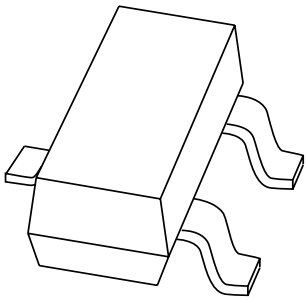
DATA SHEET



PMBT5401
PNP high-voltage transistor

Product specification
Supersedes data of 1999 Apr 15

2004 Jan 21

Philips
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PNP high-voltage transistor PMBT5401

FEATURES

- Low current (max. 300 mA)
- High voltage (max. 150 V).

APPLICATIONS

- Switching and amplification in high voltage applications such as telephony.

DESCRIPTION

PNP high-voltage transistor in a SOT23 plastic package.
NPN complement: PMBT5550.

MARKING

TYPE NUMBER	MARKING CODE(1)
PMBT5401	*2L

Note

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

PINNING

PIN	DESCRIPTION
1	base
2	emitter
3	collector

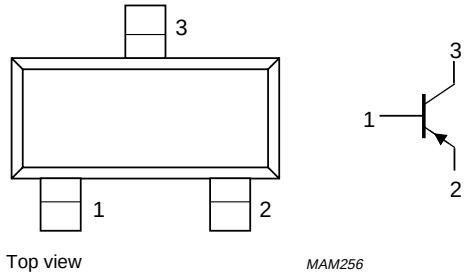


Fig.1 Simplified outline (SOT23) and symbol.

ORDERING INFORMATION

TYPE NUMBER	PACKAGE		
	NAME	DESCRIPTION	VERSION
PMBT5401	–	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	–	–160	V
V_{CEO}	collector-emitter voltage	open base	–	–150	V
V_{EBO}	emitter-base voltage	open collector	–	–5	V
I_C	collector current (DC)		–	–300	mA
I_{CM}	peak collector current		–	–600	mA
I_{BM}	peak base current		–	–100	mA
P_{tot}	total power dissipation	$T_{amb} \leq 25$ °C; note 1	–	250	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
$R_{th(j-a)}$	thermal resistance from junction to ambient	note 1	500	K/W

Note

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

CHARACTERISTICS

T_j = 25 °C unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
I_{CBO}	collector-base cut-off current	I_E = 0; V_{CB} = –120 V	–	–50	nA
		I_E = 0; V_{CB} = –120 V; T_{amb} = 150 °C	–	–50	µA
I_{EBO}	emitter-base cut-off current	I_C = 0; V_{EB} = –4 V	–	–50	nA
h_{FE}	DC current gain	V_{CE} = –5 V; (see Fig.2)			
		I_C = –1 mA	50	–	
		I_C = –10 mA	60	240	
		I_C = –50 mA	50	–	
V_{CEsat}	collector-emitter saturation voltage	I_C = –10 mA; I_B = –1 mA	–	–200	mV
		I_C = –50 mA; I_B = –5 mA	–	–500	mV
V_{BEsat}	base-emitter saturation voltage	I_C = –10 mA; I_B = –1 mA	–	–1	V
		I_C = –50 mA; I_B = –5 mA	–	–1	V
C_c	collector capacitance	I_E = I_e = 0; V_{CB} = –10 V; f = 1 MHz	–	6	pF
f_T	transition frequency	I_C = –10 mA; V_{CE} = –10 V; f = 100 MHz; T_{amb} = 25 °C	100	300	MHz
F	noise figure	I_C = –200 µA; V_{CE} = –5 V; R_S = 2 kΩ; f = 10 Hz to 15.7 kHz; T_{amb} = 25 °C	–	8	dB

