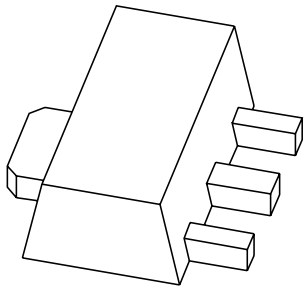


DATA SHEET



PXT2907A PNP switching transistor

Product data sheet
Supersedes data of 2002 Mar 20

2004 Dec 09

PNP switching transistor

PXT2907A

FEATURES

- High current (max. 600 mA)
- Low voltage (max. 60 V).

APPLICATIONS

- Switching and linear amplification.

DESCRIPTION

PNP switching transistor in a SOT89 plastic package.
NPN complement: PXT2222A.

MARKING

| TYPE NUMBER | MARKING CODE ⁽¹⁾ |
|-------------|-----------------------------|
| PXT2907A | *2F |

Note

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

PINNING

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

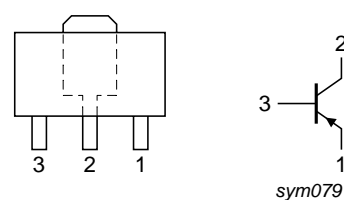


Fig.1 Simplified outline (SOT89) and symbol.

ORDERING INFORMATION

| TYPE NUMBER | PACKAGE | | |
|-------------|---------|--|---------|
| | NAME | DESCRIPTION | VERSION |
| PXT2907A | SC-62 | plastic surface mounted package; collector pad for good heat transfer; 3 leads | SOT89 |

PNP switching transistor

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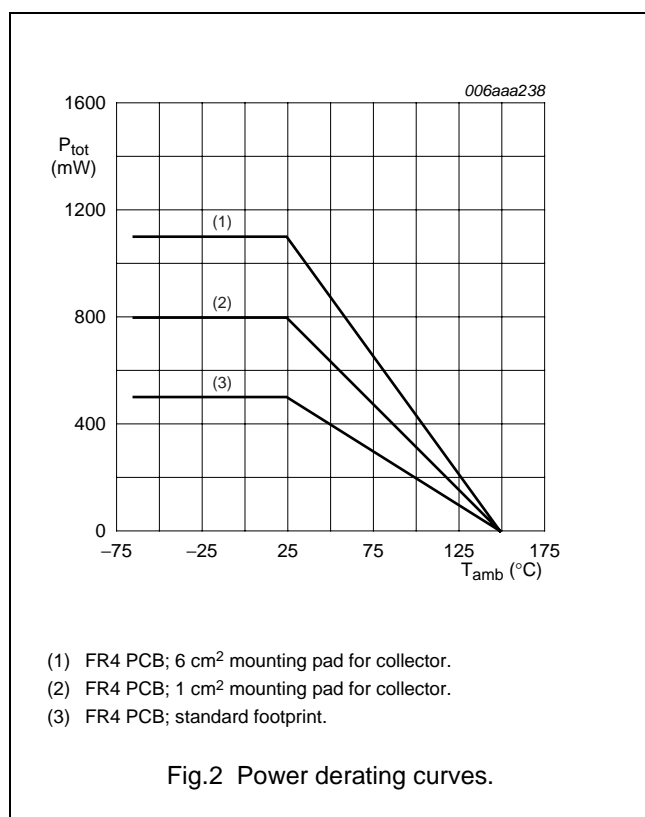
LIMITING VALUES

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 | — | −60 | V |
| V_{EBO} | emitter-base voltage | open collector | — | −5 | V |
| I_C | collector current (DC) | | — | −600 | mA |
| I_{CM} | peak collector current | | — | −800 | mA |
| I_{BM} | peak base current | | — | −200 | mA |
| P_{tot} | total power dissipation | $T_{amb} \leq 25\text{ °C}$ note 1 note 2 note 3 | — | 0.5 0.8 1.1 | W W W |
| T_{stg} | storage temperature | | −65 | +150 | °C |
| T_j | junction temperature | | — | 150 | °C |
| T_{amb} | ambient temperature | | −65 | +150 | °C |

Notes

1. Device mounted on a printed-circuit board, single-sided copper, tin-plated and standard footprint.
2. Device mounted on a printed-circuit board, single-sided copper, tin-plated and mounting pad for collector 1 cm².
3. Device mounted on a printed-circuit board, single-sided copper, tin-plated and mounting pad for collector 6 cm².



