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BAS16L, SBAS16L

Switching Diode

Features

- S Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable
- These Devices are Pb-Free, Halogen Free/BFR Free and are RoHS Compliant

MAXIMUM RATINGS

| Rating | Symbol | Value | Unit |
|--|------------------|-------|------|
| Continuous Reverse Voltage | V_R | 100 | V |
| Peak Forward Current | I_F | 200 | mA |
| Non-Repetitive Peak Forward Surge Current 60 Hz | $I_{FSM(surge)}$ | 500 | mA |
| Repetitive Peak Forward Current (Note 3) | I_{FRM} | 1.0 | A |
| Non-Repetitive Peak Forward Current (Square Wave, $T_J = 25^\circ\text{C}$ prior to surge) | I_{FSM} | | A |
| $t = 1 \mu\text{s}$ | | 36.0 | |
| $t = 10 \mu\text{s}$ | | 18.0 | |
| $t = 100 \mu\text{s}$ | | 6.0 | |
| $t = 1 \text{ms}$ | | 3.0 | |
| $t = 1 \text{s}$ | | 0.7 | |

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

THERMAL CHARACTERISTICS

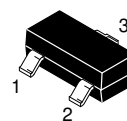
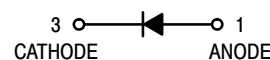
| Characteristic | Symbol | Max | Unit |
|---|-----------------|-------------|---------------------------|
| Total Device Dissipation FR-5 Board (Note 1) $T_A = 25^\circ\text{C}$ Derate above 25°C | P_D | 225 | mW |
| | | 1.8 | mW/ $^\circ\text{C}$ |
| Thermal Resistance, Junction-to-Ambient | $R_{\theta JA}$ | 556 | $^\circ\text{C}/\text{W}$ |
| Total Device Dissipation Alumina Substrate, (Note 2) $T_A = 25^\circ\text{C}$ Derate above 25°C | P_D | 300 | mW |
| | | 2.4 | mW/ $^\circ\text{C}$ |
| Thermal Resistance, Junction-to-Ambient | $R_{\theta JA}$ | 417 | $^\circ\text{C}/\text{W}$ |
| Junction and Storage Temperature | T_J, T_{stg} | -55 to +150 | $^\circ\text{C}$ |

1. FR-5 = $1.0 \times 0.75 \times 0.062$ in.
2. Alumina = $0.4 \times 0.3 \times 0.024$ in. 99.5% alumina.
3. Square Wave, $f = 40 \text{kHz}$, $PW = 200 \text{ns}$
Test Duration = 60 s, $T_J = 25^\circ\text{C}$ prior to surge.



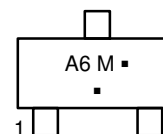
ON Semiconductor®

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**SOT-23
CASE 318
STYLE 8**

MARKING DIAGRAM



A6 = Specific Device Code
M = Date Code*
▪ = Pb-Free Package

(Note: Microdot may be in either location)

*Date Code orientation and/or overbar may vary depending upon manufacturing location.

ORDERING INFORMATION

| Device | Package | Shipping† |
|------------|------------------|-------------------|
| BAS16LT1G | SOT-23 (Pb-Free) | 3000/Tape & Reel |
| BAS16LT3G | SOT-23 (Pb-Free) | 10000/Tape & Reel |
| SBAS16LT1G | SOT-23 (Pb-Free) | 3000/Tape & Reel |
| SBAS16LT3G | SOT-23 (Pb-Free) | 10000/Tape & Reel |

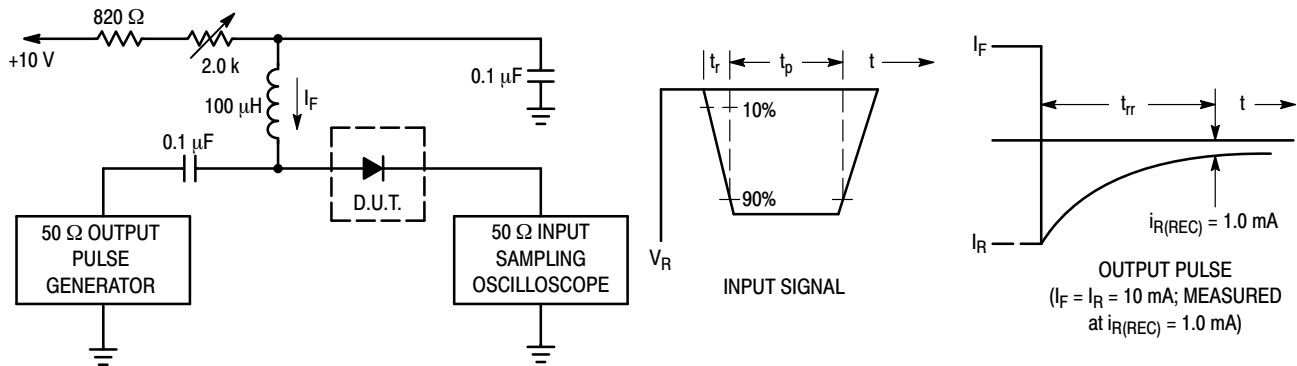
†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

