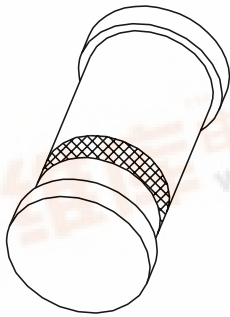


DISCRETE SEMICONDUCTORS

DATA SHEET



BZV80; BZV81 Voltage reference diodes

Product specification
Supersedes data of April 1992

1996 Mar 21

Voltage reference diodes

BZV80; BZV81

FEATURES

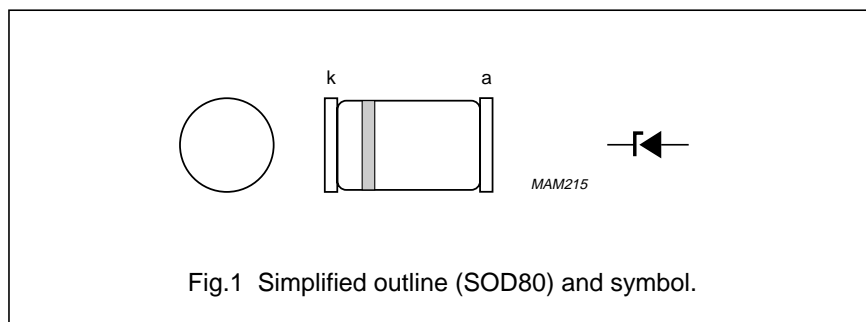
- Reference voltage range:
5.89 to 6.51 V (nom. 6.20 V)
- Low temperature coefficient range:
max. 0.005 to 0.01 %/K.

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

BZV80; BZV81

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_{\text{ref}} $	reference voltage excursion BZV80 BZV81	$I_Z = 7.5\text{ mA}$; test points for T_{amb} : -20 ; $+25$; $+55$; $+80\text{ °C}$; notes 1 and 2	– –	– –	62 31	mV mV
$ S_Z $	temperature coefficient BZV80 BZV81	$I_Z = 7.5\text{ mA}$: notes 1 and 2	– –	–	0.01 0.005	%/K %/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: $\Delta V_{\text{ref}}\text{ (mV)} = \Delta I_Z\text{ (mA)} \times 15\ \Omega$ 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:

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

THERMAL CHARACTERISTICS

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

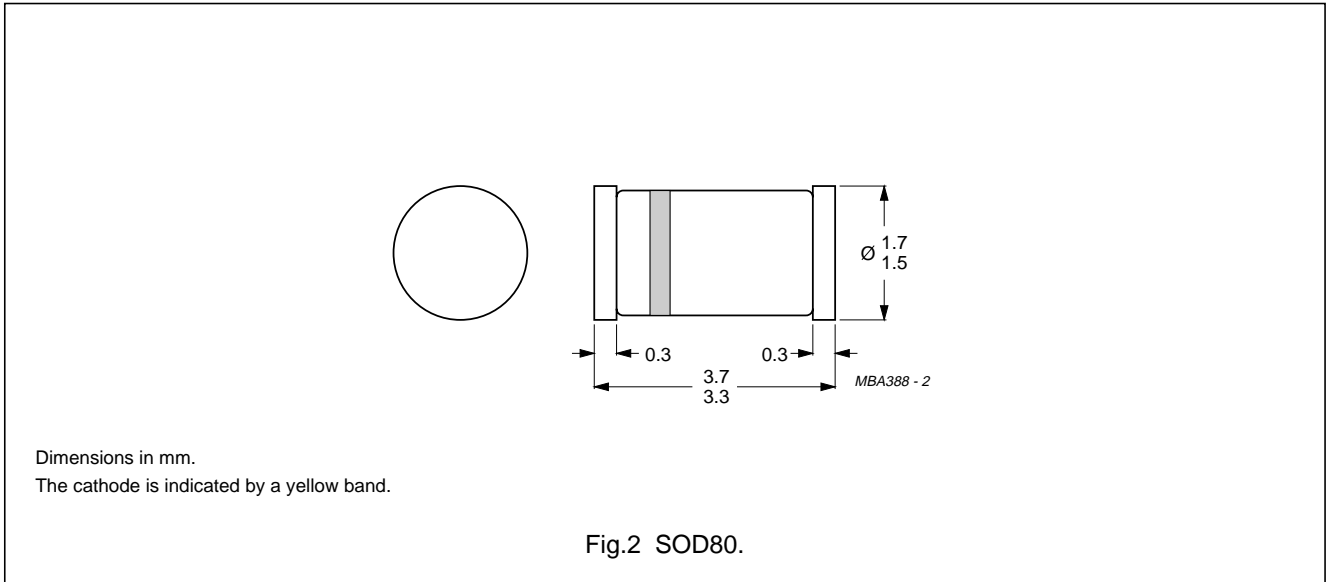
Note

- Device mounted on a FR4 printed-circuit board.

Voltage reference diodes

BZV80; BZV81

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

These products are not designed for use in life support appliances, devices, or systems where malfunction of these products can reasonably be expected to result in personal injury. Philips customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Philips for any damages resulting from such improper use or sale.