RoHS
*Available on commercial versions*

# Schottky Barrier Diode

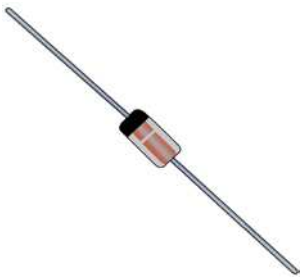
***Qualified per MIL-PRF-19500/444***

*Qualified Levels:*
*JAN, JANTX, and JANTXV*

## DESCRIPTION

This Schottky barrier diode is metallurgically bonded and offers military grade qualifications for high-reliability applications on "1N" prefixed numbers. This small diode is hermetically sealed and bonded into a DO-35 glass package.

**Important:** For the latest information, visit our website http://www.microsemi.com.



**DO-35 (DO-204AH) Package**

Also available in:

**UB package**
(3-pin surface mount)
1N5711UB, 1N5712UB (B, CC, CA)

**DO-213AA package**
(surface mount)
1N5711UR-1, 1N5712UR-1, 1N6857UR-1, and 1N6858UR-1

## FEATURES

- JEDEC registered 1N5711-1, 1N5712-1, 1N6857-1, and 1N6858-1 numbers.
- Metallurgically bonded.
- JAN, JANTX, JANTXV and commercial qualifications also available per MIL-PRF-19500/444 on "1N" numbers only.
  (See Part Nomenclature for all available options).
- RoHS compliant versions available (commercial grade only).

## APPLICATIONS / BENEFITS

- Low reverse leakage characteristics.
- Small size for high density mounting using flexible thru-hole leads (see package illustration).
- ESD sensitive to Class 1.

## MAXIMUM RATINGS @ 25 ºC unless otherwise stated

| Parameters/Test Conditions | Symbol | Value | Unit |
|---|---|---|---|
| Junction and Storage Temperature | $T_J$ and $T_{STG}$ | -65 to +150 | ºC |
| Thermal Resistance, Junction-to-Lead @ lead length = 0.375 inch (9.52 mm) from body | $R_{\Theta JL}$ | 250 | ºC/W |
| Average Rectified Output Current:<br>1N5711 (1)<br>DSB2810, DSB5712, 1N5712 & 1N6858 (2)<br>1N6857 (3) | $I_O$ | <br>33<br>75<br>150 | mA |
| Solder Temperature @ 10 s | | 260 | °C |

**NOTES:** 1. At $T_L$ = +130°C and L = 0.375 inch, derate $I_O$ to 0 at +150°C.
2. At $T_L$ = +110°C and L = 0.375 inch, derate $I_O$ to 0 at +150°C.
3. At $T_L$ = +70°C and L = 0.375 inch, derate $I_O$ to 0 at +150°C.

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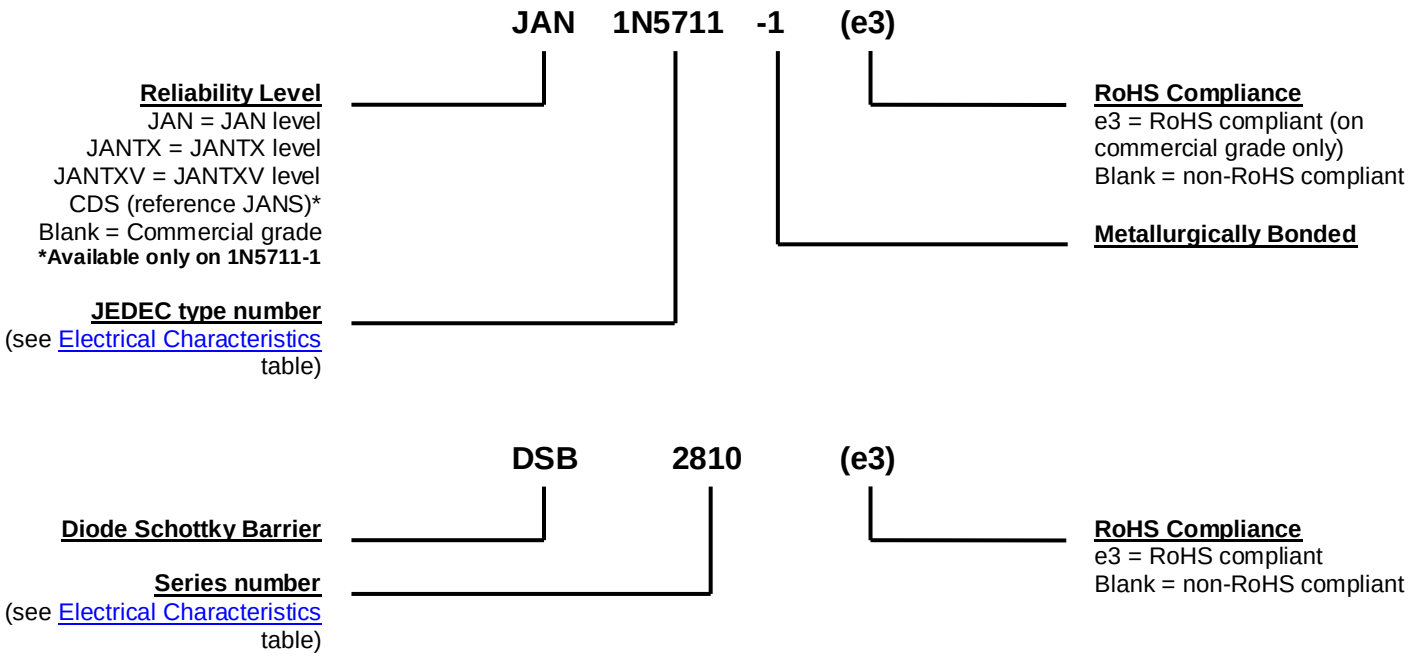
## MECHANICAL and PACKAGING

