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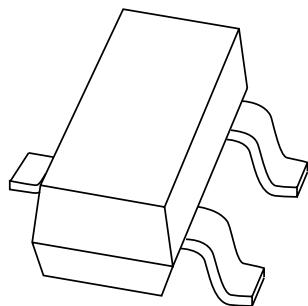
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Kind regards,

Team Nexperia

DATA SHEET



PMBT5550 NPN high-voltage transistor

Product data sheet
Supersedes data of 1999 Apr 15

2004 Jan 21

NPN high-voltage transistor

PMBT5550

FEATURES

- Low current (max. 300 mA)
- Low voltage (max. 140 V).

APPLICATIONS

- Telephony.

DESCRIPTION

NPN high-voltage transistor in a SOT23 plastic package.
PNP complement: PMBT5401.

MARKING

| TYPE NUMBER | MARKING CODE ⁽¹⁾ |
|-------------|-----------------------------|
| PMBT5550 | *1F |

Note

1. * = p : Made in Hong Kong.
- * = t : Made in Malaysia.
- * = W : Made in China.

PINNING

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

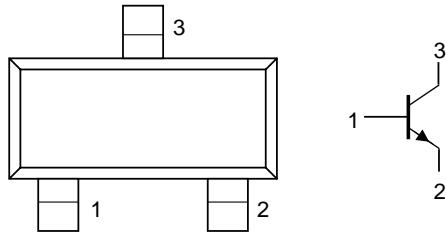


Fig.1 Simplified outline (SOT23) and symbol.

ORDERING INFORMATION

| TYPE NUMBER | PACKAGE | | |
|-------------|---------|--|---------|
| | NAME | DESCRIPTION | VERSION |
| PMBT5550 | – | plastic surface mounted package; 3 leads | SOT23 |

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 | – | 160 | V |
| V_{CEO} | collector-emitter voltage | open base | – | 140 | V |
| V_{EBO} | emitter-base voltage | open collector | – | 6 | V |
| I_C | collector current (DC) | | – | 300 | mA |
| I_{CM} | peak collector current | | – | 600 | mA |
| I_{BM} | peak base current | | – | 100 | mA |
| P_{tot} | total power dissipation | $T_{amb} \leq 25^\circ\text{C}$; 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 high-voltage transistor

PMBT5550

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

 $T_j = 25^\circ\text{C}$ unless otherwise specified.

| SYMBOL | PARAMETER | CONDITIONS | MIN. | MAX. | UNIT |
|-------------|--------------------------------------|---|------|------|------|
| I_{CBO} | collector-base cut-off current | $I_E = 0$; $V_{CB} = 100$ V | – | 50 | nA |
| | | $I_E = 0$; $V_{CB} = 100$ V; $T_{amb} = 100$ °C | – | 50 | μA |
| I_{EBO} | emitter-base cut-off current | $I_C = 0$; $V_{EB} = 4$ V | – | 50 | nA |
| h_{FE} | DC current gain | $V_{CE} = 5$ V; (see Fig.2) | | | |
| | | $I_C = 1$ mA | 60 | – | |
| | | $I_C = 10$ mA | 60 | 250 | |
| | | $I_C = 50$ mA | 20 | – | |
| V_{CEsat} | collector-emitter saturation voltage | $I_C = 10$ mA; $I_B = 1$ mA | – | 150 | mV |
| | | $I_C = 50$ mA; $I_B = 5$ mA | – | 250 | mV |
| V_{BEsat} | base-emitter saturation voltage | $I_C = 10$ mA; $I_B = 1$ mA | – | 1 | V |
| | | $I_C = 50$ mA; $I_B = 5$ mA | – | 1.2 | V |
| C_c | collector capacitance | $I_E = I_e = 0$; $V_{CB} = 10$ V; $f = 1$ MHz | – | 6 | pF |
| C_e | emitter capacitance | $I_C = I_c = 0$; $V_{EB} = 0.5$ V; $f = 1$ MHz | – | 30 | pF |
| f_T | transition frequency | $I_C = 10$ mA; $V_{CE} = 10$ V; $f = 100$ MHz | 100 | 300 | MHz |
| F | noise figure | $I_C = 200$ μA; $V_{CE} = 5$ V; $R_S = 2$ kΩ; $f = 10$ Hz to 15.7 kHz | – | 10 | dB |

