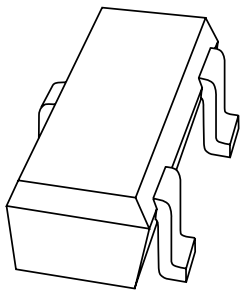


# DATA SHEET



**2PB709A**

**PNP general purpose transistor**

Product data sheet  
Supersedes data of 1997 Jun 19

1999 Apr 23

# PNP general purpose transistor

# 2PB709A

### FEATURES

- Low current (max. 100 mA)
- Low voltage (max. 45 V).

### APPLICATIONS

- General purpose switching and amplification.

### DESCRIPTION

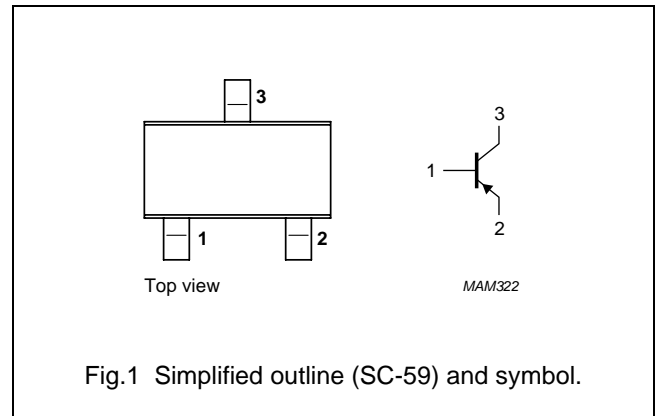
PNP transistor in an SC-59 plastic package.  
NPN complement: 2PB601A.

### MARKING

| TYPE NUMBER | MARKING CODE |
|-------------|--------------|
| 2PB709AQ    | BQ           |
| 2PB709AR    | BR           |
| 2PB709AS    | BS           |

### PINNING

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



### LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 134).

| SYMBOL    | PARAMETER                     | CONDITIONS                                       | MIN. | MAX. | UNIT             |
|-----------|-------------------------------|--|------|------|------------------|
| $V_{CBO}$ | collector-base voltage        | open emitter                                     | –    | –45  | V                |
| $V_{CEO}$ | collector-emitter voltage     | open base  | –    | –45  | V                |
| $V_{EBO}$ | emitter-base voltage          | open collector                                   | –    | –6   | V                |
| $I_C$     | collector current (DC)        |  | –    | –100 | mA               |
| $I_{CM}$  | peak collector current        |  | –    | –200 | mA               |
| $I_{BM}$  | peak base current             |  | –    | –100 | mA               |
| $P_{tot}$ | total power dissipation       | $T_{amb} \leq 25\text{ }^\circ\text{C}$ ; note 1 | –    | 250  | mW               |
| $T_{stg}$ | storage temperature           |  | –65  | +150 | $^\circ\text{C}$ |
| $T_j$     | junction temperature          |  | –    | 150  | $^\circ\text{C}$ |
| $T_{amb}$ | operating ambient temperature |  | –65  | +150 | $^\circ\text{C}$ |

### Note

1. Transistor mounted on an FR4 printed-circuit board.

## PNP general purpose transistor

2PB709A

## THERMAL CHARACTERISTICS

| SYMBOL        | PARAMETER                                   | CONDITIONS | VALUE | UNIT |
|---------------|---|------------|-------|------|
| $R_{th\ j-a}$ | thermal resistance from junction to ambient | note 1     | 500   | K/W  |

## Note

1. Transistor mounted on an FR4 printed-circuit board.

## CHARACTERISTICS

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

| SYMBOL      | PARAMETER  | CONDITIONS  | MIN. | MAX. | UNIT          |
|-------------|--|---|------|------|---------------|
| $I_{CBO}$   | collector 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 cut-off current                                  | $I_C = 0; V_{EB} = -5\text{ V}$                                 | –    | –10  | nA            |
| $h_{FE}$    | DC current gain<br>2PB709AQ<br>2PB709AR<br>2PB709AS      | $I_C = -2\text{ mA}; V_{CE} = -10\text{ V}$                     | 160  | 260  |               |
|             |  |   | 210  | 340  |               |
|             |  |   | 290  | 460  |               |
| $V_{CEsat}$ | collector-emitter saturation voltage                     | $I_C = -100\text{ mA}; I_B = -10\text{ mA};$ note 1             | –    | –500 | mV            |
| $C_c$       | collector capacitance                                    | $I_E = i_e = 0; V_{CB} = -10\text{ V}; f = 1\text{ MHz}$        | –    | 5    | pF            |
| $f_T$       | transition frequency<br>2PB709AQ<br>2PB709AR<br>2PB709AS | $I_C = -1\text{ mA}; V_{CE} = -10\text{ V}; f = 100\text{ MHz}$ | 60   | –    | MHz           |
|             |  |   | 70   | –    | MHz           |
|             |  |   | 80   | –    | MHz           |

