

# BAS16L

## 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	$I_{FSM(surge)}$	1.8	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	
$t = 10 \text{ ms}$		1.8	
$t = 100 \text{ ms}$		1.3	
$t = 1 \text{ s}$		1.0	

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

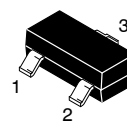
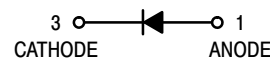
Characteristic	Symbol	Max	Unit
Total Device Dissipation FR-5 Board (Note 1) $T_A = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	225	mW
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	556	$^\circ\text{C}/\text{W}$
Total Device Dissipation Alumina Substrate, (Note 2) $T_A = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	300	mW
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.



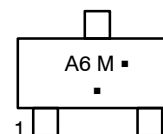
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SOT-23  
CASE 318  
STYLE 8

### 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

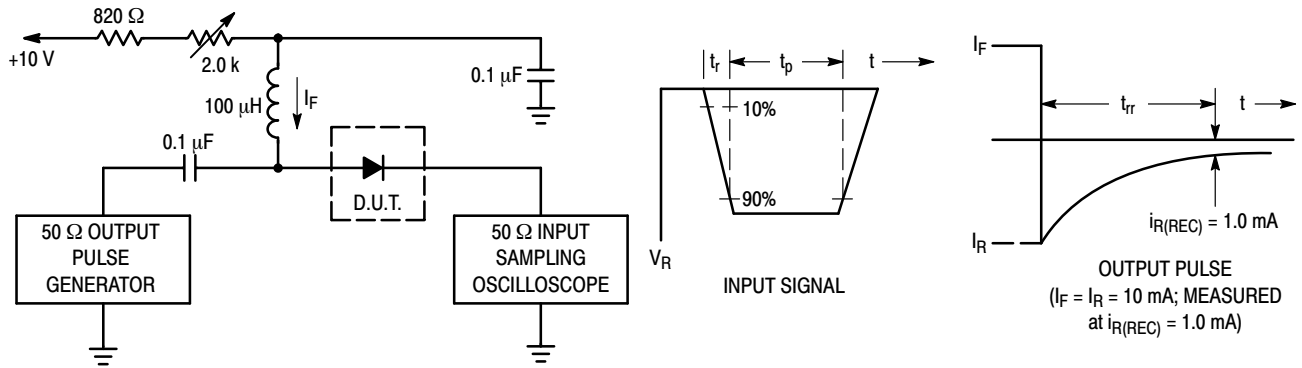
†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

# BAS16L

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

Characteristic	Symbol	Min	Max	Unit
<b>OFF CHARACTERISTICS</b>				
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	$\mu\text{Adc}$
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 $\Omega$  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