- CASE: Hermetically sealed glass package.
- TERMINALS: Tin/lead plated or RoHS compliant matte-tin (on commercial grade only) over copper clad steel. Solderable per MIL-STD-750, method 2026.
- POLARITY: Cathode indicated by band.
- MARKING: Part number.
- TAPE & REEL option: Standard per EIA-296. Consult factory for quantities.
- WEIGHT: Approximately 0.2 grams.
- See Package Dimensions on last page.

## PART NOMENCLATURE




## SYMBOLS & DEFINITIONS

| Symbol | Definition |
|---|---|
| C | Capacitance: The capacitance in pF at a frequency of 1 MHz and specified voltage. |
| f | frequency |
| $I_R$ | Reverse Current: The dc current flowing from the external circuit into the cathode terminal at the specified voltage $V_R$. |
| $I_O$ | Average Rectified Output Current: The Output Current averaged over a full cycle with a 50 Hz or 60 Hz sine-wave input and a 180 degree conduction angle. |
| $t_{rr}$ | Reverse Recovery Time: The time interval between the instant the current passes through zero when changing from the forward direction to the reverse direction and a specified decay point after a peak reverse current occurs. |
| $V_{(BR)}$ | Breakdown Voltage: A voltage in the breakdown region. |
| $V_F$ | Forward Voltage: A positive dc anode-cathode voltage the device will exhibit at a specified forward current. |
| $V_R$ | Reverse Voltage: A positive dc cathode-anode voltage below the breakdown region. |
| $V_{RWM}$ | Working Peak Reverse Voltage: The peak voltage excluding all transient voltages (ref JESD282-B). Also sometimes known historically as PIV. |

**ELECTRICAL CHARACTERISTICS** @ 25 ºC unless otherwise noted

| TYPE NUMBER | MINIMUM BREAKDOWN VOLTAGE | MAXIMUM FORWARD VOLTAGE | MAXIMUM FORWARD VOLTAGE | WORKING PEAK REVERSE VOLTAGE | MAXIMUM REVERSE LEAKAGE CURRENT | | MAXIMUM CAPACITANCE @ $V_R$ = 0 VOLTS f = 1.0 MHz |
|---|---|---|---|---|---|---|---|
| | $V_{(BR)}$ @ 10 µA | $V_F$ @ 1 mA | $V_F$ @ $I_F$ | $V_{RWM}$ | $I_R$ @ $V_R$ | | C |
| | Volts | Volts | V @ mA | V (pk) | nA | Volts | pF |
| 1N5711-1 | 70 | 0.41 | 1.0 @ 15 | 50 | 200 | 50 | 2.0 |
| 1N5712-1 | 20 | 0.41 | 1.0 @ 35 | 16 | 150 | 16 | 2.0 |
| 1N6857-1 | 20 | 0.35 | 0.75 @ 35 | 16 | 150 | 16 | 4.5 |
| 1N6858-1 | 70 | 0.36 | 0.65 @ 15 | 50 | 200 | 50 | 4.5 |
| DSB2810 | 20 | 0.41 | 1.0 @ 35 | 16 | 100 | 15 | 2.0 |
| DSB5712 | 20 | 0.41 | 1.0 @ 35 | 16 | 150 | 16 | 2.0 |

