

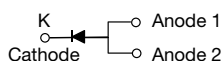


High Current Density Surface Mount Ultrafast High Voltage Rectifier

eSMP® Series



SMPC (TO-277A)



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 available
- Automotive ordering code: base P/NHM3
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

AUTOMOTIVE
GRADE
Available



RoHS
COMPLIANT
HALOGEN
FREE

LINKS TO ADDITIONAL RESOURCES



TYPICAL APPLICATIONS

For use in high voltage, high frequency power factor corrections, switching mode power supplies, freewheeling diodes and secondary DC/DC rectification application.

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
Package	SMPC (TO-277A)
Circuit configuration	Single

MECHANICAL DATA

Case: SMPC (TO-277A)

Molding compound meets UL 94 V-0 flammability rating
Base P/NHM3_X - halogen-free, RoHS-compliant and AEC-Q101 qualified

("_X" denotes revision code e.g. A, B,.....)

Terminals: matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

HM3 suffix meets JESD 201 class 2 whisker test

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 ($T_C = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)					
PARAMETER	TEST CONDITIONS	SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage	$I_F = 3.0\text{ A}$	$V_F^{(1)}$	1.6	-	V
	$I_F = 6.0\text{ A}$		1.9	3.0	
	$I_F = 3.0\text{ A}$		1.1	-	
	$I_F = 6.0\text{ A}$		1.3	1.8	
Reverse current	$V_R = 600\text{ V}$	$I_R^{(2)}$	-	10	μA
			46	200	
Maximum reverse recovery time	$I_F = 0.5\text{ A}$, $I_R = 1.0\text{ A}$, $I_{rr} = 0.25\text{ A}$	t_{rr}	23	25	ns
	$I_F = 1.0\text{ A}$, $dI/dt = 50\text{ A}/\mu\text{s}$, $V_R = 30\text{ V}$, $I_{rr} = 0.1\text{ I}_{RM}$		33	45	
Typical softness factor (t_b/t_a)	$I_F = 6\text{ A}$, $dI/dt = 200\text{ A}/\mu\text{s}$, $V_R = 400\text{ V}$, $T_J = 125\text{ }^{\circ}\text{C}$	S	0.3	-	-
Typical reverse recovery current		I_{RM}	6.5	-	A
Typical stored charge		Q_{rr}	150	-	nC
Typical forward recovery time	$I_F = 6\text{ A}$, $dI/dt = 48\text{ A}/\mu\text{s}$, $V_F = 1.1 \times V_F \text{ max.}$	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 $\leq 40\text{ ms}$

THERMAL CHARACTERISTICS ($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)			
PARAMETER	SYMBOL	UH6PJ	UNIT
Typical thermal resistance	$R_{\theta JA}^{(1)}$	90	$^{\circ}\text{C}/\text{W}$
	$R_{\theta JL}^{(2)}$	5	

Notes

- (1) Units mounted on recommended PCB 1 oz. pad layout
 (2) With heatsink

ORDERING INFORMATION (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
UH6PJHM3_A/H ⁽¹⁾	0.10	H	1500	7" diameter plastic tape and reel
UH6PJHM3_A/I ⁽¹⁾	0.10	I	6500	13" diameter plastic tape and reel

Note

- (1) AEC-Q101 qualified

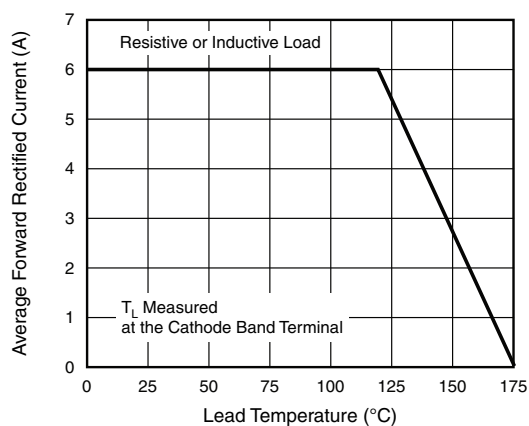

RATINGS AND CHARACTERISTICS CURVES ($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)


