

High Voltage Switching Diodes

BASHxxMX2W

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.

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

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, $T_J = 25^\circ\text{C}$ prior to surge) | I_{FSM} | | A |
| BASH16 $t = 1\ \mu\text{s}$ $t = 1\ \text{ms}$ $t = 1\ \text{s}$ | | 5.0 2.0 0.5 | |
| BASH19/20/21 $t = 1\ \mu\text{s}$ $t = 1\ \text{ms}$ $t = 1\ \text{s}$ | | 9.0 3.0 1.7 | |

THERMAL CHARACTERISTICS

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

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.



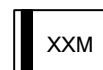
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www.onsemi.com



X2DFNW2
CASE 711BG

MARKING DIAGRAM



XX = Specific Device Code
M = Date Code

ORDERING INFORMATION

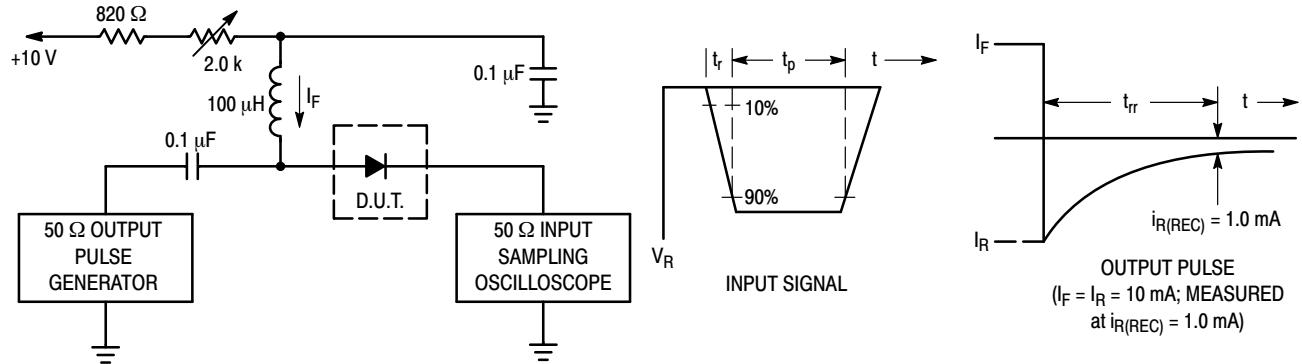
See detailed ordering, marking and shipping information on page 4 of this data sheet.

BASHxxMX2W

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

| Characteristic | Symbol | Min | Max | Unit |
|---|------------|--------------------------|--|-----------------|
| OFF CHARACTERISTICS | | | | |
| Reverse Voltage Leakage Current ($V_R = 80\text{ Vdc}$) BASH16 ($V_R = 100\text{ Vdc}$) BASH19 ($V_R = 150\text{ Vdc}$) BASH20 ($V_R = 200\text{ Vdc}$) BASH21 ($V_R = 80\text{ Vdc}$, $T_J = 150^\circ\text{C}$) BASH16 ($V_R = 100\text{ Vdc}$, $T_J = 150^\circ\text{C}$) BASH19 ($V_R = 150\text{ Vdc}$, $T_J = 150^\circ\text{C}$) BASH20 ($V_R = 200\text{ Vdc}$, $T_J = 150^\circ\text{C}$) BASH21 | I_R | – | 0.5 0.1 0.1 0.1 100 100 100 100 | μAdc |
| Reverse Breakdown Voltage ($I_{BR} = 100\text{ }\mu\text{Adc}$) BASH16 BASH19 BASH20 BASH21 | $V_{(BR)}$ | 100 120 200 250 | – – – – | Vdc |
| Forward Voltage ($I_F = 100\text{ mAdc}$) ($I_F = 200\text{ mAdc}$) | V_F | – – | 1.0 1.25 | Vdc |
| Diode Capacitance ($V_R = 0$, $f = 1.0\text{ MHz}$) | C_D | – | 3.0 | pF |
| Reverse Recovery Time ($I_F = I_R = 10\text{ mAdc}$, $R_L = 50\text{ }\Omega$) BASH16 ($I_F = I_R = 30\text{ mAdc}$, $R_L = 100\text{ }\Omega$) BASH19/20/21 | t_{rr} | – – | 6.0 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 k Ω 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

