

AUTOMOTIVE

Available

COMPLIANT

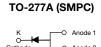
HALOGEN FREE



Vishay General Semiconductor

High Current Density Surface Mount Ultrafast Rectifier





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		

TYPICAL APPLICATIONS

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

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

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 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	Α	
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I _{FSM}	90	А	
Operating junction and storage temperature range	T _{J,} T _{STG}	- 55 to + 175	°C	

UH6PD

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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	
Poverce current	V - 200 V	T _A = 25 °C	I _R ⁽²⁾	-	10	μΑ
Reverse current	V _R = 200 V	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, dl/dt = 50 A/μs, V _R = 30 V, I _{rr} = 0.1 I _{RM}			29	40	
Typical softness factor (t _b /t _a)	I= = 6 Δ dI/dt	I _F = 6 A, dl/dt = 200 A/μs, V _R = 200 V, I _{rr} = 0.1 I _{RM} ,		0.2	-	=
Reverse recovery current	$V_R = 200 \text{ V}, I_r$			5.5	-	Α
Typical stored charge	T _A = 125 °C		Q _{rr}	90	-	nC
Typical forward recovery time	$I_F = 6 \text{ A}, \text{ dI/dt} = 48 \text{ A/}\mu\text{s}, \ V_F = 1.1 \text{ x V}_F \text{ max}.$		t _{fr}	140	-	ns
Typical junction capacitance	4.0 V, 1 MHz		CJ	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	
Tunical thermal registance	R _{θJA} ⁽¹⁾	95	- °C/W	
Typical thermal resistance	R _{0JL} (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	

(1) Automotive grade





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RATINGS AND CHARACTERISTICS CURVES

(T_A = 25 °C unless otherwise noted)

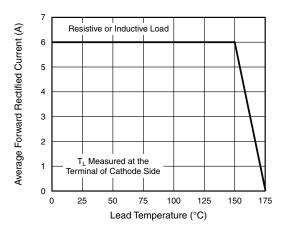


Fig. 1 - Maximum Forward Current Derating Curve

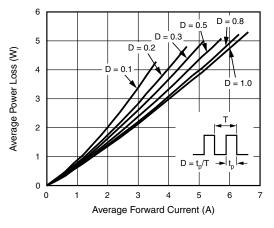


Fig. 2 - Forward Power Loss Characteristics

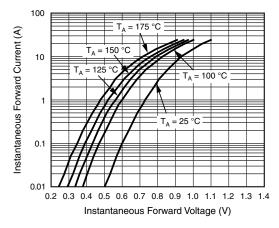


Fig. 3 - Typical Instantaneous Forward Characteristics

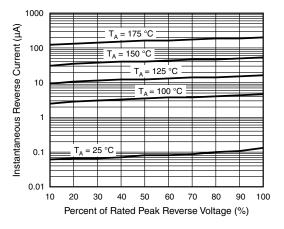


Fig. 4 - Typical Reverse Characteristics

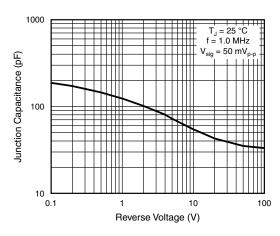


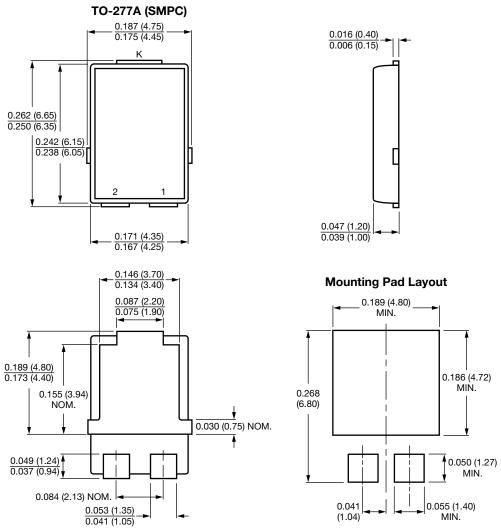
Fig. 5 - Typical Junction Capacitance

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PACKAGE OUTLINE DIMENSIONS in inches (millimeters)



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