BAS19LT1, BAS20LT1, BAS21LT1, BAS21DW5T1

Preferred Devices

High Voltage Switching Diode

Device Marking:

- BAS19LT1 = JP
- BAS20LT1 = JR
- BAS21LT1 = JS
- BAS21DW5T1 = JS

Features

- Pb−Free Packages are Available

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Continuous Reverse Voltage BAS19 BAS20 BAS21	V_R	 120 200 250	Vdc
Repetitive Peak Reverse Voltage BAS19 BAS20 BAS21	V_{RRM}	 120 200 250	Vdc
Continuous Forward Current	I_F	200	mAdc
Peak Forward Surge Current	$I_{FM(surge)}$	625	mAdc
Maximum Junction Temperature	T_{Jmax}	150	°C
Power Dissipation (Note 4)	P_D	385	mW

Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

1. Mounted on FR−5 Board = 1.0 x 0.75 x 0.062 in.

ON Semiconductor®

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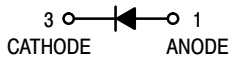
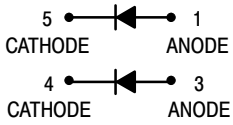
HIGH VOLTAGE SWITCHING DIODE

SOT−23

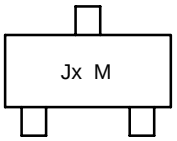


SC−88A



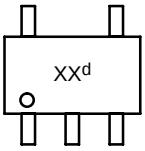
MARKING DIAGRAMS

SOT−23 (TO−236)
CASE 318
STYLE 8



Jx = Specific Device Code
x = P, R or S
M = Date Code

SC−88A (SOT−353)
CASE 419A



XX = Specific Device Code
d = Date Code

ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 4 of this data sheet.

Preferred devices are recommended choices for future use and best overall value.

THERMAL CHARACTERISTICS (SOT−23)

Characteristic	Symbol	Max	Unit
Total Device Dissipation FR−5 Board (Note 2) T_A = 25°C Derate above 25°C	P_D	225 1.8	mW mW/°C
Thermal Resistance Junction−to−Ambient (SOT−23)	$R_{\theta JA}$	556	°C/W
Total Device Dissipation Alumina Substrate (Note 3) T_A = 25°C Derate above 25°C	P_D	300 2.4	mW mW/°C
Thermal Resistance Junction−to−Ambient	$R_{\theta JA}$	417	°C/W
Junction and Storage Temperature Range	T_J, T_{stg}	−55 to +150	°C

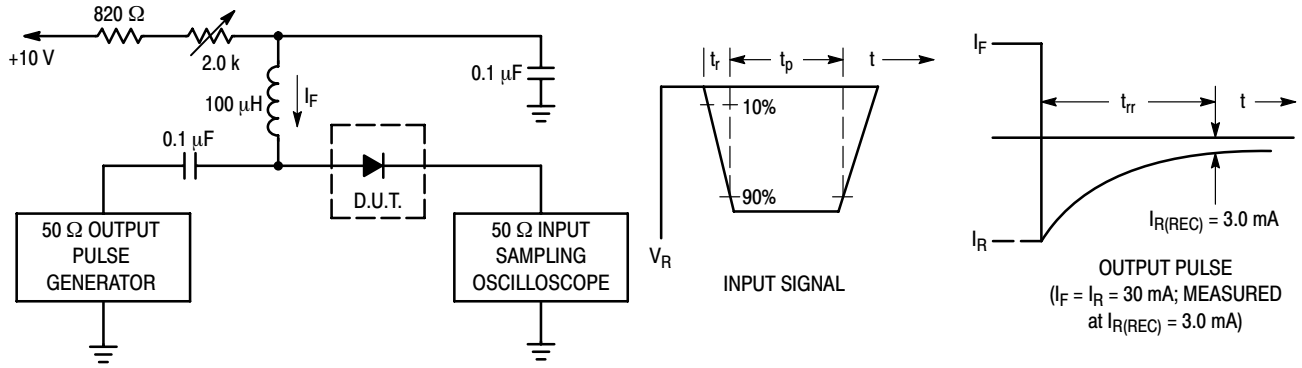
THERMAL CHARACTERISTICS (SC−88A)

