

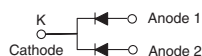


High Current Density Surface Mount Ultrafast Rectifiers

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 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
- Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21 definition

AUTOMOTIVE
GRADE
Available



RoHS
COMPLIANT
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

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 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

TYPICAL APPLICATIONS

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

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

PARAMETER	SYMBOL	UH4PBC	UH4PCC	UH4PCD	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)	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

UH4PBC, UH4PCC, UH4PCD



Vishay General Semiconductor

ELECTRICAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage per diode	$I_F = 1.0\text{ A}$	$T_A = 25\text{ }^\circ\text{C}$	$V_F^{(1)}$	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	$T_A = 25\text{ }^\circ\text{C}$	$I_R^{(2)}$	-	5	μA
		$T_A = 125\text{ }^\circ\text{C}$		6.4	25	mA
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_p/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	4.0 V, 1 MHz		C_J	21	-	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 specified)					
PARAMETER	SYMBOL	UH4PBC	UH4PCC	UH4PCD	UNIT
Typical thermal resistance per diode	$R_{\theta JA}^{(1)}$	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
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 ⁽¹⁾	0.10	86A	1500	7" diameter plastic tape and reel
UH4PDCHM3/87A ⁽¹⁾	0.10	87A	6500	13" diameter plastic tape and reel

