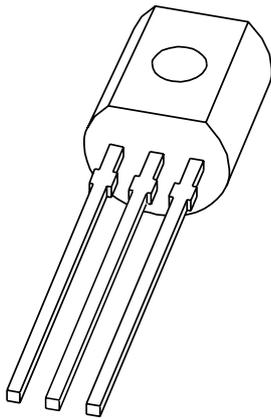


DATA SHEET



PBSS5140S

40 V low V_{CEsat} PNP transistor

Product data sheet
Supersedes data of 2001 Nov 15

2004 Aug 13

40 V low V_{CEsat} PNP transistor

PBSS5140S

FEATURES

- High power dissipation (830 mW)
- Ultra low collector-emitter saturation voltage
- 1 A continuous current
- High current switching
- Improved device reliability due to reduced heat generation.

APPLICATIONS

- Medium power switching and muting
- Linear regulators
- DC/DC converter
- LCD back-lighting
- Supply line switching circuits
- Battery driven equipment (mobile phones, video cameras and hand-held devices).

DESCRIPTION

PNP low V_{CEsat} transistor in a SOT54 plastic package. NPN complement: PBSS4140S.

MARKING

| TYPE NUMBER | MARKING CODE |
|-------------|--------------|
| PBSS5140S | S5140S |

QUICK REFERENCE DATA

| SYMBOL | PARAMETER | MAX. | UNIT |
|-------------|---------------------------|------|------------|
| V_{CEO} | collector-emitter voltage | -40 | V |
| I_C | collector current (DC) | -1 | A |
| I_{CM} | peak collector current | -2 | A |
| R_{CEsat} | equivalent on-resistance | <500 | m Ω |

PINNING

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

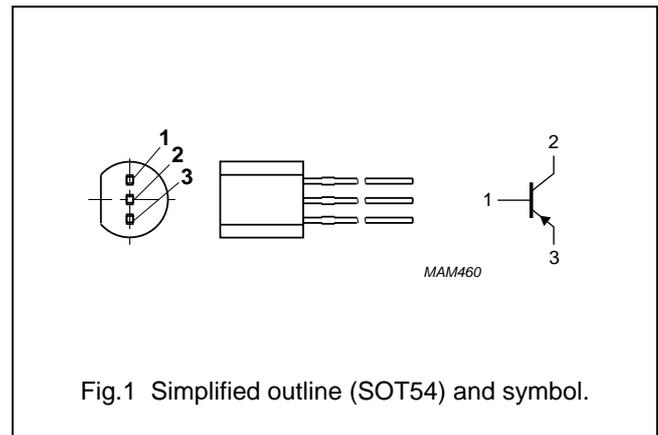


Fig.1 Simplified outline (SOT54) and symbol.

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 | - | -40 | V |
| V_{CEO} | collector-emitter voltage | open base | - | -40 | 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_{BM} | peak base current | | - | -1 | A |
| P_{tot} | total power dissipation | $T_{amb} \leq 25\text{ }^\circ\text{C}$; note 1 | - | 830 | mW |
| T_{stg} | storage temperature | | -65 | +150 | $^\circ\text{C}$ |
| T_j | junction temperature | | - | 150 | $^\circ\text{C}$ |
| T_{amb} | operating ambient temperature | | -65 | +150 | $^\circ\text{C}$ |

Note

1. Device mounted on a printed-circuit board, single sided copper, tinplated and standard footprint.

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THERMAL CHARACTERISTICS

| SYMBOL | PARAMETER | CONDITIONS | VALUE | UNIT |
|---------------|---|---------------------|-------|------|
| $R_{th\ j-a}$ | thermal resistance from junction to ambient | in free air; note 1 | 150 | K/W |

