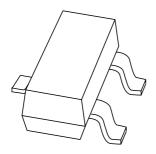
DISCRETE SEMICONDUCTORS

DATA SHEET



PMBT2369 NPN switching transistor

Product specification Supersedes data of 1999 Apr 27 2004 Jan 22





NPN switching transistor

PMBT2369

FEATURES

- Low current (max. 200 mA)
- Low voltage (max. 15 V).

APPLICATIONS

• High-speed switching, especially in portable equipment.

DESCRIPTION

NPN switching transistor in a SOT23 plastic package.

MARKING

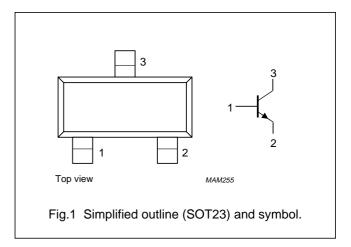
TYPE NUMBER	MARKING CODE ⁽¹⁾	
PMBT2369	*1J	

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	PACKAGE				
NUMBER	NAME	NAME DESCRIPTION VERSION			
PMBT2369	_	plastic surface mounted package; 3 leads SOT23			

LIMITING VALUES

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

SYMBOL	PARAMETER	PARAMETER CONDITIONS		MAX.	UNIT
V _{CBO}	collector-base voltage	open emitter	_	40	V
V _{CEO}	collector-emitter voltage	open base	_	15	V
V _{EBO}	emitter-base voltage	open collector	_	5	V
Ic	collector current (DC)		_	200	mA
I _{CM}	peak collector current		_	300	mA
I _{BM}	peak base current		_	100	mA
P _{tot}	total power dissipation	T _{amb} ≤ 25 °C; note 1	_	250	mW
T _{stg}	storage temperature		-65	+150	°C
Tj	junction temperature		_	150	°C
T _{amb}	operating ambient temperature		-65	+150	°C

Note

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

NPN switching transistor

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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

 $T_j = 25$ °C unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
I _{CBO}	collector cut-off current	I _E = 0; V _{CB} = 20 V	_	400	nA
		I _E = 0; V _{CB} = 20 V; T _j = 125 °C	_	30	μΑ
I _{EBO}	emitter cut-off current	I _C = 0; V _{EB} = 4 V	_	100	nA
h _{FE}	DC current gain	I _C = 10 mA; V _{CE} = 1 V	40	120	
		$I_C = 10 \text{ mA}; V_{CE} = 1 \text{ V}; T_{amb} = -55 ^{\circ}\text{C}$	20	_	
		I _C = 100 mA; V _{CE} = 2 V	20	_	
V _{CEsat}	collector-emitter saturation voltage	I _C = 10 mA; I _B = 1 mA	_	250	mV
V _{BEsat}	base-emitter saturation voltage	I _C = 10 mA; I _B = 1 mA	700	850	mV
C _c	collector capacitance	I _E = I _e = 0; V _{CB} = 5 V; f = 1 MHz	_	4	pF
f _T	transition frequency	I _C = 10 mA; V _{CE} = 10 V; f = 100 MHz	500	_	MHz
Switching t	imes (between 10% and 90% levels); (see Fig.2)	•		•
t _{on}	turn-on time	I _{Con} = 10 mA; I _{Bon} = 3 mA;	_	10	ns
t _d	delay time	$I_{Boff} = -1.5 \text{ mA}$	_	4	ns
t _r	rise time		_	6	ns
t _{off}	turn-off time		_	20	ns
t _s	storage time		_	10	ns
t _f	fall time		_	10	ns

NPN switching transistor

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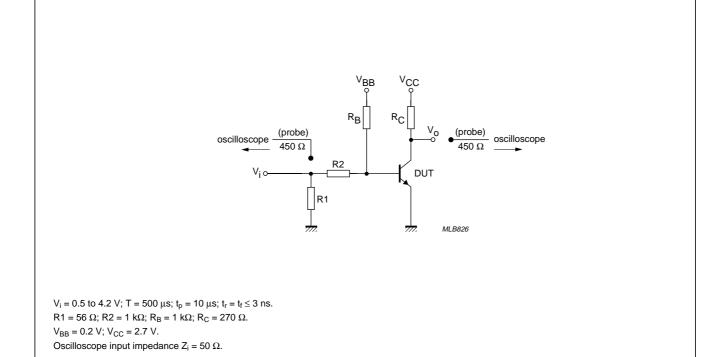


Fig.2 Test circuit for switching times.

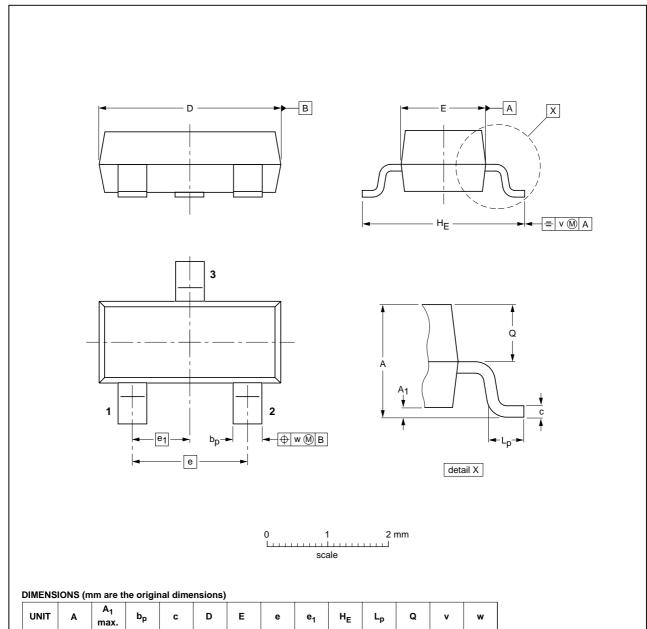
NPN switching transistor

PMBT2369

PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT23



OUTLINE	REFERENCES		EUROPEAN	ISSUE DATE		
VERSION	IEC JEDEC EIAJ		EIAJ		PROJECTION	
SOT23		TO-236AB				-97-02-28 99-09-13

0.95

1.9

0.45

0.55

0.2

0.1

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0.48

0.38

0.9

NPN switching transistor

PMBT2369

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.
II	Preliminary data	Qualification	This data sheet contains data from the preliminary specification. Supplementary data will be published at a later date. Philips Semiconductors reserves the right to change the specification without notice, in order to improve the design and supply the best possible product.
III	Product data	Production	This data sheet contains data from the product specification. Philips Semiconductors reserves the right to make changes at any time in order to improve the design, manufacturing and supply. Relevant changes will be communicated via a Customer Product/Process Change Notification (CPCN).

Notes

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DEFINITIONS

Short-form specification — The data in a short-form specification is extracted from a full data sheet with the same type number and title. For detailed information see the relevant data sheet or data handbook.

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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