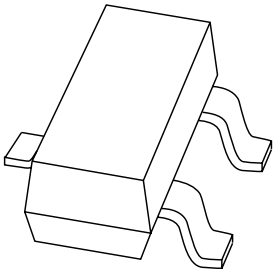
DATA SHEET



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

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

PINNING

PIN	DESCRIPTION
1	base
2	emitter
3	collector

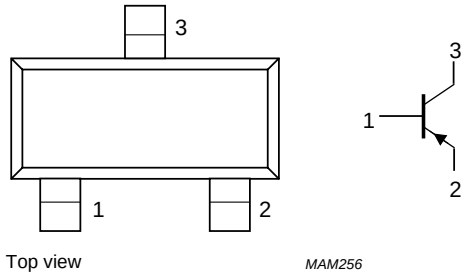


Fig.1 Simplified outline (SOT23) and symbol.

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_{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 capability		–	−100	mA
I_{CM}	peak collector current		–	−200	mA
I_{BM}	peak base current		–	−200	mA
P_{tot}	total power dissipation	$T_{amb} \leq 25$ °C	–	250	mW
T_{stg}	storage temperature		−65	+150	°C
T_j	junction temperature		–	150	°C
T_{amb}	operating ambient temperature		−65	+150	°C

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 °C unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
I_{CBO}	collector cut-off current	I_E = 0; V_{CB} = –30 V	–	–50	nA
I_{EBO}	emitter cut-off current	I_C = 0; V_{EB} = –5 V	–	–50	nA
h_{FE}	DC current gain	V_{CE} = –1 V; (see Fig.2)			
		I_C = –0.1 mA	60	–	
		I_C = –1 mA	80	–	
		I_C = –10 mA	100	300	
		I_C = –50 mA; note 1	60	–	
		I_C = –100 mA; note 1	30	–	
V_{CEsat}	collector-emitter saturation voltage	I_C = –10 mA; I_B = –1 mA	–	–250	mV
		I_C = –50 mA; I_B = –5 mA; note 1	–	–400	mV
V_{BEsat}	base-emitter saturation voltage	I_C = –10 mA; I_B = –1 mA	–	–850	mV
		I_C = –50 mA; I_B = –5 mA; note 1	–	–950	mV
C_c	collector capacitance	$I_E = i_e$ = 0; V_{CB} = –5 V; f = 100 MHz	–	4.5	pF
C_e	emitter capacitance	$I_C = i_c$ = 0; VE_B = –0.5 V; f = 100 MHz	–	12	pF
f_T	transition frequency	I_C = –10 mA; V_{CE} = –20 V; f = 100 MHz	150	–	MHz
F	noise figure	I_C = –100 μA; V_{CE} = –5 V; R_S = 1 kΩ; f = 10 Hz to 15.7 kHz	–	4	dB
Switching times (between 10% and 90% levels); (see Fig.3)					
t_{on}	turn-on time	I_{Con} = –10 mA; I_{Bon} = –1 mA; I_{Boff} = 1 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: $t_p \leq 300$ μs; $\delta \leq 0.02$.

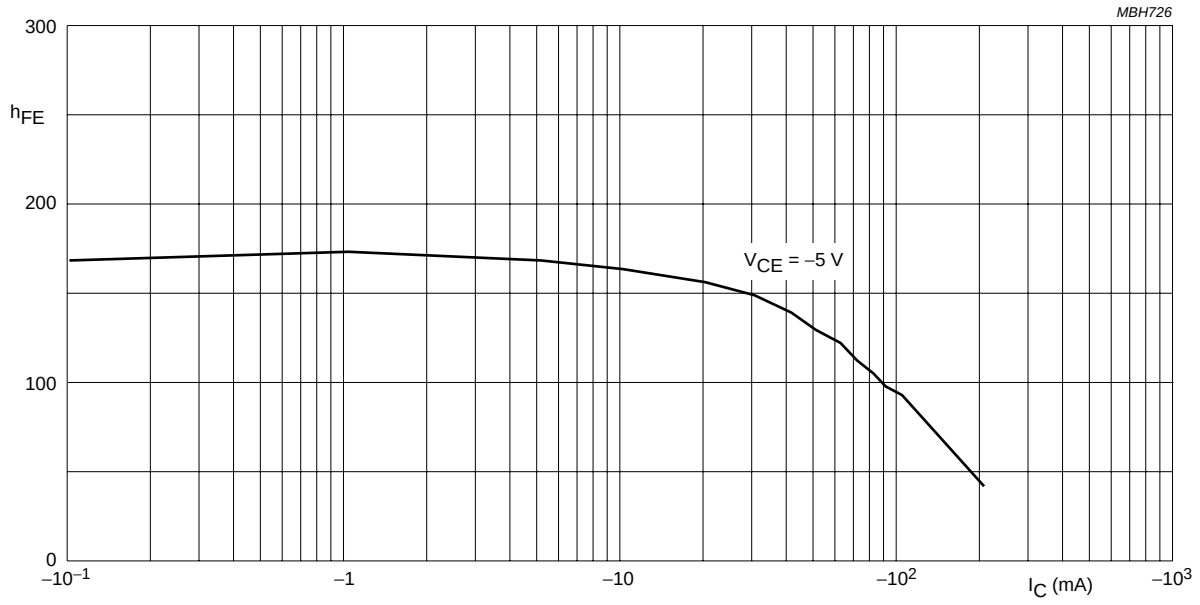
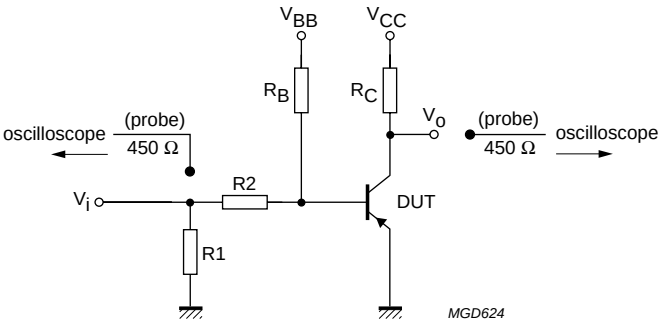


