
# 2PA1576

## PNP general-purpose transistor

Rev. 06 — 17 November 2009 Product data sheet

## 1. Product profile

### 1.1 General description

PNP transistor in a SOT323 (SC-70) plastic package. The NPN complement is 2PC4081.

### 1.2 Features

- Low current (max. 150 mA)
- Low voltage (max. 50 V)
- Low collector capacitance (typ. 2.5 pF)

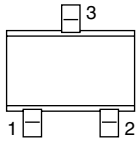
### 1.3 Applications

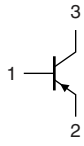
- General-purpose switching and amplification

## 2. Pinning information

**Table 1. Pinning**

| Pin | Description | Simplified outline | Symbol |
|---|---|---|---|
| 1 | base | | |
| 2 | emitter | | |
| 3 | collector | | |

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## 3. Ordering information

**Table 2. Ordering information**

| Type number | Package | | |
|---|---|---|---|
| | Name | Description | Version |
| 2PA1576Q | SC-70 | plastic surface mounted package; 3 leads | SOT323 |
| 2PA1576R | | | |
| 2PA1576S | | | |

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## 4. Marking

**Table 3. Marking codes**

| Type number | Marking code[1] |
|---|---|
| 2PA1576Q | F*Q |
| 2PA1576R | F*R |
| 2PA1576S | F*S |

[1] * = -: made in Hong Kong
* = t: made in Malaysia

## 5. Limiting values

**Table 4. Limiting values**

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

| 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 | | - | –6 | V |
| $I_C$ | collector current (DC) | | | - | –150 | mA |
| $I_{CM}$ | peak collector current | | | - | –200 | mA |
| $I_{BM}$ | peak base current | | | - | –200 | mA |
| $P_{tot}$ | total power dissipation | $T_{amb} \leq 25$ °C | [1] | - | 200 | mW |
| $T_{stg}$ | storage temperature | | | –65 | +150 | °C |
| $T_j$ | junction temperature | | | - | 150 | °C |
| $T_{amb}$ | ambient temperature | | | –65 | +150 | °C |

[1] Transistor mounted on an FR4 printed-circuit board, single-sided copper, tin-plated and standard footprint.

## 6. Thermal characteristics

**Table 5. Thermal characteristics**

| Symbol | Parameter | Conditions | | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|---|
| $R_{th(j-a)}$ | thermal resistance from junction to ambient | | [1] | - | - | 625 | K/W |

[1] Transistor mounted on an FR4 printed-circuit board, single-sided copper, tin-plated and standard footprint.

# 7. Characteristics

**Table 6. Characteristics**

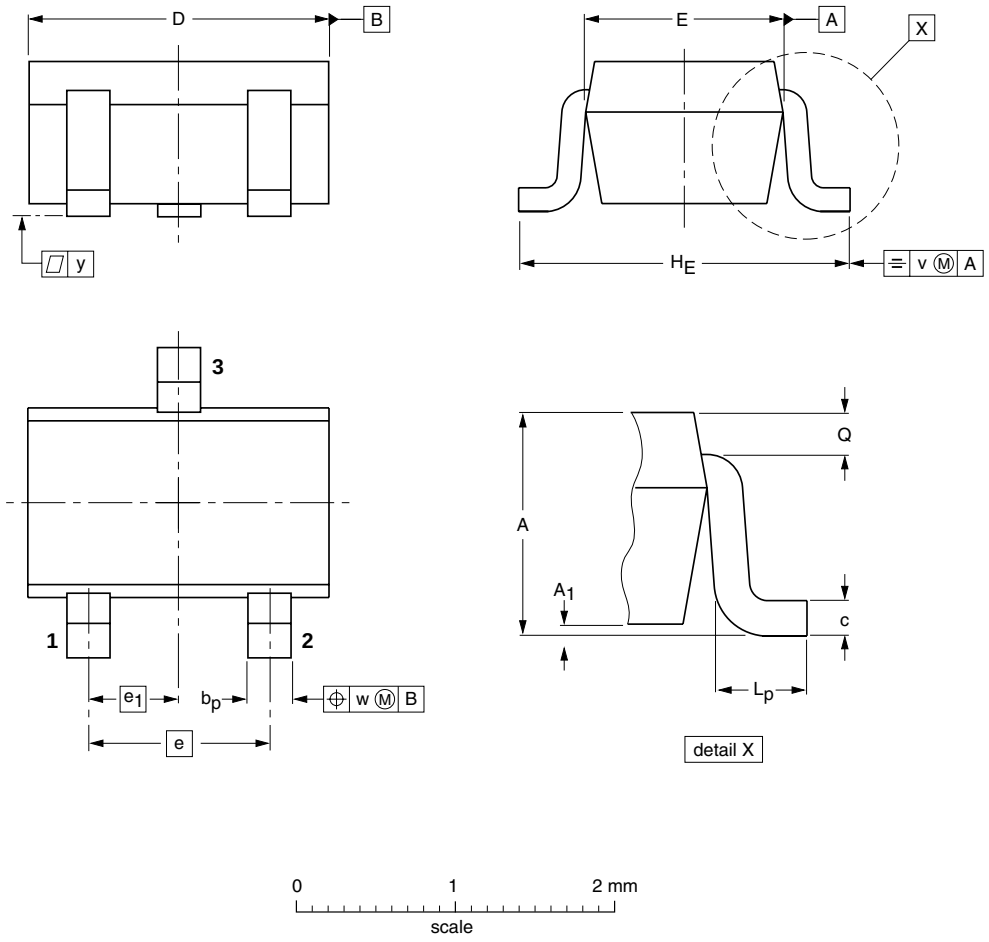
*$T_{amb}$ = 25 °C unless otherwise specified.*

