

# TECHNICAL DATA SHEET

**ZENER DIODE, 500mW** – LEADLESS PACKAGE FOR SURFACE MOUNT  
– LOW REVERSE LEAKAGE CHARACTERISTICS  
– METALLURGICALLY BONDED

Qualified per MIL-PRF-19500/437

## DEVICES

**1N5518BUR-1 Thru 1N5546BUR-1**  
**And**  
**CDLL5518 Thru CDLL5546D**

## QUALIFIED LEVELS

**JAN**  
**JANTX**  
**JANTXV**

## MAXIMUM RATING AT 25°C

**Junction and Storage Temperature:** -65°C to +175°C  
**DC Power Dissipation:** 500mW @ T<sub>EC</sub> = +125°C  
**Power Derating:** 10mW / °C above T<sub>EC</sub> = +125°C  
**Forward Voltage @ 200mA:** 1.1 volts maximum

## ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C, unless otherwise specified)

| TYPE<br>NUMBER<br><br>(NOTE 1) | NOMINAL<br>ZENER<br>VOLTAGE<br><br>V <sub>Z</sub> @ I <sub>ZT</sub><br>(NOTE 2) | ZENER<br>TEST<br>CURRENT<br><br>I <sub>ZT</sub> | MAX. ZENER<br>IMPEDANCE<br>B-C-D<br>SUFFIX<br><br>Z <sub>ZT</sub> @ I <sub>ZT</sub><br>(NOTE 3) | MAXIMUM REVERSE LEAKAGE<br>CURRENT |                        |                  | B-C-D<br>SUFFIX<br>MAXIMUM<br>DC ZENER<br><br>I <sub>ZM</sub> | REGULATION<br>FACTOR<br>CURRENT<br><br>ΔV <sub>Z</sub><br>(NOTE 5) | LOW<br>V <sub>Z</sub><br>CURRENT<br><br>I <sub>ZL</sub> |
|--------------------------------|---------------------------------------------------------------------------------|-------------------------------------------------|-------------------------------------------------------------------------------------------------|------------------------------------|------------------------|------------------|---------------------------------------------------------------|--------------------------------------------------------------------|---------------------------------------------------------|
|                                | VOLTS                                                                           | mA                                              | Ohms                                                                                            | I <sub>R</sub><br>(NOTE 4)         | V <sub>R</sub> = VOLTS |                  | mA                                                            | VOLTS                                                              | mA                                                      |
|                                |                                                                                 |                                                 |                                                                                                 | μAdc                               | NON &<br>A-<br>SUFFIX  | B-C-D-<br>SUFFIX |                                                               |                                                                    |                                                         |
| CDLL5518B                      | 3.3                                                                             | 20                                              | 26                                                                                              | 5.0                                | 0.90                   | 1.0              | 115                                                           | 0.90                                                               | 2.0                                                     |
| CDLL5519B                      | 3.6                                                                             | 20                                              | 24                                                                                              | 3.0                                | 0.90                   | 1.0              | 105                                                           | 0.90                                                               | 2.0                                                     |
| CDLL5520B                      | 3.9                                                                             | 20                                              | 22                                                                                              | 1.0                                | 0.90                   | 1.0              | 98                                                            | 0.85                                                               | 2.0                                                     |
| CDLL5521B                      | 4.3                                                                             | 20                                              | 18                                                                                              | 3.0                                | 1.0                    | 1.5              | 88                                                            | 0.75                                                               | 2.0                                                     |
| CDLL5522B                      | 4.7                                                                             | 10                                              | 22                                                                                              | 2.0                                | 1.5                    | 2.0              | 81                                                            | 0.60                                                               | 1.0                                                     |
| CDLL5523B                      | 5.1                                                                             | 5.0                                             | 26                                                                                              | 2.0                                | 2.0                    | 2.5              | 75                                                            | 0.65                                                               | 0.25                                                    |
| CDLL5524B                      | 5.6                                                                             | 3.0                                             | 30                                                                                              | 2.0                                | 3.0                    | 3.5              | 68                                                            | 0.30                                                               | 0.25                                                    |
| CDLL5525B                      | 6.2                                                                             | 1.0                                             | 30                                                                                              | 1.0                                | 4.5                    | 5.0              | 61                                                            | 0.20                                                               | 0.01                                                    |
| CDLL5526B                      | 6.8                                                                             | 1.0                                             | 30                                                                                              | 1.0                                | 5.5                    | 6.2              | 56                                                            | 0.10                                                               | 0.01                                                    |
| CDLL5527B                      | 7.5                                                                             | 1.0                                             | 35                                                                                              | 0.5                                | 6.0                    | 6.8              | 51                                                            | 0.05                                                               | 0.01                                                    |
| CDLL5528B                      | 8.2                                                                             | 1.0                                             | 40                                                                                              | 0.5                                | 6.5                    | 7.5              | 46                                                            | 0.05                                                               | 0.01                                                    |
| CDLL5529B                      | 9.1                                                                             | 1.0                                             | 45                                                                                              | 0.1                                | 7.0                    | 8.2              | 42                                                            | 0.05                                                               | 0.01                                                    |