BAS16L, SBAS16L

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

| Characteristic | Symbol | Min | Max | Unit |
|---|------------|-----|----------------------------|-----------------|
| OFF CHARACTERISTICS | | | | |
| Reverse Voltage Leakage Current ($V_R = 100\text{ V}$) ($V_R = 75\text{ Vdc}$, $T_J = 150^\circ\text{C}$) ($V_R = 25\text{ Vdc}$, $T_J = 150^\circ\text{C}$) | I_R | – | 1.0 50 30 | μAdc |
| Reverse Breakdown Voltage ($I_{BR} = 100\ \mu\text{Adc}$) | $V_{(BR)}$ | 100 | – | Vdc |
| Forward Voltage ($I_F = 1.0\ \text{mA}$) ($I_F = 10\ \text{mA}$) ($I_F = 50\ \text{mA}$) ($I_F = 150\ \text{mA}$) | V_F | – | 715 855 1000 1250 | mV |
| Diode Capacitance ($V_R = 0$, $f = 1.0\ \text{MHz}$) | C_D | – | 2.0 | pF |
| Forward Recovery Voltage ($I_F = 10\ \text{mA}$, $t_r = 20\ \text{ns}$) | V_{FR} | – | 1.75 | Vdc |
| Reverse Recovery Time ($I_F = I_R = 10\ \text{mA}$, $R_L = 50\ \Omega$) | t_{rr} | – | 6.0 | ns |
| Stored Charge ($I_F = 10\ \text{mA}$ to $V_R = 5.0\ \text{Vdc}$, $R_L = 500\ \Omega$) | Q_S | – | 45 | pC |

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.



- Notes: 1. A 2.0 k Ω variable resistor adjusted for a Forward Current (I_F) of 10 mA.
 2. Input pulse is adjusted so $I_{R(\text{peak})}$ is equal to 10 mA.
 3. $t_p \gg t_{rr}$

