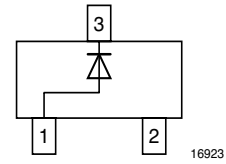
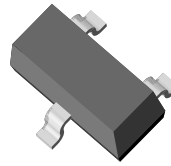


## Small Signal Switching Diodes, High Voltage

### Features

- Silicon Epitaxial Planar Diode
- Fast switching diode in case SOT-23, especially suited for automatic insertion.
- These diodes are also available in other case styles including: the SOD-123 case with the type designations BAV19W-V to BAV21W-V, the Mini-MELF case with the type designation BAV101 to BAV103, the DO-35 case with the type designations BAV19-V to BAV21-V and the SOD-323 case with type designation BAV19WS-V to BAV21WS-V.
- Lead (Pb)-free component
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC



16923

### Mechanical Data

**Case:** SOT-23 Plastic case

**Weight:** approx. 8.8 mg

#### Packaging Codes/Options:

GS18 / 10 k per 13" reel (8 mm tape), 10 k/box

GS08 / 3 k per 7" reel (8 mm tape), 15 k/box

### Parts Table

Part	Type differentiation	Ordering code	Marking	Remarks
BAS19-V	$V_{RRM} = 120\text{ V}$	BAS19-V-GS18 or BAS19-V-GS08	A8	Tape and Reel
BAS20-V	$V_{RRM} = 200\text{ V}$	BAS20-V-GS18 or BAS20-V-GS08	A81	Tape and Reel
BAS21-V	$V_{RRM} = 250\text{ V}$	BAS21-V-GS18 or BAS21-V-GS08	A82	Tape and Reel

### Absolute Maximum Ratings

$T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified

Parameter	Test condition	Part	Symbol	Value	Unit
Continuous reverse voltage		BAS19-V	$V_R$	100	V
		BAS20-V	$V_R$	150	V
		BAS21-V	$V_R$	200	V
Repetitive peak reverse voltage		BAS19-V	$V_{RRM}$	120	V
		BAS20-V	$V_{RRM}$	200	V
		BAS21-V	$V_{RRM}$	250	V
Non-repetitive peak forward current	$t = 1\text{ }\mu\text{s}$		$I_{FSM}$	2.5	A
Non-repetitive peak forward surge current	$t = 1\text{ s}$		$I_{FSM}$	0.5	A
Maximum average forward rectified current	(av. over any 20 ms period)		$I_{F(AV)}$	200 <sup>1)</sup>	mA
DC forward current	$T_{amb} = 25\text{ }^{\circ}\text{C}$		$I_F$	200 <sup>2)</sup>	mA
Repetitive peak forward current			$I_{FRM}$	625	mA
Power dissipation	$T_{amb} = 25\text{ }^{\circ}\text{C}$		$P_{tot}$	250 <sup>2)</sup>	mW

<sup>1)</sup> Measured under pulse conditions; Pulse time =  $T_p \leq 0.3\text{ ms}$

<sup>2)</sup> Device on fiberglass substrate, see layout on next page

### Thermal Characteristics

$T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Thermal resistance junction to ambient air		$R_{thJA}$	430 <sup>1)</sup>	$^{\circ}\text{C}$
Junction temperature		$T_j$	150	$^{\circ}\text{C}$
Storage temperature range		$T_S$	- 65 to + 150	$^{\circ}\text{C}$

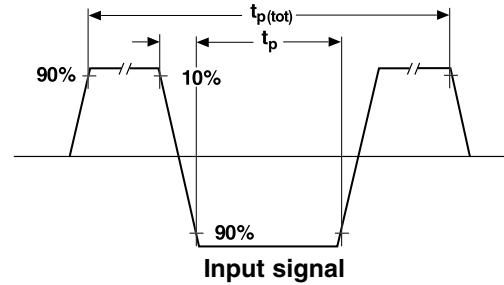
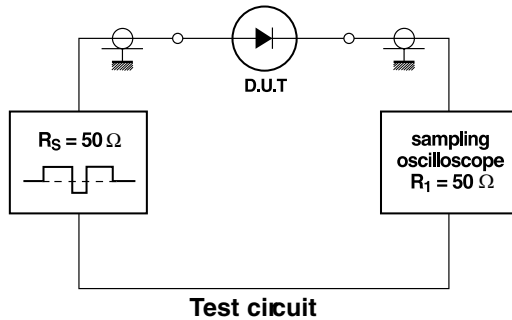
<sup>1)</sup> Device on fiberglass substrate, see layout on next page

### Electrical Characteristics

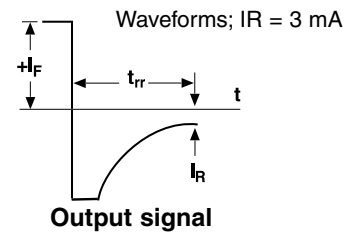
$T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Forward voltage	$I_F = 100\text{ mA}$	$V_F$			1.0	V
	$I_F = 200\text{ mA}$	$V_F$			1.25	V
Leakage current	$V_R = V_{Rmax}$	$I_R$			100	nA
	$V_R = V_{Rmax}, T_j = 150\text{ }^{\circ}\text{C}$	$I_R$			100	$\mu\text{A}$
Dynamic forward resistance	$I_F = 10\text{ mA}$	$r_f$		5		$\Omega$
Diode capacitance	$V_R = 0, f = 1\text{ MHz}$	$C_{tot}$			5	pF
Reverse recovery time	$I_F = I_R = 30\text{ mA}, R_L = 100\text{ }\Omega,$ $I_{rr} = 3\text{ mA}$	$t_{rr}$			50	ns

