Surface-Mount Ultrafast Rectifier

SMB (DO-214AA)

Cathode ○—◀—○ Anode

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 available
  - Automotive ordering code: base P/NHE3
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

AUTOMOTIVE GRADE

RoHS COMPLIANT

LINKS TO ADDITIONAL RESOURCES

3D Models

PRIMARY CHARACTERISTICS

$I_{F(AV)}$	2.0 A
V_{RRM}	100 V, 150 V
I_{FSM}	50 A
t_{rr}	25 ns
V_F at I_F = 2.0 A	0.69 V
T_J max.	175 °C
Package	SMB (DO-214AA)
Circuit configuration	Single

TYPICAL APPLICATIONS

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

MECHANICAL DATA

Case: SMB (DO-214AA)
Molding compound meets UL 94 V-0 flammability rating
Base P/NHE3_X - RoHS-compliant, 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
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	UH2B	UH2C	UNIT
Device marking code		HB	HC	
Maximum repetitive peak reverse voltage	V_{RRM}	100	150	V
Maximum average forward rectified current (fig. 1) (1)	$I_{F(AV)}$	2.0		A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I_{FSM}	50		A
Operating junction and storage temperature range	T_J, T_{STG}	-55 to +175		°C

Note

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

ELECTRICAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage	I_F = 1.0 A	T_A = 25 °C	V_F (1)	0.79	-	V
	I_F = 2.0 A			0.87	1.05	
	I_F = 1.0 A	T_A = 125 °C		0.62	-	
	I_F = 2.0 A			0.69	0.90	
Reverse current	Rated V_R	T_A = 25 °C	I_R (2)	-	2.0	µA
		T_A = 125 °C		10	50	
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}	15	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}			20	35	
Typical softness factor (t_b/t_a)	I_F = 2.0 A, dI/dt = 200 A/µs, V_R = 200 V	T_A = 125 °C	S	0.3	-	
Typical reverse recovery current			I_{RM}	5.0	6.0	A
Typical stored charge			Q_{rr}	55	-	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	UH2B	UH2C	UNIT
Typical thermal resistance	$R_{\theta JA}$ (1)	105		°C/W
	$R_{\theta JM}$ (1)	15		

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
UH2CHE3_A/H (1)	0.100	H	750	7" diameter plastic tape and reel
UH2CHE3_A/I (1)	0.100	I	3200	13" diameter plastic tape and reel

Note

(1) AEC-Q101 qualified

RATINGS AND CHARACTERISTICS CURVES (T_A = 25 °C unless otherwise noted)