| CDLL5530B                      | 10.0                                                                            | 1.0                                             | 60                                                                                              | 0.05                               | 8.0                    | 9.1              | 38                                                            | 0.10                                                               | 0.01                                                    |
| CDLL5531B                      | 11.0                                                                            | 1.0                                             | 80                                                                                              | 0.05                               | 9.0                    | 9.9              | 35                                                            | 0.20                                                               | 0.01                                                    |
| CDLL5532B                      | 12.0                                                                            | 1.0                                             | 90                                                                                              | 0.05                               | 9.5                    | 10.8             | 32                                                            | 0.20                                                               | 0.01                                                    |
| CDLL5533B                      | 13.0                                                                            | 1.0                                             | 90                                                                                              | 0.01                               | 10.5                   | 11.7             | 29                                                            | 0.20                                                               | 0.01                                                    |
| CDLL5534B                      | 14.0                                                                            | 1.0                                             | 100                                                                                             | 0.01                               | 11.5                   | 12.6             | 27                                                            | 0.20                                                               | 0.01                                                    |
| CDLL5535B                      | 15.0                                                                            | 1.0                                             | 100                                                                                             | 0.01                               | 12.5                   | 13.5             | 25                                                            | 0.20                                                               | 0.01                                                    |
| CDLL5536B                      | 16.0                                                                            | 1.0                                             | 100                                                                                             | 0.01                               | 13.0                   | 14.4             | 24                                                            | 0.20                                                               | 0.01                                                    |
| CDLL5537B                      | 17.0                                                                            | 1.0                                             | 100                                                                                             | 0.01                               | 14.0                   | 15.3             | 22                                                            | 0.20                                                               | 0.01                                                    |
| CDLL5538B                      | 18.0                                                                            | 1.0                                             | 100                                                                                             | 0.01                               | 15.0                   | 16.2             | 21                                                            | 0.20                                                               | 0.01                                                    |
| CDLL5539B                      | 19.0                                                                            | 1.0                                             | 100                                                                                             | 0.01                               | 16.0                   | 17.1             | 20                                                            | 0.20                                                               | 0.01                                                    |
| CDLL5540B                      | 20.0                                                                            | 1.0                                             | 100                                                                                             | 0.01                               | 17.0                   | 18.0             | 19                                                            | 0.20                                                               | 0.01                                                    |
| CDLL5541B                      | 22.0                                                                            | 1.0                                             | 100                                                                                             | 0.01                               | 18.0                   | 19.8             | 17                                                            | 0.25                                                               | 0.01                                                    |
| CDLL5542B                      | 24.0                                                                            | 1.0                                             | 100                                                                                             | 0.01                               | 20.0                   | 21.6             | 16                                                            | 0.30                                                               | 0.01                                                    |
| CDLL5543B                      | 25.0                                                                            | 1.0                                             | 100                                                                                             | 0.01                               | 21.0                   | 22.4             | 15                                                            | 0.35                                                               | 0.01                                                    |
| CDLL5544B                      | 28.0                                                                            | 1.0                                             | 100                                                                                             | 0.01                               | 23.0                   | 25.2             | 14                                                            | 0.40                                                               | 0.01                                                    |
| CDLL5545B                      | 30.0                                                                            | 1.0                                             | 100                                                                                             | 0.01                               | 24.0                   | 27.0             | 13                                                            | 0.45                                                               | 0.01                                                    |
| CDLL5546B                      | 33.0                                                                            | 1.0                                             | 100                                                                                             | 0.01                               | 28.0                   | 29.7             | 12                                                            | 0.50                                                               | 0.01                                                    |

