

# 1N957BUR-1 thru 1N986BUR-1

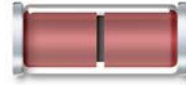


## Silicon Zener Diode Series

Rev. V1

### Features

- Available in JAN, JANTX and JANTXV per MIL-PRF-19500/117
- Standard voltage tolerances are plus/minus 5% with B suffix, 10% with A suffix identification.
- Tight tolerances available in plus or minus 2% or 1% with C or D suffix respectively.
- 500 mW power handling
- Hermetically sealed axial-leaded glass DO-213AA package.



### Electrical Specifications: $T_A = +25^\circ\text{C}$ (unless otherwise specified)

| Part # <sup>1</sup> | Normal Zener Voltage $V_Z$ | Zener Test Current $I_{ZT}$ | Max. Zener Impedance      |                  |                  | Max. DC Zener Current $I_{ZM}$ | Max. Surge Current $I_{ZSM}$ | Max. Reverse Leakage $I_R @ V_R$ |       | Max. Temperature Coefficient $a_{V_Z}$ |
|---------------------|----------------------------|-----------------------------|---------------------------|------------------|------------------|--------------------------------|------------------------------|----------------------------------|-------|--|
|                     | Volts                      | mA                          | $Z_{ZT} @ I_{ZT}$<br>Ohms | $Z_{ZK}$<br>Ohms | @ $I_{ZK}$<br>mA | mA                             | mA                           | mA                               | Volts | %/°C                                   |
| 1N957BUR-1          | 6.8                        | 18.5                        | 4.5                       | 700              | 1.0              | 55                             | 300                          | 150                              | 5.2   | 0.05                                   |
| 1N958BUR-1          | 7.5                        | 16.5                        | 5.5                       | 700              | 0.5              | 50                             | 275                          | 75                               | 5.7   | 0.058                                  |
| 1N959BUR-1          | 8.2                        | 15.0                        | 6.5                       | 700              | 0.5              | 45                             | 250                          | 50                               | 6.2   | 0.065                                  |
| 1N960BUR-1          | 9.1                        | 14.0                        | 7.5                       | 700              | 0.5              | 41                             | 225                          | 25                               | 6.9   | 0.068                                  |
| 1N961BUR-1          | 10                         | 12.5                        | 8.5                       | 700              | 0.25             | 38                             | 200                          | 10                               | 7.6   | 0.075                                  |
| 1N962BUR-1          | 11                         | 11.5                        | 9.5                       | 700              | 0.25             | 32                             | 175                          | 5                                | 8.4   | 0.076                                  |
| 1N963BUR-1          | 12                         | 10.5                        | 11.5                      | 700              | 0.25             | 31                             | 160                          | 5                                | 9.1   | 0.077                                  |
| 1N964BUR-1          | 13                         | 9.5                         | 13                        | 700              | 0.25             | 28                             | 150                          | 5                                | 9.9   | 0.079                                  |
| 1N965BUR-1          | 15                         | 8.5                         | 16                        | 700              | 0.25             | 25                             | 130                          | 5                                | 11.4  | 0.082                                  |
| 1N966BUR-1          | 16                         | 7.8                         | 17                        | 700              | 0.25             | 24                             | 120                          | 5                                | 12.2  | 0.083                                  |
| 1N967BUR-1          | 18                         | 7.0                         | 21                        | 750              | 0.25             | 20                             | 110                          | 5                                | 13.7  | 0.085                                  |
| 1N968BUR-1          | 20                         | 6.2                         | 25                        | 750              | 0.25             | 18                             | 100                          | 5                                | 15.2  | 0.086                                  |
| 1N969BUR-1          | 22                         | 5.6                         | 29                        | 750              | 0.25             | 16                             | 90                           | 5                                | 16.7  | 0.087                                  |
| 1N970BUR-1          | 24                         | 5.2                         | 33                        | 750              | 0.25             | 15                             | 80                           | 5                                | 18.2  | 0.088                                  |

1. The JEDEC type numbers shown (B Suffix) have a +5% tolerance on nominal Zener Voltage. The suffix A is used to identify +10% tolerance; suffix C is used to identify +2%; and suffix D is used to identify +1%; no suffix indicates +20%.

