



**THE DATASHEET OF  
SBAS16LT3G**

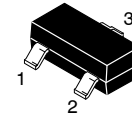


# Switching Diode

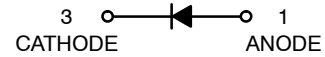
## BAS16L

### 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



SOT-23  
CASE 318  
STYLE 8



### 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	A
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	

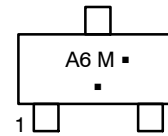
Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

### 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.

### 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 <sup>†</sup>
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

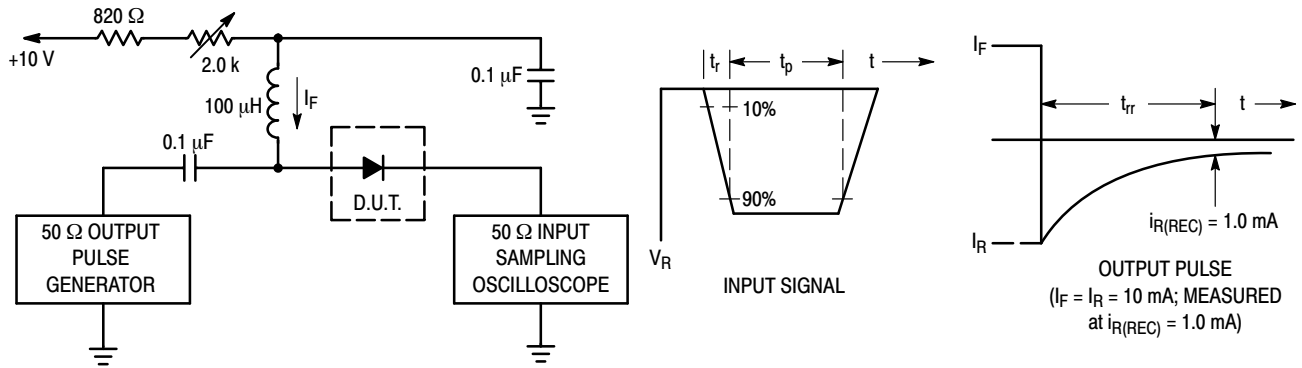
<sup>†</sup>For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

