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Kind regards,

Team Nexperia



# PVR100AD-B series

## Voltage regulator series

Rev. 01 — 31 October 2006

Product data sheet

## 1. Product profile

### 1.1 General description

Integrated Zener diode and NPN bipolar transistor in one package.

Table 1. Product overview

| Type number   | Package |       | SOT223 complement |
|---------------|---------|-------|-------------------|
|               | NXP     | JEITA |                   |
| PVR100AD-B2V5 | SOT457  | SC-74 | PVR100AZ-B2V5     |
| PVR100AD-B3V0 |         |       | PVR100AZ-B3V0     |
| PVR100AD-B3V3 |         |       | PVR100AZ-B3V3     |
| PVR100AD-B5V0 |         |       | PVR100AZ-B5V0     |
| PVR100AD-B12V |         |       | PVR100AZ-B12V     |

### 1.2 Features

- Integrated Zener diode and bipolar transistor
- Output voltage options: 2.5 V, 3 V, 3.3 V, 5 V and 12 V
- Output power dissipation capability: 380 mW
- Small Surface-Mounted Device (SMD) plastic package

### 1.3 Applications

- Linear voltage regulation

### 1.4 Quick reference data

Table 2. Quick reference data

| Symbol                | Parameter                 | Conditions                                 | Min | Typ | Max | Unit |
|-----------------------|---------------------------|--------------------------------------------|-----|-----|-----|------|
| <b>NPN transistor</b> |                           |                                            |     |     |     |      |
| $V_{CE0}$             | collector-emitter voltage | open base                                  | -   | -   | 45  | V    |
| $I_C$                 | collector current         |                                            | -   | -   | 0.1 | A    |
| $h_{FE}$              | DC current gain           | $V_{CE} = 1\text{ V}; I_C = 100\text{ mA}$ | 160 | -   | 400 |      |

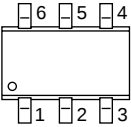
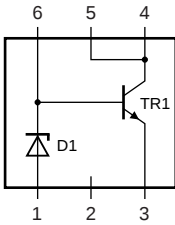
Table 2. Quick reference data ...continued

| Symbol                   | Parameter                         | Conditions                                                                   | Min  | Typ  | Max  | Unit |
|--------------------------|-----------------------------------|------------------------------------------------------------------------------|------|------|------|------|
| <b>Zener diode</b>       |                                   |                                                                              |      |      |      |      |
| $V_Z$                    | working voltage                   | $I_Z = 5 \text{ mA}$                                                         |      |      |      |      |
|                          | PVR100AD-B2V5                     |                                                                              | 3.23 | 3.3  | 3.37 | V    |
|                          | PVR100AD-B3V0                     |                                                                              | 3.53 | 3.6  | 3.67 | V    |
|                          | PVR100AD-B3V3                     |                                                                              | 3.82 | 3.9  | 3.98 | V    |
|                          | PVR100AD-B5V0                     |                                                                              | 5.49 | 5.6  | 5.71 | V    |
|                          | PVR100AD-B12V                     |                                                                              | 12.7 | 13   | 13.3 | V    |
| <b>Voltage regulator</b> |                                   |                                                                              |      |      |      |      |
| $V_O$                    | output voltage                    | $I_O = 10 \text{ mA}$                                                        |      |      |      |      |
|                          | PVR100AD-B2V5                     | $V_I = 4.5 \text{ V}; I_{\text{ctrl}} = 3.5 \text{ mA}$                      | 2.25 | 2.5  | 2.75 | V    |
|                          | PVR100AD-B3V0                     | $V_I = 5 \text{ V}; I_{\text{ctrl}} = 6.5 \text{ mA}$                        | 2.7  | 3    | 3.3  | V    |
|                          | PVR100AD-B3V3                     | $V_I = 5.3 \text{ V}; I_{\text{ctrl}} = 6.5 \text{ mA}$                      | 3.07 | 3.3  | 3.53 | V    |
|                          | PVR100AD-B5V0                     | $V_I = 7 \text{ V}; I_{\text{ctrl}} = 10 \text{ mA}$                         | 4.65 | 5    | 5.35 | V    |
|                          | PVR100AD-B12V                     | $V_I = 14 \text{ V}; I_{\text{ctrl}} = 5 \text{ mA}$                         | 11.4 | 12.3 | 13.2 | V    |
| <b>Line regulation</b>   |                                   |                                                                              |      |      |      |      |
| $\Delta V_O/V_O$         | relative output voltage variation | $I_O = 10 \text{ mA}$                                                        |      |      |      |      |
|                          | PVR100AD-B2V5                     | $4.5 \text{ V} \leq V_I \leq 40 \text{ V}; I_{\text{ctrl}} = 3.5 \text{ mA}$ | -10  | -    | +10  | %    |
|                          | PVR100AD-B3V0                     | $5 \text{ V} \leq V_I \leq 40 \text{ V}; I_{\text{ctrl}} = 6.5 \text{ mA}$   | -10  | -    | +10  | %    |
|                          | PVR100AD-B3V3                     | $5.3 \text{ V} \leq V_I \leq 40 \text{ V}; I_{\text{ctrl}} = 6.5 \text{ mA}$ | -7   | -    | +7   | %    |
|                          | PVR100AD-B5V0                     | $7 \text{ V} \leq V_I \leq 40 \text{ V}; I_{\text{ctrl}} = 10 \text{ mA}$    | -7   | -    | +7   | %    |
|                          | PVR100AD-B12V                     | $14 \text{ V} \leq V_I \leq 40 \text{ V}; I_{\text{ctrl}} = 5 \text{ mA}$    | -7   | -    | +7   | %    |
| <b>Load regulation</b>   |                                   |                                                                              |      |      |      |      |
| $\Delta V_O/V_O$         | relative output voltage variation | $5 \text{ mA} \leq I_O \leq 100 \text{ mA}$                                  |      |      |      |      |
|                          | PVR100AD-B2V5                     | $V_I = 4.5 \text{ V}; I_{\text{ctrl}} = 3.5 \text{ mA}$                      | -10  | -    | +10  | %    |
|                          | PVR100AD-B3V0                     | $V_I = 5 \text{ V}; I_{\text{ctrl}} = 6.5 \text{ mA}$                        | -10  | -    | +10  | %    |
|                          | PVR100AD-B3V3                     | $V_I = 5.3 \text{ V}; I_{\text{ctrl}} = 6.5 \text{ mA}$                      | -7   | -    | +7   | %    |
|                          | PVR100AD-B5V0                     | $V_I = 7 \text{ V}; I_{\text{ctrl}} = 10 \text{ mA}$                         | -7   | -    | +7   | %    |
|                          | PVR100AD-B12V                     | $V_I = 14 \text{ V}; I_{\text{ctrl}} = 5 \text{ mA}$                         | -7   | -    | +7   | %    |

[1] Pulse test:  $t_p \leq 300 \mu\text{s}$ ;  $\delta \leq 0.02$ .

