

# Dual Switching Diode Common Anode

## BAW56L, SBAW56L

### 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 (EACH DIODE)

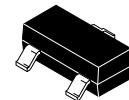
Rating	Symbol	Value	Unit
Reverse Voltage	$V_R$	70	V
Forward Current	$I_F$	200	mA
Forward Surge Current (60 Hz @ 1 cycle)	$I_{FSM}$	2.0	A
Non-Repetitive Peak Forward Current $t = 1 \mu s$ (Note 3)	$I_{FSM}$	4.0	A
Repetitive Peak Forward Current Pulse Wave = 1 sec, Duty Cycle = 66%	$I_{FRM}$	500	mA
ESD Rating: Human Body Model Machine Model Charged Device Model	ESD	Class 3A Class M4 Class C3	

### THERMAL CHARACTERISTICS

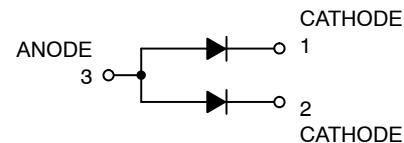
Characteristic	Symbol	Max	Unit
Total Device Dissipation FR-5 Board (Note 1) $T_A = 25^\circ C$ Derate above $25^\circ C$	$P_D$	225 1.8	mW mW/ $^\circ C$
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	556	$^\circ C/W$
Total Device Dissipation Alumina Substrate, (Note 2) $T_A = 25^\circ C$ Derate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

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.

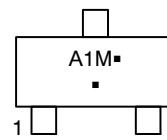
1. FR-5 =  $1.0 \times 0.75 \times 0.062$  in.
2. Alumina =  $0.4 \times 0.3 \times 0.024$  in. 99.5% alumina.
3. Square Wave;  $T_J = 25^\circ C$ .



SOT-23 (TO-236)  
CASE 318  
STYLE 12



### MARKING DIAGRAM



A1 = 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>
BAW56LT1G	SOT-23 (Pb-Free)	3,000 / Tape & Reel
SBAW56LT1G	SOT-23 (Pb-Free)	3,000 / Tape & Reel
BAW56LT3G	SOT-23 (Pb-Free)	10,000 / Tape & Reel
SBAW56LT3G	SOT-23 (Pb-Free)	10,000 / 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.

# BAW56L, SBAW56L

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

Characteristic	Symbol	Min	Max	Unit
Reverse Breakdown Voltage ( $I_{(BR)} = 100 \mu\text{A}$ )	$V_{(BR)}$	70	—	V
Reverse Voltage Leakage Current ( $V_R = 25 \text{ V}$ , $T_J = 150^\circ\text{C}$ ) ( $V_R = 70 \text{ V}$ ) ( $V_R = 70 \text{ V}$ , $T_J = 150^\circ\text{C}$ )	$I_R$	— — —	30 2.5 50	$\mu\text{A}$
Diode Capacitance ( $V_R = 0 \text{ V}$ , $f = 1.0 \text{ MHz}$ )	$C_D$	—	2.0	pF
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
Reverse Recovery Time ( $I_F = I_R = 10 \text{ mA}$ , $I_{R(\text{REC})} = 1.0 \text{ mA}$ ) (Figure 1) $R_L = 100 \Omega$	$t_{rr}$	—	6.0	ns

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.

