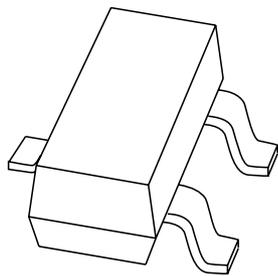


DATA SHEET



BCX19

NPN general purpose transistor

Product specification
Supersedes data of 2000 Jul 28

2004 Jan 16

NPN general purpose transistor

BCX19

FEATURES

- High current (500 mA)
- Low voltage (45 V).

APPLICATIONS

- General purpose amplification
- Saturated switching and driver applications.

DESCRIPTION

NPN transistor in a SOT23 plastic package.
PNP complement: BCX17.

MARKING

| TYPE NUMBER | MARKING CODE ⁽¹⁾ |
|-------------|-----------------------------|
| BCX19 | U1* |

Note

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

PINNING

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

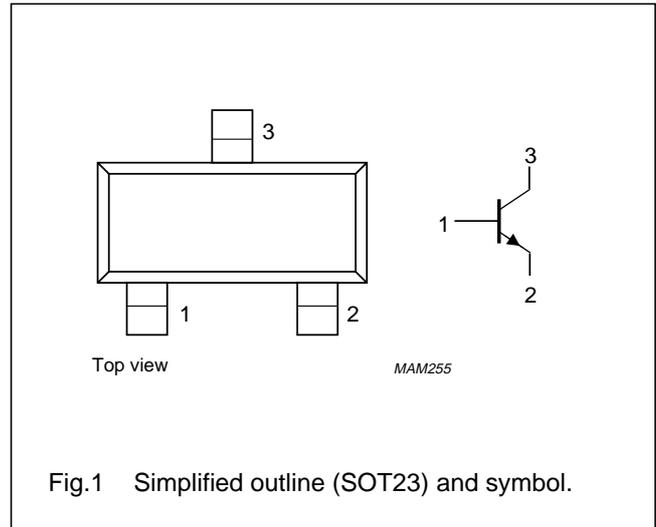


Fig.1 Simplified outline (SOT23) and symbol.

ORDERING INFORMATION

| TYPE NUMBER | PACKAGE | | |
|-------------|---------|--|---------|
| | NAME | DESCRIPTION | VERSION |
| BCX19 | – | 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 | – | 50 | V |
| V _{CEO} | collector-emitter voltage | open base; I _C = 10 mA | – | 45 | V |
| V _{EBO} | emitter-base voltage | open collector | – | 5 | V |
| I _C | collector current (DC) | | – | 500 | mA |
| I _{CM} | peak collector current | | – | 1 | A |
| I _{BM} | peak base current | | – | 200 | mA |
| P _{tot} | total power dissipation | T _{amb} ≤ 25 °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 general purpose transistor

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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

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

| SYMBOL | PARAMETER | CONDITIONS | MIN. | TYP. | MAX. | UNIT |
|-------------|--------------------------------------|---|------|------|------|---------------|
| I_{CBO} | collector cut-off current | $I_E = 0; V_{CB} = 20\text{ V}$ | – | – | 100 | nA |
| | | $I_E = 0; V_{CB} = 20\text{ V}; T_j = 150\text{ °C}$ | – | – | 5 | μA |
| I_{EBO} | emitter cut-off current | $I_C = 0; V_{EB} = 5\text{ V}$ | – | – | 100 | nA |
| h_{FE} | DC current gain | $V_{CE} = 1\text{ V};$ note 1 | | | | |
| | | $I_C = 100\text{ mA}$ | 100 | – | 600 | |
| | | $I_C = 300\text{ mA}$ | 70 | – | – | |
| | | $I_C = 500\text{ mA}$ | 40 | – | – | |
| V_{CEsat} | collector-emitter saturation voltage | $I_C = 500\text{ mA}; I_B = 50\text{ mA};$ note 2 | – | – | 620 | mV |
| V_{BE} | base-emitter voltage | $I_C = 500\text{ mA}; V_{CE} = 1\text{ V};$ notes 1 and 2 | – | – | 1.2 | V |
| C_c | collector capacitance | $I_E = I_e = 0; V_{CB} = 10\text{ V}; f = 1\text{ MHz}$ | – | 5 | – | pF |
| f_T | transition frequency | $I_C = 10\text{ mA}; V_{CE} = 5\text{ V}; f = 100\text{ MHz}$ | 100 | – | – | MHz |

Notes

1. Pulse test: $t_p \leq 300\text{ }\mu\text{s}; \delta \leq 0.02$.
2. V_{BE} decreases by approximately -2 mV/°C with increasing temperature.