Note

1. Device mounted on a printed-circuit board, single sided copper, tinplated and standard footprint.

CHARACTERISTICS

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

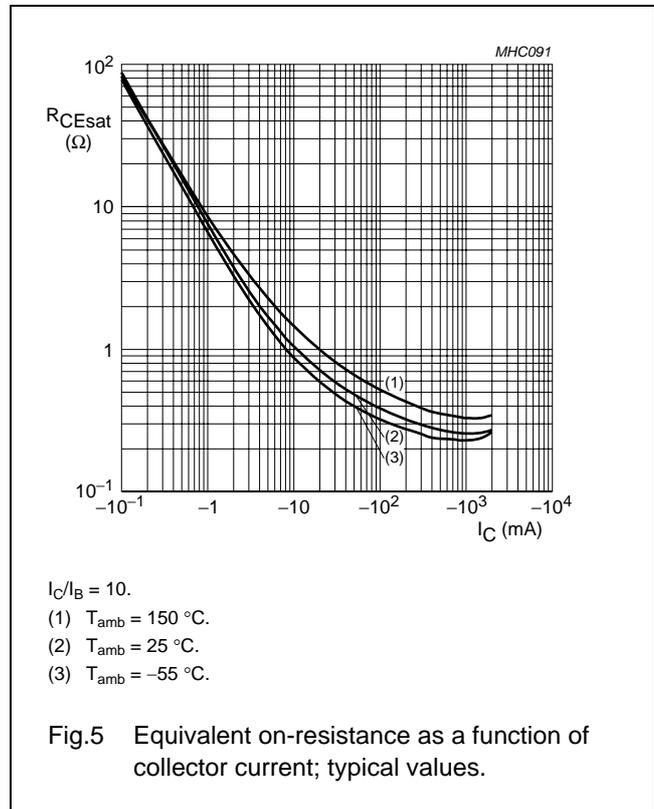
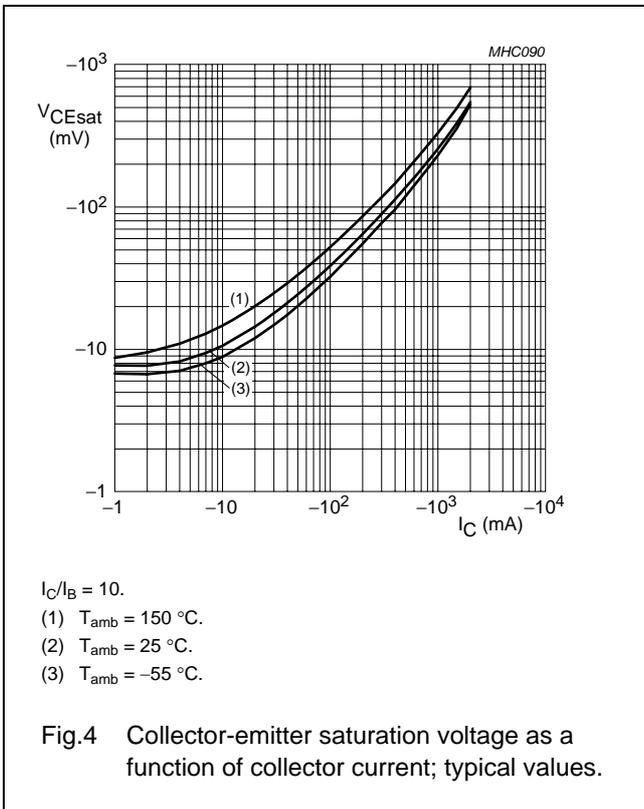
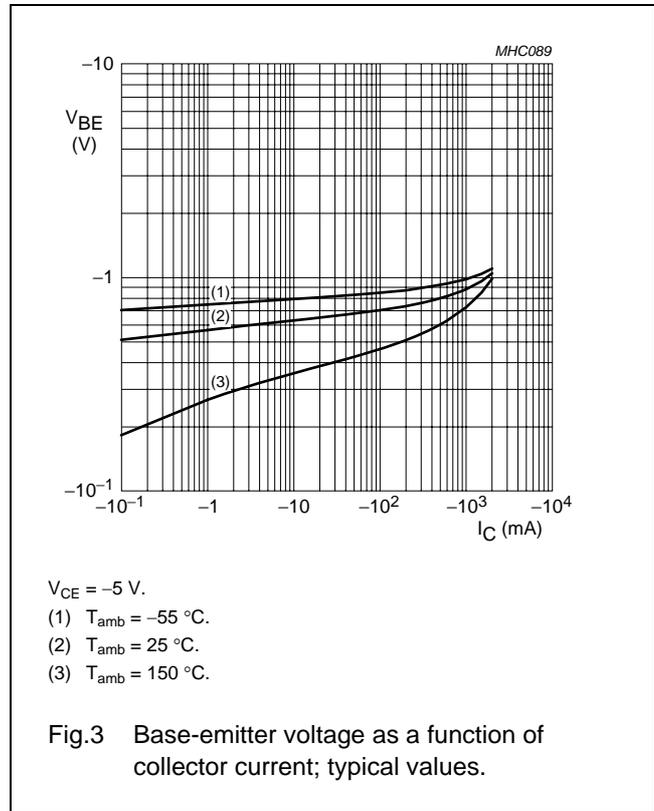
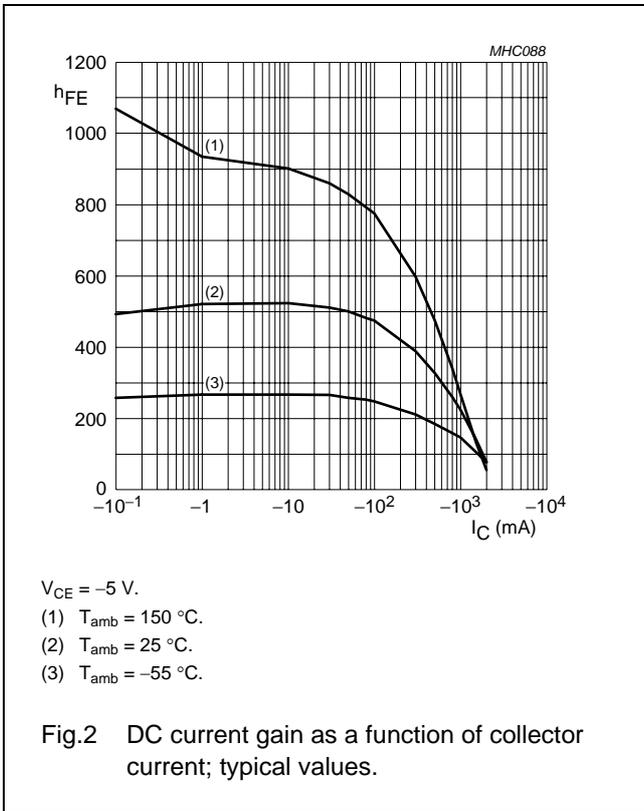
| SYMBOL | PARAMETER | CONDITIONS | MIN. | TYP. | MAX. | UNIT |
|-------------|--------------------------------------|--|------|------|------|------------------|
| I_{CBO} | collector-base cut-off current | $V_{CB} = -40\text{ V}; I_C = 0$ | – | – | –100 | nA |
| | | $V_{CB} = -40\text{ V}; I_C = 0; T_J = 150\text{ °C}$ | – | – | –50 | μA |
| I_{CEO} | collector-emitter cut-off current | $V_{CE} = -30\text{ V}; I_B = 0$ | – | – | –100 | nA |
| I_{EBO} | emitter-base cut-off current | $V_{EB} = -5\text{ V}; I_C = 0$ | – | – | –100 | nA |
| h_{FE} | DC current gain | $V_{CE} = -5\text{ V}; I_C = -1\text{ mA}$ | 300 | – | – | |
