



### Vishay General Semiconductor

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



**DO-214AB (SMC)** 

PRIMARY CHARACTERISTICS					
I <sub>F(AV)</sub>	3.0 A				
V <sub>RRM</sub>	100 V, 150 V, 200 V				
I <sub>FSM</sub>	100 A				
t <sub>rr</sub>	20 ns				
V <sub>F</sub> at I <sub>F</sub> = 3.0 A	0.74 V				
T <sub>J</sub> max.	150 °C				

### **FEATURES**

- Oxide planar chip junction
- Ultrafast recovery time
- Low forward voltage, low power losses
- · High forward surge capability

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

 Compliant to RoHS directive 2002/95/EC and in accordance to WEEE 2002/96/EC





## RoHS

### **TYPICAL APPLICATIONS**

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

#### **MECHANICAL DATA**

Case: DO-214AB (SMC)

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	U3B	U3C	U3D	UNIT
Device marking code			U3B	U3C	U3D	
Maximum repetitive peak reverse voltage		V <sub>RRM</sub>	100	150	200	V
Maximum average forward rectified current (fig. 1)	T <sub>M</sub> = 134 °C	I <sub>F(AV)</sub> (1)	2.0			А
	T <sub>M</sub> = 125 °C	I <sub>F(AV)</sub> (2)	3.0			
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load		I <sub>FSM</sub>	100			Α
Operating junction and storage temperature range		T <sub>J</sub> , T <sub>STG</sub>	- 55 to + 150			°C

### **Notes**

- $^{(1)}$  Free air, mounted on recommended copper pad area
- (2) Units mounted on P.C.B. with 0.47" x 0.47" (12 mm x 12 mm) copper pad areas

# U3B, U3C, U3D

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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> = 3.0 A	T <sub>A</sub> = 25 °C	V <sub>F</sub> <sup>(1)</sup>	0.85	0.90	V	
		T <sub>A</sub> = 100 °C		0.74	0.83		
Reverse current	Patad V	T <sub>A</sub> = 25 °C	I <sub>D</sub> (2)	-	10	μА	
	Rated V <sub>R</sub>	T <sub>A</sub> = 100 °C		250	500		
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>A</sub> = 25 °C	t <sub>rr</sub>	-	20	ns	
	$I_F = 3.0 \text{ A}, \text{ dI/dt} = 50 \text{ A/µs}, \\ V_R = 30 \text{ V}, I_{rr} = 0.1 I_{RM}$	T <sub>A</sub> = 25 °C		25	30		
		T <sub>A</sub> = 100 °C		35	50		
Storage charge	$I_F = 3.0 \text{ A}, \text{ dI/dt} = 50 \text{ A/}\mu\text{s}, \\ V_R = 30 \text{ V}, I_{rr} = 0.1 I_{RM}$	T <sub>A</sub> = 25 °C	Q <sub>rr</sub>	9	15	nC	
		T <sub>A</sub> = 100 °C		22	35		
Typical junction capacitance	4.0 V, 1 MHz		CJ	25	-	pF	

#### **Notes**

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

(2) Pulse test: Pulse width  $\leq$  40 ms

THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted)					
PARAMETER	SYMBOL	U3B U3C U3D			UNIT
Typical thermal resistance	R <sub>0JA</sub> (1)	92			°C/W
Typical triefmai resistance	R <sub>0JM</sub> (1)	10			

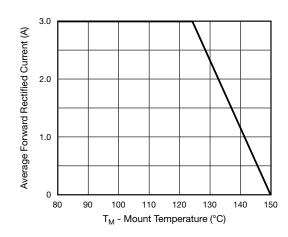
#### Note

(1) Free air, mounted on recommended copper pad area. Thermal resistance R<sub>0JA</sub> - junction to ambient, R<sub>0JM</sub> - junction to mount

ORDERING INFORMATION (Example)						
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE		
U3D-E3/57T	0.239	57T	850	7" diameter plastic tape and reel		
U3D-E3/9AT	0.239	9AT	3500	13" diameter plastic tape and reel		

### **RATINGS AND CHARACTERISTICS CURVES**

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





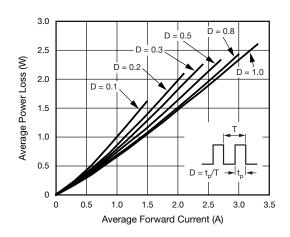


Fig. 2 - Forward Power Loss Characteristics



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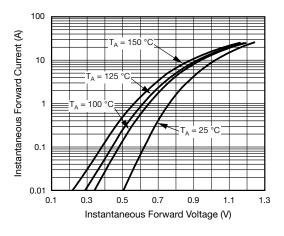


Fig. 3 - Typical Instantaneous Forward Characteristics

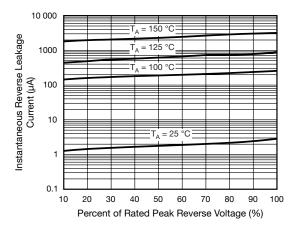


Fig. 4 - Typical Reverse Leakage Characteristics

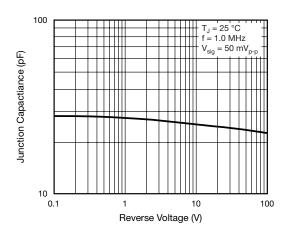


Fig. 5 - Typical Junction Capacitance

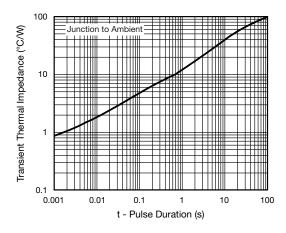
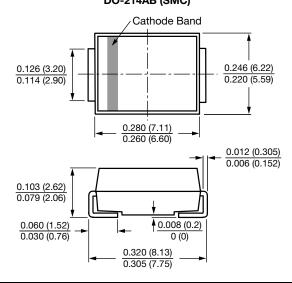
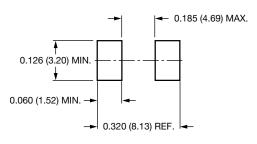


Fig. 6 - Typical Transient Thermal Impedance

# PACKAGE OUTLINE DIMENSIONS in inches (millimeters) DO-214AB (SMC)



### Mounting Pad Layout







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Document Number: 91000 www.vishay.com Revision: 11-Mar-11