



## Schottky Barrier Diode MELF Surface Mount 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. This small diode is hermetically sealed and bonded into a DO-213AA glass package. Also included in this datasheet are Microsemi's CDLL numbered variants of this series (military qualification grades not available for the CDLL prefix part numbers).

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

### FEATURES

- Surface mount equivalent of JEDEC registered 1N5711, 1N5712, 1N6857, and 1N6858 numbers.
- Hermetically sealed glass construction.
- Metallurgically bonded.
- Double plug construction.
- 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).

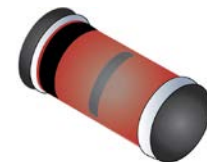
### APPLICATIONS / BENEFITS

- Low reverse leakage characteristics.
- Small size for high density mounting using the surface mount method (see package illustration).
- ESD sensitive to Class 1.

### MAXIMUM RATINGS @ 25 °C unless otherwise stated

| Parameters/Test Conditions              | Symbol              | Value       | Unit |
|-----------------------------------------|---------------------|-------------|------|
| Junction and Storage Temperature        | $T_J$ and $T_{STG}$ | -65 to +150 | °C   |
| Thermal Resistance, Junction-to-End Cap | $R_{\theta JEC}$    | 250         | °C/W |
| Average Rectified Output Current:       |                     |             |      |
| 5711 & 6263 types <sup>(1)</sup>        | $I_O$               | 33          | mA   |
| 2810, 5712 & 6858 types <sup>(2)</sup>  |                     | 75          |      |
| 6857 types <sup>(3)</sup>               |                     | 150         |      |
| 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.  
3. At  $T_{EC}$  and  $T_{SP} = +110$  °C, derate  $I_O$  to 0 at +150 °C.



### DO-213AA (MELF) Package

Also available in:

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

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

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

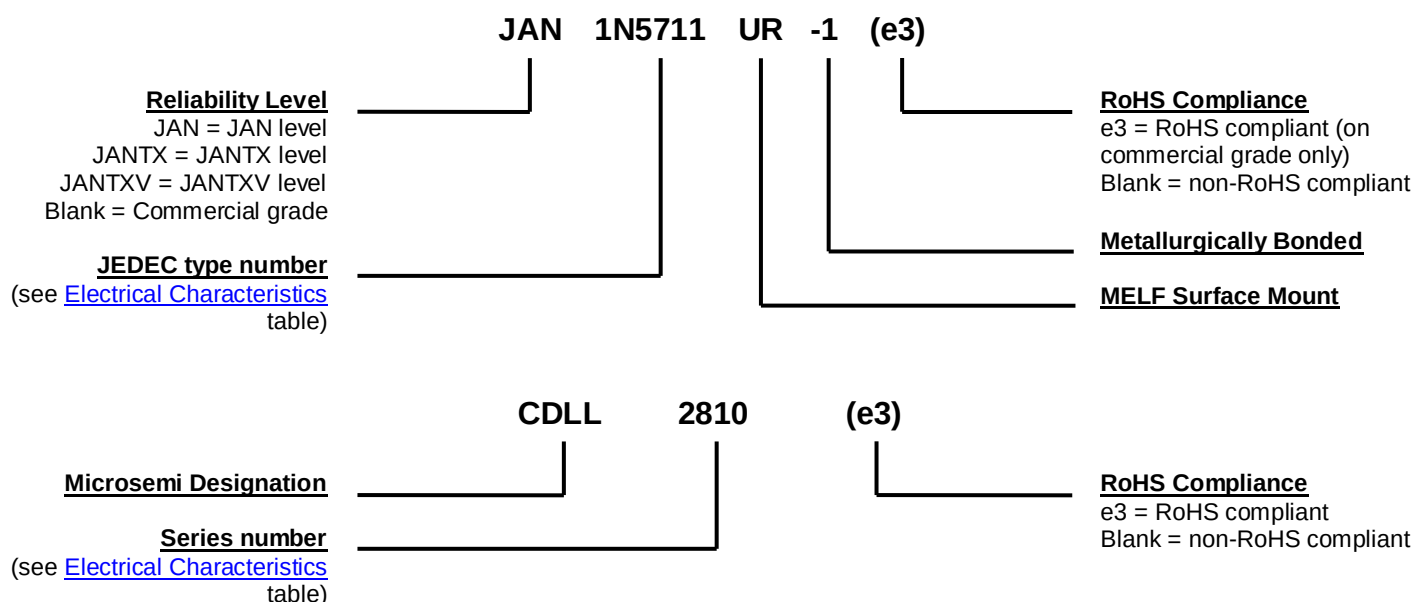
**MSC – Ireland**  
Gort Road Business Park,  
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Tel: +353 (0) 65 6840044  
Fax: +353 (0) 65 6822298

