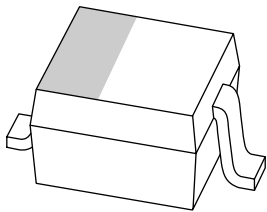


# DATA SHEET



## **PDZ-B series** Voltage regulator diodes

Product data sheet  
Supersedes data of 2002 Feb 18

2004 Mar 22

## Voltage regulator diodes

## PDZ-B series

## FEATURES

- Total power dissipation: max. 400 mW
- Small plastic package suitable for surface mounted design
- Wide variety of voltage ranges: nominal 2.4 to 36 V (E24 range)
- Tolerance approximately  $\pm 2\%$ .

## APPLICATIONS

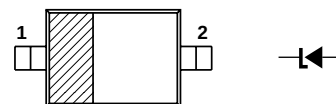
- General voltage regulation.

## DESCRIPTION

Low-power general purpose voltage regulator diodes in a small plastic SMD SOD323 (SC-76) package.

## PINNING

| PIN | DESCRIPTION |
|-----|-------------|
| 1   | cathode     |
| 2   | anode       |



Top view

MAM387

The marking bar indicates the cathode.

Fig.1 Simplified outline (SOD323; SC-76) and symbol.

## MARKING

| TYPE NUMBER | MARKING CODE | TYPE NUMBER | MARKING CODE | TYPE NUMBER | MARKING CODE | TYPE NUMBER | MARKING CODE |
|-------------|--------------|-------------|--------------|-------------|--------------|-------------|--------------|
| PDZ2.4B     | Z0           | PDZ5.1B     | Z8           | PDZ11B      | ZG           | PDZ24B      | ZQ           |
| PDZ2.7B     | Z1           | PDZ5.6B     | Z9           | PDZ12B      | ZH           | PDZ27B      | ZR           |
| PDZ3.0B     | Z2           | PDZ6.2B     | ZA           | PDZ13B      | ZJ           | PDZ30B      | ZS           |
| PDZ3.3B     | Z3           | PDZ6.8B     | ZB           | PDZ15B      | ZK           | PDZ33B      | ZT           |
| PDZ3.6B     | Z4           | PDZ7.5B     | ZC           | PDZ16B      | ZL           | PDZ36B      | ZU           |
| PDZ3.9B     | Z5           | PDZ8.2B     | ZD           | PDZ18B      | ZM           |             |              |
| PDZ4.3B     | Z6           | PDZ9.1B     | ZE           | PDZ20B      | ZN           |             |              |
| PDZ4.7B     | Z7           | PDZ10B      | ZF           | PDZ22B      | ZP           |             |              |

## ORDERING INFORMATION

| TYPE NUMBER       | PACKAGE |                                          |         |
|-------------------|---------|------------------------------------------|---------|
|                   | NAME    | DESCRIPTION                              | VERSION |
| PDZ2.4B to PDZ36B | —       | plastic surface mounted package; 2 leads | SOD323  |

## Voltage regulator diodes

## PDZ-B series

**LIMITING VALUES**

In accordance with the Absolute Maximum Rating System (IEC 60134).

| SYMBOL    | PARAMETER                           | CONDITIONS                                                                | MIN.        | MAX. | UNIT       |
|-----------|-------------------------------------|---------------------------------------------------------------------------|-------------|------|------------|
| $I_F$     | continuous forward current          |                                                                           | —           | 200  | mA         |
| $I_{ZSM}$ | non-repetitive peak reverse current | $t_p = 100 \mu s$ ; square wave;<br>$T_{amb} = 25^\circ C$ prior to surge | see Table 2 |      |            |
| $P_{tot}$ | total power dissipation             | $T_{amb} = 25^\circ C$ ; note 1;<br>see Fig.2                             | —           | 400  | mW         |
| $T_{stg}$ | storage temperature                 |                                                                           | −65         | +150 | $^\circ C$ |
| $T_j$     | junction temperature                |                                                                           | —           | 150  | $^\circ C$ |