Fig. 1 - Maximum Forward Current Derating Curve

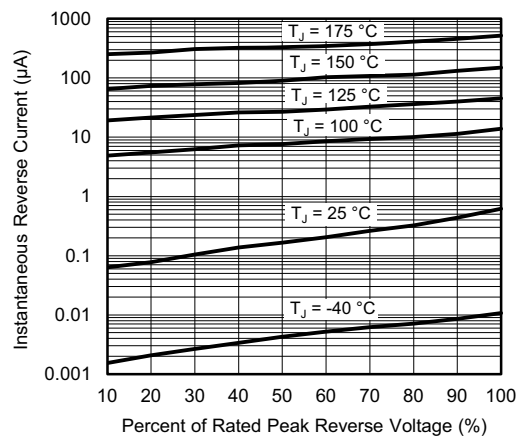


Fig. 4 - Typical Reverse Characteristics

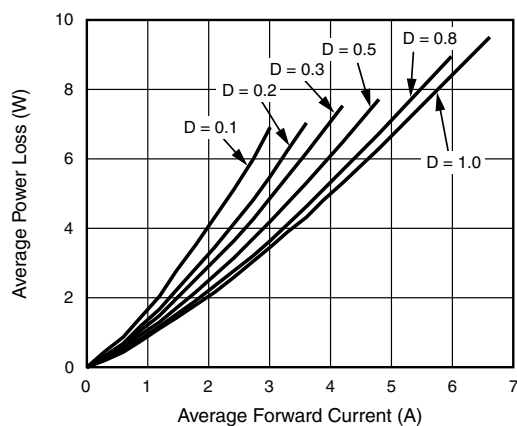


Fig. 2 - Forward Power Loss Characteristics

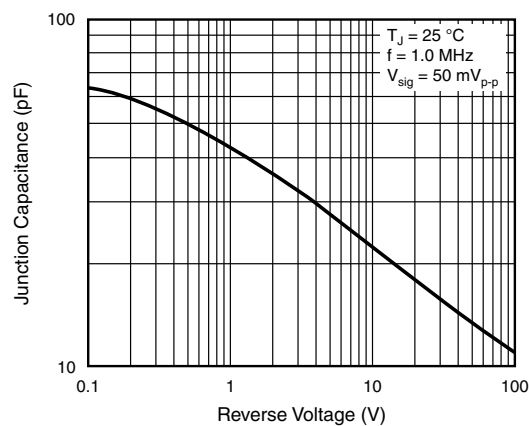


Fig. 5 - Typical Junction Capacitance

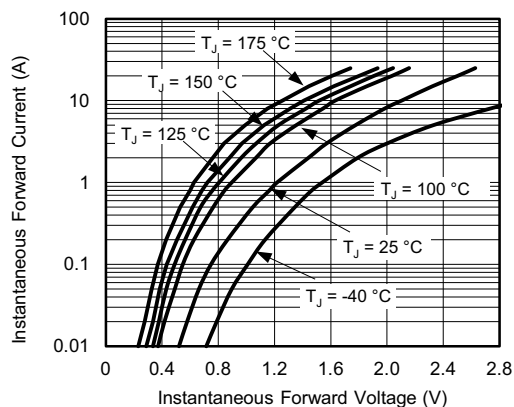
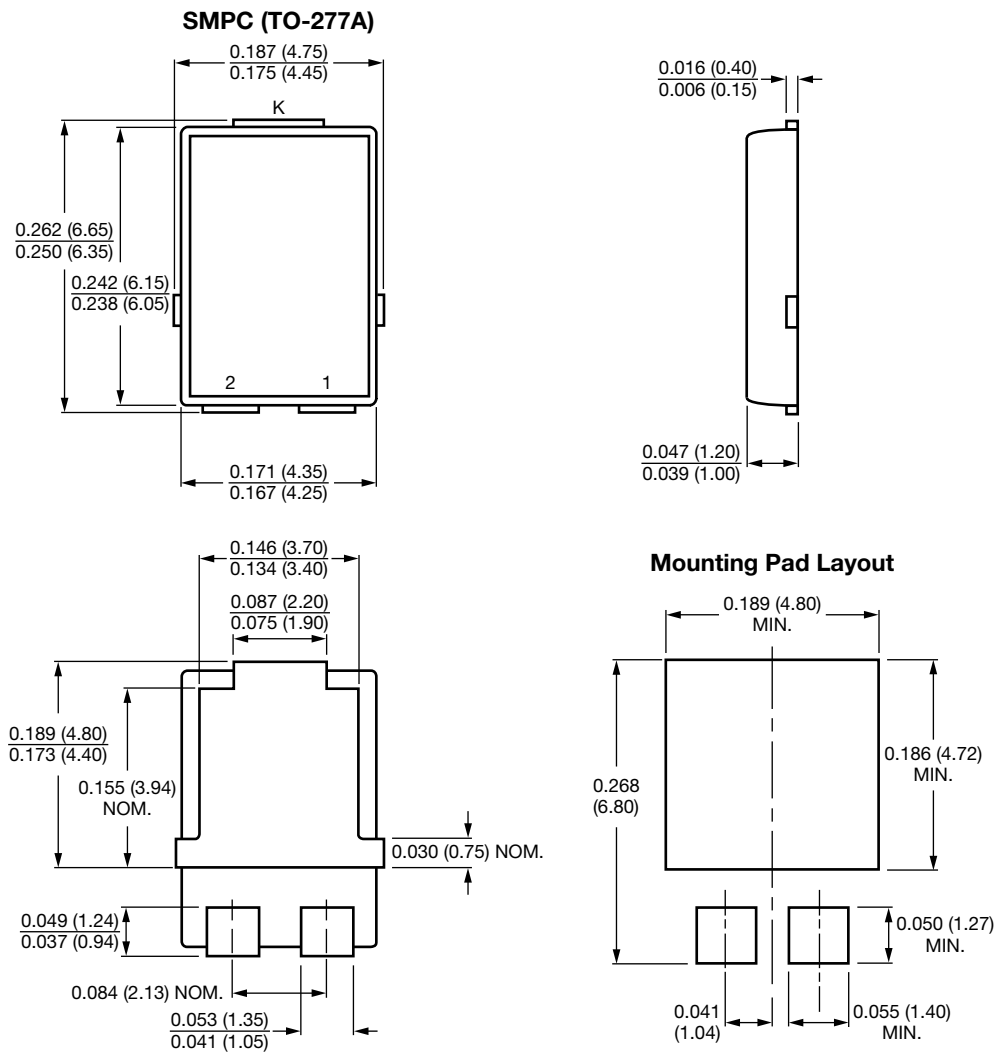


Fig. 3 - Typical Instantaneous Forward Characteristics

**PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)



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