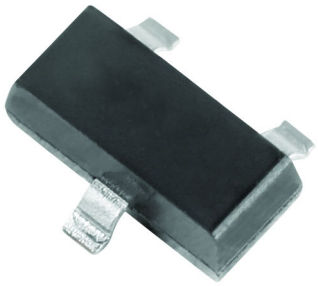
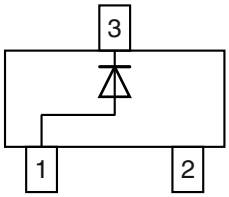
# Small Signal Switching Diodes, High Voltage






## FEATURES

- Silicon epitaxial planar diode
- Fast switching diode in case SOT-23, especially suited for automatic insertion
- AEC-Q101 qualified available
- Base P/N-E3 - RoHS-compliant, commercial grade
- Base P/N-HE3_A - RoHS-compliant, AEC-Q101 qualified
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

AUTOMOTIVE GRADE Available

Pb-free

e3

RoHS COMPLIANT

## LINKS TO ADDITIONAL RESOURCES

3D Models | Models | Marking | Parametric Search | Order Samples

## MECHANICAL DATA

**Case:** SOT-23
**Weight:** approx. 9.2 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 | AEC-Q101 QUALIFIED | TYPE MARKING | CIRCUIT CONFIGURATION | TAPED UNITS PER REEL | MINIMUM ORDER QUANTITY |
|---|---|---|---|---|---|---|---|
| BAS19 | $V_R$ = 100 V | BAS19-E3-08 | no | A8G | Single | 3 000 (8 mm tape on 7" reel) | 15 000 |
| | | BAS19-HE3_A-08 | yes | | | | |
| | | BAS19-E3-18 | no | | | 10 000 (8 mm tape on 13" reel) | 10 000 |
| | | BAS19-HE3_A-18 | yes | | | | |
| BAS20 | $V_R$ = 150 V | BAS20-E3-08 | no | A9G | Single | 3 000 (8 mm tape on 7" reel) | 15 000 |
| | | BAS20-HE3_A-08 | yes | | | | |
| | | BAS20-E3-18 | no | | | 10 000 (8 mm tape on 13" reel) | 10 000 |
| | | BAS20-HE3_A-18 | yes | | | | |
| BAS21 | $V_R$ = 200 V | BAS21-E3-08 | no | AAG | Single | 3 000 (8 mm tape on 7" reel) | 15 000 |
| | | BAS21-HE3_A-08 | yes | | | | |
| | | BAS21-E3-18 | no | | | 10 000 (8 mm tape on 13" reel) | 10 000 |
| | | BAS21-HE3_A-18 | yes | | | | |

**PACKAGE**

| PACKAGE NAME | WEIGHT | MOLDING COMPOUND FLAMMABILITY RATING | MOISTURE SENSITIVITY LEVEL | SOLDERING CONDITIONS |
|---|---|---|---|---|
| SOT-23 | 9.2 mg | UL 94 V-0 | MSL 1 (according J-STD-020) | Peak temperature max. 260 °C |


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| **ABSOLUTE MAXIMUM RATINGS** ($T_{amb}$ = 25 °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 (1) | t = 1 µs | | $I_{FSM}$ | 2.5 | A |
| Non repetitive peak forward surge current(1) | t = 1 s | | $I_{FSM}$ | 0.5 | A |
| Maximum average forward rectified current (1) | f ≥ 50 Hz | | $I_{F(AV)}$ | 250 | mA |
| DC forward current (1) | | | $I_F$ | 350 | mA |
| Repetitive peak forward current | | | $I_{FRM}$ | 625 | mA |
| Power dissipation | On FR-4 board with recommended soldering footprint | | $P_{tot}$ | 300 | mW |
| | Infinite heatsink | | | 500 | mW |