**Website:**  
[www.microsemi.com](http://www.microsemi.com)

## MECHANICAL and PACKAGING

- CASE: Hermetically sealed glass DO-213AA MELF (SOD-80, LL34) case 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 end is banded.
- MOUNTING: The axial coefficient of expansion (COE) of this device is approximately +6PPM/°C. The COE of the mounting surface system should be selected to provide a suitable match with this device.
- 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 <sub>R</sub>    | Reverse Current: The dc current flowing from the external circuit into the cathode terminal at the specified voltage V <sub>R</sub> .                                                                                           |
| I <sub>O</sub>    | 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 <sub>rr</sub>   | 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 <sub>(BR)</sub> | Breakdown Voltage: A voltage in the breakdown region.                                                                                                                                                                           |
| V <sub>F</sub>    | Forward Voltage: A positive dc anode-cathode voltage the device will exhibit at a specified forward current.                                                                                                                    |
| V <sub>R</sub>    | Reverse Voltage: A positive dc cathode-anode voltage below the breakdown region.                                                                                                                                                |
| V <sub>RWM</sub>  | Working Peak Reverse Voltage: The peak voltage excluding all transient voltages (ref JESD282-B). Also sometimes known historically as PIV.                                                                                      |

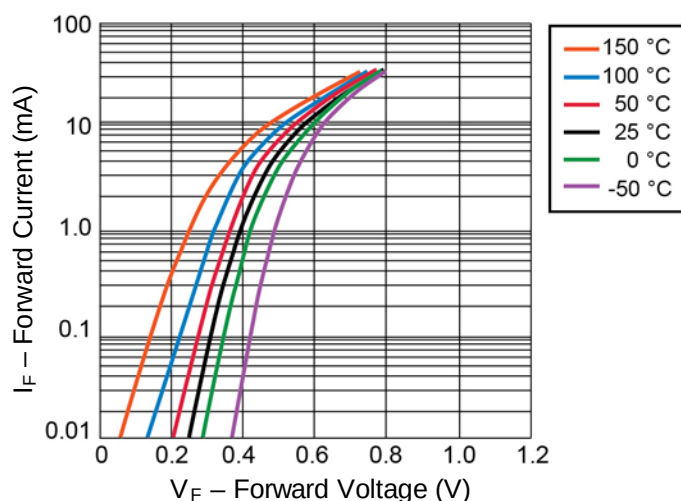
**ELECTRICAL CHARACTERISTICS @  $T_A = 25^\circ\text{C}$  unless otherwise noted**

| TYPE<br>NUMBER | MINIMUM<br>BREAKDOWN<br>VOLTAGE | MAXIMUM<br>FORWARD<br>VOLTAGE | MAXIMUM<br>FORWARD<br>VOLTAGE | WORKING<br>PEAK<br>REVERSE<br>VOLTAGE | MAXIMUM<br>REVERSE<br>LEAKAGE<br>CURRENT |       | MAXIMUM<br>CAPACITANCE<br>@ $V_R = 0$<br>VOLTS<br>$f = 1.0\text{ MHz}$ |
|----------------|---------------------------------|-------------------------------|-------------------------------|---------------------------------------|------------------------------------------|-------|------------------------------------------------------------------------|
|                | $V_{(BR)} @ 10\ \mu\text{A}$    | $V_F @ 1\text{ mA}$           | $V_F @ I_F$                   | $V_{RWM}$                             | $I_R @ V_R$                              |       | $C_T$                                                                  |
|                | Volts                           | Volts                         | V @ mA                        | V (pk)                                | nA                                       | Volts | pF                                                                     |
| 1N5711UR-1     | 70                              | 0.41                          | 1.0 @ 15                      | 50                                    | 200                                      | 50    | 2.0                                                                    |
| 1N5712UR-1     | 20                              | 0.41                          | 1.0 @ 35                      | 16                                    | 150                                      | 16    | 2.0                                                                    |
| 1N6857UR-1     | 20                              | 0.35                          | 0.75 @ 35                     | 16                                    | 150                                      | 16    | 4.5                                                                    |
| 1N6858UR-1     | 70                              | 0.36                          | 0.65 @ 15                     | 50                                    | 200                                      | 50    | 4.5                                                                    |
| CDLL2810       | 20                              | 0.41                          | 1.0 @ 35                      | 50                                    | 100                                      | 15    | 2.0                                                                    |
| CDLL5711       | 70                              | 0.41                          | 1.0 @ 15                      | 50                                    | 200                                      | 50    | 2.0                                                                    |
| CDLL5712       | 20                              | 0.41                          | 1.0 @ 35                      | 16                                    | 150                                      | 16    | 2.0                                                                    |
| CDLL6263       | 60                              | 0.41                          | 1.0 @ 15                      | 16                                    | 200                                      | 50    | 2.2                                                                    |
| CDLL6857       | 20                              | 0.35                          | 0.75 @ 35                     | 16                                    | 150                                      | 16    | 4.5                                                                    |
| CDLL6858       | 70                              | 0.36                          | 0.65 @ 15                     | 50                                    | 200                                      | 50    | 4.5                                                                    |

