

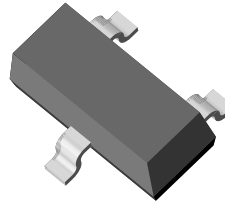
## Small Signal Switching Diodes, High Voltage

### Features

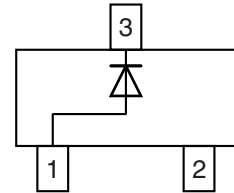
- Silicon epitaxial planar diode
- Fast switching diode in case SOT-23, especially suited for automatic insertion
- General purpose switching applications
- High conductance
- AEC-Q101 qualified
- Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC



**RoHS**  
COMPLIANT  
**GREEN**  
(5-2009)\*\*



16923



### Mechanical Data

**Case:** SOT-23

**Weight:** approx. 8.1 mg

**Packaging codes/options:**

18/10K per 13" reel (8 mm tape), 10K/box

08/3K per 7" reel (8 mm tape), 15K/box

### Parts Table

Part	Type differentiation	Ordering code	Marking	Remarks
BAS19-V-G	$V_{RRM} = 120\text{ V}$	BAS19-V-G-18 or BAS19-V-G-08	A8G	Tape and reel
BAS20-V-G	$V_{RRM} = 200\text{ V}$	BAS20-V-G-18 or BAS20-V-G-08	A9G	Tape and reel
BAS21-V-G	$V_{RRM} = 250\text{ V}$	BAS21-V-G-18 or BAS21-V-G-08	AAG	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-G	$V_R$	100	V
		BAS20-V-G	$V_R$	150	V
		BAS21-V-G	$V_R$	200	V
Repetitive peak reverse voltage		BAS19-V-G	$V_{RRM}$	120	V
		BAS20-V-G	$V_{RRM}$	200	V
		BAS21-V-G	$V_{RRM}$	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			$I_F$	200 <sup>2)</sup>	mA
Repetitive peak forward current			$I_{FRM}$	625	mA
Power dissipation			$P_{tot}$	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		$T_{stg}$	- 65 to + 150	$^{\circ}\text{C}$

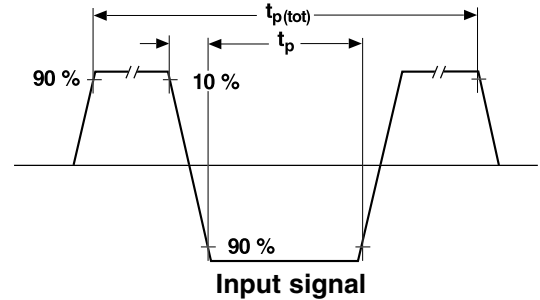
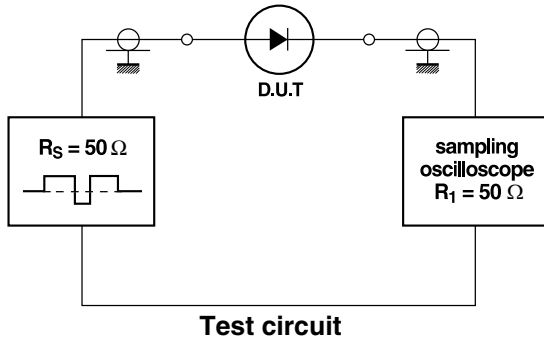
<sup>1)</sup> Device on fiberglass substrate, see layout on next page