2. Pinning information

Table 3. Pinning

| Pin | Symbol | Description    | Simplified outline                                                                  | Symbol                                                                              |
|-----|--------|----------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 1   | GND    | ground         |  |  |
| 2   | n.c.   | not connected  |                                                                                     |                                                                                     |
| 3   | VO     | output voltage |                                                                                     |                                                                                     |
| 4   | VI     | input voltage  |                                                                                     |                                                                                     |
| 5   | VI     | input voltage  |                                                                                     |                                                                                     |
| 6   | REXT   | base           |                                                                                     |                                                                                     |

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3. Ordering information

Table 4. Ordering information

| Type number   | Package |                                                  |         |
|---------------|---------|--------------------------------------------------|---------|
|               | Name    | Description                                      | Version |
| PVR100AD-B2V5 | SC-74   | plastic surface-mounted package (TSOP6); 6 leads | SOT457  |
| PVR100AD-B3V0 |         |                                                  |         |
| PVR100AD-B3V3 |         |                                                  |         |
| PVR100AD-B5V0 |         |                                                  |         |
| PVR100AD-B12V |         |                                                  |         |

4. Marking

Table 5. Marking codes

| Type number   | Marking code |
|---------------|--------------|
| PVR100AD-B2V5 | T1           |
| PVR100AD-B3V0 | T2           |
| PVR100AD-B3V3 | T3           |
| PVR100AD-B5V0 | T4           |
| PVR100AD-B12V | T5           |

## 5. Limiting values

**Table 6. Limiting values**

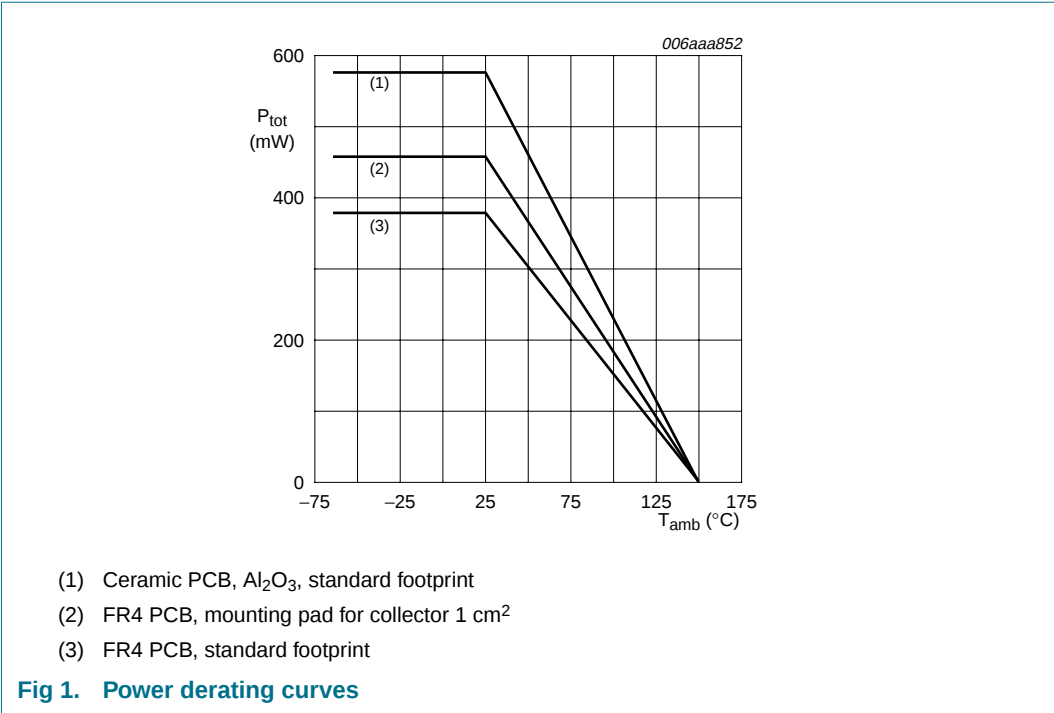
*In accordance with the Absolute Maximum Rating System (IEC 60134).*

| Symbol            | Parameter                           | Conditions                             | Min   | Max  | Unit |
|-------------------|-------------------------------------|----------------------------------------|-------|------|------|
| NPN transistor    |                                     |                                        |       |      |      |
| V <sub>CBO</sub>  | collector-base voltage              | open emitter                           | -     | 50   | V    |
| V <sub>CEO</sub>  | collector-emitter voltage           | open base                              | -     | 45   | V    |
| V <sub>EBO</sub>  | emitter-base voltage                | open collector                         | -     | 5    | V    |
| I <sub>C</sub>    | collector current                   |                                        | -     | 0.1  | A    |
| I <sub>CM</sub>   | peak collector current              | single pulse;<br>t <sub>p</sub> ≤ 1 ms | -     | 0.2  | A    |
| I <sub>BM</sub>   | peak base current                   | single pulse;<br>t <sub>p</sub> ≤ 1 ms | -     | 0.2  | A    |
| P <sub>tot</sub>  | total power dissipation             | T <sub>amb</sub> ≤ 25 °C               | [1] - | 300  | mW   |
|                   |                                     |                                        | [2] - | 380  | mW   |
|                   |                                     |                                        | [3] - | 480  | mW   |
| Zener diode       |                                     |                                        |       |      |      |
| I <sub>F</sub>    | forward current                     |                                        | -     | 200  | mA   |
| I <sub>ZSM</sub>  | non-repetitive peak reverse current | V <sub>Z</sub> < 6 V                   | -     | 6    | A    |
|                   |                                     | V <sub>Z</sub> = 13 V                  | -     | 2.5  | A    |
| P <sub>tot</sub>  | total power dissipation             | T <sub>amb</sub> ≤ 25 °C               | [1] - | 140  | mW   |
| Voltage regulator |                                     |                                        |       |      |      |
| P <sub>tot</sub>  | total power dissipation             | T <sub>amb</sub> ≤ 25 °C               | [1] - | 380  | mW   |
|                   |                                     |                                        | [2] - | 460  | mW   |
|                   |                                     |                                        | [3] - | 580  | mW   |
| T <sub>j</sub>    | junction temperature                |                                        | -     | 150  | °C   |
| T <sub>amb</sub>  | ambient temperature                 |                                        | -65   | +150 | °C   |
| T <sub>stg</sub>  | storage temperature                 |                                        | -65   | +150 | °C   |

