



# 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

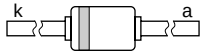
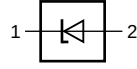
### 1.4 Quick reference data

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  |

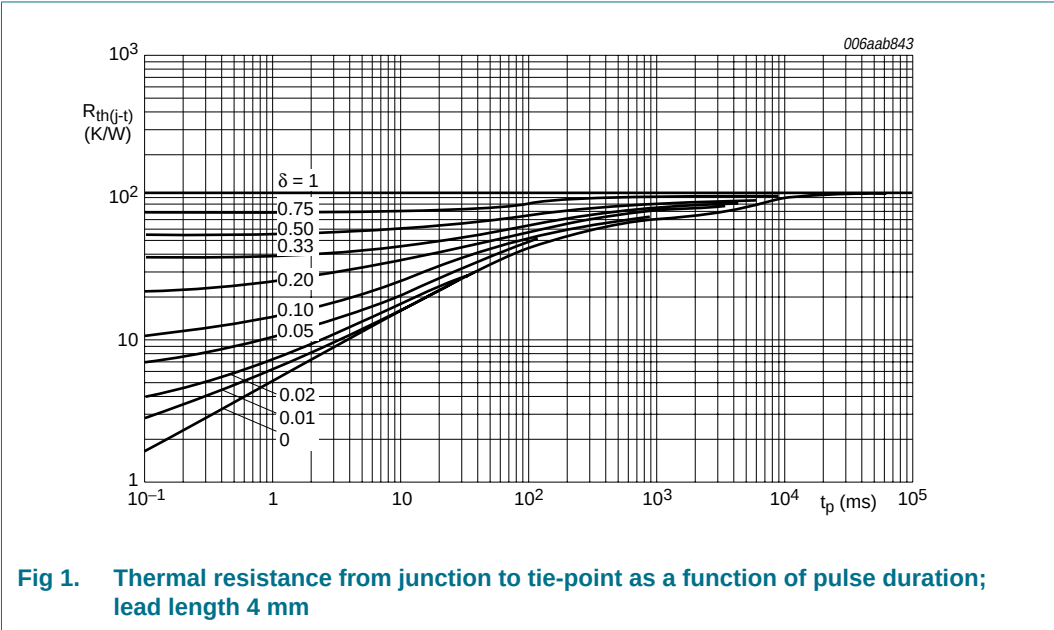


Fig 1. Thermal resistance from junction to tie-point as a function of pulse duration; lead length 4 mm

7. Characteristics

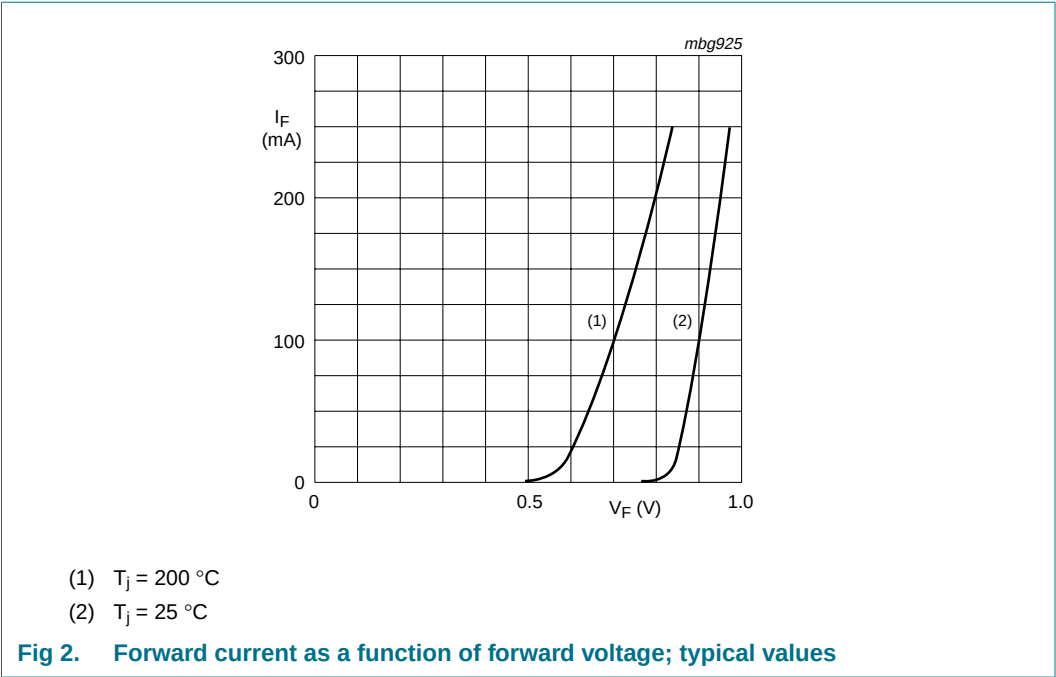
Table 7. Characteristics  
 $T_j = 25\text{ }^{\circ}\text{C}$  unless otherwise specified.

