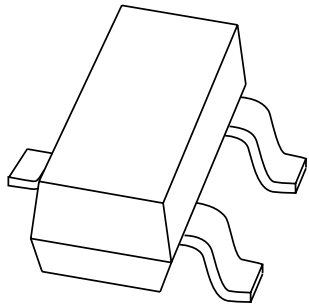


# DATA SHEET



## **PMBT2907; PMBT2907A** PNP switching transistors

Product specification  
Supersedes data of 1997 May 07  
File under Discrete Semiconductors, SC04

1997 Sep 04

## PNP switching transistors

PMBT2907;  
PMBT2907A

## FEATURES

- High current (max. 600 mA)
- Low voltage (max. 60 V).

## APPLICATIONS

- Switching and linear amplification.

## DESCRIPTION

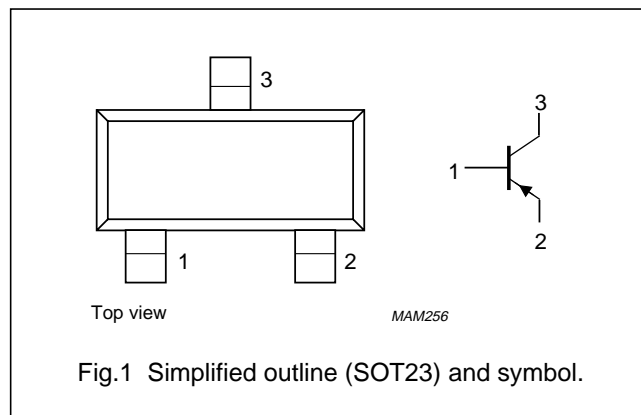
PNP switching transistor in a SOT23 plastic package.  
NPN complements: PMBT2222 and PMBT2222A.

## MARKING

TYPE NUMBER	MARKING CODE
PMBT2907	p2B
PMBT2907A	p2F

## PINNING

PIN	DESCRIPTION
1	base
2	emitter
3	collector



## QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$V_{CBO}$	collector-base voltage	open emitter	–	–60	V
$V_{CEO}$	collector-emitter voltage	open base	–	–40	V
	PMBT2907A		–	–60	V
$I_C$	collector current (DC)		–	–600	mA
$P_{tot}$	total power dissipation	$T_{amb} \leq 25\text{ °C}$	–	250	mW
$h_{FE}$	DC current gain	$I_C = -500\text{ mA}; V_{CE} = -10\text{ V}$	30	–	
	PMBT2907A		50	–	
$f_T$	transition frequency	$I_C = -50\text{ mA}; V_{CE} = -20\text{ V}; f = 100\text{ MHz}$	200	–	MHz
$t_{off}$	turn-off time	$I_{Con} = -150\text{ mA}; I_{Bon} = -15\text{ mA}; I_{Boff} = 15\text{ mA}$	–	365	ns

## PNP switching transistors

## PMBT2907; PMBT2907A

**LIMITING VALUES**

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$V_{CBO}$	collector-base voltage	open emitter	–	–60	V
$V_{CEO}$	collector-emitter voltage	open base	–	–40	V
	PMBT2907			–60	V
$V_{EBO}$	emitter-base voltage	open collector	–	–5	V
$I_C$	collector current (DC)		–	–600	mA
$I_{CM}$	peak collector current		–	–800	mA
$I_{BM}$	peak base current		–	–200	mA
$P_{tot}$	total power dissipation	$T_{amb} \leq 25\text{ °C}$	–	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**