**Note**

1. Device mounted on a printed-circuit board measuring  $11 \times 25 \times 1.6$  mm.

**THERMAL CHARACTERISTICS**

| SYMBOL        | PARAMETER                                           | CONDITIONS | VALUE | UNIT |
|---------------|-----------------------------------------------------|------------|-------|------|
| $R_{th(j-s)}$ | thermal resistance from junction to soldering point |            | 130   | K/W  |
| $R_{th(j-a)}$ | thermal resistance from junction to ambient         | note 1     | 340   | K/W  |

**Note**

1. Device mounted on a printed-circuit board measuring  $11 \times 25 \times 1.6$  mm.

## Voltage regulator diodes

## PDZ-B series

## CHARACTERISTICS

**Table 1** Total series $T_j = 25\text{ }^{\circ}\text{C}$  unless otherwise specified.

| SYMBOL | PARAMETER       | CONDITIONS                        | MAX. | UNIT          |
|--------|-----------------|-----------------------------------|------|---------------|
| $V_F$  | forward voltage | $I_F = 10\text{ mA}$ ; see Fig.3  | 0.9  | V             |
|        |                 | $I_F = 100\text{ mA}$ ; see Fig.3 | 1.1  | V             |
| $I_R$  | reverse current |                                   |      |               |
|        | PDZ2.4B         | $V_R = 1\text{ V}$                | 50   | $\mu\text{A}$ |
|        | PDZ2.7B         | $V_R = 1\text{ V}$                | 20   | $\mu\text{A}$ |
|        | PDZ3.0B         | $V_R = 1\text{ V}$                | 10   | $\mu\text{A}$ |
|        | PDZ3.3B         | $V_R = 1\text{ V}$                | 5    | $\mu\text{A}$ |
|        | PDZ3.6B         | $V_R = 1\text{ V}$                | 5    | $\mu\text{A}$ |
|        | PDZ3.9B         | $V_R = 1\text{ V}$                | 3    | $\mu\text{A}$ |
|        | PDZ4.3B         | $V_R = 1\text{ V}$                | 3    | $\mu\text{A}$ |
|        | PDZ4.7B         | $V_R = 1\text{ V}$                | 2    | $\mu\text{A}$ |
|        | PDZ5.1B         | $V_R = 1.5\text{ V}$              | 2    | $\mu\text{A}$ |
|        | PDZ5.6B         | $V_R = 2.5\text{ V}$              | 1    | $\mu\text{A}$ |
|        | PDZ6.2B         | $V_R = 3\text{ V}$                | 500  | nA            |
|        | PDZ6.8B         | $V_R = 3.5\text{ V}$              | 500  | nA            |
|        | PDZ7.5B         | $V_R = 4\text{ V}$                | 500  | nA            |
|        | PDZ8.2B         | $V_R = 5\text{ V}$                | 500  | nA            |
|        | PDZ9.1B         | $V_R = 6\text{ V}$                | 500  | nA            |
|        | PDZ10B          | $V_R = 7\text{ V}$                | 100  | nA            |
|        | PDZ11B          | $V_R = 8\text{ V}$                | 100  | nA            |
|        | PDZ12B          | $V_R = 9\text{ V}$                | 100  | nA            |
|        | PDZ13B          | $V_R = 10\text{ V}$               | 100  | nA            |
|        | PDZ15B          | $V_R = 11\text{ V}$               | 50   | nA            |
|        | PDZ16B          | $V_R = 12\text{ V}$               | 50   | nA            |
|        | PDZ18B          | $V_R = 13\text{ V}$               | 50   | nA            |
|        | PDZ20B          | $V_R = 15\text{ V}$               | 50   | nA            |
|        | PDZ22B          | $V_R = 17\text{ V}$               | 50   | nA            |
|        | PDZ24B          | $V_R = 19\text{ V}$               | 50   | nA            |
|        | PDZ27B          | $V_R = 21\text{ V}$               | 50   | nA            |
|        | PDZ30B          | $V_R = 23\text{ V}$               | 50   | nA            |
|        | PDZ33B          | $V_R = 25\text{ V}$               | 50   | nA            |
|        | PDZ36B          | $V_R = 27\text{ V}$               | 50   | nA            |