# 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**

# BAS16L

## TYPICAL CHARACTERISTICS

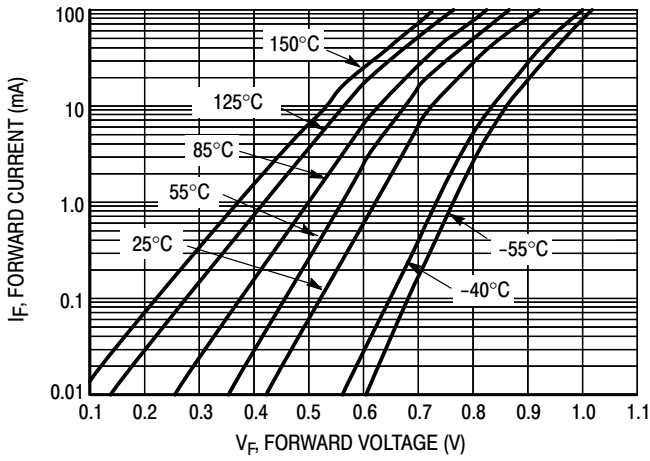


Figure 2.  $V_F$  vs.  $I_F$

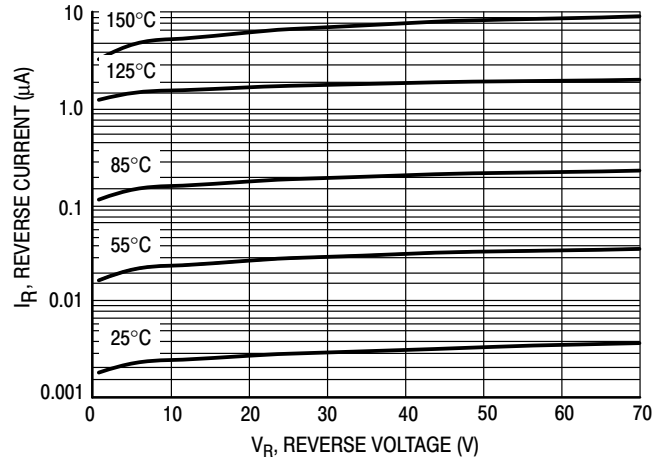


Figure 3.  $I_R$  vs.  $V_R$

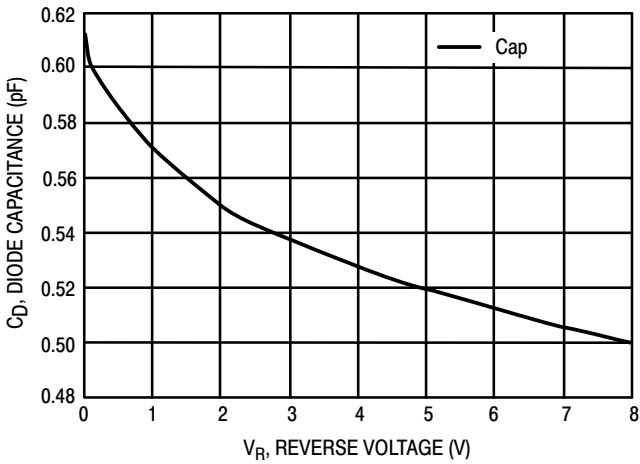


Figure 4. Capacitance

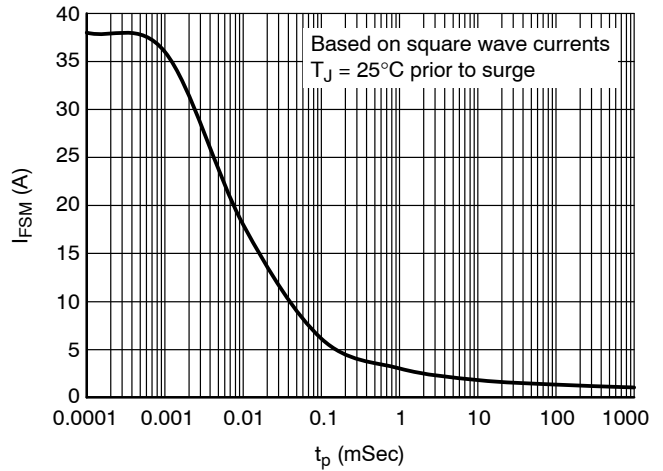


Figure 5. Maximum Non-repetitive Peak Forward Current as a Function of Pulse Duration, Typical Values

# MECHANICAL CASE OUTLINE PACKAGE DIMENSIONS



**SOT-23 (TO-236)**  
CASE 318  
ISSUE AT

DATE 01 MAR 2023

SCALE 4:1



**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
H <sub>E</sub>	2.10	2.40	2.64	0.083	0.094	0.104
T	0°	---	10°	0°	---	10°

**GENERIC MARKING DIAGRAM\***



- XXX = Specific Device Code
- M = Date Code
- = Pb-Free Package

\*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "▪", may or may not be present. Some products may not follow the Generic Marking.



**RECOMMENDED MOUNTING 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.

**STYLES ON PAGE 2**

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**MECHANICAL CASE OUTLINE  
PACKAGE DIMENSIONS**



**SOT-23 (TO-236)  
CASE 318  
ISSUE AT**

DATE 01 MAR 2023

- STYLE 1 THRU 5:  
CANCELLED
- STYLE 6:  
PIN 1. BASE  
2. EMITTER  
3. COLLECTOR
- STYLE 7:  
PIN 1. EMITTER  
2. BASE  
3. COLLECTOR
- STYLE 8:  
PIN 1. ANODE  
2. NO CONNECTION  
3. CATHODE
- STYLE 9:  
PIN 1. ANODE  
2. ANODE  
3. CATHODE
- STYLE 10:  
PIN 1. DRAIN  
2. SOURCE  
3. GATE
- STYLE 11:  
PIN 1. ANODE  
2. CATHODE  
3. CATHODE-ANODE
- STYLE 12:  
PIN 1. CATHODE  
2. CATHODE  
3. ANODE
- STYLE 13:  
PIN 1. SOURCE  
2. DRAIN  
3. GATE
- STYLE 14:  
PIN 1. CATHODE  
2. GATE  
3. ANODE
- STYLE 15:  
PIN 1. GATE  
2. CATHODE  
3. ANODE
- STYLE 16:  
PIN 1. ANODE  
2. CATHODE  
3. CATHODE
- STYLE 17:  
PIN 1. NO CONNECTION  
2. ANODE  
3. CATHODE
- STYLE 18:  
PIN 1. NO CONNECTION  
2. CATHODE  
3. ANODE
- STYLE 19:  
PIN 1. CATHODE  
2. ANODE  
3. CATHODE-ANODE
- STYLE 20:  
PIN 1. CATHODE  
2. ANODE  
3. GATE
- STYLE 21:  
PIN 1. GATE  
2. SOURCE  
3. DRAIN
- STYLE 22:  
PIN 1. RETURN  
2. OUTPUT  
3. INPUT
- STYLE 23:  
PIN 1. ANODE  
2. ANODE  
3. CATHODE
- STYLE 24:  
PIN 1. GATE  
2. DRAIN  
3. SOURCE
- STYLE 25:  
PIN 1. ANODE  
2. CATHODE  
3. GATE
- STYLE 26:  
PIN 1. CATHODE  
2. ANODE  
3. NO CONNECTION
- STYLE 27:  
PIN 1. CATHODE  
2. CATHODE  
3. CATHODE
- STYLE 28:  
PIN 1. ANODE  
2. ANODE  
3. ANODE

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