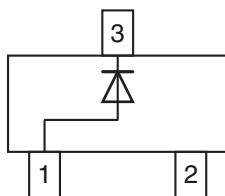




## Small Signal Switching Diodes, High Voltage



## FEATURES

- Silicon epitaxial planar diode
- Fast switching diode in case SOT-23, especially suited for automatic insertion.
- AEC-Q101 qualified
- Base P/N-E3 - RoHS-compliant, commercial grade
- Base P/N-HE3 - RoHS-compliant, AEC-Q101 qualified
- Material categorization: For definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)

RoHS  
COMPLIANT

## MECHANICAL DATA

Case: SOT-23

Weight: approx. 8.8 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                | TYPE MARKING | INTERNAL CONSTRUCTION | REMARKS       |
|-------|----------------------|------------------------------|--------------|-----------------------|---------------|
| BAS19 | $V_R = 100\text{ V}$ | BAS19-E3-08 or BAS19-E3-18   | A8           | Single diode          | Tape and reel |
|       |                      | BAS19-HE3-08 or BAS19-HE3-18 |              |                       |               |
| BAS20 | $V_R = 150\text{ V}$ | BAS20-E3-08 or BAS20-E3-18   | A81          | Single diode          | Tape and reel |
|       |                      | BAS20-HE3-08 or BAS20-HE3-18 |              |                       |               |
| BAS21 | $V_R = 200\text{ V}$ | BAS21-E3-08 or BAS21-E3-18   | A82          | Single diode          | Tape and reel |
|       |                      | BAS21-HE3-08 or BAS21-HE3-18 |              |                       |               |

ABSOLUTE MAXIMUM RATINGS ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)

| PARAMETER                                                | TEST CONDITION              | PART  | SYMBOL      | VALUE | UNIT |
|----------------------------------------------------------|-----------------------------|-------|-------------|-------|------|
| Continuous reverse voltage                               |                             | BAS19 | $V_R$       | 100   | V    |
|                                                          |                             | BAS20 | $V_R$       | 150   | V    |
|                                                          |                             | BAS21 | $V_R$       | 200   | V    |
| Repetitive peak reverse voltage                          |                             | BAS19 | $V_{RRM}$   | 120   | V    |
|                                                          |                             | BAS20 | $V_{RRM}$   | 200   | V    |
|                                                          |                             | BAS21 | $V_{RRM}$   | 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 <sup>(1)</sup> | (av. over any 20 ms period) |       | $I_{F(AV)}$ | 200   | mA   |
| DC forward current <sup>(2)</sup>                        |                             |       | $I_F$       | 200   | mA   |
| Repetitive peak forward current                          |                             |       | $I_{FRM}$   | 625   | mA   |
| Power dissipation <sup>(2)</sup>                         |                             |       | $P_{tot}$   | 250   | mW   |

## Notes

<sup>(1)</sup> Measured under pulse conditions; pulse time =  $t_p \geq 0.3\text{ ms}$ <sup>(2)</sup> Device on fiberglass substrate, see layout on next page



| <b>THERMAL CHARACTERISTICS</b> ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified) |                |                  |               |                    |
|-------------------------------------------------------------------------------------------------------|----------------|------------------|---------------|--------------------|
| PARAMETER                                                                                             | TEST CONDITION | SYMBOL           | VALUE         | UNIT               |
| Thermal resistance junction to ambient air                                                            |                | $R_{thJA}^{(1)}$ | 430           | $^{\circ}\text{C}$ |
| Junction temperature                                                                                  |                | $T_j$            | 150           | $^{\circ}\text{C}$ |
| Storage temperature range                                                                             |                | $T_{stg}$        | - 65 to + 150 | $^{\circ}\text{C}$ |
| Operating temperature range                                                                           |                | $T_{op}$         | - 55 to + 150 | $^{\circ}\text{C}$ |

