BASH19L Series

Switching Diode, High Voltage, High Temperature

Features

- 175°C $T_{J(MAX)}$ − Rated for High Temperature, Mission Critical Applications
- NSV Prefixes 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 BASH19 BASH20 BASH21	V_R	 120 200 250	Vdc
Repetitive Peak Reverse Voltage BASH19 BASH20 BASH21	V_{RRM}	 120 200 250	Vdc
Continuous Forward Current	I_F	200	mAdc
Peak Forward Surge Current (1/2 Cycle, Sine Wave, 60 Hz)	I_{FSM}	2	A
Repetitive Peak Forward Current (Pulse Train: T_{ON} = 1 s, T_{OFF} = 0.5 s)	I_{FRM}	0.6	A
Junction and Storage Temperature Range	T_J, T_{stg}	−55 to +175	°C
Electrostatic Discharge	ESD	HM < 500 MM < 400	V V

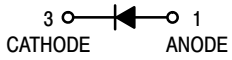
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

ON Semiconductor®

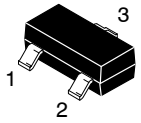
www.onsemi.com

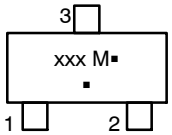
HIGH VOLTAGE SWITCHING DIODE

SOT−23



MARKING DIAGRAM





SOT−23 (TO−236)
CASE 318
STYLE 8

xxx = BASH19L
xxx = BASH20L
AA7 = BASH21L
M = Date Code
▪ = Pb−Free Package
(Note: Microdot may be in either location)

ORDERING INFORMATION

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

THERMAL CHARACTERISTICS

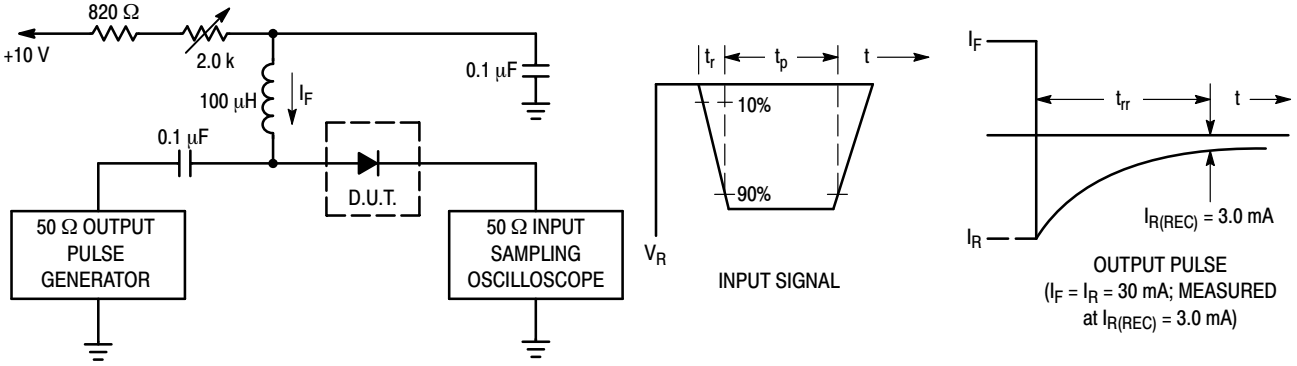
Characteristic	Symbol	Max	Unit
Total Device Dissipation FR−5 Board (Note 1) T_A = 25°C Derate above 25°C	P_D	300 1.8	mW mW/°C
Thermal Resistance Junction−to−Ambient (SOT−23)	$R_{\theta JA}$	340	°C/W
Total Device Dissipation Alumina Substrate (Note 2) T_A = 25°C Derate above 25°C	P_D	400 2.4	mW mW/°C
Thermal Resistance Junction−to−Ambient	$R_{\theta JA}$	250	°C/W
Junction and Storage Temperature Range	T_J, T_{stg}	−55 to +175	°C

