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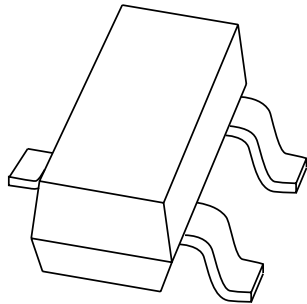
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Kind regards,

Team Nexperia

DATA SHEET



PBSS9110T

100 V, 1 A

PNP low V_{CEsat} (BISS) transistor

Product data sheet
Supersedes data of 2004 May 06

2004 May 13

100 V, 1 A PNP low V_{CEsat} (BISS) transistor

PBSS9110T

FEATURES

- SOT23 package
- Low collector-emitter saturation voltage V_{CEsat}
- High collector current capability: I_C and I_{CM}
- Higher efficiency leading to less heat generation

APPLICATIONS

- Major application segments
 - Automotive 42 V power
 - Telecom infrastructure
 - Industrial
- DC-to-DC conversion
- Peripheral drivers
 - Driver in low supply voltage applications (e.g. lamps and LEDs).
 - Inductive load driver (e.g. relays, buzzers and motors).

DESCRIPTION

PNP low V_{CEsat} transistor in a SOT23 plastic package.
NPN complement: PBSS8110T.

MARKING

| TYPE NUMBER | MARKING CODE ⁽¹⁾ |
|-------------|-----------------------------|
| PBSS9110T | *U7 |

Note

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

ORDERING INFORMATION

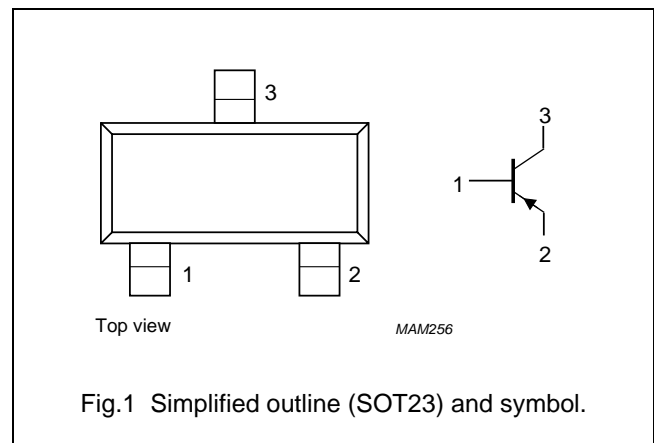
| TYPE NUMBER | PACKAGE | | |
|-------------|---------|--|---------|
| | NAME | DESCRIPTION | VERSION |
| PBSS9110T | – | plastic surface mounted package; 3 leads | SOT23 |

QUICK REFERENCE DATA

| SYMBOL | PARAMETER | MAX. | UNIT |
|-------------|-----------------------------------|------|------------|
| V_{CEO} | collector-emitter voltage | –100 | V |
| I_C | collector current (DC) | –1 | A |
| I_{CM} | repetitive peak collector current | –3 | A |
| R_{CEsat} | equivalent on-resistance | 320 | m Ω |

