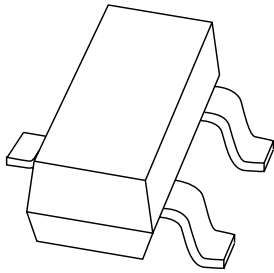


DATA SHEET



PMBS3906

PNP general purpose transistor

Product data sheet
Supersedes data of 1999 Apr 22

2004 Feb 02

PNP general purpose transistor

PMBS3906

FEATURES

- Low current (max. 100 mA)
- Low voltage (max. 40 V).

APPLICATIONS

- General purpose switching and amplification, e.g. telephony and professional communication equipment.

DESCRIPTION

PNP transistor in a SOT23 plastic package.
NPN complement: PMBS3904.

MARKING

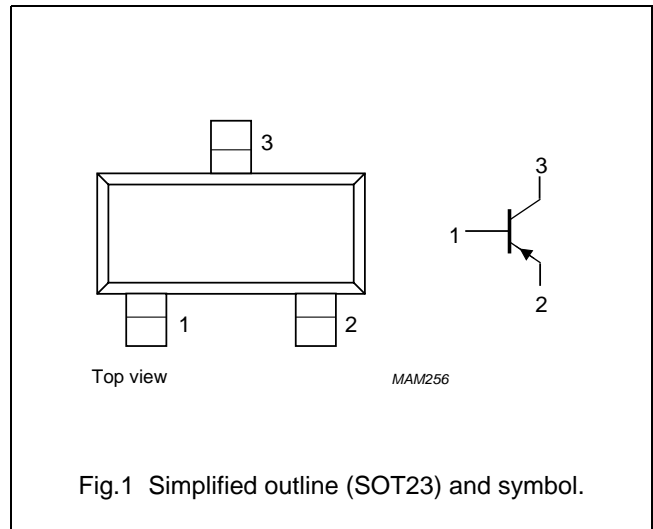
TYPE NUMBER	MARKING CODE ⁽¹⁾
PMBS3906	*O6

Note

- * = p : Made in Hong Kong.
* = t : Made in Malaysia.
* = W : Made in China.

PINNING

PIN	DESCRIPTION
1	base
2	emitter
3	collector



ORDERING INFORMATION

TYPE NUMBER	PACKAGE		
	NAME	DESCRIPTION	VERSION
PMBS3906	–	plastic surface mounted package; 3 leads	SOT23

LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 60134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V _{CB0}	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 capability		–	–100	mA
I _{CM}	peak collector current		–	–200	mA
I _{BM}	peak base current		–	–200	mA
P _{tot}	total power dissipation	T _{amb} ≤ 25 °C	–	250	mW
T _{stg}	storage temperature		–65	+150	°C
T _j	junction temperature		–	150	°C
T _{amb}	operating ambient temperature		–65	+150	°C

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THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th(j-a)}$	thermal resistance from junction to ambient	note 1	500	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 cut-off current	$I_E = 0$; $V_{CB} = -30\text{ V}$	–	–50	nA
I_{EBO}	emitter cut-off current	$I_C = 0$; $V_{EB} = -5\text{ V}$	–	–50	nA
h_{FE}	DC current gain	$V_{CE} = -1\text{ V}$; (see Fig.2) $I_C = -0.1\text{ mA}$ $I_C = -1\text{ mA}$ $I_C = -10\text{ mA}$ $I_C = -50\text{ mA}$; note 1 $I_C = -100\text{ mA}$; note 1	60 80 100 60 30	– – 300 – –	
V_{CEsat}	collector-emitter saturation voltage	$I_C = -10\text{ mA}$; $I_B = -1\text{ mA}$ $I_C = -50\text{ mA}$; $I_B = -5\text{ mA}$; note 1	–	–250 –400	mV mV
V_{BEsat}	base-emitter saturation voltage	$I_C = -10\text{ mA}$; $I_B = -1\text{ mA}$ $I_C = -50\text{ mA}$; $I_B = -5\text{ mA}$; note 1	–	–850 –950	mV mV
C_c	collector capacitance	$I_E = i_e = 0$; $V_{CB} = -5\text{ V}$; $f = 100\text{ MHz}$	–	4.5	pF
C_e	emitter capacitance	$I_C = i_c = 0$; $V_{EB} = -0.5\text{ V}$; $f = 100\text{ MHz}$	–	12	pF
f_T	transition frequency	$I_C = -10\text{ mA}$; $V_{CE} = -20\text{ V}$; $f = 100\text{ MHz}$	150	–	MHz
F	noise figure	$I_C = -100\text{ }\mu\text{A}$; $V_{CE} = -5\text{ V}$; $R_S = 1\text{ k}\Omega$; $f = 10\text{ Hz to }15.7\text{ kHz}$	–	4	dB

