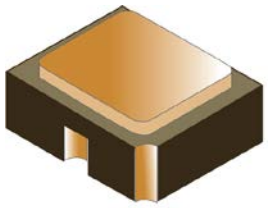
RoHS Compliant

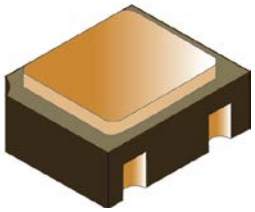
# Schottky Barrier Diode
# Ceramic Surface Mount
## *Qualified per MIL-PRF-19500/444*

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

## DESCRIPTION

This 1N5711UB and 1N5712UB Schottky barrier diode is ceramic encased and offers military grade qualifications for high-reliability applications. Unidirectional as well as doubler, common anode and common cathode polarities are available.





**UB Package**

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

## FEATURES

- Surface mount equivalent of JEDEC registered 1N5711, 1N5712 numbers.
- 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 by design.

## APPLICATIONS / BENEFITS

- Low reverse leakage characteristics.
- Low-profile ceramic surface mount package (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-Solder Pad | $R_{\Theta JSP}$ | 100 | ºC/W |
| Average Rectified Output Current:<br>1N5711UB (1)<br>1N5712UB (2) | $I_O$ | <br>33<br>75 | mA |
| Solder Temperature @ 10 s | | 260 | °C |

**NOTES:** 1. At $T_{EC}$ and $T_{SP}$ = +140 °C, derate $I_O$ to 0 at +150 °C.
2. At $T_{EC}$ and $T_{SP}$ = +130 °C, derate $I_O$ to 0 at +150 °C.

Also available in:

**DO-35 package**
(axial-leaded)
1N5711-1, 1N5712-1, 1N6857-1, and 1N6858-1

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

**MSC – Lawrence**
6 Lake Street,
Lawrence, MA 01841
Tel: 1-800-446-1158 or
(978) 620-2600
Fax: (978) 689-0803

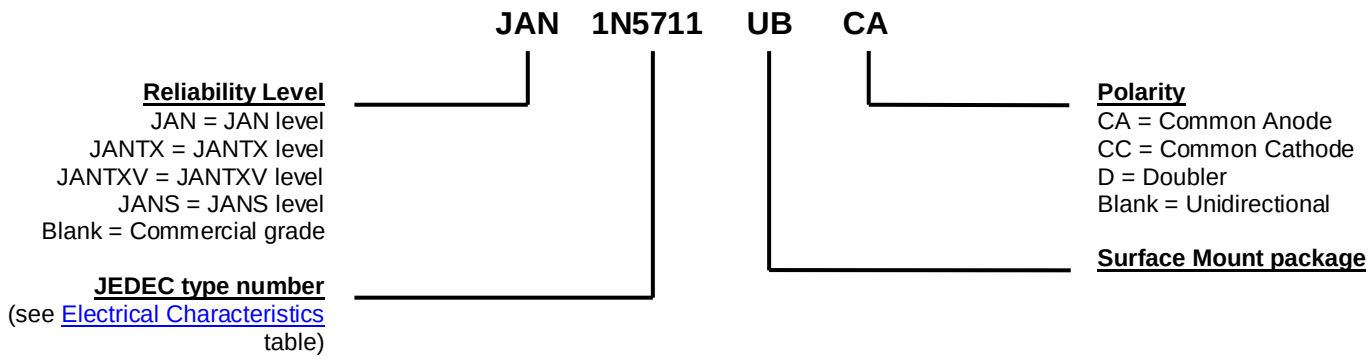
**MSC – Ireland**
Gort Road Business Park,
Ennis, Co. Clare, Ireland
Tel: +353 (0) 65 6840044
Fax: +353 (0) 65 6822298