PINNING

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



100 V, 1 A
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PBSS9110T

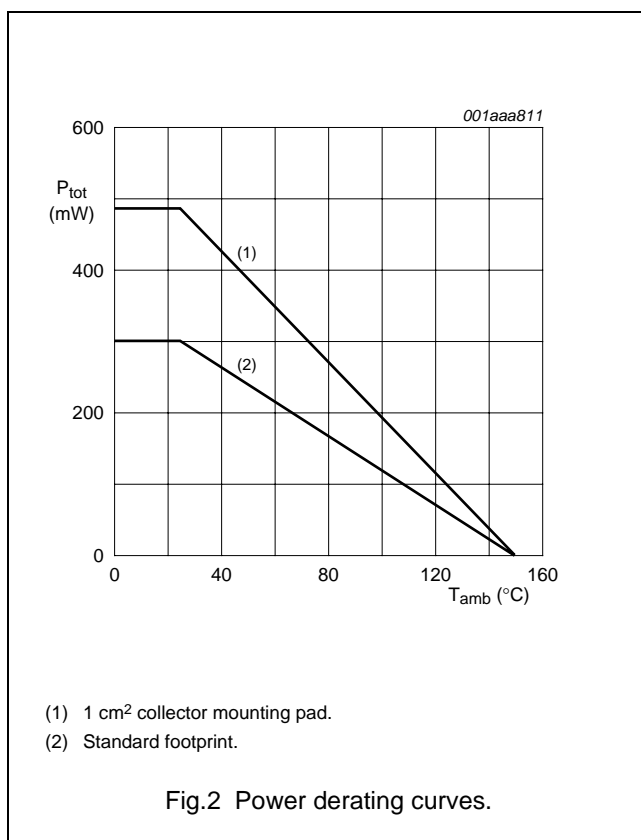
LIMITING VALUES

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

| SYMBOL | PARAMETER | CONDITIONS | MIN. | MAX. | UNIT |
|-----------|-------------------------------|--|------|------|------------------|
| V_{CBO} | collector-base voltage | open emitter | – | –120 | V |
| V_{CEO} | collector-emitter voltage | open base | – | –100 | V |
| V_{EBO} | emitter-base voltage | open collector | – | –5 | V |
| I_C | collector current (DC) | | – | –1 | A |
| I_{CM} | peak collector current | limited by $T_{j(max)}$ | – | –3 | A |
| I_B | base current (DC) | | – | –300 | mA |
| P_{tot} | total power dissipation | $T_{amb} \leq 25\text{ }^\circ\text{C}$; note 1 | – | 300 | mW |
| | | $T_{amb} \leq 25\text{ }^\circ\text{C}$; note 2 | – | 480 | mW |
| T_j | junction temperature | | – | 150 | $^\circ\text{C}$ |
| T_{amb} | operating ambient temperature | | –65 | +150 | $^\circ\text{C}$ |
| T_{stg} | storage temperature | | –65 | +150 | $^\circ\text{C}$ |

