



# 1N4728A to 1N4749A

## Voltage regulator diodes

Rev. 02 — 30 October 2009

Product data sheet

## 1. Product profile

### 1.1 General description

Low voltage regulator diodes in hermetically sealed small SOD66 (DO-41) glass packages.

The series consists of 22 types with nominal working voltages from 3.3 to 24 V.

### 1.2 Features

- Total power dissipation:  
max.  $\leq 1000$  mW
- Working voltage range:  
nom. 3.3 V to 24 V
- Tolerance series:  $\pm 5$  %
- Small hermetically sealed glass package

### 1.3 Applications

- Low voltage stabilizers

### 1.4 Quick reference data

Table 1. Quick reference data

| Symbol    | Parameter               | Conditions     | Min | Typ | Max  | Unit |
|-----------|-------------------------|----------------|-----|-----|------|------|
| $V_F$     | forward voltage         | $I_F = 200$ mA | -   | -   | 1.2  | V    |
| $P_{tot}$ | total power dissipation |                | -   | -   | 1000 | mW   |

## 2. Pinning information

Table 2. Pinning

| Pin | Description | Simplified outline | Graphic symbol |
|-----|-------------|--------------------|----------------|
| 1   | cathode     |                    |                |
| 2   | anode       |                    |                |

006aaa152

[1] The marking band indicates the cathode.

### 3. Ordering information

**Table 3. Ordering information**

| Type number                       | Package |                                                          |         |
|-----------------------------------|---------|----------------------------------------------------------|---------|
|                                   | Name    | Description                                              | Version |
| 1N4728A to 1N4749A <sup>[1]</sup> | -       | hermetically sealed glass package; axial leaded; 2 leads | SOD66   |

[1] The series consists of 22 types with nominal working voltages from 3.3 V to 24 V.

### 4. Marking

**Table 4. Marking codes**

| Type number        | Marking code                 |
|--------------------|------------------------------|
| 1N4728A to 1N4749A | The diodes are type branded. |

### 5. Limiting values

**Table 5. Limiting values**

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

| Symbol    | Parameter                           | Conditions               | Min | Max                         | Unit |
|-----------|-------------------------------------|--------------------------|-----|-----------------------------|------|
| $I_F$     | forward current                     |                          | -   | 500                         | mA   |
| $I_Z$     | working current                     |                          | -   | see <a href="#">Table 8</a> |      |
| $I_{ZSM}$ | non-repetitive peak reverse current |                          | -   | see <a href="#">Table 8</a> |      |
| $P_{tot}$ | total power dissipation             | $T_{amb} = 50\text{ °C}$ | -   | 1000                        | mW   |
| $T_j$     | junction temperature                |                          | -65 | +200                        | °C   |
| $T_{stg}$ | storage temperature                 |                          | -65 | +200                        | °C   |

6. Thermal characteristics

Table 6. Thermal characteristics

| Symbol        | Parameter                                     | Conditions       | Min | Typ | Max | Unit |
|---------------|-----------------------------------------------|------------------|-----|-----|-----|------|
| $R_{th(j-t)}$ | thermal resistance from junction to tie-point | lead length 4 mm | -   | -   | 110 | K/W  |

