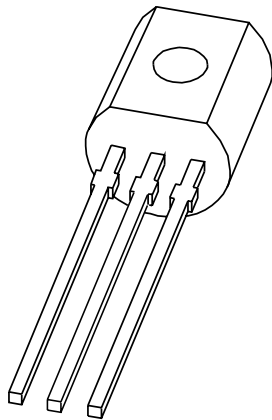


DATA SHEET



MPSA42; MPSA43 NPN high-voltage transistors

Product data sheet
Supersedes data of 1999 Apr 12

2004 Oct 11

NPN high-voltage transistors

MPSA42; MPSA43

FEATURES

- Low current (max. 100 mA)
- High voltage (max. 300 V).

APPLICATIONS

- Video
- Telephony
- Professional communication equipment.

DESCRIPTION

NPN high-voltage transistor in a TO-92; SOT54 plastic package. PNP complement: MPSA92.

PINNING

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

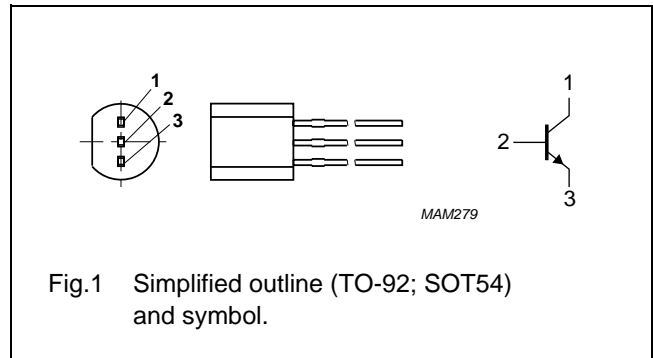


Fig.1 Simplified outline (TO-92; SOT54) and symbol.

ORDERING INFORMATION

| TYPE NUMBER | PACKAGE | | |
|-------------|---------|---|---------|
| | NAME | DESCRIPTION | VERSION |
| MPSA42 | SC-43A | plastic single-ended leaded (through hole) package; 3 leads | SOT54 |
| MPSA43 | | | |

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 | | | |
| | MPSA42 | | – | 300 | V |
| | MPSA43 | | – | 200 | V |
| V _{CEO} | collector-emitter voltage | open base | | | |
| | MPSA42 | | – | 300 | V |
| | MPSA43 | | – | 200 | V |
| V _{EBO} | emitter-base voltage | open collector | – | 6 | 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 | – | 500 | mW |
| T _{stg} | storage temperature | | –65 | +150 | °C |
| T _j | junction temperature | | – | 150 | °C |
| T _{amb} | ambient temperature | | –65 | +150 | °C |

NPN high-voltage transistors

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THERMAL CHARACTERISTICS

| SYMBOL | PARAMETER | CONDITIONS | VALUE | UNIT |
|---------------|---|------------|-------|------|
| $R_{th(j-a)}$ | thermal resistance from junction to ambient | note 1 | 250 | K/W |

Note

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

CHARACTERISTICS

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

| SYMBOL | PARAMETER | CONDITIONS | MIN. | MAX. | UNIT |
|-------------|--|--|----------------|--------|----------|
| I_{CBO} | collector-base cut-off current MPSA42 MPSA43 | $V_{CB} = 200\text{ V}; I_E = 0\text{ A}$ $V_{CB} = 160\text{ V}; I_E = 0\text{ A}$ | – | 100 | nA |
| I_{EBO} | emitter-base cut-off current MPSA42 MPSA43 | $V_{EB} = 6\text{ V}; I_C = 0\text{ A}$ $V_{EB} = 4\text{ V}; I_C = 0\text{ A}$ | – | 100 | nA |
| h_{FE} | DC current gain | $V_{CE} = 10\text{ V}$; note 1 $I_C = 1\text{ mA}$ $I_C = 10\text{ mA}$ $I_C = 30\text{ mA}$ | 25 40 40 | – | |
| V_{CEsat} | collector-emitter saturation voltage | $I_C = 20\text{ mA}; I_B = 2\text{ mA}$; note 1 | – | 500 | mV |
| V_{BEsat} | base-emitter saturation voltage | $I_C = 20\text{ mA}; I_B = 2\text{ mA}$; note 1 | – | 900 | mV |
| C_c | collector capacitance MPSA42 MPSA43 | $V_{CB} = 20\text{ V}; I_E = i_e = 0\text{ A}; f = 1\text{ MHz}$ | – | 3 4 | pF pF |
| f_T | transition frequency | $V_{CE} = 20\text{ V}; I_C = 10\text{ mA}; f = 100\text{ MHz}$ | 50 | – | MHz |