Notes

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



100 V, 1 A
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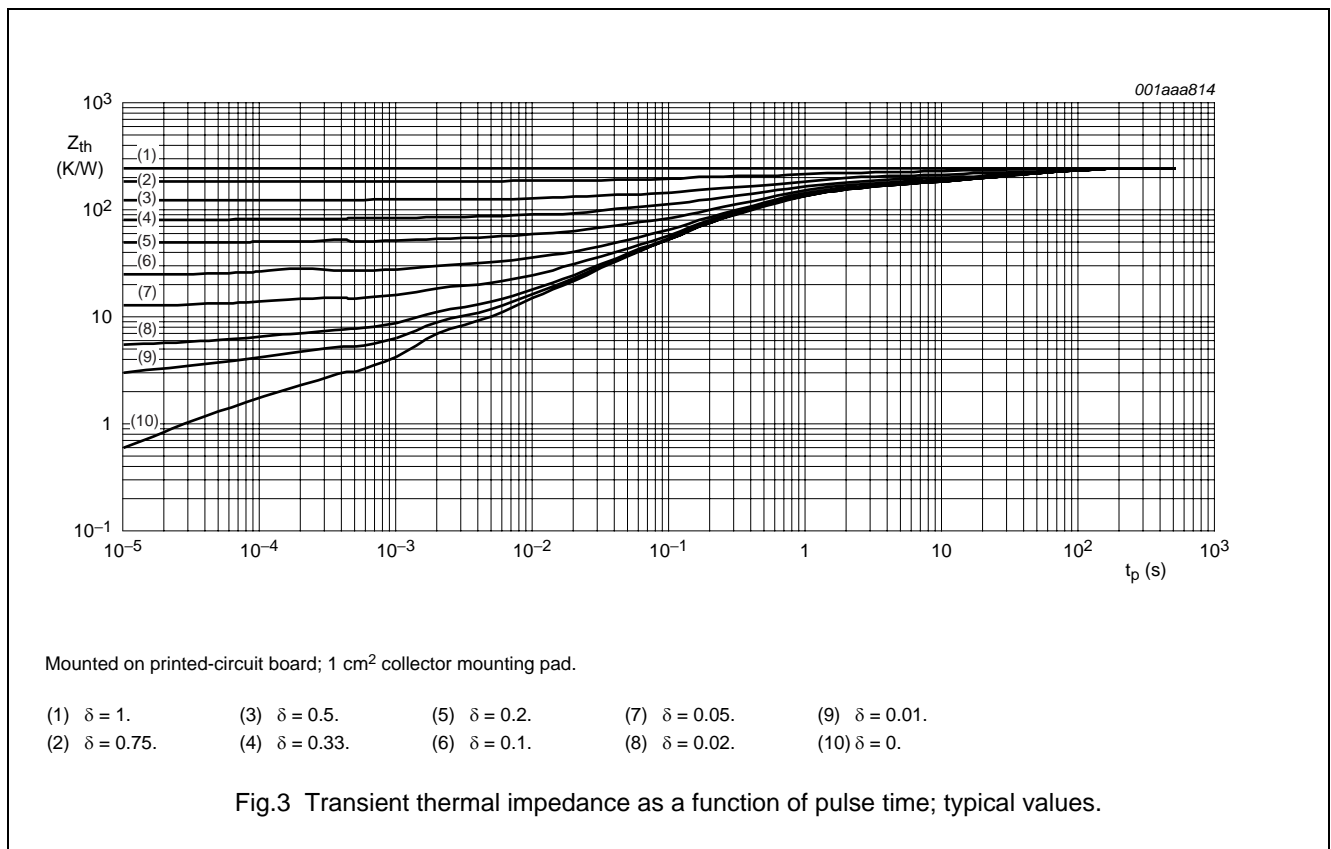
PBSS9110T

THERMAL CHARACTERISTICS

| SYMBOL | PARAMETER | CONDITIONS | VALUE | UNIT |
|---------------|---|---------------------|-------|------|
| $R_{th(j-a)}$ | thermal resistance from junction to ambient | in free air; note 1 | 417 | K/W |
| | | in free air; note 2 | 260 | K/W |

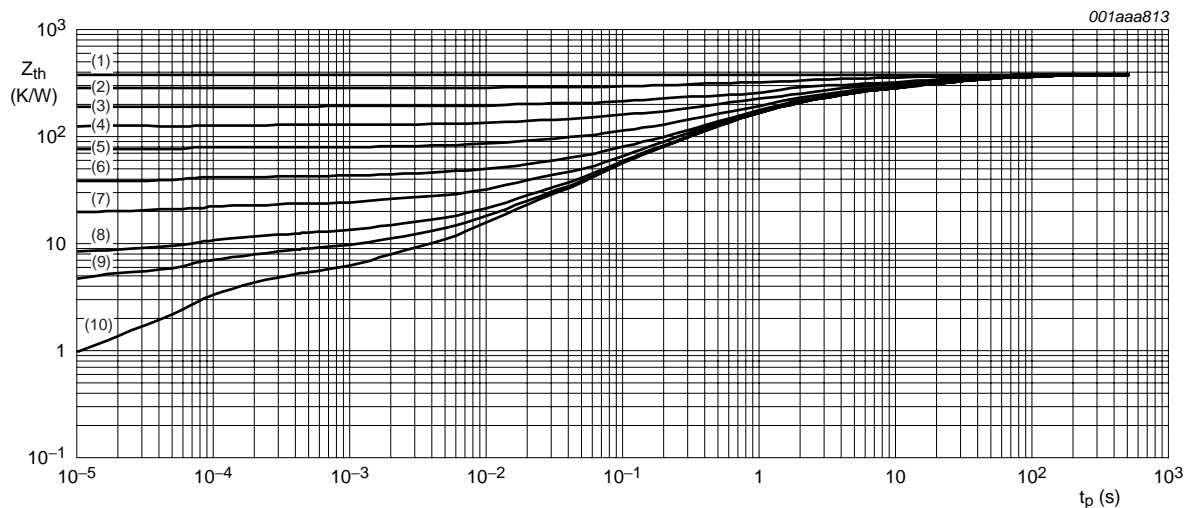
Notes

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 1 cm² collector mounting pad.



100 V, 1 A
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PBSS9110T



Mounted on printed-circuit board; standard footprint.

- | | | | | |
|----------------------|----------------------|---------------------|----------------------|----------------------|
| (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.