[1] Device mounted on an FR4 Printed-Circuit Board (PCB), single-sided copper, tin-plated and standard footprint.

[2] Device mounted on an FR4 PCB, single-sided copper, tin-plated, mounting pad for collector 1 cm<sup>2</sup>.

[3] Device mounted on a ceramic PCB, Al<sub>2</sub>O<sub>3</sub>, standard footprint.



6. Thermal characteristics

Table 7. Thermal characteristics

| Symbol                   | Parameter                                        | Conditions  | Min | Typ | Max | Unit |
|--------------------------|--------------------------------------------------|-------------|-----|-----|-----|------|
| <b>NPN transistor</b>    |                                                  |             |     |     |     |      |
| R <sub>th(j-a)</sub>     | thermal resistance from junction to ambient      | in free air | [1] | -   | 417 | K/W  |
|                          |                                                  |             | [2] | -   | 329 | K/W  |
|                          |                                                  |             | [3] | -   | 260 | K/W  |
| R <sub>th(j-sp)</sub>    | thermal resistance from junction to solder point |             | -   | -   | 125 | K/W  |
| <b>Zener diode</b>       |                                                  |             |     |     |     |      |
| R <sub>th(j-a)</sub>     | thermal resistance from junction to ambient      | in free air | [1] | -   | 893 | K/W  |
| <b>Voltage regulator</b> |                                                  |             |     |     |     |      |
| R <sub>th(j-a)</sub>     | thermal resistance from junction to ambient      | in free air | [1] | -   | 329 | K/W  |
|                          |                                                  |             | [2] | -   | 272 | K/W  |
|                          |                                                  |             | [3] | -   | 216 | K/W  |

[1] Device mounted on an FR4 PCB, single-sided copper, tin-plated and standard footprint.  
[2] Device mounted on an FR4 PCB, single-sided copper, tin-plated, mounting pad for collector 1 cm<sup>2</sup>.  
[3] Device mounted on a ceramic PCB, Al<sub>2</sub>O<sub>3</sub>, standard footprint.

## 7. Characteristics

**Table 8. Characteristics**

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

| Symbol                | Parameter                      | Conditions                                                                  | Min  | Typ  | Max  | Unit          |
|-----------------------|--------------------------------|-----------------------------------------------------------------------------|------|------|------|---------------|
| <b>NPN transistor</b> |                                |                                                                             |      |      |      |               |
| $I_{CBO}$             | collector-base cut-off current | $V_{CB} = 20\text{ V}; I_E = 0\text{ A}$                                    | -    | -    | 100  | nA            |
|                       |                                | $V_{CB} = 20\text{ V}; I_E = 0\text{ A}; T_J = 150\text{ }^{\circ}\text{C}$ | -    | -    | 5    | $\mu\text{A}$ |
| $I_{EBO}$             | emitter-base cut-off current   | $V_{EB} = 5\text{ V}; I_C = 0\text{ A}$                                     | -    | -    | 100  | nA            |
| $h_{FE}$              | DC current gain                | $V_{CE} = 1\text{ V}; I_C = 100\text{ mA}$                                  | 160  | -    | 400  |               |
| $V_{BE}$              | base-emitter voltage           | $V_{CE} = 1\text{ V}; I_C = 10\text{ mA}$                                   | -    | 0.72 | -    | V             |
| <b>Zener diode</b>    |                                |                                                                             |      |      |      |               |
| $V_F$                 | forward voltage                | $I_F = 10\text{ mA}$                                                        | -    | -    | 0.9  | V             |
| $I_R$                 | reverse current                |                                                                             |      |      |      |               |
|                       | PVR100AD-B2V5                  | $V_R = 1\text{ V}$                                                          | -    | -    | 5    | $\mu\text{A}$ |
|                       | PVR100AD-B3V0                  | $V_R = 1\text{ V}$                                                          | -    | -    | 5    | $\mu\text{A}$ |
|                       | PVR100AD-B3V3                  | $V_R = 1\text{ V}$                                                          | -    | -    | 3    | $\mu\text{A}$ |
|                       | PVR100AD-B5V0                  | $V_R = 2\text{ V}$                                                          | -    | -    | 1    | $\mu\text{A}$ |
|                       | PVR100AD-B12V                  | $V_R = 8\text{ V}$                                                          | -    | -    | 0.1  | $\mu\text{A}$ |
| $V_Z$                 | working voltage                |                                                                             |      |      |      |               |
|                       | PVR100AD-B2V5                  | $I_Z = 5\text{ mA}$                                                         | 3.23 | 3.3  | 3.37 | V             |
|                       | PVR100AD-B3V0                  |                                                                             | 3.53 | 3.6  | 3.67 | V             |
|                       | PVR100AD-B3V3                  |                                                                             | 3.82 | 3.9  | 3.98 | V             |
|                       | PVR100AD-B5V0                  |                                                                             | 5.49 | 5.6  | 5.71 | V             |
|                       | PVR100AD-B12V                  |                                                                             | 12.7 | 13   | 13.3 | V             |
| $r_{dif}$             | differential resistance        |                                                                             |      |      |      |               |
|                       | PVR100AD-B2V5                  | $I_Z = 1\text{ mA}$                                                         | -    | 350  | 600  | $\Omega$      |
|                       | PVR100AD-B3V0                  |                                                                             | -    | 375  | 600  | $\Omega$      |
|                       | PVR100AD-B3V3                  |                                                                             | -    | 400  | 600  | $\Omega$      |
|                       | PVR100AD-B5V0                  |                                                                             | -    | 80   | 400  | $\Omega$      |
|                       | PVR100AD-B12V                  |                                                                             | -    | 50   | 170  | $\Omega$      |
| $r_{dif}$             | differential resistance        |                                                                             |      |      |      |               |
|                       | PVR100AD-B2V5                  | $I_Z = 5\text{ mA}$                                                         | -    | 85   | 95   | $\Omega$      |
|                       | PVR100AD-B3V0                  |                                                                             | -    | 85   | 90   | $\Omega$      |
|                       | PVR100AD-B3V3                  |                                                                             | -    | 85   | 90   | $\Omega$      |
|                       | PVR100AD-B5V0                  |                                                                             | -    | 15   | 40   | $\Omega$      |
|                       | PVR100AD-B12V                  |                                                                             | -    | 10   | 30   | $\Omega$      |

