

## ESH2B, ESH2C & ESH2D

Vishay General Semiconductor

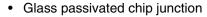
## **Surface Mount Ultrafast Plastic Rectifier**



DO-214AA (SMB)

PRIMARY CHARACTERISTICS				
I <sub>F(AV)</sub>	2 A			
V <sub>RRM</sub> 100 V, 150 V, 200				
t <sub>rr</sub>	25 ns			
$V_{F}$	0.93 V			
T <sub>J</sub> max.	175 °C			

#### **FEATURES**





- · Ideal for automated placement
- · Ultrafast recovery times for high efficiency
- Low forward voltage, low power loss



RohS

- High forward surge capability
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- Solder dip 260 °C, 40 s
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC

### **TYPICAL APPLICATIONS**

For use in high frequency rectification and freewheeling application in switching mode converter and inverter for both consumer and automotive.

#### **MECHANICAL DATA**

Case: DO-214AA (SMB)

Epoxy meets UL 94V-0 flammability rating

Terminals: Matte tin plated leads, solderable per

J-STD-002 and JESD22-B102

E3 suffix for commercial 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

PARAMETER	SYMBOL	ESH2B	ESH2C	ESH2D	UNIT
Device marking code		EHB	EHC	EHD	
Maximum repetitive peak reverse voltage	V <sub>RRM</sub>	100	150	200	V
Maximum RMS voltage	V <sub>RMS</sub>	70	105	140	٧
Maximum DC blocking voltage	$V_{DC}$	100	150	200	V
Maximum average forward rectified current (Fig. 1)	I <sub>F(AV)</sub>	2.0			Α
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I <sub>FSM</sub>	60			А
Operating junction and storage temperature range	T <sub>J</sub> , T <sub>STG</sub>	- 55 to + 175			°C

# ESH2B, ESH2C & ESH2D

# Vishay General Semiconductor



<b>ELECTRICAL CHARACTERISTICS</b> (T <sub>A</sub> = 25 °C unless otherwise noted)						
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT		
Maximum instantaneous forward voltage (1)	I <sub>F</sub> = 2 A		$V_{F}$	0.93	V	
Maximum DC reverse current at rated DC blocking voltage	T <sub>A</sub> = 25 °C T <sub>A</sub> = 125 °C	I <sub>R</sub>	2.0 50	μΑ		
Maximum reverse recovery time	I <sub>F</sub> = 0.5 A, I <sub>R</sub> = 1 A, I <sub>rr</sub> = 0.25 A		t <sub>rr</sub>	25	ns	
Typical reverse recovery time	$I_F = 2 \text{ A}, V_R = 30 \text{ V},$ $dI/dt = 50 \text{ A/}\mu\text{s}, I_{rr} = 10 \% I_{RM}$	T <sub>J</sub> = 25 °C T <sub>J</sub> = 100 °C	t <sub>rr</sub>	35 55	ns	
Typical stored charge	$I_F = 2 \text{ A}, V_R = 30 \text{ V},$ $T_J = 25 ^{\circ}\text{C}$ $I_{J} = 100 ^{\circ}\text{C}$ $T_{J} = 100 ^{\circ}\text{C}$		Q <sub>rr</sub>	20 35	nC	
Typical junction capacitance	4.0 V, 1 MHz		CJ	30	pF	

#### Note:

(1) Pulse test: 300 µs pulse width, 1 % duty cycle

THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted)					
PARAMETER	SYMBOL	ESH2B	ESH2C	ESH2D	UNIT
Typical thermal resistance (1)	$R_{ hetaJA} \ R_{ hetaJL}$	65 20		°C/W	

#### Note:

(1) Units mounted on P.C.B. with 8.0 x 8.0 mm land areas.

ORDERING INFORMATION (Example)						
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE		
ESH2D-E3/52T	0.096	52T	750	7" diameter plastic tape and reel		
ESH2D-E3/5BT	0.096	5BT	3200	13" diameter plastic tape and reel		
ESH2DHE3/52T (1)	0.096	52T	750	7" diameter plastic tape and reel		
ESH2DHE3/5BT (1)	0.096	5BT	3200	13" diameter plastic tape and reel		

#### Note:

### **RATINGS AND CHARACTERISTICS CURVES**

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

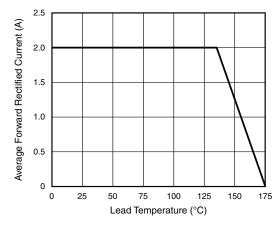


Figure 1. Maximum Forward Current Derating Curve

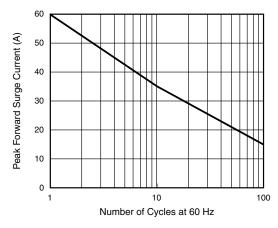


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current

<sup>(1)</sup> Automotive grade AEC Q101 qualified





# Vishay General Semiconductor

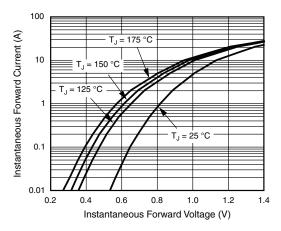


Figure 3. Typical Instantaneous Forward Characteristics

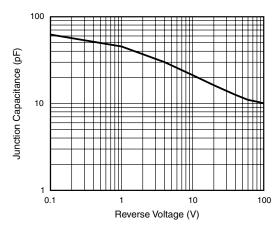


Figure 5. Typical Junction Capacitance

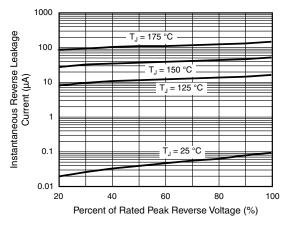


Figure 4. Typical Reverse Leakage Characteristics

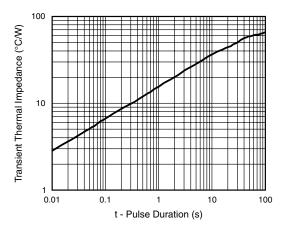
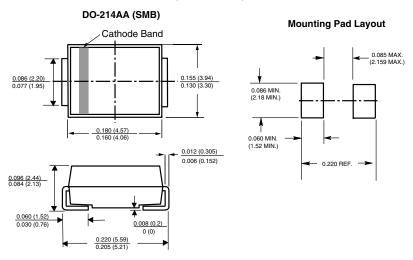


Figure 6. Typical Transient Thermal Impedance

### **PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)





Vishay

## **Disclaimer**

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

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained herein or in any other disclosure relating to any product.

Vishay disclaims any and all liability arising out of the use or application of any product described herein or of any information provided herein to the maximum extent permitted by law. The product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein, which apply to these products.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications unless otherwise expressly indicated. Customers using or selling Vishay products not expressly indicated for use in such applications do so entirely at their own risk and agree to fully indemnify Vishay for any damages arising or resulting from such use or sale. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

Product names and markings noted herein may be trademarks of their respective owners.

Document Number: 91000 Revision: 18-Jul-08

www.vishay.com