1. FR−5 = 1.0 × 0.75 × 0.062 in.
2. Alumina = 0.4 × 0.3 × 0.024 in. 99.5% alumina.

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)	BASH19		−	0.1	
(V_R = 150 Vdc)	BASH20		−	0.1	
(V_R = 200 Vdc)	BASH21		−	0.1	
(V_R = 100 Vdc, T_J = 175°C)	BASH19		−	100	
(V_R = 150 Vdc, T_J = 175°C)	BASH20		−	100	
(V_R = 200 Vdc, T_J = 175°C)	BASH21		−	100	
Reverse Breakdown Voltage		$V_{(BR)}$			Vdc
(I_{BR} = 100 μAdc)	BASH19		120	−	
(I_{BR} = 100 μAdc)	BASH20		200	−	
(I_{BR} = 100 μAdc)	BASH21		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

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 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

TYPICAL CHARACTERISTICS

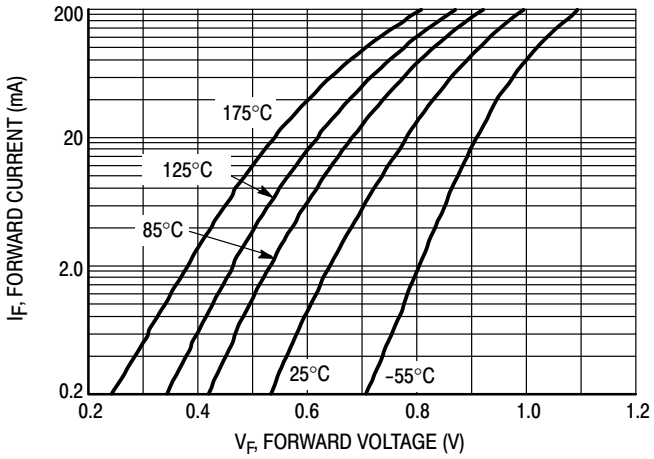


Figure 2. Forward Voltage

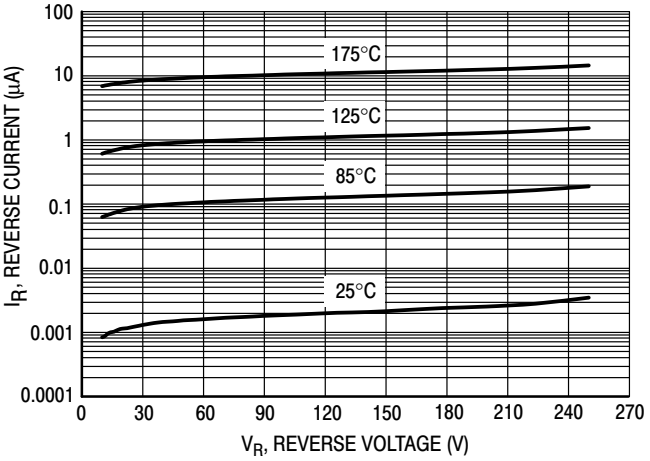


Figure 3. Leakage Current

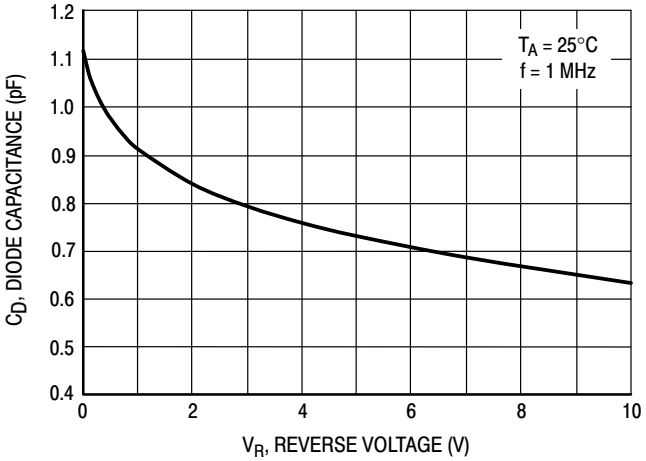


Figure 4. Capacitance

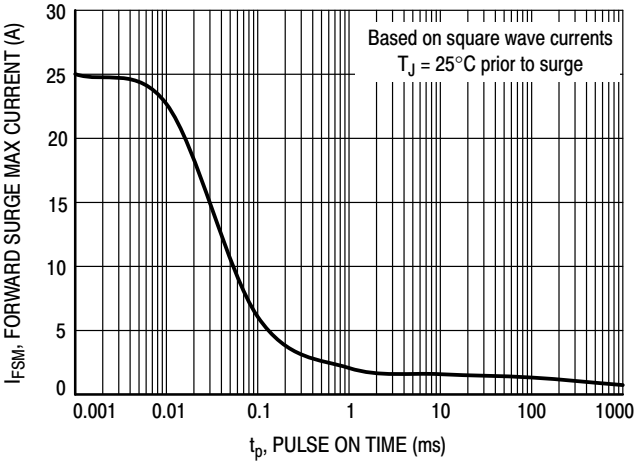


Figure 5. Forward Surge Current

ORDERING INFORMATION

Device	Package	Shipping†
BASH19LT1G	SOT−23 (Pb−Free)	3000 / Tape & Reel
NSVBASH19LT1G*	SOT−23 (Pb−Free)	3000 / Tape & Reel
BASH20LT1G	SOT−23 (Pb−Free)	3000 / Tape & Reel
NSVBASH20LT1G*	SOT−23 (Pb−Free)	3000 / Tape & Reel
BASH21LT1G	SOT−23 (Pb−Free)	3000 / Tape & Reel
NSVBASH21LT1G*	SOT−23 (Pb−Free)	3000 / Tape & Reel