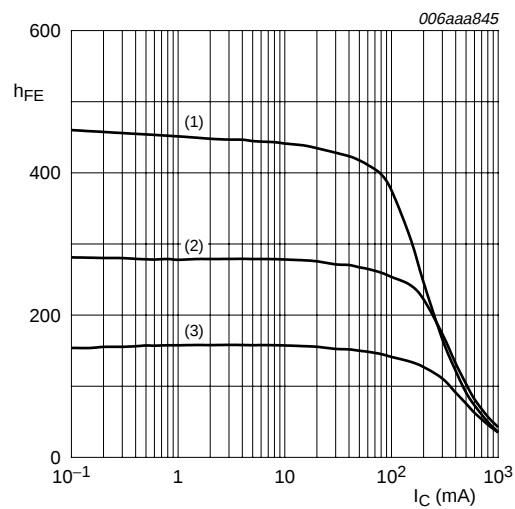
**Table 8. Characteristics ...continued**  
 $T_{amb} = 25\text{ }^{\circ}\text{C}$  unless otherwise specified.

| Symbol                                     | Parameter                                                  | Conditions                                                                                         | Min                 | Typ  | Max  | Unit               |
|--------------------------------------------|------------------------------------------------------------|----------------------------------------------------------------------------------------------------|---------------------|------|------|--------------------|
| $S_Z$                                      | temperature coefficient                                    | $I_Z = 5\text{ mA}$                                                                                |                     |      |      |                    |
|                                            | PVR100AD-B2V5                                              |                                                                                                    | -3.5                | -2.4 | 0    | mV/K               |
|                                            | PVR100AD-B3V0                                              |                                                                                                    | -3.5                | -2.4 | 0    | mV/K               |
|                                            | PVR100AD-B3V3                                              |                                                                                                    | -3.5                | -2.5 | 0    | mV/K               |
|                                            | PVR100AD-B5V0                                              |                                                                                                    | -2                  | 1.2  | 2.5  | mV/K               |
|                                            | PVR100AD-B12V                                              |                                                                                                    | 7                   | 9.4  | 11   | mV/K               |
| <b>Voltage regulator</b>                   |                                                            |                                                                                                    |                     |      |      |                    |
| $V_O$                                      | output voltage                                             | $I_O = 10\text{ mA}$                                                                               | <a href="#">[1]</a> |      |      |                    |
|                                            | PVR100AD-B2V5                                              | $V_I = 4.5\text{ V};$<br>$I_{ctrl} = 3.5\text{ mA}$                                                | 2.25                | 2.5  | 2.75 | V                  |
|                                            | PVR100AD-B3V0                                              | $V_I = 5\text{ V};$<br>$I_{ctrl} = 6.5\text{ mA}$                                                  | 2.7                 | 3    | 3.3  | V                  |
|                                            | PVR100AD-B3V3                                              | $V_I = 5.3\text{ V};$<br>$I_{ctrl} = 6.5\text{ mA}$                                                | 3.07                | 3.3  | 3.53 | V                  |
|                                            | PVR100AD-B5V0                                              | $V_I = 7\text{ V};$<br>$I_{ctrl} = 10\text{ mA}$                                                   | 4.65                | 5    | 5.35 | V                  |
|                                            | PVR100AD-B12V                                              | $V_I = 14\text{ V};$<br>$I_{ctrl} = 5\text{ mA}$                                                   | 11.4                | 12.3 | 13.2 | V                  |
| $\Delta V_O / (V_O \times \Delta T_{amb})$ | relative output voltage variation over ambient temperature | $I_O = 100\text{ mA};$<br>$T_{amb} = -55\text{ }^{\circ}\text{C}$ to $150\text{ }^{\circ}\text{C}$ | <a href="#">[1]</a> |      |      |                    |
|                                            | PVR100AD-B2V5                                              | $V_I = 4.5\text{ V}$                                                                               | -                   | 38   | -    | $10^{-6}/\text{K}$ |
|                                            | PVR100AD-B3V0                                              | $V_I = 5\text{ V}$                                                                                 | -                   | -78  | -    | $10^{-6}/\text{K}$ |
|                                            | PVR100AD-B3V3                                              | $V_I = 5.3\text{ V}$                                                                               | -                   | -61  | -    | $10^{-6}/\text{K}$ |
|                                            | PVR100AD-B5V0                                              | $V_I = 7\text{ V}$                                                                                 | -                   | 634  | -    | $10^{-6}/\text{K}$ |
|                                            | PVR100AD-B12V                                              | $V_I = 14\text{ V}$                                                                                | -                   | 892  | -    | $10^{-6}/\text{K}$ |
| <b>Line regulation</b>                     |                                                            |                                                                                                    |                     |      |      |                    |
| $\Delta V_O / V_O$                         | relative output voltage variation                          | $I_O = 10\text{ mA}$                                                                               | <a href="#">[1]</a> |      |      |                    |
|                                            | PVR100AD-B2V5                                              | $4.5\text{ V} \leq V_I \leq 40\text{ V};$<br>$I_{ctrl} = 3.5\text{ mA}$                            | -10                 | -    | +10  | %                  |
|                                            | PVR100AD-B3V0                                              | $5\text{ V} \leq V_I \leq 40\text{ V};$<br>$I_{ctrl} = 6.5\text{ mA}$                              | -10                 | -    | +10  | %                  |
|                                            | PVR100AD-B3V3                                              | $5.3\text{ V} \leq V_I \leq 40\text{ V};$<br>$I_{ctrl} = 6.5\text{ mA}$                            | -7                  | -    | +7   | %                  |
|                                            | PVR100AD-B5V0                                              | $7\text{ V} \leq V_I \leq 40\text{ V};$<br>$I_{ctrl} = 10\text{ mA}$                               | -7                  | -    | +7   | %                  |
|                                            | PVR100AD-B12V                                              | $14\text{ V} \leq V_I \leq 40\text{ V};$<br>$I_{ctrl} = 5\text{ mA}$                               | -7                  | -    | +7   | %                  |

