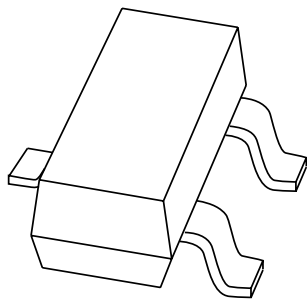


# DATA SHEET



**BCX19**

**NPN general purpose transistor**

Product specification  
Supersedes data of 1997 Mar 04

1999 Apr 12

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

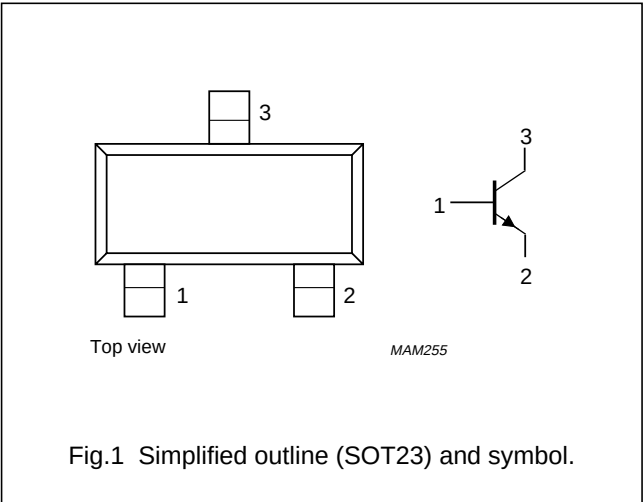
| TYPE NUMBER | MARKING CODE <sup>(1)</sup> |
|-------------|-----------------------------|
| BCX19       | U8*                         |

Note

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

PINNING

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



LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 134).

| SYMBOL           | PARAMETER                     | CONDITIONS                        | MIN. | MAX. | UNIT |
|------------------|-------------------------------|-----------------------------------|------|------|------|
| V <sub>CBO</sub> | collector-base voltage        | open emitter                      | –    | 50   | V    |
| V <sub>CEO</sub> | collector-emitter voltage     | open base; I <sub>C</sub> = 10 mA | –    | 45   | V    |
| V <sub>EBO</sub> | emitter-base voltage          | open collector                    | –    | 5    | V    |
| I <sub>C</sub>   | collector current (DC)        |                                   | –    | 500  | mA   |
| I <sub>CM</sub>  | peak collector current        |                                   | –    | 1    | A    |
| I <sub>BM</sub>  | peak base current             |                                   | –    | 200  | mA   |
| P <sub>tot</sub> | total power dissipation       | T <sub>amb</sub> ≤ 25 °C; note 1  | –    | 250  | mW   |
| T <sub>stg</sub> | storage temperature           |                                   | –65  | +150 | °C   |
| T <sub>j</sub>   | junction temperature          |                                   | –    | 150  | °C   |
| T <sub>amb</sub> | operating ambient temperature |                                   | –65  | +150 | °C   |

Note

1. Transistor mounted on an FR4 printed-circuit board.

## NPN general purpose transistor

## BCX19

## 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    | $\mu\text{A}$ |
| $I_{EBO}$   | emitter cut-off current              | $I_C = 0; V_{EB} = 5\text{ V}$                                   | –    | –    | 100  | nA            |
| $h_{FE}$    | DC current gain                      | $V_{CE} = 1\text{ V}; \text{note 1}$                             |      |      |      |               |
|             |                                      | $I_C = 100\text{ mA}$                                            | 100  | –    | 600  |               |
|             |                                      | $I_C = 300\text{ mA}$                                            | 70   | –    | –    |               |
|             |                                      | $I_C = 500\text{ mA}$                                            | 40   | –    | –    |               |
| $V_{CEsat}$ | collector-emitter saturation voltage | $I_C = 500\text{ mA}; I_B = 50\text{ mA}; \text{note 2}$         | –    | –    | 620  | mV            |
| $V_{BE}$    | base-emitter voltage                 | $I_C = 500\text{ mA}; V_{CE} = 1\text{ V}; \text{notes 1 and 2}$ | –    | –    | 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  $-2\text{ mV/°C}$  with increasing temperature.

