



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).

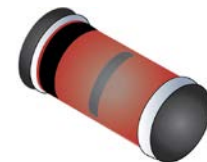
APPLICATIONS / BENEFITS

- 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 ⁽¹⁾ | I_O | 33 | mA |
| 2810, 5712 & 6858 types ⁽²⁾ | | 75 | |
| 6857 types ⁽³⁾ | | 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,
Ennis, Co. Clare, Ireland
Tel: +353 (0) 65 6840044
Fax: +353 (0) 65 6822298

Website:

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

JAN 1N5711 UR -1 (e3)

Reliability Level

JAN = JAN level
JANTX = JANTX level
JANTXV = JANTXV level
Blank = Commercial grade

JEDEC type number

(see [Electrical Characteristics](#) table)

RoHS Compliance

e3 = RoHS compliant (on commercial grade only)
Blank = non-RoHS compliant

Metallurgically Bonded

MELF Surface Mount

CDLL 2810 (e3)

Microsemi Designation

Series number
(see [Electrical Characteristics](#) table)

RoHS Compliance

e3 = RoHS compliant
Blank = non-RoHS compliant

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 @ $T_A = 25^\circ\text{C}$ 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 $f = 1.0\text{ MHz}$ |
|----------------|------------------------------------|-------------------------------|-------------------------------|---------------------------------------|--|-------|--|
| | $V_{(BR)} @ 10\text{ }\mu\text{A}$ | $V_F @ 1\text{ mA}$ | $V_F @ I_F$ | 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 (τ) is 100 pico seconds.