Figure 1. Recovery Time Equivalent Test Circuit

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TYPICAL CHARACTERISTICS

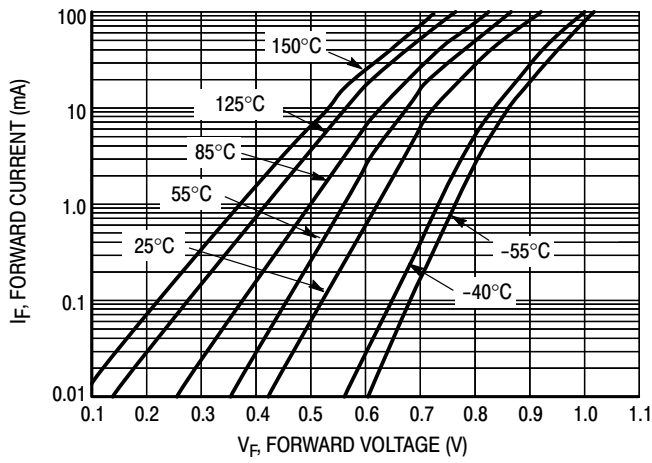


Figure 2. V_F vs. I_F

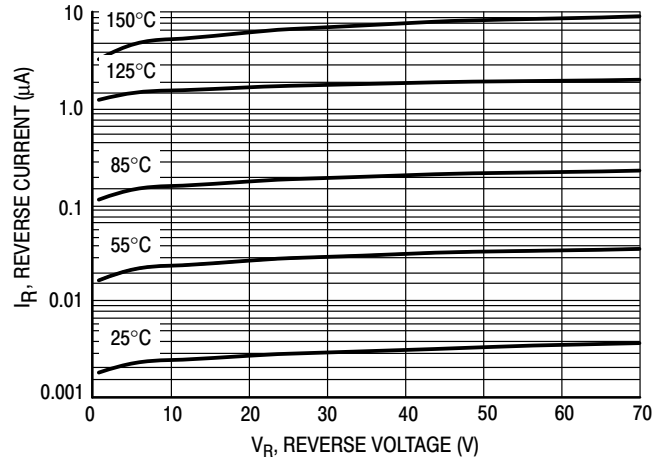


Figure 3. I_R vs. V_R

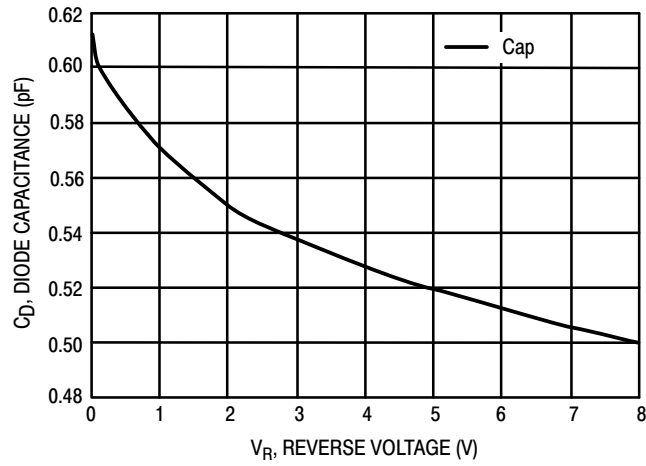
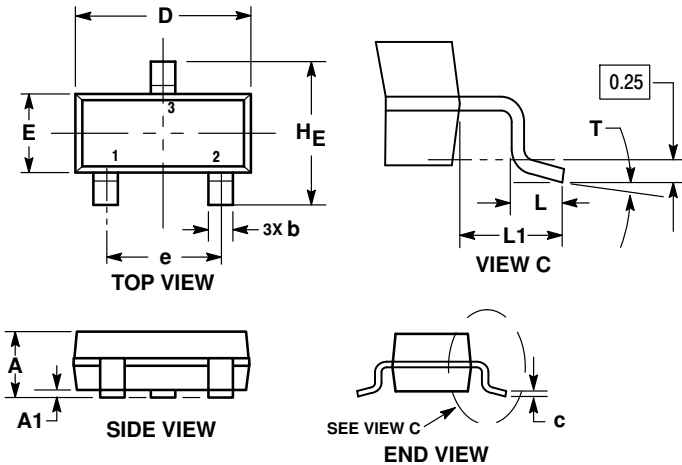


Figure 4. Capacitance

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PACKAGE DIMENSIONS

SOT-23 (TO-236)
CASE 318-08
ISSUE AR

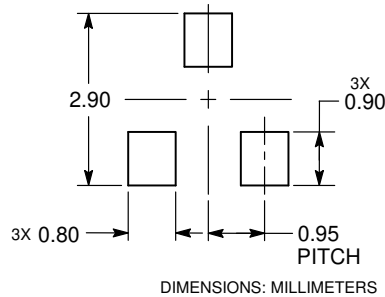


- NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
 2. CONTROLLING DIMENSION: MILLIMETERS.
 3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF THE BASE MATERIAL.
 4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR GATE BURRS.

| DIM | MILLIMETERS | | | INCHES | | |
|-----|-------------|------|------|--------|-------|-------|
| | MIN | NOM | MAX | MIN | NOM | MAX |
| A | 0.89 | 1.00 | 1.11 | 0.035 | 0.039 | 0.044 |
| A1 | 0.01 | 0.06 | 0.10 | 0.000 | 0.002 | 0.004 |
| b | 0.37 | 0.44 | 0.50 | 0.015 | 0.017 | 0.020 |
| c | 0.08 | 0.14 | 0.20 | 0.003 | 0.006 | 0.008 |
| D | 2.80 | 2.90 | 3.04 | 0.110 | 0.114 | 0.120 |
| E | 1.20 | 1.30 | 1.40 | 0.047 | 0.051 | 0.055 |
| e | 1.78 | 1.90 | 2.04 | 0.070 | 0.075 | 0.080 |
| L | 0.30 | 0.43 | 0.55 | 0.012 | 0.017 | 0.022 |
| L1 | 0.35 | 0.54 | 0.69 | 0.014 | 0.021 | 0.027 |
| HE | 2.10 | 2.40 | 2.64 | 0.083 | 0.094 | 0.104 |
| T | 0° | --- | 10° | 0° | --- | 10° |

- STYLE 8:
 PIN 1. ANODE
 2. NO CONNECTION
 3. CATHODE

RECOMMENDED SOLDERING FOOTPRINT*



*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

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