High Voltage Switching Diodes

BASH16MX2W

The BASHxxMX2W Switching Diode is a spin−off of our popular SOT−23 three−leaded device. It is designed for switching applications and is housed in the X2DFNW2 (1.0x0.6mm) surface mount package. This device is ideal for low−power surface mount applications, where board space is at a premium.

X2DFNW2
CASE 711BG

MARKING DIAGRAM

XX = Specific Device Code
M = Date Code

Features

- 175°C $T_{J(max)}$ − Rated for High Temperature, Mission Critical Applications
- Wettable Flank Package for optimal Automated Optical Inspection (AOI)
- NSV 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

ORDERING INFORMATION

See detailed ordering, marking and shipping information on page 4 of this data sheet.

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Continuous Reverse Voltage BASH16 BASH19 BASH20 BASH21	V_R, V_{RRM}	 100 120 200 250	Vdc
Continuous Forward Current	I_F	200	mAdc
Repetitive Peak Forward Current (Pulse Wave = 1 sec, Duty Cycle = 66%)	I_{FRM}	500	mA
Non−Repetitive Peak Forward Current (Square Wave, T_J = 25°C prior to surge) BASH16 t = 1 μs t = 1 ms t = 1 s BASH19/20/21 t = 1 μs t = 1 ms t = 1 s	I_{FSM}	 5.0 2.0 0.5 9.0 3.0 1.7	A

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Total Device Dissipation FR−5 Board T_A = 25°C (Note 1)	P_D	300	mW
Thermal Resistance Junction−to−Ambient (Note 1)	$R_{\theta JA}$	400	°C/W
Thermal Resistance Junction−to−Solder Point (Note 1)	$R_{\theta JSP}$	105	°C/W
Junction and Storage Temperature Range	T_J, T_{stg}	−55 to +175	°C

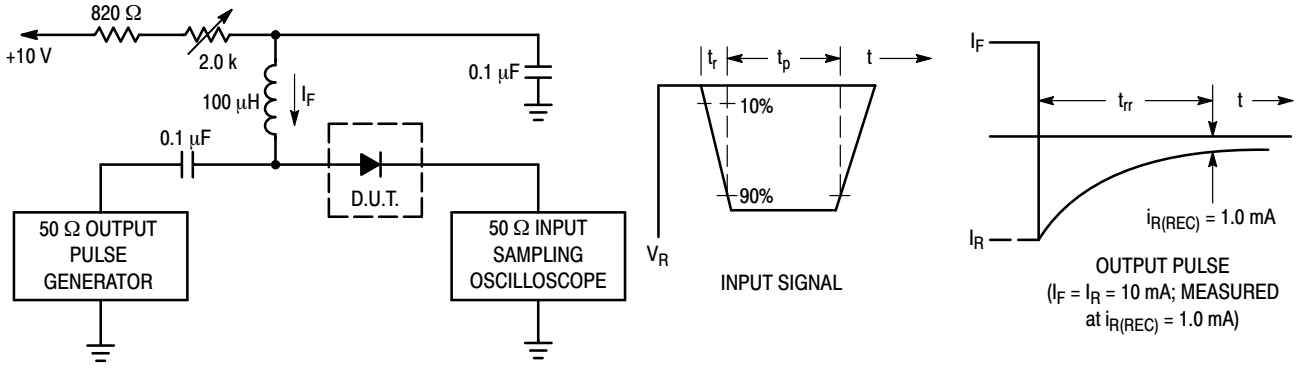
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

1. Mounted onto a 4 in square FR−4 board 10 mm sq. 1 oz. Cu 0.06″ thick single sided. Operating to steady state.

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

Characteristic		Symbol	Min	Max	Unit
OFF CHARACTERISTICS					
Reverse Voltage Leakage Current		I_R			μAdc
(V_R = 80 Vdc)	BASH16		–	0.5	
(V_R = 100 Vdc)	BASH19		–	0.1	
(V_R = 150 Vdc)	BASH20		–	0.1	
(V_R = 200 Vdc)	BASH21		–	0.1	
(V_R = 80 Vdc, T_J = 150°C)	BASH16		–	50	
(V_R = 25 Vdc, T_J = 150°C)	BASH16		–	30	
(V_R = 100 Vdc, T_J = 150°C)	BASH19		–	100	
(V_R = 150 Vdc, T_J = 150°C)	BASH20		–	100	
(V_R = 200 Vdc, T_J = 150°C)	BASH21		–	100	
Reverse Breakdown Voltage (I_{BR} = 100 μAdc)		$V_{(BR)}$			Vdc
BASH16			100	–	
BASH19			120	–	
BASH20			200	–	
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	–	3.0	pF
Reverse Recovery Time		t_{rr}			ns
(I_F = I_R = 10 mAdc, R_L = 50 Ω)	BASH16		–	6.0	
(I_F = I_R = 30 mAdc, R_L = 100 Ω)	BASH19/20/21		–	50	

