



Surface Mount Ultrafast Rectifier



DO-214AB (SMC)

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
- Solder dip 260 °C, 40 s
- Compliant to RoHS directive 2002/95/EC and in accordance to WEEE 2002/96/EC


RoHS
COMPLIANT

TYPICAL APPLICATIONS

For use in secondary rectification and freewheeling for ultrafast switching speeds of ac-to-ac and dc-to-dc converters in high temperature conditions for both consumer and automotive applications.

MECHANICAL DATA

Case: DO-214AB (SMC)

Epoxy meets UL 94 V-0 flammability rating

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

E3 suffix for consumer grade, meets JESD 201 class 1A whisker test, HE3 suffix for high reliability grade (AEC-Q101 qualified), meets JESD 201 class 2 whisker test

Polarity: Color band denotes cathode end

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	3.0 A
V_{RRM}	100 V, 150 V, 200 V
I_{FSM}	80 A
t_{rr}	25 ns
V_F at $I_F = 3.0$ A	0.75 V
T_J max.	175 °C

MAXIMUM RATINGS ($T_A = 25$ °C unless otherwise noted)					
PARAMETER	SYMBOL	UH3B	UH3C	UH3D	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)	$I_{F(AV)}$	2.5 ⁽¹⁾ 3.0 ⁽²⁾			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

Notes:

(1) Free air, mounted on recommended copper pad area

(2) Units mounted on P.C.B. with 0.31" x 0.31" (8.0 mm x 8.0 mm) copper pad area

UH3B, UH3C & UH3D

Vishay General Semiconductor



ELECTRICAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage ⁽¹⁾	I _F = 1.5 A I _F = 3.0 A	T _A = 25 °C	V _F	0.85 0.95	- 1.05	V
	I _F = 1.5 A I _F = 3.0 A	T _A = 125 °C		0.65 0.75	- 0.90	
Reverse current ⁽²⁾	Rated V _R	T _A = 25 °C T _A = 125 °C	I _R	- 15	5 100	μA
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}	14	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}			23	40	
Typical softness factor (t _b /t _a)	I _F = 3.0 A, dI/dt = 200 A/μs, V _R = 200 V	T _A = 125 °C	S	0.2	-	
Typical reverse recovery current			I _{RM}	5.0	7.0	A
Typical stored charge			Q _{rr}	60	-	nC
Typical junction capacitance	4.0 V, 1 MHz		C _J	42	-	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	UH3B	UH3C	UH3D	UNIT
Typical thermal resistance ⁽¹⁾	R _{θJA}		95		°C/W
	R _{θJM}		12		

Note:(1) Free air, mounted on recommended copper pad area. Thermal resistance R_{θJA} - junction to ambient, R_{θJM} - junction to mount

ORDERING INFORMATION (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
UH3D-E3/57T	0.236	57T	850	7" diameter plastic tape and reel
UH3D-E3/9AT	0.236	9AT	3500	13" diameter plastic tape and reel
UH3DHE3/57T ⁽¹⁾	0.236	57T	850	7" diameter plastic tape and reel
UH3DHE3/9AT ⁽¹⁾	0.236	9AT	3500	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)