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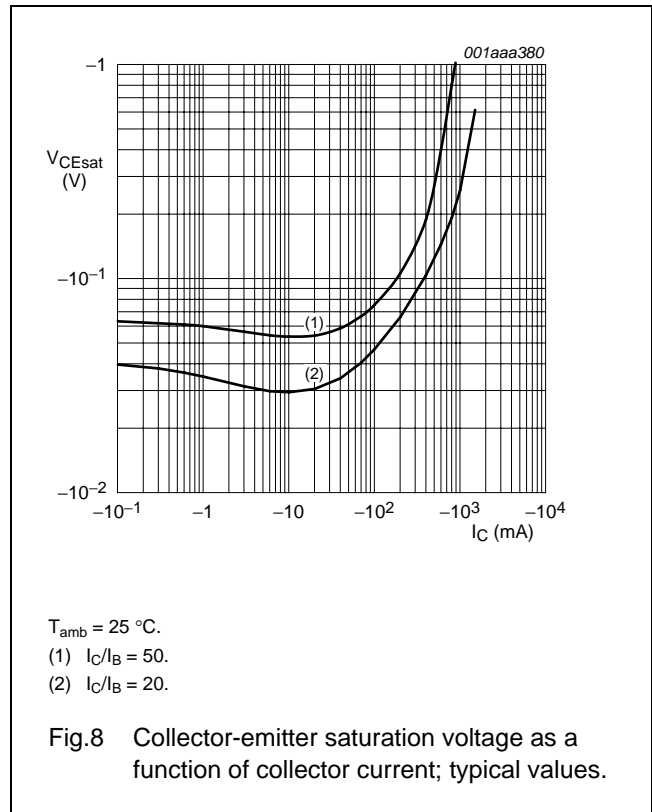
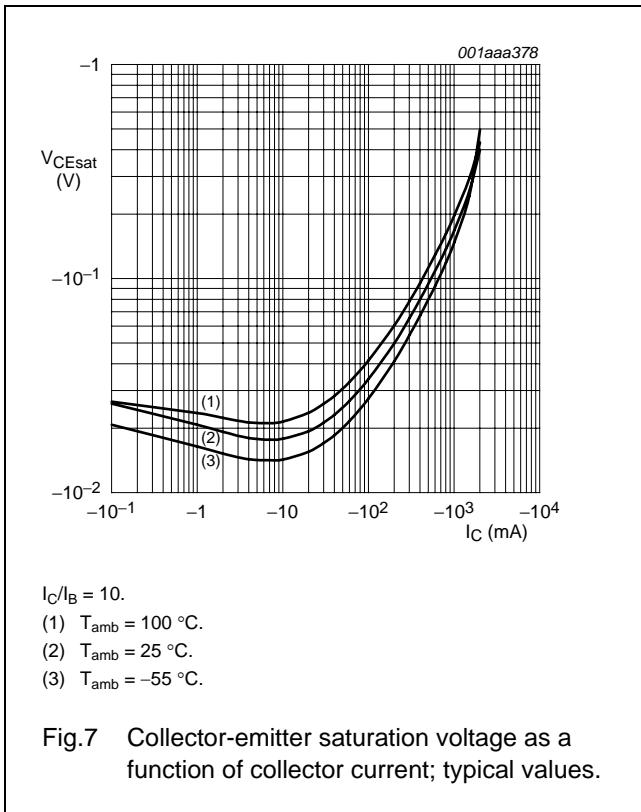
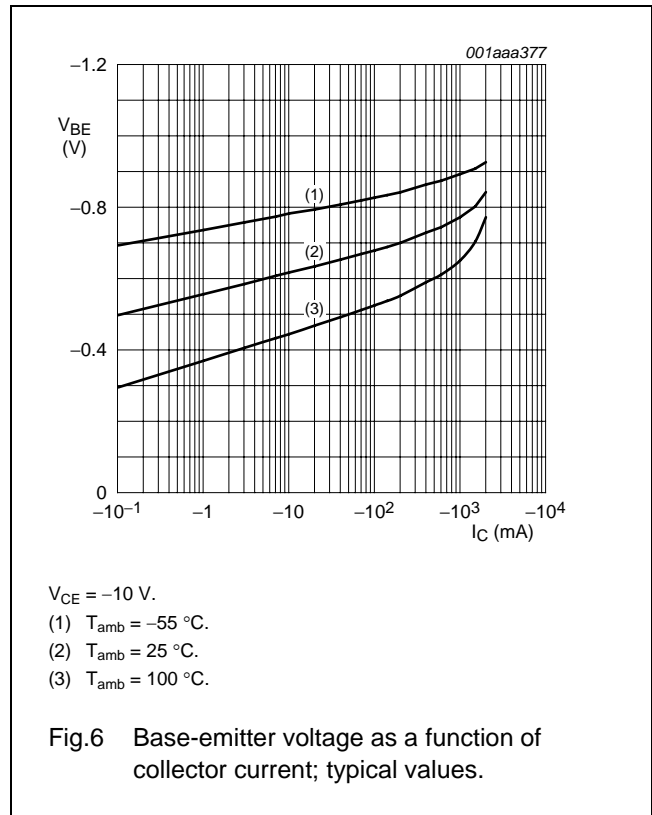
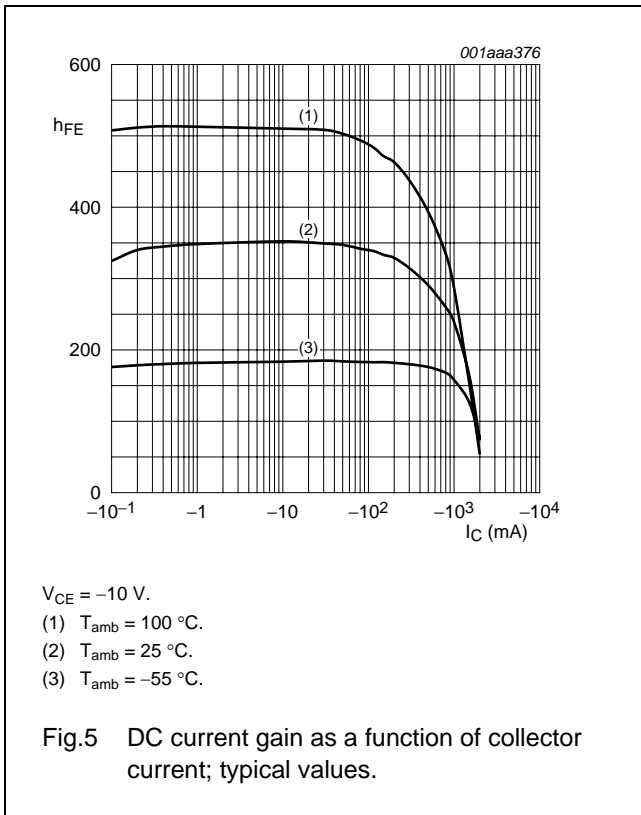
CHARACTERISTICS $T_j = 25\text{ °C}$ unless otherwise specified.

