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Should be replaced with:

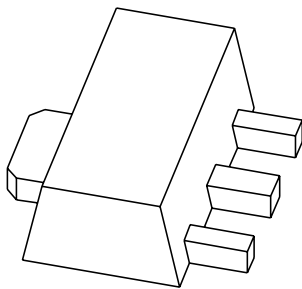
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Kind regards,

Team Nexperia

DATA SHEET



BST60; BST61; BST62 PNP Darlington transistors

Product data sheet
Supersedes data of 2001 Feb 20

2004 Dec 09

PNP Darlington transistors

BST60; BST61; BST62

FEATURES

- High current (max. 0.5 A)
- Low voltage (max. 80 V)
- Integrated diode and resistor.

APPLICATIONS

- Industrial switching applications such as:
 - Print hammer
 - Solenoid
 - Relay and lamp driving.

DESCRIPTION

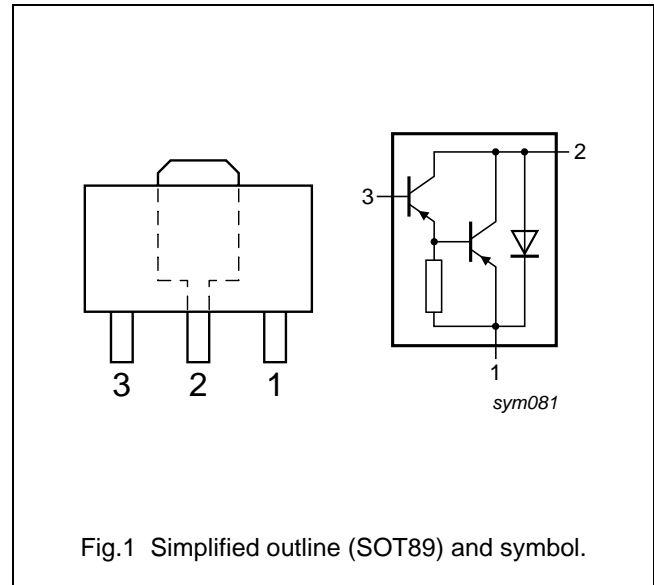
PNP Darlington transistor in a SOT89 plastic package.
NPN complements: BST50, BST51 and BST52.

MARKING

| TYPE NUMBER | MARKING CODE |
|-------------|--------------|
| BST60 | BS1 |
| BST61 | BS2 |
| BST62 | BS3 |

PINNING

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



ORDERING INFORMATION

| TYPE NUMBER | PACKAGE | | |
|-------------|---------|--|---------|
| | NAME | DESCRIPTION | VERSION |
| BST60 | SC-62 | plastic surface mounted package; collector pad for good heat transfer; 3 leads | SOT89 |
| BST61 | | | |
| BST62 | | | |

PNP Darlington transistors

BST60; BST61; BST62

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 | | | |
| | BST60 | | – | –60 | V |
| | BST61 | | – | –80 | V |
| | BST62 | | – | –90 | V |
| V _{CES} | collector-emitter voltage | V _{BE} = 0 V | | | |
| | BST60 | | – | –45 | V |
| | BST61 | | – | –60 | V |
| | BST62 | | – | –80 | V |
| V _{EBO} | emitter-base voltage | open collector | – | –5 | V |
| I _C | collector current (DC) | | – | –1 | A |
| I _{CM} | peak collector current | | – | –2 | A |
| I _B | base current (DC) | | – | –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*”.

PNP Darlington transistors

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CHARACTERISTICS

$T_{amb} = 25\text{ }^{\circ}\text{C}$ unless otherwise specified.