Voltage regulator diodes

PDZ-B series

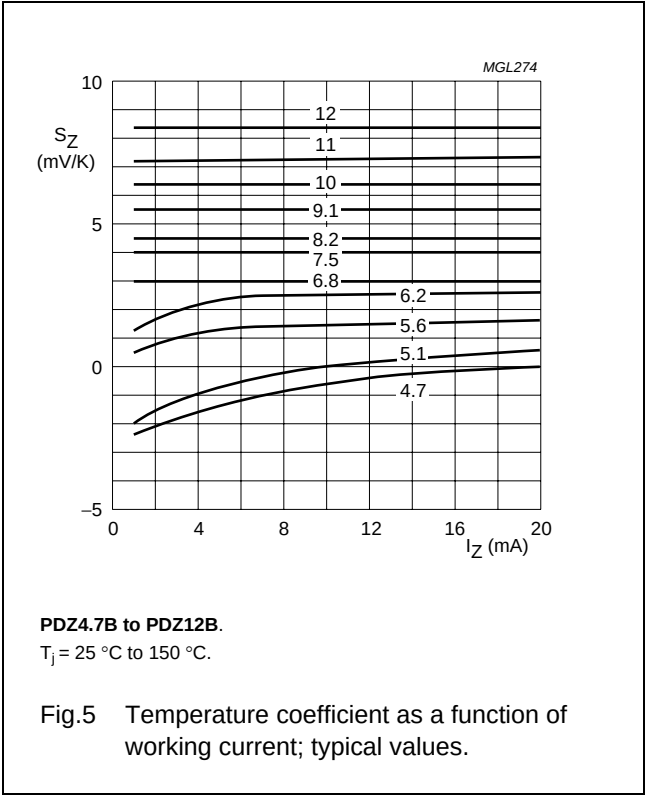
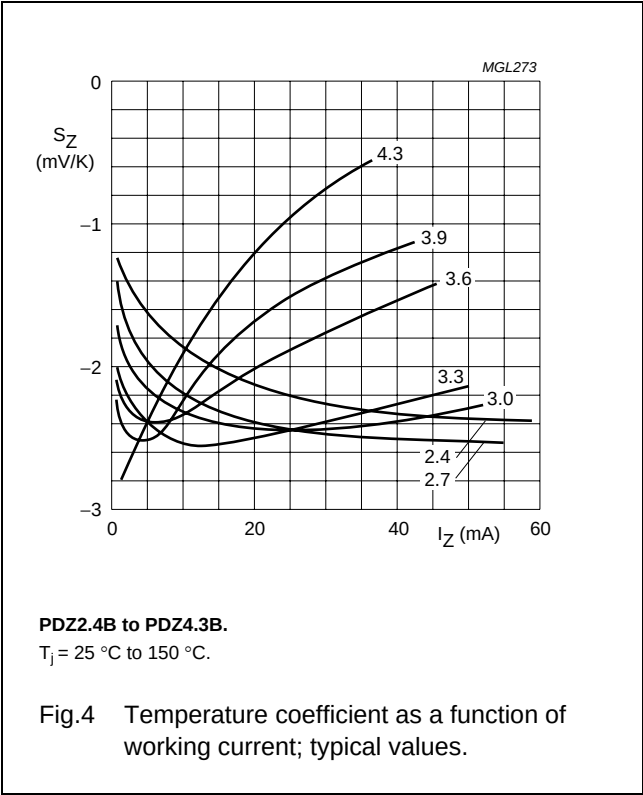