## GRAPHS

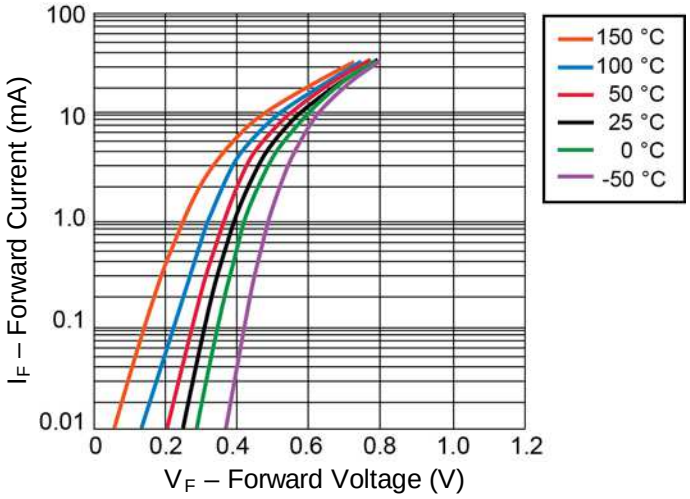



**FIGURE 1**
I-V Curve showing typical Forward Voltage Variation
Temperature for the 1N5712-1, DSB5712 and DSB2810 Schottky Diodes

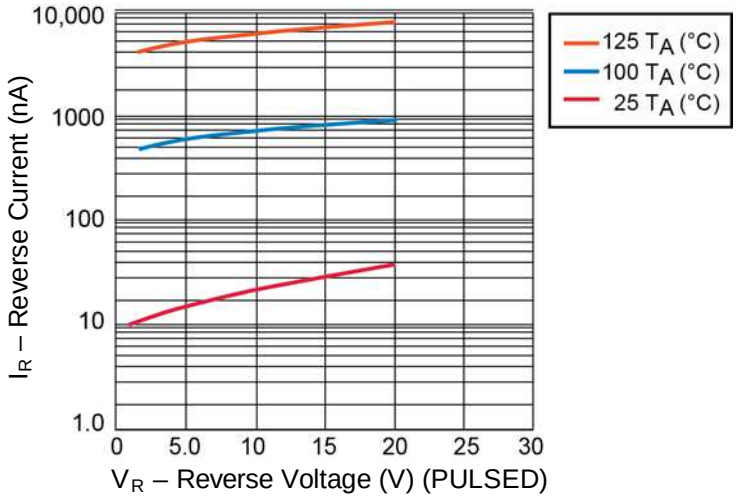



**FIGURE 2**
1N5712-1, DSB5712 and DSB2810 Typical variation of Reverse
Current ($I_R$) vs Reverse Voltage ($V_R$) at Various Temperatures

