

## 200mW, 2% Tolerance Zener Diodes

### FEATURES

- Wide zener voltage range selection: 3.6V to 36V
- $V_Z$  tolerance selection of  $\pm 2\%$
- Moisture sensitivity level: level 1, per J-STD-020
- Compliant to RoHS directive 2011/65/EU and in accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21

### APPLICATIONS

- Constant voltage control

### MECHANICAL DATA

- Case: SOD-323F
- Molding compound meets UL 94 V-0 flammability rating
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Polarity: Indicated by cathode band
- Weight: 4.594 mg (approximately)

| KEY PARAMETERS |            |      |
|----------------|------------|------|
| PARAMETER      | VALUE      | UNIT |
| $V_Z$          | 3.6-36     | V    |
| $P_D$          | 200        | mW   |
| $T_J$ Max.     | 150        | °C   |
| Package        | SOD-323F   |      |
| Configuration  | Single die |      |



| ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted) |           |             |      |
|-----------------------------------------------------------------------------|-----------|-------------|------|
| PARAMETER                                                                   | SYMBOL    | VALUE       | UNIT |
| Power dissipation                                                           | $P_D$     | 200         | mW   |
| Junction temperature range                                                  | $T_J$     | -55 to +150 | °C   |
| Storage temperature range                                                   | $T_{STG}$ | -55 to +150 | °C   |

**ELECTRICAL SPECIFICATIONS** ( $T_A = 25^\circ\text{C}$  unless otherwise noted)

| PART<br>NUMBER | MARKING<br>CODE | ZENER VOLTAGE  |       |       | TEST<br>CURRENT | REGULAR IMPEDANCE |                   | TEST<br>CURRENT | LEAKAGE<br>CURRENT |    |
|----------------|-----------------|----------------|-------|-------|-----------------|-------------------|-------------------|-----------------|--------------------|----|
|                |                 | $V_Z @ I_{ZT}$ |       |       | $I_{ZT}$        | $Z_{ZT} @ I_{ZT}$ | $Z_{ZK} @ I_{ZK}$ | $I_{ZK}$        | $I_R @ V_R$        |    |
|                |                 | V              |       |       | mA              | $\Omega$          | $\Omega$          | mA              | $\mu\text{A}$      | V  |
|                |                 | Min.           | Nom.  | Max.  |                 | Max.              | Max.              |                 | Max.               |    |
| UDZS3V6B       | D0              | 3.60           | 3.60  | 3.85  | 5               | 90                | 600               | 1.0             | 4.50               | 1  |
| UDZS3V9B       | D1              | 3.89           | 3.90  | 4.16  | 5               | 90                | 600               | 1.0             | 2.70               | 1  |
| UDZS4V3B       | D2              | 4.17           | 4.30  | 4.43  | 5               | 90                | 600               | 1.0             | 2.70               | 1  |
| UDZS4V7B       | D3              | 4.55           | 4.70  | 4.75  | 5               | 80                | 500               | 1.0             | 2.70               | 1  |
| UDZS5V1B       | D4              | 4.98           | 5.10  | 5.20  | 5               | 60                | 500               | 1.0             | 1.80               | 2  |
| UDZS5V6B       | D5              | 5.49           | 5.60  | 5.73  | 5               | 40                | 300               | 1.0             | 0.90               | 3  |
| UDZS6V2B       | D6              | 6.06           | 6.20  | 6.33  | 5               | 40                | 150               | 1.0             | 2.70               | 3  |
| UDZS6V8B       | D7              | 6.65           | 6.80  | 6.93  | 5               | 30                | 75                | 1.0             | 1.80               | 4  |
| UDZS7V5B       | D8              | 7.28           | 7.50  | 7.60  | 5               | 30                | 75                | 1.0             | 0.90               | 4  |
| UDZS8V2B       | D9              | 8.02           | 8.20  | 8.36  | 5               | 30                | 75                | 1.0             | 0.63               | 5  |
| UDZS9V1B       | DA              | 8.85           | 9.10  | 9.23  | 5               | 30                | 90                | 1.0             | 0.45               | 6  |
| UDZS10B        | DB              | 9.77           | 10.00 | 10.21 | 5               | 20                | 150               | 1.0             | 0.18               | 7  |
| UDZS11B        | DC              | 10.76          | 11.00 | 11.22 | 5               | 20                | 150               | 1.0             | 0.09               | 8  |
| UDZS12B        | DE              | 11.74          | 12.00 | 12.24 | 5               | 20                | 150               | 1.0             | 0.09               | 9  |
| UDZS13B        | DF              | 12.91          | 13.00 | 13.49 | 5               | 40                | 160               | 1.0             | 0.045              | 10 |
| UDZS15B        | DG              | 14.34          | 15.00 | 14.98 | 5               | 40                | 190               | 1.0             | 0.045              | 11 |
| UDZS16B        | DH              | 15.85          | 16.00 | 16.51 | 5               | 40                | 190               | 1.0             | 0.045              | 12 |
| UDZS18B        | DJ              | 17.56          | 18.00 | 18.35 | 5               | 50                | 220               | 1.0             | 0.045              | 13 |
| UDZS20B        | DK              | 19.52          | 20.00 | 20.39 | 5               | 60                | 220               | 1.0             | 0.045              | 15 |
| UDZS22B        | DL              | 21.54          | 22.00 | 22.47 | 5               | 80                | 240               | 1.0             | 0.045              | 17 |
| UDZS24B        | DM              | 23.72          | 24.00 | 24.78 | 5               | 80                | 240               | 1.0             | 0.045              | 19 |
| UDZS27B        | DN              | 26.19          | 27.00 | 27.53 | 5               | 100               | 300               | 0.5             | 0.045              | 21 |
| UDZS30B        | DP              | 29.19          | 30.00 | 30.69 | 5               | 100               | 300               | 0.5             | 0.045              | 23 |
| UDZS33B        | DR              | 32.15          | 33.00 | 33.79 | 5               | 100               | 310               | 0.5             | 0.045              | 25 |
| UDZS36B        | DS              | 35.07          | 36.00 | 36.87 | 5               | 100               | 330               | 0.5             | 0.045              | 27 |

