Surface Mount Ultrafast Rectifier



DO-214AC (SMA)

FEATURES

- Low profile package
- Ideal for automated placement
- Oxide planar chip junction
- Ultrafast recovery times for high frequency
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- AEC-Q101 qualified
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912

RoHS COMPLIANT

TYPICAL APPLICATIONS

For use in secondary rectification and freewheeling for ultrafast switching speeds AC/AC and DC/DC converters in high temperature conditions for both consumer and automotive applications.

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	1.0 A
V_{RRM}	100 V, 150 V, 200 V
I_{FSM}	30 A
t_{rr}	25 ns
V_F at I_F = 1.0 A	0.76 V
T_J max.	175 °C

MECHANICAL DATA

Case: DO-214AC (SMA)
Molding compound meets UL 94 V-0 flammability rating
Base P/N-E3 - RoHS-compliant, commercial grade
Base P/NHE3 - RoHS-compliant, AEC-Q101 qualified
Base P/NHE3_X - 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
E3 suffix meets JESD 201 class 1A whisker test, HE3 suffix meets JESD 201 class 2 whisker test

Polarity: Color band denotes cathode end

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

PARAMETER	SYMBOL	UH1B	UH1C	UH1D	UNIT
Device marking code		HB	HC	HD	
Maximum repetitive peak reverse voltage	V_{RRM}	100	150	200	V
Maximum average forward rectified current (fig. 1)	$I_{F(AV)}$	1.0			A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I_{FSM}	30			A
Operating junction and storage temperature range	T_J, T_{STG}	- 55 to + 175			°C

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ELECTRICAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)						
PARAMETER	**TEST CONDITIONS**		**SYMBOL**	**TYP.**	**MAX.**	**UNIT**
Instantaneous forward voltage	I_F = 0.6 A	T_A = 25 °C	V_F (1)	0.90	-	V
	I_F = 1.0 A			0.96	1.05	
	I_F = 0.6 A	T_A = 125 °C		0.70	-	
	I_F = 1.0 A			0.76	0.90	
Reverse current	Rated V_R	T_A = 25 °C	I_R (2)	-	1.0	µA
		T_A = 125 °C		7.5	25	
Maximum reverse recovery time	I_F = 0.5 A, I_R = 1.0 A, I_{rr} = 0.25 A	T_A = 25 °C	t_{rr}	13	25	ns
Typical reverse recovery time	I_F = 1.0 A, dI/dt = 50 A/µs, V_R = 30 V, I_{rr} = 0.1 I_{RM}			21	30	
Typical softness factor (t_b/t_a)	I_F = 1.0 A, dI/dt = 200 A/µs, V_R = 200 V	T_A = 125 °C	S	0.8	-	-
Typical reverse recovery current			I_{RM}	2.7	4.0	A
Typical stored charge			Q_{rr}	35	-	nC
Typical junction capacitance	4.0 V, 1 MHz		C_J	17	-	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**	**UH1B**	**UH1C**	**UH1D**	**UNIT**
Typical thermal resistance	$R_{\theta JA}$ (1)	120			°C/W
	$R_{\theta JM}$ (1)	20			

Note
(1) Free air, mounted on recommended copper pad area. Thermal resistance $R_{\theta JA}$ - junction to ambient, $R_{\theta JM}$ - junction to mount

ORDERING INFORMATION (Example)				
PREFERRED P/N	**UNIT WEIGHT (g)**	**PREFERRED PACKAGE CODE**	**BASE QUANTITY**	**DELIVERY MODE**
UH1D-E3/61T	0.064	61T	1800	7" diameter plastic tape and reel
UH1D-E3/5AT	0.064	5AT	7500	13" diameter plastic tape and reel
UH1DHE3/61T (1)	0.064	61T	1800	7" diameter plastic tape and reel
UH1DHE3/5AT (1)	0.064	5AT	7500	13" diameter plastic tape and reel
UH1DHE3_A/H (1)	0.064	H	1800	7" diameter plastic tape and reel
UH1DHE3_A/I (1)	0.064	I	7500	13" diameter plastic tape and reel

Note
(1) AEC-Q101 qualified

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RATINGS AND CHARACTERISTICS CURVES

(T_A = 25 °C unless otherwise noted)

