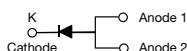


High Current Density Surface Mount Ultrafast High Voltage Rectifier

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 time
- Soft recovery characteristics
- Low switching losses, high efficiency
- High forward surge capability
- 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 voltage, high frequency power factor corrections, switching mode power supplies, freewheeling diodes and secondary dc-to-dc rectification application.

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

PRIMARY CHARACTERISTICS

$I_{F(AV)}$	6.0 A
V_{RRM}	600 V
I_{FSM}	80 A
t_{rr}	25 ns
V_F at $I_F = 6.0$ A	1.3 V
T_J max.	175 °C

MAXIMUM RATINGS ($T_C = 25$ °C unless otherwise noted)

PARAMETER	SYMBOL	UH6PJ	UNIT
Device marking code		H6PJ	
Maximum repetitive peak reverse voltage	V_{RRM}	600	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}	80	A
Operating junction and storage temperature range	T_J, T_{STG}	- 55 to + 175	°C

ELECTRICAL CHARACTERISTICS (T _C = 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⁾	1.6	-	V
	I _F = 6.0 A			1.9	3.0	
	I _F = 3.0 A	T _A = 125 °C		1.1	-	
	I _F = 6.0 A			1.3	1.8	
Reverse current	V _R = 600 V	T _A = 25 °C	I _R ⁽²⁾	-	10	μA
		T _A = 125 °C		46	200	
Maximum reverse recovery time	I _F = 0.5 A, I _R = 1.0 A, I _{rr} = 0.25 A		t _{rr}	23	25	ns
	I _F = 1.0 A, di/dt = 50 A/μs, V _R = 30 V, I _{rr} = 0.1 I _{RM}			33	45	
Typical softness factor (t _b /t _a)	I _F = 6 A, di/dt = 200 A/μs, V _R = 400 V, T _J = 125 °C		S	0.3	-	-
Typical reverse recovery current			I _{RM}	6.5	-	A
Typical stored charge			Q _{rr}	150	-	nC
Typical forward recovery time	I _F = 6 A, di/dt = 48 A/μs, V _F = 1.1 x V _F max.		t _{fr}	150	-	ns
Typical junction capacitance	4.0 V, 1 MHz		C _J	30	-	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	UH6PJ	UNIT
Typical thermal resistance	R _{θJA} ⁽¹⁾	90	°C/W
	R _{θJL} ⁽²⁾	5	

Notes

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

(2) With heatsink

ORDERING INFORMATION (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
UH6PJ-M3/86A	0.10	86A	1500	7" diameter plastic tape and reel
UH6PJ-M3/87A	0.10	87A	6500	13" diameter plastic tape and reel
UH6PJHM3/86A ⁽¹⁾	0.10	86A	1500	7" diameter plastic tape and reel
UH6PJHM3/87A ⁽¹⁾	0.10	87A	6500	13" diameter plastic tape and reel

Note

(1) AEC-Q101 qualified

RATINGS AND CHARACTERISTICS CURVES

($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)