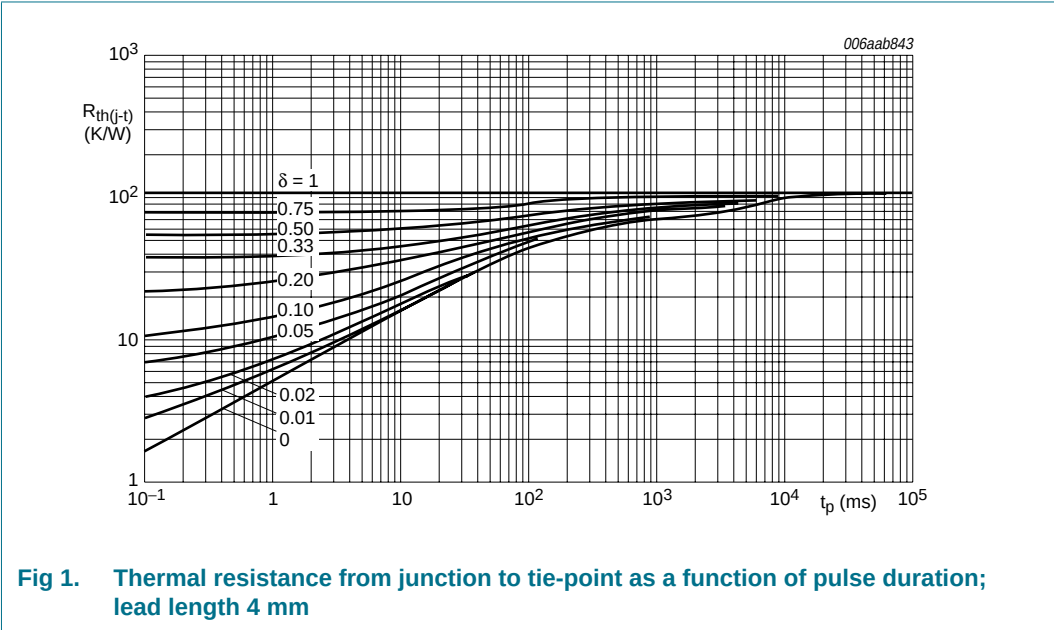


Fig 1. Thermal resistance from junction to tie-point as a function of pulse duration; lead length 4 mm

7. Characteristics

Table 7. Characteristics  
 $T_j = 25\text{ }^{\circ}\text{C}$  unless otherwise specified.

| Symbol | Parameter       | Conditions            | Min | Typ | Max | Unit |
|--------|-----------------|-----------------------|-----|-----|-----|------|
| $V_F$  | forward voltage | $I_F = 200\text{ mA}$ | -   | -   | 1.2 | V    |