**Notes:**

1. The zener voltage ( $V_Z$ ) is tested under pulse condition of 30ms
2. For detailed information on price, availability and delivery of nominal zener voltages between the voltages shown and tighter voltage tolerances
3. The zener impedance is derived from the 60-cycle ac voltage, which results when an ac current having an ms value equal to 10% of the DC zener current ( $I_{ZT}$  or  $I_{ZK}$ ) is superimposed to  $I_{ZT}$  or  $I_{ZK}$

**ORDERING INFORMATION**

| <b>PART NO.</b><br>(Note 1) | <b>PACKAGE</b> | <b>PACKING</b> |
|-----------------------------|----------------|----------------|
| UDZSxxxB RRG                | SOD-323F       | 3K / 7" Reel   |
| UDZSxxxB RR                 | SOD-323F       | 3K / 7" Reel   |
| UDZSxxxB R9G                | SOD-323F       | 10K / 13" Reel |
| UDZSxxxB R9                 | SOD-323F       | 10K / 13" Reel |

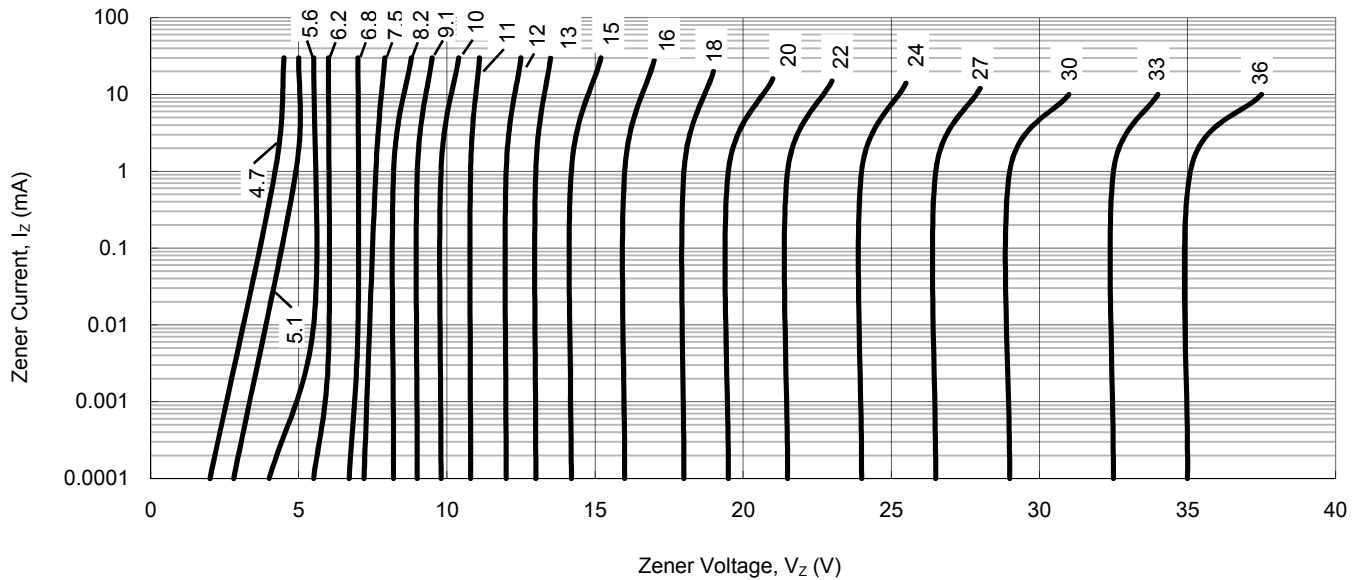
**Note:**

1. "xxx" defines voltage from 3.6V (UDZS3V6B) to 36V (UDZS36B)