**Table 8. Characteristics ...continued**  
 $T_{amb} = 25^{\circ}\text{C}$  unless otherwise specified.

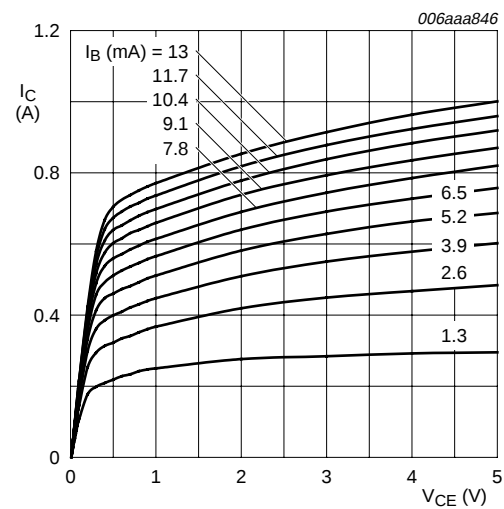
| Symbol                                 | Parameter                                             | Conditions                                                              | Min | Typ  | Max | Unit                |
|----------------------------------------|-------------------------------------------------------|-------------------------------------------------------------------------|-----|------|-----|---------------------|
| $\Delta V_O / (V_O \times \Delta V_I)$ | relative output voltage variation over input voltage  | $I_O = 10\text{ mA}$                                                    | [1] |      |     |                     |
|                                        | PVR100AD-B2V5                                         | $4.5\text{ V} \leq V_I \leq 40\text{ V};$<br>$I_{ctrl} = 3.5\text{ mA}$ | -   | 100  | -   | $10^{-6}/\text{V}$  |
|                                        | PVR100AD-B3V0                                         | $5\text{ V} \leq V_I \leq 40\text{ V};$<br>$I_{ctrl} = 6.5\text{ mA}$   | -   | 80   | -   | $10^{-6}/\text{V}$  |
|                                        | PVR100AD-B3V3                                         | $5.3\text{ V} \leq V_I \leq 40\text{ V};$<br>$I_{ctrl} = 6.5\text{ mA}$ | -   | 70   | -   | $10^{-6}/\text{V}$  |
|                                        | PVR100AD-B5V0                                         | $7\text{ V} \leq V_I \leq 40\text{ V};$<br>$I_{ctrl} = 10\text{ mA}$    | -   | 40   | -   | $10^{-6}/\text{V}$  |
|                                        | PVR100AD-B12V                                         | $14\text{ V} \leq V_I \leq 40\text{ V};$<br>$I_{ctrl} = 5\text{ mA}$    | -   | 20   | -   | $10^{-6}/\text{V}$  |
| <b>Load regulation</b>                 |                                                       |                                                                         |     |      |     |                     |
| $\Delta V_O / V_O$                     | relative output voltage variation                     | $5\text{ mA} \leq I_O \leq 100\text{ mA}$                               | [1] |      |     |                     |
|                                        | PVR100AD-B2V5                                         | $V_I = 4.5\text{ V};$<br>$I_{ctrl} = 3.5\text{ mA}$                     | -10 | -    | +10 | %                   |
|                                        | PVR100AD-B3V0                                         | $V_I = 5\text{ V};$<br>$I_{ctrl} = 6.5\text{ mA}$                       | -10 | -    | +10 | %                   |
|                                        | PVR100AD-B3V3                                         | $V_I = 5.3\text{ V};$<br>$I_{ctrl} = 6.5\text{ mA}$                     | -7  | -    | +7  | %                   |
|                                        | PVR100AD-B5V0                                         | $V_I = 7\text{ V};$<br>$I_{ctrl} = 10\text{ mA}$                        | -7  | -    | +7  | %                   |
|                                        | PVR100AD-B12V                                         | $V_I = 14\text{ V};$<br>$I_{ctrl} = 5\text{ mA}$                        | -7  | -    | +7  | %                   |
| $\Delta V_O / (V_O \times \Delta I_O)$ | relative output voltage variation over output current | $5\text{ mA} \leq I_O \leq 100\text{ mA}$                               | [1] |      |     |                     |
|                                        | PVR100AD-B2V5                                         | $V_I = 4.5\text{ V};$<br>$I_{ctrl} = 3.5\text{ mA}$                     | -   | -840 | -   | $10^{-6}/\text{mA}$ |
|                                        | PVR100AD-B3V0                                         | $V_I = 5\text{ V};$<br>$I_{ctrl} = 6.5\text{ mA}$                       | -   | -630 | -   | $10^{-6}/\text{mA}$ |
|                                        | PVR100AD-B3V3                                         | $V_I = 5.3\text{ V};$<br>$I_{ctrl} = 6.5\text{ mA}$                     | -   | -540 | -   | $10^{-6}/\text{mA}$ |
|                                        | PVR100AD-B5V0                                         | $V_I = 7\text{ V};$<br>$I_{ctrl} = 10\text{ mA}$                        | -   | -320 | -   | $10^{-6}/\text{mA}$ |
|                                        | PVR100AD-B12V                                         | $V_I = 14\text{ V};$<br>$I_{ctrl} = 5\text{ mA}$                        | -   | -130 | -   | $10^{-6}/\text{mA}$ |

[1] Pulse test:  $t_p \leq 300\text{ }\mu\text{s}$ ;  $\delta \leq 0.02$ .



