

Important notice

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Should be replaced with:

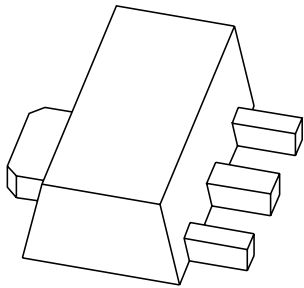
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If you have any questions related to the data sheet, please contact our nearest sales office via e-mail or telephone (details via salesaddresses@nexperia.com). Thank you for your cooperation and understanding,

Kind regards,

Team Nexperia

DATA SHEET



BST39; BST40 NPN high-voltage transistors

Product data sheet
Supersedes data of 2000 Jul 03

2004 Dec 14



NPN high-voltage transistors

BST39; BST40

FEATURES

- Low current (max. 100 mA)
- High voltage (max. 350 V).

APPLICATIONS

- General purpose switching and amplification.

DESCRIPTION

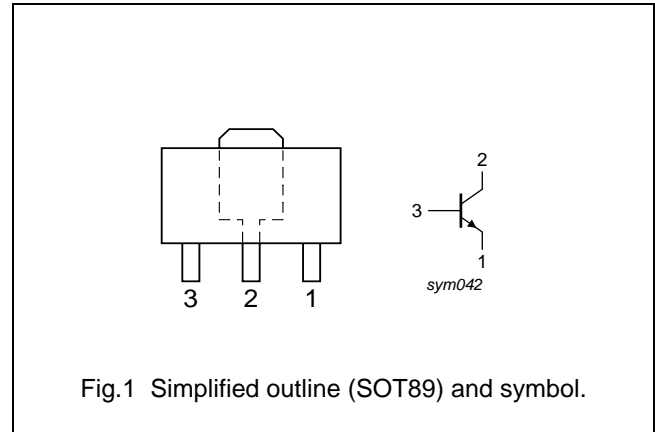
NPN high-voltage transistor in a SOT89 plastic package.
PNP complements: BST15 and BST16.

MARKING

| TYPE NUMBER | MARKING CODE |
|-------------|--------------|
| BST39 | AT1 |
| BST40 | AT2 |

PINNING

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



ORDERING INFORMATION

| TYPE NUMBER | PACKAGE | | |
|-------------|---------|--|---------|
| | NAME | DESCRIPTION | VERSION |
| BST39 | SC-62 | plastic surface mounted package; collector pad for good heat transfer; 3 leads | SOT89 |
| BST40 | | | |

NPN high-voltage transistors

BST39; BST40

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 | | | |
| | BST39 | | – | 400 | V |
| | BST40 | | – | 300 | V |
| V _{CEO} | collector-emitter voltage | open base | | | |
| | BST39 | | – | 350 | V |
| | BST40 | | – | 250 | V |
| V _{EBO} | emitter-base voltage | open collector | – | 5 | V |
| I _C | collector current (DC) | | – | 100 | mA |
| I _{CM} | peak collector current | | – | 200 | mA |
| I _{BM} | peak base current | | – | 100 | mA |
| P _{tot} | total power dissipation | T _{amb} ≤ 25 °C; note 1 | – | 1.3 | W |
| T _{stg} | storage temperature | | –65 | +150 | °C |
| T _j | junction temperature | | – | 150 | °C |
| T _{amb} | ambient temperature | | –65 | +150 | °C |

Note

- Device mounted on a printed-circuit board, single-sided copper, tin-plated, mounting pad for collector 6 cm².
For other mounting conditions, see “*Thermal considerations for SOT89 in the General Part of associated Handbook*”.

THERMAL CHARACTERISTICS

| SYMBOL | PARAMETER | CONDITIONS | VALUE | UNIT |
|----------------------|---|------------|-------|------|
| R _{th(j-a)} | thermal resistance from junction to ambient | note 1 | 96 | K/W |
| R _{th(j-s)} | thermal resistance from junction to soldering point | | 16 | K/W |

Note

- Device mounted on a printed-circuit board, single-sided copper, tin-plated, mounting pad for collector 6 cm².
For other mounting conditions, see “*Thermal considerations for SOT89 in the General Part of associated Handbook*”.

