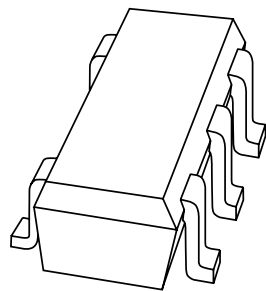


DATA SHEET



PSSI2021SAY Constant current source

Product specification

2001 May 07

Constant current source

PSSI2021SAY

FEATURES

- One chip constant current source
- Reduced number of components and board space.

APPLICATIONS

- Especially suitable for space reduction in, for example, LED driving circuits or active bias controlling.

DESCRIPTION

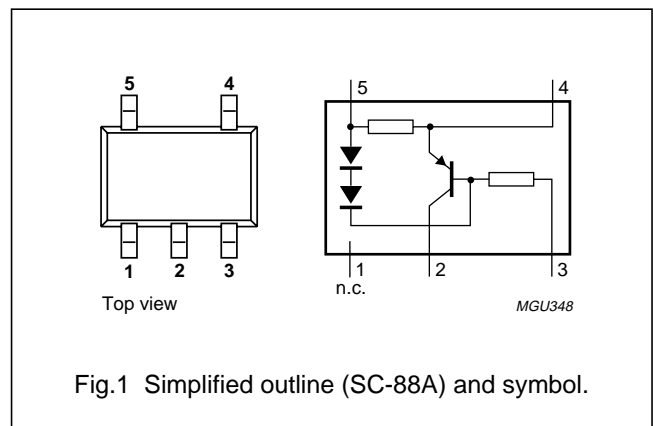
Resistor equipped PNP transistor with two diodes on one chip in a plastic SC-88A package. Built-in bias resistor and two diodes allow operation as constant current source. The stabilized current can be adjusted between 15 μ A and 50 mA by connection of external resistors between pins 4 and 5.

MARKING

| TYPE NUMBER | MARKING CODE |
|-------------|--------------|
| PSSI2021SAY | S1p |

PINNING

| PIN | SYMBOL | DESCRIPTION |
|-----|--------------------|-----------------------------------|
| 1 | n.c. | not connected |
| 2 | I_{stab}/V_{out} | stabilized current/output voltage |
| 3 | GND | ground |
| 4 | $R_{external}$ | external resistor |
| 5 | V_S | supply voltage |



LIMITING VALUES

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

| SYMBOL | PARAMETER | CONDITIONS | MIN. | MAX. | UNIT |
|------------|------------------------------------|------------------------------|------|------|------|
| V_S | supply voltage | | – | 75 | V |
| V_{out} | output voltage | $V_S = 75$ V | – | 73 | V |
| V_R | reverse voltage | between all terminals | – | 0.5 | V |
| I_{stab} | continuous stabilized current (DC) | | – | 50 | mA |
| P_{tot} | total power dissipation | $T_{amb} \leq 25$ °C; note 1 | – | 335 | mW |
| T_{stg} | storage temperature | | –65 | +150 | °C |
| T_j | junction temperature | | – | 150 | °C |
| T_{amb} | operating ambient temperature | | –65 | +150 | °C |

Note

1. Device mounted on a FR4 printed-circuit board.

Constant current source

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THERMAL CHARACTERISTICS

| SYMBOL | PARAMETER | CONDITIONS | VALUE | UNIT |
|---------------|---|---------------------|-------|------|
| $R_{th\ j-a}$ | thermal resistance from junction to ambient | in free air; note 1 | 370 | K/W |

Note

1. Device mounted on a FR4 printed-circuit board.

CHARACTERISTICS

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

| SYMBOL | PARAMETER | CONDITIONS | MIN. | TYP. | MAX. | UNIT |
|--|--|---|------|------|------|---------------|
| I_{stab} | stabilized current | $V_S = 12\text{ V}$; $V_{out} = 0\text{ to }10\text{ V}$; $R_{external} = \text{infinity}$ | 10 | 15 | 20 | μA |
| I_{supply} | supply current | $V_S = 12\text{ V}$; $V_{out} = 0\text{ to }10\text{ V}$; $I_{stab} = 15\ \mu\text{A}$ | – | 240 | 370 | μA |
| | | $V_S = 75\text{ V}$; $V_{out} = 0\text{ V}$; $I_{stab} = 15\ \mu\text{A}$ | – | 1.5 | 2.2 | mA |
| $\frac{\Delta I_{stab}}{I_{stab}}$ | stability of stabilized current as a function of $V_{control}$ | $V_{out} = 1\text{ to }10\text{ V}$; $V_S = 12\text{ V}$; $T_{amb} = 25\text{ °C}$ | – | 0.5 | 1 | % |
| $\frac{\Delta I_{stab}}{\Delta T \times I_{stab}}$ | stability of stabilized current as a function of temperature | $V_{out} = 1\text{ V}$; $V_S = 12\text{ V}$; $T_{amb} = -55\text{ to }+150\text{ °C}$ | – | 0.15 | 0.3 | % |