Switching times (between 10% and 90% levels); (see Fig.3)

t_{on}	turn-on time	$I_{Con} = -10\text{ mA}$; $I_{Bon} = -1\text{ mA}$; $I_{Boff} = 1\text{ mA}$	–	100	ns
t_d	delay time		–	50	ns
t_r	rise time		–	50	ns
t_{off}	turn-off time		–	700	ns
t_s	storage time		–	600	ns
t_f	fall time		–	100	ns

Note

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

PNP general purpose transistor

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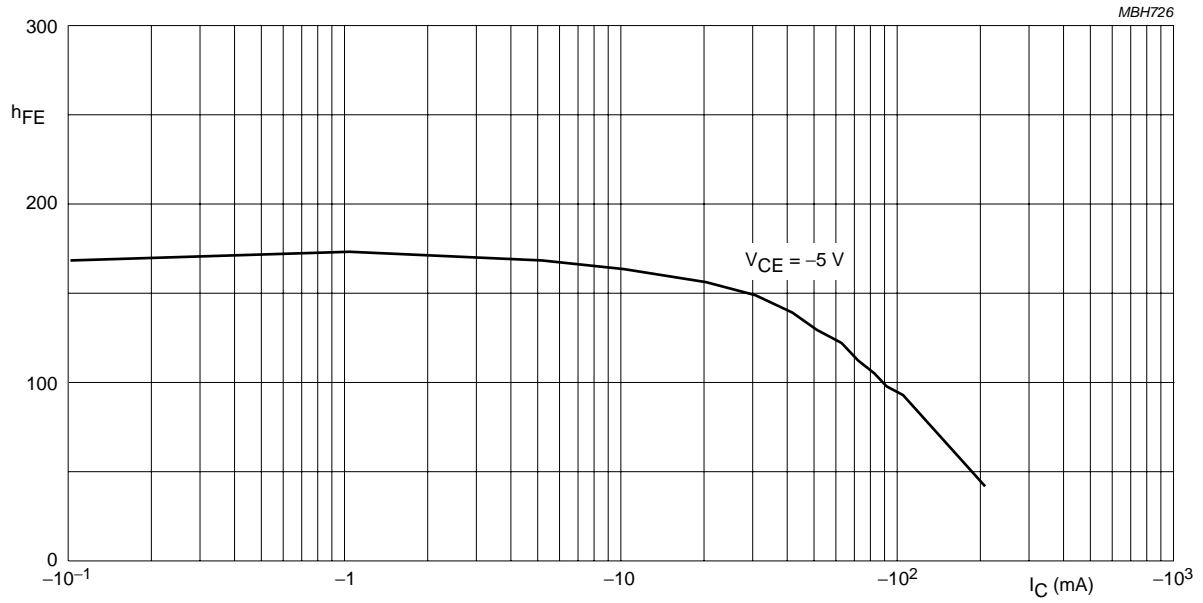
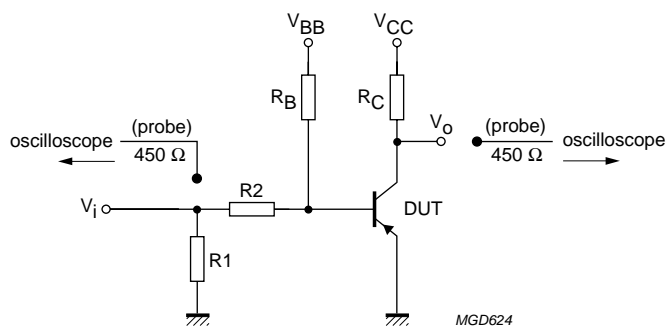


Fig.2 DC current gain; typical values.



