AUTOMOTIVE GRADE

COMPLIANT



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## Vishay General Semiconductor

## **Surface-Mount Ultrafast Plastic Rectifier**



**SMB (DO-214AA)** 

Cathode O Anode

#### **LINKS TO ADDITIONAL RESOURCES**



PRIMARY CHARACTERISTICS					
I <sub>F(AV)</sub>	2.0 A				
$V_{RRM}$	400 V, 600 V				
I <sub>FSM</sub>	SM 35 A				
t <sub>rr</sub>	50 ns				
V <sub>F</sub>	1.20 V				
T <sub>J</sub> max.	175 °C				
Package	SMB (DO-214AA)				
Circuit configuration Single					

#### **FEATURES**

- Glass passivated pallet chip junction
- Ideal for automated placement
- · Ultrafast reverse recovery time
- · Low switching losses, high efficiency
- High forward surge capability
- 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 <a href="https://www.vishay.com/doc?99912"><u>www.vishay.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: SMB (DO-214AA)

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	MURS240	MURS260	UNIT	
Device marking codes		M2G	M2J		
Maximum repetitive peak reverse voltage	V <sub>RRM</sub>	400 600		V	
Maximum average forward rectified current at $T_L = 125$ °C (fig. 1)	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>	35		А	
Operating junction and storage temperature range	T <sub>J</sub> , T <sub>STG</sub>	-65 to	°C		



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<b>ELECTRICAL CHARACTERISTICS</b> (T <sub>A</sub> = 25 °C unless otherwise noted)							
PARAMETER	TEST CONDITIONS		SYMBOL	MURS240	MURS260	UNIT	
Maximum instantaneous forward voltage	I <sub>F</sub> = 2.0 A	T <sub>J</sub> = 25 °C	V <sub>F</sub> <sup>(1)</sup>	1.45		V	
		T <sub>J</sub> = 125 °C		1.20			
Maximum instantaneous reverse current	Rated Vs	T <sub>J</sub> = 25 °C	I <sub>R</sub> <sup>(2)</sup>	5.0		μА	
		T <sub>J</sub> = 125 °C		150			
Maximum reverse recovery time	$I_F = 0.5 \text{ A}, I_R = 1.0 \text{ A}, I_{rr} = 0.25 \text{ A}$		t <sub>rr</sub>	50		ns	
Maximum reverse recovery time	$I_F = 1.0 \text{ A}, \text{ dI/dt} = 50 \text{ A/}\mu\text{s}, \\ V_R = 30 \text{ V}, I_{rr} = 10 \% I_{RM}$		t <sub>rr</sub>	75		ns	
Maximum forward recovery time	$I_F = 1.0$ A, $dI/dt = 100$ A/ $\mu$ s, recovery to 1.0 V		t <sub>fr</sub>	50		ns	

#### Notes

 $^{(1)}~$  Pulse test:  $t_p$  = 300  $\mu s,~duty~cycle \leq 2~\%$ 

(2) Pulse test: Pulse width ≤ 40 ms

THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted)				
PARAMETER	SYMBOL	MURS240	MURS260	UNIT
Typical thermal resistance junction to lead	$R_{\theta JL}$	15		°C/W

#### Note

 $^{(1)}$  Units mounted on PCB with 30 mm x 30 mm copper pad areas

ORDERING INFORMATION (Example)					
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE	
MURS240-E3/52T	0.093	52T	750	7" diameter plastic tape and reel	
MURS240-E3/5BT	0.093	5BT	3200	13" diameter plastic tape and reel	
MURS240HE3_A/H (1)	0.093	Н	750	7" diameter plastic tape and reel	
MURS240HE3_A/I (1)	0.093	I	3200	13" diameter plastic tape and reel	

#### Note

(1) AEC-Q101 qualified

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

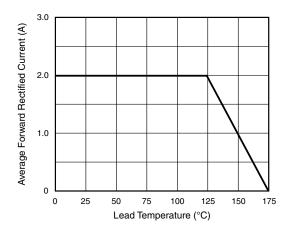


Fig. 1 - Forward Current Derating Curve

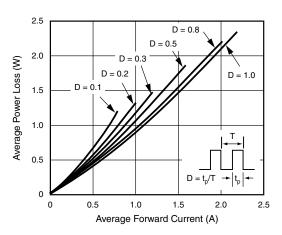


Fig. 2 - Forward Power Loss Characteristics

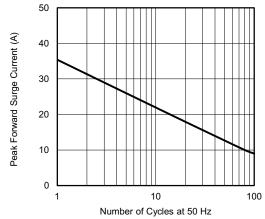


Fig. 3 - Maximum Non-Repetitive Peak Forward Surge Current

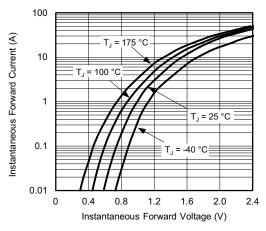


Fig. 4 - Typical Instantaneous Forward Characteristics

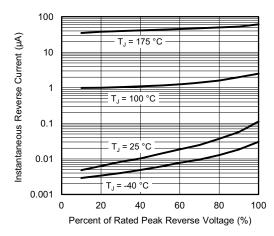


Fig. 5 - Typical Reverse Leakage Characteristics

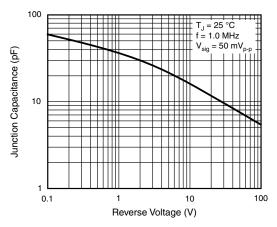


Fig. 6 - Typical Junction Capacitance

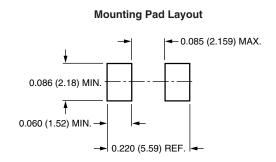


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### **PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)

## SMB (DO-214AA) Cathode Band 0.086 (2.20) 0.077 (1.95) 0.155 (3.94) 0.130 (3.30) 0.180 (4.57) 0.160 (4.06) 0.012 (0.305) 0.006 (0.152) 0.096 (2.44) 0.084 (2.13) 0.060 (1.52) 0.008 (0.2) 0.030 (0.76) 0 (0) 0.220 (5.59)

0.205 (5.21)





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