Fig.2 DC current gain; typical values.

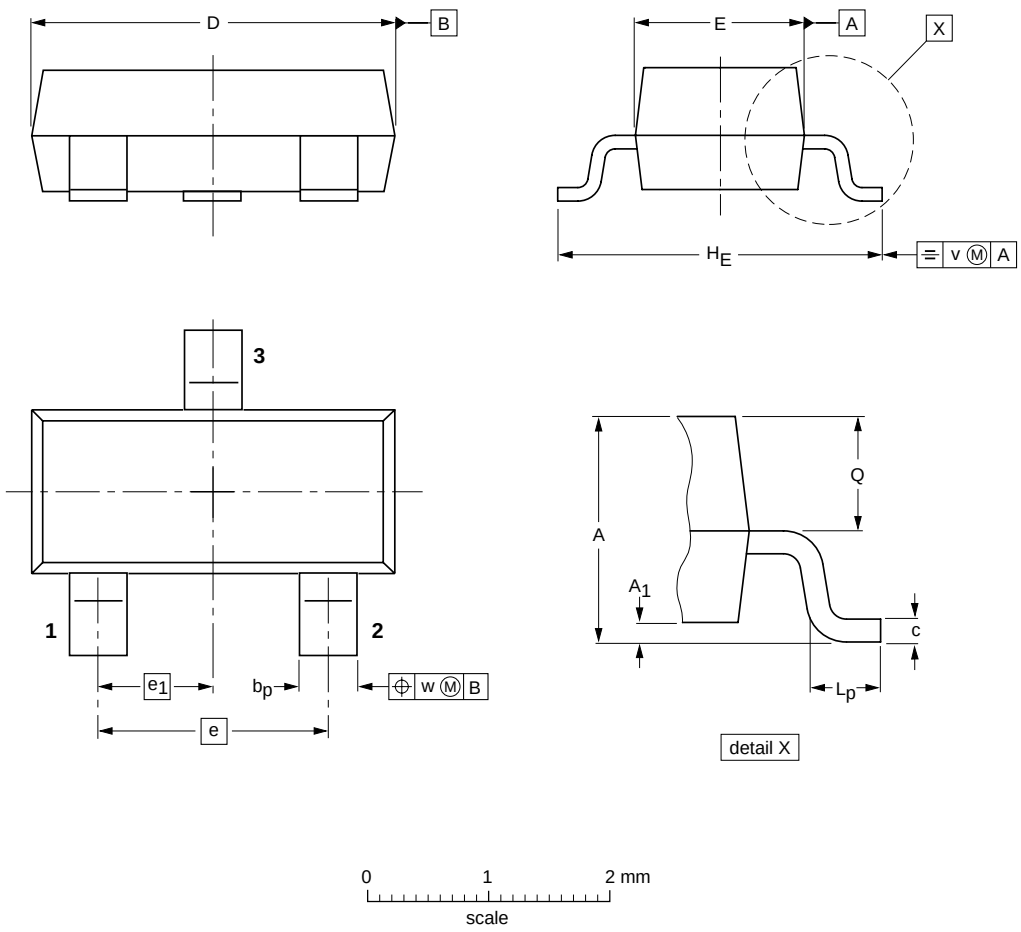


V_i = –5 V; T = 500 μs; t_p = 10 μs; t_r = t_f ≤ 3 ns.
R1 = 56 Ω; R2 = 2.5 kΩ; R_B = 3.9 kΩ; R_C = 270 Ω.
V_{BB} = 1.9 V; V_{CC} = 3 V.
Oscilloscope input impedance Z_i = 50 Ω.

Fig.3 Test circuit for switching times.

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

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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NXP Semiconductors

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

For additional information please visit: **http://www.nxp.com**
For sales offices addresses send e-mail to: **salesaddresses@nxp.com**

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