**NOTE:**

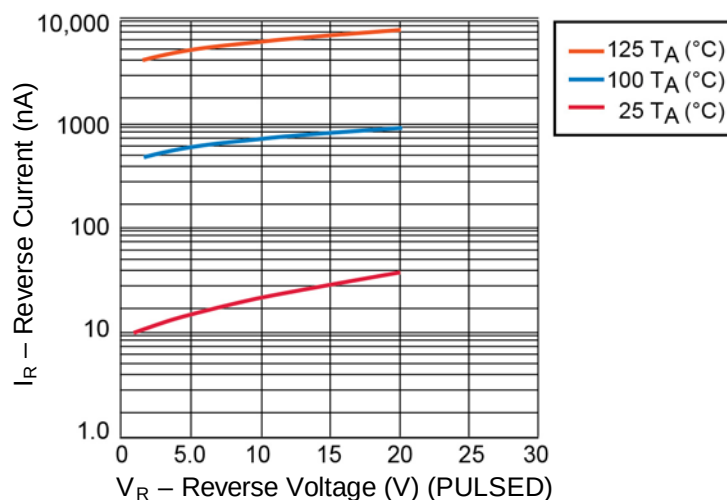
- Effective minority carrier lifetime ( $\tau$ ) is 100 pico seconds.

## GRAPHS



**FIGURE 1**

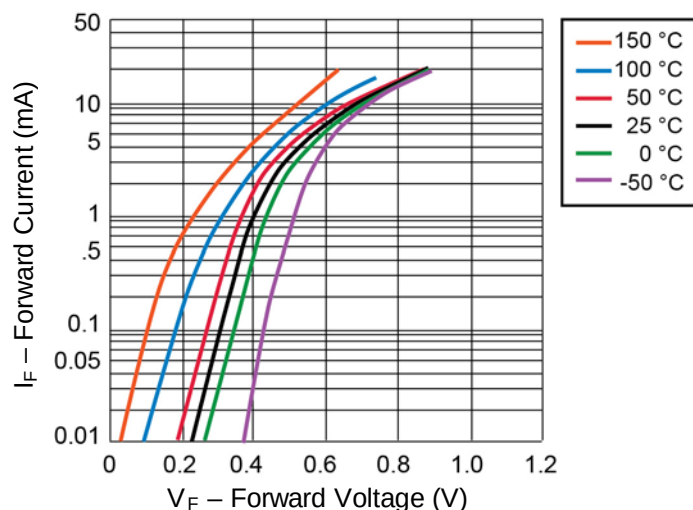
I-V Curve showing typical Forward Voltage Variation  
Temperature for the 1N5712UR-1, CDLL5712 and CDLL2810 Schottky Diodes



**FIGURE 2**

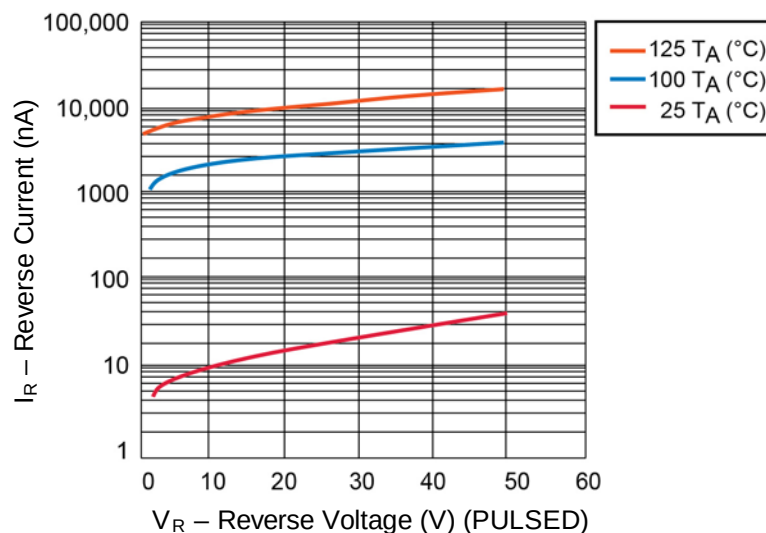
1N5712UR-1, CDLL5712 and CDLL2810 Typical variation of Reverse  
Current ( $I_R$ ) vs Reverse Voltage ( $V_R$ ) at Various Temperatures

