查询PMBTH10供应商 捷多邦，专业PCB打样工厂，24小时加急出货

DISCRETE SEMICONDUCTORS

# DATA SHEET

# PMBTH10
## NPN 1 GHz general purpose switching transistor

Product specification
File under Discrete Semiconductors, SC14

September 1995

找PDF 维库一下 pdf.dzsc.com

Philips Semiconductors

PHILIPS

# NPN 1 GHz general purpose switching transistor PMBTH10

## FEATURES

- Low cost
- High power gain.

## DESCRIPTION

The PMBTH10 is a general purpose silicon npn transistor, encapsulated in a SOT23 plastic envelope. Its pnp complement is the PMBTH81.

## PINNING

| PIN | DESCRIPTION |
|---|---|
| Code: V30 | |
| 1 | base |
| 2 | emitter |
| 3 | collector |

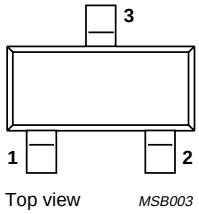



Fig.1 SOT23.

## QUICK REFERENCE DATA

| SYMBOL | PARAMETER | CONDITIONS | MIN. | MAX. | UNIT |
|---|---|---|---|---|---|
| $V_{CBO}$ | collector-base voltage | open emitter | – | 30 | V |
| $V_{CEO}$ | collector-emitter voltage | open base | – | 25 | V |
| $V_{EBO}$ | emitter-base voltage | open collector | – | 3 | V |
| $P_{tot}$ | total power dissipation | $T_s$ = 45 °C (note 1) | – | 400 | mW |
| $h_{FE}$ | DC current gain | $V_{CE}$ = 10 V; $I_C$ = 4 mA | 60 | – | |
| $C_{re}$ | collector-emitter feedback capacitance | $V_{CB}$ = 10 V; $I_E$ = 0; f = 1 MHz | – | 0.7 | pF |
| $C_{rb}$ | collector-base feedback capacitance | $V_{CB}$ = 10 V; $I_E$ = 0; f = 1 MHz | 0.35 | 0.65 | pF |
| $f_T$ | transition frequency | $V_{CE}$ = 10 V; $I_C$ = 4 mA; f = 100 MHz; $T_{amb}$ = 25 °C | 650 | – | MHz |
| $r_bC_c$ | collector-base time constant | $V_{CE}$ = 10 V; $I_C$ = 4 mA; f = 100 MHz; $T_{amb}$ = 25 °C | – | 9 | ps |

## LIMITING VALUES

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

| SYMBOL | PARAMETER | CONDITIONS | MIN. | MAX. | UNIT |
|---|---|---|---|---|---|
| $V_{CBO}$ | collector-base voltage | open emitter | – | 30 | V |
| $V_{CEO}$ | collector-emitter voltage | open base | – | 25 | V |
| $V_{EBO}$ | emitter-base voltage | open collector | – | 3 | V |
| $I_C$ | DC collector current | | – | 40 | mA |
| $P_{tot}$ | total power dissipation | $T_s$ = 45 °C (note 1) | – | 400 | mW |
| $T_{stg}$ | storage temperature | | –65 | 150 | °C |
| $T_j$ | junction temperature | | – | 150 | °C |

**Note**

1. $T_s$ is the temperature at the soldering point of the collector tab.

## THERMAL RESISTANCE

| SYMBOL | PARAMETER | THERMAL RESISTANCE |
|---|---|---|
| $R_{th\ j\text{-}s}$ | from junction to soldering point (note 1) | 260 K/W |

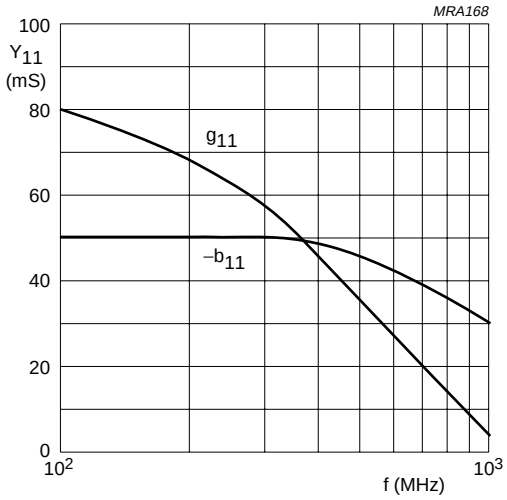
**Note**

1. $T_s$ is the temperature at the soldering point of the collector tab.

