

## Vishay General Semiconductor

## **Surface Mount Ultrafast Plastic Rectifier**

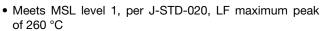


**SMB (DO-214AA)** 

PRIMARY CHARACTERISTICS					
I <sub>F(AV)</sub>	2.0 A				
V <sub>RRM</sub>	300 V, 400 V				
I <sub>FSM</sub>	50 A				
t <sub>rr</sub>	35 ns				
V <sub>F</sub> at I <sub>F</sub>	1.1 V				
T <sub>J</sub> max.	150 °C				
Package	DO-214AA (SMB)				
Circuit configuration	Single				

#### **FEATURES**

- Glass passivated pellet chip junction
- · Ideal for automated placement
- · Ultrafast reverse recovery time
- · Low switching losses, high efficiency
- High forward surge capability



- AEC-Q101 qualified available
  - Automotive ordering code: base P/NHE3
- Material categorization: for definitions of compliance please see <a href="https://www.vishav.com/doc?99912"><u>www.vishav.com/doc?99912</u></a>

### TYPICAL APPLICATIONS

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

#### **MECHANICAL DATA**

Case: DO-214AA (SMB)

Molding compound meets UL 94 V-0 flammability rating Base P/N-E3 - RoHS-compliant, commercial grade

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

E3 suffix meets JESD 201 class 2 whisker test, HE3 suffix meets JESD 201 class 2 whisker test

Polarity: color band denotes cathode end

<b>MAXIMUM RATINGS</b> (T <sub>A</sub> = 25 °C unless otherwise noted)					
PARAMETER	SYMBOL	ES2F	ES2G	UNIT	
Device marking code		EF	EG		
Maximum repetitive peak reverse voltage	V <sub>RRM</sub>	300	400	V	
Working peak reverse voltage	e voltage V <sub>RWM</sub> 225		300	V	
Maximum RMS voltage	V <sub>RMS</sub>	210	280	V	
Maximum average forward rectified current at T <sub>L</sub> = 110 °C	I <sub>F(AV)</sub>	2.0		А	
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I <sub>FSM</sub>	50		А	
Operating junction and storage temperature range	T <sub>J</sub> , T <sub>STG</sub>	-55 to	°C		



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<b>ELECTRICAL CHARACTERISTICS</b> (T <sub>A</sub> = 25 °C unless otherwise noted)								
PARAMETER	TEST CONDITIONS		SYMBOL	ES2F	ES2G	UNIT		
Maximum instantaneous forward voltage	2.0 A		V <sub>F</sub> <sup>(1)</sup>	1.1		V		
Maximum reverse surrent at V		T <sub>A</sub> = 25 °C		I <sub>R</sub> 10 200		μΑ		
Maximum reverse current at V <sub>RRM</sub>		T <sub>A</sub> = 100 °C	I IR					
Maximum reverse recovery time	I <sub>F</sub> = 0.5 A, I <sub>R</sub> = 1.0 A, I <sub>rr</sub> = 0.25 A		t <sub>rr</sub>	35		ns		
Maximum reverse recovery time	$I_F = 1.0 \text{ A}, \text{ dI/dt} = 100 \text{ A/}\mu\text{s}, \\ V_R = 30 \text{ V}, I_{rr} = 0.1 I_{RM}$		t <sub>rr</sub>	50		ns		
Maximum reverse recovery current	$I_F = 1.0 \text{ A}, \text{ dI/dt} = 100 \text{ A/}\mu\text{s}, \\ V_R = 30 \text{ V}, I_{rr} = 0.1 I_{RM}$		I <sub>RM</sub>	3.0		Α		
Maximum stored charge	$I_F = 1.0 \text{ A}, \text{ dI/dt} = 100 \text{ A/}\mu\text{s}, \\ V_R = 30 \text{ V}, I_{rr} = 0.1 I_{RM}$				Q <sub>rr</sub>	5	0	nC
Typical junction capacitance	4.0 V, 1 MHz		CJ	1	5	pF		

#### Note

 $<sup>^{(1)}</sup>$  Pulse test: 300  $\mu s$  pulse width, 1 % duty cycle

THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted)					
PARAMETER	SYMBOL	ES2F	ES2G	UNIT	
Maximum thermal resistance	R <sub>θJA</sub> <sup>(1)</sup>	75		°C/W	
waximum memaresistance	R <sub>0</sub> JL (1)	25			

#### Note

<sup>(1)</sup> Units mounted on PCB 5.0 mm x 5.0 mm (0.013 mm thick) land areas

ORDERING INFORMATION (Example)					
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE	
ES2G-E3/52T	0.096	52T	750	7" diameter plastic tape and reel	
ES2G-E3/5BT	0.096	5BT	3200	13" diameter plastic tape and reel	
ES2GHE3_A/H (1)	0.096	Н	750	7" diameter plastic tape and reel	
ES2GHE3_A/I (1)	0.096	I	3200	13" diameter plastic tape and reel	

## Note

<sup>(1)</sup> AEC-Q101 qualified



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### RATINGS AND CHARACTERISTICS CURVES (T<sub>A</sub> = 25 °C unless otherwise noted)

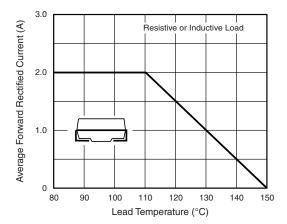


Fig. 1 - Maximum Forward Current Derating Curve

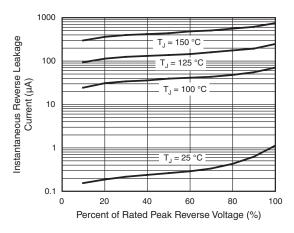


Fig. 4 - Typical Reverse Leakage Characteristics

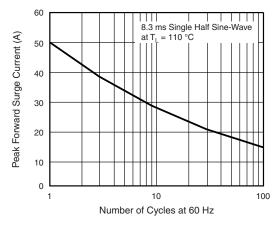


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

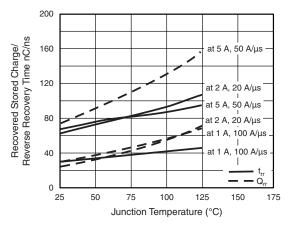


Fig. 5 - Reverse Switching Characteristics

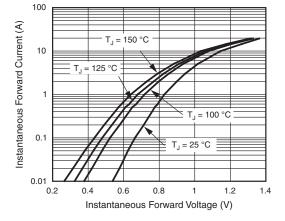


Fig. 3 - Typical Instantaneous Forward Characteristics

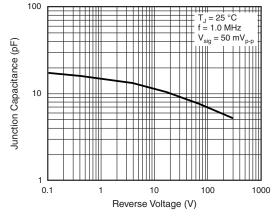


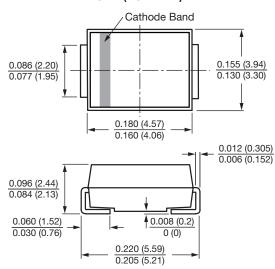
Fig. 6 - Typical Junction Capacitance



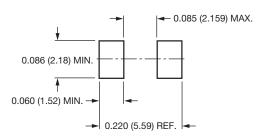
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### **PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)

### SMB (DO-214AA)



### **Mounting Pad Layout**





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