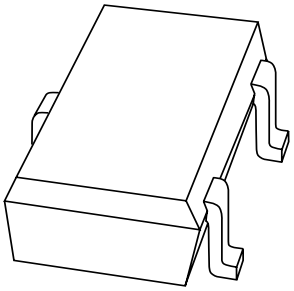
# DATA SHEET



# BC807W
## PNP general purpose transistor

Product specification
Supersedes data of 1997 Jun 09

1999 May 18

Philips
Semiconductors

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# PNP general purpose transistor BC807W

## FEATURES

- High current (max. 500 mA)
- Low voltage (max. 45 V).

## APPLICATIONS

- General purpose switching and amplification.

## DESCRIPTION

PNP transistor in a SOT323 plastic package.
NPN complement: BC817W.

## MARKING

| TYPE NUMBER | MARKING CODE(1) | TYPE NUMBER | MARKING CODE(1) |
|---|---|---|---|
| BC807W | 5D∗ | BC807-25W | 5B∗ |
| BC807-16W | 5A∗ | BC807-40W | 5C∗ |

**Note**

1. ∗ = - : Made in Hong Kong.
   ∗ = t : Made in Malaysia.

## PINNING

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

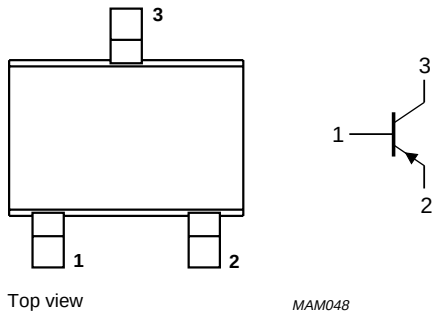



Fig.1 Simplified outline (SOT323) and symbol.

## 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 | – | –50 | V |
| $V_{CEO}$ | collector-emitter voltage | open base; $I_C$ = –10 mA | – | –45 | V |
| $V_{EBO}$ | emitter-base voltage | open collector | – | –5 | V |
| $I_C$ | collector current (DC) | | – | –500 | mA |
| $I_{CM}$ | peak collector current | | – | –1 | A |
| $I_{BM}$ | peak base current | | – | –200 | mA |
| $P_{tot}$ | total power dissipation | $T_{amb} \leq 25$ °C; note 1 | – | 200 | 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 an FR4 printed-circuit board.

## THERMAL CHARACTERISTICS

| SYMBOL | PARAMETER | CONDITIONS | VALUE | UNIT |
|---|---|---|---|---|
| $R_{th\ j\text{-}a}$ | thermal resistance from junction to ambient | note 1 | 625 | K/W |