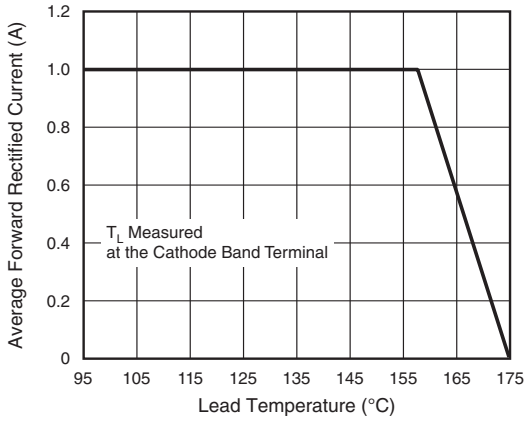


Fig. 1 - Maximum Forward Current Derating Curve

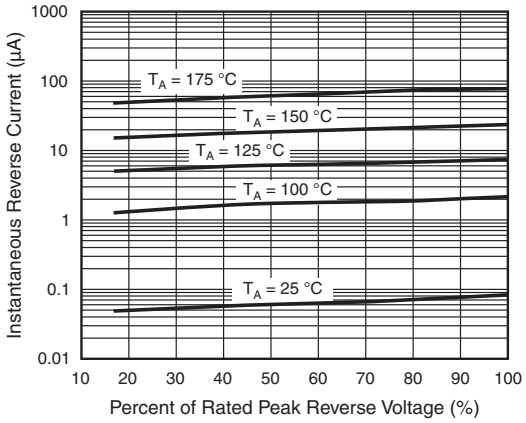


Fig. 4 - Typical Reverse Characteristics

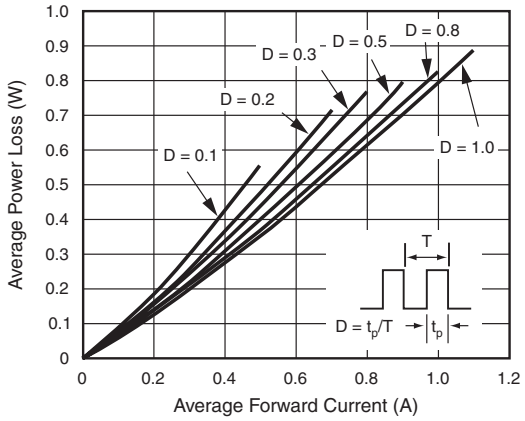


Fig. 2 - Forward Power Loss Characteristics

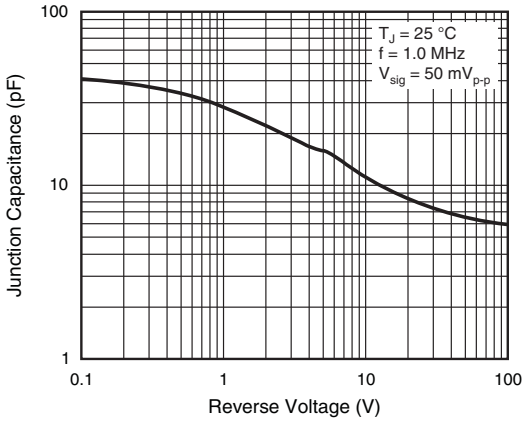


Fig. 5 - Typical Junction Capacitance

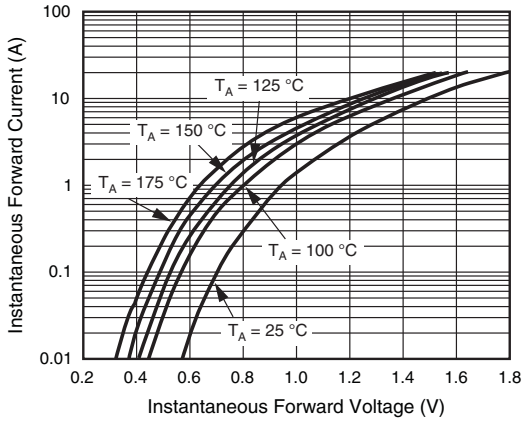


Fig. 3 - Typical Instantaneous Forward Characteristics

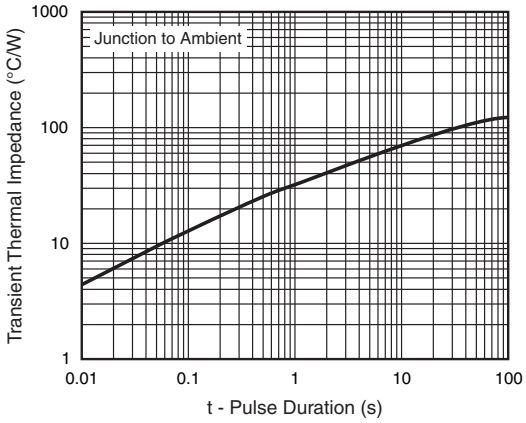


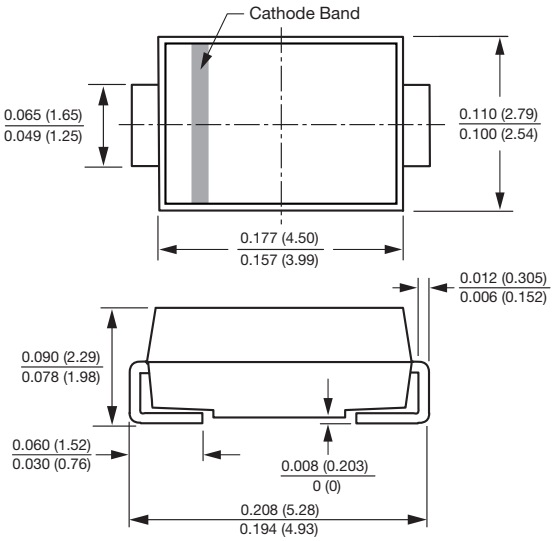
Fig. 6 - Typical Transient Thermal Impedance

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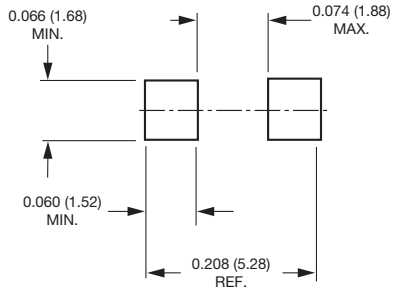
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PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-214AC (SMA)



Mounting Pad Layout



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