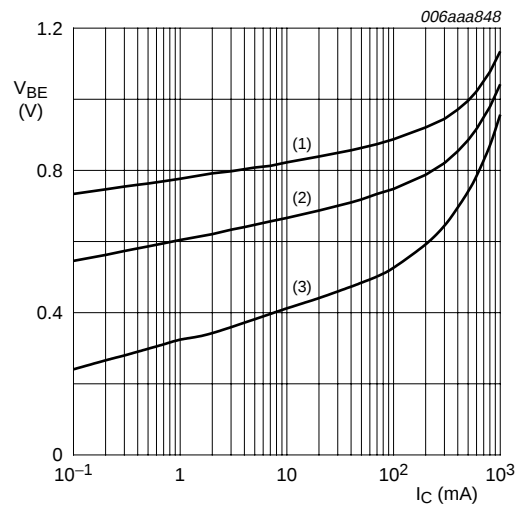
- $V_{CE} = 1\text{ V}$
- (1)  $T_{amb} = 150\text{ }^{\circ}\text{C}$
  - (2)  $T_{amb} = 25\text{ }^{\circ}\text{C}$
  - (3)  $T_{amb} = -55\text{ }^{\circ}\text{C}$

Fig 2. NPN transistor: DC current gain as a function of collector current; typical values



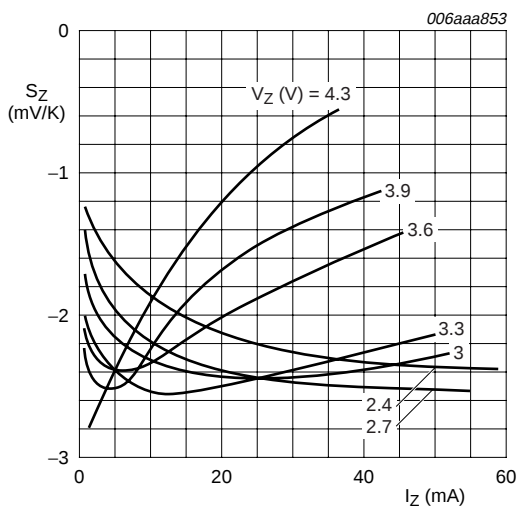
$T_{amb} = 25\text{ }^{\circ}\text{C}$

Fig 3. NPN transistor: Collector current as a function of collector-emitter voltage; typical values



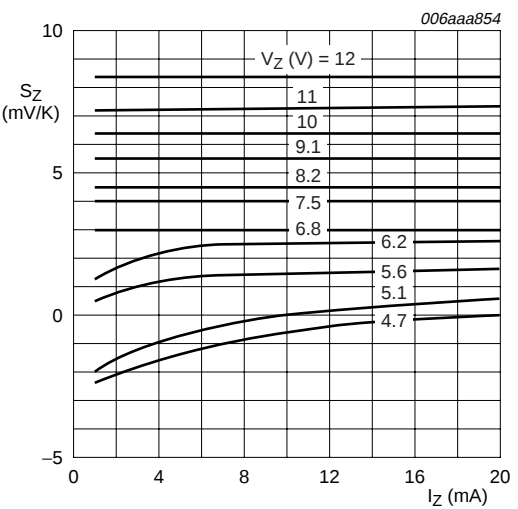
- $V_{CE} = 1\text{ V}$
- (1)  $T_{amb} = -55\text{ }^{\circ}\text{C}$
  - (2)  $T_{amb} = 25\text{ }^{\circ}\text{C}$
  - (3)  $T_{amb} = 150\text{ }^{\circ}\text{C}$

Fig 4. NPN transistor: Base-emitter voltage as a function of collector current; typical values



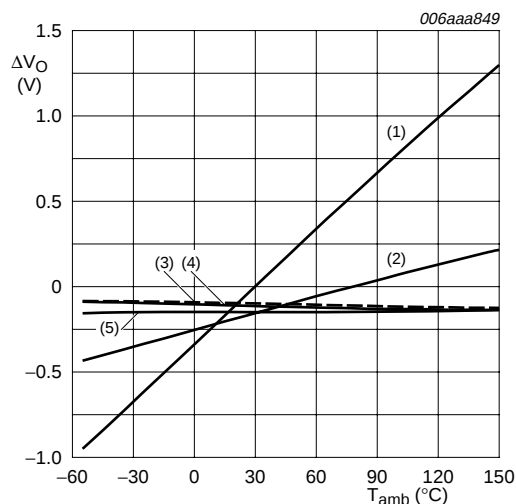
$T_j = 25^\circ\text{C}$  to  $150^\circ\text{C}$

Fig 5. Zener diode: Temperature coefficient as a function of working current; typical values



$T_j = 25^\circ\text{C}$  to  $150^\circ\text{C}$

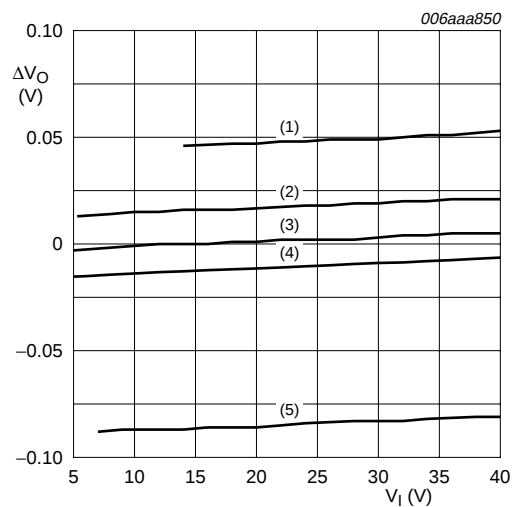
Fig 6. Zener diode: Temperature coefficient as a function of working current; typical values



$V_I = V_{O(typ)} + 2 \text{ V}$ ;  $I_O = 100 \text{ mA}$ ;  
 $T_{amb} = -55 \text{ °C to } 150 \text{ °C}$