$V_i = -5 \text{ V}$; $T = 500 \text{ } \mu\text{s}$; $t_p = 10 \text{ } \mu\text{s}$; $t_r = t_f \leq 3 \text{ ns}$.
 $R_1 = 56 \text{ } \Omega$; $R_2 = 2.5 \text{ k}\Omega$; $R_B = 3.9 \text{ k}\Omega$; $R_C = 270 \text{ } \Omega$.
 $V_{BB} = 1.9 \text{ V}$; $V_{CC} = 3 \text{ V}$.
 Oscilloscope input impedance $Z_i = 50 \text{ } \Omega$.

Fig.3 Test circuit for switching times.

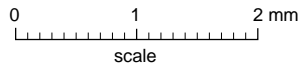
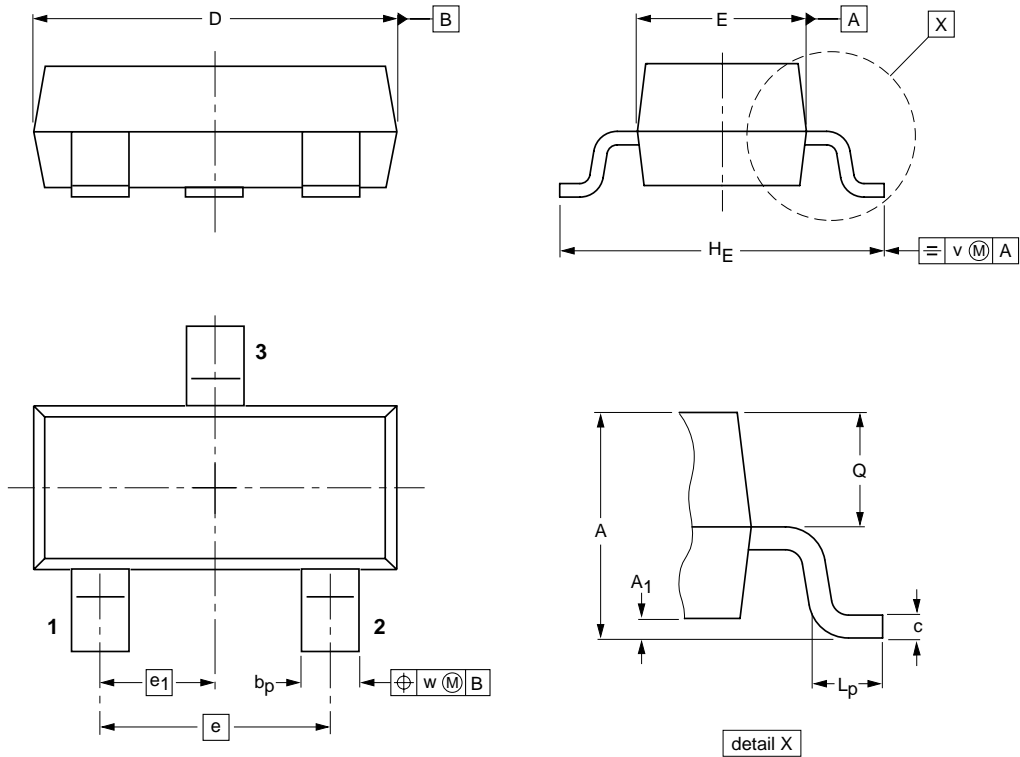
PNP general purpose transistor

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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 0.9	0.1	0.48 0.38	0.15 0.09	3.0 2.8	1.4 1.2	1.9	0.95	2.5 2.1	0.45 0.15	0.55 0.45	0.2	0.1

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA			
SOT23		TO-236AB				04-11-04 06-03-16

PNP general purpose transistor

PMBS3906

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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