## Note

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

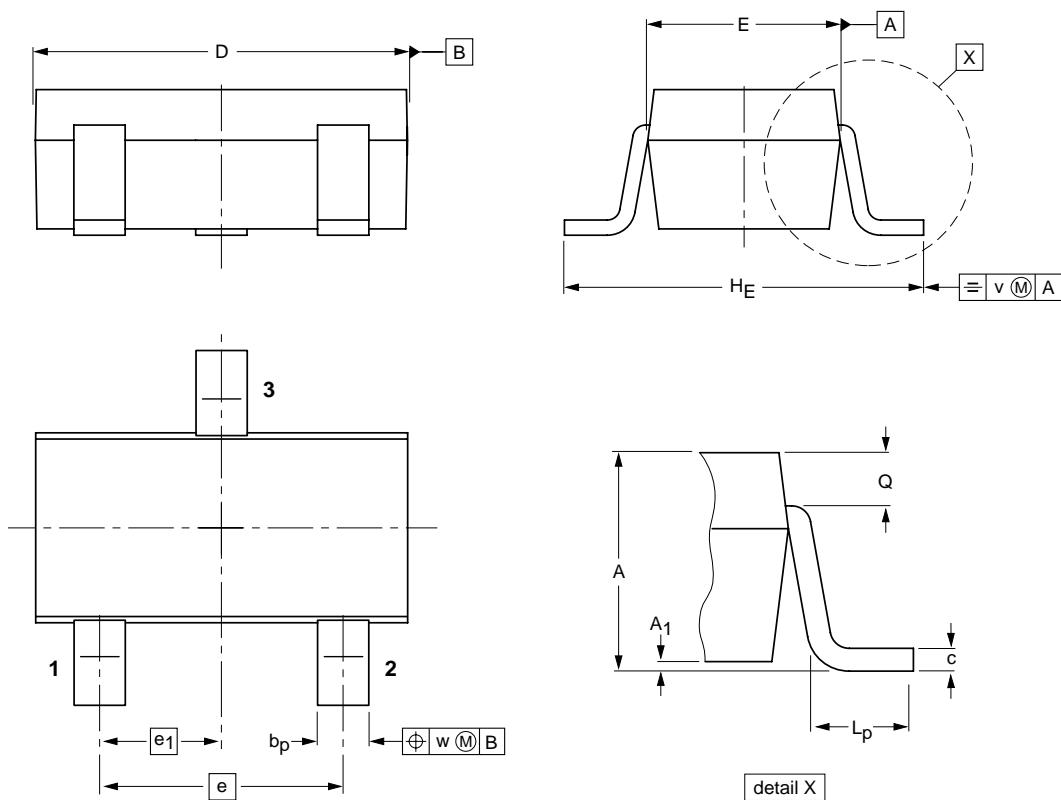
PNP general purpose transistor

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PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT346



DIMENSIONS (mm are the original dimensions)

| UNIT | A          | A <sub>1</sub> | b <sub>p</sub> | c            | D          | E          | e   | e <sub>1</sub> | H <sub>E</sub> | L <sub>p</sub> | Q            | v   | w   |
|------|------------|----------------|----------------|--------------|------------|------------|-----|----------------|----------------|----------------|--------------|-----|-----|
| mm   | 1.3<br>1.0 | 0.1<br>0.013   | 0.50<br>0.35   | 0.26<br>0.10 | 3.1<br>2.7 | 1.7<br>1.3 | 1.9 | 0.95           | 3.0<br>2.5     | 0.6<br>0.2     | 0.33<br>0.23 | 0.2 | 0.2 |

| OUTLINE VERSION | REFERENCES |        |       |  | EUROPEAN PROJECTION | ISSUE DATE |
|-----------------|------------|--------|-------|--|---------------------|------------|
|                 | IEC        | JEDEC  | EIAJ  |  |                     |            |
| SOT346          |            | TO-236 | SC-59 |  |                     | 98-07-17   |

## PNP general purpose transistor

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## DATA SHEET STATUS

| DOCUMENT STATUS <sup>(1)</sup> | PRODUCT STATUS <sup>(2)</sup> | DEFINITION  |
|--------------------------------|-------------------------------|---|
| Objective data sheet           | Development                   | This document contains data from the objective specification for product development. |
| Preliminary data sheet         | Qualification                 | This document contains data from the preliminary specification.                       |
| Product data sheet             | Production                    | This document contains the product specification.                                     |

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