
t_{rr}	25 ns
V_F at I_F = 6.0 A	0.73 V
T_J max.	175 °C

MECHANICAL DATA

Case: TO-277A (SMPC)
Molding compound meets UL 94 V-0 flammability rating
Base P/N-M3 - halogen-free, RoHS compliant, and commercial grade
Base P/NHM3 - halogen-free, RoHS compliant, and automotive grade

Terminals: Matte tin plated leads, solderable per J-STD-002 and JESD 22-B102
M3 suffix meets JESD 201 class 1A whisker test, HM3 suffix meets JESD 201 class 2 whisker test

TYPICAL APPLICATIONS

For use in high frequency rectification and freewheeling application in switching mode converters and inverters for consumer computer, automotive, and telecommunication applications.

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

PARAMETER	SYMBOL	UH6PD	UNIT
Device marking code		H6D	
Maximum repetitive peak reverse voltage	V_{RRM}	200	V
Maximum average forward rectified current (fig. 1)	$I_{F(AV)}$	6.0	A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I_{FSM}	90	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 = 3.0 A	T_A = 25 °C	V_F (1)	0.80	-	V
	I_F = 6.0 A			0.87	1.05	
	I_F = 3.0 A	T_A = 125 °C		0.65	-	
	I_F = 6.0 A			0.73	0.90	
Reverse current	V_R = 200 V	T_A = 25 °C	I_R (2)	-	10	µA
		T_A = 125 °C		16	200	
Reverse recovery time	I_F = 0.5 A, I_R = 1.0 A, I_{rr} = 0.25 A		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}			29	40	
Typical softness factor (t_b/t_a)	I_F = 6 A, dI/dt = 200 A/µs, V_R = 200 V, I_{rr} = 0.1 I_{RM}, T_A = 125 °C		S	0.2	-	-
Reverse recovery current			I_{RM}	5.5	-	A
Typical stored charge			Q_{rr}	90	-	nC
Typical forward recovery time	I_F = 6 A, dI/dt = 48 A/µs, V_F = 1.1 x V_F max.		t_{fr}	140	-	ns
Typical junction capacitance	4.0 V, 1 MHz		C_J	80	-	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	UH6PD	UNIT
Typical thermal resistance	$R_{\theta JA}$ (1)	95	°C/W
	$R_{\theta JL}$ (2)	5	

Notes

(1) Units mounted on recommended P.C.B. 1 oz. pad layout

(2) Mounted on 25 mm x 25 mm x 2 copper pad areas FR4 PCB

ORDERING INFORMATION (Example)

PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
UH6PD-M3/86A	0.10	86A	1500	7" diameter plastic tape and reel
UH6PD-M3/87A	0.10	87A	6500	13" diameter plastic tape and reel
UH6PDHM3/86A (1)	0.10	86A	1500	7" diameter plastic tape and reel
UH6PDHM3/87A (1)	0.10	87A	6500	13" diameter plastic tape and reel

Note

(1) Automotive grade

For technical questions within your region, please contact one of the following:
DiodesAmericas@vishay.com, DiodesAsia@vishay.com, DiodesEurope@vishay.com

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RATINGS AND CHARACTERISTICS CURVES

(T_A = 25 °C unless otherwise noted)

