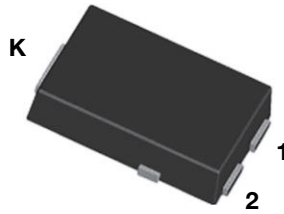
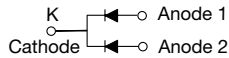


# High Current Density Surface Mount Ultrafast Rectifiers

## 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 times for high frequency
- Low forward voltage drop, low power loss
- 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](http://www.vishay.com/doc?99912)

 AUTOMOTIVE  
GRADE  
Available

**RoHS**  
COMPLIANT  
HALOGEN  
**FREE**

## LINKS TO ADDITIONAL RESOURCES


[3D Models](#)

### PRIMARY CHARACTERISTICS

$I_{F(AV)}$	2 x 2.0 A
$V_{RRM}$	100 V, 150 V
$I_{FSM}$	40 A
$t_{rr}$	25 ns
$V_F$ at $I_F = 2.0$ A	0.77 V
$T_J$ max.	175 °C
Package	SMPC (TO-277A)
Circuit configurations	Common cathode

## TYPICAL APPLICATIONS

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

## 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 ( $T_A = 25$ °C unless otherwise noted)

PARAMETER	SYMBOL	UH4PBC	UH4PCC	UNIT
Device marking code		H4BC	H4CC	
Maximum repetitive peak reverse voltage	$V_{RRM}$	100	150	V
Maximum average forward rectified current (fig. 1)	total device	4.0		A
	per diode	2.0		
Peak forward surge current 10 ms single half sine-wave superimposed on rated load per diode	$I_{FSM}$	40		A
Operating junction and storage temperature range	$T_J, T_{STG}$	-55 to +175		°C

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

PARAMETER	TEST CONDITIONS	SYMBOL	TYP.	MAX.	UNIT	
Instantaneous forward voltage per diode	$I_F = 1.0\text{ A}$	$T_A = 25\text{ }^\circ\text{C}$	0.84	-	V	
	$I_F = 2.0\text{ A}$		0.93	1.05		
	$I_F = 1.0\text{ A}$	$T_A = 125\text{ }^\circ\text{C}$	0.68	-		
	$I_F = 2.0\text{ A}$		0.77	0.85		
Reverse current per diode	Rated $V_R$	$I_R^{(2)}$	$T_A = 25\text{ }^\circ\text{C}$	-	5	$\mu\text{A}$
			$T_A = 125\text{ }^\circ\text{C}$	6.4	25	
Maximum reverse recovery time per diode	$I_F = 0.5\text{ A}$ , $I_R = 1.0\text{ A}$ , $I_{rr} = 0.25\text{ A}$	$t_{rr}$	20	25	ns	
Typical reverse recovery time per diode	$I_F = 1.0\text{ A}$ , $dI/dt = 50\text{ A}/\mu\text{s}$ , $V_R = 30\text{ V}$ , $I_{rr} = 0.1 I_{RM}$		24	-		
Typical softness factor ( $t_b/t_a$ ) per diode	$I_F = 2\text{ A}$ , $dI/dt = 200\text{ A}/\mu\text{s}$ , $V_R = 200\text{ V}$ , $I_{rr} = 0.1 I_{RM}$ , $T_A = 125\text{ }^\circ\text{C}$	S	0.3	-	-	
Typical reverse recovery current per diode		$I_{RM}$	5.4	-	A	
Typical stored charge per diode		$Q_{rr}$	88	-	nC	
Typical junction capacitance per diode		$C_J$	21	-	pF	

**Notes**(1) Pulse test: 300  $\mu\text{s}$  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 specified)

PARAMETER	SYMBOL	UH4PBC	UH4PCC	UNIT
Typical thermal resistance per device	$R_{\theta JA}^{(1)}$	60		$^\circ\text{C}/\text{W}$
	$R_{\theta JL}$	4		

**Note**

(1) Units mounted on recommended PCB 1 oz. pad layout

**ORDERING INFORMATION** (Example)

PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
UH4PCCHM3_A/H <sup>(1)</sup>	0.10	H	1500	7" diameter plastic tape and reel
UH4PCCHM3_A/I <sup>(1)</sup>	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)