- (1) PVR100AD-B12V
- (2) PVR100AD-B5V0
- (3) PVR100AD-B3V3
- (4) PVR100AD-B3V0
- (5) PVR100AD-B2V5

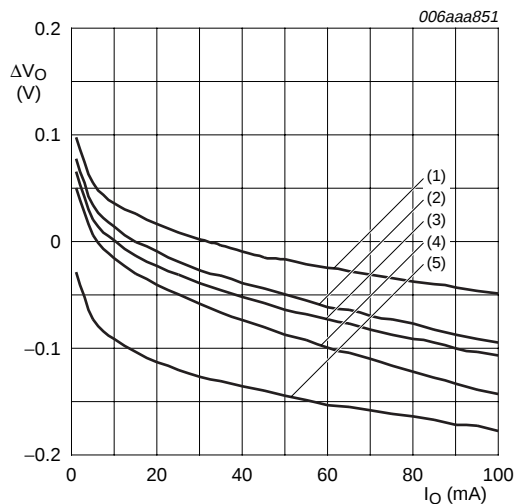
**Fig 7. Voltage regulator: Output voltage variation as a function of ambient temperature; typical values**



$T_{amb} = 25 \text{ °C}$ ;  $I_O = 10 \text{ mA}$

- (1) PVR100AD-B12V;  $I_{ctrl} = 5 \text{ mA}$
- (2) PVR100AD-B3V3;  $I_{ctrl} = 6.5 \text{ mA}$
- (3) PVR100AD-B3V0;  $I_{ctrl} = 6.5 \text{ mA}$
- (4) PVR100AD-B2V5;  $I_{ctrl} = 3.5 \text{ mA}$
- (5) PVR100AD-B5V0;  $I_{ctrl} = 10 \text{ mA}$

**Fig 8. Voltage regulator: Output voltage variation as a function of input voltage; typical values**



$T_{amb} = 25 \text{ °C}$ ;  $V_I = V_{O(typ)} + 2 \text{ V}$

- (1) PVR100AD-B12V;  $I_{ctrl} = 5 \text{ mA}$
- (2) PVR100AD-B3V3;  $I_{ctrl} = 6.5 \text{ mA}$
- (3) PVR100AD-B3V0;  $I_{ctrl} = 6.5 \text{ mA}$
- (4) PVR100AD-B2V5;  $I_{ctrl} = 3.5 \text{ mA}$
- (5) PVR100AD-B5V0;  $I_{ctrl} = 10 \text{ mA}$

**Fig 9. Voltage regulator: Output voltage variation as a function of output current; typical values**

8. Test information

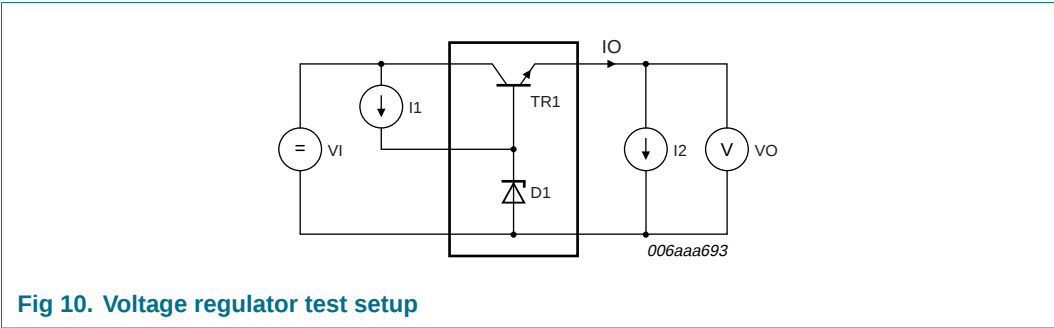


Fig 10. Voltage regulator test setup

9. Package outline

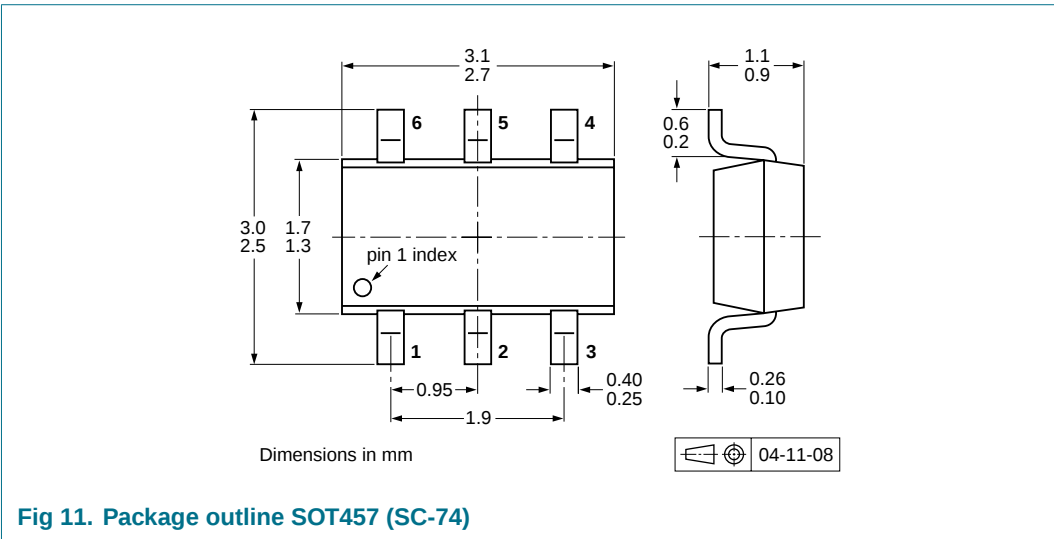


Fig 11. Package outline SOT457 (SC-74)