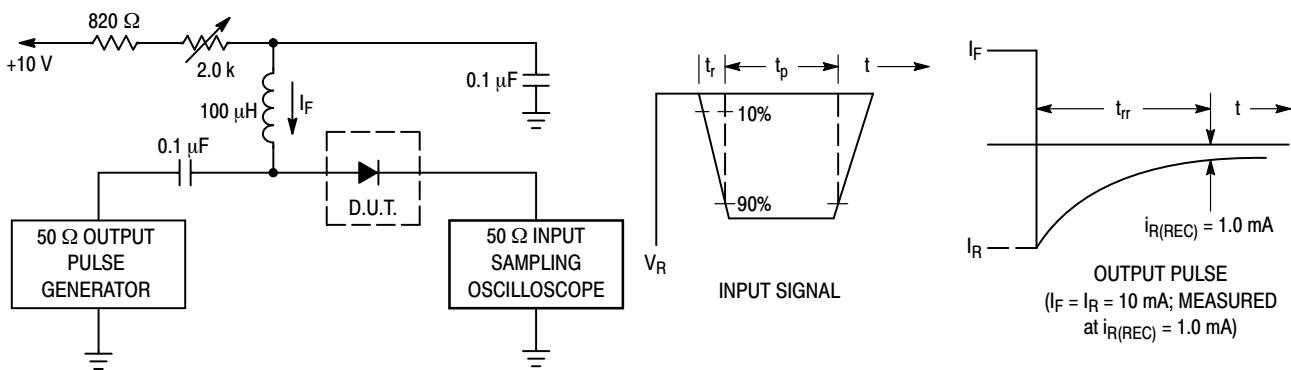


Figure 1. Recovery Time Equivalent Test Circuit

# BAW56L, SBAW56L

## Curves Applicable to Each Cathode

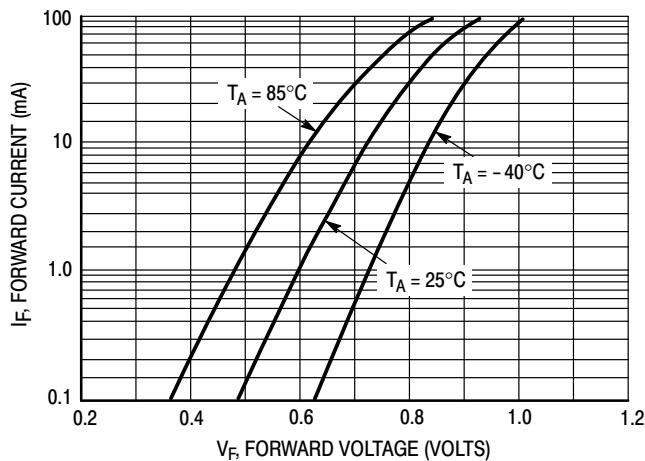


Figure 2. Forward Voltage

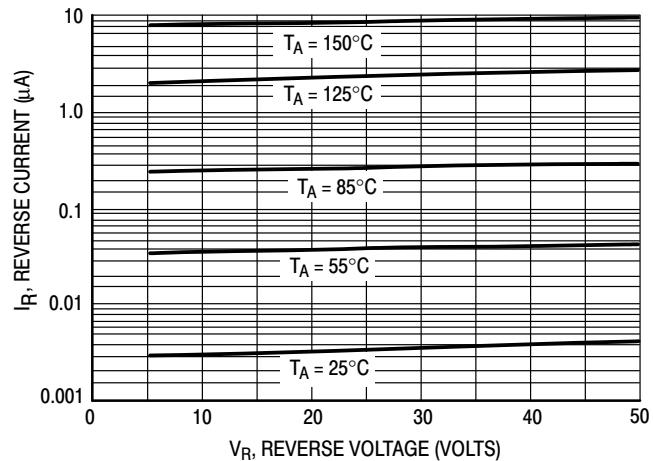


Figure 3. Leakage Current

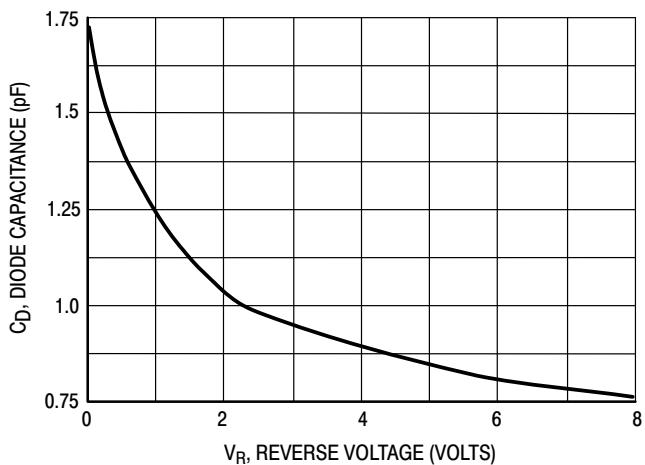


Figure 4. Capacitance

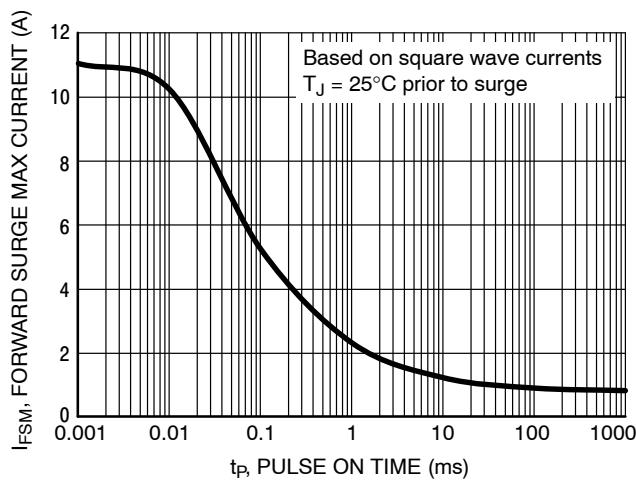
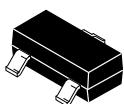