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 10 mA.
2. Input pulse is adjusted so $I_{R(peak)}$ is equal to 10 mA.
3. $t_p \gg t_{rr}$

Figure 1. Recovery Time Equivalent Test Circuit

TYPICAL CHARACTERISTICS

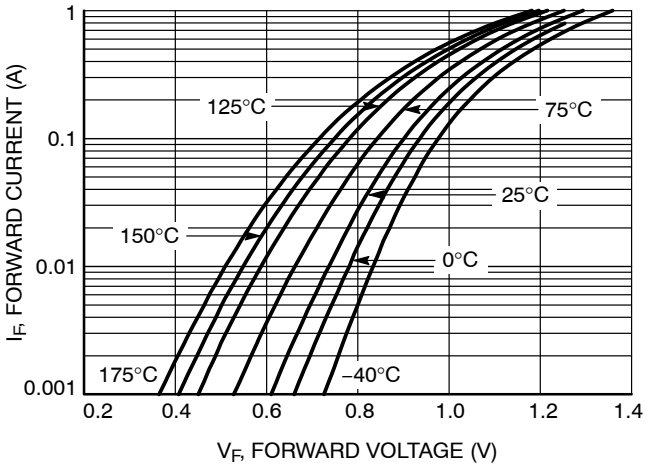


Figure 2. Forward Voltage

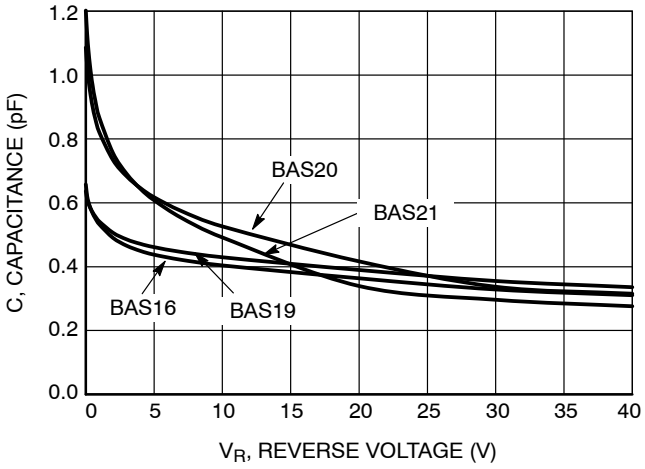


Figure 3. Total Capacitance

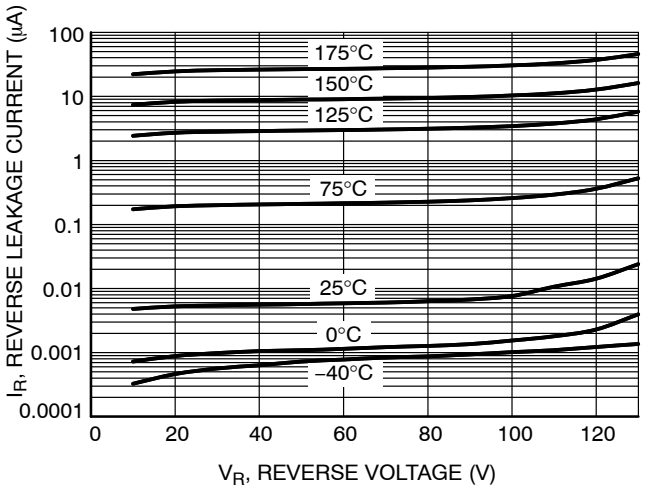


Figure 4. Reverse Current − BASH16

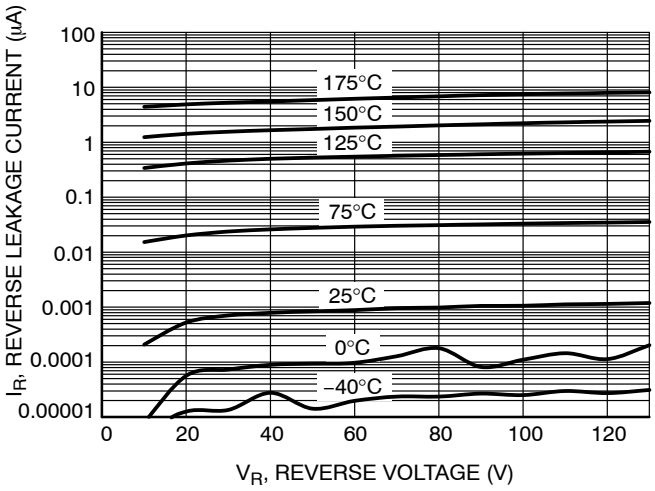


