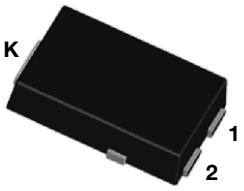
UH6PD

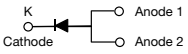
Vishay General Semiconductor

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**
- Find out more about Vishay's Automotive Grade Product requirements at: www.vishay.com/applications

AUTOMOTIVE GRADE Available

RoHS COMPLIANT

HALOGEN FREE

TYPICAL APPLICATIONS

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

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 and RoHS compliant, commercial grade
Base P/NHM3 - halogen-free and RoHS compliant, 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

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

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 P.C.B.

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

RATINGS AND CHARACTERISTICS CURVES

(T_A = 25 °C unless otherwise noted)

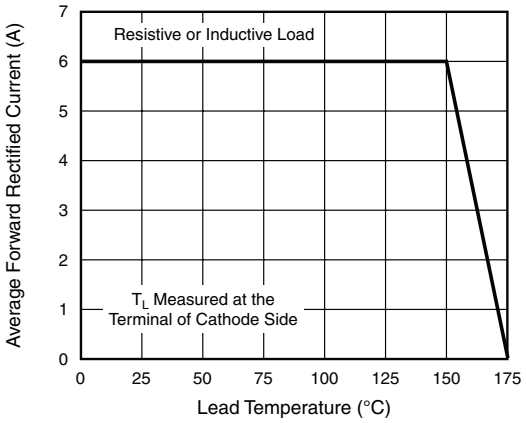


Fig. 1 - Maximum Forward Current Derating Curve

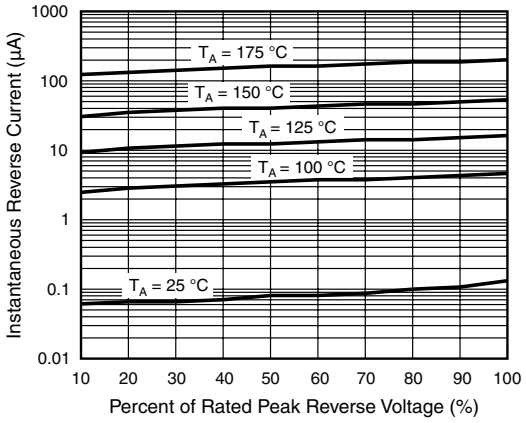


Fig. 4 - Typical Reverse Characteristics

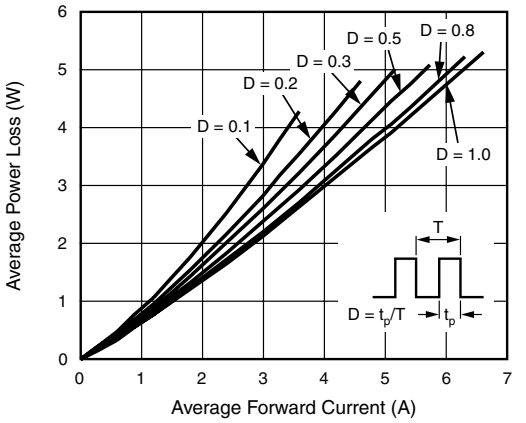


Fig. 2 - Forward Power Loss Characteristics

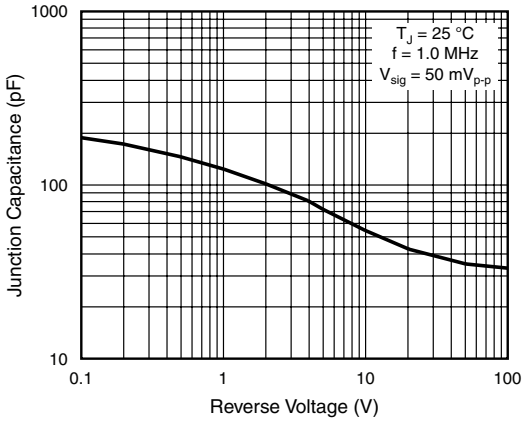


Fig. 5 - Typical Junction Capacitance

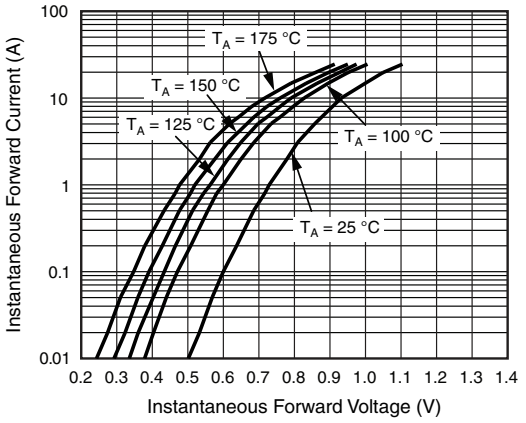
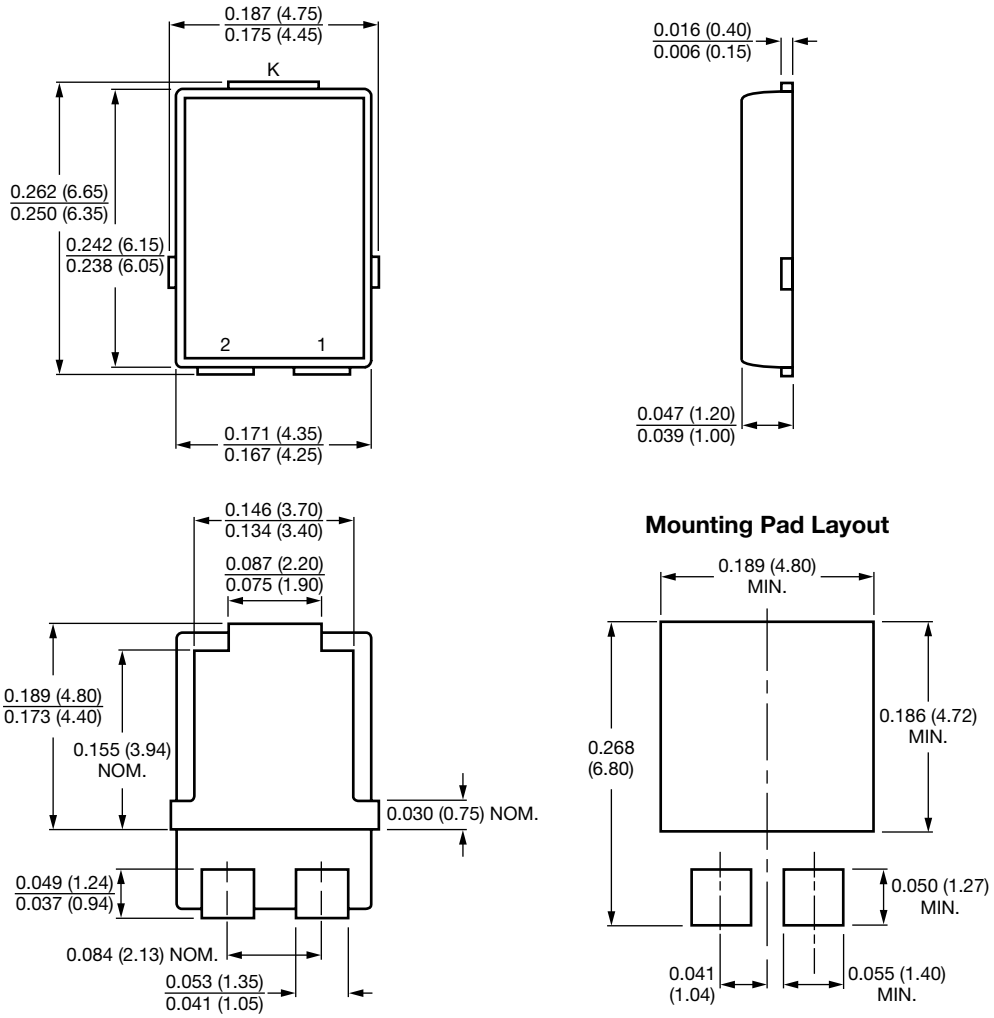


Fig. 3 - Typical Instantaneous Forward Characteristics

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

TO-277A (SMPC)



Mounting Pad Layout

Conform to JEDEC TO-277A

For technical questions within your region, please contact one of the following:
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