



# 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  |

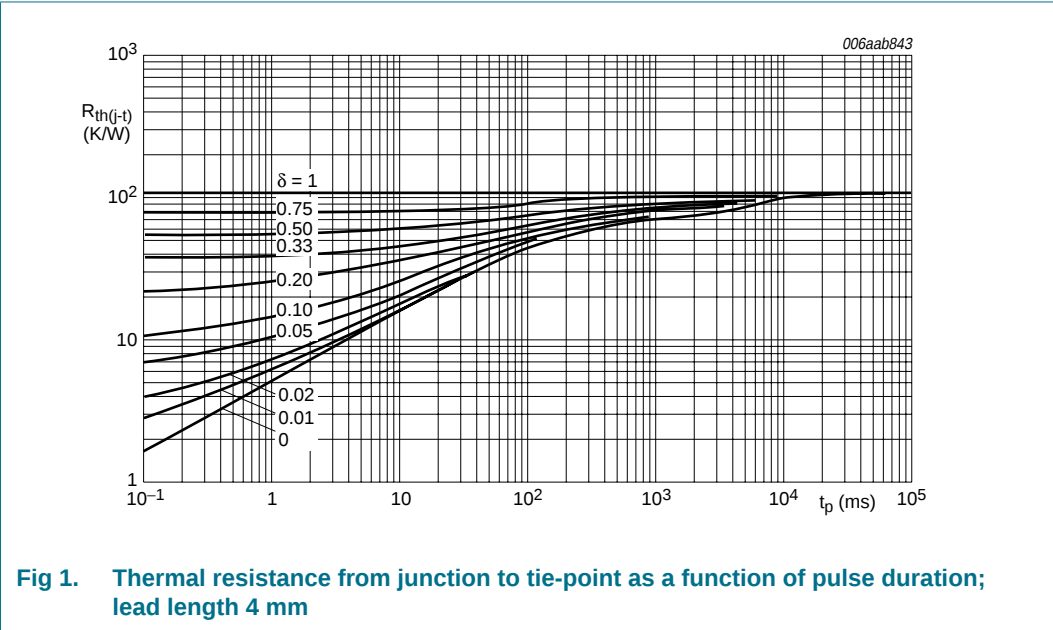


Fig 1. Thermal resistance from junction to tie-point as a function of pulse duration; lead length 4 mm

7. Characteristics

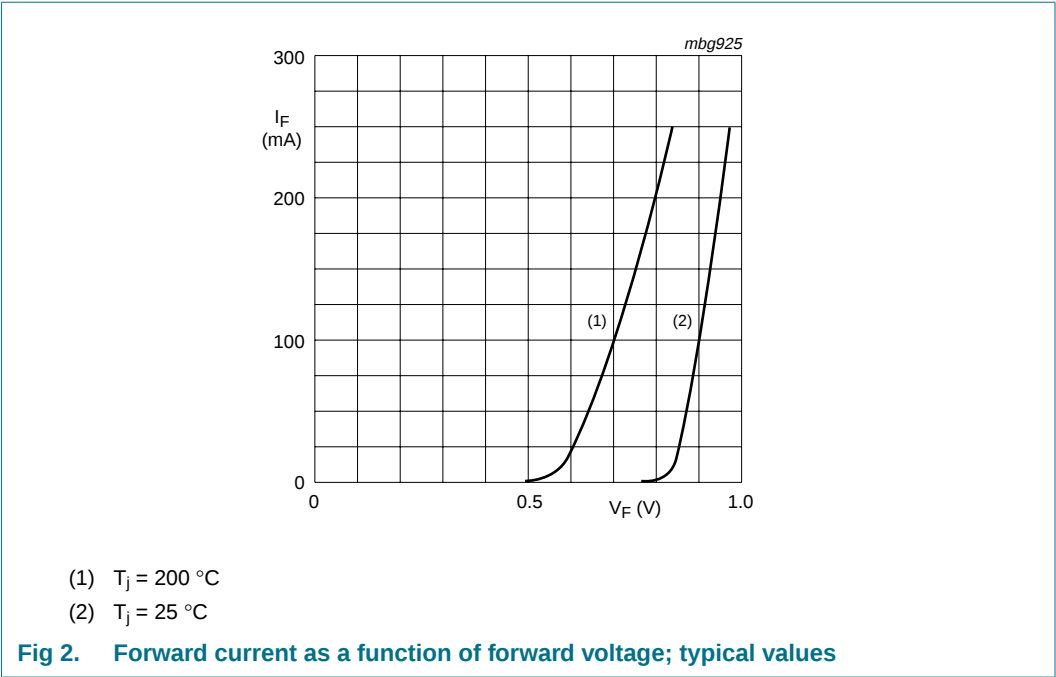
Table 7. Characteristics  
 $T_j = 25\text{ }^{\circ}\text{C}$  unless otherwise specified.