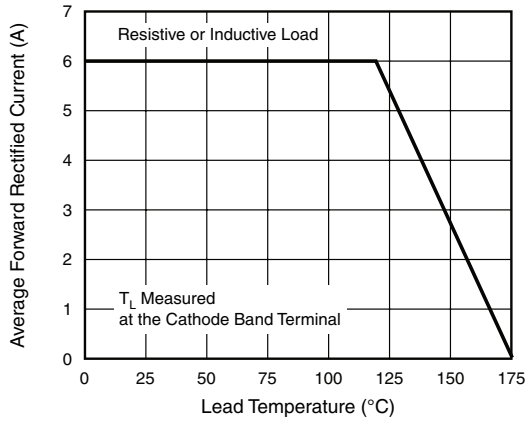


Fig. 1 - Maximum Forward Current Derating Curve

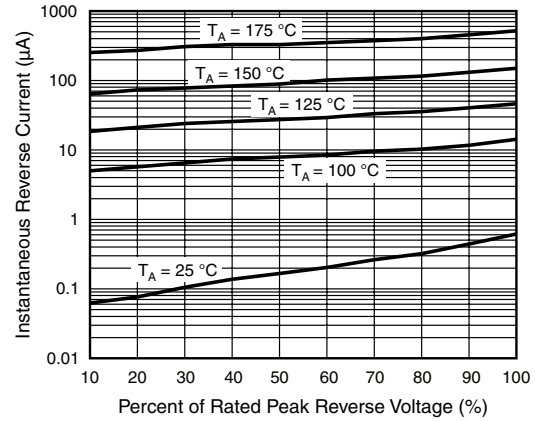


Fig. 4 - Typical Reverse Characteristics

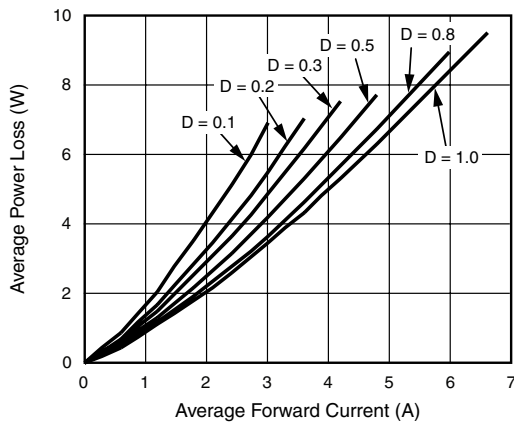


Fig. 2 - Forward Power Loss Characteristics

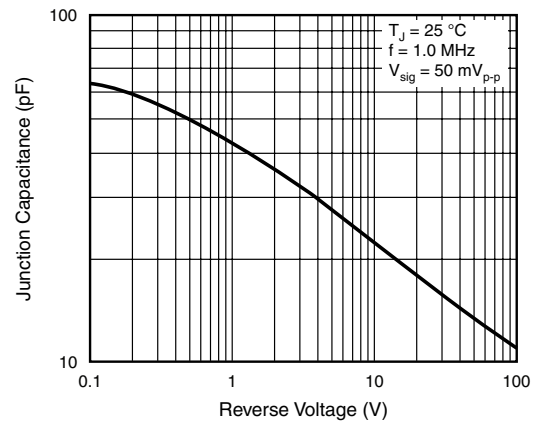


Fig. 5 - Typical Junction Capacitance

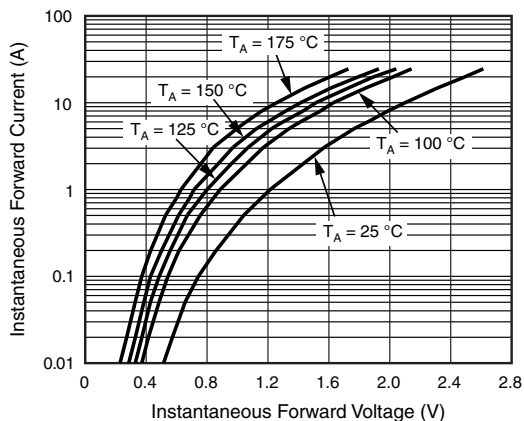
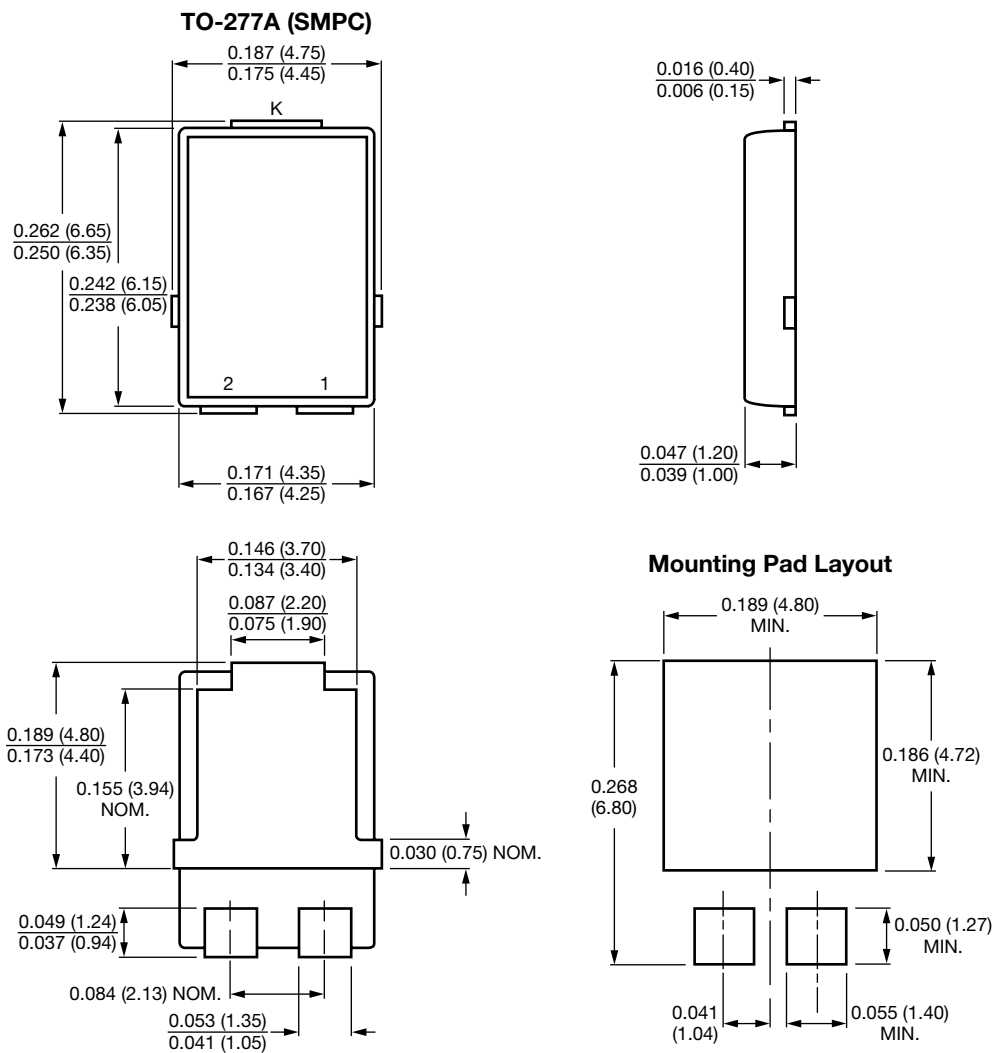


Fig. 3 - Typical Instantaneous Forward Characteristics

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)



Conform to JEDEC TO-277A



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