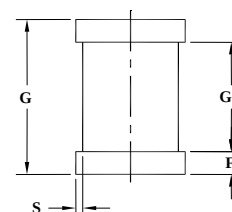
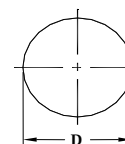
**NOTE 1:** No Suffix type numbers are ±20% with guaranteed limits for only V<sub>Z</sub>, I<sub>R</sub>, and V<sub>F</sub>. Units with "A" suffix are ±10% with guaranteed limits for V<sub>Z</sub>, I<sub>R</sub>, and V<sub>F</sub>. Units with guaranteed limits for all six parameters are indicated by a "B" suffix for ±5.0% units, "C" suffix for ±2.0% and "D" suffix for ±1.0%.

**NOTE 2:** Zener voltage is measured with the device junction in thermal equilibrium at an ambient temperature of 25°C ± 3°C.

**NOTE 3:** Zener impedance is derived by superimposing on I<sub>ZT</sub> A 60Hz rms a.c. current equal to 10% of I<sub>ZT</sub>.

**NOTE 4:** Reverse leakage currents are measured at V<sub>R</sub> as shown on the table.

**NOTE 5:** ΔV<sub>Z</sub> is the maximum difference between V<sub>Z</sub> at I<sub>ZT</sub> and V<sub>Z</sub> at I<sub>ZL</sub> measured with the device junction in thermal equilibrium.



|     | MILLIMETERS |      | INCHES    |       |
|-----|-------------|------|-----------|-------|
| DIM | MIN         | MAX  | MIN       | MAX   |
| D   | 1.60        | 1.70 | 0.063     | 0.067 |
| F   | 0.41        | 0.55 | 0.016     | 0.022 |
| G   | 3.30        | 3.70 | .130      | .146  |
| G1  | 2.54 REF.   |      | .100 REF. |       |
| S   | 0.03 MIN    |      | .001 MIN  |       |

**FIGURE 1**

## DESIGN DATA

**CASE:** DO-213AA, Hermetically sealed glass case.  
(MELF, SOD-80, LL34)

**LEAD FINISH:** Tin / Lead

**THERMAL RESISTANCE: (R<sub>θJEC</sub>):**  
100 °C/W maximum at L = 0 inch

**THERMAL IMPEDANCE: (Z<sub>θJX</sub>):**  
35°C/W maximum

**POLARITY:** Diode to be operated with the banded  
(cathode) end positive.

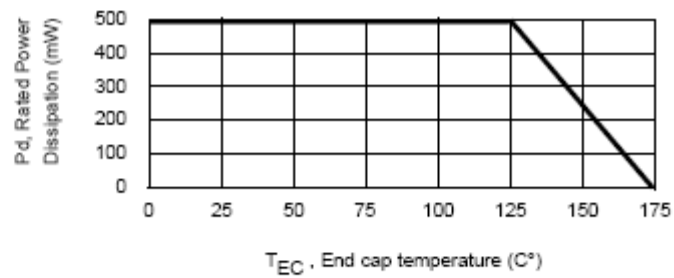
**MOUNTING SURFACE SELECTION:**  
The Axial Coefficient of Expansion (COE) of this device is approximately +6PPM/°C. The COE of the Mounting Surface System should be selected to provide a suitable match with this device.