## CHARACTERISTICS

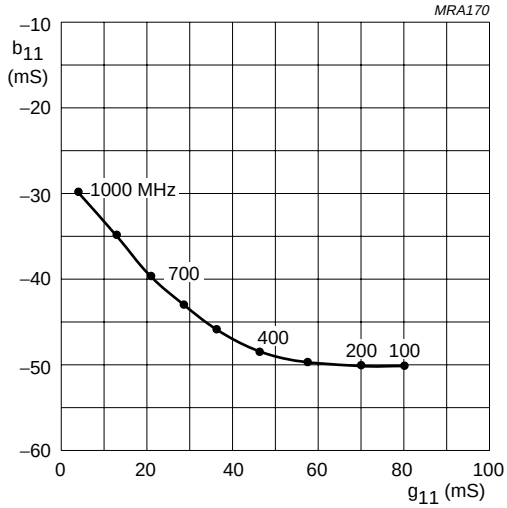
$T_j$ = 25 °C.

| SYMBOL | PARAMETER | CONDITIONS | MIN. | MAX. | UNIT |
|---|---|---|---|---|---|
| $V_{(BR)CBO}$ | collector-base breakdown voltage | open emitter; $I_C$ = 100 μA; $I_E$ = 0 | 30 | – | V |
| $V_{(BR)CEO}$ | collector-emitter breakdown voltage | open base; $I_C$ = 1 mA; $I_B$ = 0 | 25 | – | V |
| $V_{(BR)EBO}$ | emitter-base breakdown voltage | open collector; $I_E$ = 10 μA; $I_C$ = 0 | 3 | – | V |
| $V_{CE\ sat}$ | collector-emitter saturation voltage | $I_C$ = 4 mA; $I_B$ = 0.4 mA | – | 0.5 | V |
| $V_{BE\ on}$ | base-emitter ON voltage | $V_{CE}$ = 10 V; $I_C$ = 4 mA | – | 0.95 | V |
| $I_{CBO}$ | collector-base cut-off current | $V_{CB}$ = 25 V; $I_E$ = 0 | – | 100 | nA |
| $I_{EBO}$ | emitter-base cut-off current | $V_{CB}$ = 25 V; $I_C$ = 0 | – | 100 | nA |
| $h_{FE}$ | DC current gain | $V_{CE}$ = 10 V; $I_C$ = 4 mA | 60 | – | |
| $C_{re}$ | collector-emitter feedback capacitance | $V_{CB}$ = 10 V; $I_E$ = $i_e$ = 0; f = 1 MHz | – | 0.7 | pF |
| $C_{rb}$ | collector-base feedback capacitance | $V_{CB}$ = 10 V; $I_C$ = $i_c$ = 0; f = 1 MHz | 0.35 | 0.65 | pF |
| $f_T$ | transition frequency | $V_{CE}$ = 10 V; $I_C$ = 4 mA; f = 100 MHz; $T_{amb}$ = 25 °C | 650 | – | MHz |
| $r_bC_c$ | collector-base time constant | $V_{CB}$ = 10 V; $I_C$ = 4 mA; f = 100 MHz; $T_{amb}$ = 25 °C | – | 9 | ps |



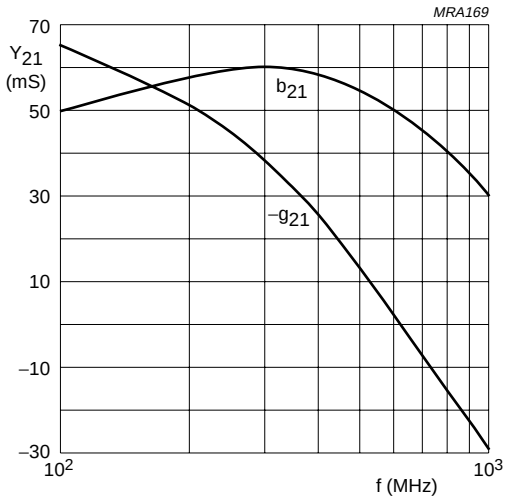

$V_{CB}$ = 10 V; $I_C$ = 4 mA.

Fig.2 Common base input admittance ($Y_{11}$) as a function of frequency.



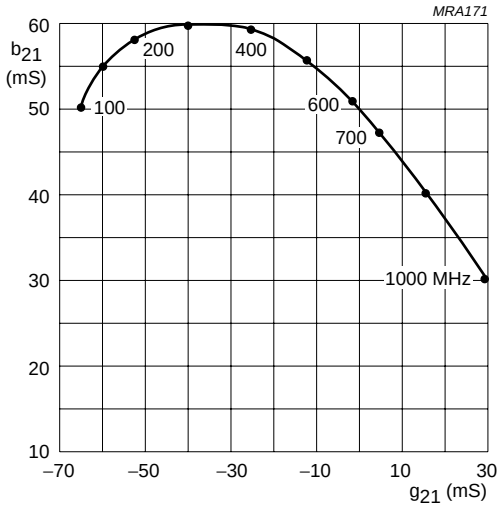

$V_{CB}$ = 10 V; $I_C$ = 4 mA.