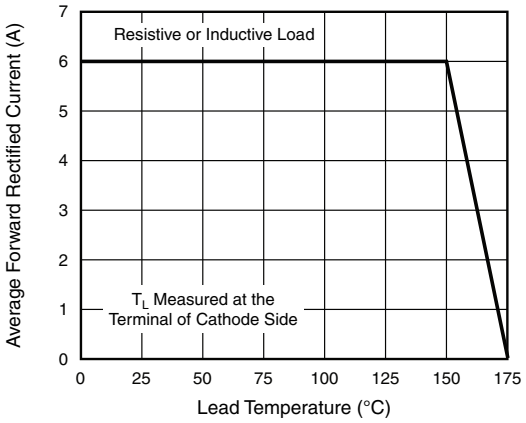

Fig. 1 - Maximum Forward Current Derating Curve

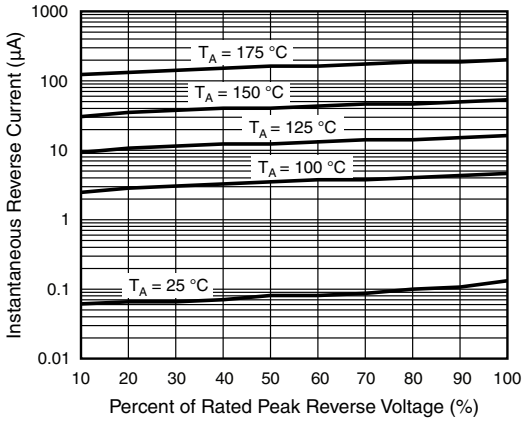

Fig. 4 - Typical Reverse Characteristics

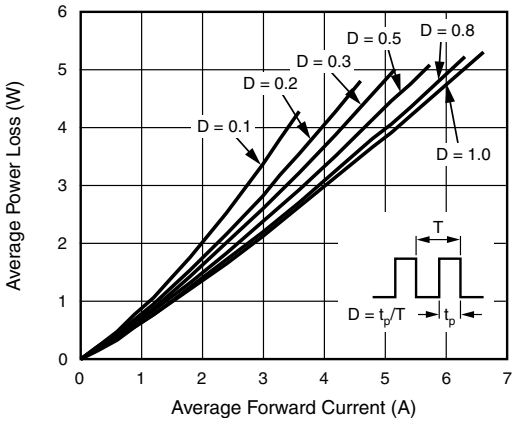

Fig. 2 - Forward Power Loss Characteristics

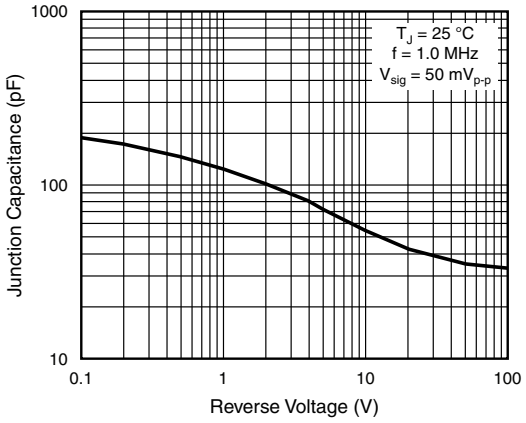

Fig. 5 - Typical Junction Capacitance

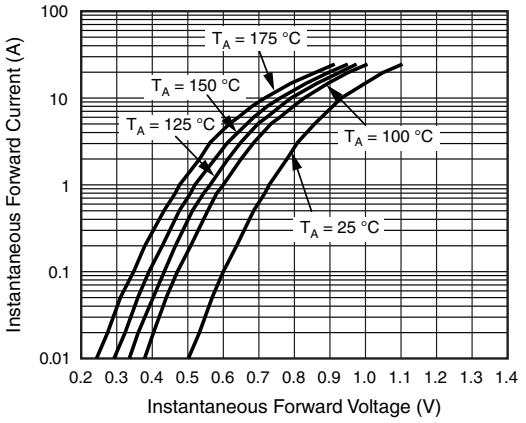

Fig. 3 - Typical Instantaneous Forward Characteristics

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

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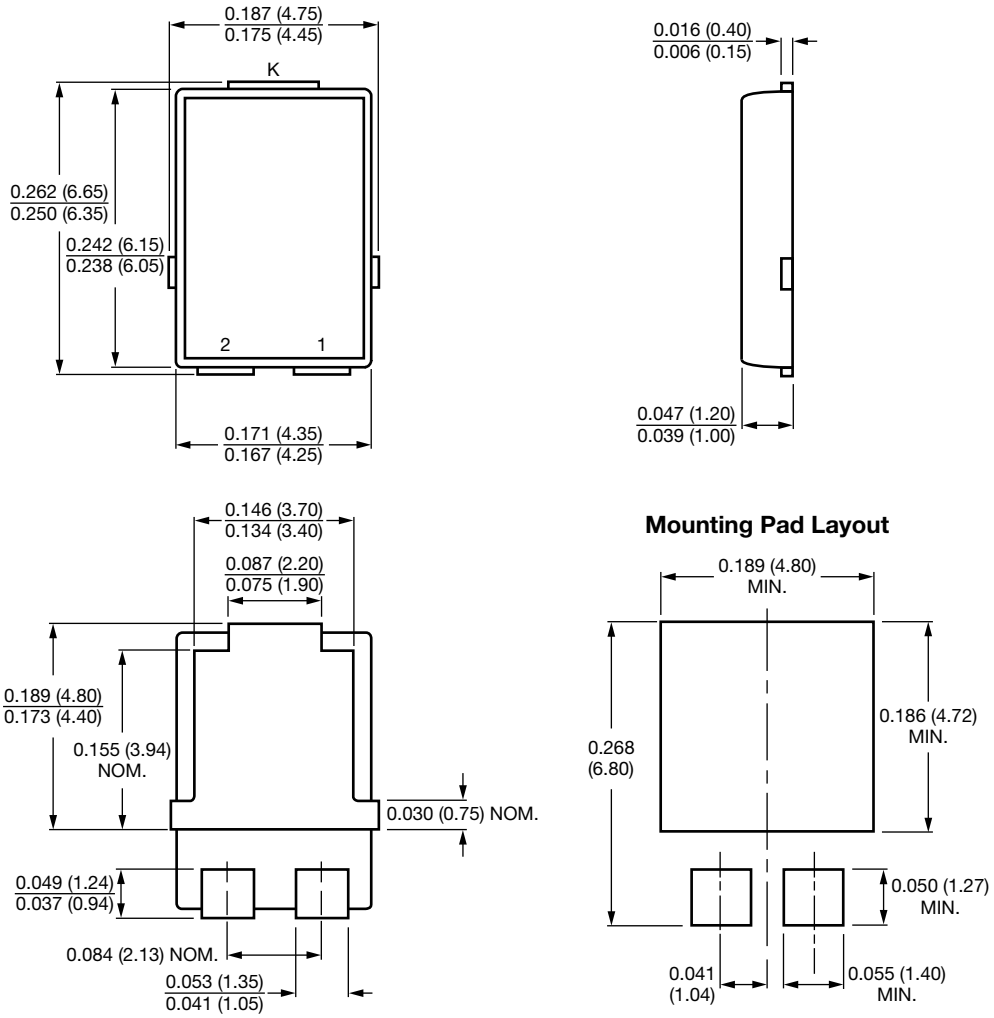

Mounting Pad Layout

Conform to JEDEC TO-277A

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