Figure 5. Reverse Current − BASH19

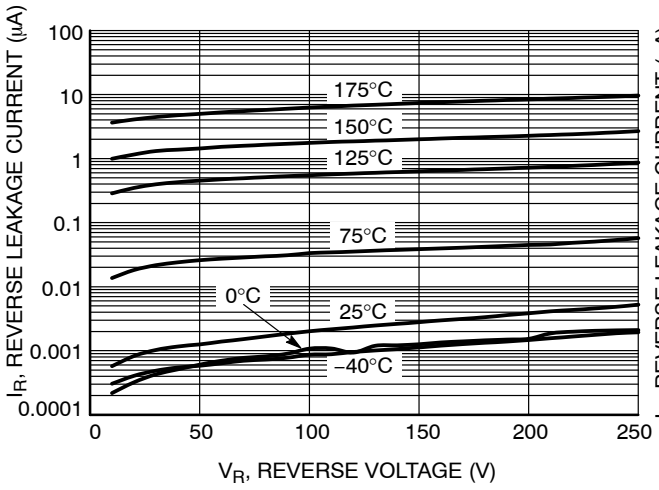


Figure 6. Reverse Current − BASH20

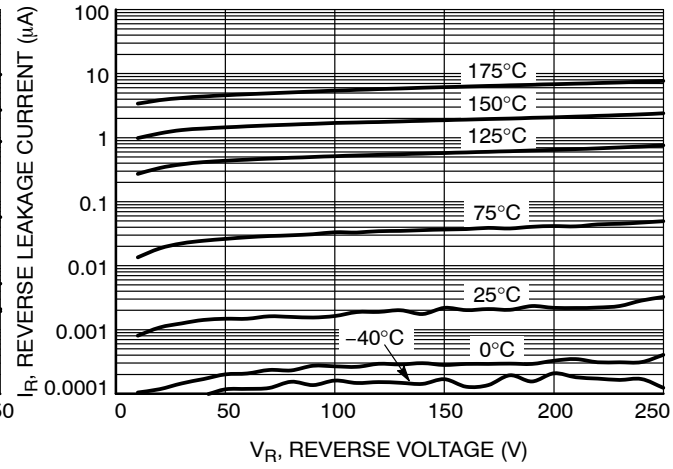


Figure 7. Reverse Current − BASH21

DEVICE ORDERING INFORMATION

Device	Marking	Package	Shipping†
BASH16MX2WT5G, NSVBASH16MX2WT5G*	MF	X2DFN2 (Pb−Free)	8000 / Tape & Reel
BASH19MX2WT5G, NSVBASH19MX2WT5G*	ME		
BASH20MX2WT5G, NSVBASH20MX2WT5G*	MG		
BASH21MX2WT5G, NSVBASH21MX2WT5G*	MH		

†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.