PNP switching transistor

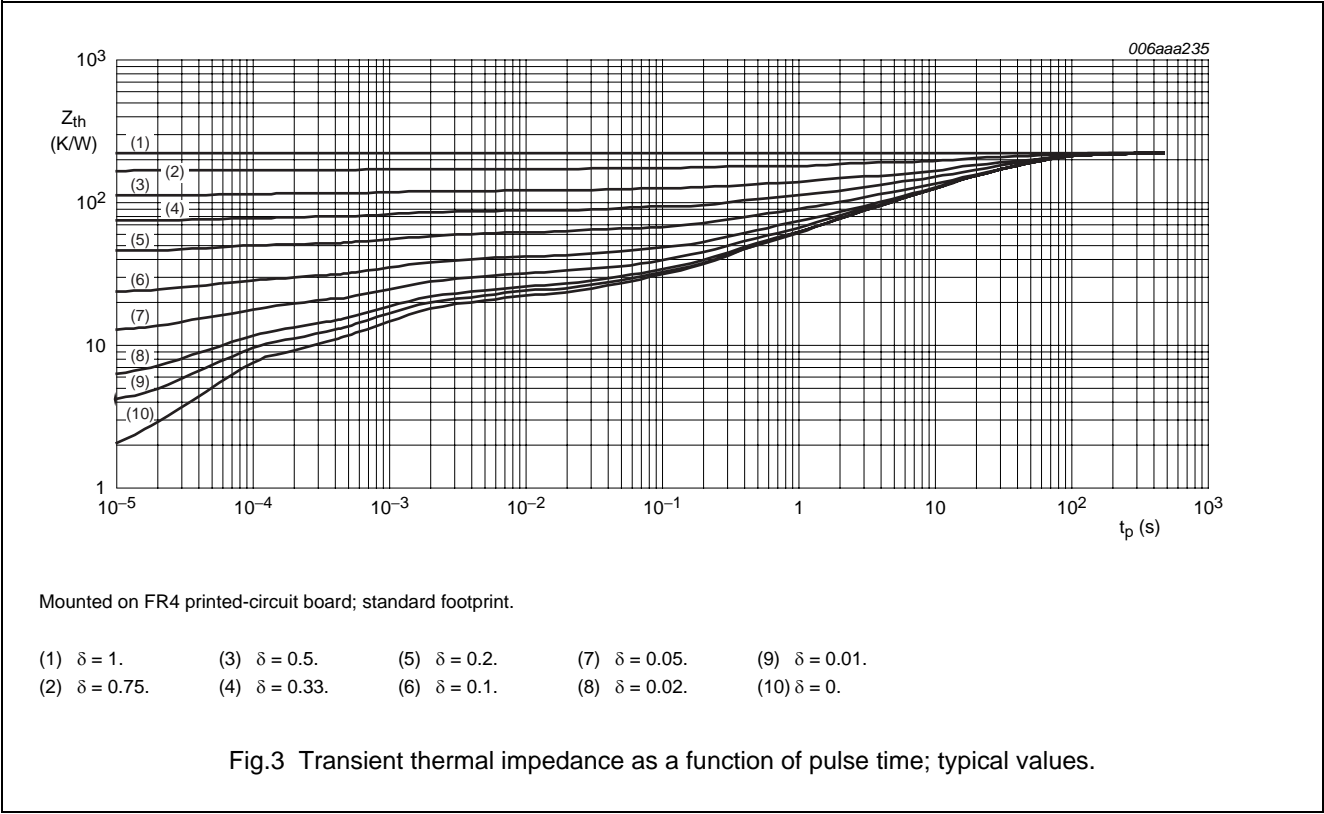
PXT2907A

THERMAL CHARACTERISTICS

| SYMBOL | PARAMETER | CONDITIONS | VALUE | UNIT |
|---------------|---|-------------|-------|------|
| $R_{th(j-a)}$ | thermal resistance from junction to ambient | in free air | | |
| | | note 1 | 250 | K/W |
| | | note 2 | 156 | K/W |
| | | note 3 | 113 | K/W |
| $R_{th(j-s)}$ | thermal resistance from junction to soldering point | | 30 | K/W |

