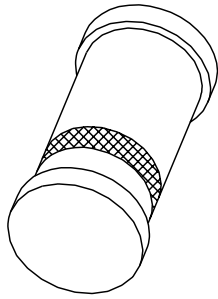


DATA SHEET



BZV80; BZV81 Voltage reference diodes

Product specification
Supersedes data of April 1992

1996 Mar 21

Voltage reference diodes

BZV80; BZV81

FEATURES

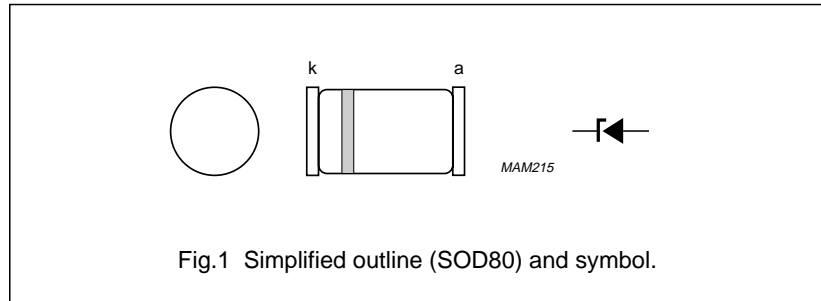
- Reference voltage range:
5.89 to 6.51 V (nom. 6.20 V)
- Low temperature coefficient range:
max. 0.005 to 0.01 %/K.

APPLICATION

- Voltage reference sources.

DESCRIPTION

Leadless voltage reference diode in a small glass SOD80 SMD package.



LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 134).

| SYMBOL | PARAMETER | CONDITIONS | MIN. | MAX. | UNIT |
|-----------|-------------------------------|-----------------------------------|------|------|------|
| I_z | working current | | – | 50 | mA |
| P_{tot} | total power dissipation | $T_{amb} = 50\text{ °C}$; note 1 | – | 400 | mW |
| T_{stg} | storage temperature | | –65 | +200 | °C |
| T_j | junction temperature | | – | 200 | °C |
| T_{amb} | operating ambient temperature | | –20 | +80 | °C |

Note

1. Device mounted on a FR4 printed-circuit board.

Voltage reference diodes

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ELECTRICAL CHARACTERISTICS

$T_j = 25\text{ °C}$ unless otherwise specified.

| SYMBOL | PARAMETER | CONDITIONS | MIN. | NOM. | MAX. | UNIT |
|--------------------|-----------------------------|---|------|------|-------|----------|
| V_{ref} | reference voltage | $I_Z = 7.5\text{ mA}$ | 5.89 | 6.20 | 6.51 | V |
| $ \Delta V_{ref} $ | reference voltage excursion | $I_Z = 7.5\text{ mA}$; test points for $T_{amb}: -20; +25; +55; +80\text{ °C}$; notes 1 and 2 | – | – | 62 | mV |
| | BZV80 | | – | – | 31 | mV |
| | BZV81 | | – | – | 31 | mV |
| $ S_Z $ | temperature coefficient | $I_Z = 7.5\text{ mA}$: notes 1 and 2 | – | – | 0.01 | %/K |
| | BZV80 | | – | – | 0.005 | %/K |
| | BZV81 | | – | – | 0.005 | %/K |
| r_{dif} | differential resistance | $I_Z = 7.5\text{ mA}$ | – | – | 15 | Ω |

Notes

- The quoted values of ΔV_{ref} are based on a constant current I_Z . Two factors can cause ΔV_{ref} to change with I_Z , namely the differential resistance r_{dif} and the temperature coefficient S_Z .
 - Each change of I_Z can result in a maximum change of ΔV_{ref} as follows: $\Delta V_{ref}\text{ (mV)} = \Delta I_Z\text{ (mA)} \times 15\ \Omega$ taking into account that r_{dif} is max. $15\ \Omega$.
 - The temperature coefficient of the reference voltage S_Z is also a function of I_Z . However, for these reference diodes S_Z varies max. $\pm 0.05\text{ mV/K}$ or $\pm 0.001\%/K$ when I_Z is between 6 and 10 mA, so this effect can be neglected in practice for these types.
- The temperature coefficient of the reference voltage is obtained from the following formula:

$$S_Z = \frac{V_{ref1} - V_{ref2}}{T_{amb2} - T_{amb1}} \times \frac{100}{V_{ref\ nom}} \text{ %/K}$$

THERMAL CHARACTERISTICS

| SYMBOL | PARAMETER | CONDITIONS | VALUE | UNIT |
|----------------|---|------------|-------|------|
| $R_{th\ j-tp}$ | thermal resistance from junction to tie-point | | 300 | K/W |
| $R_{th\ j-a}$ | thermal resistance from junction to ambient | note 1 | 380 | K/W |

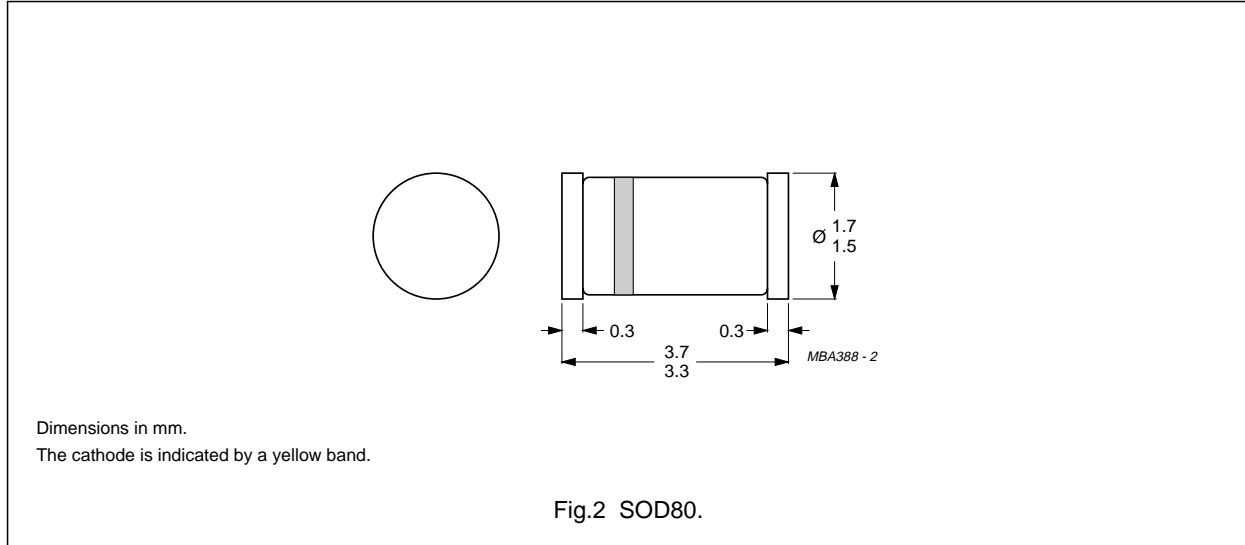
Note

- Device mounted on a FR4 printed-circuit board.

Voltage reference diodes

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PACKAGE OUTLINE



DEFINITIONS

| Data Sheet Status | |
|---|---|
| Objective specification | This data sheet contains target or goal specifications for product development. |
| Preliminary specification | This data sheet contains preliminary data; supplementary data may be published later. |
| Product specification | This data sheet contains final product specifications. |
| Limiting values | |
| Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability. | |
| Application information | |
| Where application information is given, it is advisory and does not form part of the specification. | |

LIFE SUPPORT APPLICATIONS

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