Note

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

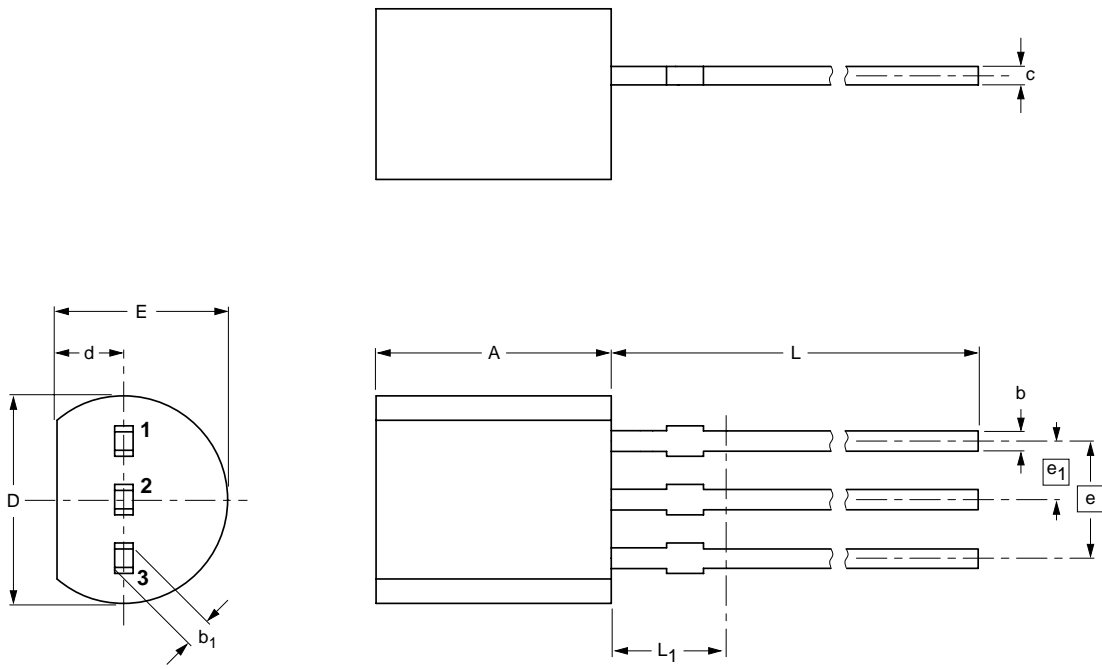
NPN high-voltage transistors

MPSA42; MPSA43

PACKAGE OUTLINE

Plastic single-ended leaded (through hole) package; 3 leads

SOT54



DIMENSIONS (mm are the original dimensions)

| UNIT | A | b | b ₁ | c | D | d | E | e | e ₁ | L | L ₁ ⁽¹⁾ max. |
|------|------------|--------------|----------------|--------------|------------|------------|------------|------|----------------|--------------|---------------------------------------|
| mm | 5.2 5.0 | 0.48 0.40 | 0.66 0.55 | 0.45 0.38 | 4.8 4.4 | 1.7 1.4 | 4.2 3.6 | 2.54 | 1.27 | 14.5 12.7 | 2.5 |

Note

1. Terminal dimensions within this zone are uncontrolled to allow for flow of plastic and terminal irregularities.

| OUTLINE VERSION | REFERENCES | | | EUROPEAN PROJECTION | ISSUE DATE |
|-----------------|------------|-------|--------|---------------------|----------------------|
| | IEC | JEDEC | JEITA | | |
| SOT54 | | TO-92 | SC-43A | | 04-06-28 04-11-16 |

NPN high-voltage transistors

MPSA42; MPSA43

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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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

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