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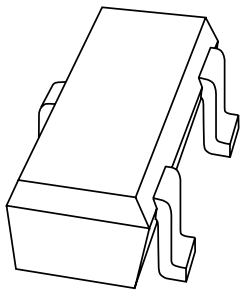
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If you have any questions related to the data sheet, please contact our nearest sales office via e-mail or telephone (details via [salesaddresses@nexperia.com](mailto:salesaddresses@nexperia.com)). Thank you for your cooperation and understanding,

Kind regards,

Team Nexperia

# DATA SHEET



**2PD602A**

**NPN general purpose transistor**

Product data sheet  
Supersedes data of 1997 Jun 20

1999 Apr 23

# NPN general purpose transistor

# 2PD602A

### FEATURES

- High current (max. 500 mA)
- Low voltage (max. 50 V).

### APPLICATIONS

- General purpose switching and amplification.

### DESCRIPTION

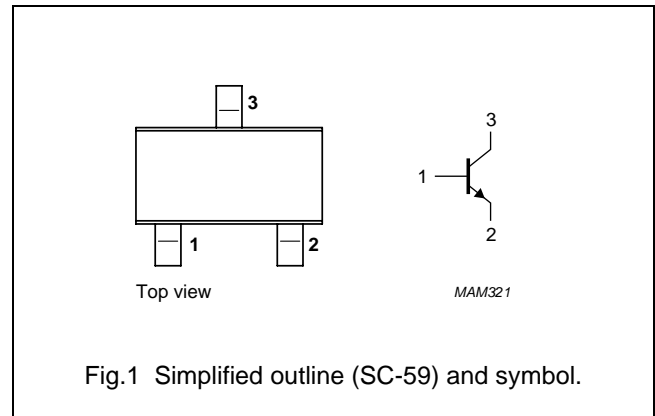
NPN transistor in an SC-59 plastic package.  
PNP complement: 2PB710A.

### MARKING

| TYPE NUMBER | MARKING CODE |
|-------------|--------------|
| 2PD602AQ    | XQ           |
| 2PD602AR    | XR           |
| 2PD602AS    | XS           |

### 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                         | –    | 60   | V    |
| $V_{CEO}$ | collector-emitter voltage     | open base                            | –    | 50   | V    |
| $V_{EBO}$ | emitter-base voltage          | open collector                       | –    | 5    | V    |
| $I_C$     | collector current (DC)        |                                      | –    | 500  | mA   |
| $I_{CM}$  | peak collector current        |                                      | –    | 1    | A    |
| $I_{BM}$  | peak base current             |                                      | –    | 200  | mA   |
| $P_{tot}$ | total power dissipation       | $T_{amb} \leq 25\text{ °C}$ ; note 1 | –    | 250  | mW   |
| $T_{stg}$ | storage temperature           |                                      | –65  | +150 | °C   |
| $T_j$     | junction temperature          |                                      | –    | 150  | °C   |
| $T_{amb}$ | operating ambient temperature |                                      | –65  | +150 | °C   |

### Note

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

## NPN general purpose transistor

## 2PD602A

## 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            | $I_E = 0; V_{CB} = 60\text{ V}$                                               | –    | 10   | nA            |
|             |                                      | $I_E = 0; V_{CB} = 60\text{ V}; T_j = 150\text{ °C}$                          | –    | 5    | $\mu\text{A}$ |
| $I_{EBO}$   | emitter cut-off current              | $I_C = 0; V_{EB} = 4\text{ V}$                                                | –    | 10   | nA            |
| $h_{FE}$    | DC current gain                      | $I_C = 150\text{ mA}; V_{CE} = 10\text{ V}; \text{note 1}$                    | 85   | 170  |               |
|             | 2PD602AQ                             |                                                                               |      |      |               |
| 2PD602AR    |                                      |                                                                               |      |      |               |
|             | 2PD602AS                             | 170                                                                           | 340  |      |               |
|             | DC current gain                      | $I_C = 500\text{ mA}; V_{CE} = 10\text{ V}; \text{note 1}$                    | 40   | –    |               |
| $V_{CEsat}$ | collector-emitter saturation voltage | $I_C = 300\text{ mA}; I_B = 30\text{ mA}; \text{note 1}$                      | –    | 600  | mV            |
| $C_c$       | collector capacitance                | $I_E = i_e = 0; V_{CB} = 10\text{ V}; f = 1\text{ MHz}$                       | –    | 15   | pF            |
| $f_T$       | transition frequency                 | $I_C = 50\text{ mA}; V_{CE} = 10\text{ V}; f = 100\text{ MHz}; \text{note 1}$ | 140  | –    | MHz           |
|             | 2PD602AQ                             |                                                                               |      |      |               |
|             | 2PD602AR                             |                                                                               |      |      |               |
|             | 2PD602AS                             | 180                                                                           | –    | MHz  |               |