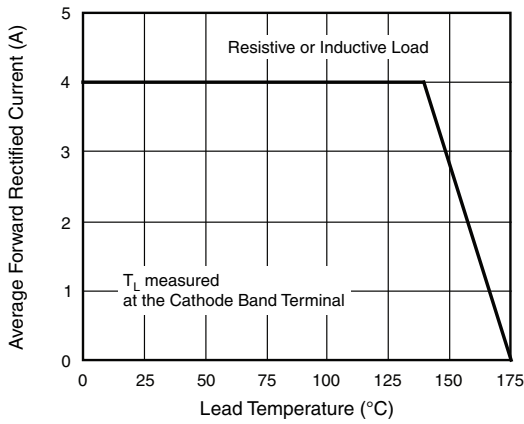


Fig. 1 - Maximum Forward Current Derating Curve

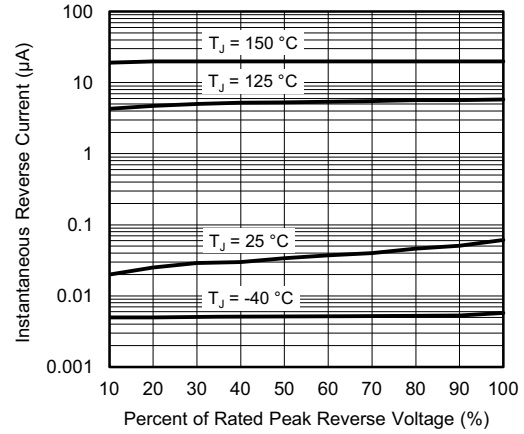


Fig. 4 - Typical Reverse Leakage Characteristics Per Diode

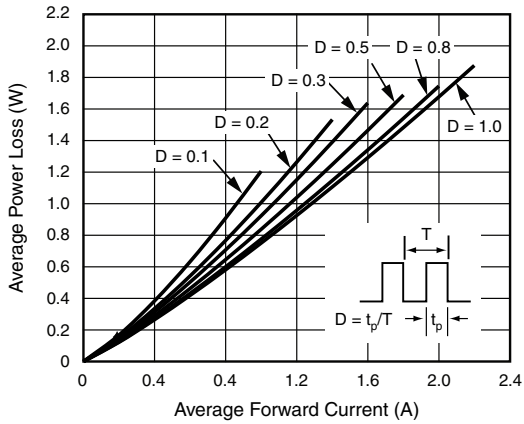


Fig. 2 - Forward Power Loss Characteristics Per Diode

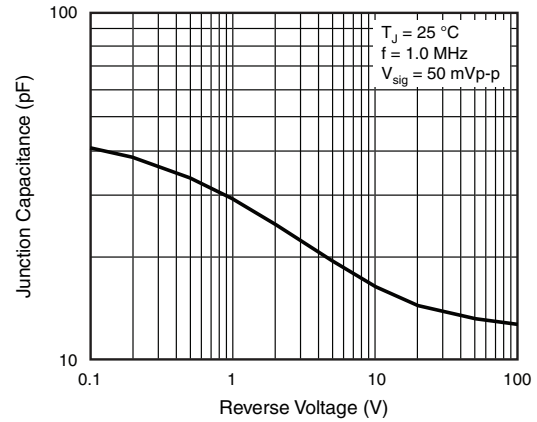


Fig. 5 - Typical Junction Capacitance Per Diode