| 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<sub>j</sub> = 25 °C unless otherwise specified.*

| Type number | Working voltage<br>V <sub>Z</sub> (V) <sup>[1]</sup> | Test current<br>I <sub>test</sub> (mA) | Differential resistance<br>r <sub>diff</sub> (Ω) |                   |                     | Reverse current<br>I <sub>R</sub> (μA) |                    | Working current<br>I <sub>Z</sub> (mA) | Non-repetitive peak reverse current<br>I <sub>ZSM</sub> (mA) <sup>[2]</sup> |
|-------------|------------------------------------------------------|----------------------------------------|--------------------------------------------------|-------------------|---------------------|----------------------------------------|--------------------|----------------------------------------|-----------------------------------------------------------------------------|
|             | at I <sub>test</sub>                                 |                                        | at I <sub>test</sub>                             | at I <sub>Z</sub> | I <sub>Z</sub> (mA) |                                        |                    |                                        |                                                                             |
|             | Nom                                                  |                                        | Max                                              | Max               |                     | Max                                    | V <sub>R</sub> (V) | Max                                    | Max                                                                         |
| 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<sub>Z</sub> 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<sub>test</sub>.



8. Package outline

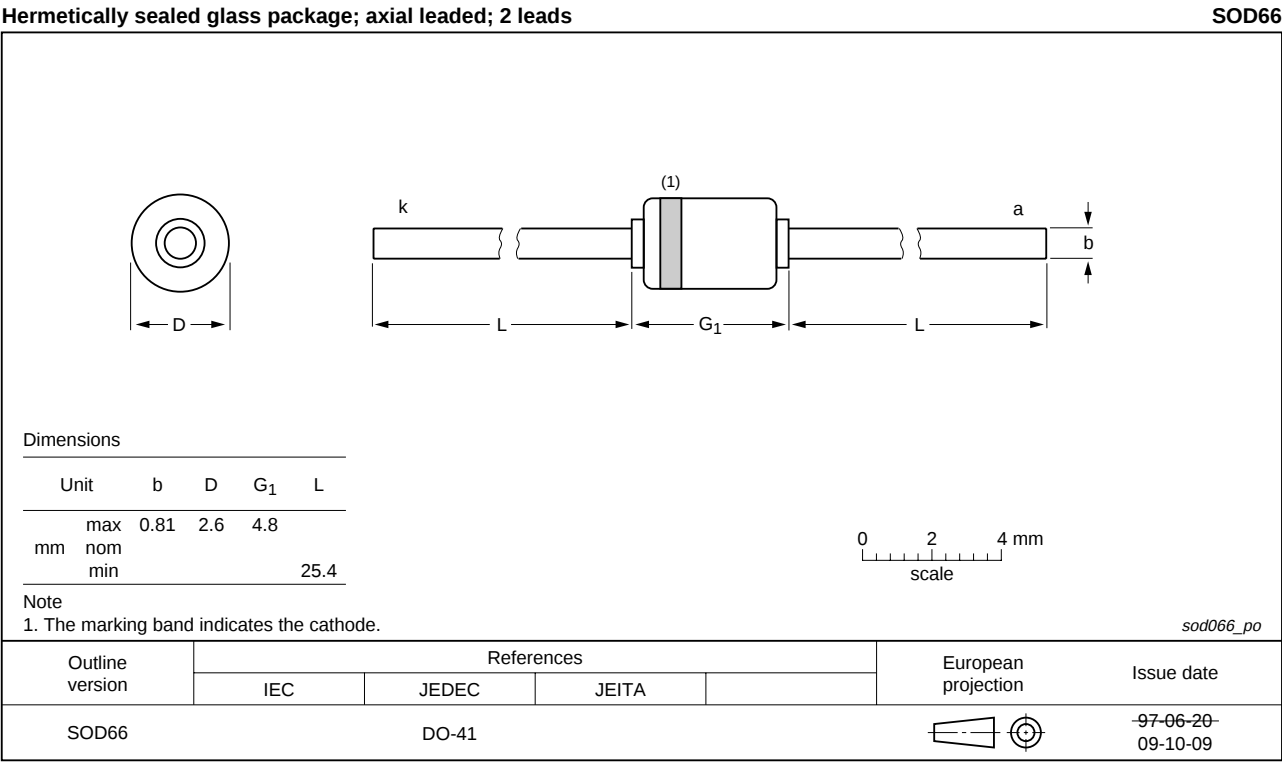


Fig 3. Package outline SOD66 (DO-41)

## 9. Packing information

**Table 9. Packing methods**

The indicated -xxx are the last three digits of the 12NC ordering code.[\[1\]](#)

| Type number                               | Package | Description                | Packing quantity |
|-------------------------------------------|---------|----------------------------|------------------|
|                                           |         |                            | 10000            |
| 1N4728A to<br>1N4749A <a href="#">[2]</a> | SOD66   | 52 mm tape ammopack, axial | -133             |
|                                           |         | 52 mm reel pack, axial     | -113             |

[1] For further information and the availability of packing methods, see [Section 11](#).

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

## 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".

[3] The product status of device(s) described in this document may have changed since this document was published and may differ in case of multiple devices. The latest product status information is available on the Internet at URL <http://www.nxp.com>.

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