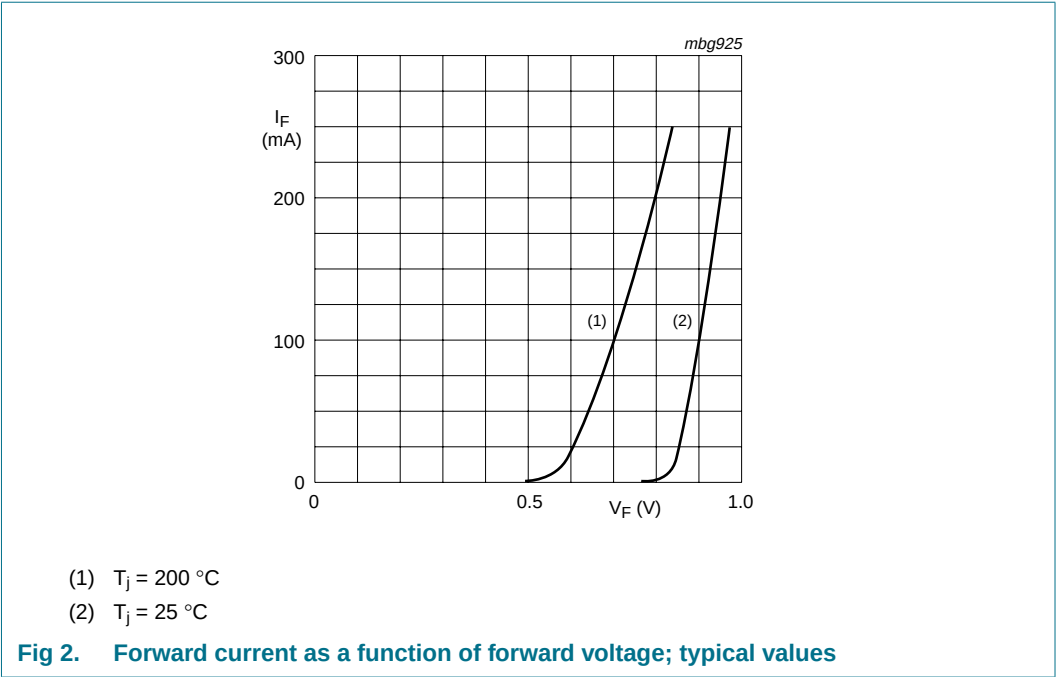
Table 8. Characteristics per type

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

| Type number | Working voltage<br>$V_Z$ (V) <sup>[1]</sup> | Test current<br>$I_{\text{test}}$ (mA) | Differential resistance<br>$r_{\text{dif}}$ ( $\Omega$ ) |          |            | Reverse current<br>$I_R$ ( $\mu\text{A}$ ) |           | Working current<br>$I_Z$ (mA) | Non-repetitive peak reverse current<br>$I_{ZSM}$ (mA) <sup>[2]</sup> |
|-------------|---------------------------------------------|----------------------------------------|----------------------------------------------------------|----------|------------|--------------------------------------------|-----------|-------------------------------|----------------------------------------------------------------------|
|             | at $I_{\text{test}}$                        |                                        | at $I_{\text{test}}$                                     | at $I_Z$ | $I_Z$ (mA) |                                            |           | Max                           | Max                                                                  |
|             | Nom                                         |                                        | Max                                                      | Max      |            | Max                                        | $V_R$ (V) |                               |                                                                      |
| 1N4728A     | 3.3                                         | 76                                     | 10                                                       | 400      | 1          | 100                                        | 1         | 276                           | 1380                                                                 |
| 1N4729A     | 3.6                                         | 69                                     | 10                                                       | 400      | 1          | 100                                        | 1         | 252                           | 1260                                                                 |
| 1N4730A     | 3.9                                         | 64                                     | 9                                                        | 400      | 1          | 50                                         | 1         | 234                           | 1190                                                                 |
| 1N4731A     | 4.3                                         | 58                                     | 9                                                        | 400      | 1          | 10                                         | 1         | 217                           | 1070                                                                 |
| 1N4732A     | 4.7                                         | 53                                     | 8                                                        | 500      | 1          | 10                                         | 1         | 193                           | 970                                                                  |
| 1N4733A     | 5.1                                         | 49                                     | 7                                                        | 550      | 1          | 10                                         | 1         | 178                           | 890                                                                  |
| 1N4734A     | 5.6                                         | 45                                     | 5                                                        | 600      | 1          | 10                                         | 2         | 162                           | 810                                                                  |
| 1N4735A     | 6.2                                         | 41                                     | 2                                                        | 700      | 1          | 10                                         | 3         | 146                           | 730                                                                  |
| 1N4736A     | 6.8                                         | 37                                     | 3.5                                                      | 700      | 1          | 10                                         | 4         | 133                           | 660                                                                  |
| 1N4737A     | 7.5                                         | 34                                     | 4                                                        | 700      | 0.5        | 10                                         | 5         | 121                           | 605                                                                  |
| 1N4738A     | 8.2                                         | 31                                     | 4.5                                                      | 700      | 0.5        | 10                                         | 6         | 110                           | 550                                                                  |
| 1N4739A     | 9.1                                         | 28                                     | 5                                                        | 700      | 0.5        | 10                                         | 7         | 100                           | 500                                                                  |
| 1N4740A     | 10                                          | 25                                     | 7                                                        | 700      | 0.25       | 10                                         | 7.6       | 91                            | 454                                                                  |
| 1N4741A     | 11                                          | 23                                     | 8                                                        | 700      | 0.25       | 5                                          | 8.4       | 83                            | 414                                                                  |
| 1N4742A     | 12                                          | 21                                     | 9                                                        | 700      | 0.25       | 5                                          | 9.1       | 76                            | 380                                                                  |
| 1N4743A     | 13                                          | 19                                     | 10                                                       | 700      | 0.25       | 5                                          | 9.9       | 69                            | 344                                                                  |
| 1N4744A     | 15                                          | 17                                     | 14                                                       | 700      | 0.25       | 5                                          | 11.4      | 61                            | 304                                                                  |
| 1N4745A     | 16                                          | 15.5                                   | 16                                                       | 700      | 0.25       | 5                                          | 12.2      | 57                            | 285                                                                  |
| 1N4746A     | 18                                          | 14                                     | 20                                                       | 750      | 0.25       | 5                                          | 13.7      | 50                            | 250                                                                  |
| 1N4747A     | 20                                          | 12.5                                   | 22                                                       | 750      | 0.25       | 5                                          | 15.2      | 45                            | 225                                                                  |
| 1N4748A     | 22                                          | 11.5                                   | 23                                                       | 750      | 0.25       | 5                                          | 16.7      | 41                            | 205                                                                  |
| 1N4749A     | 24                                          | 10.5                                   | 25                                                       | 750      | 0.25       | 5                                          | 18.2      | 38                            | 190                                                                  |

[1]  $V_Z$  is measured with device at thermal equilibrium while held in clips at 10 mm from body in still air at 25 °C.

[2] Half square wave or equivalent sine wave pulse 1/120 second duration superimposed on  $I_{\text{test}}$ .