# TECHNICAL DATA SHEET

## CDLL5518 thru CDLL5546D

FIGURE 2



POWER DERATING CURVE

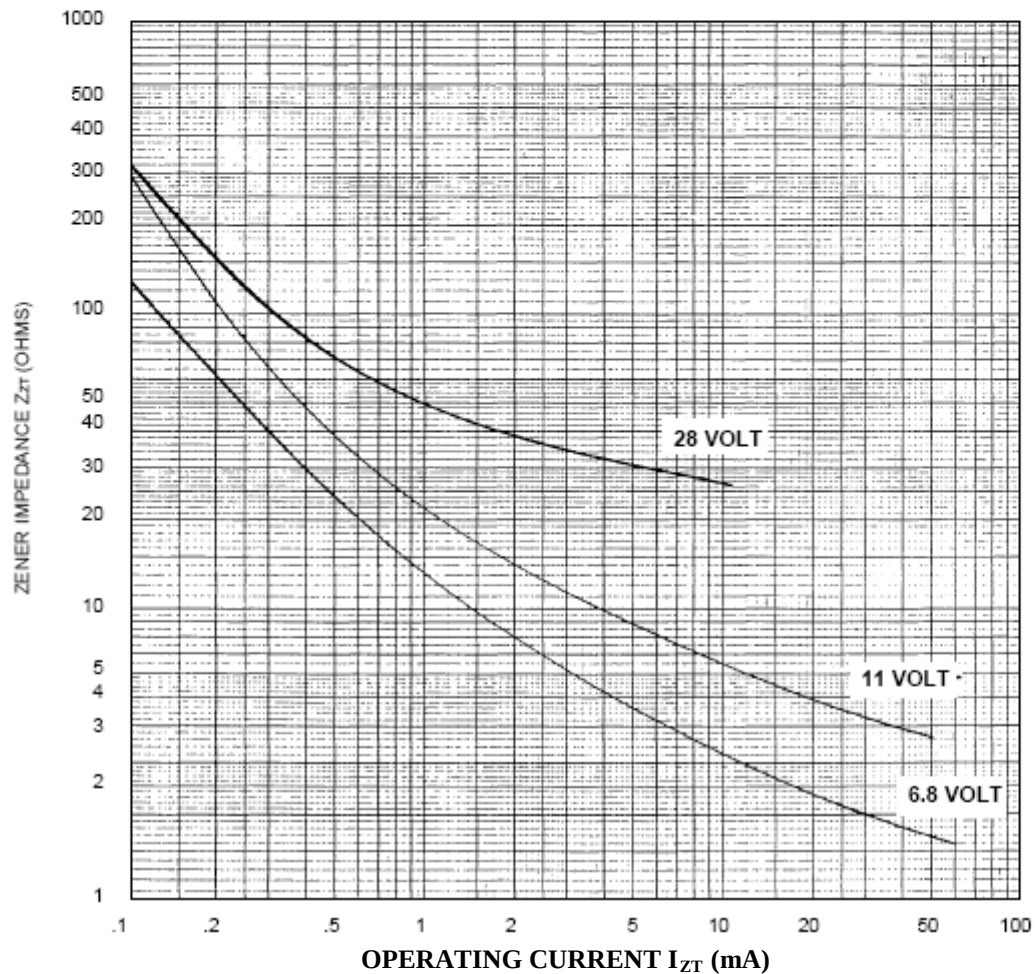


FIGURE 3  
ZENER IMPEDANCE VS. OPERATION CURRENT