BASHxxMX2W

TYPICAL CHARACTERISTICS

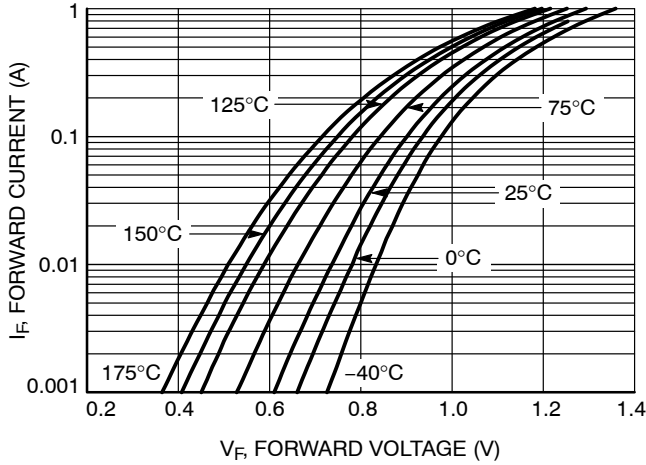


Figure 2. Forward Voltage

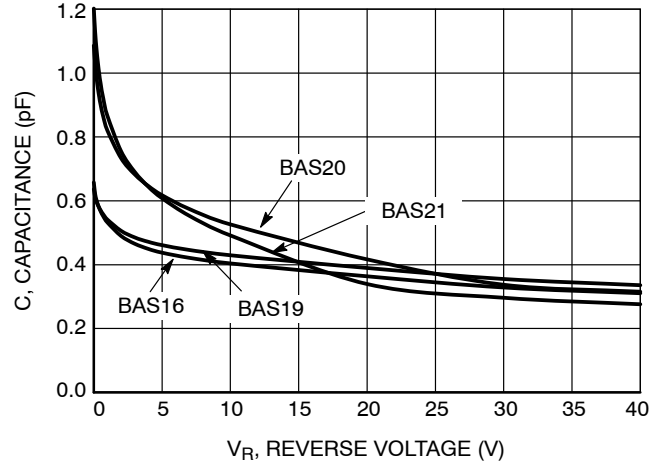


Figure 3. Total Capacitance

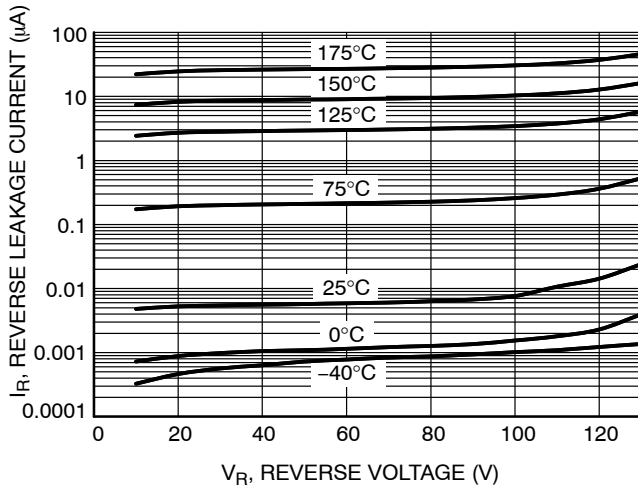


Figure 4. Reverse Current – BASH16

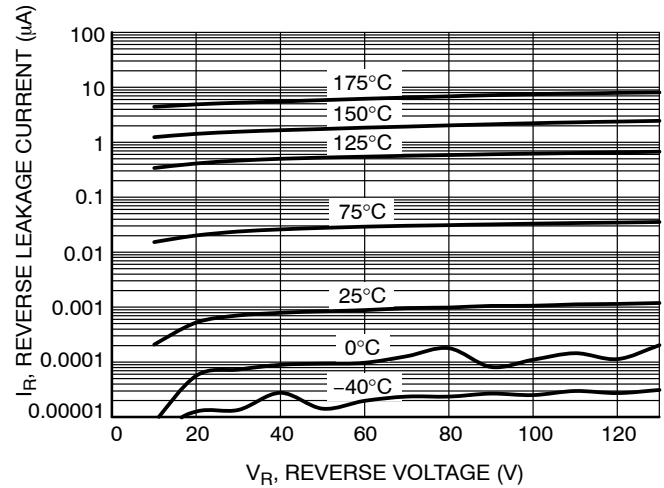


Figure 5. Reverse Current – BASH19

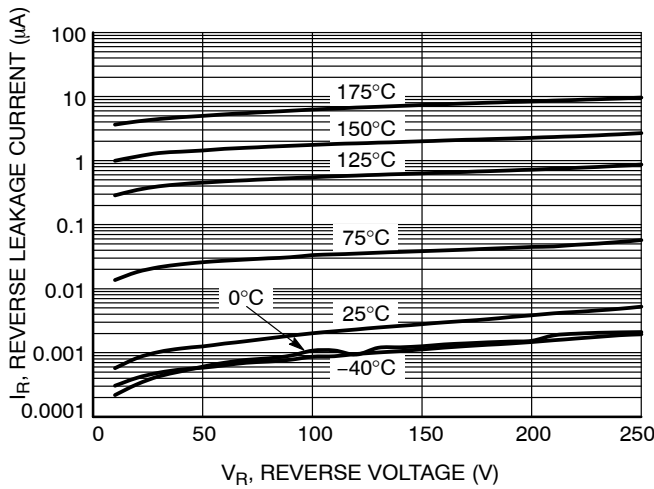


Figure 6. Reverse Current – BASH20

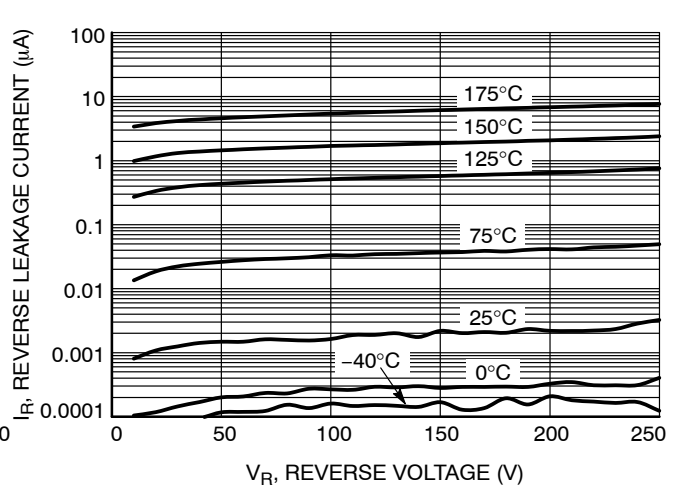


Figure 7. Reverse Current – BASH21

BASHxxMX2W

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.