## GRAPHS



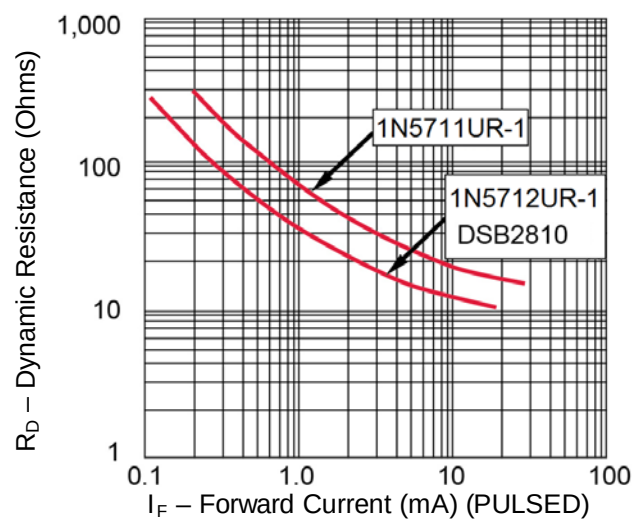
**FIGURE 3**

I – V curve showing typical Forward Voltage Variation  
With Temperature Schottky Diode 1N5711UR-1

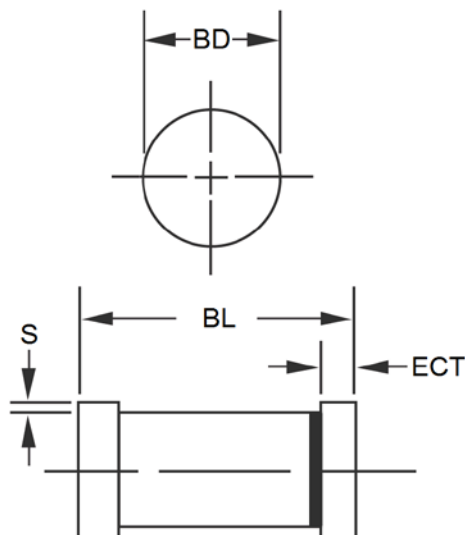


**FIGURE 4**

1N5711UR-1 Typical Variation of Reverse Current ( $I_R$ ) vs Reverse Voltage ( $V_R$ )  
at Various Temperatures

**GRAPHS**

**FIGURE 5**

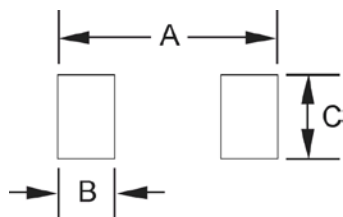
Typical Dynamic Resistance ( $R_D$ ) vs Forward Current ( $I_F$ )

**PACKAGE DIMENSIONS**


| DIM        | INCH      |       | MILLIMETERS |      |
|------------|-----------|-------|-------------|------|
|            | MIN       | MAX   | MIN         | MAX  |
| <b>BD</b>  | 0.063     | 0.067 | 1.60        | 1.70 |
| <b>BL</b>  | 0.130     | 0.146 | 3.30        | 3.71 |
| <b>ECT</b> | 0.016     | 0.022 | 0.41        | 0.56 |
| <b>S</b>   | 0.001 min |       | 0.03 min    |      |

**NOTES:**

1. Dimensions are in inches. Millimeters are given for information only.
2. Dimensions are pre-solder dip.
3. Referencing to dimension S, minimum clearance of glass body to mounting surface on all orientations.
4. In accordance with ASME Y14.5M, diameters are equivalent to  $\Phi$ x symbology.

**PAD LAYOUT**


|          | INCH  | mm   |
|----------|-------|------|
| <b>A</b> | 0.200 | 5.08 |
| <b>B</b> | 0.055 | 1.40 |
| <b>C</b> | 0.080 | 2.03 |