NPN high-voltage transistor

PMBT5550

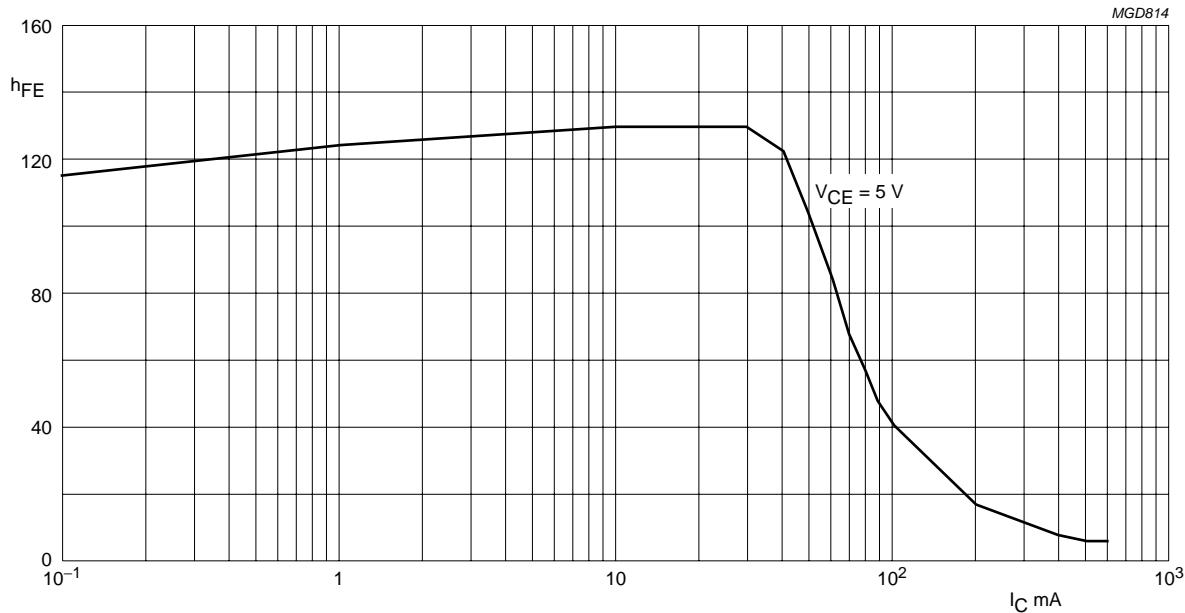


Fig.2 DC current gain; typical values.

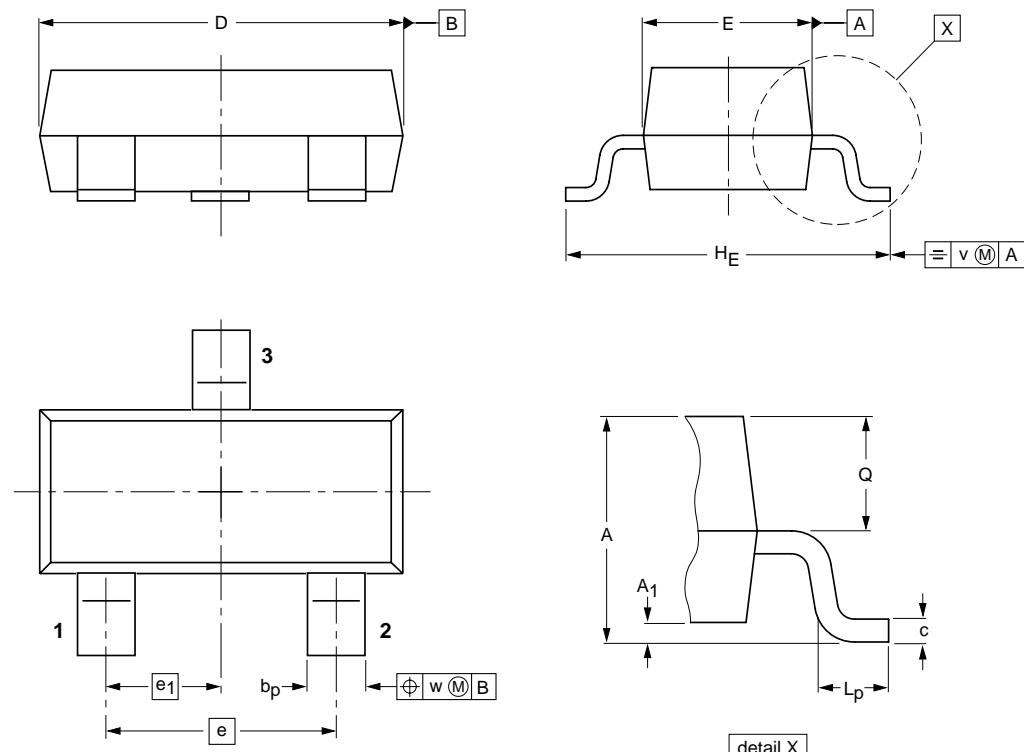
NPN high-voltage transistor

PMBT5550

PACKAGE OUTLINE

Plastic surface-mounted package; 3 leads

SOT23



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 0.9 | 0.1 | 0.48 0.38 | 0.15 0.09 | 3.0 2.8 | 1.4 1.2 | 1.9 | 0.95 | 2.5 2.1 | 0.45 0.15 | 0.55 0.45 | 0.2 | 0.1 |

| OUTLINE VERSION | REFERENCES | | | | EUROPEAN PROJECTION | ISSUE DATE |
|--------------------|------------|----------|-------|--|---|------------------------|
| | IEC | JEDEC | JEITA | | | |
| SOT23 | | TO-236AB | | |  | -04-11-04- 06-03-16 |

NPN high-voltage transistor

PMBT5550

DATA SHEET STATUS

| DOCUMENT STATUS ⁽¹⁾ | PRODUCT STATUS ⁽²⁾ | 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>

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