8. Package outline

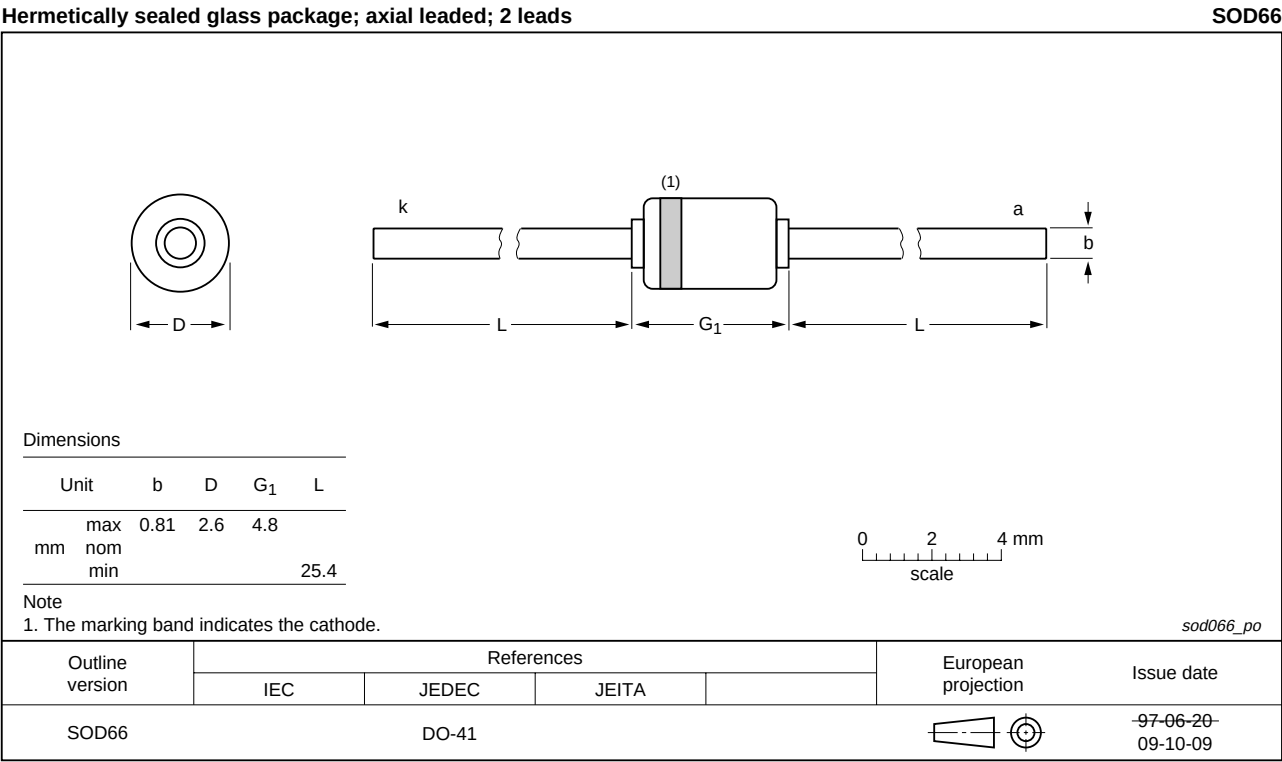


Fig 3. Package outline SOD66 (DO-41)

## 9. Packing information

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Please refer to packing information on [www.nexperia.com](http://www.nexperia.com).

## 10. Revision history

**Table 10. Revision history**

| Document ID                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Release date | Data sheet status  | Change notice | Supersedes |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|--------------------|---------------|------------|
| 1N4728A_SER_2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 20091030     | Product data sheet | -             | 1N4728A_1  |
| Modifications:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |              |                    |               |            |
| <ul style="list-style-type: none"><li>• The format of this data sheet has been redesigned to comply with the new identity guidelines of NXP Semiconductors.</li><li>• Legal texts have been adapted to the new company name where appropriate.</li><li>• <a href="#">Table 5 “Limiting values”</a>: <math>I_{ZM}</math> redefined to <math>I_Z</math> working current</li><li>• <a href="#">Table 6</a>: <math>R_{th(j-tp)}</math> redefined to <math>R_{th(j-t)}</math> thermal resistance from junction to tie-point</li><li>• <a href="#">Figure 1</a>: <math>R_{th(j-tp)}</math> redefined to <math>R_{th(j-t)}</math> thermal resistance from junction to tie-point</li><li>• <a href="#">Table 8 “Characteristics per type”</a>: <math>I_{Ztest}</math> redefined to <math>I_{test}</math> test current</li><li>• <a href="#">Figure 3 “Package outline SOD66 (DO-41)”</a>: updated</li></ul> |              |                    |               |            |
| 1N4728A_1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 19960426     | Product data sheet | -             | -          |



## 11. Legal information

### 11.1 Data sheet status

| Document status <sup>[1][2]</sup> | Product status <sup>[3]</sup> | Definition                                                                            |
|-----------------------------------|-------------------------------|---------------------------------------------------------------------------------------|
| Objective [short] data sheet      | Development                   | This document contains data from the objective specification for product development. |
| Preliminary [short] data sheet    | Qualification                 | This document contains data from the preliminary specification.                       |
| Product [short] data sheet        | Production                    | This document contains the product specification.                                     |

[1] Please consult the most recently issued document before initiating or completing a design.

[2] The term 'short data sheet' is explained in section "Definitions".

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