## Test Circuit and Waveforms



Input Signal	<ul style="list-style-type: none"> <li>- total pulse duration</li> <li>- duty factor</li> <li>- rise time of reverse pulse</li> <li>- reverse pulse duration</li> </ul>	$t_{p(tot)} = 2 \mu\text{s}$ $\delta = 0.0025$ $t_r = 0.6\text{ns}$ $t_p = 100\text{ns}$
Oscilloscope	<ul style="list-style-type: none"> <li>- rise time</li> <li>- circuit capacitance*</li> </ul>	$t_r = 0.35\text{ns}$ $C < 1\text{pF}$



\*C = oscilloscope input capacitance + parasitic capacitance

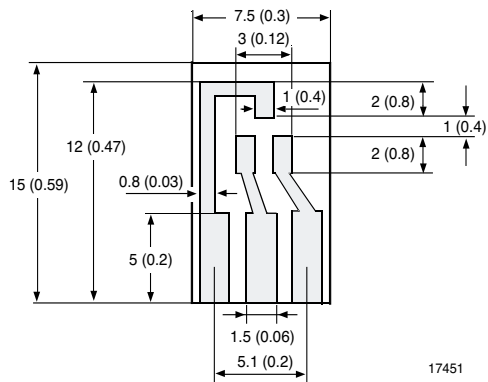
18098

## Layout for $R_{thJA}$ test

Thickness:

Fiberglass 1.5 mm (0.059 in.)

Copper leads 0.3 mm (0.012 in.)

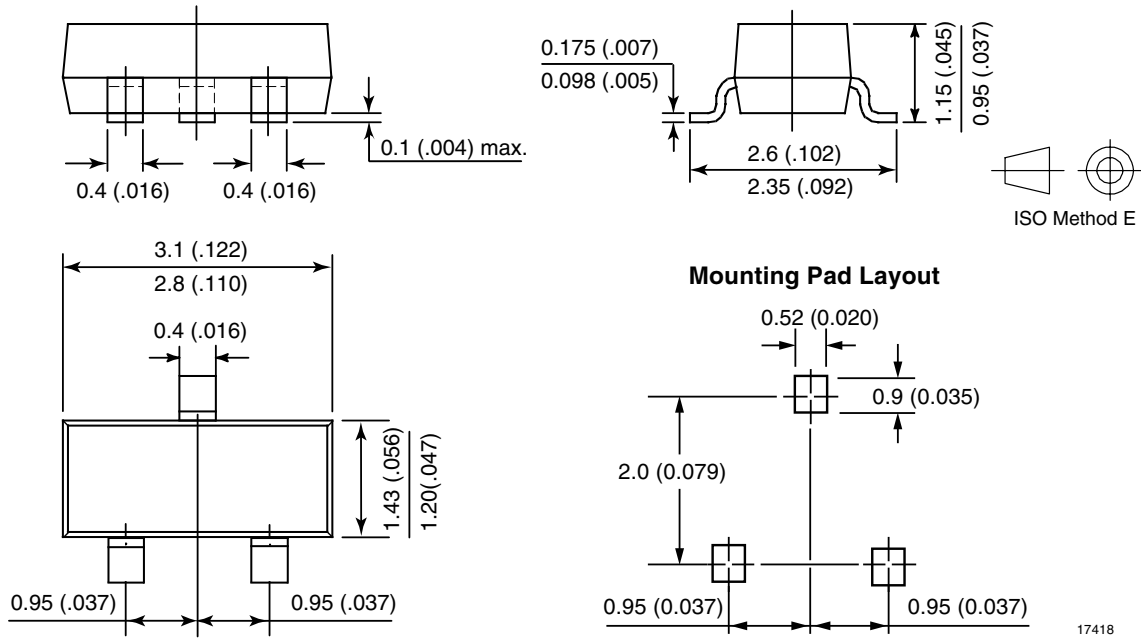


# BAS19-V / 20-V / 21-V



Vishay Semiconductors

## Package Dimensions in mm (Inches)



17418



## Ozone Depleting Substances Policy Statement

It is the policy of Vishay Semiconductor GmbH to

1. Meet all present and future national and international statutory requirements.
2. Regularly and continuously improve the performance of our products, processes, distribution and operating systems with respect to their impact on the health and safety of our employees and the public, as well as their impact on the environment.

It is particular concern to control or eliminate releases of those substances into the atmosphere which are known as ozone depleting substances (ODSs).

The Montreal Protocol (1987) and its London Amendments (1990) intend to severely restrict the use of ODSs and forbid their use within the next ten years. Various national and international initiatives are pressing for an earlier ban on these substances.

Vishay Semiconductor GmbH has been able to use its policy of continuous improvements to eliminate the use of ODSs listed in the following documents.

1. Annex A, B and list of transitional substances of the Montreal Protocol and the London Amendments respectively
2. Class I and II ozone depleting substances in the Clean Air Act Amendments of 1990 by the Environmental Protection Agency (EPA) in the USA
3. Council Decision 88/540/EEC and 91/690/EEC Annex A, B and C (transitional substances) respectively.

Vishay Semiconductor GmbH can certify that our semiconductors are not manufactured with ozone depleting substances and do not contain such substances.

We reserve the right to make changes to improve technical design and may do so without further notice.

Parameters can vary in different applications. All operating parameters must be validated for each customer application by the customer. Should the buyer use Vishay Semiconductors products for any unintended or unauthorized application, the buyer shall indemnify Vishay Semiconductors against all claims, costs, damages, and expenses, arising out of, directly or indirectly, any claim of personal damage, injury or death associated with such unintended or unauthorized use.

Vishay Semiconductor GmbH, P.O.B. 3535, D-74025 Heilbronn, Germany



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