Continued on next page

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### Electrical Specifications: $T_A = +25^\circ\text{C}$ (unless otherwise specified)

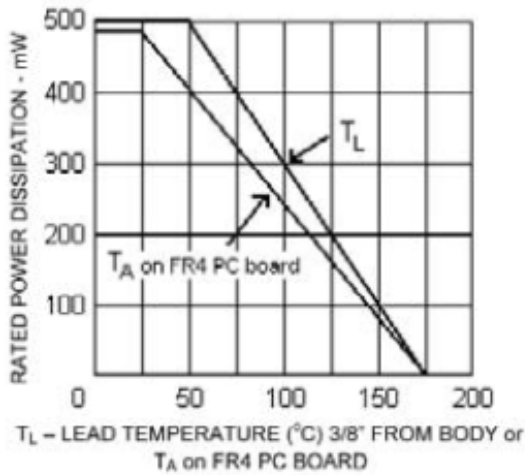
| Part # <sup>1</sup> | Normal Zener Voltage $V_Z$ | Zener Test Current $I_{ZT}$ | Max. Zener Impedance      |                  |                  | Max. DC Zener Current $I_{ZM}$ | Max. Surge Current $I_{ZSM}$ | Max. Reverse Leakage $I_R @ V_R$ |       | Max. Temperature Coefficient $a_{V_Z}$ |
|---------------------|----------------------------|-----------------------------|---------------------------|------------------|------------------|--------------------------------|------------------------------|----------------------------------|-------|--|
|                     | Volts                      | mA                          | $Z_{ZT} @ I_{ZT}$<br>Ohms | $Z_{ZK}$<br>Ohms | @ $I_{ZK}$<br>mA | mA                             | mA                           | mA                               | Volts | %/ $^\circ\text{C}$                    |
| 1N971BUR-1          | 27                         | 4.6                         | 41                        | 750              | 0.25             | 13                             | 70                           | 5                                | 20.6  | 0.090                                  |
| 1N972BUR-1          | 30                         | 4.2                         | 49                        | 1000             | 0.25             | 12                             | 65                           | 5                                | 22.8  | 0.091                                  |
| 1N973BUR-1          | 33                         | 3.8                         | 58                        | 1000             | 0.25             | 11                             | 60                           | 5                                | 25.1  | 0.092                                  |
| 1N974BUR-1          | 36                         | 3.4                         | 70                        | 1000             | 0.25             | 10                             | 55                           | 5                                | 27.4  | 0.093                                  |
| 1N975BUR-1          | 39                         | 3.2                         | 80                        | 1000             | 0.25             | 9.5                            | 46                           | 5                                | 29.7  | 0.094                                  |
| 1N976BUR-1          | 43                         | 3.0                         | 93                        | 1000             | 0.25             | 8.8                            | 44                           | 5                                | 32.7  | 0.095                                  |
| 1N977BUR-1          | 47                         | 2.7                         | 105                       | 1500             | 0.25             | 7.9                            | 40                           | 5                                | 35.8  | 0.095                                  |
| 1N978BUR-1          | 51                         | 2.5                         | 125                       | 1500             | 0.25             | 7.4                            | 37                           | 5                                | 38.8  | 0.096                                  |
| 1N979BUR-1          | 56                         | 2.2                         | 150                       | 2000             | 0.25             | 6.8                            | 35                           | 5                                | 42.6  | 0.096                                  |
| 1N980BUR-1          | 62                         | 2.0                         | 185                       | 2000             | 0.25             | 6.0                            | 30                           | 5                                | 47.1  | 0.097                                  |
| 1N981BUR-1          | 68                         | 1.8                         | 230                       | 2000             | 0.25             | 5.5                            | 28                           | 5                                | 51.7  | 0.097                                  |
| 1N982BUR-1          | 75                         | 1.7                         | 270                       | 2000             | 0.25             | 5.0                            | 26                           | 5                                | 56.0  | 0.098                                  |
| 1N983BUR-1          | 82                         | 1.5                         | 330                       | 3000             | 0.25             | 4.6                            | 23                           | 5                                | 62.2  | 0.098                                  |
| 1N984BUR-1          | 91                         | 1.4                         | 400                       | 3000             | 0.25             | 4.1                            | 21                           | 5                                | 69.2  | 0.099                                  |
| 1N985BUR-1          | 100                        | 1.3                         | 500                       | 3000             | 0.25             | 3.7                            | 18                           | 5                                | 76.0  | 0.11                                   |
| 1N986BUR-1          | 110                        | 1.1                         | 750                       | 4000             | 0.25             | 3.3                            | 16                           | 5                                | 83.6  | 0.11                                   |

1. The JEDEC type numbers shown (B Suffix) have a +5% tolerance on nominal Zener Voltage. The suffix A is used to identify +10% tolerance; suffix C is used to identify +2%; and suffix D is used to identify +1%; no suffix indicates +20%.

