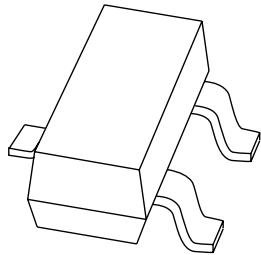


DATA SHEET



PBSS4350T 50 V; 3 A NPN low V_{CEsat} (BISS) transistor

Product data sheet
Supersedes data of 2002 Aug 08

2004 Jan 09

50 V; 3 A NPN low V_{CEsat} (BISS) transistor

PBSS4350T

FEATURES

- Low collector-emitter saturation voltage V_{CEsat} and corresponding low R_{CEsat}
- High collector current capability
- High collector current gain
- Improved efficiency due to reduced heat generation.

APPLICATIONS

- Power management applications
- Low and medium power DC/DC converters
- Supply line switching
- Battery chargers
- Linear voltage regulation with low voltage drop-out (LDO).

DESCRIPTION

NPN low V_{CEsat} transistor in a SOT23 plastic package.
PNP complement: PBSS5350T.

MARKING

| TYPE NUMBER | MARKING CODE ⁽¹⁾ |
|-------------|-----------------------------|
| PBSS4350T | ZC* |

Note

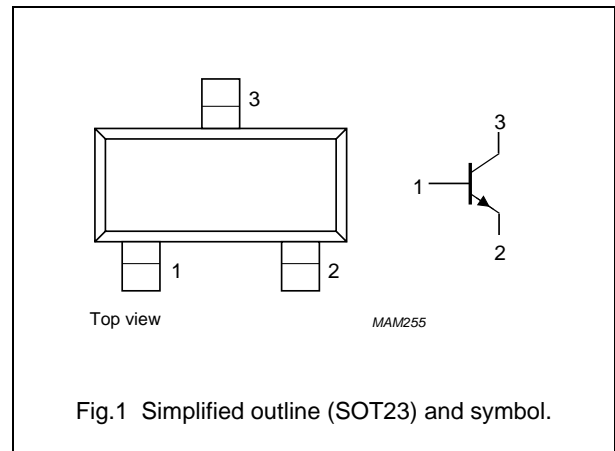
- * = p: Made in Hong Kong.
* = t: Made in Malaysia.
* = W: Made in China.

QUICK REFERENCE DATA

| SYMBOL | PARAMETER | MAX. | UNIT |
|-------------|-----------------------------------|------|------------|
| V_{CEO} | collector-emitter voltage | 50 | V |
| I_C | collector current (DC) | 2 | A |
| I_{CRP} | repetitive peak collector current | 3 | A |
| R_{CEsat} | equivalent on-resistance | 130 | m Ω |

PINNING

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



ORDERING INFORMATION

| TYPE NUMBER | PACKAGE | | |
|-------------|---------|--|---------|
| | NAME | DESCRIPTION | VERSION |
| PBSS4350T | - | plastic surface mounted package; 3 leads | SOT23 |

50 V; 3 A NPN low V_{CEsat} (BISS) transistor

PBSS4350T

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 | – | 50 | V |
| V_{CEO} | collector-emitter voltage | open base | – | 50 | V |
| V_{EBO} | emitter-base voltage | open collector | – | 5 | V |
| I_C | collector current (DC) | | – | 2 | A |
| I_{CRP} | repetitive peak collector current | note 1 | – | 3 | A |
| I_{CM} | peak collector current | single peak | – | 5 | A |
| I_B | base current (DC) | | – | 0.5 | A |
| P_{tot} | total power dissipation | $T_{amb} \leq 25\text{ °C}$; note 2 | – | 300 | mW |
| | | $T_{amb} \leq 25\text{ °C}$; note 3 | – | 480 | mW |
| | | $T_{amb} \leq 25\text{ °C}$; note 4 | – | 540 | mW |
| | | $T_{amb} \leq 25\text{ °C}$; notes 1 and 2 | – | 1.2 | W |
| T_{stg} | storage temperature | | –65 | +150 | °C |
| T_j | junction temperature | | – | 150 | °C |
| T_{amb} | operating ambient temperature | | –65 | +150 | °C |

Notes

1. Operated under pulsed conditions: pulse width $t_p \leq 100\text{ ms}$; duty cycle $\delta \leq 0.25$.
2. Device mounted on a printed-circuit board; single sided copper; tinplated; standard footprint.
3. Device mounted on a printed-circuit board; single sided copper; tinplated; mounting pad for collector 1 cm^2 .
4. Device mounted on a printed-circuit board; single sided copper; tinplated; mounting pad for collector 6 cm^2 .