**Note**

(1) Infinite heatsink

| **THERMAL CHARACTERISTICS** ($T_{amb}$ = 25 °C, unless otherwise specified) | | | | |
|---|---|---|---|---|
| **PARAMETER** | **TEST CONDITION** | **SYMBOL** | **VALUE** | **UNIT** |
| Thermal resistance junction to ambient air | according to JEDEC® 51-3 on FR-4 board with recommended soldering footprint | $R_{thJA}$ | 420 | K/W |
| Thermal resistance junction to lead | Infinite heatsink | $R_{thJL}$ | 250 | K/W |
| Junction temperature | | $T_j$ | 150 | °C |
| Storage temperature range | | $T_{stg}$ | -65 to +150 | °C |
| Operating temperature range | | $T_{op}$ | -55 to +150 | °C |

| **ELECTRICAL CHARACTERISTICS** ($T_{amb}$ = 25 °C, unless otherwise specified) | | | | | | | |
|---|---|---|---|---|---|---|---|
| **PARAMETER** | **TEST CONDITION** | **PART** | **SYMBOL** | **MIN.** | **TYP.** | **MAX.** | **UNIT** |
| Forward voltage | $I_F$ = 100 mA | | $V_F$ | | | 1.0 | V |
| | $I_F$ = 200 mA | | $V_F$ | | | 1.25 | V |
| Leakage current | $V_R$ = 100 V | BAS19 | $I_R$ | | | 100 | nA |
| | $V_R$ = 150 V | BAS20 | $I_R$ | | | 100 | nA |
| | $V_R$ = 200 V | BAS21 | $I_R$ | | | 100 | nA |
| | $V_R = V_{Rmax.}$, $T_j$ = 150 °C | | $I_R$ | | | 100 | µA |
| Dynamic forward resistance | $I_F$ = 10 mA | | $r_f$ | | 5 | | Ω |
| Diode capacitance | $V_R$ = 0, f = 1 MHz | | $C_D$ | | | 5 | pF |
| Reverse recovery time | $I_F = I_R$ = 30 mA, $R_L$ = 100 Ω, $i_R$ = 3 mA | | $t_{rr}$ | | | 50 | ns |


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## TYPICAL CHARACTERISTICS ($T_{amb}$ = 25 °C, unless otherwise specified)