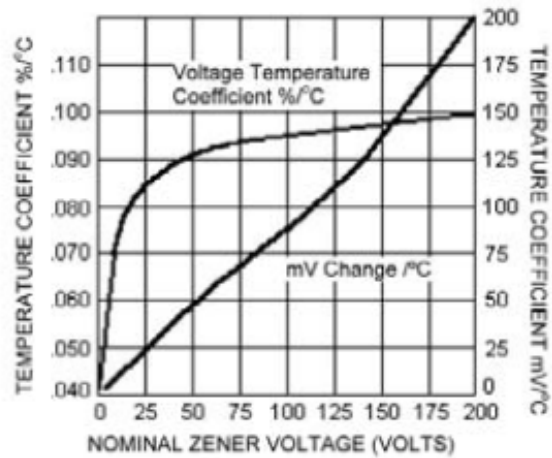
### Absolute Maximum Ratings<sup>2,3</sup>

| Parameter                       | Absolute Maximum                              |
|---------------------------------|---|
| Thermal Resistance              | 250 $^\circ\text{C}/\text{W}$                 |
| Steady-State Power              | 0.5 W   |
| Forward Voltage                 | 1.1 V @ 200 mA                                |
| Operating / Storage Temperature | -65 $^\circ\text{C}$ to +175 $^\circ\text{C}$ |

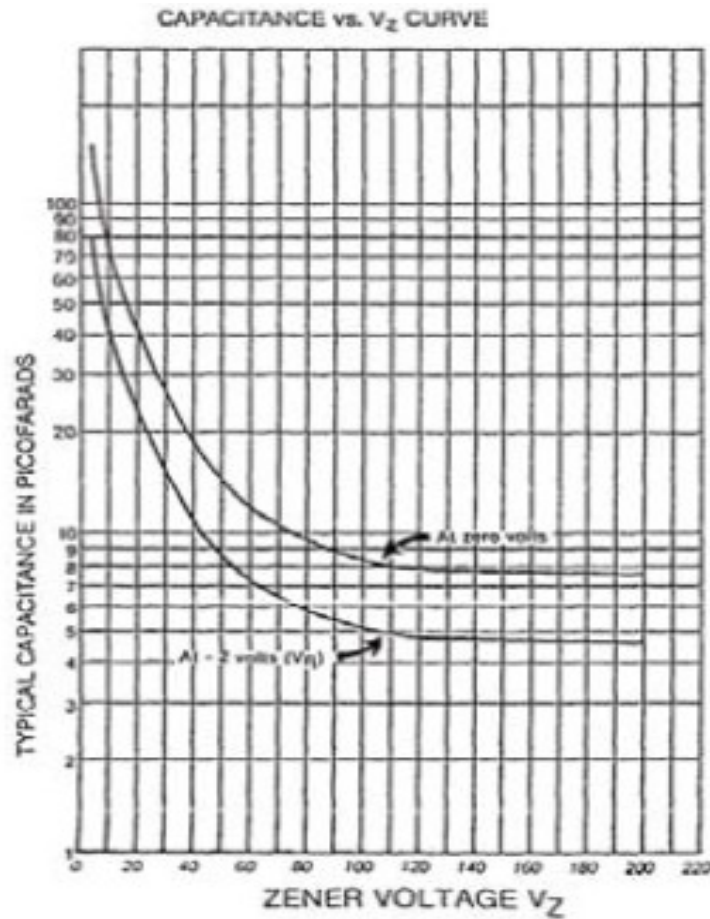
2. Exceeding any one or combination of these limits may cause permanent damage to this device.  
 3. MACOM does not recommend sustained operation near these survivability limits.



**FIGURE 1**  
POWER DERATING CURVE

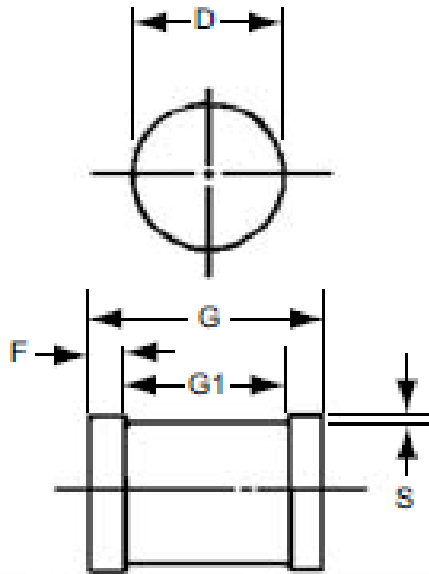


**FIGURE 2**  
ZENER VOLTAGE TEMPERATURE COEFFICIENT vs. ZENER VOLTAGE



**FIGURE 3**  
CAPACITANCE vs. ZENER VOLTAGE

Outline (DO – 213AA, Hermetically sealed glass case. (MELF, SOD-80, LL34))



### LEADED DESIGN DATA

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

LEAD FINISH: Tin / Lead

POLARITY: Cathode end is banded.

MOUNTING POSITION: Any.

MOUNTING SURFACE SELECTION: The Axial Coefficient of Expansion (COE) Of this Device is Approximately +6 PPM/°C. The COE of the Mounting Surface System Should Be Selected To Provide A Suitable Match With This Device.

| Dim. | Millimeters |      | Inches     |       |
|------|-------------|------|------------|-------|
|      | 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 | 0.130      | 0.140 |
| G1   | 2.54 ref.   |      | 0.100 ref. |       |
| S    | 0.03 min.   |      | 0.001 min. |       |

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