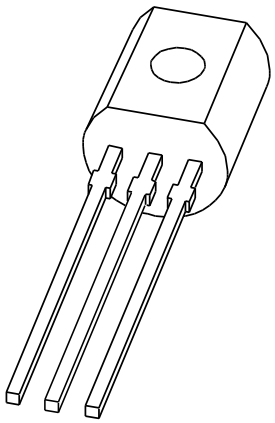
# DATA SHEET



# BF421; BF423
## PNP high-voltage transistors

Product specification
1996 Dec 09
Supersedes data of September 1994
File under Discrete Semiconductors, SC04

Philips
Semiconductors

PHILIPS

# PNP high-voltage transistors BF421; BF423

## FEATURES

- Low feedback capacitance.

## APPLICATIONS

- Class-B video output stages in colour television and professional monitor equipment.

## DESCRIPTION

PNP transistors in a TO-92 plastic package.
NPN complements: BF420 and BF422.

## PINNING

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

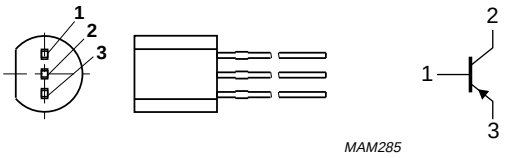



Fig.1 Simplified outline (TO-92) and symbol.

## QUICK REFERENCE DATA

| SYMBOL | PARAMETER | CONDITIONS | MIN. | MAX. | UNIT |
|---|---|---|---|---|---|
| $V_{CBO}$ | collector-base voltage | open emitter | | | |
| | BF421 | | – | –300 | V |
| | BF423 | | – | –250 | V |
| $V_{CEO}$ | collector-emitter voltage | open base | | | |
| | BF421 | | – | –300 | V |
| | BF423 | | – | –250 | V |
| $I_{CM}$ | peak collector current | | – | –100 | mA |
| $P_{tot}$ | total power dissipation | $T_{amb} \leq 25$ °C | – | 830 | mW |
| $h_{FE}$ | DC current gain | $I_C = -25$ mA; $V_{CE} = -20$ V | 50 | – | |
| $C_{re}$ | feedback capacitance | $I_C = i_c = 0$; $V_{CE} = -30$ V; f = 1 MHz | – | 1.6 | pF |
| $f_T$ | transition frequency | $I_C = -10$ mA; $V_{CE} = -10$ V; f = 100 MHz | 60 | – | MHz |

## LIMITING VALUES

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

| SYMBOL | PARAMETER | CONDITIONS | MIN. | MAX. | UNIT |
|---|---|---|---|---|---|
| $V_{CBO}$ | collector-base voltage | open emitter | | | |
| | BF421 | | – | –300 | V |
| | BF423 | | – | –250 | V |
| $V_{CEO}$ | collector-emitter voltage | open base | | | |
| | BF421 | | – | –300 | V |
| | BF423 | | – | –250 | V |
| $V_{EBO}$ | emitter-base voltage | open collector | – | –5 | V |
| $I_C$ | collector current (DC) | | – | –50 | mA |
| $I_{CM}$ | peak collector current | | – | –100 | mA |
| $I_{BM}$ | peak base current | | – | –50 | mA |
| $P_{tot}$ | total power dissipation | $T_{amb} \leq 25$ °C; note 1 | – | 830 | mW |
| $T_{stg}$ | storage temperature | | –65 | +150 | °C |
| $T_j$ | junction temperature | | – | 150 | °C |
| $T_{amb}$ | operating ambient temperature | | –65 | +150 | °C |

**Note**

1. Transistor mounted on a printed-circuit board.

## THERMAL CHARACTERISTICS

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

**Note**

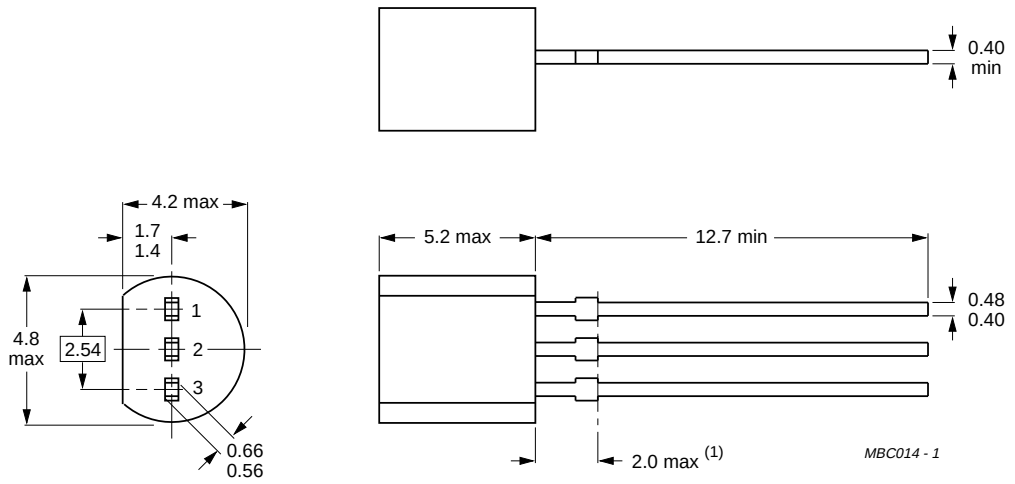
1. Transistor mounted on a printed-circuit board.

## CHARACTERISTICS

$T_j = 25$ °C unless otherwise specified.

| SYMBOL | PARAMETER | CONDITIONS | MIN. | MAX. | UNIT |
|---|---|---|---|---|---|
| $I_{CBO}$ | collector cut-off current | $I_E = 0$; $V_{CB} = –200$ V | – | –10 | nA |
| | | $I_E = 0$; $V_{CB} = –200$ V; $T_j = 150$ °C | – | –10 | µA |
| $I_{EBO}$ | emitter cut-off current | $I_C = 0$; $V_{EB} = –5$ V | – | –50 | nA |
| $h_{FE}$ | DC current gain | $I_C = –25$ mA; $V_{CE} = –20$ V | 50 | – | |
| $V_{CEsat}$ | collector-emitter saturation voltage | $I_C = –30$ mA; $I_B = –5$ mA | – | –0.6 | V |
| $C_{re}$ | feedback capacitance | $I_C = i_c = 0$; $V_{CE} = –30$ V; f = 1 MHz | – | 1.6 | pF |
| $f_T$ | transition frequency | $I_C = –10$ mA; $V_{CE} = –10$ V; f = 100 MHz | 60 | – | MHz |

## PACKAGE OUTLINE




Dimensions in mm.

(1) Terminal dimensions within this zone are uncontrolled.

Fig.2 TO-92.

## DEFINITIONS

| **Data sheet status** | |
|---|---|
| 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. |
| **Limiting values** | |
| 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. | |
| **Application information** | |
| Where application information is given, it is advisory and does not form part of the specification. | |

## LIFE SUPPORT APPLICATIONS

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