



**THE DATASHEET OF  
B120-E3/5AT**





# Surface-Mount Schottky Barrier Rectifier



SMA (DO-214AC)



## 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 [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



## LINKS TO ADDITIONAL RESOURCES



## 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: SMA (DO-214AC)

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 2 whisker test

Polarity: color band denotes the cathode end

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	1.0 A
$V_{RRM}$	20 V, 30 V, 40 V, 50 V, 60 V
$I_{FSM}$	30 A
$V_F$	0.52 V, 0.75 V
$T_J$ max.	125 °C, 150 °C
Package	SMA (DO-214AC)
Circuit configurations	Single

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

ELECTRICAL CHARACTERISTICS ( $T_A = 25\text{ °C}$ unless otherwise noted)								
PARAMETER	TEST CONDITIONS	SYMBOL	B120	B130	B140	B150	B160	UNIT
Maximum instantaneous forward voltage	1.0 A	$V_F$ <sup>(1)</sup>	0.52			0.75		V
Maximum reverse current at rated $V_R$	$T_A = 25\text{ °C}$	$I_R$ <sup>(2)</sup>	0.2					mA
	$T_A = 100\text{ °C}$		6.0		5.0			

### Notes

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

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



THERMAL CHARACTERISTICS ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)							
PARAMETER	SYMBOL	B120	B130	B140	B150	B160	UNIT
Typical thermal resistance	$R_{\theta JA}$ (1)	95					$^\circ\text{C/W}$
	$R_{\theta JL}$ (1)	30					

