

## High Current Density Surface Mount Ultrafast Rectifiers



### 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
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC
- **Halogen-free**



PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	2 x 2.0 A
$V_{RRM}$	100 V, 150 V, 200 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

### 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:** TO-277A (SMPC)

Molding compound meets UL 94V-0 flammability rating.

Base P/N-E3 - RoHS compliant, commercial grade  
 Base P/NHE3 - RoHS compliant, high reliability/automotive grade (AEC-Q101 qualified)

Base P/N-M3 - halogen-free and RoHS compliant, commercial grade

Base P/NHM3 - halogen-free and RoHS compliant, high reliability/automotive grade (AEC-Q101 qualified)

**Terminals:** Matte tin plated leads, solderable per J-STD-002 and JESD22-B102

E3 and M3 suffix meets JESD 201 class 1A whisker test, HE3 and HM3 suffix meets JESD 201 class 2 whisker test

MAXIMUM RATINGS ( $T_A = 25$ °C unless otherwise noted)					
PARAMETER	SYMBOL	UH4PBC	UH4PCC	UH4PDC	UNIT
Device marking code		H4BC	H4CC	H4DC	
Maximum repetitive peak reverse voltage	$V_{RRM}$	100	150	200	V
Maximum average forward rectified current (Fig. 1)	$I_{F(AV)}$	4.0 2.0			A
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



<b>ELECTRICAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage per diode <sup>(1)</sup>	$I_F = 1.0\text{ A}$	$T_A = 25\text{ }^\circ\text{C}$	$V_F$	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 <sup>(2)</sup>	rated $V_R$	$T_A = 25\text{ }^\circ\text{C}$ $T_A = 125\text{ }^\circ\text{C}$	$I_R$	- 6.4	5 25	$\mu\text{A}$
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	$I_F = 1.0\text{ A}$ , $dI/dt = 50\text{ A}/\mu\text{s}$ , $V_R = 30\text{ V}$ , $I_{rr} = 0.1\text{ }I_{RM}$			24	-	
Typical softness factor ( $t_b/t_a$ ) per diode	$I_F = 2\text{ A}$ , $dI/dt = 200\text{ A}/\mu\text{s}$ , $V_R = 200\text{ V}$ , $I_{rr} = 0.1\text{ }I_{RM}$		S	0.3	-	-
Typical reverse recovery current per diode	$T_A = 125\text{ }^\circ\text{C}$		$I_{RM}$	5.4	-	A
Typical stored charge per diode			$Q_{rr}$	88	-	nC
Typical junction capacitance per diode	4.0 V, 1 MHz		$C_J$	21	-	pF

**Notes:**

- (1) Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle  
(2) Pulse test: Pulse width  $\leq 40\text{ ms}$

<b>THERMAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)					
PARAMETER	SYMBOL	UH4PBC	UH4PCC	UH4PDC	UNIT
Typical thermal resistance per diode	$R_{\theta JA}$ <sup>(1)</sup>		60		$^\circ\text{C}/\text{W}$
	$R_{\theta JL}$		4		

**Note:**

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

<b>ORDERING INFORMATION</b> (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
UH4PDC-E3/86A	0.10	86A	1500	7" diameter plastic tape and reel
UH4PDC-E3/87A	0.10	87A	6500	13" diameter plastic tape and reel
UH4PDCHE3/86A <sup>(1)</sup>	0.10	86A	1500	7" diameter plastic tape and reel
UH4PDCHE3/87A <sup>(1)</sup>	0.10	87A	6500	13" diameter plastic tape and reel
UH4PDC-M3/86A	0.10	86A	1500	7" diameter plastic tape and reel
UH4PDC-M3/87A	0.10	87A	6500	13" diameter plastic tape and reel
UH4PDCHM3/86A <sup>(1)</sup>	0.10	86A	1500	7" diameter plastic tape and reel
UH4PDCHM3/87A <sup>(1)</sup>	0.10	87A	6500	13" diameter plastic tape and reel

**Note:**

- (1) High reliability/automotive grade (AEC-Q101 qualified)