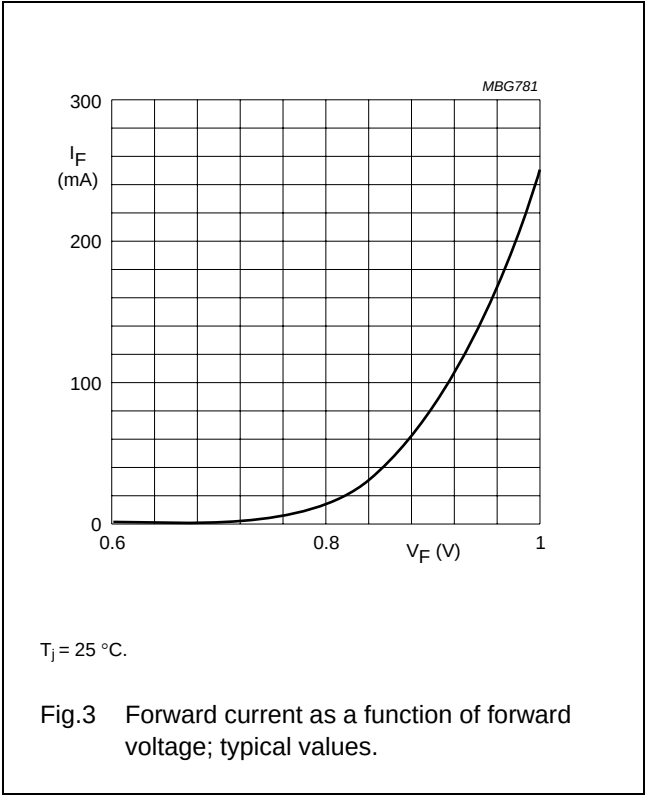
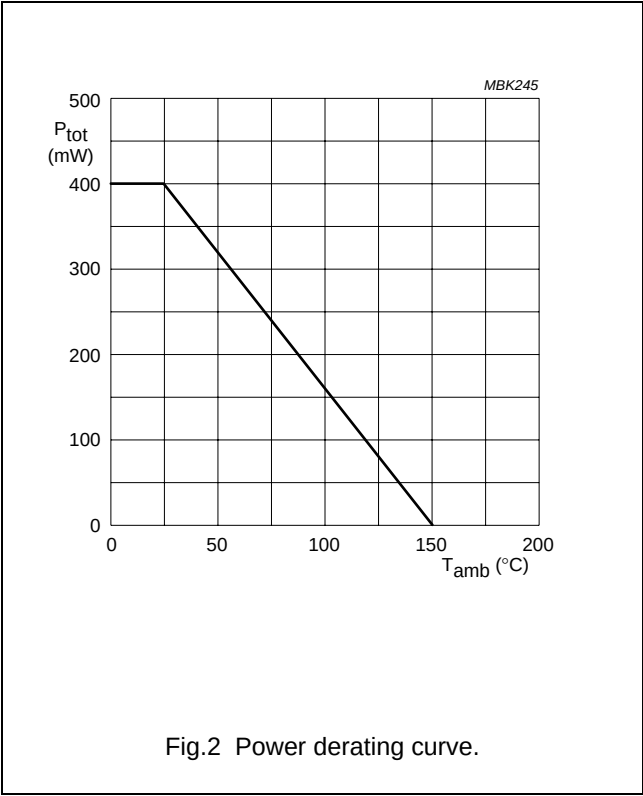
**Table 2** Per type  
T<sub>j</sub> = 25 °C unless otherwise specified.

