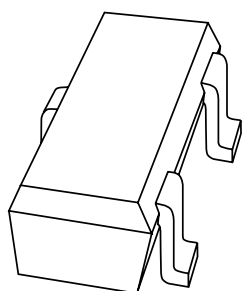


# DATA SHEET



**2PB709AW**

**PNP general purpose transistor**

Product specification

2002 Jun 26

PNP general purpose transistor

2PB709AW

FEATURES

- High collector current (max. 100 mA)
- Low collector-emitter saturation voltage (max. 500 mV).

APPLICATIONS

- General purpose switching and amplification.

DESCRIPTION

PNP transistor in an SC-70 (SOT323) plastic package.  
NPN complement: 2PD601AW

MARKING

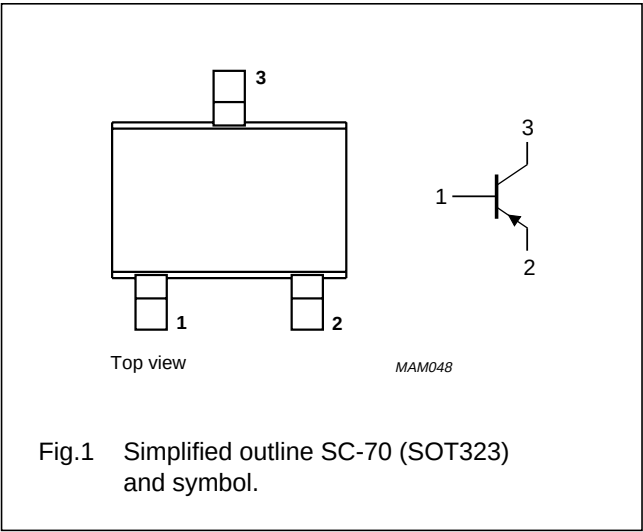
| TYPE NUMBER | MARKING CODE <sup>(1)</sup> |
|-------------|-----------------------------|
| 2PB709AQW   | N5*                         |
| 2PB709ARW   | N7*                         |
| 2PB709ASW   | N9*                         |

Note

1. \* = p: made in Hong Kong.  
\* = t: made in Malaysia.

PINNING

| PIN | DESCRIPTION |
|-----|-------------|
| 1   | base        |
| 2   | emitter     |
| 3   | collector   |



LIMITING VALUES

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

| SYMBOL           | PARAMETER                     | CONDITIONS                       | MIN. | MAX. | UNIT |
|------------------|-------------------------------|----------------------------------|------|------|------|
| V <sub>CBO</sub> | collector-base voltage        | open emitter                     | –    | –45  | V    |
| V <sub>CEO</sub> | collector-emitter voltage     | open base                        | –    | –45  | V    |
| V <sub>EBO</sub> | emitter-base voltage          | open collector                   | –    | –6   | V    |
| I <sub>C</sub>   | collector current (DC)        |                                  | –    | –100 | mA   |
| I <sub>CM</sub>  | peak collector current        |                                  | –    | –200 | mA   |
| P <sub>tot</sub> | total power dissipation       | T <sub>amb</sub> ≤ 25 °C; note 1 | –    | 200  | mW   |
| T <sub>stg</sub> | storage temperature           |                                  | –65  | +150 | °C   |
| T <sub>j</sub>   | junction temperature          |                                  | –    | 150  | °C   |
| T <sub>amb</sub> | operating ambient temperature |                                  | –65  | +150 | °C   |

Note

1. For mounting conditions, see “Thermal considerations and footprint design for SOT323 in the General Part of Data Handbook SC18”.

## PNP general purpose transistor

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## THERMAL CHARACTERISTICS

| SYMBOL        | PARAMETER                                   | CONDITIONS | VALUE | UNIT |
|---------------|---------------------------------------------|------------|-------|------|
| $R_{th\ j-a}$ | thermal resistance from junction to ambient | note 1     | 625   | K/W  |

## Note

- For mounting conditions, see “Thermal considerations and footprint design for SOT323 in the General Part of Data Handbook SC18”.

## CHARACTERISTICS

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

| SYMBOL      | PARAMETER                                                   | CONDITIONS                                                               | MIN.              | MAX.              | UNIT          |
|-------------|-------------------------------------------------------------|--------------------------------------------------------------------------|-------------------|-------------------|---------------|
| $I_{CBO}$   | collector-base cut-off current                              | $I_E = 0$ ; $V_{CB} = -45\text{ V}$                                      | –                 | –10               | nA            |
|             |                                                             | $I_E = 0$ ; $V_{CB} = -45\text{ V}$ ; $T_j = 150\text{ °C}$              | –                 | –5                | $\mu\text{A}$ |
| $I_{EBO}$   | emitter-base cut-off current                                | $I_C = 0$ ; $V_{EB} = -5\text{ V}$                                       | –                 | –10               | nA            |
| $h_{FE}$    | DC current gain<br>2PB709AQW<br>2PB709ARW<br>2PB709ASW      | $I_C = -2\text{ mA}$ ; $V_{CE} = -10\text{ V}$                           | 160<br>210<br>290 | 260<br>340<br>460 |               |
| $V_{CEsat}$ | collector-emitter saturation voltage                        | $I_C = -100\text{ mA}$ ; $I_B = -10\text{ mA}$ ;<br>note 1               | –                 | –500              | mV            |
| $C_c$       | collector capacitance                                       | $I_E = I_E = 0$ ; $V_{CB} = -10\text{ V}$ ;<br>$f = 1\text{ MHz}$        | –                 | 5                 | pF            |
| $f_T$       | transition frequency<br>2PB709AQW<br>2PB709ARW<br>2PB709ASW | $I_C = -1\text{ mA}$ ; $V_{CE} = -10\text{ V}$ ;<br>$f = 100\text{ MHz}$ | 60                | –                 | MHz           |
|             |                                                             |                                                                          | 70                | –                 | MHz           |
|             |                                                             |                                                                          | 80                | –                 | MHz           |