| | | $V_{CE} = -5\text{ V}; I_C = -100\text{ mA}$ | 300 | – | 800 | |
| | | $V_{CE} = -5\text{ V}; I_C = -500\text{ mA}$ | 250 | – | – | |
| | | $V_{CE} = -5\text{ V}; I_C = -1\text{ A}$ | 160 | – | – | |
| V_{CEsat} | collector-emitter saturation voltage | $I_C = -100\text{ mA}; I_B = -1\text{ mA}$ | – | – | –200 | mV |
| | | $I_C = -500\text{ mA}; I_B = -50\text{ mA}$ | – | – | –250 | mV |
| | | $I_C = -1\text{ A}; I_B = -100\text{ mA}$ | – | – | –500 | mV |
| R_{CEsat} | equivalent on-resistance | $I_C = -500\text{ mA}; I_B = -50\text{ mA}; \text{note 1}$ | – | 300 | <500 | $\text{m}\Omega$ |
| V_{BEsat} | base-emitter saturation voltage | $I_C = -1\text{ A}; I_B = -50\text{ mA}$ | – | – | –1.1 | V |
| V_{BEon} | base-emitter turn-on voltage | $V_{CE} = -5\text{ V}; I_C = -1\text{ A}$ | – | – | –1 | V |
| f_T | transition frequency | $I_C = -50\text{ mA}; V_{CE} = -10\text{ V}; f = 100\text{ MHz}$ | 150 | – | – | MHz |
| C_c | collector capacitance | $V_{CB} = -10\text{ V}; I_E = I_e = 0; f = 1\text{ MHz}$ | – | – | 12 | pF |