**Note**

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

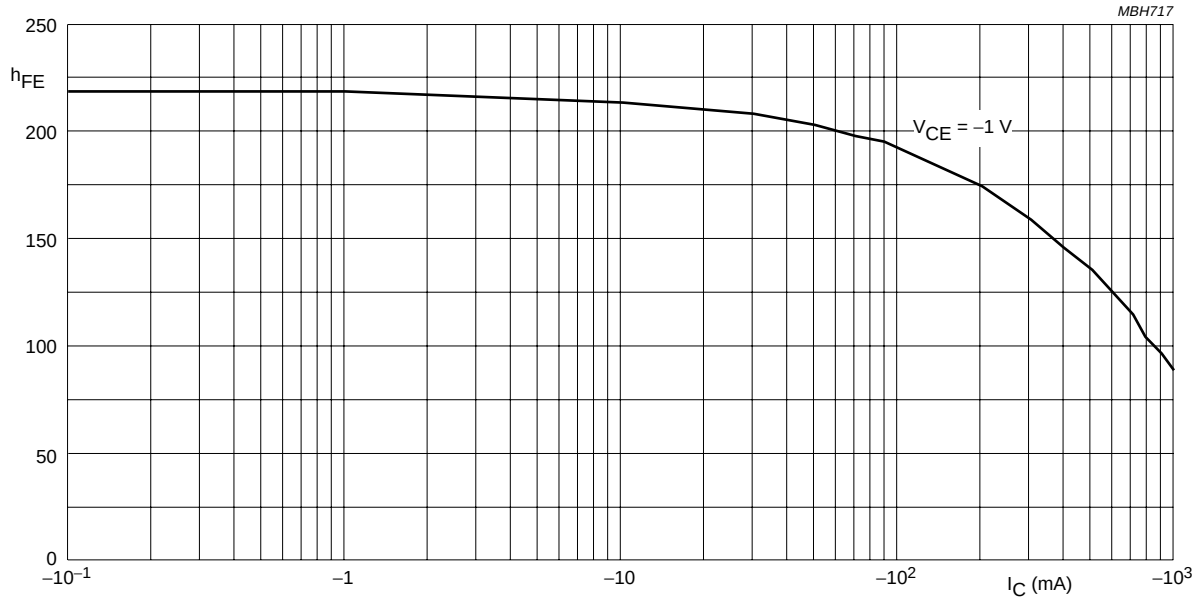
## CHARACTERISTICS

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

| SYMBOL | PARAMETER | CONDITIONS | MIN. | MAX. | UNIT |
|---|---|---|---|---|---|
| $I_{CBO}$ | collector cut-off current | $I_E$ = 0; $V_{CB}$ = –20 V | – | –100 | nA |
| | | $I_E$ = 0; $V_{CB}$ = –20 V; $T_j$ = 150 °C | – | –5 | µA |
| $I_{EBO}$ | emitter cut-off current | $I_C$ = 0; $V_{EB}$ = –5 V | – | –100 | nA |
| $h_{FE}$ | DC current gain<br>BC807W<br>BC807-16W<br>BC807-25W<br>BC807-40W | $I_C$ = –100 mA; $V_{CE}$ = –1 V; note 1; see Figs 2, 3 and 4 | <br>100<br>100<br>160<br>250 | <br>600<br>250<br>400<br>600 | |
| | DC current gain | $I_C$ = –500 mA; $V_{CE}$ = –1 V; note 1 | 40 | – | |
| $V_{CEsat}$ | collector-emitter saturation voltage | $I_C$ = –500 mA; $I_B$ = –50 mA; note 1 | – | –700 | mV |
| $V_{BE}$ | base-emitter voltage | $I_C$ = –500 mA; $V_{CE}$ = –1 V; note 1 | – | –1.2 | V |
| $C_c$ | collector capacitance | $I_E$ = $i_e$ = 0; $V_{CB}$ = –10 V; f = 1 MHz | – | 10 | pF |
| $f_T$ | transition frequency | $I_C$ = –10 mA; $V_{CE}$ = –5 V; f = 100 MHz | 80 | – | MHz |