| SYMBOL | PARAMETER | CONDITIONS | MIN. | TYP. | MAX. | UNIT |
|-------------|--------------------------------------|--|------|------|------|------------------|
| I_{CBO} | collector-base cut-off current | $V_{CB} = -80\text{ V}; I_E = 0\text{ A}$ | – | – | –100 | nA |
| | | $V_{CB} = -80\text{ V}; I_E = 0\text{ A}; T_j = 150\text{ °C}$ | – | – | –50 | μA |
| I_{CES} | collector-emitter cut-off current | $V_{CE} = -80\text{ V}; V_{BE} = 0\text{ A}$ | – | – | –100 | nA |
| I_{EBO} | emitter-base cut-off current | $V_{EB} = -4\text{ V}; I_C = 0\text{ A}$ | – | – | –100 | nA |
| h_{FE} | DC current gain | $V_{CE} = -5\text{ V}; I_C = -1\text{ mA}$ | 150 | – | – | |
| | | $V_{CE} = -5\text{ V}; I_C = -250\text{ mA}$ | 150 | – | – | |
| | | $V_{CE} = -5\text{ V}; I_C = -500\text{ mA}; \text{note 1}$ | 150 | – | 450 | |
| | | $V_{CE} = -5\text{ V}; I_C = -1\text{ A}; \text{note 1}$ | 125 | – | – | |
| V_{CEsat} | collector-emitter saturation voltage | $I_C = -250\text{ mA}; I_B = -25\text{ mA}$ | – | – | –120 | mV |
| | | $I_C = -500\text{ mA}; I_B = -50\text{ mA}$ | – | – | –180 | mV |
| | | $I_C = -1\text{ A}; I_B = -100\text{ mA}; \text{note 1}$ | – | – | –320 | mV |
| R_{CEsat} | equivalent on-resistance | $I_C = -1\text{ A}; I_B = -100\text{ mA}; \text{note 1}$ | – | 170 | 320 | $\text{m}\Omega$ |
| V_{BEsat} | base-emitter saturation voltage | $I_C = -1\text{ A}; I_B = -100\text{ mA}$ | – | – | –1.1 | V |
| V_{BEon} | base-emitter turn-on voltage | $V_{CE} = -5\text{ V}; I_C = -1\text{ A}$ | – | – | –1 | V |
| f_T | transition frequency | $V_{CE} = -10\text{ V}; I_C = -50\text{ mA};$ $f = 100\text{ MHz}$ | 100 | – | – | MHz |
| C_c | collector capacitance | $V_{CB} = -10\text{ V}; I_E = I_e = 0\text{ A};$ $f = 1\text{ MHz}$ | – | – | 17 | pF |

Note1. Pulse test: $t_p \leq 300\text{ }\mu\text{s}; \delta \leq 0.02$.