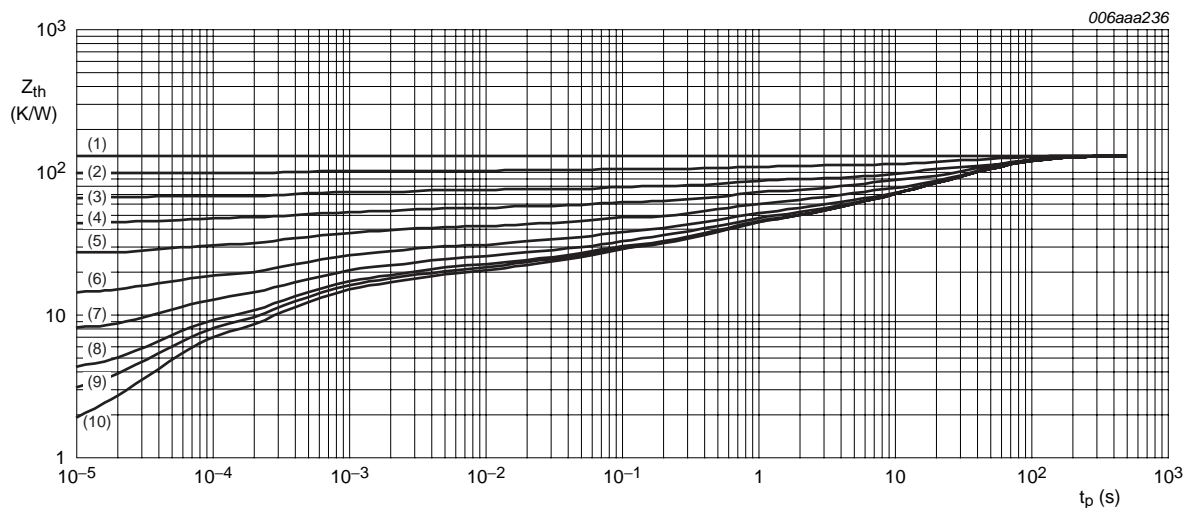
Notes

1. Device mounted on a printed-circuit board, single-sided copper, tin-plated and standard footprint.
2. Device mounted on a printed-circuit board, single-sided copper, tin-plated and mounting pad for collector 1 cm².
3. Device mounted on a printed-circuit board, single-sided copper, tin-plated and mounting pad for collector 6 cm².



PNP switching transistor

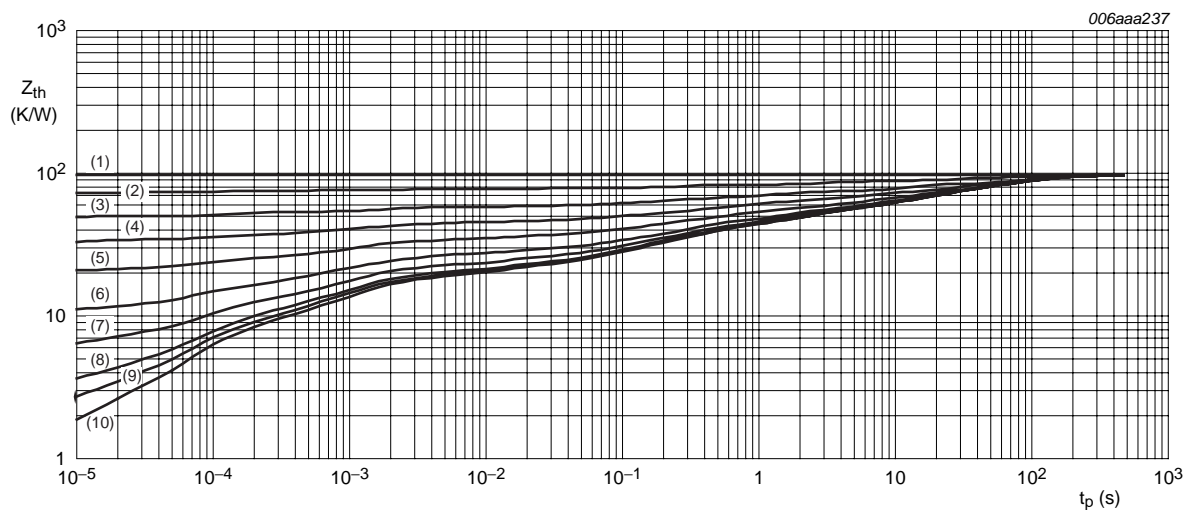
PXT2907A



Mounted on FR4 printed-circuit board; mounting pad for collector 1 cm².