Characteristic	Symbol	Max	Unit
Power Dissipation (Note 4)	P_D	385	mW
Thermal Resistance − Junction−to−Ambient Derate Above 25°C	$R_{\theta JA}$	328 3.0	°C/W mW/°C
Maximum Junction Temperature	T_{Jmax}	150	°C
Operating Junction and Storage Temperature Range	T_J, T_{stg}	−55 to +150	°C

2. FR−5 = 1.0 × 0.75 × 0.062 in.
3. Alumina = 0.4 × 0.3 × 0.024 in. 99.5% alumina.
4. Mounted on FR−5 Board = 1.0 x 0.75 x 0.062 in.

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

Characteristic		Symbol	Min	Max	Unit
Reverse Voltage Leakage Current		I_R			μAdc
(V_R = 100 Vdc)	BAS19		−	0.1	
(V_R = 150 Vdc)	BAS20		−	0.1	
(V_R = 200 Vdc)	BAS21		−	0.1	
(V_R = 100 Vdc, T_J = 150°C)	BAS19		−	100	
(V_R = 150 Vdc, T_J = 150°C)	BAS20		−	100	
(V_R = 200 Vdc, T_J = 150°C)	BAS21		−	100	
Reverse Breakdown Voltage		$V_{(BR)}$			Vdc
(I_{BR} = 100 μAdc)	BAS19		120	−	
(I_{BR} = 100 μAdc)	BAS20		200	−	
(I_{BR} = 100 μAdc)	BAS21		250	−	
Forward Voltage		V_F			Vdc
(I_F = 100 mAdc)			−	1.0	
(I_F = 200 mAdc)			−	1.25	
Diode Capacitance (V_R = 0, f = 1.0 MHz)		C_D	−	5.0	pF
Reverse Recovery Time (I_F = I_R = 30 mAdc, $I_{R(REC)}$ = 3.0 mAdc, R_L = 100)		t_{rr}	−	50	ns



Notes: 1. A 2.0 kΩ variable resistor adjusted for a Forward Current (I_F) of 30 mA.
2. Input pulse is adjusted so $I_{R(peak)}$ is equal to 30 mA.
3. $t_p \gg t_{rr}$