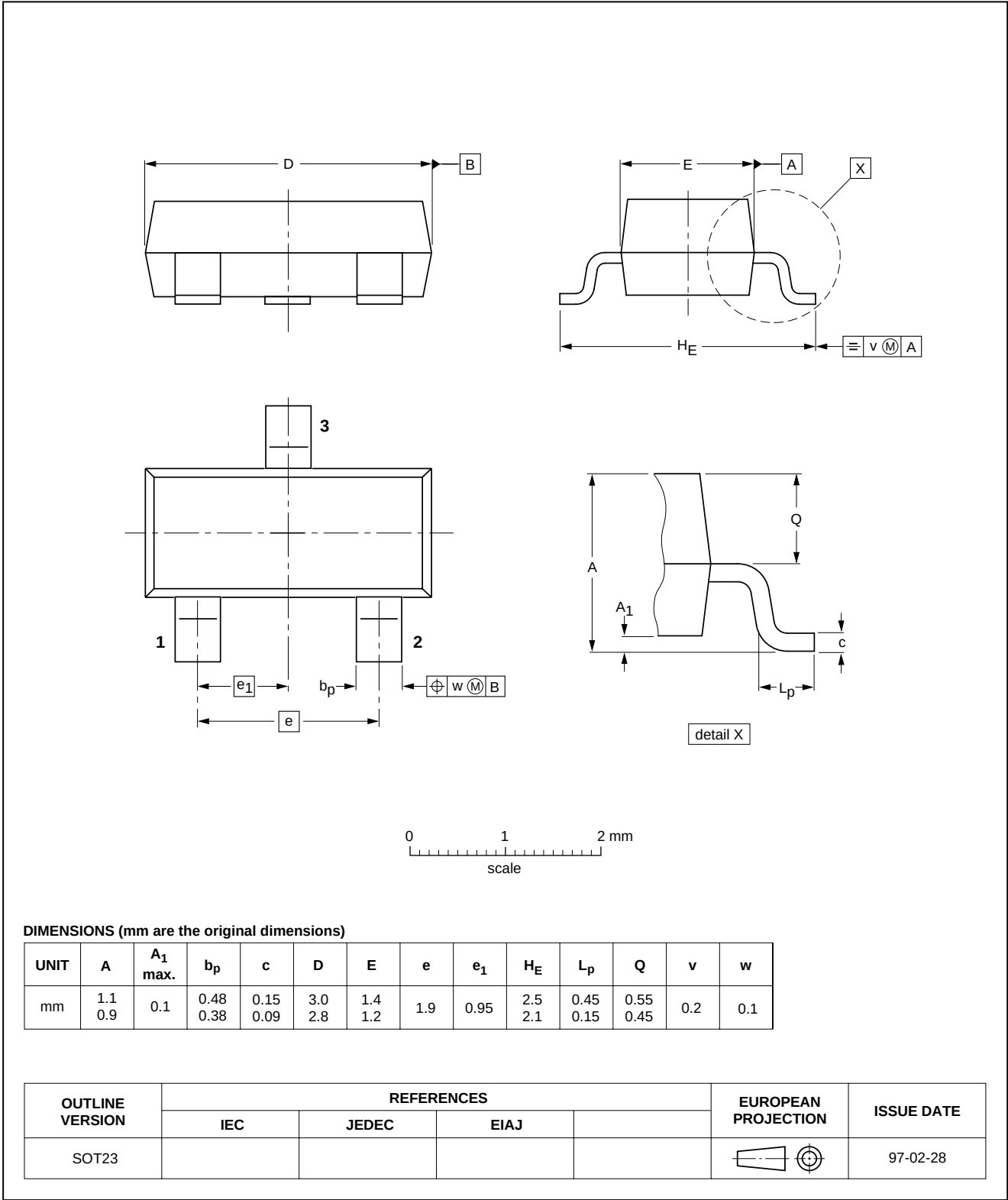
NPN general purpose transistor

BCX19

PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT23



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NPN general purpose transistorBCX19

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**DEFINITIONS**

| <b>Data Sheet Status</b>                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                       |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Objective specification                                                                                                                                                                                                                                                                                                                                                                                                                                   | This data sheet contains target or goal specifications for product development.       |
| Preliminary specification                                                                                                                                                                                                                                                                                                                                                                                                                                 | This data sheet contains preliminary data; supplementary data may be published later. |
| Product specification                                                                                                                                                                                                                                                                                                                                                                                                                                     | This data sheet contains final product specifications.                                |
| <b>Limiting values</b>                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                       |
| Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 134). 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. |                                                                                       |
| <b>Application information</b>                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                       |
| Where application information is given, it is advisory and does not form part of the specification.                                                                                                                                                                                                                                                                                                                                                       |                                                                                       |

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**NOTES**

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**NOTES**

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Printed in The Netherlands

115002/00/03/pp8

Date of release: 1999 Apr 12

Document order number: 9397 750 05581

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