## Note

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

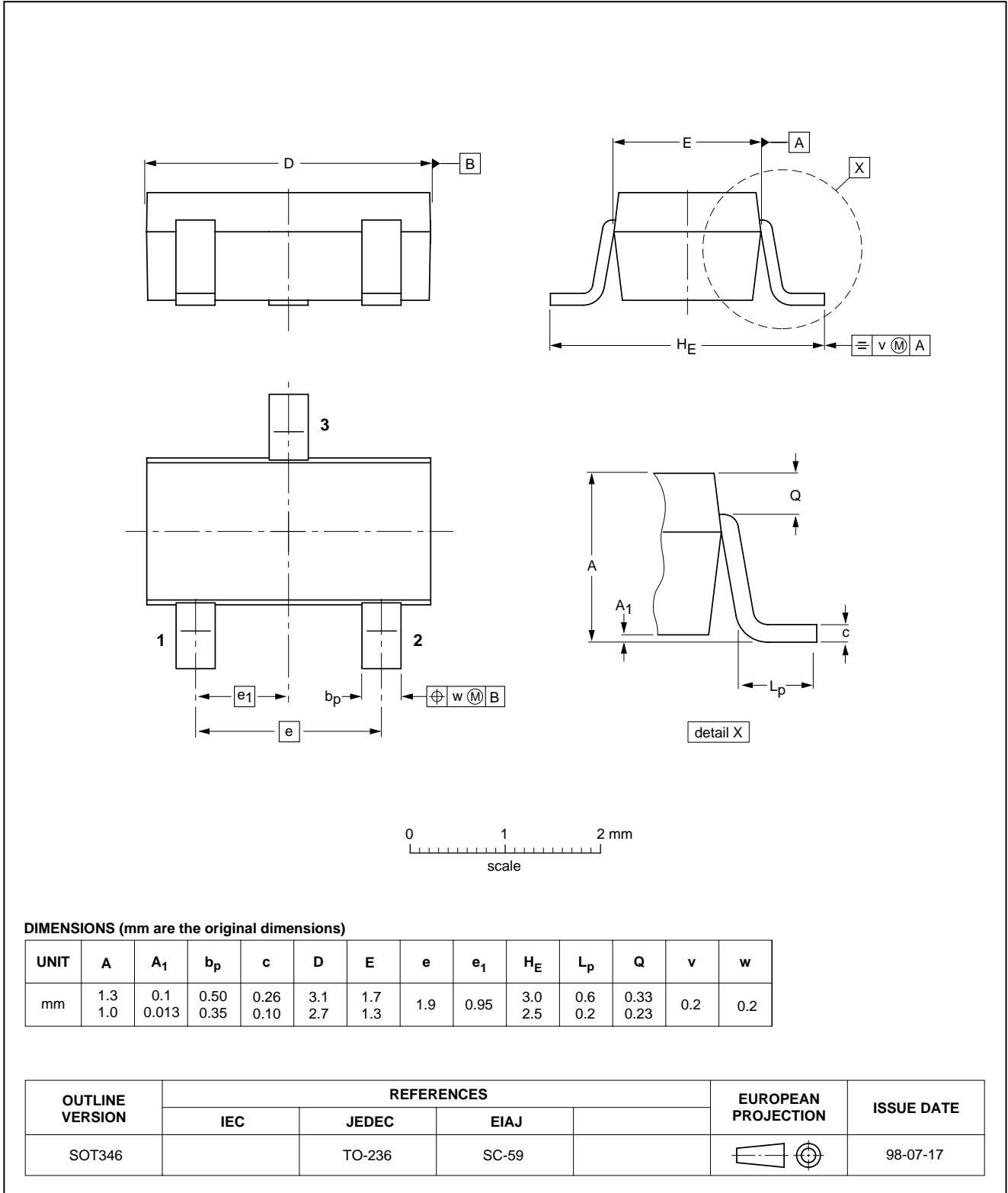
NPN general purpose transistor

2PD602A

PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT346



## NPN general purpose transistor

2PD602A

## 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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# ***NXP Semiconductors***

## **Customer notification**

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## **Contact information**

For additional information please visit: **<http://www.nxp.com>**

For sales offices addresses send e-mail to: **[salesaddresses@nxp.com](mailto:salesaddresses@nxp.com)**

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