Note

- (1) Automotive grade



RATINGS AND CHARACTERISTICS CURVES

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

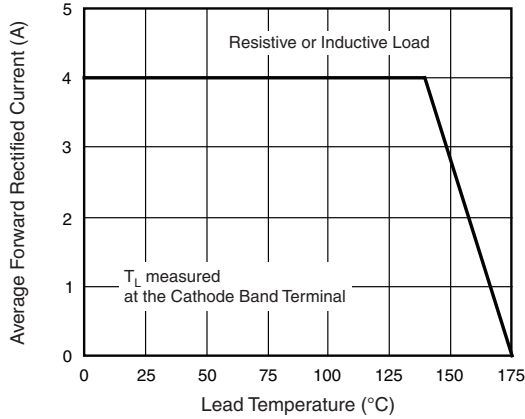


Fig. 1 - Maximum Forward Current Derating Curve

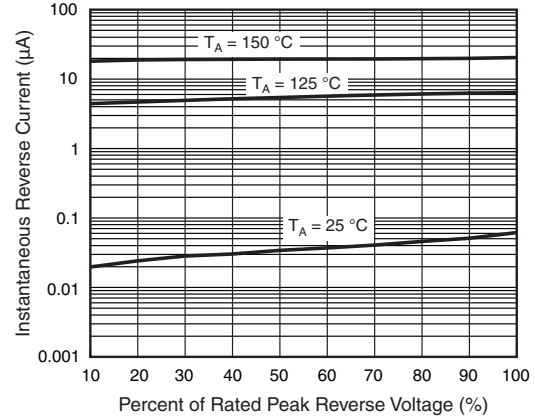


Fig. 4 - Typical Reverse Leakage Characteristics Per Diode

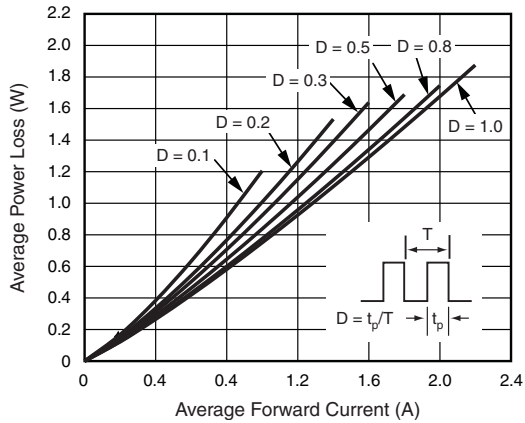


Fig. 2 - Forward Power Loss Characteristics Per Diode

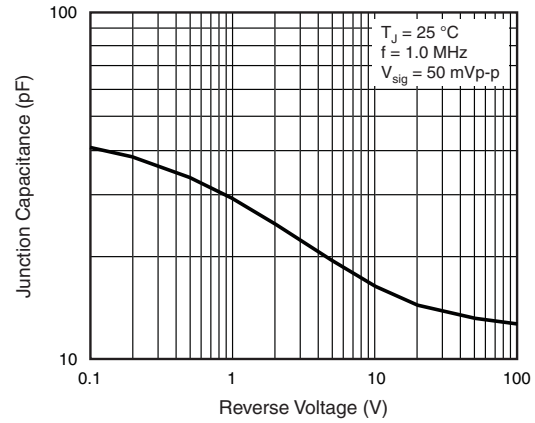


Fig. 5 - Typical Junction Capacitance Per Diode

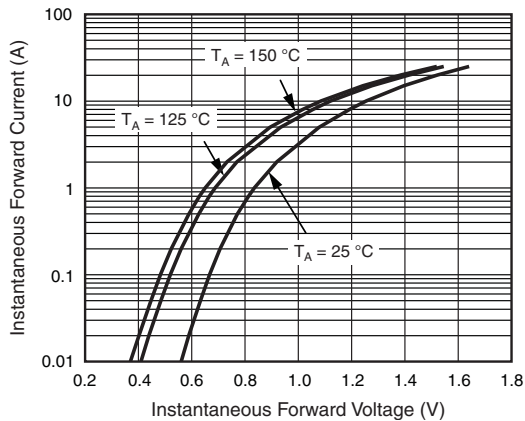


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

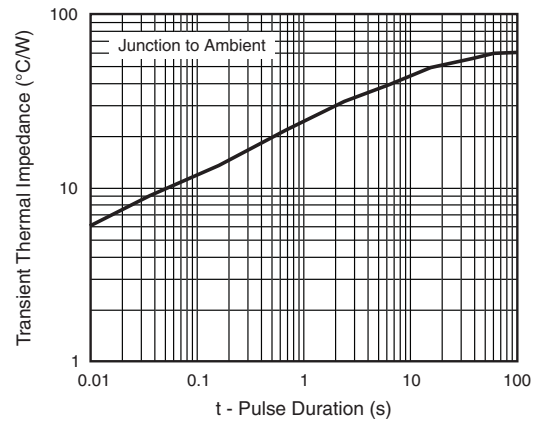


Fig. 6 - Typical Transient Thermal Impedance Per Diode

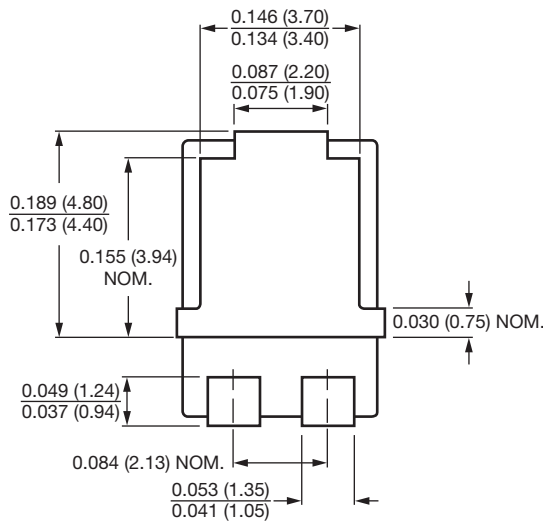
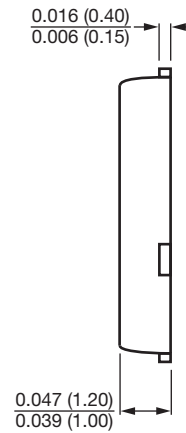
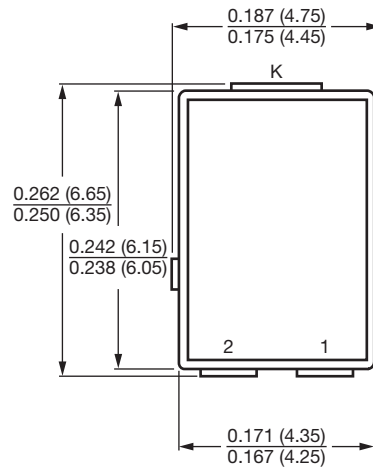
UH4PBC, UH4PCC, UH4PCD

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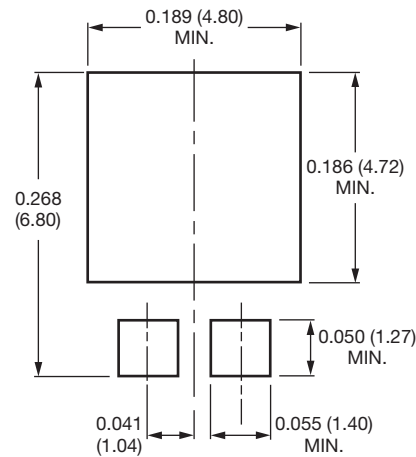


PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

TO-277A (SMPC)



Mounting Pad Layout



Conform to JEDEC TO-277A



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