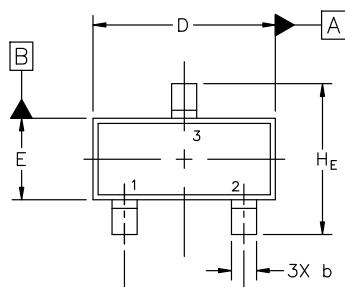
Figure 5. Forward Surge Current



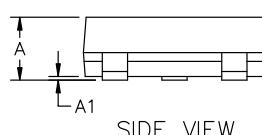
SCALE 4:1

**SOT-23 (TO-236) 2.90x1.30x1.00 1.90P  
CASE 318  
ISSUE AU**

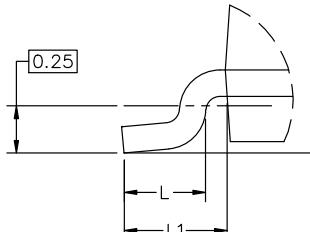
DATE 14 AUG 2024



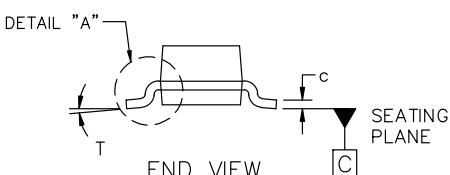
### TOP VIEW



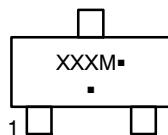
### SIDE VIEW



DETAIL "A"  
Scale 3:1



## GENERIC MARKING DIAGRAM\*



XXX = Specific Device Code

XXX = Specific B

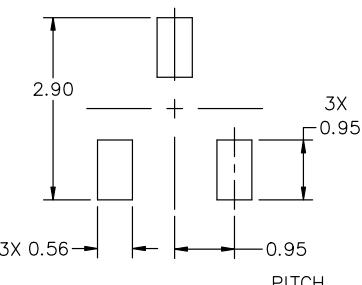
M = Date Code  
■ = Pb-Free Package

\*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.

MILLIMETERS			
DIM	MIN	NOM	MAX
A	0.89	1.00	1.11
A1	0.01	0.06	0.10
b	0.37	0.44	0.50
c	0.08	0.14	0.20
D	2.80	2.90	3.04
E	1.20	1.30	1.40
e	1.78	1.90	2.04
L	0.30	0.43	0.55
L1	0.35	0.54	0.69
H <sub>E</sub>	2.10	2.40	2.64
T	0°	---	10°

## NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 2018.
2. CONTROLLING DIMENSIONS: 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.



## RECOMMENDED MOUNTING FOOTPRINT

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

## STYLES ON PAGE 2

<b>DOCUMENT NUMBER:</b>	<b>98ASB42226B</b>	Electronic versions are uncontrolled except when accessed directly from the Document Repository. Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red.
<b>DESCRIPTION:</b>	<b>SOT-23 (TO-236) 2.90x1.30x1.00 1.90P</b>	<b>PAGE 1 OF 2</b>

**onsemi** and **ONSEMI** are trademarks of Semiconductor Components Industries, LLC dba **onsemi** or its subsidiaries in the United States and/or other countries. **onsemi** reserves the right to make changes without further notice to any products herein. **onsemi** makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does **onsemi** assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. **onsemi** does not convey any license under its patent rights nor the rights of others.