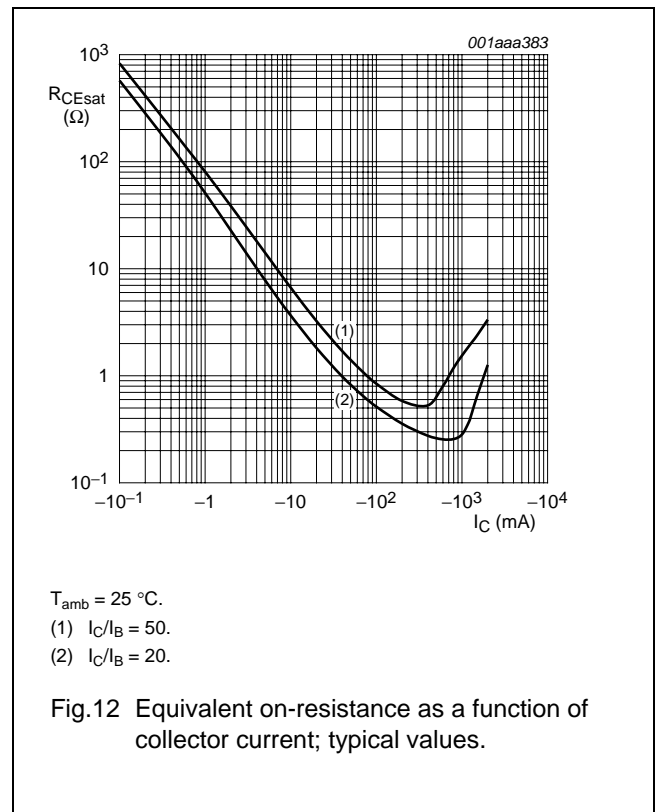
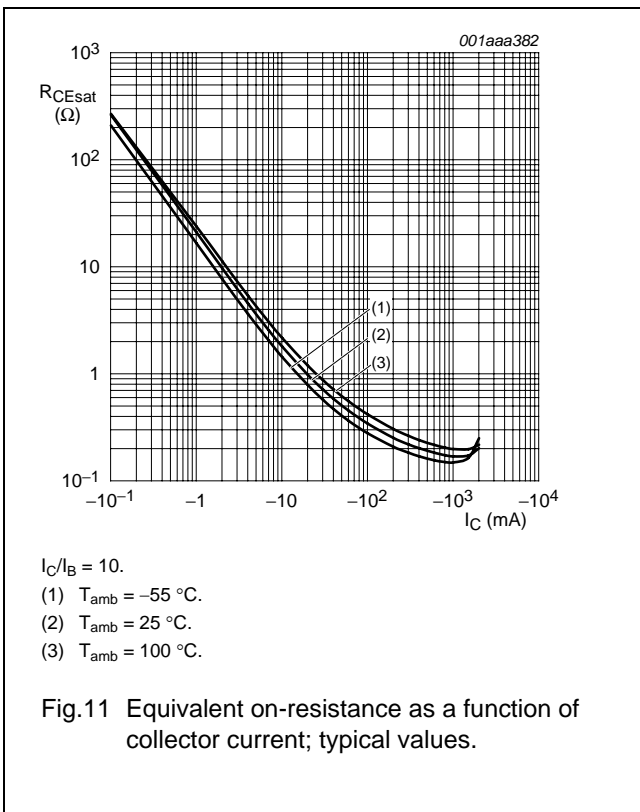
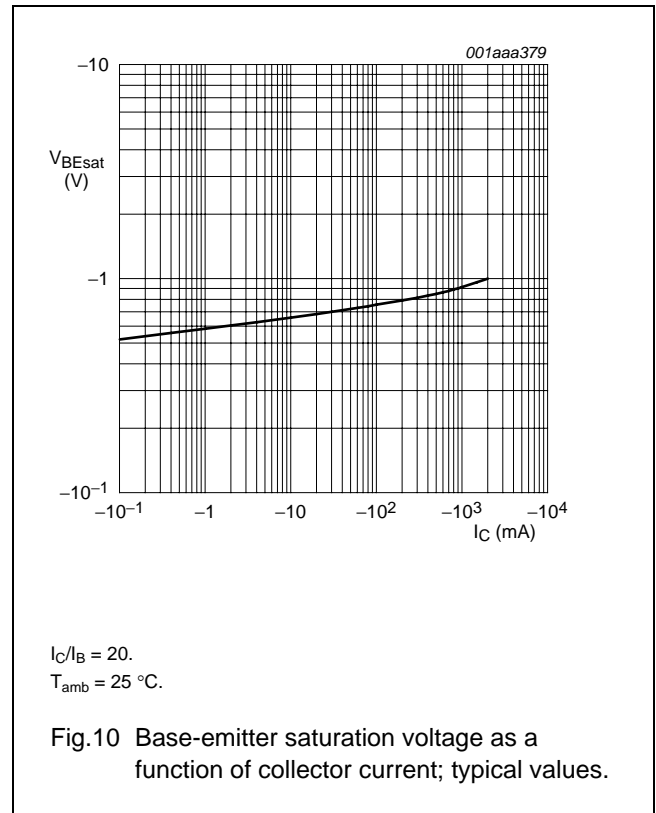
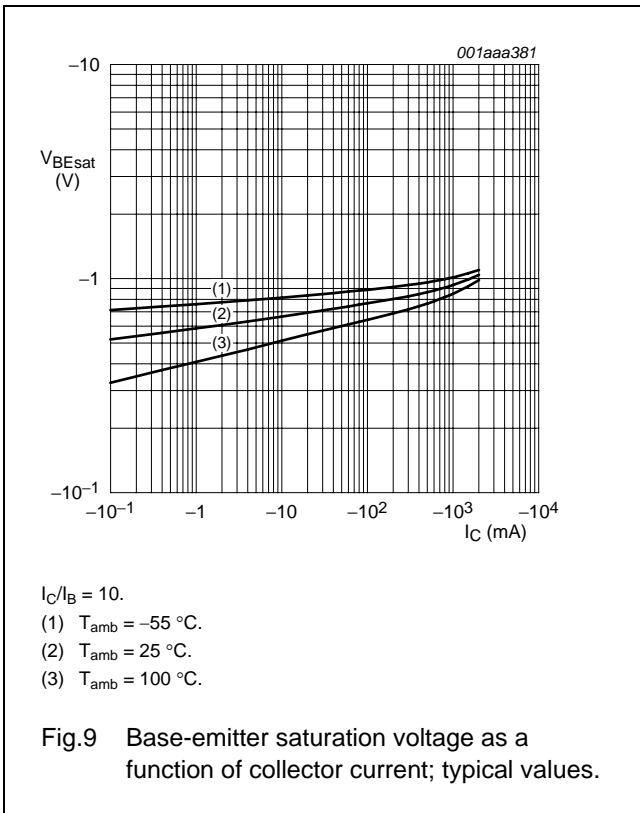
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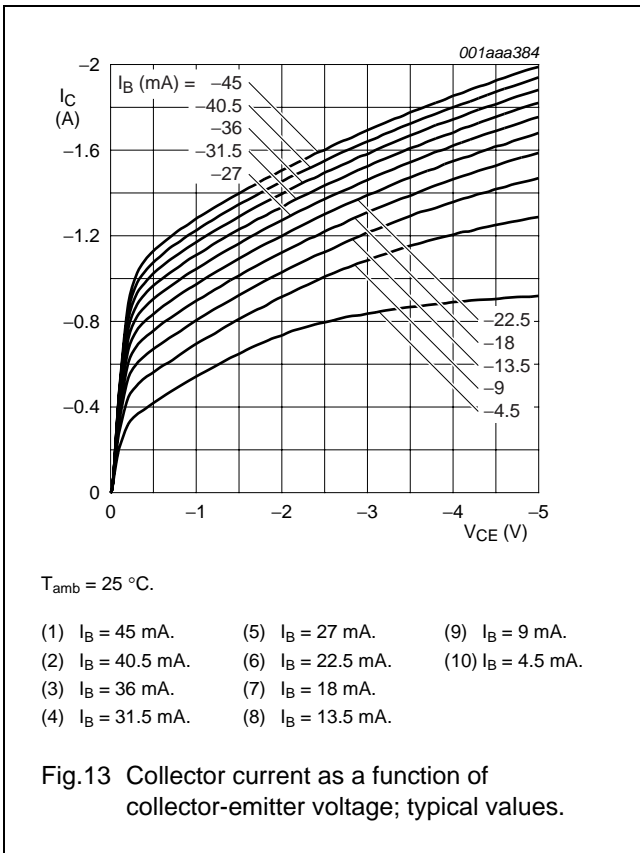