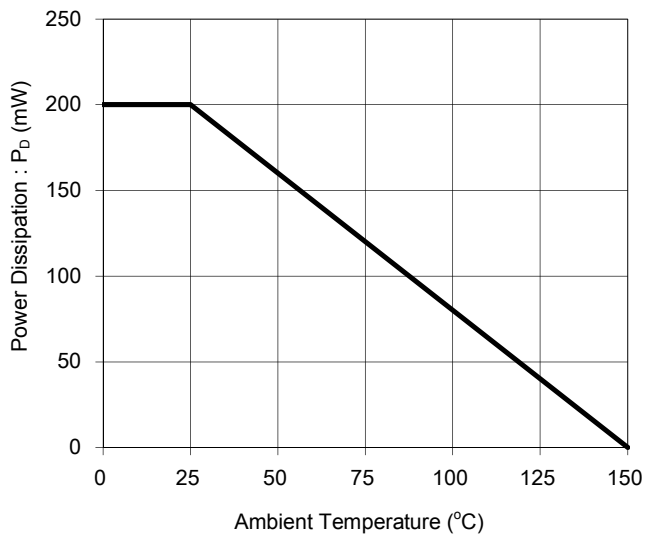
## CHARACTERISTICS CURVES

( $T_A = 25^\circ\text{C}$  unless otherwise noted)

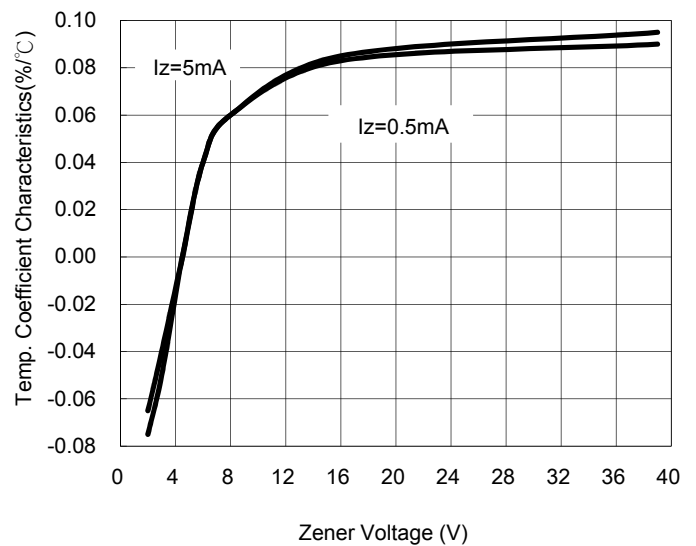
**Fig.1 VZ - IZ Characteristics**



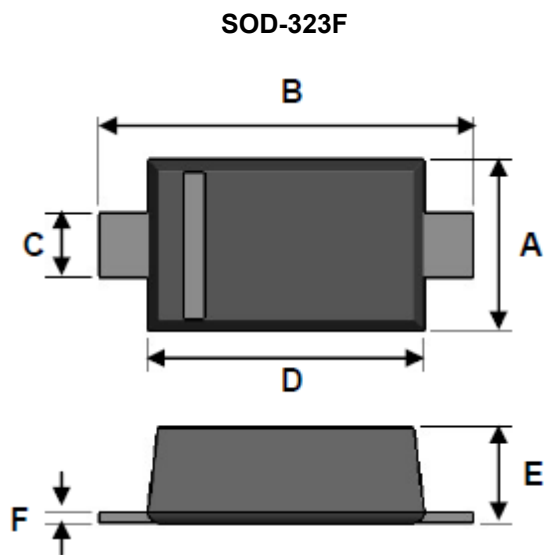
**Fig.2 Derating Curve**



**Fig.3 Zener Voltage-Temp. Coefficient Characteristics**

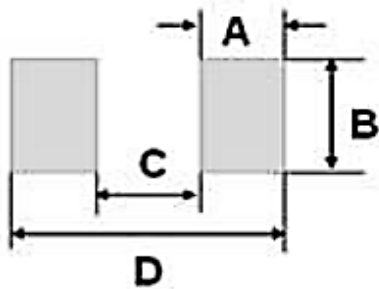


## PACKAGE OUTLINE DIMENSION



| DIM. | Unit (mm) |      | Unit (inch) |       |
|------|-----------|------|-------------|-------|
|      | Min       | Max  | Min         | Max   |
| A    | 1.15      | 1.35 | 0.045       | 0.053 |
| B    | 2.30      | 2.80 | 0.091       | 0.110 |
| C    | 0.25      | 0.40 | 0.010       | 0.016 |
| D    | 1.60      | 1.80 | 0.063       | 0.071 |
| E    | 0.80      | 1.10 | 0.031       | 0.043 |
| F    | 0.05      | 0.25 | 0.002       | 0.010 |

## SUGGEST PAD LAYOUT



| DIM. | Unit (mm) | Unit (inch) |
|------|-----------|-------------|
|      | Typ.      | Typ.        |
| A    | 0.63      | 0.025       |
| B    | 0.83      | 0.033       |
| C    | 1.60      | 0.063       |
| D    | 2.86      | 0.113       |

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