| 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

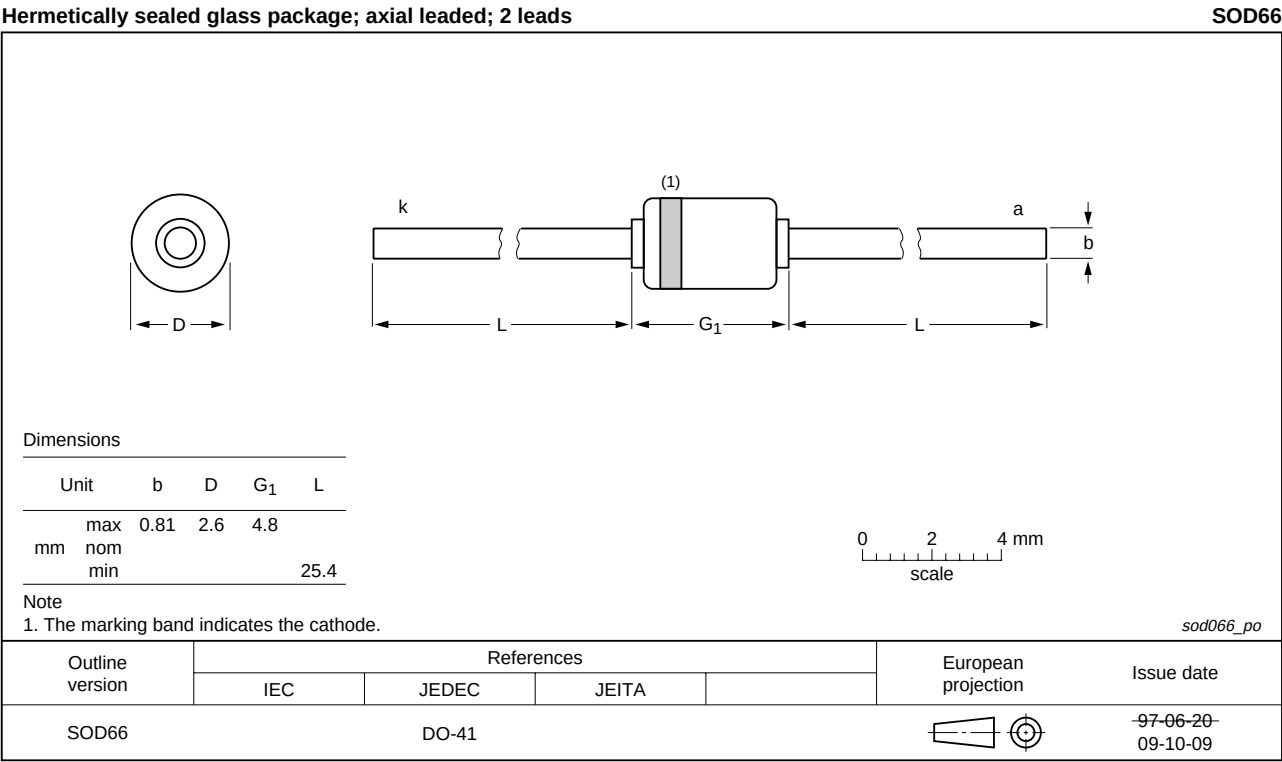


Fig 3. Package outline SOD66 (DO-41)

## 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".

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Date of release: 30 October 2009

Document identifier: 1N4728A\_SER\_2

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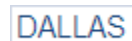
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