Figure 1. Recovery Time Equivalent Test Circuit

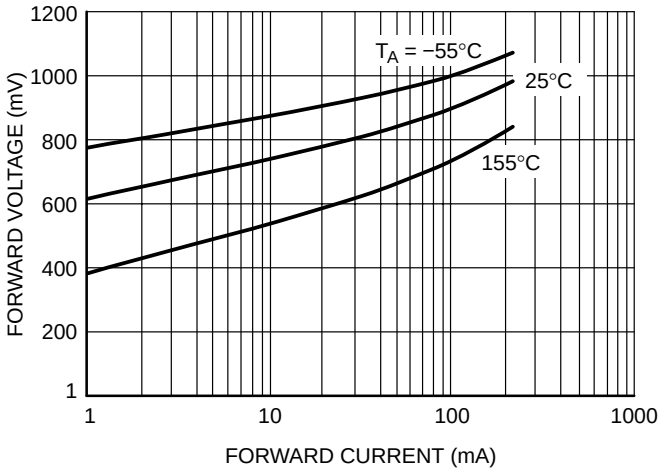


Figure 2. Forward Voltage

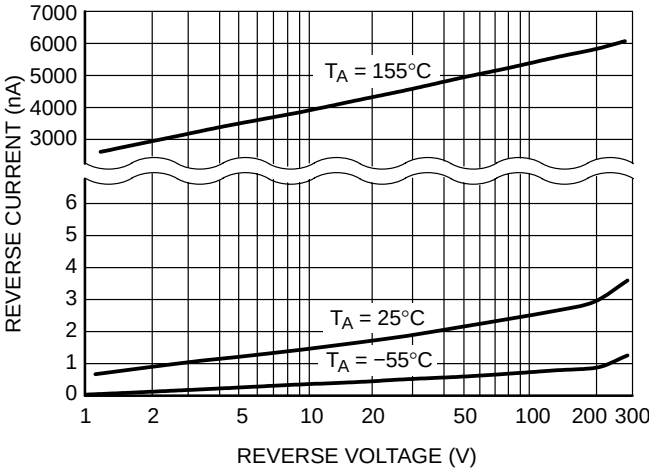


Figure 3. Reverse Leakage

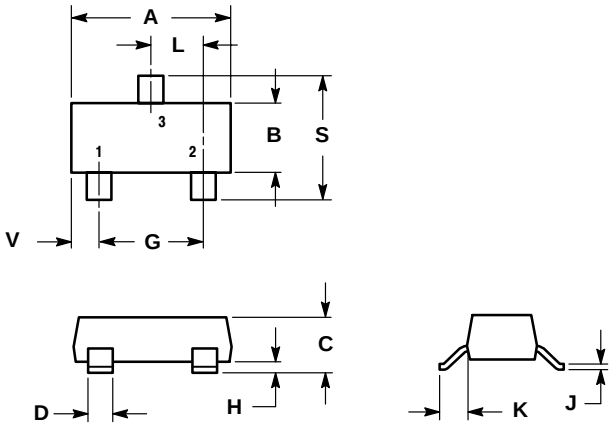
ORDERING INFORMATION

Device	Package	Shipping†
BAS19LT1	SOT−23	3000 Tape/Reel
BAS19LT1G	SOT−23 (Pb−Free)	
BAS19LT3	SOT−23	10000 Tape/Reel
BAS19LT3G	SOT−23 (Pb−Free)	
BAS20LT1	SOT−23	3000 Tape/Reel
BAS20LT1G	SOT−23 (Pb−Free)	
BAS21LT1	SOT−23	3000 Tape/Reel
BAS21LT1G	SOT−23 (Pb−Free)	
BAS21LT3	SOT−23	10000 Tape/Reel
BAS21LT3G	SOT−23 (Pb−Free)	
BAS21DW5T1	SC−88A	3000 Tape/Reel
BAS21DW5T1G	SC−88A (Pb−Free)	

†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.

PACKAGE DIMENSIONS

SOT−23 (TO−236)
CASE 318−09
ISSUE AH

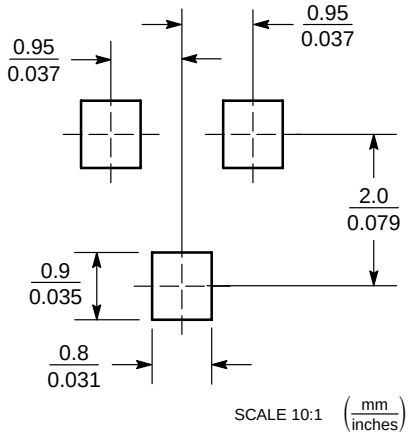


NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. MAXIUMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4. 318−01, −02, AND −06 OBSOLETE, NEW STANDARD 318−09.

	INCHES		MILLIMETERS	
DIM	MIN	MAX	MIN	MAX
A	0.1102	0.1197	2.80	3.04
B	0.0472	0.0551	1.20	1.40
C	0.0385	0.0498	0.99	1.26
D	0.0140	0.0200	0.36	0.50
G	0.0670	0.0826	1.70	2.10
H	0.0040	0.0098	0.10	0.25
J	0.0034	0.0070	0.085	0.177
K	0.0180	0.0236	0.45	0.60
L	0.0350	0.0401	0.89	1.02
S	0.0830	0.0984	2.10	2.50
V	0.0177	0.0236	0.45	0.60