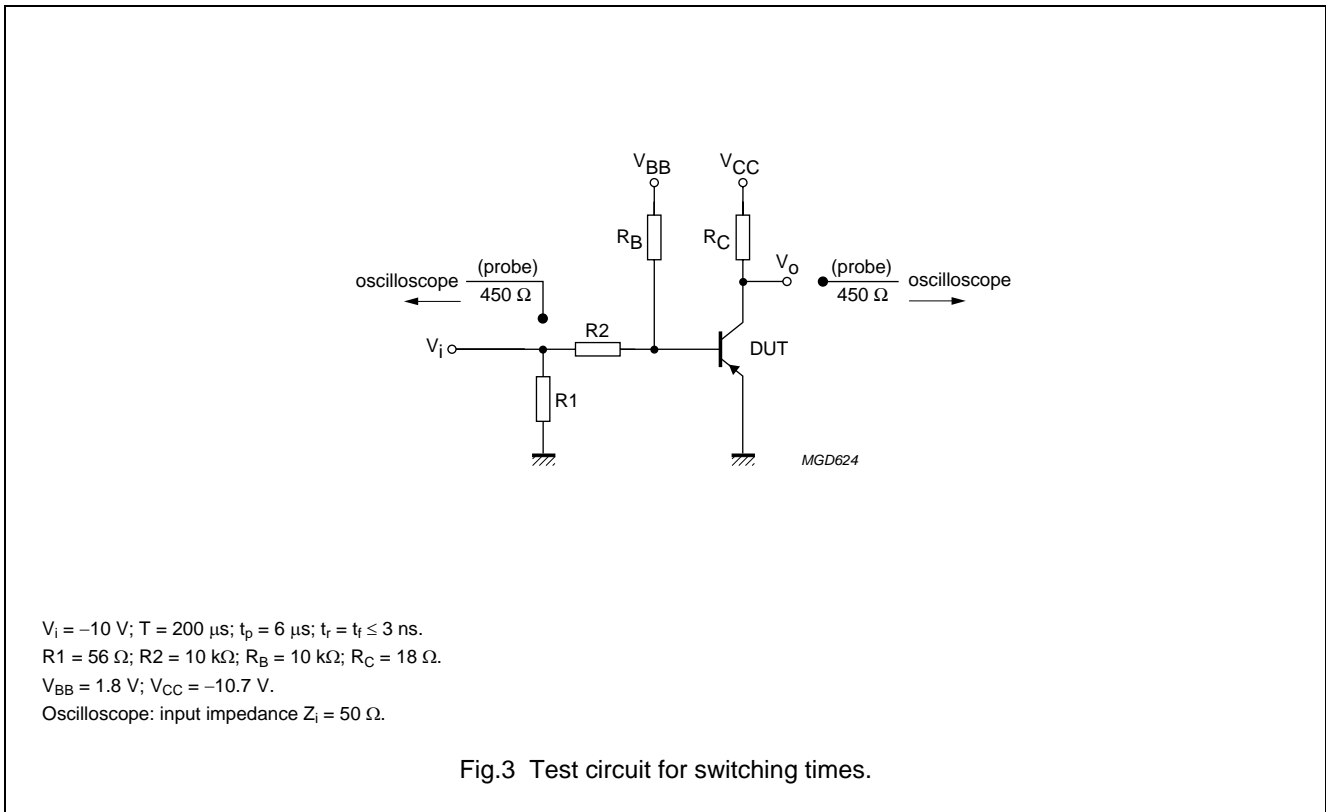
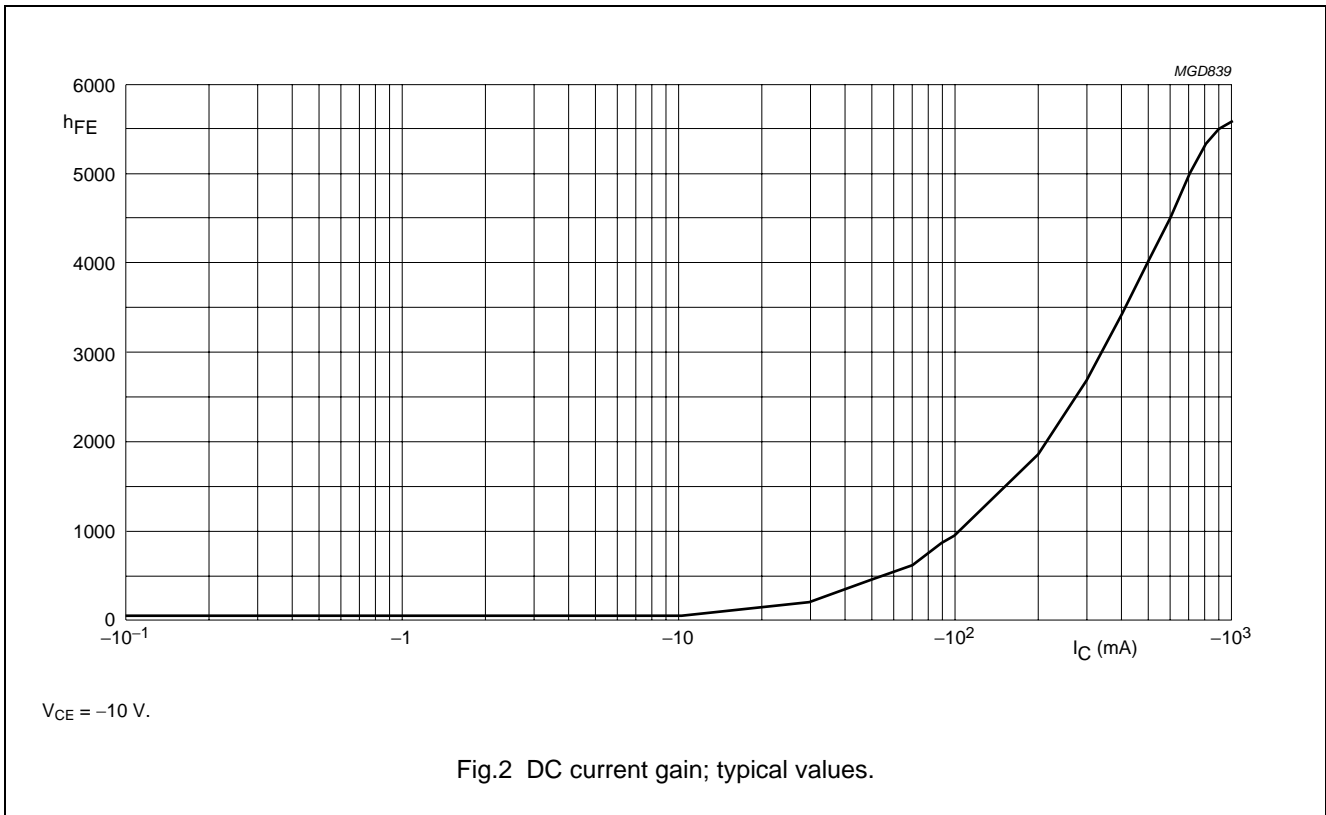
| SYMBOL | PARAMETER | CONDITIONS | MIN. | TYP. | MAX. | UNIT |
|--|--------------------------------------|---|------|------|------|------|
| I_{CES} | collector-emitter cut-off current | | | | | |
| | BST60 | $V_{BE} = 0\text{ V}; V_{CE} = -45\text{ V}$ | – | – | –50 | nA |
| | BST61 | $V_{BE} = 0\text{ V}; V_{CE} = -60\text{ V}$ | – | – | –50 | nA |
| | BST62 | $V_{BE} = 0\text{ V}; V_{CE} = -80\text{ V}$ | – | – | –50 | nA |
| I_{EBO} | emitter-base cut-off current | $I_C = 0\text{ A}; V_{EB} = -4\text{ V}$ | – | – | –50 | nA |
| h_{FE} | DC current gain | $V_{CE} = -10\text{ V}$; note 1; see Fig.2 | | | | |
| | | $I_C = -150\text{ mA}$ | 1000 | – | – | |
| | | $I_C = -500\text{ mA}$ | 2000 | – | – | |
| V_{CEsat} | collector-emitter saturation voltage | $I_C = -500\text{ mA}; I_B = -0.5\text{ mA}$ | – | – | –1.3 | V |
| | | $I_C = -500\text{ mA}; I_B = -0.5\text{ mA}; T_j = 150\text{ }^{\circ}\text{C}$ | – | – | –1.3 | V |
| V_{BEsat} | base-emitter saturation voltage | $I_C = -500\text{ mA}; I_B = -0.5\text{ mA}$ | – | – | –1.9 | V |
| f_T | transition frequency | $I_C = -500\text{ mA}; V_{CE} = -5\text{ V}; f = 100\text{ MHz}$ | – | 200 | – | MHz |
| Switching times (between 10% and 90% levels); (see Fig.3) | | | | | | |
| t_{on} | turn-on time | $I_{Con} = -500\text{ mA}; I_{Bon} = -0.5\text{ mA}; I_{Boff} = 0.5\text{ mA}$ | – | 500 | – | ns |
| t_{off} | turn-off time | | – | 700 | – | ns |