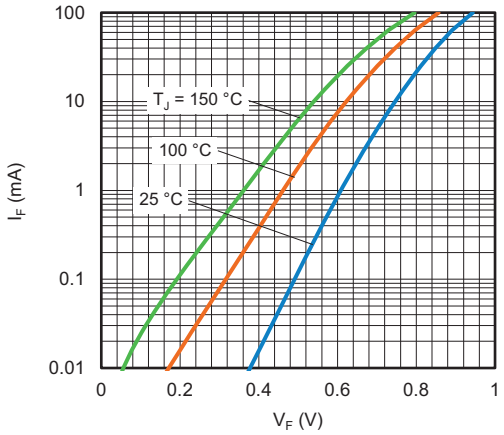



Fig. 1 - Typical Forward Current vs. Forward Voltage

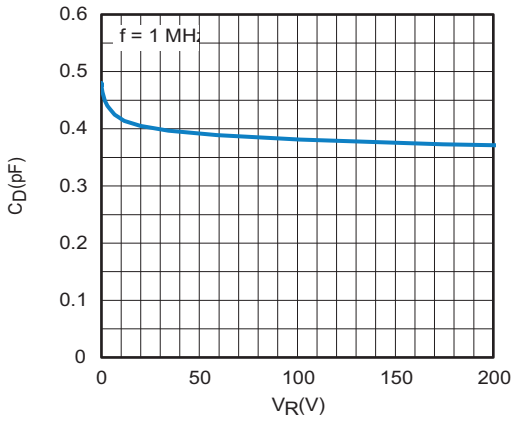



Fig. 3 - Typical Capacitance vs. Reverse Voltage

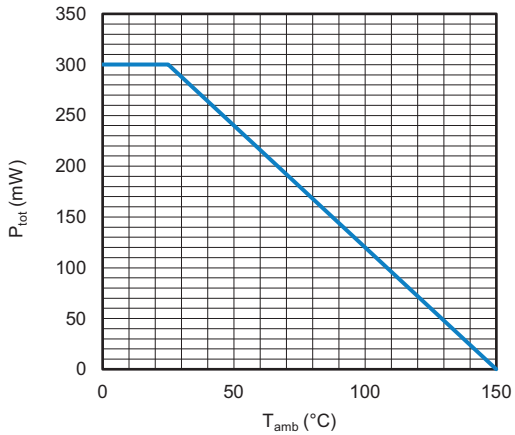



Fig. 2 - Admissible Power Dissipation vs. Ambient Temperature

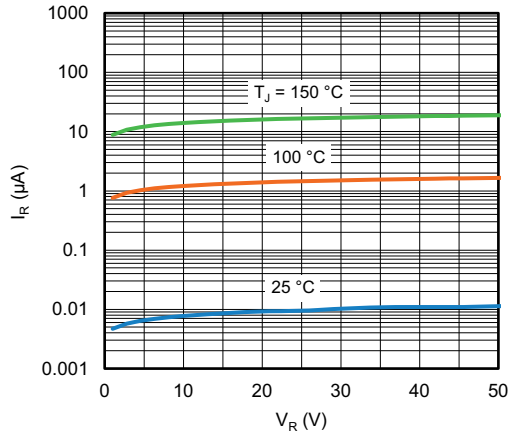
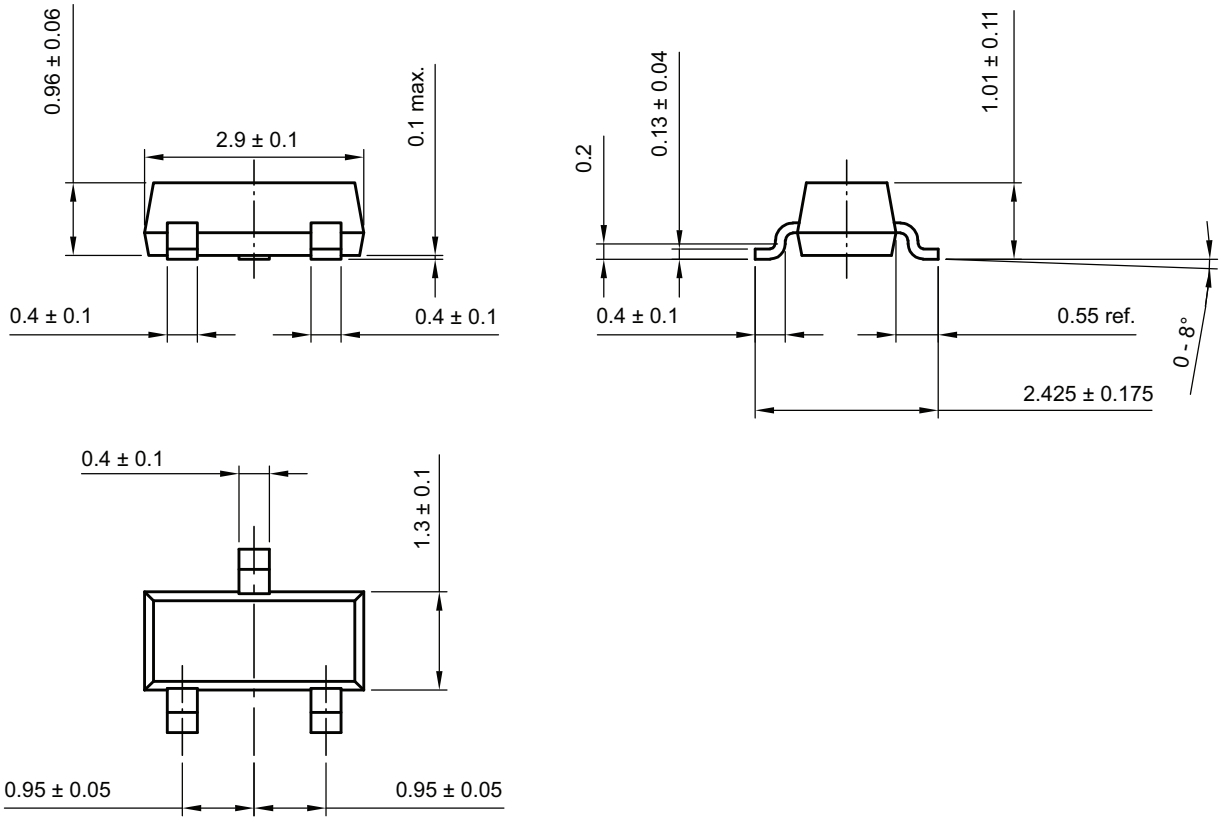


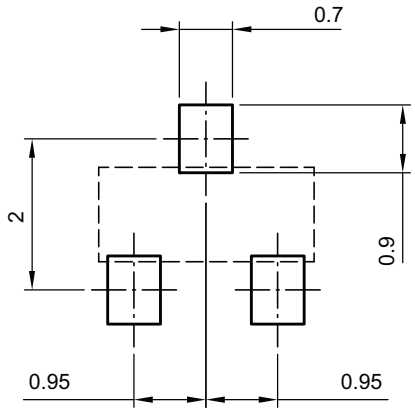

Fig. 4 - Typical Reverse Leakage Current vs. Reverse Voltage


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**PACKAGE DIMENSIONS** in millimeters: **SOT-23**