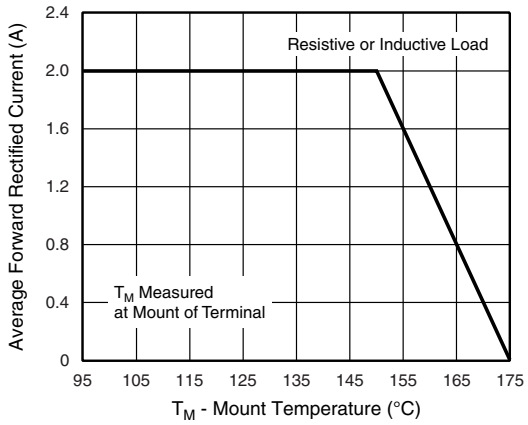


Fig. 1 - Maximum Forward Current Derating Curve

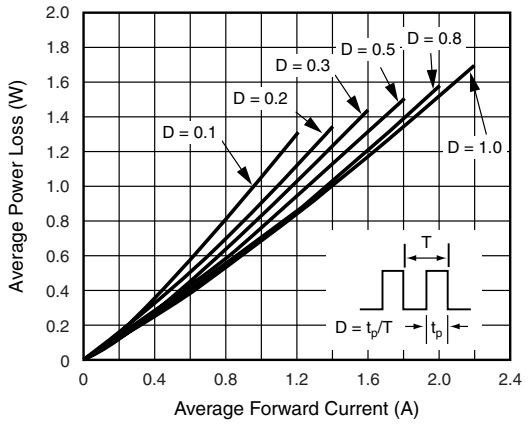


Fig. 2 - Forward Power Loss Characteristics

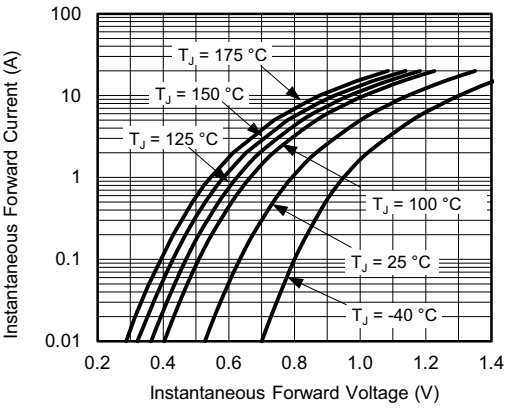


Fig. 3 - Typical Instantaneous Forward Characteristics

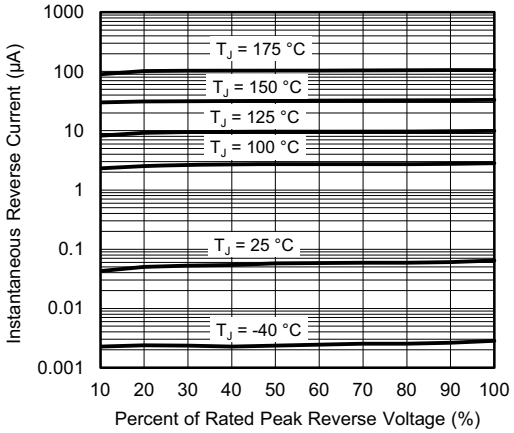


Fig. 4 - Typical Reverse Characteristics

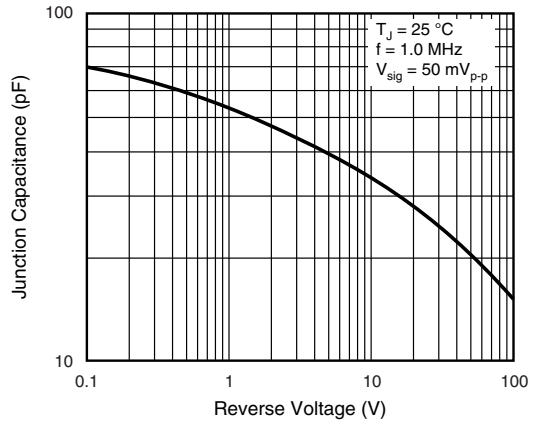


Fig. 5 - Typical Junction Capacitance

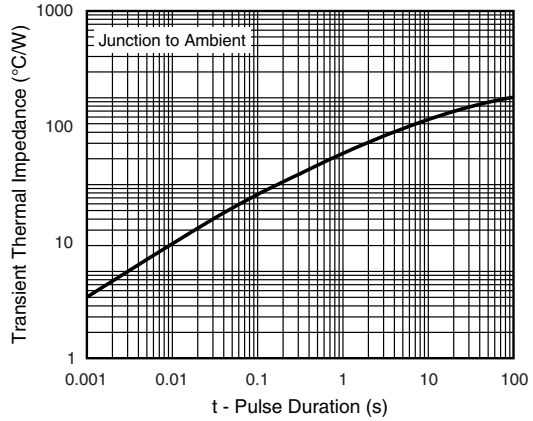
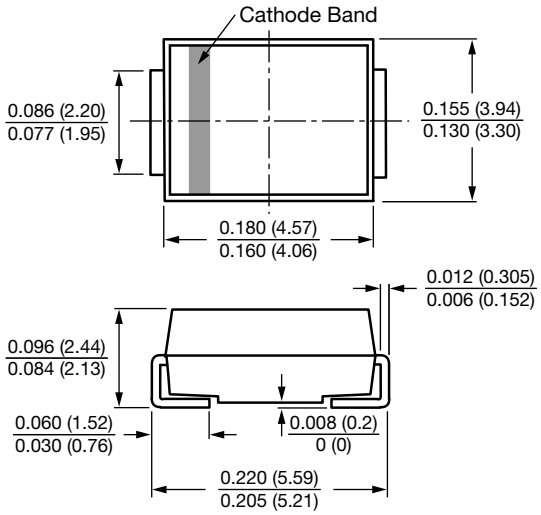


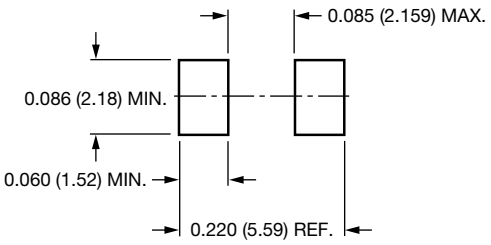
Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SMB (DO-214AA)



Mounting Pad Layout



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