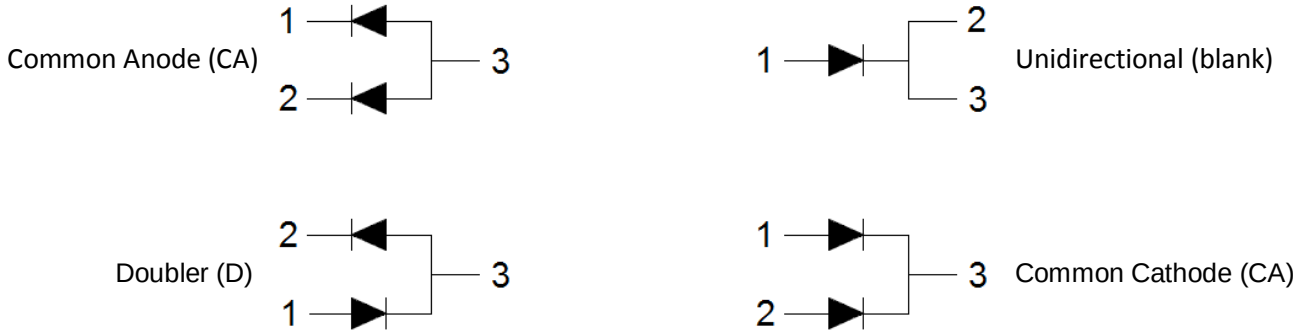
**Website:**
www.microsemi.com

## MECHANICAL and PACKAGING

- CASE: Ceramic.
- TERMINALS: Gold plating over nickel under plate.
- MARKING: Part number, date code, manufacturer's ID.
- TAPE & REEL option: Standard per EIA-418D. Consult factory for quantities.
- WEIGHT: Approximately 0.04 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 °C 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 | $V_F$ @ $I_F$ | $V_{RWM}$ | $I_R$ @ $V_R$ | | $C_T$ |
| | Volts | Volts | V @ mA | V (pk) | nA | Volts | pF |
| 1N5711UB | 70 | 0.41 | 1.0 @ 15 | 50 | 200 | 50 | 2.0 |
| 1N5712UB | 20 | 0.41 | 1.0 @ 35 | 16 | 150 | 16 | 2.0 |