| TYPE<br>NUMBER | WORKING VOLTAGE<br>V <sub>Z</sub> (V)<br>at I <sub>Z</sub> = 5 mA |       | DIFFERENTIAL RESISTANCE<br>r <sub>dif</sub> (Ω) |                           |      |                           | TEMP. COEFF.<br>S <sub>Z</sub> (mV/K)<br>at I <sub>Z</sub> = 5 mA<br>(see Figs 4 and 5) | DIODE CAP.<br>C <sub>d</sub> (pF) at<br>f = 1 MHz;<br>V <sub>R</sub> = 0 | NON-REPETITIVE PEAK<br>REVERSE CURRENT<br>I <sub>ZSM</sub> (A) at t <sub>p</sub> = 100 μs;<br>T <sub>amb</sub> = 25 °C |
|----------------|-------------------------------------------------------------------|-------|-------------------------------------------------|---------------------------|------|---------------------------|-----------------------------------------------------------------------------------------|--------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
|                | MIN.                                                              | MAX.  | MAX.                                            | at I <sub>Z</sub><br>(mA) | MAX. | at I <sub>Z</sub><br>(mA) | TYP.                                                                                    | MAX.                                                                     | MAX.                                                                                                                   |
| PDZ2.4B        | 2.43                                                              | 2.63  | 1000                                            | 0.5                       | 100  | 5                         | -1.6                                                                                    | 450                                                                      | 8.0                                                                                                                    |
| PDZ2.7B        | 2.69                                                              | 2.91  | 1000                                            | 0.5                       | 100  | 5                         | -2.0                                                                                    | 440                                                                      | 8.0                                                                                                                    |
| PDZ3.0B        | 2.85                                                              | 3.07  | 1000                                            | 0.5                       | 95   | 5                         | -2.1                                                                                    | 425                                                                      | 8.0                                                                                                                    |
| PDZ3.3B        | 3.32                                                              | 3.53  | 1000                                            | 0.5                       | 95   | 5                         | -2.4                                                                                    | 410                                                                      | 8.0                                                                                                                    |
| PDZ3.6B        | 3.60                                                              | 3.85  | 500                                             | 1.0                       | 90   | 5                         | -2.4                                                                                    | 390                                                                      | 8.0                                                                                                                    |
| PDZ3.9B        | 3.89                                                              | 4.16  | 500                                             | 1.0                       | 90   | 5                         | -2.5                                                                                    | 370                                                                      | 8.0                                                                                                                    |
| PDZ4.3B        | 4.17                                                              | 4.48  | 600                                             | 1.0                       | 90   | 5                         | -2.5                                                                                    | 350                                                                      | 8.0                                                                                                                    |
| PDZ4.7B        | 4.55                                                              | 4.75  | 600                                             | 1.0                       | 90   | 5                         | -1.4                                                                                    | 325                                                                      | 8.0                                                                                                                    |
| PDZ5.1B        | 4.96                                                              | 5.20  | 250                                             | 0.5                       | 60   | 5                         | 0.3                                                                                     | 300                                                                      | 5.5                                                                                                                    |
| PDZ5.6B        | 5.48                                                              | 5.73  | 100                                             | 0.5                       | 50   | 5                         | 1.9                                                                                     | 275                                                                      | 5.5                                                                                                                    |
| PDZ6.2B        | 6.06                                                              | 6.33  | 80                                              | 0.5                       | 50   | 5                         | 2.7                                                                                     | 250                                                                      | 5.5                                                                                                                    |
| PDZ6.8B        | 6.65                                                              | 6.93  | 60                                              | 0.5                       | 40   | 5                         | 3.4                                                                                     | 215                                                                      | 5.5                                                                                                                    |
| PDZ7.5B        | 7.28                                                              | 7.60  | 60                                              | 0.5                       | 10   | 5                         | 4.0                                                                                     | 170                                                                      | 3.5                                                                                                                    |