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

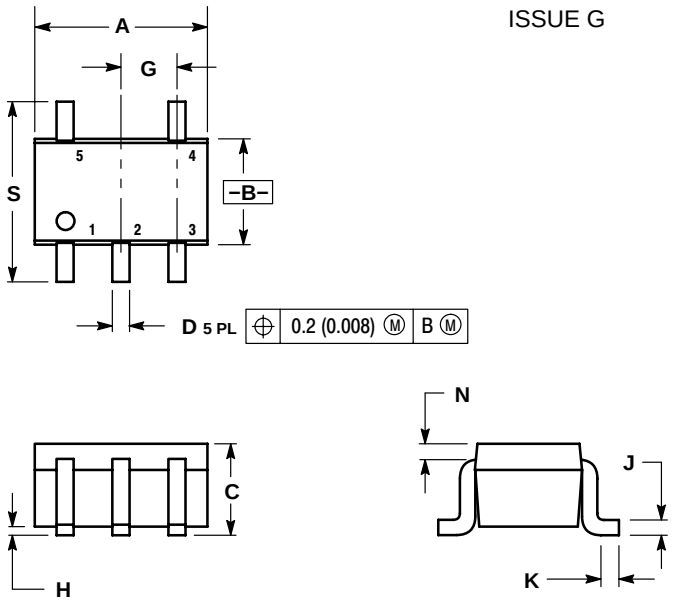
SOLDERING FOOTPRINT*



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

PACKAGE DIMENSIONS

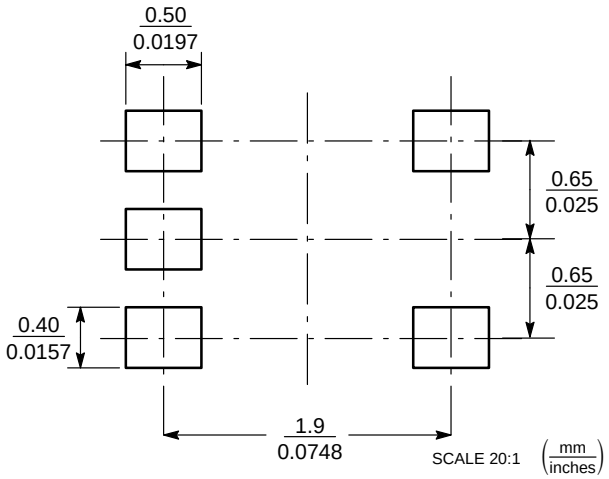
SC−88A (SOT−353)
CASE 419A−02
ISSUE G



NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. 419A−01 OBSOLETE. NEW STANDARD 419A−02.
4. DIMENSIONS A AND B DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR GATE BURRS.

	INCHES		MILLIMETERS	
DIM	MIN	MAX	MIN	MAX
A	0.071	0.087	1.80	2.20
B	0.045	0.053	1.15	1.35
C	0.031	0.043	0.80	1.10
D	0.004	0.012	0.10	0.30
G	0.026 BSC		0.65 BSC	
H	---	0.004	---	0.10
J	0.004	0.010	0.10	0.25
K	0.004	0.012	0.10	0.30
N	0.008 REF		0.20 REF	
S	0.079	0.087	2.00	2.20

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.

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:
Literature Distribution Center for ON Semiconductor
P.O. Box 61312, Phoenix, Arizona 85082−1312 USA
Phone: 480−829−7710 or 800−344−3860 Toll Free USA/Canada
Fax: 480−829−7709 or 800−344−3867 Toll Free USA/Canada
Email: orderlit@onsemi.com

N. American Technical Support: 800−282−9855 Toll Free USA/Canada

Japan: ON Semiconductor, Japan Customer Focus Center
2−9−1 Kamimeguro, Meguro−ku, Tokyo, Japan 153−0051
Phone: 81−3−5773−3850

ON Semiconductor Website: http://onsemi.com

Order Literature: http://www.onsemi.com/litorder

For additional information, please contact your local Sales Representative.