SCALE 8:1

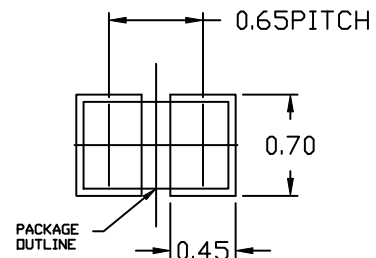
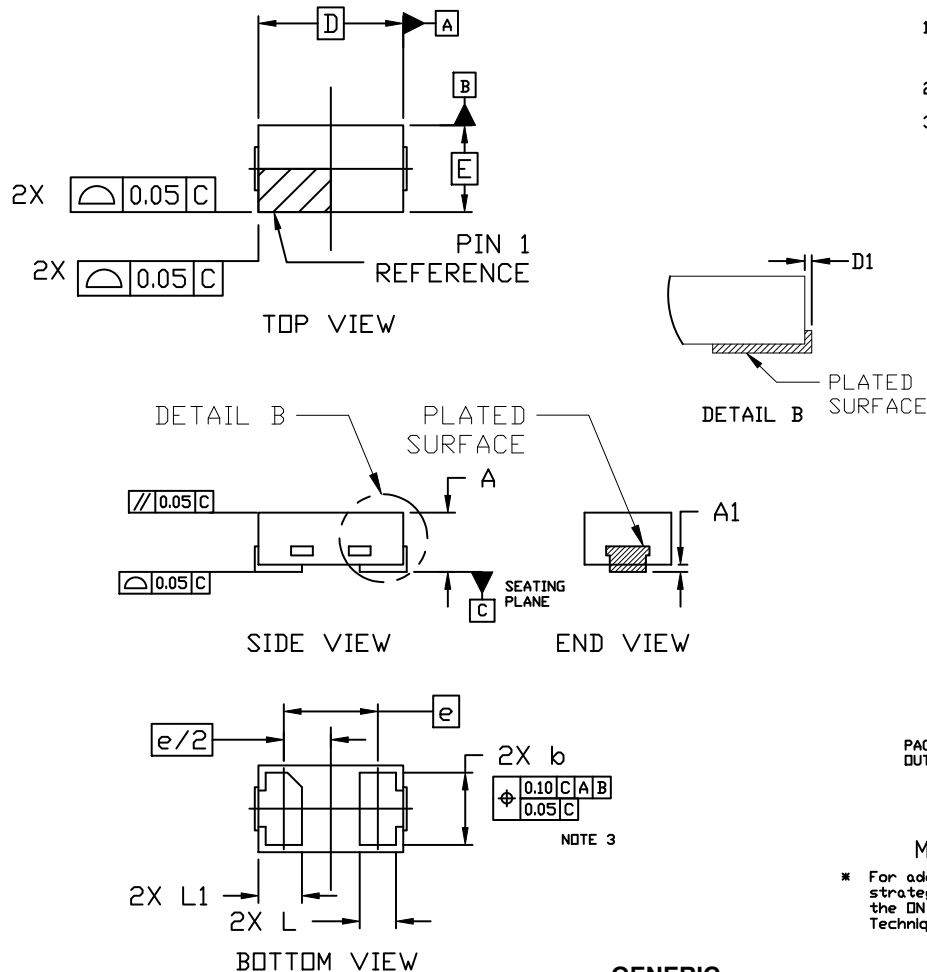
X2DFNW2 1.0x0.6, 0.65P
CASE 711BG
ISSUE C

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.

| DIM | MILLIMETERS | | |
|-----|-------------|-------|------|
| | 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.

| | | |
|-------------------------|-------------------------------|---|
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| DESCRIPTION: | X2DFNW2 1.0X0.6, 0.65P | PAGE 1 OF 1 |

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