| PDZ8.2B        | 8.02                                                              | 8.36  | 60                                              | 0.5                       | 10   | 5                         | 4.6                                                                                     | 150                                                                      | 3.5                                                                                                                    |
| PDZ9.1B        | 8.85                                                              | 9.23  | 60                                              | 0.5                       | 10   | 5                         | 5.5                                                                                     | 120                                                                      | 3.5                                                                                                                    |
| PDZ10B         | 9.77                                                              | 10.21 | 60                                              | 0.5                       | 10   | 5                         | 6.4                                                                                     | 110                                                                      | 3.5                                                                                                                    |
| PDZ11B         | 10.78                                                             | 11.22 | 60                                              | 0.5                       | 10   | 5                         | 7.4                                                                                     | 108                                                                      | 3.0                                                                                                                    |
| PDZ12B         | 11.74                                                             | 12.24 | 80                                              | 0.5                       | 10   | 5                         | 8.4                                                                                     | 105                                                                      | 3.0                                                                                                                    |
| PDZ13B         | 12.91                                                             | 13.49 | 80                                              | 0.5                       | 10   | 5                         | 9.4                                                                                     | 103                                                                      | 2.5                                                                                                                    |
| PDZ15B         | 14.34                                                             | 14.98 | 80                                              | 0.5                       | 15   | 5                         | 11.4                                                                                    | 99                                                                       | 2.0                                                                                                                    |
| PDZ16B         | 15.85                                                             | 16.51 | 80                                              | 0.5                       | 20   | 5                         | 12.4                                                                                    | 97                                                                       | 1.5                                                                                                                    |
| PDZ18B         | 17.56                                                             | 18.35 | 80                                              | 0.5                       | 20   | 5                         | 14.4                                                                                    | 93                                                                       | 1.5                                                                                                                    |
| PDZ20B         | 19.52                                                             | 20.39 | 100                                             | 0.5                       | 20   | 5                         | 16.4                                                                                    | 88                                                                       | 1.5                                                                                                                    |
| PDZ22B         | 21.54                                                             | 22.47 | 100                                             | 0.5                       | 25   | 5                         | 18.4                                                                                    | 84                                                                       | 1.3                                                                                                                    |
| PDZ24B         | 23.72                                                             | 24.78 | 120                                             | 0.5                       | 30   | 5                         | 20.4                                                                                    | 80                                                                       | 1.3                                                                                                                    |
| PDZ27B         | 26.19                                                             | 27.53 | 150                                             | 0.5                       | 40   | 5                         | 23.4                                                                                    | 73                                                                       | 1.0                                                                                                                    |
| PDZ30B         | 29.19                                                             | 30.69 | 200                                             | 0.5                       | 40   | 5                         | 26.6                                                                                    | 66                                                                       | 1.0                                                                                                                    |
| PDZ33B         | 32.15                                                             | 33.79 | 250                                             | 0.5                       | 40   | 5                         | 29.7                                                                                    | 60                                                                       | 0.9                                                                                                                    |
| PDZ36B         | 35.07                                                             | 36.87 | 300                                             | 0.5                       | 60   | 5                         | 33.0                                                                                    | 59                                                                       | 0.8                                                                                                                    |