Note

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

PNP Darlington transistors

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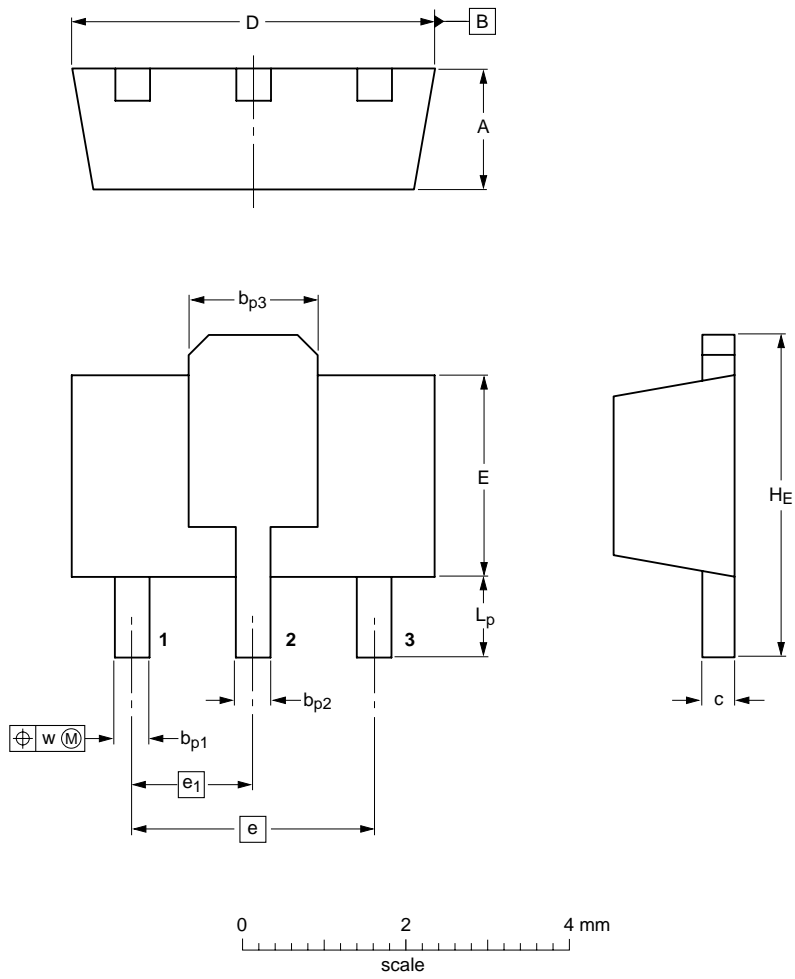
PNP Darlington transistors

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PACKAGE OUTLINE

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

SOT89



DIMENSIONS (mm are the original dimensions)

| UNIT | A | bp1 | bp2 | bp3 | c | D | E | e | e1 | HE | Lp | 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 |

PNP Darlington transistors

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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

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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