Fig.3 Common base input admittance ($Y_{11}$).



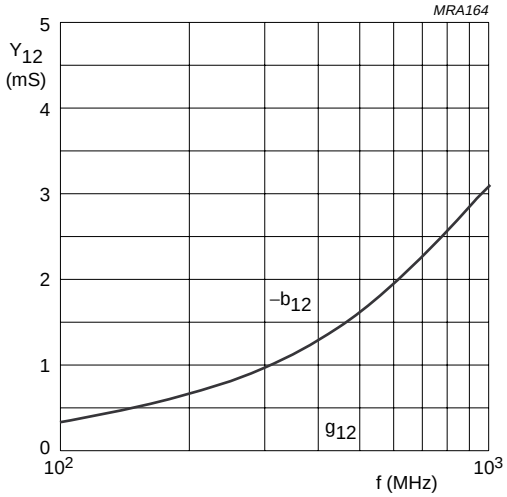

$V_{CB}$ = 10 V; $I_C$ = 4 mA.

Fig.4 Common base forward transfer admittance ($Y_{21}$) as a function of frequency.



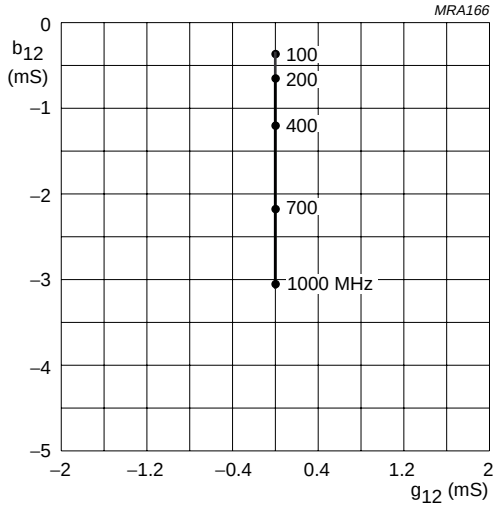

$V_{CB}$ = 10 V; $I_C$ = 4 mA.

Fig.5 Common base forward transfer admittance ($Y_{21}$).



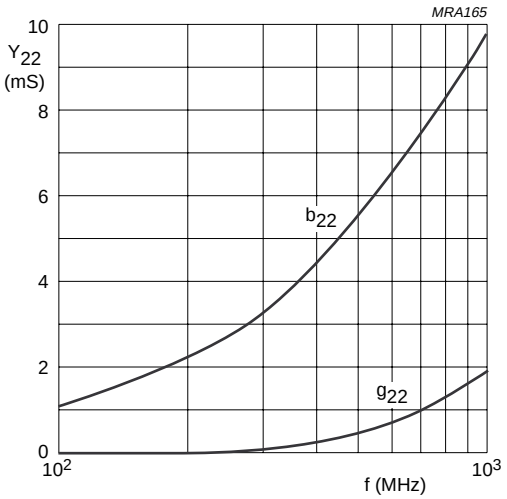

$V_{CB}$ = 10 V; $I_C$ = 4 mA.

Fig.6 Common base reverse transfer admittance ($Y_{12}$) as a function of frequency.



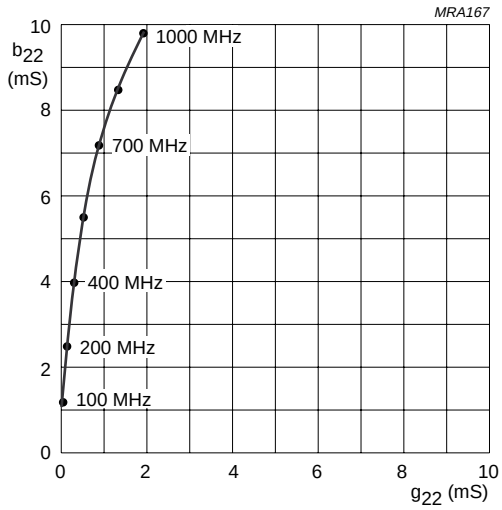

$V_{CB}$ = 10 V; $I_C$ = 4 mA.

Fig.7 Common base reverse transfer admittance ($Y_{12}$).