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 |
| | | in free air; note 3 | 230 | K/W |
| | | in free air; notes 1 and 4 | 104 | K/W |

Notes

1. Device mounted on a printed-circuit board; single sided copper; tinplated; standard footprint.
2. Device mounted on a printed-circuit board; single sided copper; tinplated; mounting pad for collector 1 cm^2 .
3. Device mounted on a printed-circuit board; single sided copper; tinplated; mounting pad for collector 6 cm^2 .
4. Operated under pulsed conditions: pulse width $t_p \leq 100\text{ ms}$; duty cycle $\delta \leq 0.25$.

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

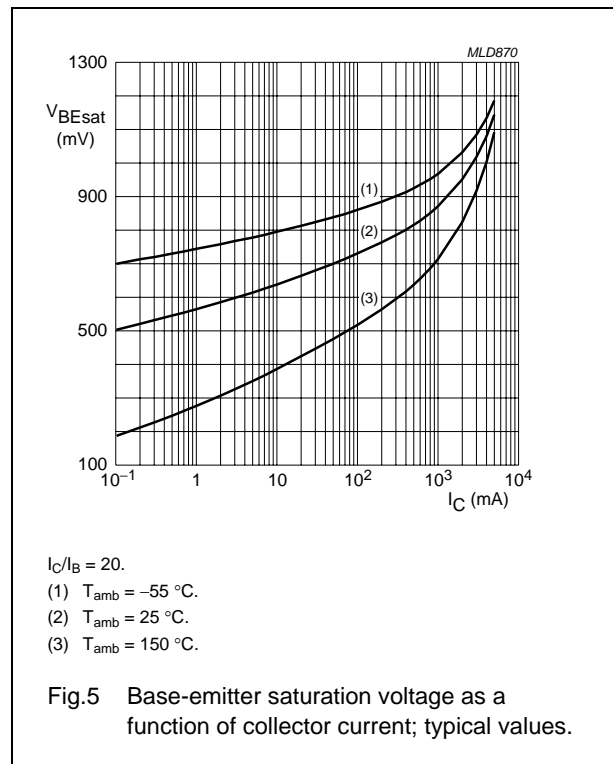
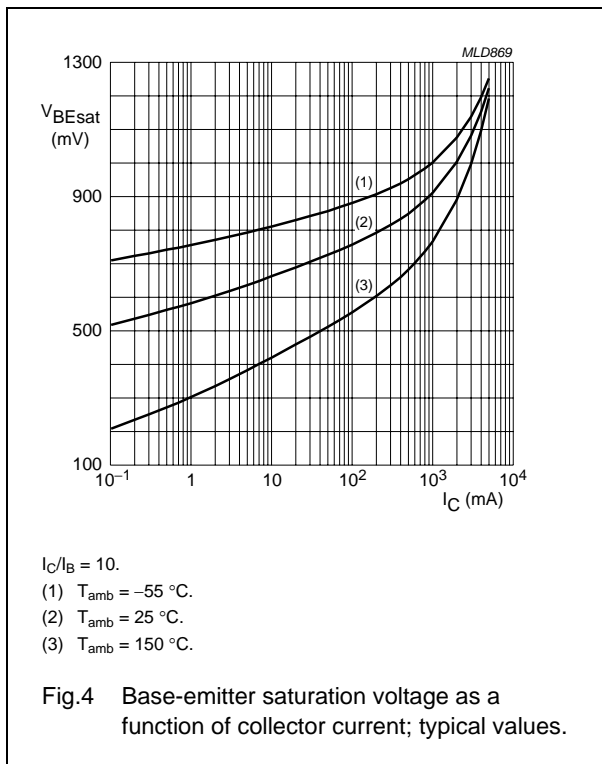
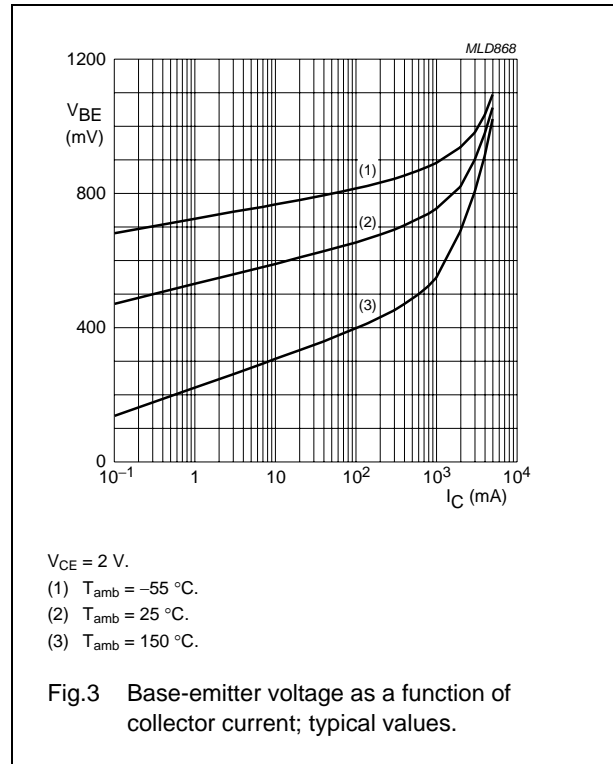
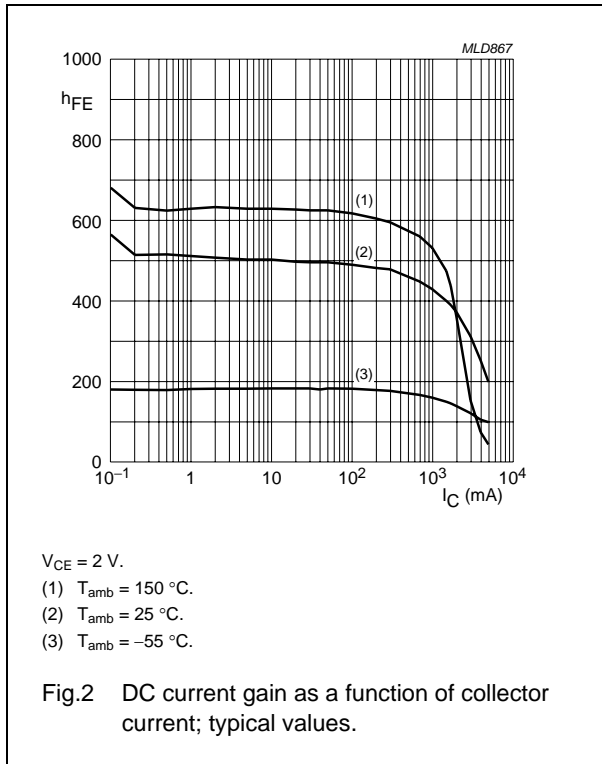
| SYMBOL | PARAMETER | CONDITIONS | MIN. | TYP. | MAX. | UNIT |
|-------------|--------------------------------------|---|------|------|------|------------------|
| I_{CBO} | collector-base cut-off current | $I_E = 0; V_{CB} = 50\text{ V}$ | – | – | 100 | nA |
| | | $I_E = 0; V_{CB} = 50\text{ V}; T_j = 150\text{ °C}$ | – | – | 50 | μA |
| I_{EBO} | emitter-base cut-off current | $I_C = 0; V_{EB} = 5\text{ V}$ | – | – | 100 | nA |
| h_{FE} | DC current gain | $I_C = 100\text{ mA}; V_{CE} = 2\text{ V}$ | 300 | – | – | |
| | | $I_C = 500\text{ mA}; V_{CE} = 2\text{ V}$ | 300 | – | – | |