## GRAPHS

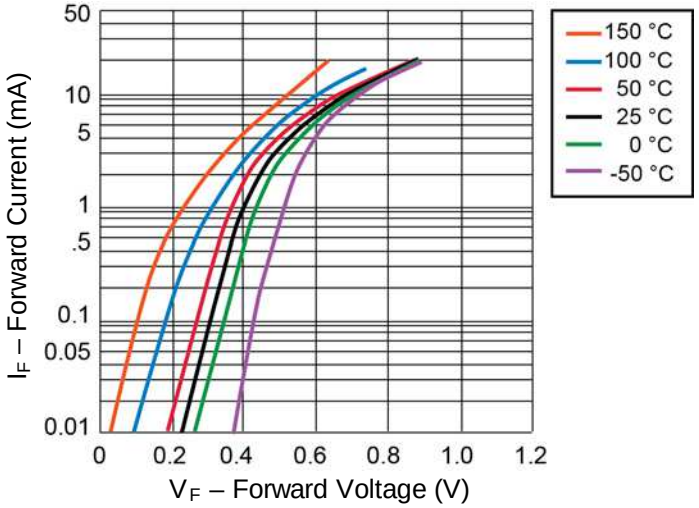



**FIGURE 3**
I – V curve showing typical Forward Voltage Variation
With Temperature Schottky Diode 1N5711

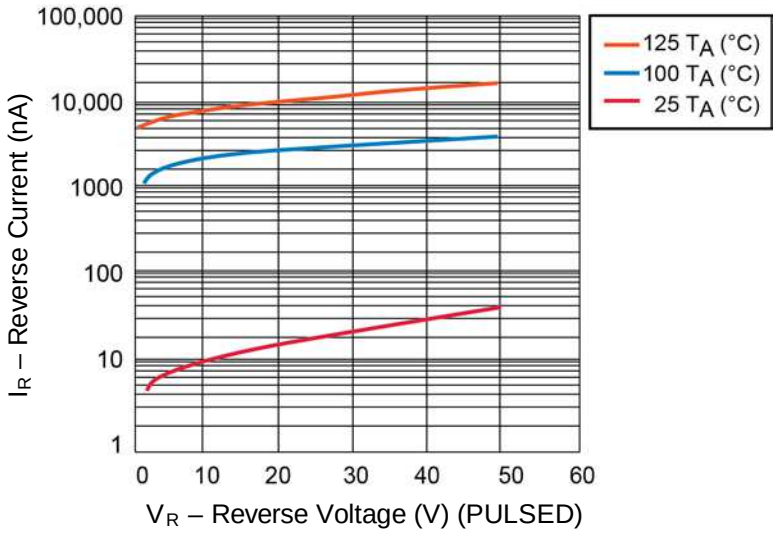



**FIGURE 4**
1N5711 Typical Variation of Reverse Current ($I_R$) vs Reverse Voltage ($V_R$)
at Various Temperatures

## GRAPHS

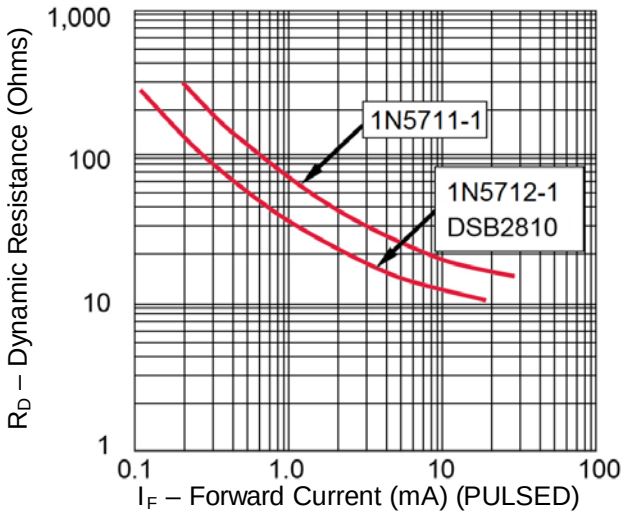
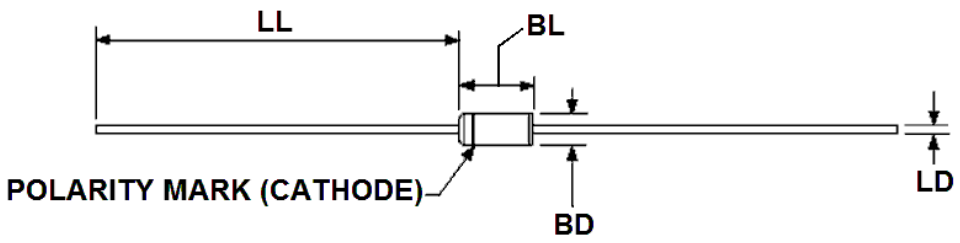



**FIGURE 5**
Typical Dynamic Resistance ($R_D$) vs Forward Current ($I_F$)

## PACKAGE DIMENSIONS




**NOTES:**

1. Dimensions are in inches. Millimeters are given for information only.
2. Dimensions BL and LD includes all components of the diode periphery expect the section of the leads over which the diameter is controlled.
3. Dimension BD shall be measured at the largest diameter.
4. In accordance with ASME Y1.4M, diameters are equivalents to ϕx symbology.

| Symbol | Dimensions | | | | Notes |
|---|---|---|---|---|---|
| | Inches | | Millimeters | | |
| | Min | Max | Min | Max | |
| BD | 0.068 | 0.076 | 1.73 | 1.93 | 2,3 |
| BL | 0.125 | 0.170 | 3.18 | 4.32 | 2 |
| LD | 0.014 | 0.022 | 0.36 | 0.56 | |
| LL | 1.000 | 1.500 | 25.40 | 38.10 | |