**NOTE:**

1. Effective minority carrier lifetime ($\tau$) is 100 pico seconds.

## GRAPHS

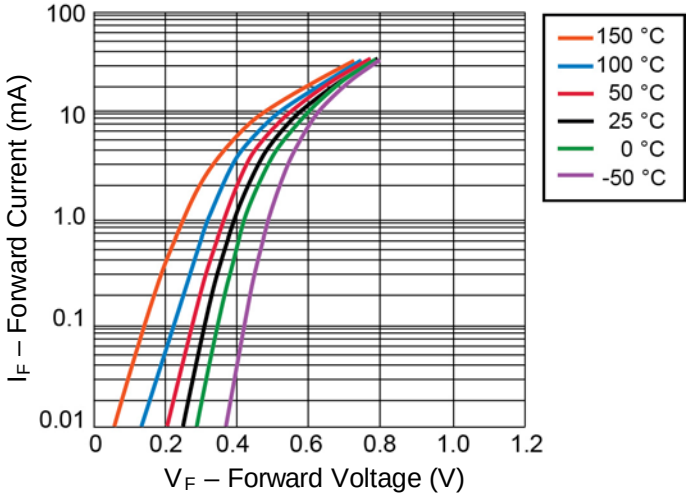



**FIGURE 1**
I-V Curve showing typical Forward Voltage Variation
Temperature for the 1N5712 Schottky Diodes

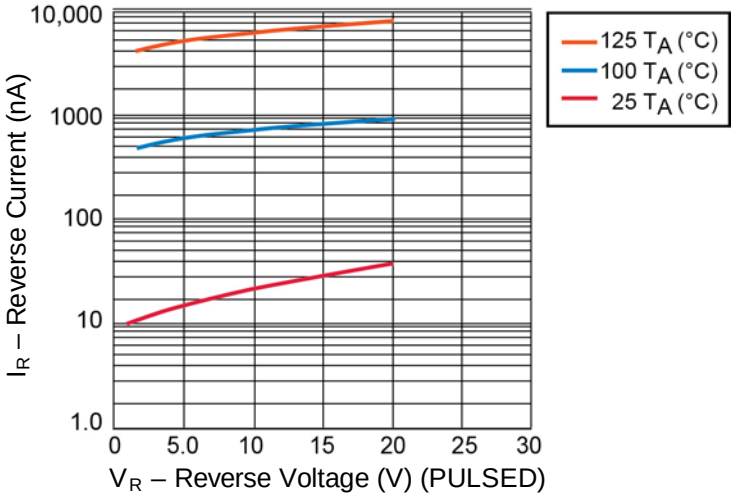



**FIGURE 2**
1N5712 Typical variation of Reverse
Current ($I_R$) vs Reverse Voltage ($V_R$) at Various Temperatures

## GRAPHS

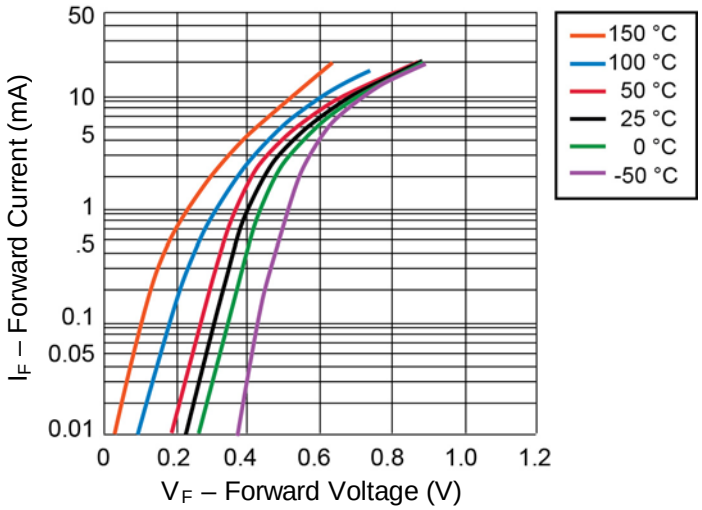



**FIGURE 3**
I – V curve showing typical Forward Voltage Variation
With Temperature Schottky Diode 1N5711

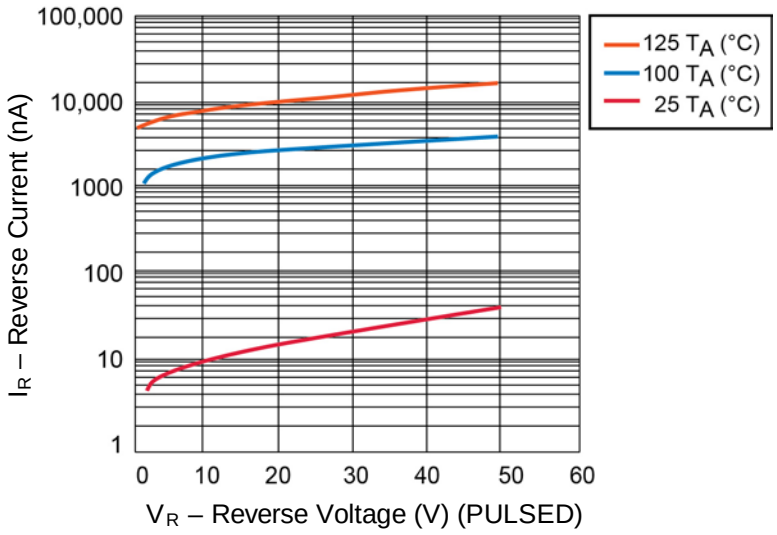



**FIGURE 4**
1N5711 Typical Variation of Reverse Current ($I_R$) vs Reverse Voltage ($V_R$)
at Various Temperatures

## GRAPHS

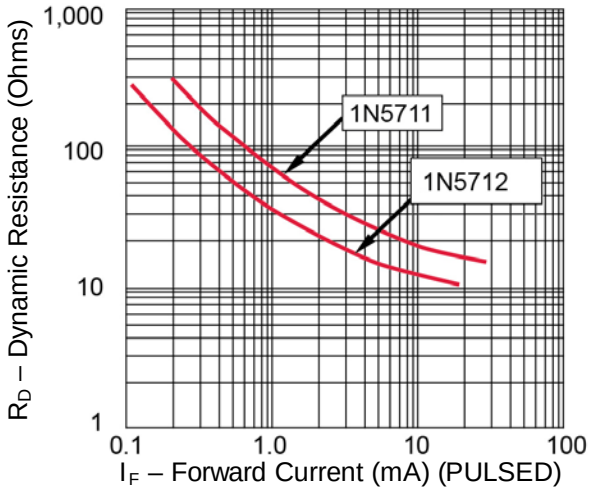
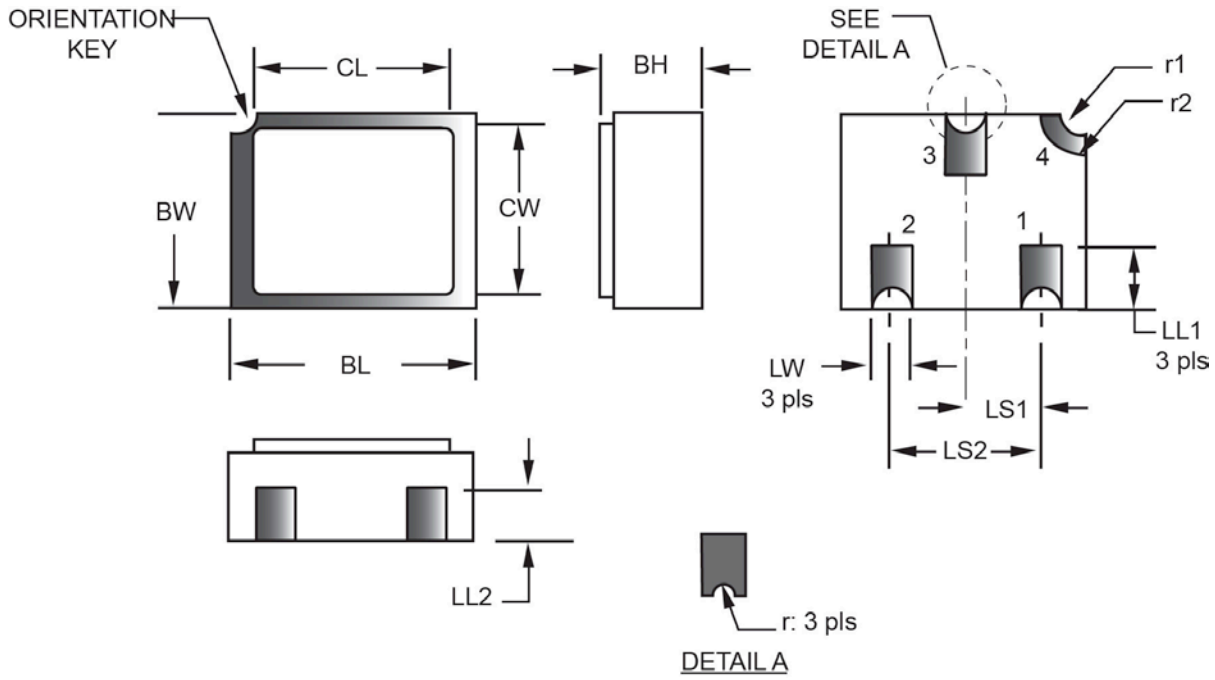



**FIGURE 5**
Typical Dynamic Resistance ($R_D$) vs Forward Current ($I_F$)

## PACKAGE DIMENSIONS




| Symbol | Dimensions | | | | Note | Symbol | Dimensions | | | | Note |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | inch | | millimeters | | | | inch | | millimeters | | |