## Note

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

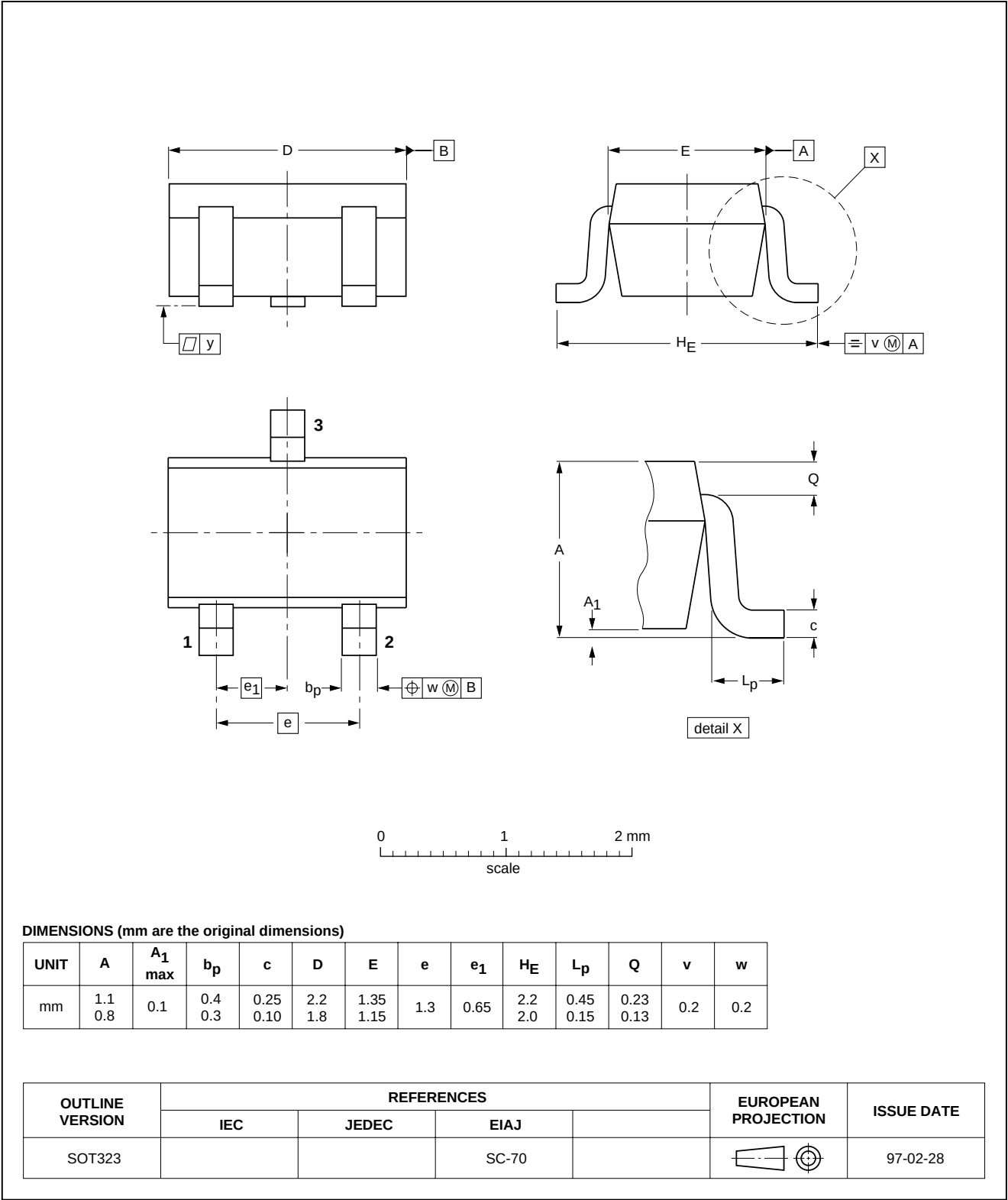
PNP general purpose transistor

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PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT323



## PNP general purpose transistor

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## DATA SHEET STATUS

| DATA SHEET STATUS <sup>(1)</sup> | PRODUCT STATUS <sup>(2)</sup> | 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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**NOTES**

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