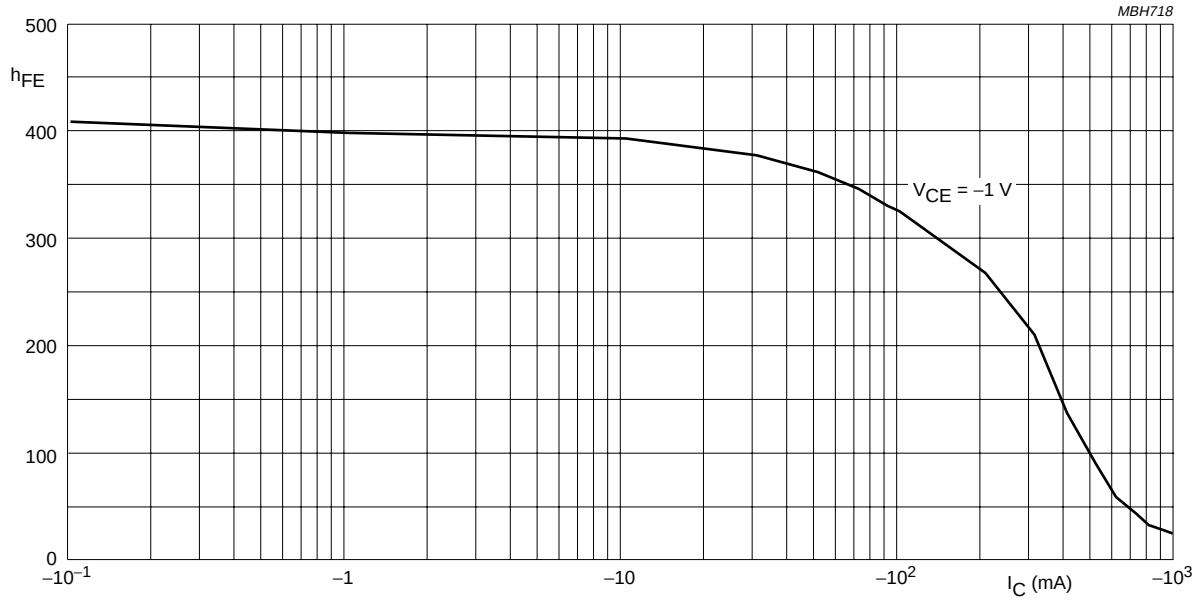
**Note**

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



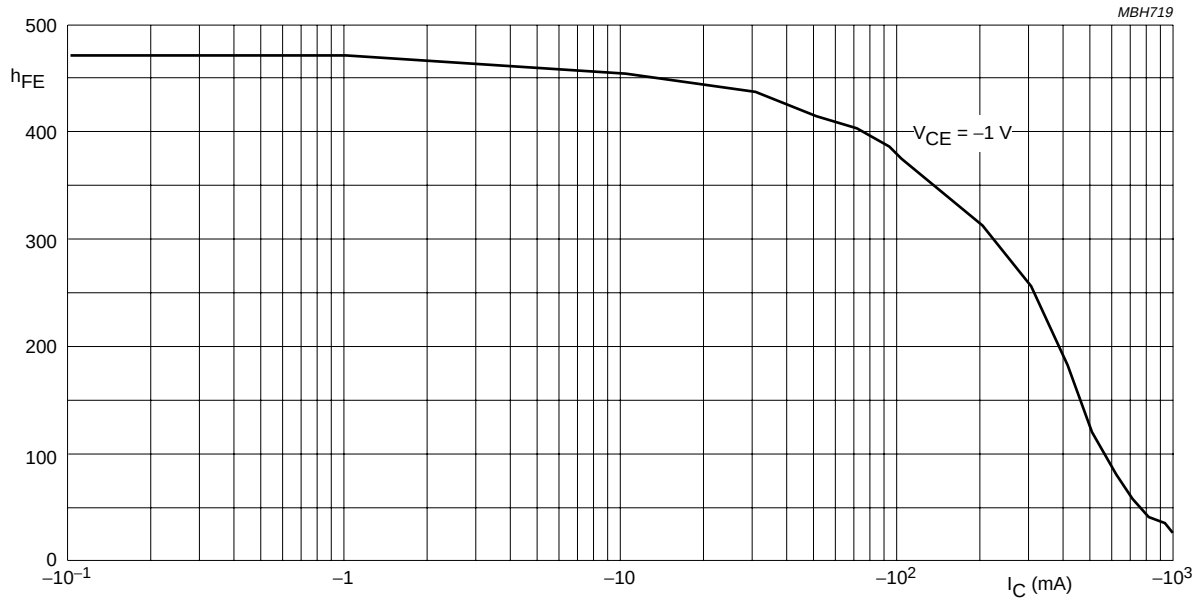

**BC807-16W**.

Fig.2 DC current gain; typical values.




**BC807-25W**.

Fig.3 DC current gain; typical values.