Note

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

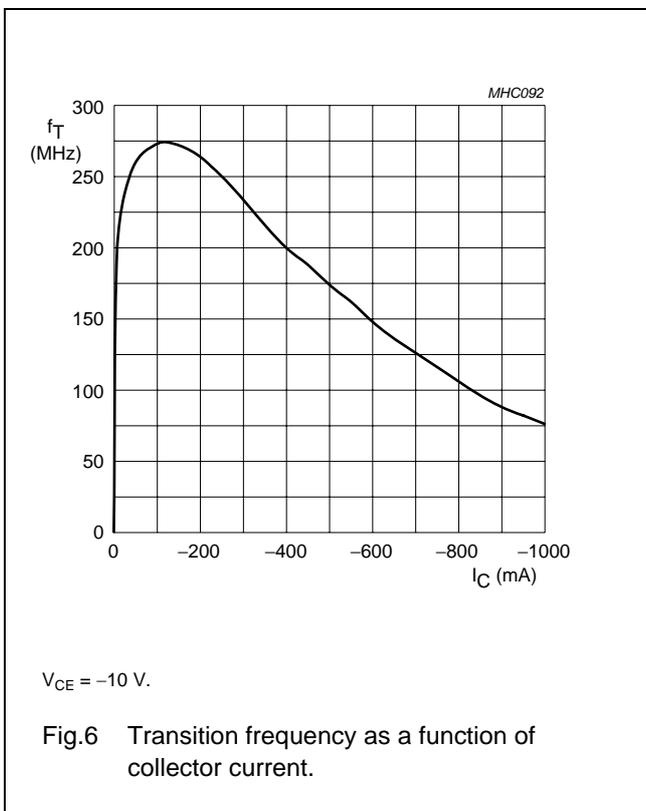
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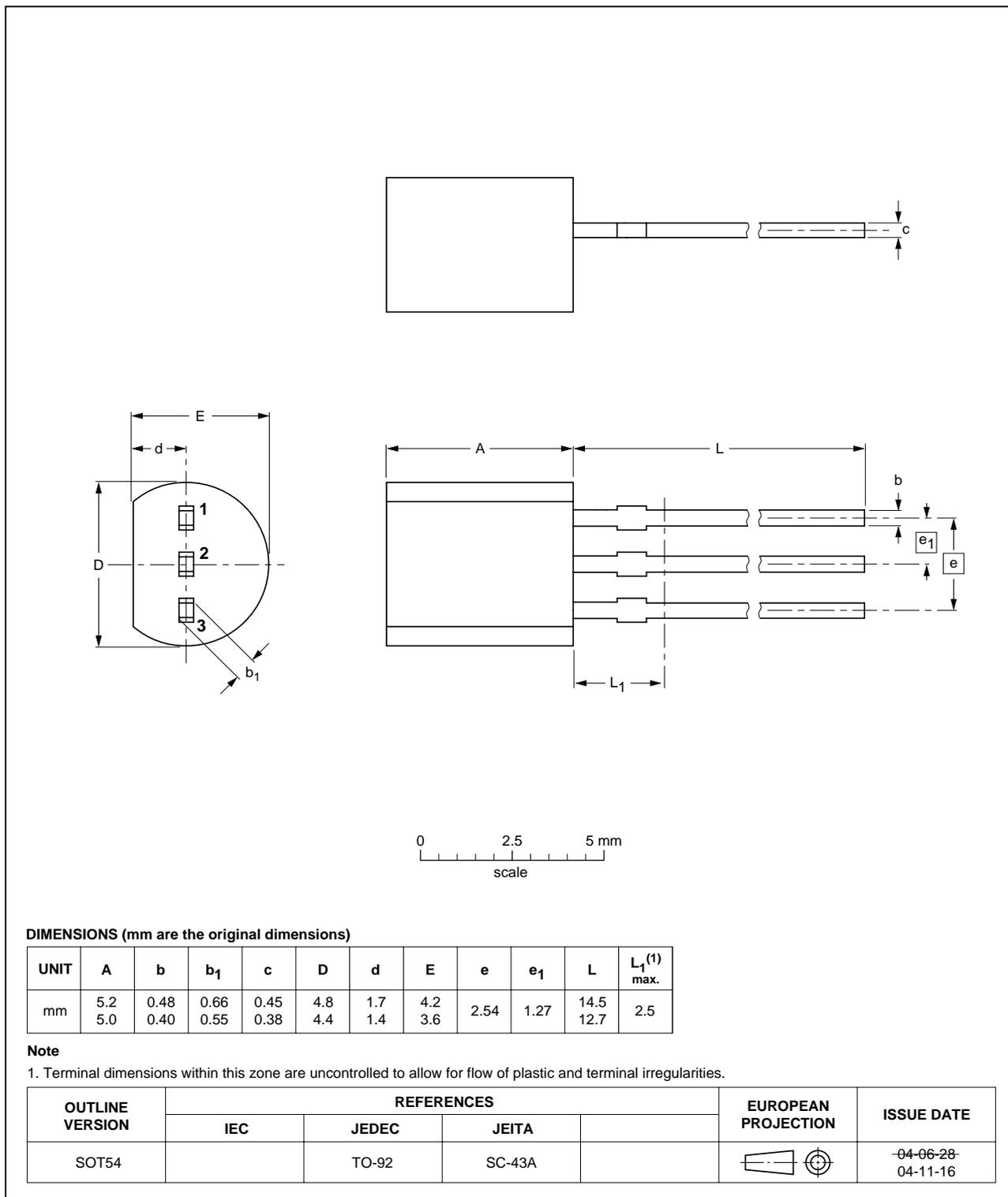
40 V low V_{CEsat} PNP transistor

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PACKAGE OUTLINE

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

SOT54



40 V low V_{CEsat} PNP transistor

PBSS5140S

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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Contact information

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