| | Min | Max | Min | Max | | | Min | Max | Min | Max | |
| **BH** | 0.046 | 0.056 | 1.17 | 1.42 | | **LS1** | .035 | .039 | 0.89 | 0.99 | |
| **BL** | 0.115 | 0.128 | 2.92 | 3.25 | | **LS2** | .071 | .079 | 1.80 | 2.01 | |
| **BW** | 0.085 | 0.108 | 2.16 | 2.74 | | **LW** | .016 | .024 | 0.41 | 0.61 | |
| **CL** | - | 0.128 | - | 3.25 | | **r** | - | .008 | - | 0.20 | |
| **CW** | - | 0.108 | - | 2.74 | | **r1** | - | .012 | - | 0.31 | |
| **LL1** | 0.022 | 0.038 | 0.56 | 0.97 | | **r2** | - | .022 | - | .056 | |
| **LL2** | 0.017 | 0.035 | 0.43 | 0.89 | | | | | | | |

**NOTES:**

1. Dimensions are in inches. Millimeters are given for information only.
2. Ceramic package only.
3. Hatched areas on package denote metallized areas.
4. Pad 1 = Base, Pad 2 = Emitter, Pad 3 = Collector, Pad 4 = Shielding connected to the lid.
5. In accordance with ASME Y14.5M, diameters are equivalent to Φx symbology.