Voltage regulator diodes

PDZ-B series

GRAPHICAL DATA



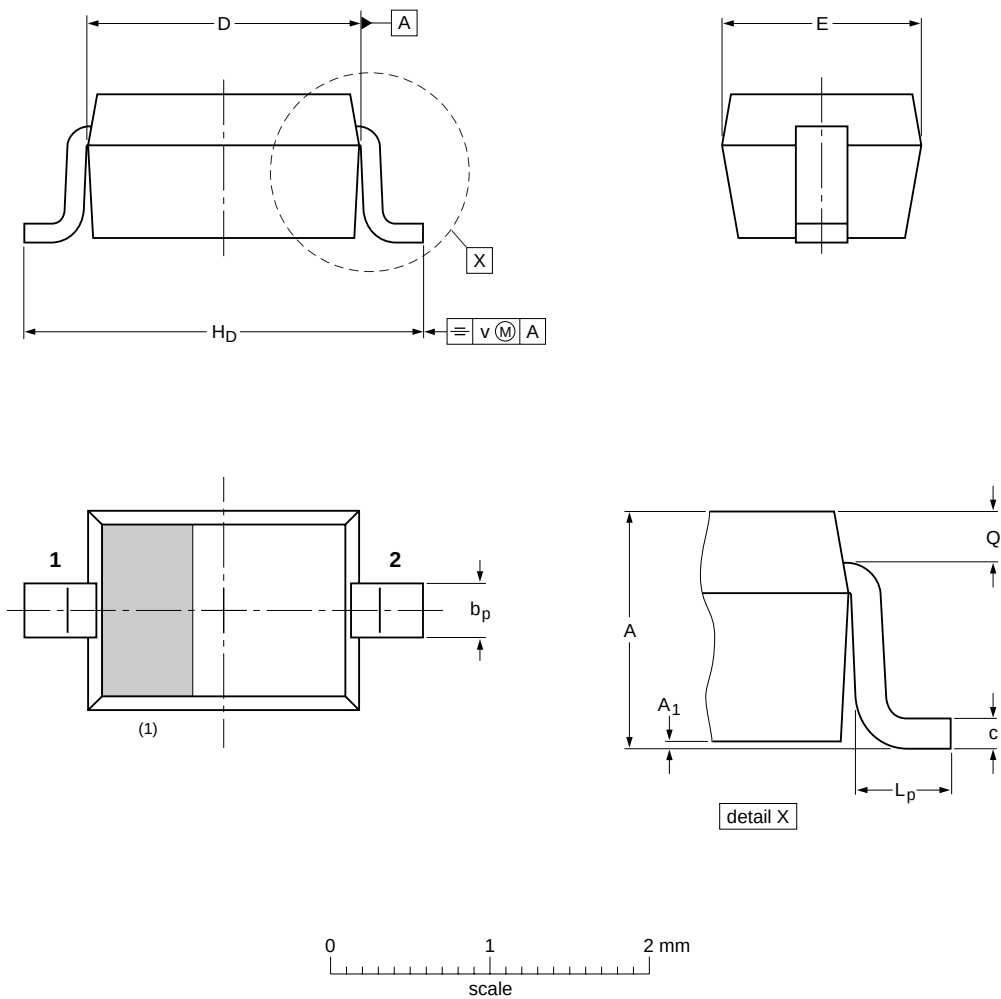
Voltage regulator diodes

PDZ-B series

PACKAGE OUTLINE

Plastic surface-mounted package; 2 leads

SOD323



DIMENSIONS (mm are the original dimensions)

| UNIT | A          | A <sub>1</sub><br>max | b <sub>p</sub> | c            | D          | E            | H <sub>D</sub> | L <sub>p</sub> | Q            | v   |
|------|------------|-----------------------|----------------|--------------|------------|--------------|----------------|----------------|--------------|-----|
| mm   | 1.1<br>0.8 | 0.05                  | 0.40<br>0.25   | 0.25<br>0.10 | 1.8<br>1.6 | 1.35<br>1.15 | 2.7<br>2.3     | 0.45<br>0.15   | 0.25<br>0.15 | 0.2 |

Note  
1. The marking bar indicates the cathode

| OUTLINE<br>VERSION | REFERENCES |       |       |  | EUROPEAN<br>PROJECTION | ISSUE DATE                      |
|--------------------|------------|-------|-------|--|------------------------|---------------------------------|
|                    | IEC        | JEDEC | JEITA |  |                        |                                 |
| SOD323             |            |       | SC-76 |  |                        | <del>03-12-17</del><br>06-03-16 |

## Voltage regulator diodes

## PDZ-B series

## DATA SHEET STATUS

| DOCUMENT STATUS <sup>(1)</sup> | PRODUCT STATUS <sup>(2)</sup> | DEFINITION                                                                            |
|--------------------------------|-------------------------------|---------------------------------------------------------------------------------------|
| Objective data sheet           | Development                   | This document contains data from the objective specification for product development. |
| Preliminary data sheet         | Qualification                 | This document contains data from the preliminary specification.                       |
| Product data sheet             | Production                    | This document contains the product specification.                                     |

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## **Contact information**

For additional information please visit: <http://www.nxp.com>

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