- | | | | | |
|----------------------|----------------------|---------------------|----------------------|----------------------|
| (1) $\delta = 1.$ | (3) $\delta = 0.5.$ | (5) $\delta = 0.2.$ | (7) $\delta = 0.05.$ | (9) $\delta = 0.01.$ |
| (2) $\delta = 0.75.$ | (4) $\delta = 0.33.$ | (6) $\delta = 0.1.$ | (8) $\delta = 0.02.$ | (10) $\delta = 0.$ |

Fig.4 Transient thermal impedance as a function of pulse time; typical values.



Mounted on FR4 printed-circuit board; mounting pad for collector 6 cm².

- | | | | | |
|----------------------|----------------------|---------------------|----------------------|----------------------|
| (1) $\delta = 1.$ | (3) $\delta = 0.5.$ | (5) $\delta = 0.2.$ | (7) $\delta = 0.05.$ | (9) $\delta = 0.01.$ |
| (2) $\delta = 0.75.$ | (4) $\delta = 0.33.$ | (6) $\delta = 0.1.$ | (8) $\delta = 0.02.$ | (10) $\delta = 0.$ |

Fig.5 Transient thermal impedance as a function of pulse time; typical values.

PNP switching transistor

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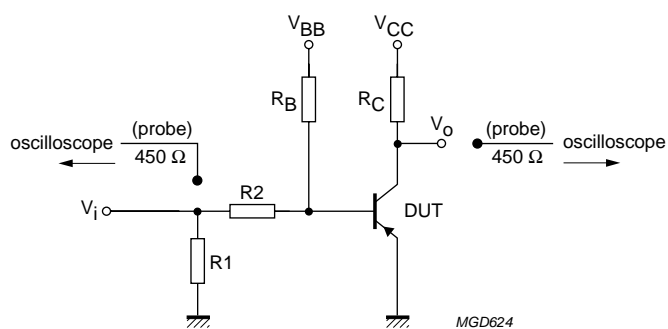
CHARACTERISTICS

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

| SYMBOL | PARAMETER | CONDITIONS | MIN. | MAX. | UNIT |
|--|--------------------------------------|---|------|------|---------------|
| I_{CBO} | collector-base cut-off current | $I_E = 0\text{ A}; V_{CB} = -50\text{ V}$ | – | –10 | nA |
| | | $I_E = 0\text{ A}; V_{CB} = -50\text{ V}; T_{amb} = 125\text{ }^{\circ}\text{C}$ | – | –10 | μA |
| I_{EBO} | emitter-base cut-off current | $I_C = 0\text{ A}; V_{EB} = -5\text{ V}$ | – | –50 | nA |
| h_{FE} | DC current gain | $I_C = -0.1\text{ mA}; V_{CE} = -1\text{ V}$ | 75 | – | |
| | | $I_C = -1\text{ mA}; V_{CE} = -1\text{ V}$ | 100 | – | |
| | | $I_C = -10\text{ mA}; V_{CE} = -1\text{ V}$ | 100 | – | |
| | | $I_C = -150\text{ mA}; V_{CE} = -2\text{ V}$ | 100 | 300 | |
| | | $I_C = -500\text{ mA}; V_{CE} = -10\text{ V}$ | 50 | – | |
| V_{CEsat} | collector-emitter saturation voltage | $I_C = -150\text{ mA}; I_B = -15\text{ mA}$ | – | –400 | mV |
| | | $I_C = -500\text{ mA}; I_B = -50\text{ mA}$ | – | –1.6 | V |
| V_{BEsat} | base-emitter saturation voltage | $I_C = -150\text{ mA}; I_B = -15\text{ mA}$ | – | –1.3 | V |
| | | $I_C = -500\text{ mA}; I_B = -50\text{ mA}$ | – | –2.6 | V |
| C_c | collector capacitance | $I_E = i_e = 0\text{ A}; V_{CB} = -10\text{ V}; f = 1\text{ MHz}$ | – | 8 | pF |
| C_e | emitter capacitance | $I_C = i_c = 0\text{ A}; V_{EB} = -500\text{ mV}; f = 1\text{ MHz}$ | – | 35 | pF |
| f_T | transition frequency | $I_C = -20\text{ mA}; V_{CE} = -10\text{ V}; f = 100\text{ MHz}$ | 200 | – | MHz |
| Switching times (between 10% and 90% levels); (see Fig.6) | | | | | |
| t_{on} | turn-on time | $I_{Con} = -150\text{ mA}; I_{Bon} = -15\text{ mA};$ $I_{Boff} = 15\text{ mA}$ | – | 40 | ns |
| t_d | delay time | | – | 12 | ns |
| t_r | rise time | | – | 30 | ns |
| t_{off} | turn-off time | | – | 365 | ns |
| t_s | storage time | | – | 300 | ns |
| t_f | fall time | | – | 65 | ns |