**Note**

(1) Device on fiberglass substrate, see layout drawing below

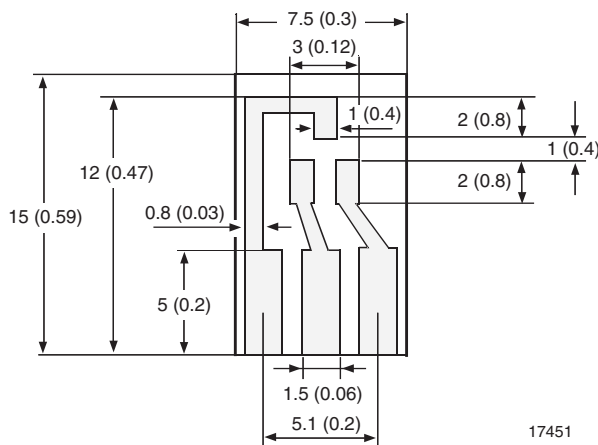
| <b>ELECTRICAL CHARACTERISTICS</b> ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified) |                                                                             |       |          |      |      |      |               |
|----------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|-------|----------|------|------|------|---------------|
| PARAMETER                                                                                                | TEST CONDITION                                                              | PART  | 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                                                                                          | $V_R = 100\text{ V}$                                                        | BAS19 | $I_R$    |      |      | 100  | nA            |
|                                                                                                          | $V_R = 150\text{ V}$                                                        | BAS20 | $I_R$    |      |      | 100  | nA            |
|                                                                                                          | $V_R = 200\text{ V}$                                                        | BAS21 | $I_R$    |      |      | 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                                                                                        | $V_R = 0, f = 1\text{ MHz}$                                                 |       | $C_D$    |      |      | 5    | pF            |
| Reverse recovery time                                                                                    | $I_F = I_R = 30\text{ mA}, R_L = 100\text{ }\Omega,$<br>$i_R = 3\text{ mA}$ |       | $t_{rr}$ |      |      | 50   | ns            |

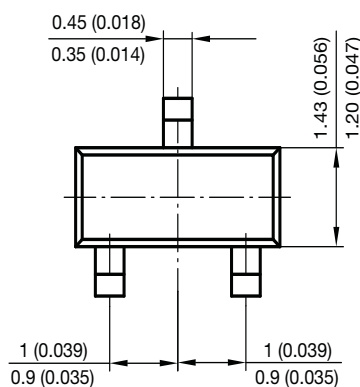
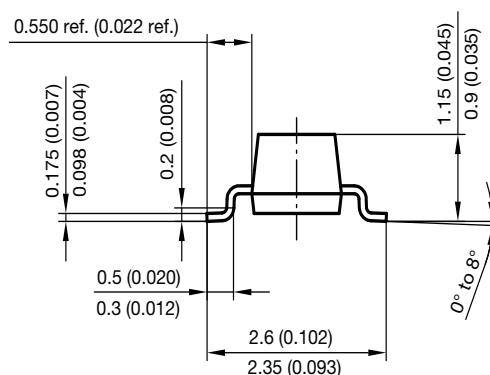
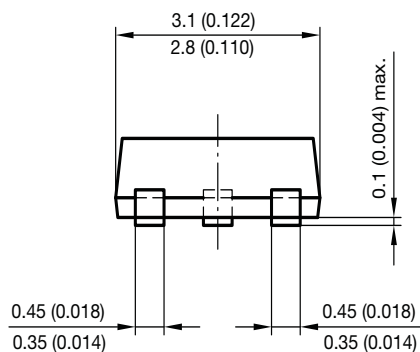
**LAYOUT FOR  $R_{thJA}$  TEST**

Thickness:

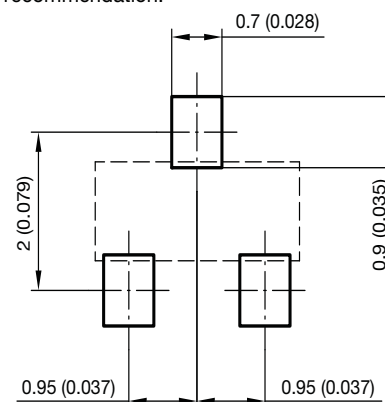
Fiberglass 1.5 mm (0.059 inches)

Copper leads 0.3 mm (0.012 inches)



**PACKAGE DIMENSIONS** in millimeters (inches): **SOT-23**

Foot print recommendation:



Document no.: 6.541-5014.01-4  
Rev. 8 - Date: 23.Sept.2009  
17418



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