**RATINGS AND CHARACTERISTICS CURVES**

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

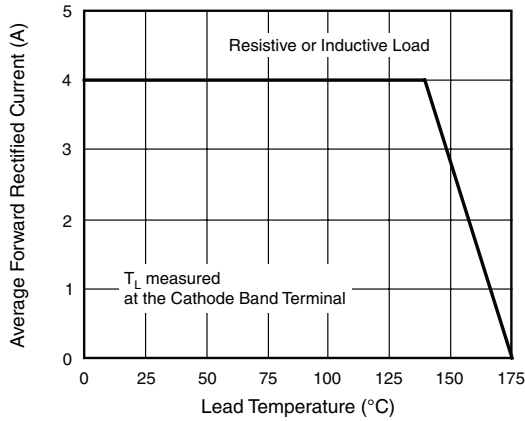


Figure 1. Maximum Forward Current Derating Curve

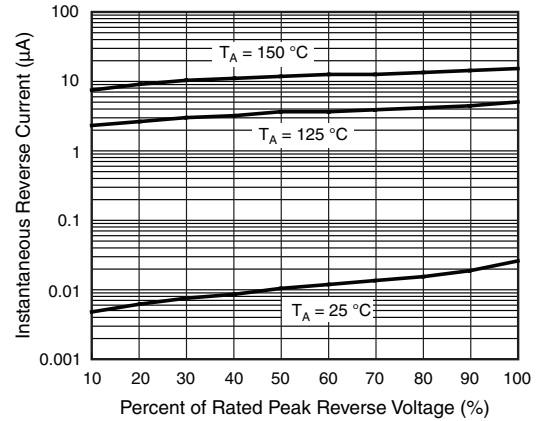


Figure 4. Typical Reverse Leakage Characteristics Per Diode

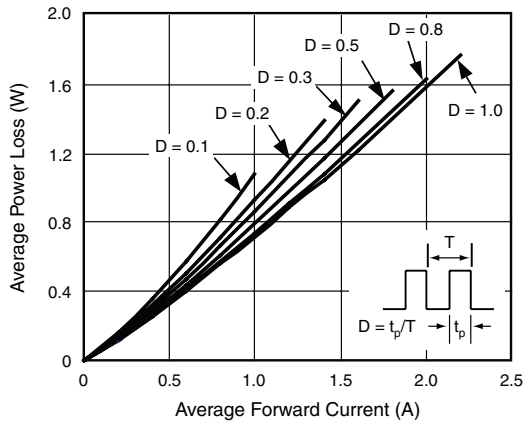


Figure 2. Forward Power Loss Characteristics Per Diode

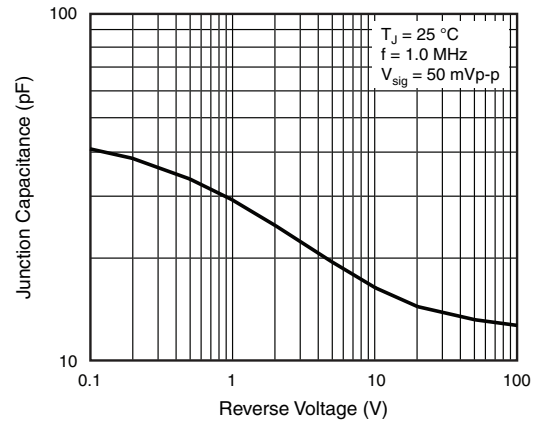


Figure 5. Typical Junction Capacitance Per Diode