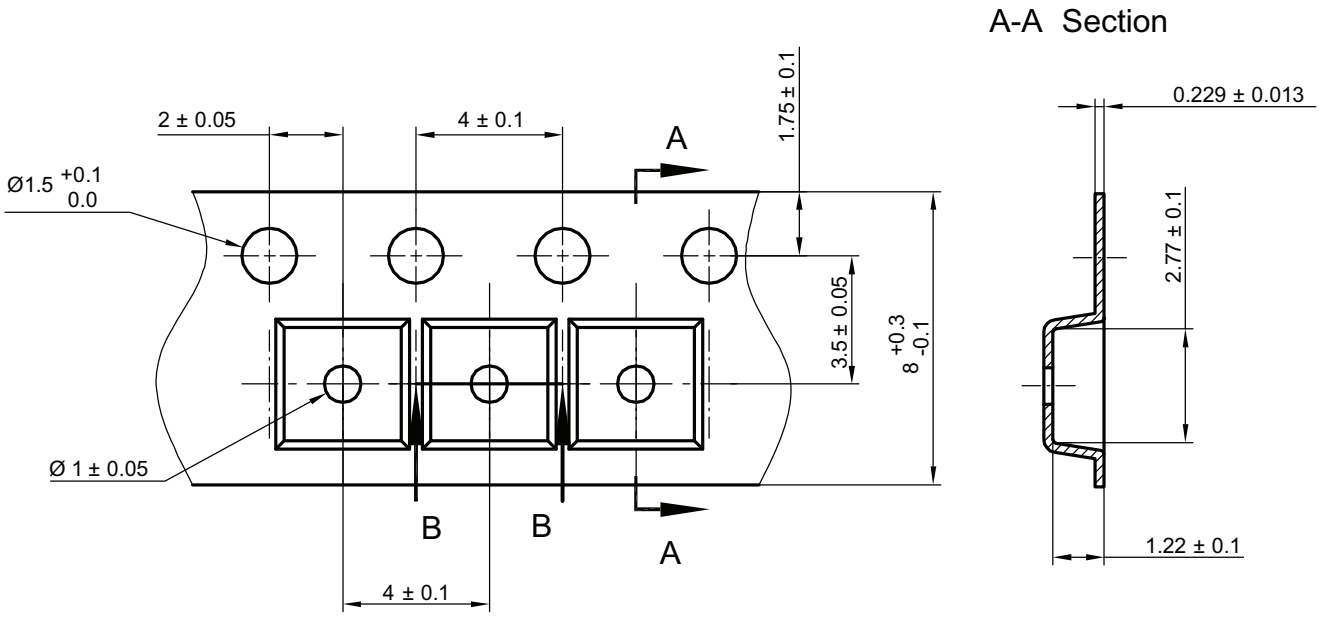

footprint recommendation:



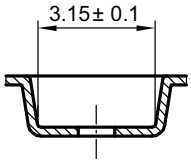

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## CARRIER TAPE SOT-23

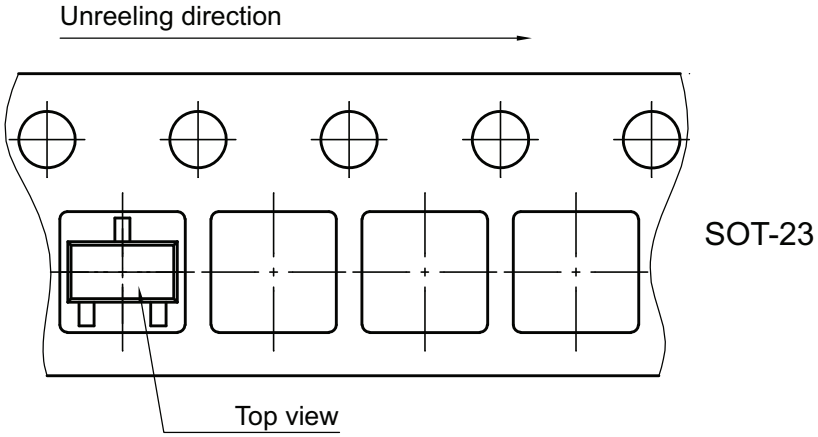



B-B Section




Created Date: 04-Feb-2010
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S8-V-3929.01-005 (4)

## ORIENTATION IN CARRIER TAPE SOT-23




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