**Note**

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

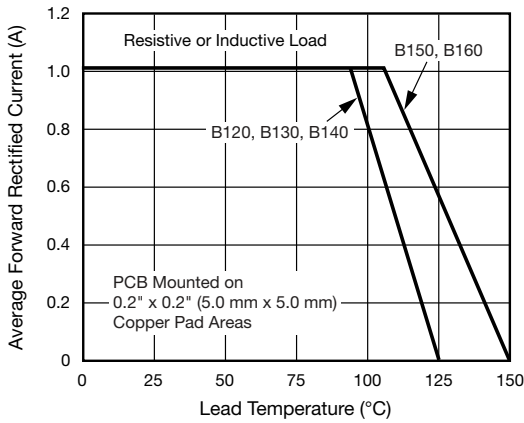


Fig. 1 - Maximum Forward Current Derating Curve

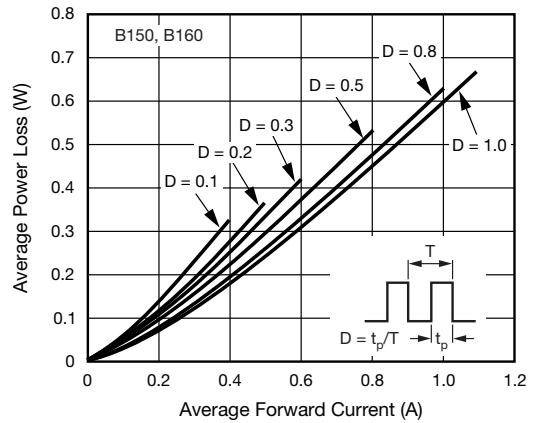


Fig. 3 - Forward Power Loss Characteristics

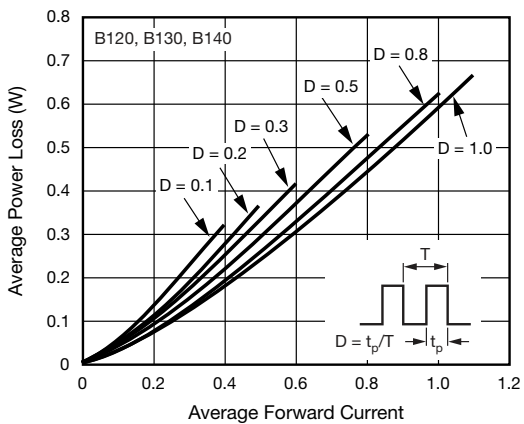


Fig. 2 - Forward Power Loss Characteristics

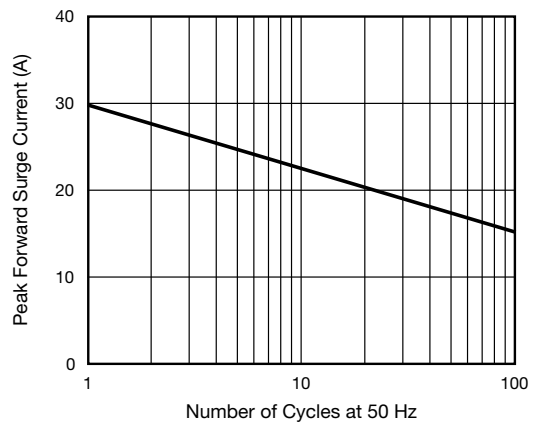


Fig. 4 - Typical Instantaneous Forward Characteristics

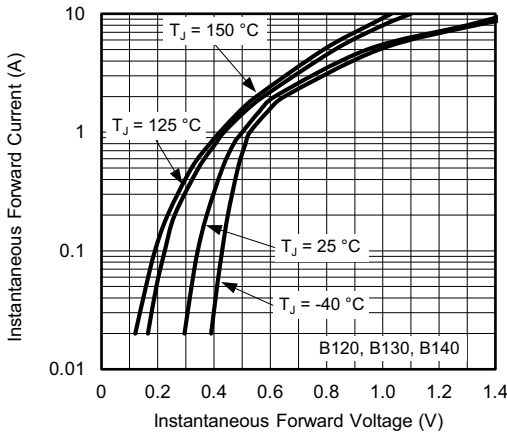


Fig. 5 - Typical Instantaneous Forward Characteristics

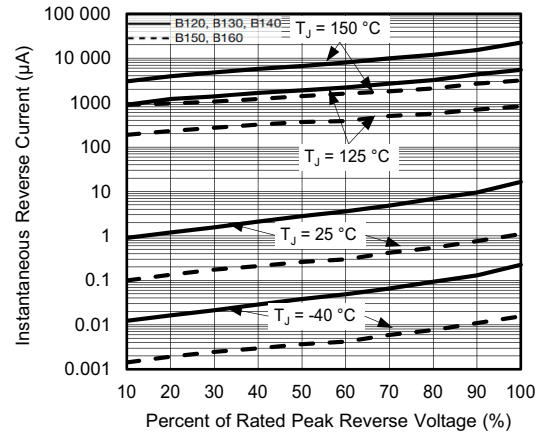


Fig. 7 - Typical Reverse Leakage Characteristics

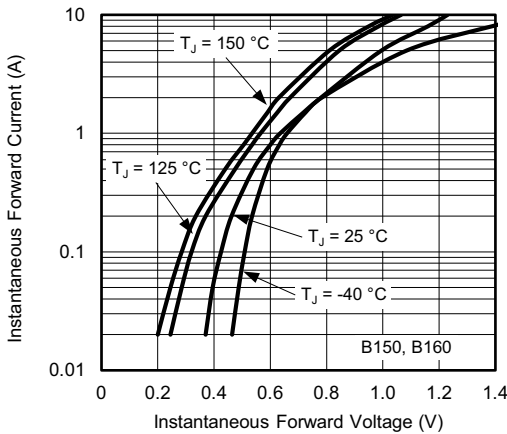


Fig. 6 - Typical Instantaneous Forward Characteristics

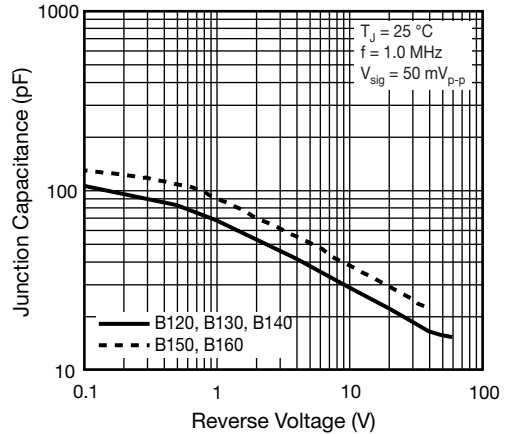
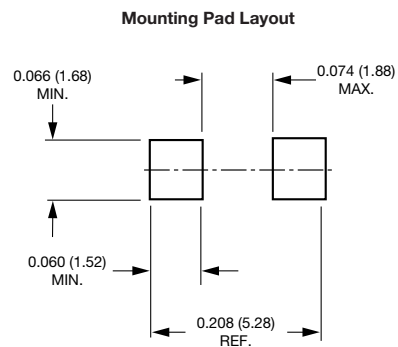
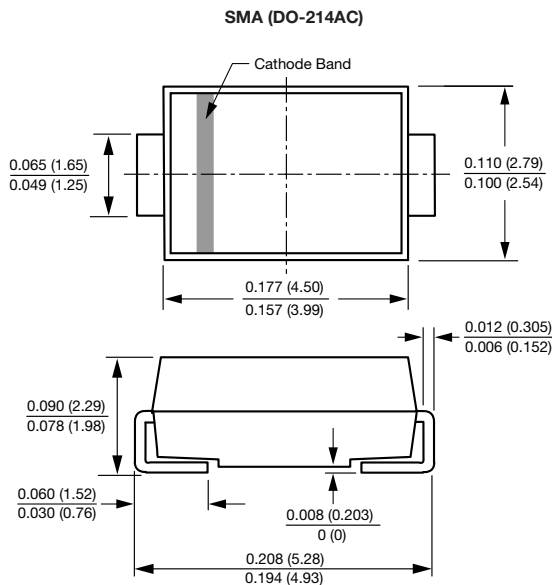


Fig. 8 - Typical Junction Capacitance

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





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