

## Vishay General Semiconductor

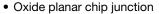
# **Surface Mount Ultrafast Plastic Rectifier**



**DO-214AA (SMB)** 

PRIMARY CHARACTERISTICS					
I <sub>F(AV)</sub>	2.0 A				
V <sub>RRM</sub>	100 V, 150 V, 200 V				
I <sub>FSM</sub>	50 A				
t <sub>rr</sub>	20 ns				
V <sub>F</sub> at I <sub>F</sub> = 2.0 A	0.76 V				
T <sub>J</sub> max.	150 °C				

#### **FEATURES**







• High forward surge capability

 Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C

 Material categorization: For definitions of compliance please see <a href="https://www.vishav.com/doc?99912">www.vishav.com/doc?99912</a>

# (e3)

RoHS

#### TYPICAL APPLICATIONS

For use in low voltage, high frequency rectifier of switching power supplies, freewheeling diodes, DC/DC converters or polarity protection application.

#### **MECHANICAL DATA**

Case: DO-214AA (SMB)

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

Terminals: Matte tin plated leads, solderable per

J-STD-002 and JESD 22-B102

E3 suffix meets JESD 201 class 1A whisker test **Polarity:** Color band denotes cathode end

MAXIMUM RATINGS (T <sub>A</sub> = 25 °C unless otherwise noted)						
PARAMETER	SYMBOL	U2B	U2C	U2D	UNIT	
Device marking code		U2B	U2C	U2D		
Maximum repetitive peak reverse voltage	V <sub>RRM</sub>	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>	50			А	
Operating junction and storage temperature range	T <sub>J</sub> , T <sub>STG</sub>	- 55 to + 150			°C	



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<b>ELECTRICAL CHARACTERISTICS</b> (T <sub>A</sub> = 25 °C unless otherwise noted)							
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT	
Instantaneous forward voltage	I <sub>F</sub> = 2 A	T <sub>A</sub> = 25 °C	V <sub>F</sub> <sup>(1)</sup>	0.86	0.90	V	
		T <sub>A</sub> = 100 °C		0.76	0.83		
Reverse current	Rated V <sub>B</sub>	T <sub>A</sub> = 25 °C	I <sub>R</sub> <sup>(2)</sup>	-	10	μА	
	Haled V <sub>R</sub>	T <sub>A</sub> = 100 °C		180	350		
Reverse recovery time	$I_F = 0.5 \text{ A}, I_R = 1.0 \text{ A},$ $I_{rr} = 0.25 \text{ A}$	T <sub>A</sub> = 25 °C	t <sub>rr</sub>	-	20	ns	
	$I_F = 2.0 \text{ A}, \text{ dI/dt} = 50 \text{ A/}\mu\text{s}, \ V_R = 30 \text{ V}, I_{rr} = 0.1 I_{RM}$	T <sub>A</sub> = 25 °C		27	-		
		T <sub>A</sub> = 100 °C		35	-		
Storage charge	$I_F = 2.0 \text{ A}, \text{ dI/dt} = 50 \text{ A/}\mu\text{s}, \ V_R = 30 \text{ V}, I_{rr} = 0.1 I_{RM}$	T <sub>A</sub> = 25 °C	Q <sub>rr</sub>	9	-	nC	
		T <sub>A</sub> = 100 °C		19	-		
Typical junction capacitance	4.0 V, 1 MHz		CJ	16	-	pF	

#### Notes

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

(2) Pulse test: Pulse width ≤ 40 ms

THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted)					
PARAMETER	SYMBOL	SYMBOL U2B U2C U2D		U2D	UNIT
Typical thermal resistance	R <sub>0JA</sub> (1)	105		°C/W	
	R <sub>0JM</sub> (1)	18			

#### 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	
U2D-E3/52T	0.099	52T	750	7" diameter plastic tape and reel	
U2D-E3/5BT	0.099	5BT	3200	13" diameter plastic tape and reel	

#### **RATINGS AND CHARACTERISTICS CURVES**

(T<sub>A</sub> = 25 °C unless otherwise noted)

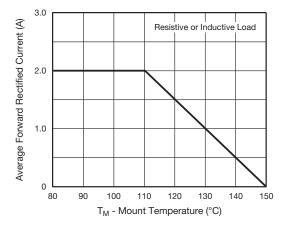


Fig. 1 - Maximum Forward Current Derating Curve

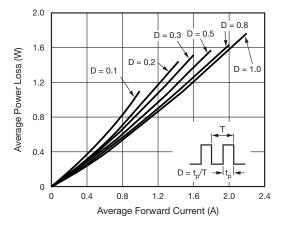


Fig. 2 - Forward Power Loss Characteristics



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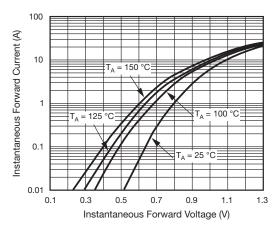
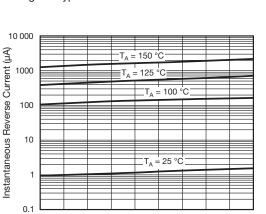


Fig. 3 - Typical Instantaneous Forward Characteristics



Percent of Rated Peak Reverse Voltage (%)
Fig. 4 - Typical Reverse Characteristics

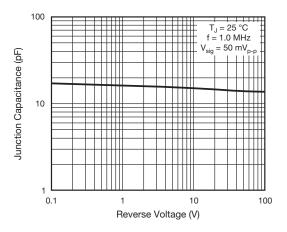


Fig. 5 - Typical Junction Capacitance

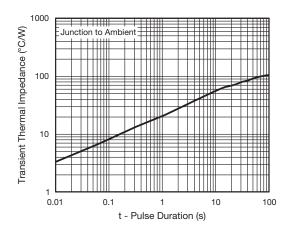
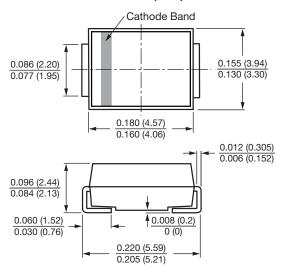


Fig. 6 - Typical Transient Thermal Impedance

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

#### DO-214AA (SMB)



# 0.086 (2.18) MIN.

**Mounting Pad Layout** 



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Vishay

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