PNP switching transistor

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$V_i = -9.5 \text{ V}$; $T = 500 \text{ } \mu\text{s}$; $t_p = 10 \text{ } \mu\text{s}$; $t_r = t_f \leq 3 \text{ ns}$.
 $R_1 = 68 \text{ } \Omega$; $R_2 = 325 \text{ } \Omega$; $R_B = 325 \text{ } \Omega$; $R_C = 160 \text{ } \Omega$.
 $V_{BB} = 3.5 \text{ V}$; $V_{CC} = -29.5 \text{ V}$.
Oscilloscope input impedance $Z_i = 50 \text{ } \Omega$.

Fig.6 Test circuit for switching times.

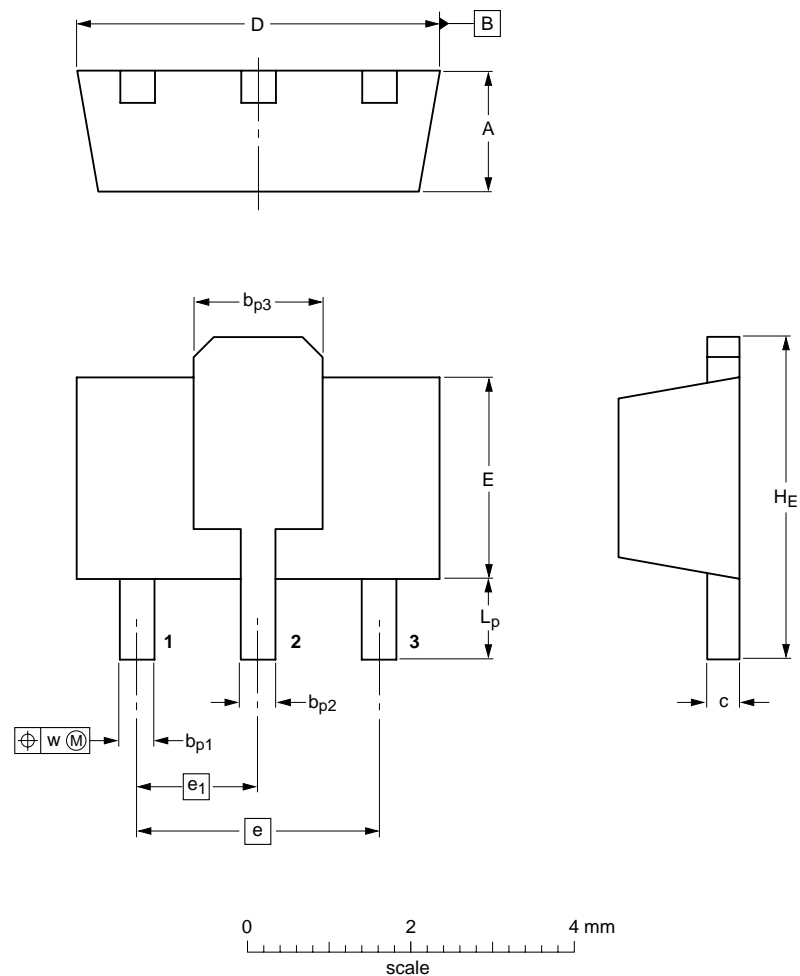
PNP switching transistor

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PACKAGE OUTLINE


Plastic surface-mounted package; collector pad for good heat transfer; 3 leads

SOT89



DIMENSIONS (mm are the original dimensions)

| UNIT | A | bp1 | bp2 | bp3 | c | D | E | e | e1 | HE | Lp | w |
|------|------------|--------------|--------------|------------|--------------|------------|------------|-----|-----|--------------|------------|------|
| mm | 1.6 1.4 | 0.48 0.35 | 0.53 0.40 | 1.8 1.4 | 0.44 0.23 | 4.6 4.4 | 2.6 2.4 | 3.0 | 1.5 | 4.25 3.75 | 1.2 0.8 | 0.13 |

| OUTLINE VERSION | REFERENCES | | | | EUROPEAN PROJECTION | ISSUE DATE |
|--------------------|------------|--------|-------|--|---|----------------------|
| | IEC | JEDEC | JEITA | | | |
| SOT89 | | TO-243 | SC-62 | |  | 04-08-03 06-03-16 |

PNP switching transistor

PXT2907A

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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