$V_{CB}$ = 10 V; $I_C$ = 4 mA.

Fig.8 Common base reverse admittance ($Y_{22}$) as a function of frequency.

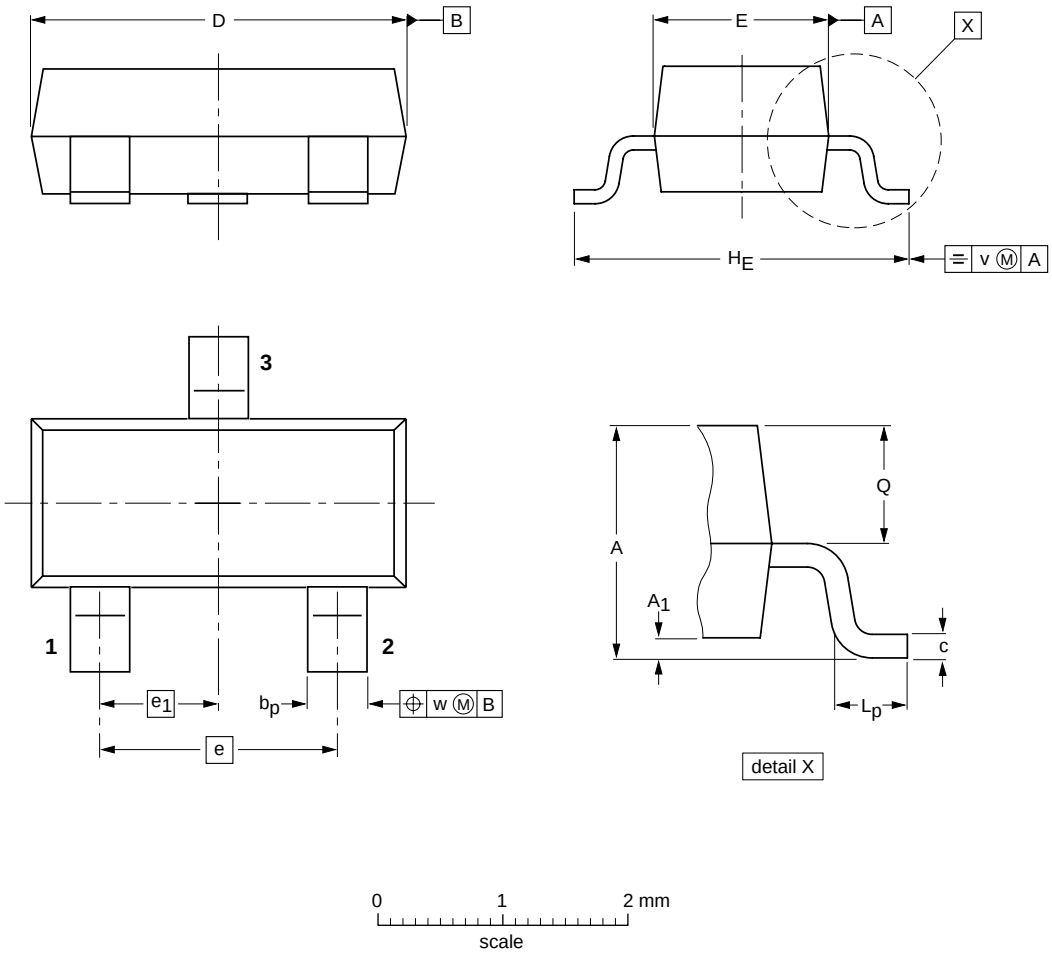



$V_{CB}$ = 10 V; $I_C$ = 4 mA.

Fig.9 Common base reverse admittance ($Y_{22}$).

## PACKAGE OUTLINE

**Plastic surface mounted package; 3 leads** **SOT23**




**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>0.9 | 0.1 | 0.48<br>0.38 | 0.15<br>0.09 | 3.0<br>2.8 | 1.4<br>1.2 | 1.9 | 0.95 | 2.5<br>2.1 | 0.45<br>0.15 | 0.55<br>0.45 | 0.2 | 0.1 |

| OUTLINE VERSION | REFERENCES | | | | EUROPEAN PROJECTION | ISSUE DATE |
|---|---|---|---|---|---|---|
| | IEC | JEDEC | EIAJ | | | |
| SOT23 | | | | | | 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. | |

## LIFE SUPPORT APPLICATIONS

These products are not designed for use in life support appliances, devices, or systems where malfunction of these products can reasonably be expected to result in personal injury. Philips customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Philips for any damages resulting from such improper use or sale.