### Electrical Characteristics

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

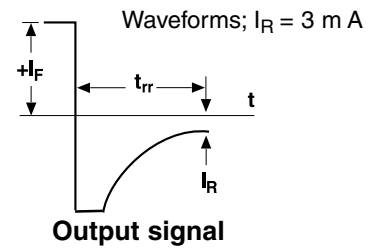
Parameter	Test condition	Symbol	Min.	Typ.	Max.	Unit
Forward voltage	$I_F = 100\text{ mA}$	$V_F$			1.0	V
	$I_F = 200\text{ mA}$	$V_F$			1.25	V
Leakage current	$V_R = V_{Rmax.}$	$I_R$			100	nA
	$V_R = V_{Rmax.}, T_j = 150\text{ }^{\circ}\text{C}$	$I_R$			100	$\mu\text{A}$
Dynamic forward resistance	$I_F = 10\text{ mA}$	$r_f$		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	- total pulse duration - duty factor - rise time of reverse pulse - reverse pulse duration	$t_{p(tot)} = 2 \mu s$ $\delta = 0.0025$ $t_r = 0.6 ns$ $t_p = 100 ns$
Oscilloscope	- rise time - circuit capacitance*	$t_r = 0.35 ns$ $C < 1 pF$

\*C = oscilloscope input capacitance + parasitic capacitance



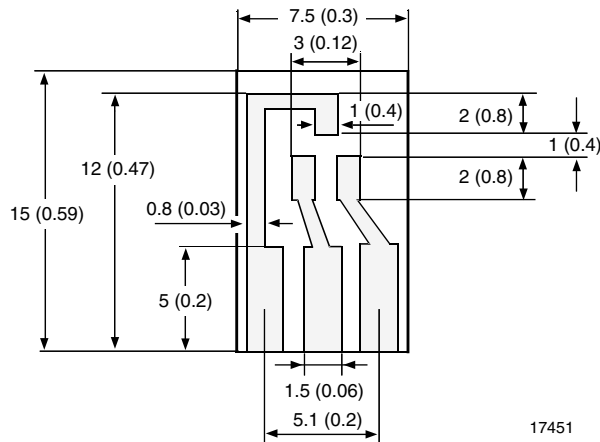
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## Layout for $R_{thJA}$ test

Thickness:

Fiberglass 1.5 mm (0.059 in.)

Copper leads 0.3 mm (0.012 in.)

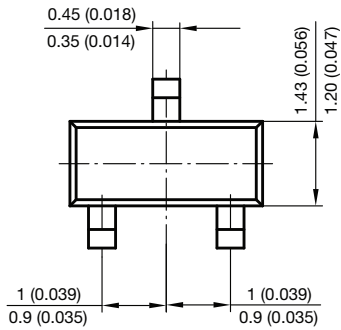
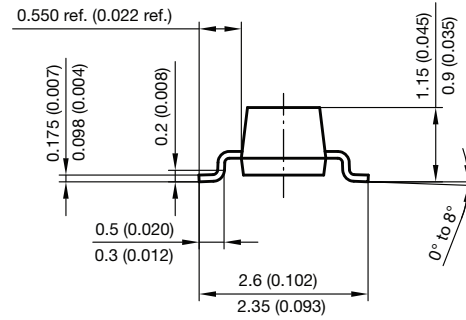
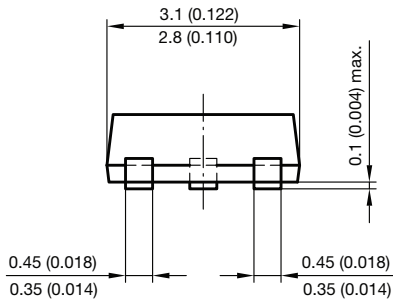


# BAS19-V-G, BAS20-V-G, BAS21-V-G

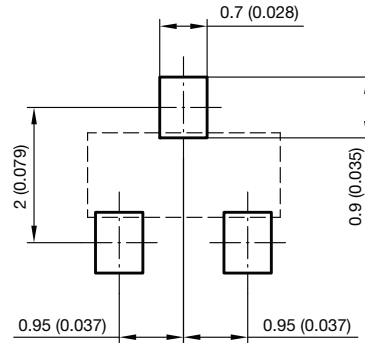


Vishay Semiconductors

Package Dimensions in millimeters (inches): SOT-23



Foot print recommendation:



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Rev. 8 - Date: 23.Sept.2009

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