CHARACTERISTICS

T_{amb} = 25 °C unless otherwise specified.

| SYMBOL | PARAMETER | CONDITIONS | MIN. | MAX. | UNIT |
|--------------------|--------------------------------------|--|------|------|------|
| I _{CBO} | collector-base cut-off current | I _E = 0 A; V _{CB} = 300 V | – | 20 | nA |
| I _{EBO} | emitter-base cut-off current | I _C = 0 A; V _{EB} = 5 V | – | 100 | nA |
| h _{FE} | DC current gain | I _C = 20 mA; V _{CE} = 10 V | 40 | – | |
| V _{CEsat} | collector-emitter saturation voltage | I _C = 50 mA; I _B = 4 mA | – | 500 | mV |
| C _c | collector capacitance | I _E = i _e = 0 A; V _{CB} = 10 V; f = 1 MHz | – | 2 | pF |
| f _T | transition frequency | I _C = 10 mA; V _{CE} = 10 V; f = 100 MHz | 70 | – | MHz |

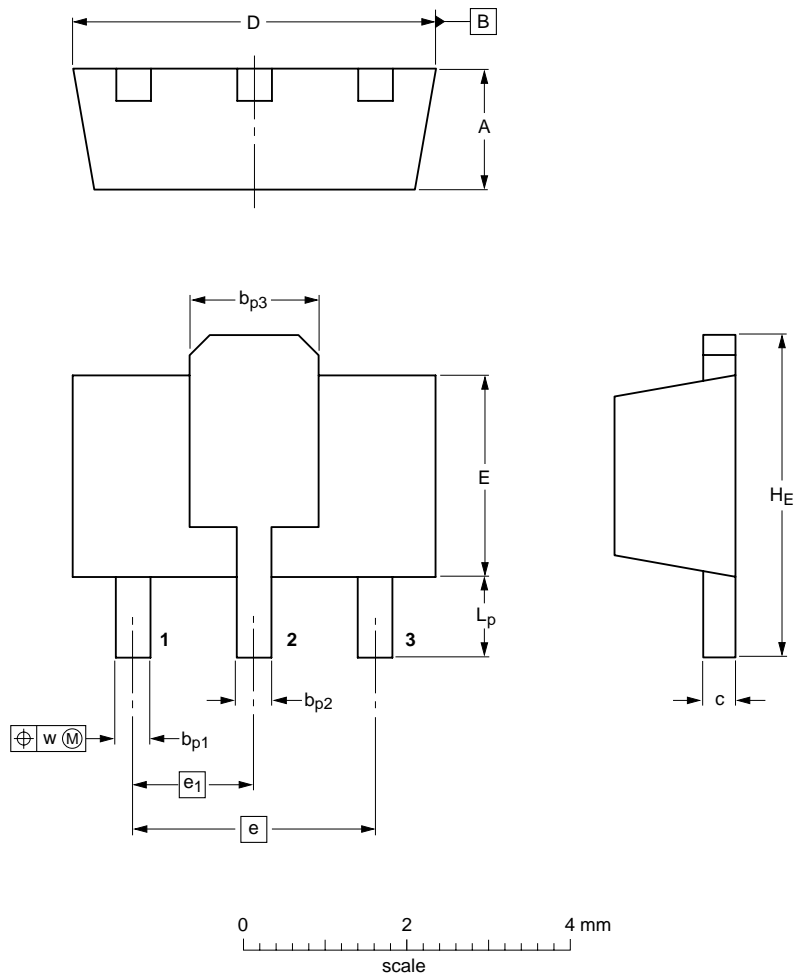
NPN high-voltage transistors

BST39; BST40

PACKAGE OUTLINE

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

SOT89



DIMENSIONS (mm are the original dimensions)

| UNIT | A | b _{p1} | b _{p2} | b _{p3} | c | D | E | e | e ₁ | H _E | L _p | 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 |

NPN high-voltage transistors

BST39; BST40

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. |

Notes

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2. The product status of device(s) described in this document may have changed since this document was published and may differ in case of multiple devices. The latest product status information is available on the Internet at URL <http://www.nxp.com>.

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NXP Semiconductors

Customer notification

This data sheet was changed to reflect the new company name NXP Semiconductors, including new legal definitions and disclaimers. No changes were made to the technical content, except for package outline drawings which were updated to the latest version.

Contact information

For additional information please visit: <http://www.nxp.com>

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