

# 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. ≤ 1000 mW
- Working voltage range: nom. 3.3 V to 24 V
- Tolerance series: ±5 %
- Small hermetically sealed glass package

### 1.3 Applications

- Low voltage stabilizers

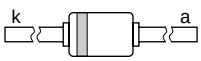
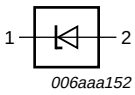
### 1.4 Quick reference data

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 [1] |   |   006aaa152 |
| 2 | anode | | |

[1] The marking band indicates the cathode.

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## 3. Ordering information

**Table 3. Ordering information**

| Type number | Package | | |
|---|---|---|---|
| | Name | Description | Version |
| 1N4728A to 1N4749A[1] | - | 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 Table 8 | |
| $I_{ZSM}$ | non-repetitive peak reverse current | | - | see Table 8 | |
| $P_{tot}$ | total power dissipation | $T_{amb}$ = 50 °C | - | 1000 | mW |
| $T_j$ | junction temperature | | –65 | +200 | °C |
| $T_{stg}$ | storage temperature | | –65 | +200 | °C |



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## 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 |

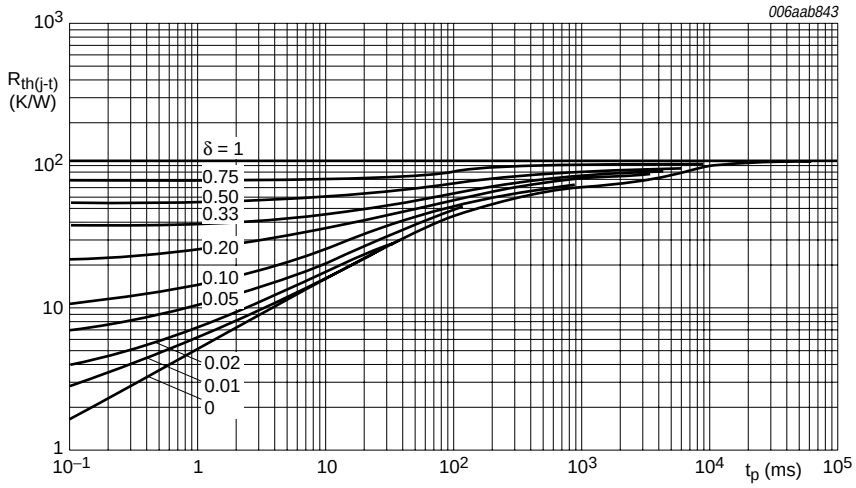



**Fig 1. Thermal resistance from junction to tie-point as a function of pulse duration; lead length 4 mm**

## 7. Characteristics

**Table 7. Characteristics**

*$T_j$ = 25 °C unless otherwise specified.*

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



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**Table 8. Characteristics per type**

*$T_j$ = 25 °C unless otherwise specified.*

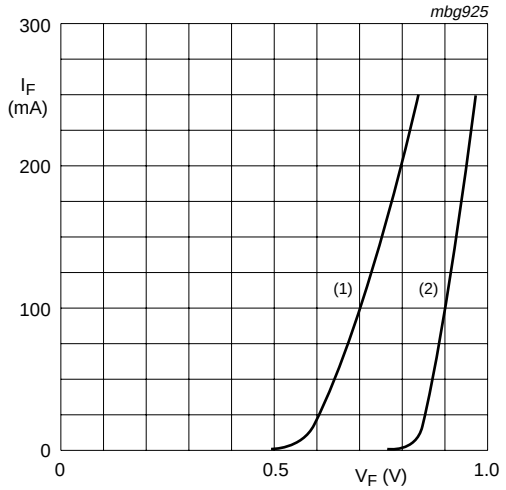
| Type number | Working voltage $V_Z$ (V)[1] at $I_{test}$ | Test current $I_{test}$ (mA) | Differential resistance $r_{dif}$ (Ω) | | | Reverse current $I_R$ (μA) | | Working current $I_Z$ (mA) | Non-repetitive peak reverse current $I_{ZSM}$ (mA)[2] |
|---|---|---|---|---|---|---|---|---|---|
| | | | at $I_{test}$ | at $I_Z$ | $I_Z$ (mA) | | | | |
| | Nom | | Max | Max | | Max | $V_R$ (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] $V_Z$ 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 $I_{test}$.



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(1) $T_j$ = 200 °C

(2) $T_j$ = 25 °C

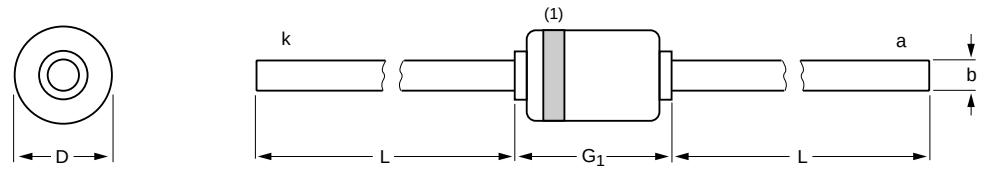
**Fig 2. Forward current as a function of forward voltage; typical values**



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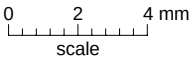
## 8. Package outline

**Hermetically sealed glass package; axial leaded; 2 leads** **SOD66**




Dimensions

| Unit | | b | D | $G_1$ | L |
|---|---|---|---|---|---|
| mm | max | 0.81 | 2.6 | 4.8 | |
| | nom | | | | |
| | min | | | | 25.4 |




Note
1. The marking band indicates the cathode.

*sod066_po*

| Outline version | References | | | | European projection | Issue date |
|---|---|---|---|---|---|---|
| | IEC | JEDEC | JEITA | | | |
| SOD66 | | DO-41 | | | | ~~97-06-20~~ 09-10-09 |

**Fig 3. Package outline SOD66 (DO-41)**


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# 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 1N4749A[2] | 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.



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## 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: | • The format of this data sheet has been redesigned to comply with the new identity guidelines of NXP Semiconductors.<br>• Legal texts have been adapted to the new company name where appropriate.<br>• Table 5 “Limiting values”: $I_{ZM}$ redefined to $I_Z$ working current<br>• Table 6: $R_{th(j-tp)}$ redefined to $R_{th(j-t)}$ thermal resistance from junction to tie-point<br>• Figure 1: $R_{th(j-tp)}$ redefined to $R_{th(j-t)}$ thermal resistance from junction to tie-point<br>• Table 8 “Characteristics per type”: $I_{Ztest}$ redefined to $I_{test}$ test current<br>• Figure 3 “Package outline SOD66 (DO-41)”: updated | | | |
| 1N4728A_1 | 19960426 | Product data sheet | - | - |


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| Document status[1][2] | Product status[3] | 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. |
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[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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