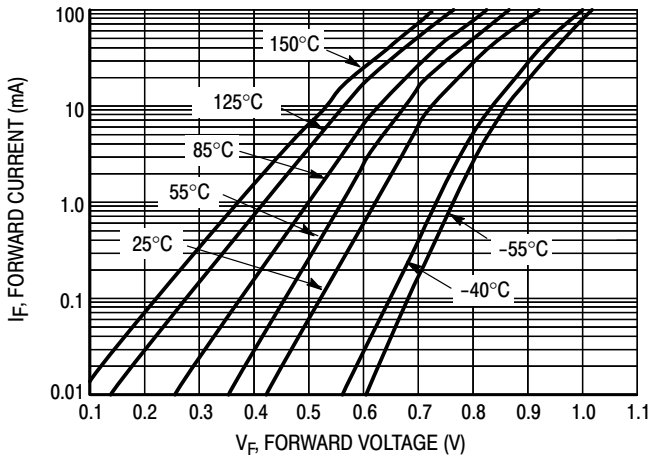


Figure 2.  $V_F$  vs.  $I_F$

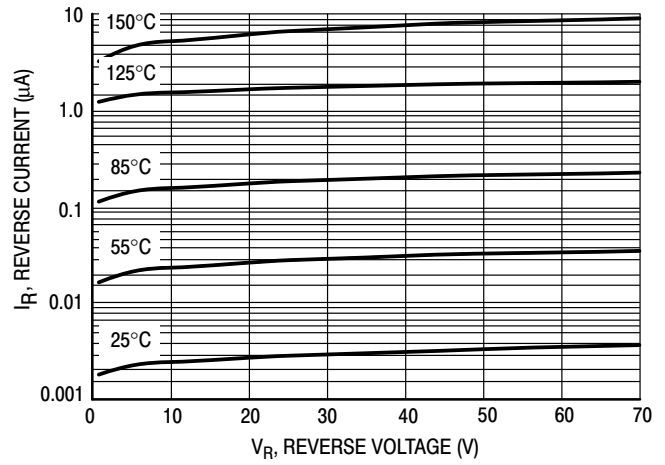


Figure 3.  $I_R$  vs.  $V_R$

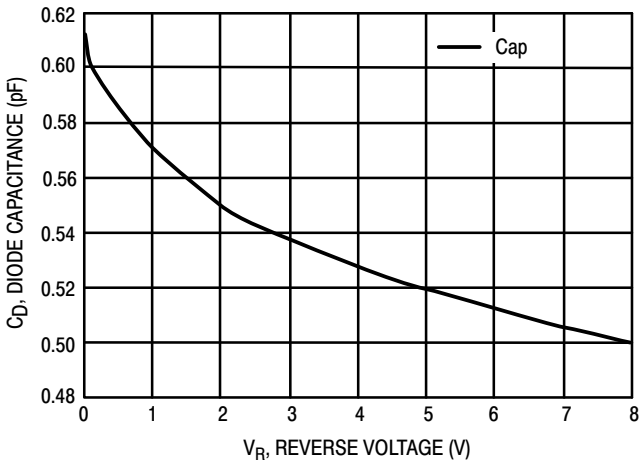


Figure 4. Capacitance

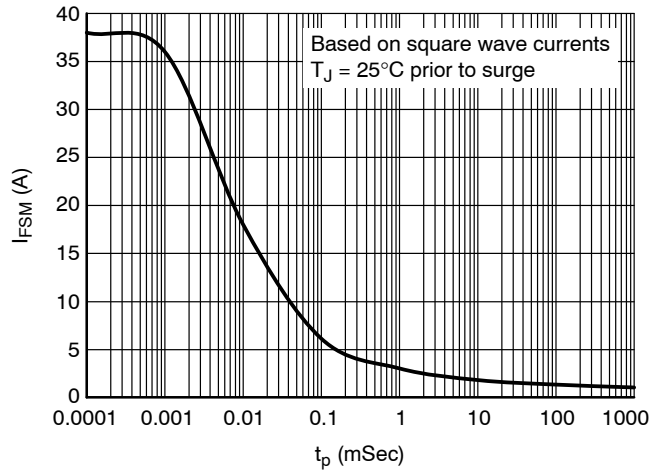


Figure 5. Maximum Non-repetitive Peak Forward Current as a Function of Pulse Duration, Typical Values

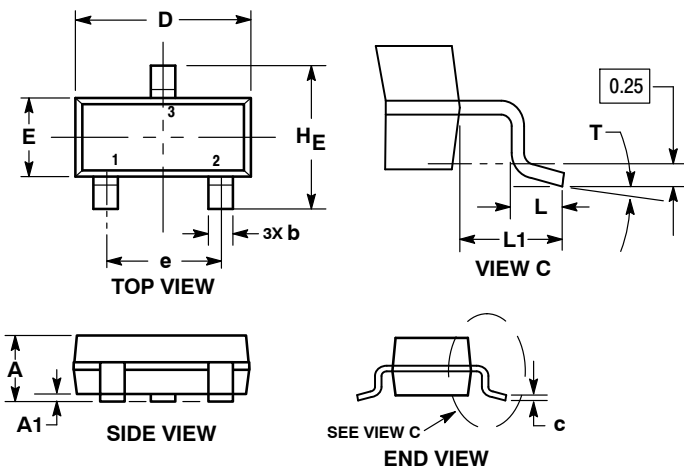
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## PACKAGE DIMENSIONS

### SOT-23 (TO-236)

CASE 318-08

ISSUE AS



#### NOTES:

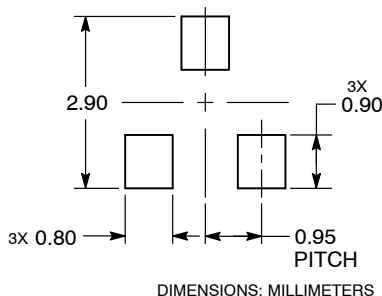
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF THE BASE MATERIAL.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR GATE BURRS.

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:

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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