| | | $I_C = 1\text{ A}; V_{CE} = 2\text{ V}; \text{note 1}$ | 300 | – | – | |
| | | $I_C = 2\text{ A}; V_{CE} = 2\text{ V}; \text{note 1}$ | 200 | – | – | |
| | | $I_C = 3\text{ A}; V_{CE} = 2\text{ V}; \text{note 1}$ | 100 | – | – | |
| V_{CEsat} | collector-emitter saturation voltage | $I_C = 500\text{ mA}; I_B = 50\text{ mA}$ | – | – | 80 | mV |
| | | $I_C = 1\text{ A}; I_B = 50\text{ mA}$ | – | – | 160 | mV |
| | | $I_C = 2\text{ A}; I_B = 100\text{ mA}; \text{note 1}$ | – | – | 280 | mV |
| | | $I_C = 2\text{ A}; I_B = 200\text{ mA}; \text{note 1}$ | – | – | 260 | mV |
| | | $I_C = 3\text{ A}; I_B = 300\text{ mA}; \text{note 1}$ | – | – | 370 | mV |
| R_{CEsat} | equivalent on-resistance | $I_C = 2\text{ A}; I_B = 200\text{ mA}; \text{note 1}$ | – | 100 | 130 | $\text{m}\Omega$ |
| V_{BEsat} | base-emitter saturation voltage | $I_C = 2\text{ A}; I_B = 100\text{ mA}; \text{note 1}$ | – | – | 1.1 | V |
| | | $I_C = 3\text{ A}; I_B = 300\text{ mA}; \text{note 1}$ | – | – | 1.2 | V |
| V_{BEon} | base-emitter turn-on voltage | $I_C = 1\text{ A}; V_{CE} = 2\text{ V}; \text{note 1}$ | 1.2 | – | – | V |
| f_T | transition frequency | $I_C = 100\text{ mA}; V_{CE} = 5\text{ V};$ $f = 100\text{ MHz}$ | 100 | – | – | MHz |
| C_c | collector capacitance | $I_E = I_e = 0; V_{CB} = 10\text{ V}; f = 1\text{ MHz}$ | – | – | 25 | pF |