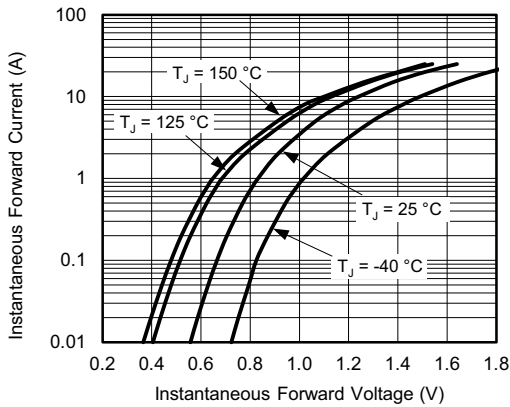


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

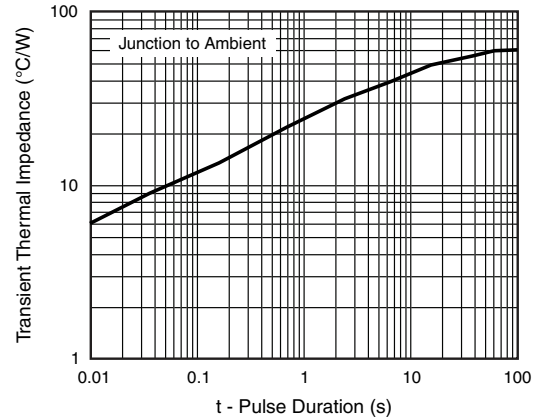
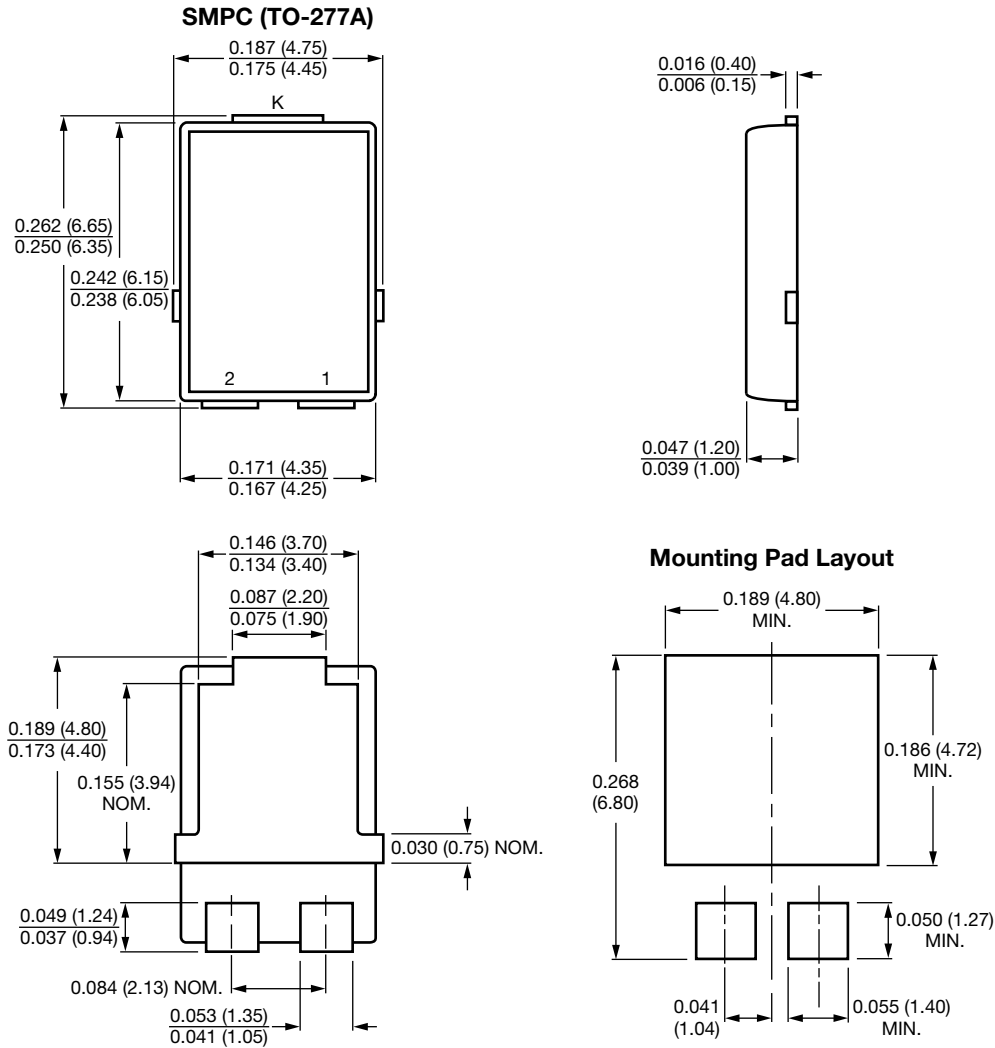


Fig. 6 - Typical Transient Thermal Impedance Per Device



### PACKAGE OUTLINE DIMENSIONS in inches (millimeters)



Conform to JEDEC® TO-277A



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