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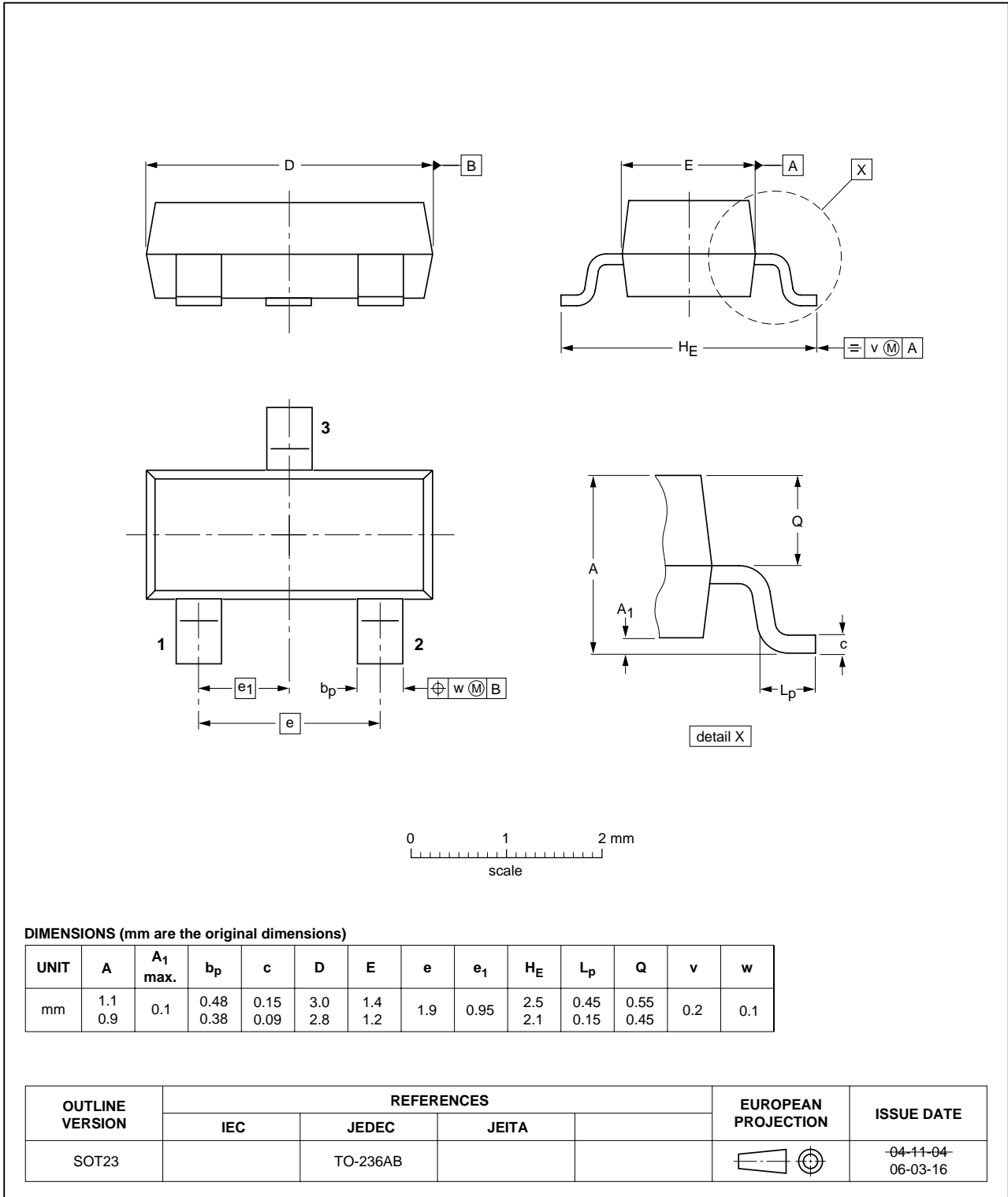
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PNP low V_{CEsat} (BISS) transistor

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PACKAGE OUTLINE

Plastic surface-mounted package; 3 leads

SOT23



100 V, 1 A
PNP low V_{CEsat} (BISS) transistor

PBSS9110T

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

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