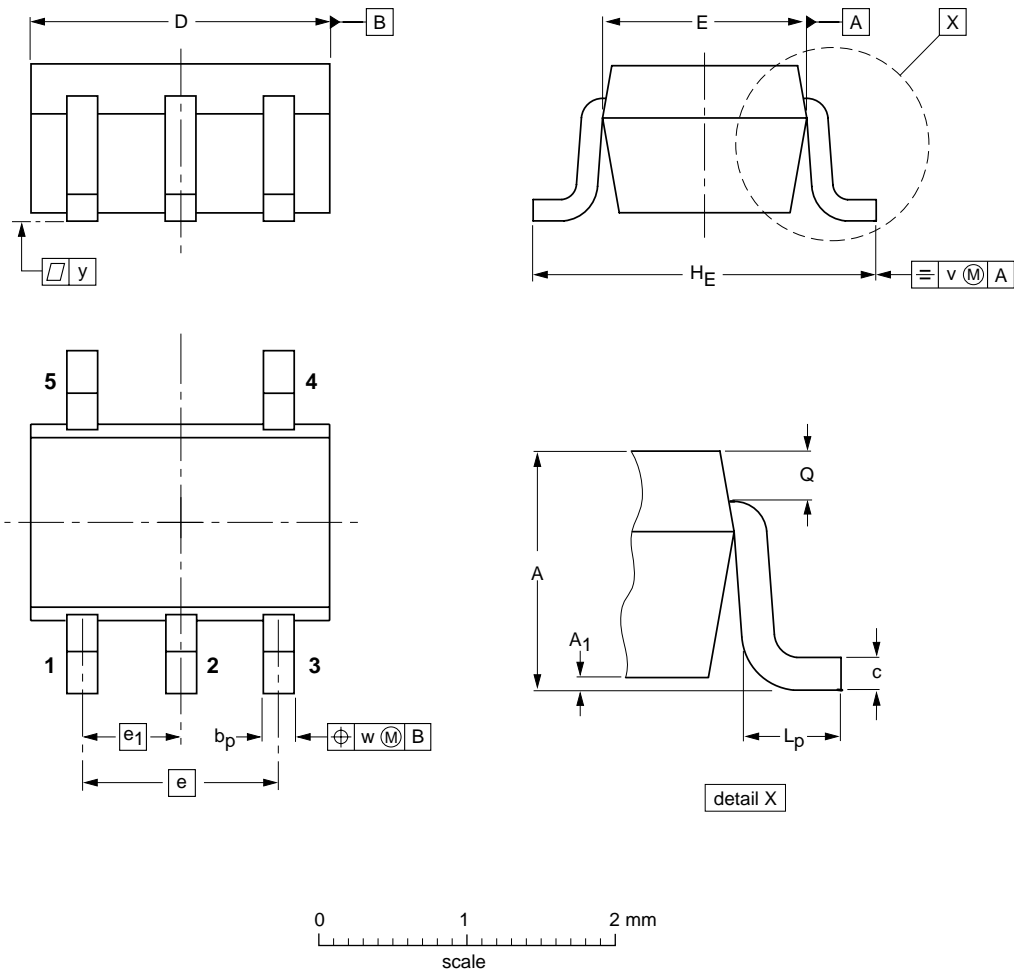
Constant current source

PSSI2021SAY

PACKAGE OUTLINE

Plastic surface mounted package; 5 leads

SOT353



DIMENSIONS (mm are the original dimensions)

| UNIT | A | A ₁ max | b _p | c | D | E ⁽²⁾ | e | e ₁ | H _E | L _p | Q | v | w | y |
|------|------------|-----------------------|----------------|--------------|------------|------------------|-----|----------------|----------------|----------------|--------------|-----|-----|-----|
| mm | 1.1 0.8 | 0.1 | 0.30 0.20 | 0.25 0.10 | 2.2 1.8 | 1.35 1.15 | 1.3 | 0.65 | 2.2 2.0 | 0.45 0.15 | 0.25 0.15 | 0.2 | 0.2 | 0.1 |

| OUTLINE VERSION | REFERENCES | | | | EUROPEAN PROJECTION | ISSUE DATE |
|-----------------|------------|-------|--------|--|---------------------|------------|
| | IEC | JEDEC | EIAJ | | | |
| SOT353 | | | SC-88A | | | 97-02-28 |

Constant current source

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DATA SHEET STATUS

| DATA SHEET STATUS ⁽¹⁾ | PRODUCT STATUS ⁽²⁾ | DEFINITIONS |
|----------------------------------|-------------------------------|--|
| Objective data | Development | This data sheet contains data from the objective specification for product development. Philips Semiconductors reserves the right to change the specification in any manner without notice. |
| Preliminary data | Qualification | This data sheet contains data from the preliminary specification. Supplementary data will be published at a later date. Philips Semiconductors reserves the right to change the specification without notice, in order to improve the design and supply the best possible product. |
| Product data | Production | This data sheet contains data from the product specification. Philips Semiconductors reserves the right to make changes at any time in order to improve the design, manufacturing and supply. Changes will be communicated according to the Customer Product/Process Change Notification (CPCN) procedure SNW-SQ-650A. |

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NOTES

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