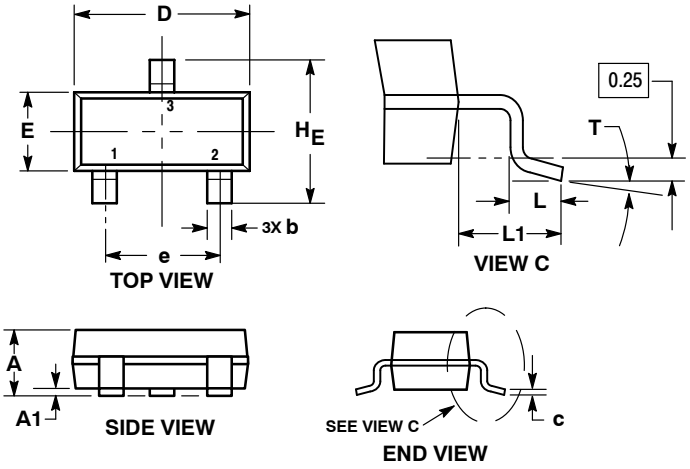
†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

*NSV Prefixes for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC−Q101 Qualified and PPAP Capable − release available upon request.

BASH19L Series

PACKAGE DIMENSIONS

SOT−23 (TO−236)
CASE 318−08
ISSUE AS

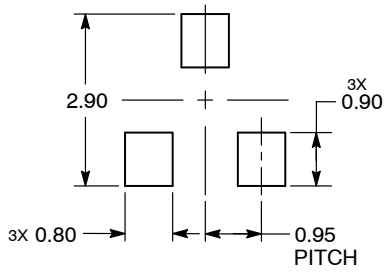


NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF THE BASE MATERIAL.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR GATE BURRS.

	MILLIMETERS			INCHES		
DIM	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_E	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



DIMENSIONS: MILLIMETERS

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:
Literature Distribution Center for ON Semiconductor
19521 E. 32nd Pkwy, Aurora, Colorado 80011 USA
Phone: 303−675−2175 or 800−344−3860 Toll Free USA/Canada
Fax: 303−675−2176 or 800−344−3867 Toll Free USA/Canada
Email: orderlit@onsemi.com

N. American Technical Support: 800−282−9855 Toll Free USA/Canada
Europe, Middle East and Africa Technical Support:
Phone: 421 33 790 2910

ON Semiconductor Website: **www.onsemi.com**

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

For additional information, please contact your local Sales Representative