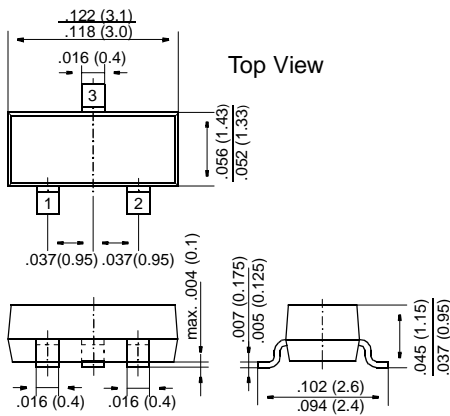


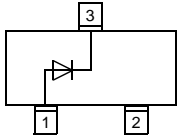
# BAS19, BAS20, BAS21

## Small Signal Diodes

### SOT-23



Dimensions in inches and (millimeters)



Top View

### Marking

BAS19 = A8  
 BAS20 = A81  
 BAS21 = A82

### FEATURES

- ◆ Silicon Planar Epitaxial High-Speed Diodes
- ◆ For switching and general purpose applications.
- ◆ These diodes are also available in other case styles including: the SOD-123 case with the type designation BAV19W - BAV21W, the MiniMELF case with the type designation BAV101 - BAV103, and the DO-35 case with the type designation BAV19 - BAV21.



### MECHANICAL DATA

**Case:** SOT-23 Plastic Package

**Weight:** approx. 0.008 g

### MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25 °C ambient temperature unless otherwise specified

	Symbol	Value	Unit
Continuous Reverse Voltage	BAS19	100	V
	BAS20	150	V
	BAS21	200	V
Repetitive Peak Reverse Voltage	BAS19	120	V
	BAS20	200	V
	BAS21	250	V
Non-Repetitive Peak Forward Current at t = 1 μs at t = 1 s	I <sub>FSM</sub>	2.5	A
	I <sub>FSM</sub>	0.5	A
Average Rectified Forward Current (averaged over any 20 ms period)	I <sub>F(AV)</sub>	200 <sup>1)</sup>	mA
Forward DC Current at T <sub>amb</sub> = 25 °C	I <sub>F</sub>	200 <sup>2)</sup>	mA
Repetitive Peak Forward Current	I <sub>FRM</sub>	625	mA
Power Dissipation up to T <sub>amb</sub> = 25 °C	P <sub>tot</sub>	200 <sup>2)</sup>	mW
Junction Temperature	T <sub>j</sub>	150	°C
Storage Temperature Range	T <sub>s</sub>	-65 to +150	°C

1) Measured under pulse conditions; Pulse time = t<sub>p</sub> ≤ 0.3 ms.

2) Device on fiberglass substrate, see layout.

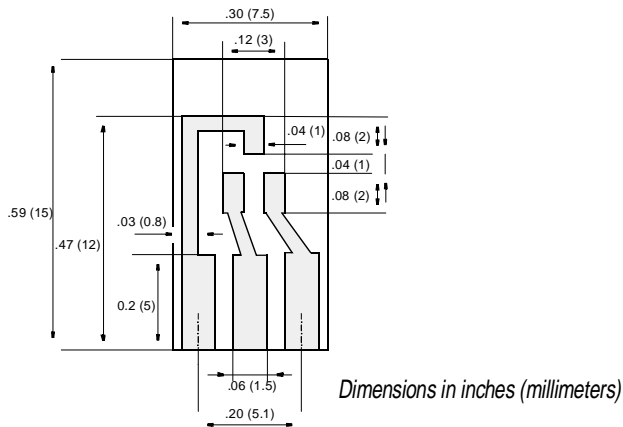
# BAS19, BAS20, BAS21

## ELECTRICAL CHARACTERISTICS

Ratings at 25 °C ambient temperature unless otherwise specified

	Symbol	Min.	Typ.	Max.	Unit
Forward Voltage at $I_F = 100 \text{ mA}$ at $I_F = 200 \text{ mA}$	$V_F$ $V_F$	– –	– –	1.0 1.25	V V
Leakage Current at $V_R = V_{Rmax}$ at $V_R = V_{Rmax}; T_j = 150 \text{ }^\circ\text{C}$	$I_R$ $I_R$	– –	– –	100 100	nA $\mu\text{A}$
Dynamic Forward Resistance at $I_F = 10 \text{ mA}$	$r_f$	–	5	–	$\Omega$
Capacitance at $V_R = 0, f = 1 \text{ MHz}$	$C_{tot}$	–	–	5	pF
Reverse Recovery Time (see figures) from $I_F = 30 \text{ mA}$ through $I_R = 30 \text{ mA}$ to $I_R = 3 \text{ mA}$ , $R_L = 100 \text{ } \Omega$	$t_{rr}$	–	–	50	ns
Thermal Resistance Junction to Ambient Air	$R_{thJA}$	–	–	430 <sup>2)</sup>	K/W

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

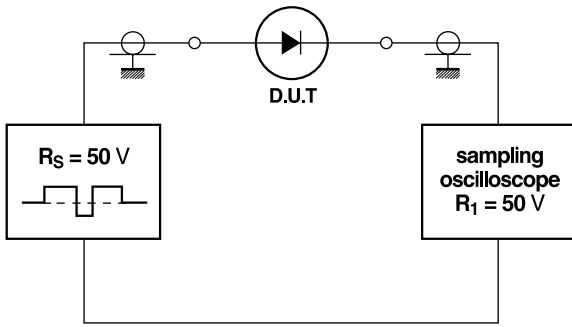


### Layout for $R_{thJA}$ test

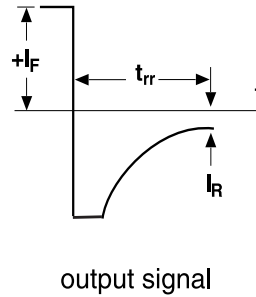
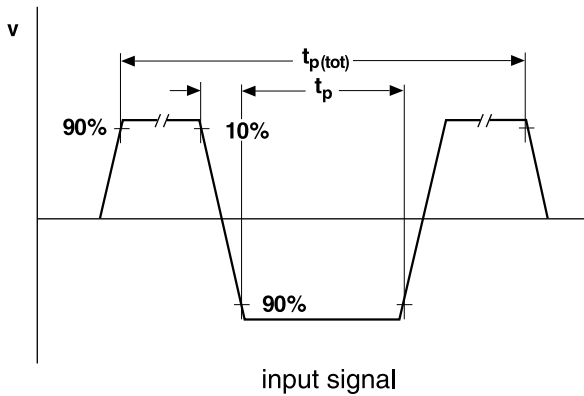
Thickness: Fiberglass 0.059 in (1.5 mm)

Copper leads 0.012 in (0.3 mm)

# Test Circuit and Waveforms BAS19, BAS20, BAS21



Test circuit



Waveforms;  $I_R = 3 \text{ mA}$

## Input Signal

- total pulse duration	$t_{p(\text{tot})} = 2 \mu\text{s}$
- duty factor	$\delta = 0.0025$
- rise time of reverse pulse	$t_r = 0.6 \text{ ns}$
- reverse pulse duration	$t_p = 100 \text{ ns}$

## Oscilloscope

- rise time	$t_r = 0.35 \text{ ns}$
- circuit capacitance*	$C < 1 \text{ pF}$

\*C = oscilloscope input capacitance + parasitic capacitance