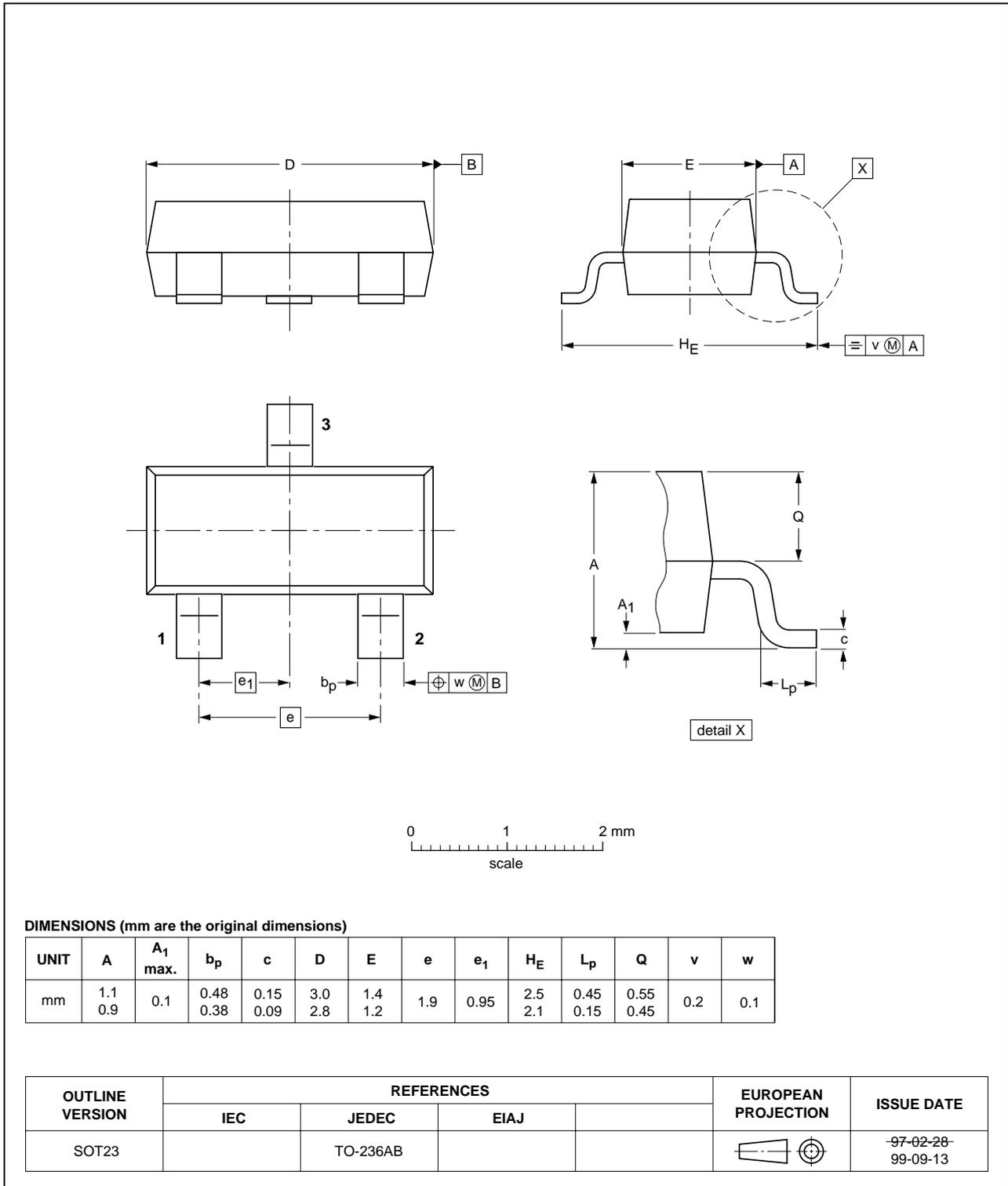
NPN general purpose transistor

BCX19

PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT23



NPN general purpose transistor

BCX19

DATA SHEET STATUS

| LEVEL | DATA SHEET STATUS ⁽¹⁾ | PRODUCT STATUS ⁽²⁾⁽³⁾ | DEFINITION |
|-------|----------------------------------|----------------------------------|--|
| I | Objective data | Development | This data sheet contains data from the objective specification for product development. Philips Semiconductors reserves the right to change the specification in any manner without notice. |
| II | Preliminary data | Qualification | This data sheet contains data from the preliminary specification. Supplementary data will be published at a later date. Philips Semiconductors reserves the right to change the specification without notice, in order to improve the design and supply the best possible product. |
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DEFINITIONS

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Limiting values definition — Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 60134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability.

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