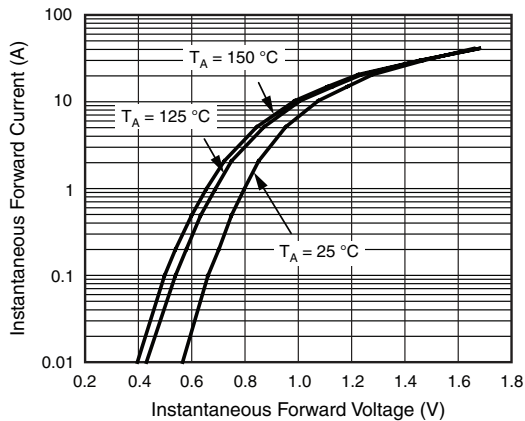


Figure 3. Typical Instantaneous Forward Characteristics Per Diode

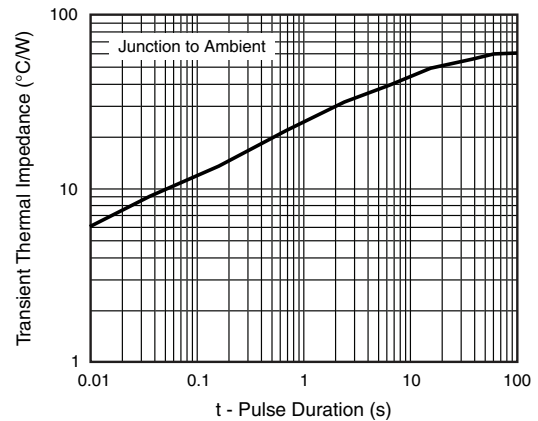
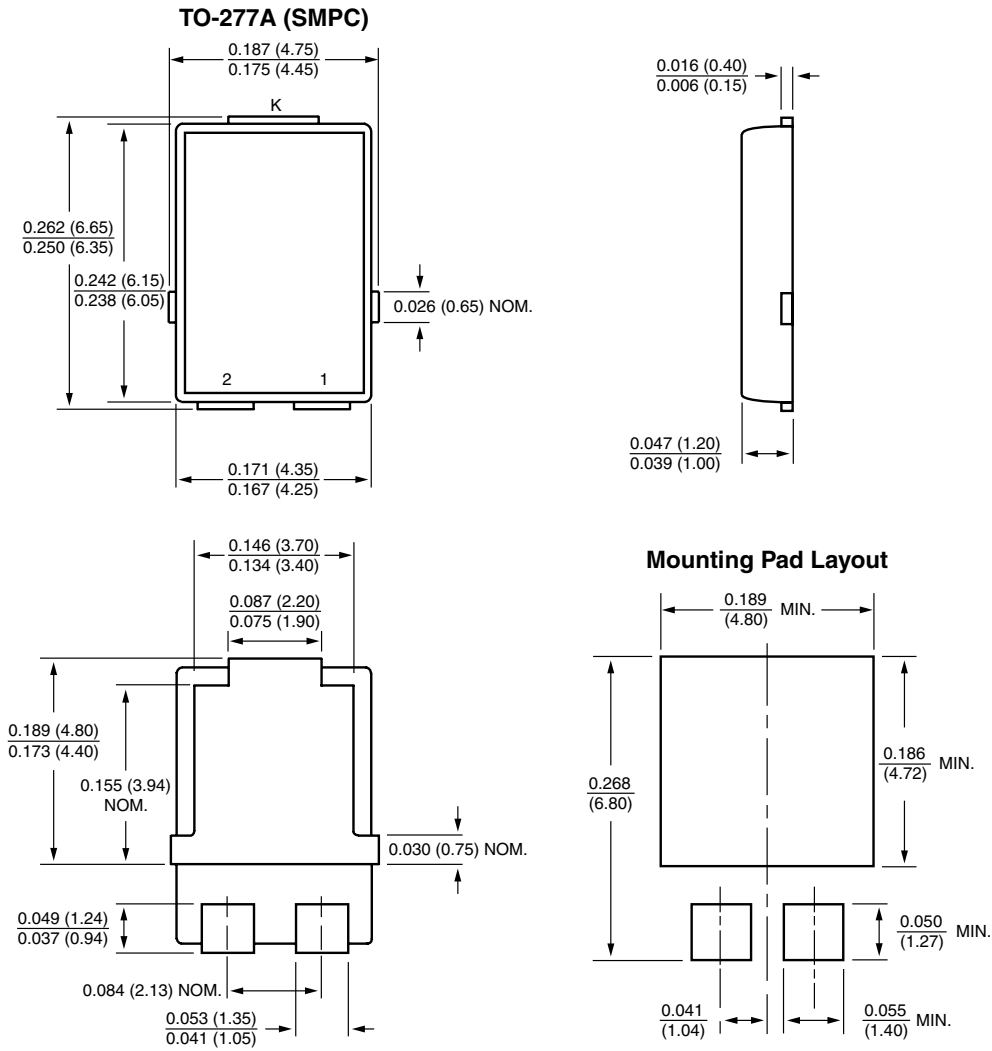


Figure 6. Typical Transient Thermal Impedance Per Diode



## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)



Conform to JEDEC TO-277A



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All product specifications and data are subject to change without notice.

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