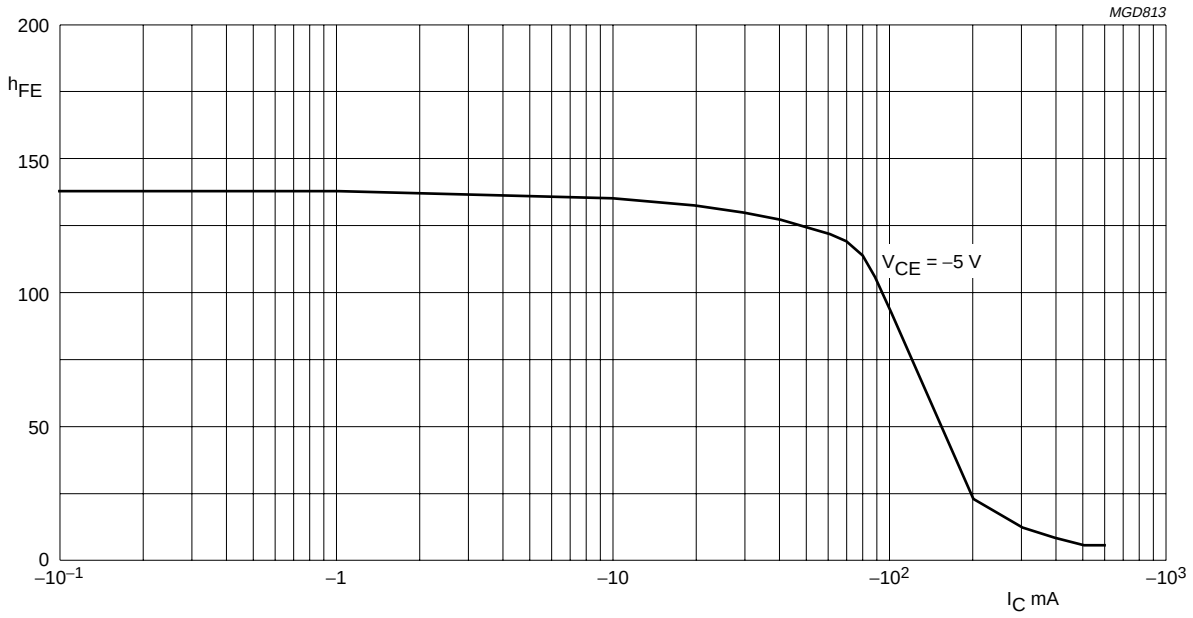
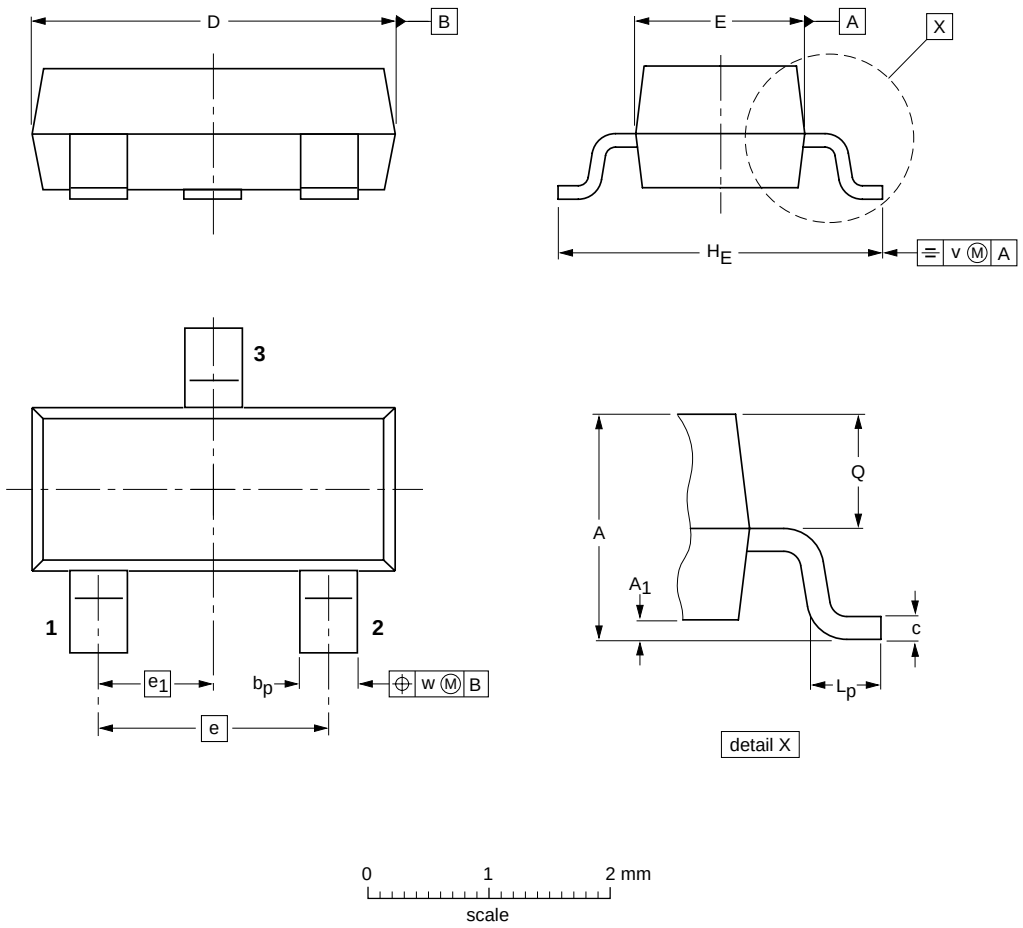


Fig.2 DC current gain; typical values.

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	EIAJ			
SOT23		TO-236AB				~~97-02-28~~ 99-09-13

DATA SHEET STATUS

LEVEL	DATA SHEET STATUS(1)	PRODUCT STATUS(2)(3)	DEFINITION
I	Objective data	Development	This data sheet contains data from the objective specification for product development. Philips Semiconductors reserves the right to change the specification in any manner without notice.
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Limiting values definition — Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 60134). 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.

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