GRAPHS

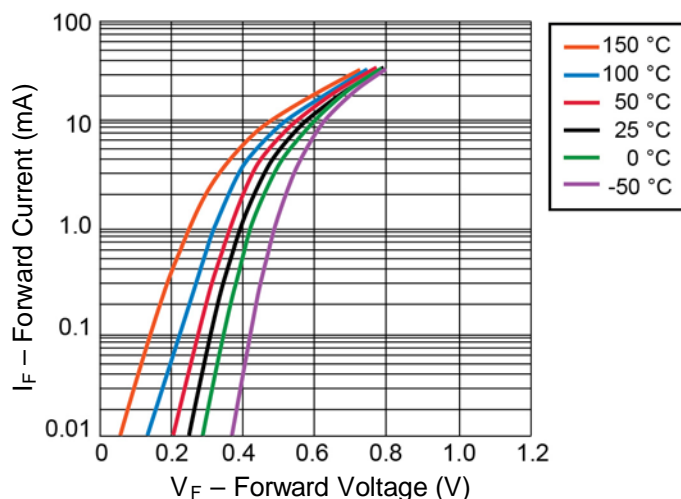


FIGURE 1

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

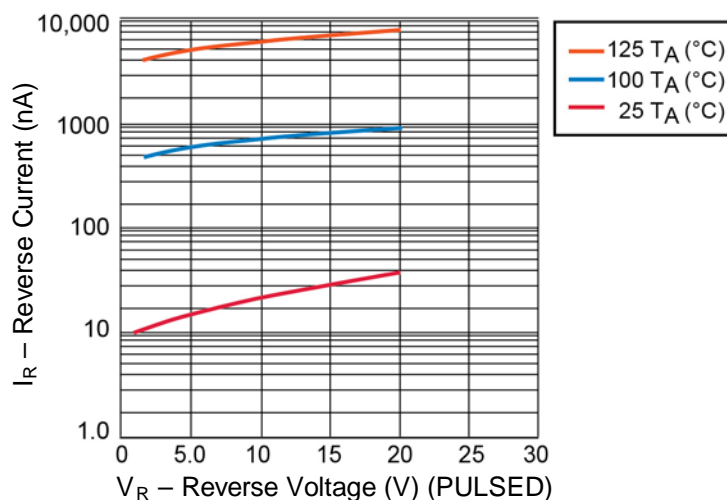


FIGURE 2

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

GRAPHS

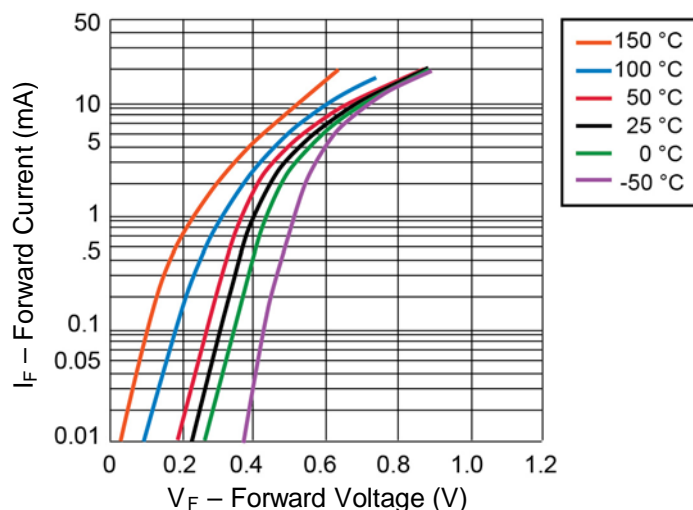


FIGURE 3

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

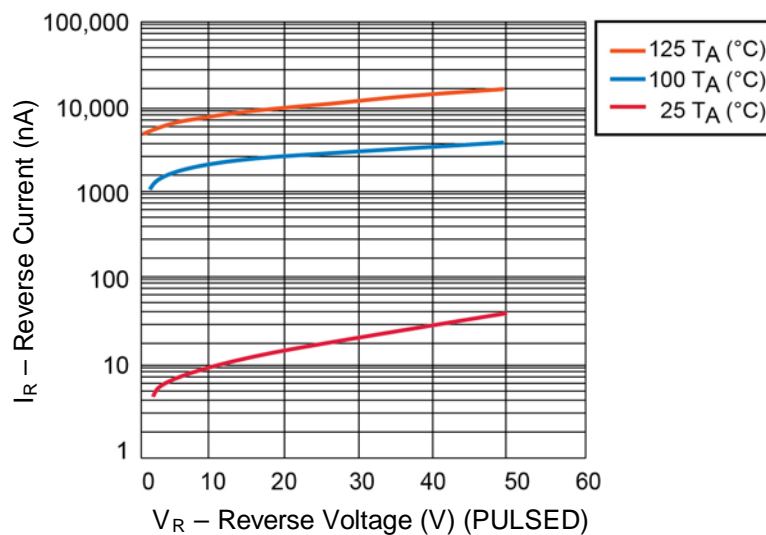


FIGURE 4

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

GRAPHS

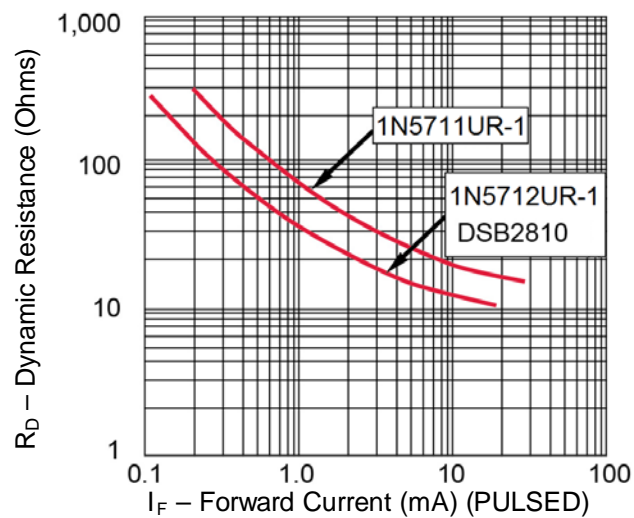
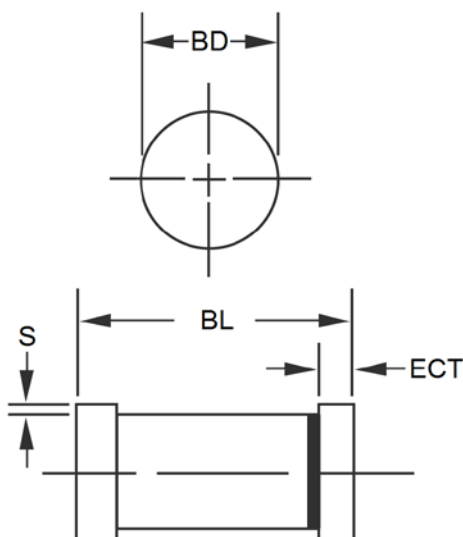


FIGURE 5

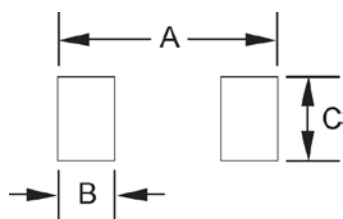
Typical Dynamic Resistance (R_D) vs Forward Current (I_F)

PACKAGE DIMENSIONS


| DIM | INCH | | MILLIMETERS | |
|------------|-----------|-------|-------------|------|
| | MIN | MAX | MIN | MAX |
| BD | 0.063 | 0.067 | 1.60 | 1.70 |
| BL | 0.130 | 0.146 | 3.30 | 3.71 |
| ECT | 0.016 | 0.022 | 0.41 | 0.56 |
| S | 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 Φ x symbology.

PAD LAYOUT


| | INCH | mm |
|----------|-------|------|
| A | 0.200 | 5.08 |
| B | 0.055 | 1.40 |
| C | 0.080 | 2.03 |