**SOT-23 (TO-236) 2.90x1.30x1.00 1.90P**

CASE 318

ISSUE AU

DATE 14 AUG 2024

STYLE 1 THRU 5:  
CANCELLEDSTYLE 6:  
PIN 1. BASE  
2. Emitter  
3. CollectorSTYLE 7:  
PIN 1. Emitter  
2. Base  
3. CollectorSTYLE 8:  
PIN 1. Anode  
2. No Connection  
3. CathodeSTYLE 9:  
PIN 1. Anode  
2. Anode  
3. CathodeSTYLE 10:  
PIN 1. Drain  
2. Source  
3. GateSTYLE 11:  
PIN 1. Anode  
2. Cathode  
3. Cathode-AnodeSTYLE 12:  
PIN 1. Cathode  
2. Cathode  
3. AnodeSTYLE 13:  
PIN 1. Source  
2. Drain  
3. GateSTYLE 14:  
PIN 1. Cathode  
2. Gate  
3. AnodeSTYLE 15:  
PIN 1. Gate  
2. Cathode  
3. AnodeSTYLE 16:  
PIN 1. Anode  
2. Cathode  
3. CathodeSTYLE 17:  
PIN 1. No Connection  
2. Anode  
3. CathodeSTYLE 18:  
PIN 1. No Connection  
2. Cathode  
3. AnodeSTYLE 19:  
PIN 1. Cathode  
2. Anode  
3. Cathode-AnodeSTYLE 20:  
PIN 1. Cathode  
2. Anode  
3. GateSTYLE 21:  
PIN 1. Gate  
2. Source  
3. DrainSTYLE 22:  
PIN 1. Return  
2. Output  
3. InputSTYLE 23:  
PIN 1. Anode  
2. Anode  
3. CathodeSTYLE 24:  
PIN 1. Gate  
2. Drain  
3. SourceSTYLE 25:  
PIN 1. Anode  
2. Cathode  
3. GateSTYLE 26:  
PIN 1. Cathode  
2. Anode  
3. No ConnectionSTYLE 27:  
PIN 1. Cathode  
2. Cathode  
3. CathodeSTYLE 28:  
PIN 1. Anode  
2. Anode  
3. Anode

DOCUMENT NUMBER:	98ASB42226B	Electronic versions are uncontrolled except when accessed directly from the Document Repository. Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red.
DESCRIPTION:	SOT-23 (TO-236) 2.90x1.30x1.00 1.90P	PAGE 2 OF 2

**onsemi** and **ONSEMI** are trademarks of Semiconductor Components Industries, LLC dba **onsemi** or its subsidiaries in the United States and/or other countries. **onsemi** reserves the right to make changes without further notice to any products herein. **onsemi** makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does **onsemi** assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. **onsemi** does not convey any license under its patent rights nor the rights of others.

**onsemi**, **ONSEMI**, and other names, marks, and brands are registered and/or common law trademarks of Semiconductor Components Industries, LLC dba "**onsemi**" or its affiliates and/or subsidiaries in the United States and/or other countries. **onsemi** owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of **onsemi**'s product/patent coverage may be accessed at [www.onsemi.com/site/pdf/Patent-Marking.pdf](http://www.onsemi.com/site/pdf/Patent-Marking.pdf). **onsemi** reserves the right to make changes at any time to any products or information herein, without notice. The information herein is provided "as-is" and **onsemi** makes no warranty, representation or guarantee regarding the accuracy of the information, product features, availability, functionality, or suitability of its products for any particular purpose, nor does **onsemi** assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. Buyer is responsible for its products and applications using **onsemi** products, including compliance with all laws, regulations and safety requirements or standards, regardless of any support or applications information provided by **onsemi**. "Typical" parameters which may be provided in **onsemi** data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. **onsemi** does not convey any license under any of its intellectual property rights nor the rights of others. **onsemi** products are not designed, intended, or authorized for use as a critical component in life support systems or any FDA Class 3 medical devices or medical devices with a same or similar classification in a foreign jurisdiction or any devices intended for implantation in the human body. Should Buyer purchase or use **onsemi** products for any such unintended or unauthorized application, Buyer shall indemnify and hold **onsemi** and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that **onsemi** was negligent regarding the design or manufacture of the part. **onsemi** is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

## ADDITIONAL INFORMATION

### TECHNICAL PUBLICATIONS:

Technical Library: [www.onsemi.com/design/resources/technical-documentation](http://www.onsemi.com/design/resources/technical-documentation)  
onsemi Website: [www.onsemi.com](http://www.onsemi.com)

### ONLINE SUPPORT: [www.onsemi.com/support](http://www.onsemi.com/support)

For additional information, please contact your local Sales Representative at  
[www.onsemi.com/support/sales](http://www.onsemi.com/support/sales)

