### B120-E3, B130-E3, B140-E3, B150-E3, B160-E3

Vishay General Semiconductor

# **Surface Mount Schottky Barrier Rectifier**



**DO-214AC (SMA)** 

PRIMARY CHARACTERISTICS							
I <sub>F(AV)</sub> 1.0 A							
V <sub>RRM</sub>	20 V, 30 V, 40 V, 50 V, 60 V						
I <sub>FSM</sub>	30 A						
V <sub>F</sub>	0.52 V, 0.75 V						
T <sub>J</sub> max.	125 °C, 150 °C						
Package	DO-214AC						
Diode variations	Single						

#### **FEATURES**

- Low profile package
- · Ideal for automated placement
- · Guardring for overvoltage protection
- Low power losses, high efficiency
- Low forward voltage drop
- · High 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.vishay.com/doc?99912"><u>www.vishay.com/doc?99912</u></a>

#### **TYPICAL APPLICATIONS**

For use in low voltage, high frequency inverters, freewheeling, DC/DC converters, and polarity protection applications.

#### Note

• These devices are not AEC-Q101 qualified

#### **MECHANICAL DATA**

Case: DO-214AC (SMA)

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 the cathode end

MAXIMUM RATINGS (T <sub>A</sub> = 25 °C unless otherwise noted)								
PARAMETER	SYMBOL	B120	B130	B140	B150	B160	UNIT	
Device marking code		B12 B13 B14 B15 E				B16		
Maximum repetitive peak reverse voltage	$V_{RRM}$	20	30	40	50	60	V	
Maximum average forward rectified current (fig. 1)	I <sub>F(AV)</sub>	1.0				Α		
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I <sub>FSM</sub>	30					Α	
Voltage rate of change (rated V <sub>R</sub> )	dV/dt	10 000				V/µs		
Operating junction temperature range	TJ	- 65 to + 125 - 65 to + 150				°C		
Storage temperature range	T <sub>STG</sub>	- 65 to + 150					°C	

<b>ELECTRICAL CHARACTERISTICS</b> (T <sub>A</sub> = 25 °C unless otherwise noted)											
PARAMETER	TEST (	CONDITIONS	SYMBOL	L B120 B130 B140 B150		B160	UNIT				
Maximum instantaneous forward voltage	1.0 A		V <sub>F</sub> <sup>(1)</sup>	0.52		0.75		V			
Maximum reverse current at rated V <sub>R</sub>		T <sub>A</sub> = 25 °C	I <sub>R</sub> <sup>(2)</sup>	0.2			mA				
Maximum reverse current at rated v <sub>R</sub>		T <sub>A</sub> = 100 °C	IR (=)		6.0		5	.0	] IIIA		

#### **Notes**

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

(2) Pulse test: Pulse width ≤ 40 ms

# B120-E3, B130-E3, B140-E3, B150-E3, B160-E3

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THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted)							
PARAMETER SYMBOL B120 B130 B140 B150 B160							UNIT
Typical thermal resistance	R <sub>0JA</sub> (1)	95					°C/W
Typical thermal resistance	R <sub>0JL</sub> (1)	30					

#### Note

<sup>(1)</sup> PCB mounted with 0.2" x 0.2" (5.0 mm x 5.0 mm) copper pad areas

ORDERING INFORMATION (Example)								
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE				
B140-E3/61T	0.064	61T	1800	7" diameter plastic tape and reel				
B140-E3/5AT	0.064	5AT	7500	13" diameter plastic tape and reel				

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

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

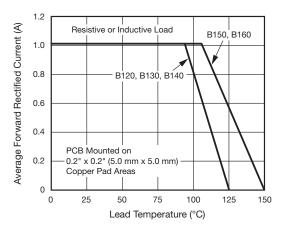


Fig. 1 - Maximum Forward Current Derating Curve

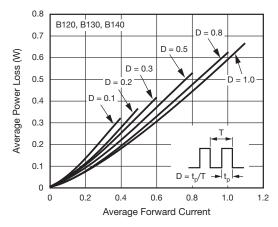


Fig. 2 - Forward Power Loss Characteristics

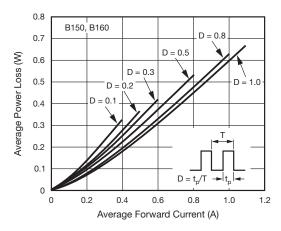


Fig. 3 - Forward Power Loss Characteristics

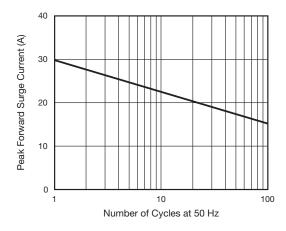


Fig. 4 - Typical Instantaneous Forward Characteristics



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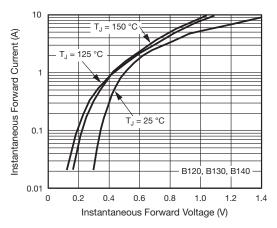


Fig. 5 - Typical Instantaneous Forward Characteristics

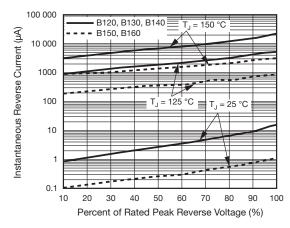


Fig. 7 - Typical Reverse Leakage Characteristics

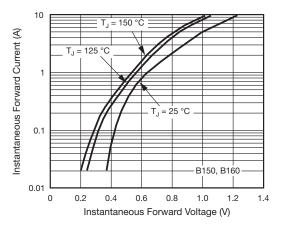


Fig. 6 - Typical Instantaneous Forward Characteristics

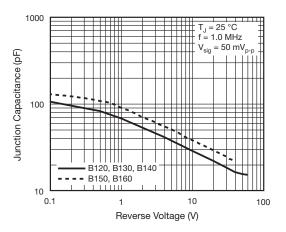
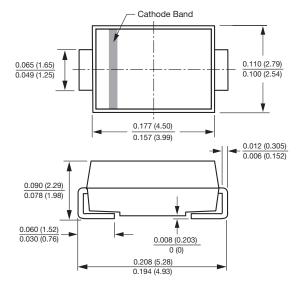


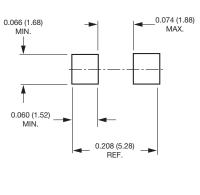
Fig. 8 - Typical Junction Capacitance

### PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

### **DO-214AC (SMA)**



### **Mounting Pad Layout**





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