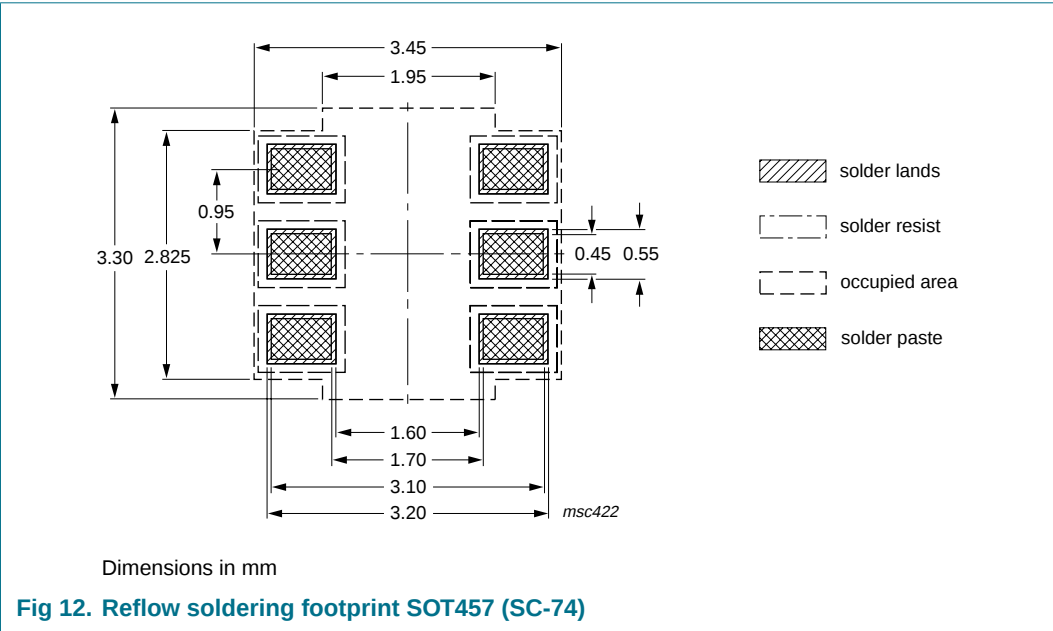
10. Packing information

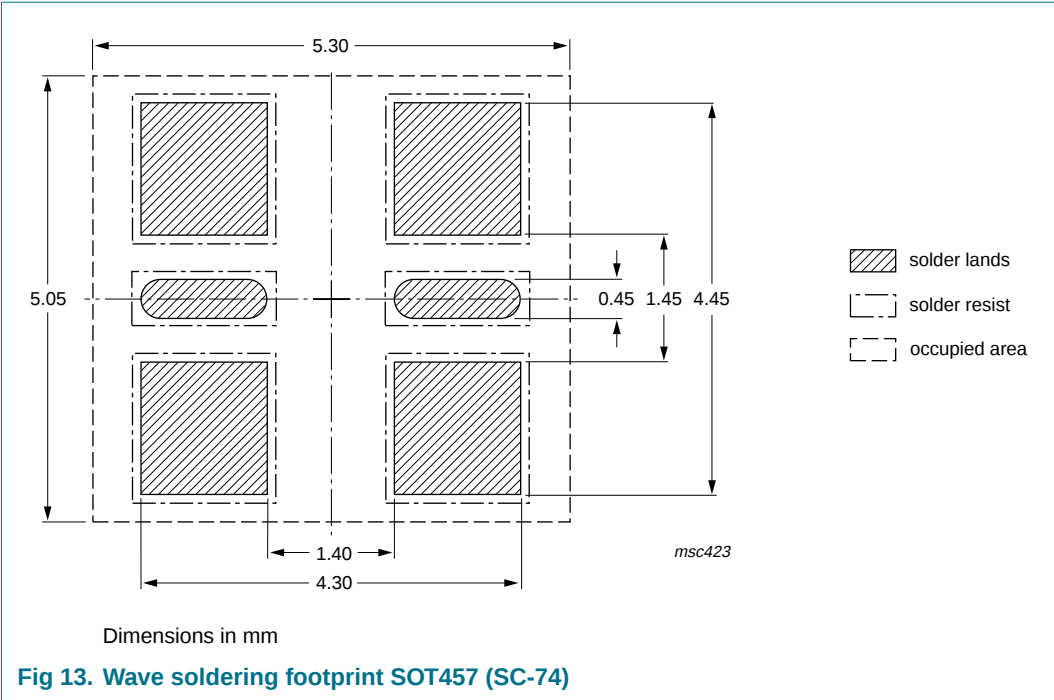
Table 9. Packing methods
The indicated -xxx are the last three digits of the 12NC ordering code.[1]

| Type number   | Package | Description                        | Packing quantity |       |
|---------------|---------|------------------------------------|------------------|-------|
|               |         |                                    | 3000             | 10000 |
| PVR100AD-B2V5 | SOT457  | 4 mm pitch, 8 mm tape and reel; T1 | [2] -115         | -135  |
|               |         | 4 mm pitch, 8 mm tape and reel; T2 | [3] -125         | -165  |
| PVR100AD-B3V0 | SOT457  | 4 mm pitch, 8 mm tape and reel; T1 | [2] -115         | -135  |
|               |         | 4 mm pitch, 8 mm tape and reel; T2 | [3] -125         | -165  |
| PVR100AD-B3V3 | SOT457  | 4 mm pitch, 8 mm tape and reel; T1 | [2] -115         | -135  |
|               |         | 4 mm pitch, 8 mm tape and reel; T2 | [3] -125         | -165  |
| PVR100AD-B5V0 | SOT457  | 4 mm pitch, 8 mm tape and reel; T1 | [2] -115         | -135  |
|               |         | 4 mm pitch, 8 mm tape and reel; T2 | [3] -125         | -165  |
| PVR100AD-B12V | SOT457  | 4 mm pitch, 8 mm tape and reel; T1 | [2] -115         | -135  |
|               |         | 4 mm pitch, 8 mm tape and reel; T2 | [3] -125         | -165  |

- [1] For further information and the availability of packing methods, see Section 14.
- [2] T1: normal taping
- [3] T2: reverse taping

11. Soldering





12. Revision history

Table 10. Revision history

| Document ID      | Release date | Data sheet status  | Change notice | Supersedes |
|------------------|--------------|--------------------|---------------|------------|
| PVR100AD-B_SER_1 | 20061031     | Product data sheet | -             | -          |

## 13. Legal information

### 13.1 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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