Note

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

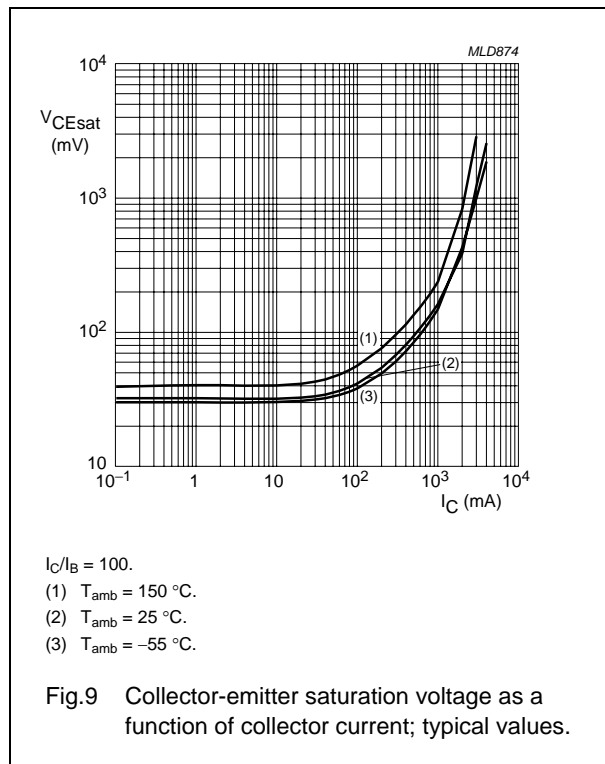
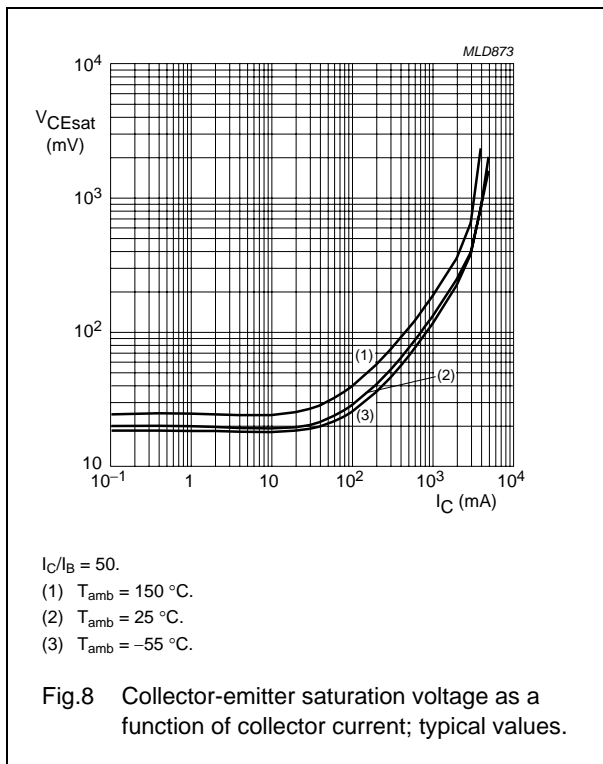
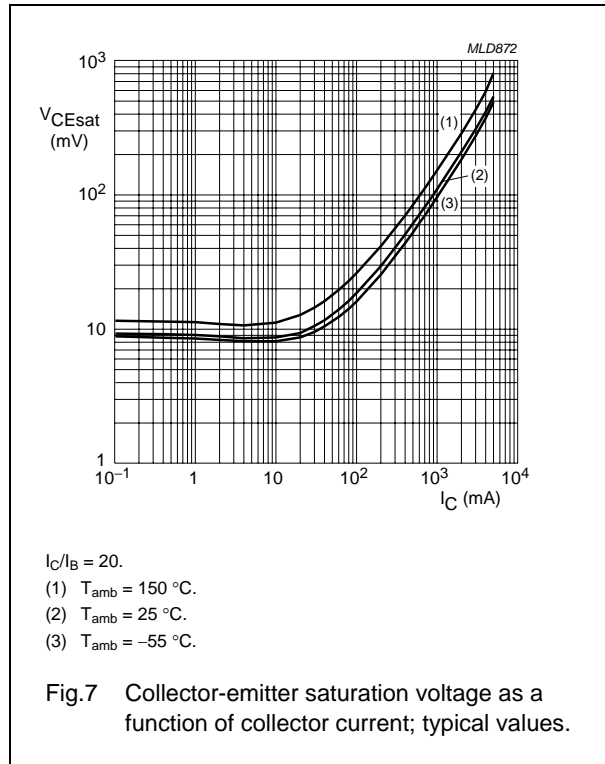