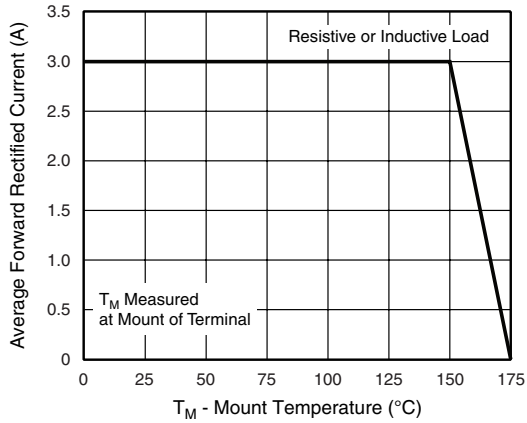


Figure 1. Maximum Forward Current Derating Curve

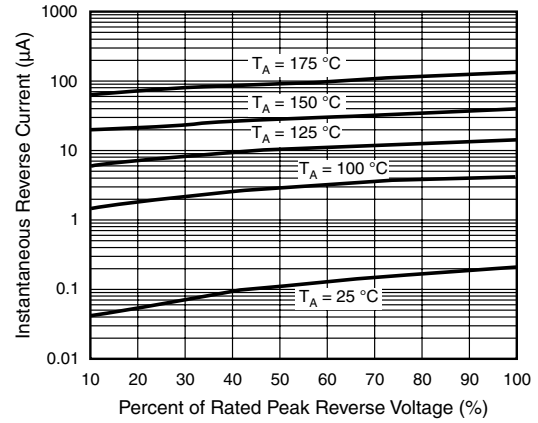


Figure 4. Typical Reverse Characteristics

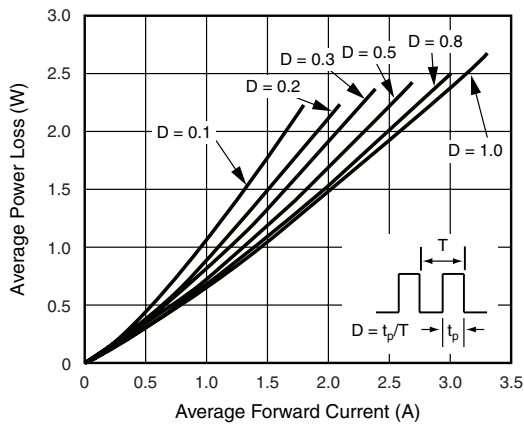


Figure 2. Forward Power Loss Characteristics

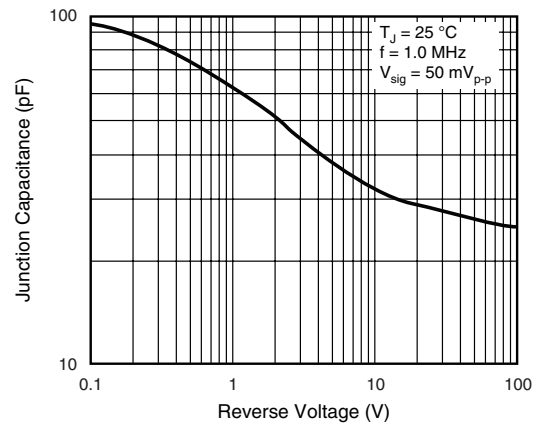


Figure 5. Typical Junction Capacitance

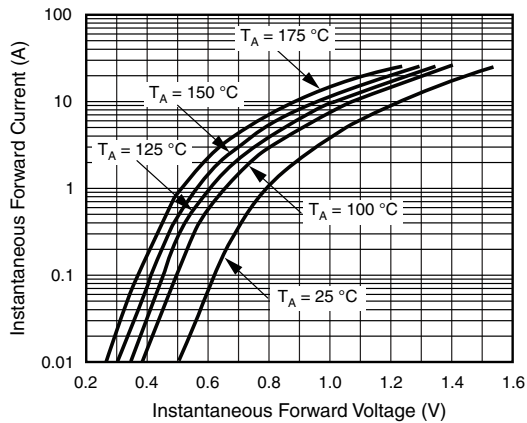


Figure 3. Typical Instantaneous Forward Characteristics

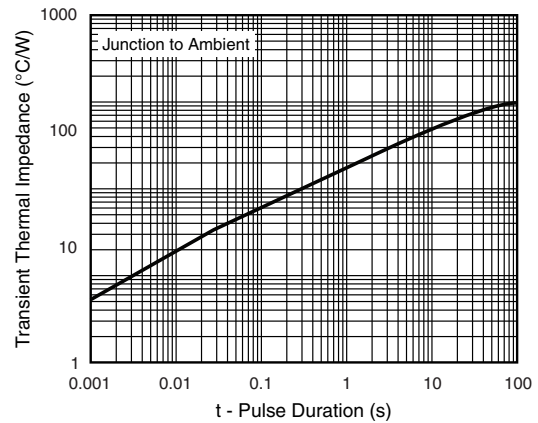


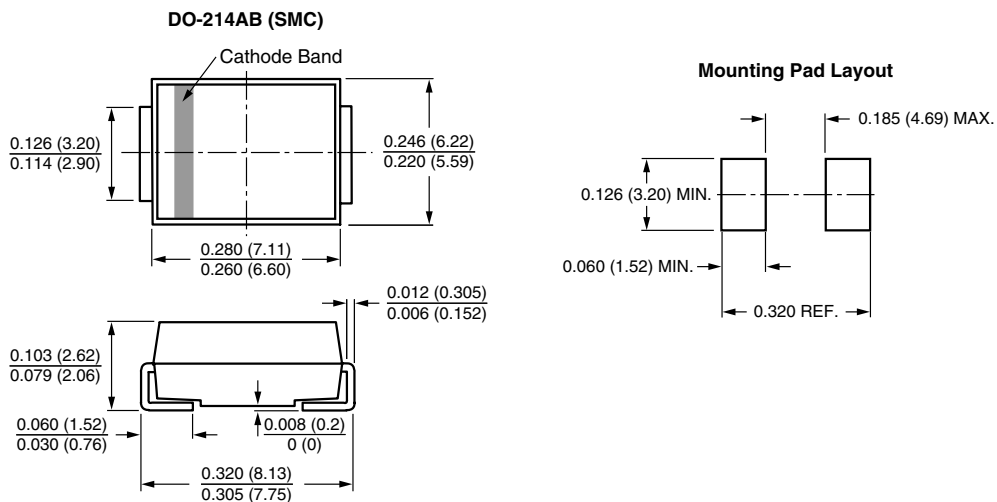
Figure 6. Typical Transient Thermal Impedance

UH3B, UH3C & UH3D

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PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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