| Symbol | Parameter | Conditions | | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|---|
| $I_{CBO}$ | collector-base cut-off current | $I_E$ = 0 A; $V_{CB}$ = −30 V | | - | - | −100 | nA |
| | | $I_E$ = 0 A; $V_{CB}$ = −30 V; $T_j$ = 150 °C | | - | - | −5 | μA |
| $I_{EBO}$ | emitter-base cut-off current | $I_C$ = 0 A; $V_{EB}$ = −4 V | | - | - | −100 | nA |
| $h_{FE}$ | DC current gain | $I_C$ = −1 mA; $V_{CE}$ = −6 V | | | | | |
| | 2PA1576Q | | | 120 | - | 270 | |
| | 2PA1576R | | | 180 | - | 390 | |
| | 2PA1576S | | | 270 | - | 560 | |
| $V_{CEsat}$ | collector-emitter saturation voltage | $I_C$ = −50 mA; $I_B$ = −5 mA | [1] | - | - | −500 | mV |
| $C_c$ | collector capacitance | $I_E = i_e$ = 0 A; $V_{CB}$ = −12 V; f = 1 MHz | | - | 2.5 | 3.5 | pF |
| $f_T$ | transition frequency | $I_C$ = −2 mA; $V_{CE}$ = −12 V; f = 100 MHz | | 100 | - | - | MHz |

[1] Pulse test: $t_p \leq 300$ μs; $\delta \leq 0.02$.

## 8. Package outline

**Plastic surface-mounted package; 3 leads** **SOT323**




**DIMENSIONS (mm are the original dimensions)**

| UNIT | A | $A_1$ max | $b_p$ | c | D | E | e | $e_1$ | $H_E$ | $L_p$ | Q | v | w |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | 1.1<br>0.8 | 0.1 | 0.4<br>0.3 | 0.25<br>0.10 | 2.2<br>1.8 | 1.35<br>1.15 | 1.3 | 0.65 | 2.2<br>2.0 | 0.45<br>0.15 | 0.23<br>0.13 | 0.2 | 0.2 |

| OUTLINE VERSION | REFERENCES | | | | EUROPEAN PROJECTION | ISSUE DATE |
|---|---|---|---|---|---|---|
| | IEC | JEDEC | JEITA | | | |
| SOT323 | | | SC-70 | | | ~~04-11-04~~<br>06-03-16 |

**Fig 1. Package outline SOT323 (SC-70)**

# 9. Revision history

**Table 7. Revision history**

| Document ID | Release date | Data sheet status | Change notice | Supersedes |
|---|---|---|---|---|
| 2PA1576 | 20091117 | Product data sheet | - | 2PA1576_5 |
| Modifications: | • This data sheet was changed to reflect the new company name NXP Semiconductors, including new legal definitions and disclaimers. No changes were made to the technical content.<br>• Figure 1 “Package outline SOT323 (SC-70)”: updated | | | |
| 2PA1576_5 | 20041124 | Product data sheet | - | 2PA1576_4 |
| 2PA1576_4 | 19990531 | Product specification | - | 2PA1576_3 |
| 2PA1576_3 | 19970328 | Objective specification | - | 2PA1576_2 |
| 2PA1576_2 | 19931213 | n.a. | - | n.a. |

# 10. Legal information

## 10.1 Data sheet status

| Document status[1][2] | Product status[3] | 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".

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