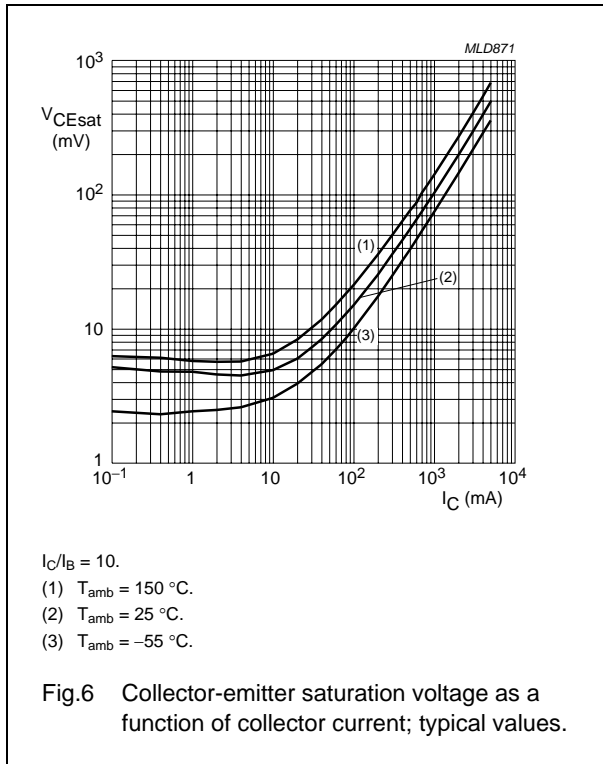
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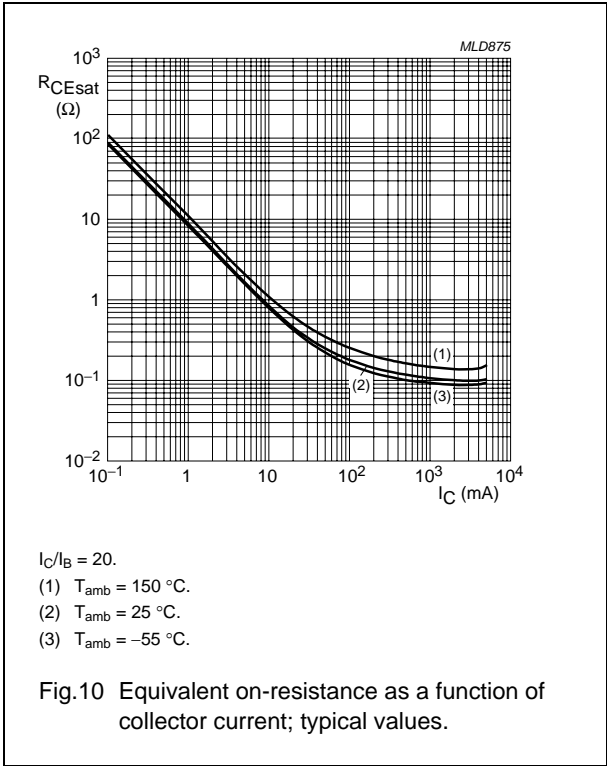
50 V; 3 A NPN low V_{CEsat} (BISS) transistor