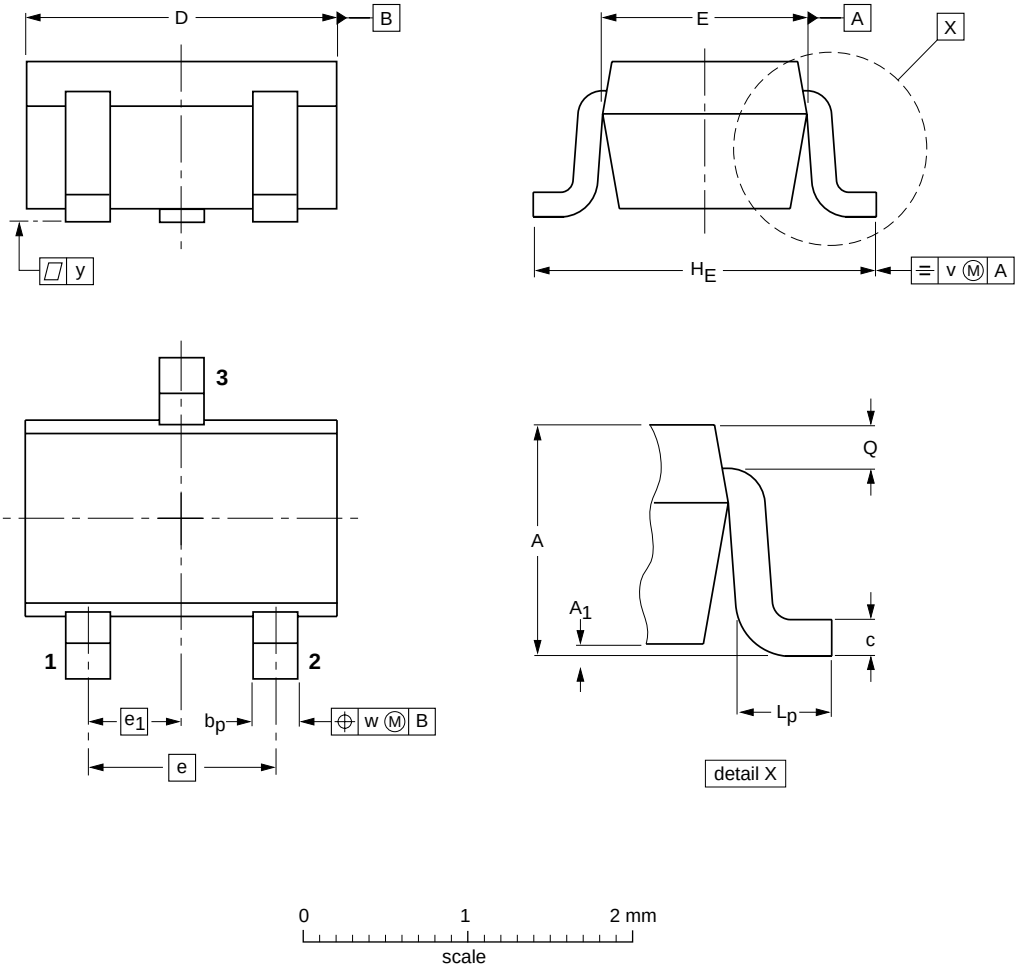



**BC807-40W**.

Fig.4 DC current gain; typical values.

## PACKAGE OUTLINE

**Plastic surface mounted package; 3 leads** **SOT323**




**DIMENSIONS (mm are the original dimensions)**

| UNIT | A | $A_1$ max | $b_p$ | c | D | E | e | $e_1$ | $H_E$ | $L_p$ | Q | v | w |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | 1.1<br>0.8 | 0.1 | 0.4<br>0.3 | 0.25<br>0.10 | 2.2<br>1.8 | 1.35<br>1.15 | 1.3 | 0.65 | 2.2<br>2.0 | 0.45<br>0.15 | 0.23<br>0.13 | 0.2 | 0.2 |

| OUTLINE VERSION | REFERENCES | | | | EUROPEAN PROJECTION | ISSUE DATE |
|---|---|---|---|---|---|---|
| | IEC | JEDEC | EIAJ | | | |
| SOT323 | | | SC-70 | | | 97-02-28 |

## 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. | |

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