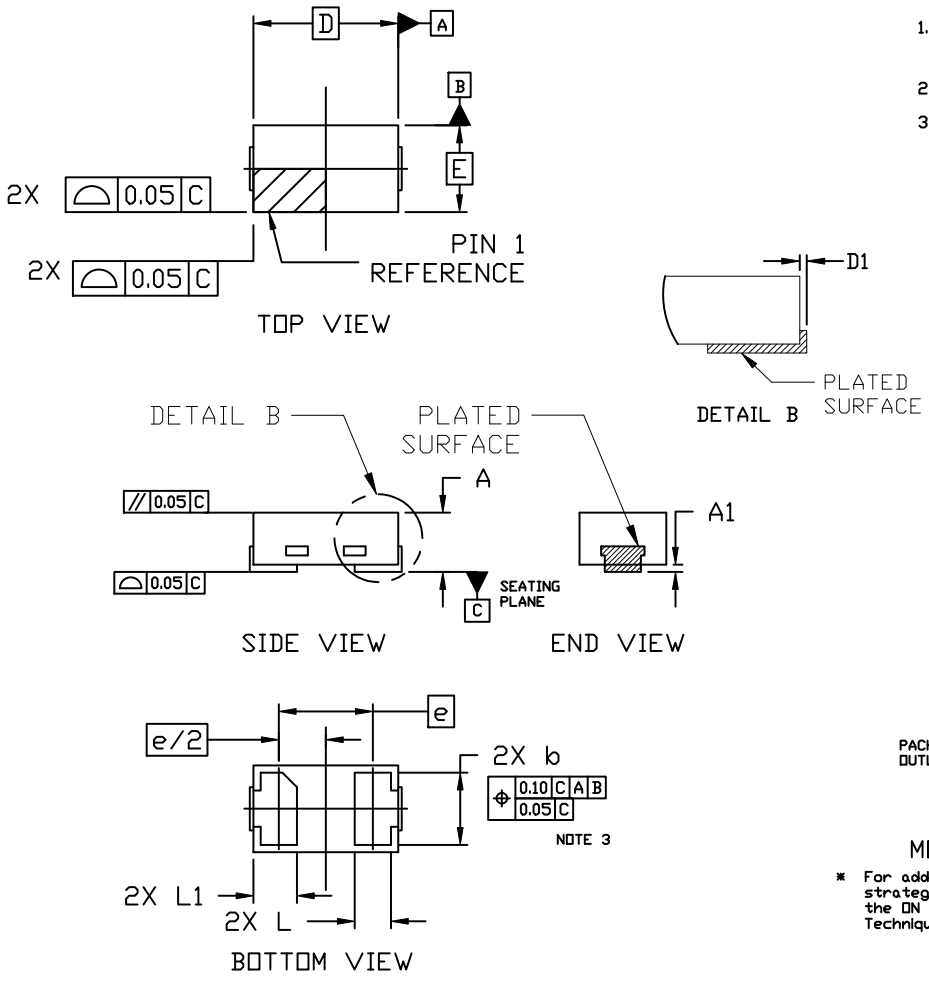
*NSV Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC−Q101 Qualified and PPAP Capable.

MECHANICAL CASE OUTLINE
PACKAGE DIMENSIONS

X2DFNW2 1.0x0.6, 0.65P
CASE 711BG
ISSUE C

SCALE 8:1

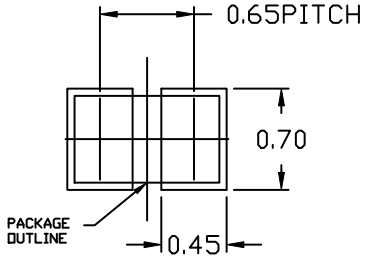
DATE 13 SEP 2019



NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 2009.
2. CONTROLLING DIMENSION: MILLIMETERS
3. DIMENSION b APPLIES TO THE PLATED TERMINAL AND IS MEASURED BETWEEN 0.15 AND 0.30 FROM THE TERMINAL TIP.

	MILLIMETERS		
DIM	MIN.	NOM.	MAX.
A	0.34	0.37	0.40
A1	---	---	0.05
b	0.45	0.50	0.55
D	0.90	1.00	1.10
D1	---	---	0.05
E	0.50	0.60	0.70
e	0.65 BSC		
L	0.22 REF		
L1	0.24	0.285	0.34



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.

GENERIC
MARKING DIAGRAM*

XX = Specific Device Code
M = Date Code

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

DOCUMENT NUMBER:	**98AON15241G**	Electronic versions are uncontrolled except when accessed directly from the Document Repository. Printed versions are uncontrolled except when stamped “CONTROLLED COPY” in red.
DESCRIPTION:	**X2DFNW2 1.0X0.6, 0.65P**	**PAGE 1 OF 1**

ADDITIONAL INFORMATION

TECHNICAL PUBLICATIONS:
Technical Library: www.onsemi.com/design/resources/technical−documentation
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