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PBSS4350T



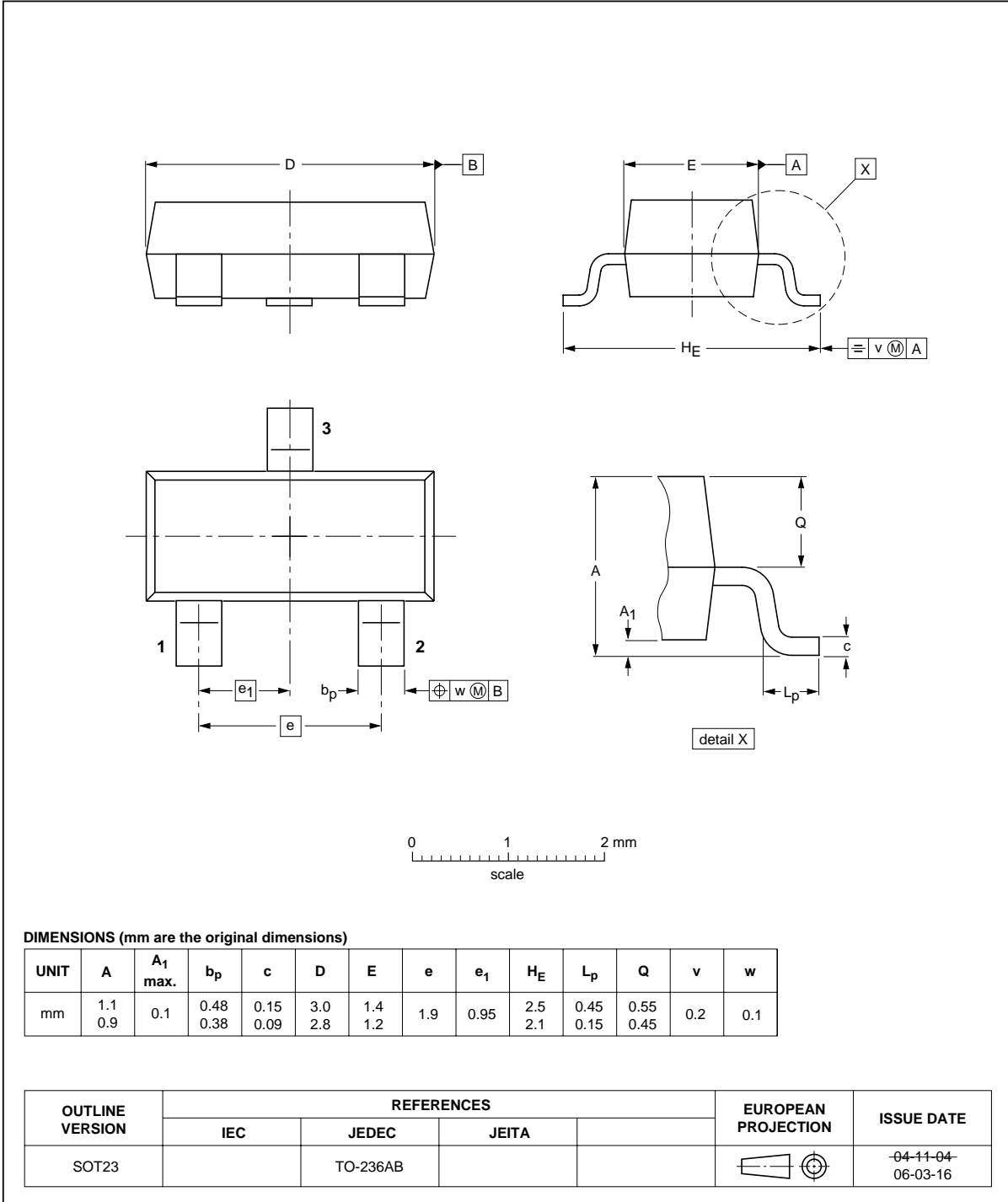
50 V; 3 A NPN low V_{CEsat} (BISS) transistor

PBSS4350T

PACKAGE OUTLINE

Plastic surface-mounted package; 3 leads

SOT23



50 V; 3 A NPN low V_{CEsat} (BISS) transistor

PBSS4350T

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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Printed in The Netherlands

R75/02/pp10

Date of release: 2004 Jan 09

Document order number: 9397 750 12437