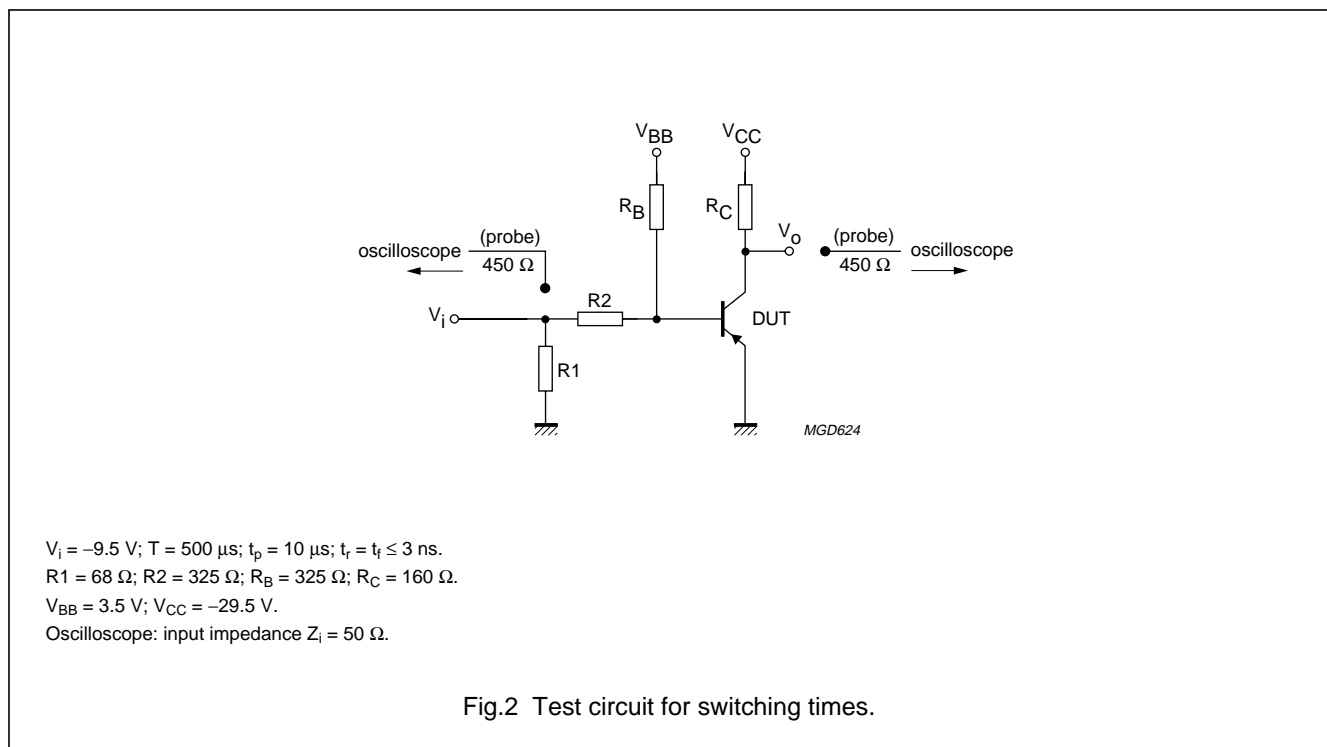
$T_j = 25\text{ °C}$  unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$I_{CBO}$	collector cut-off current	$I_E = 0; V_{CB} = -50\text{ V}$	–	–20	nA
	PMBT2907			–10	nA
$I_{CBO}$	collector cut-off current	$I_E = 0; V_{CB} = -50\text{ V}; T_j = 125\text{ °C}$	–	–20	$\mu\text{A}$
	PMBT2907			–10	$\mu\text{A}$
$I_{EBO}$	emitter cut-off current	$I_C = 0; V_{EB} = -5\text{ V}$	–	–50	nA
$h_{FE}$	DC current gain	$I_C = -0.1\text{ mA}; V_{CE} = -10\text{ V}$	35	–	
	PMBT2907			75	–
$h_{FE}$	DC current gain	$I_C = -1\text{ mA}; V_{CE} = -10\text{ V}$	50	–	
	PMBT2907			100	–

PNP switching transistors

PMBT2907; PMBT2907A

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$h_{FE}$	DC current gain PMBT2907 PMBT2907A	$I_C = -10 \text{ mA}; V_{CE} = -10 \text{ V}$	75 100	– –	
$h_{FE}$	DC current gain	$I_C = -150 \text{ mA}; V_{CE} = -10 \text{ V}$	100	300	
$h_{FE}$	DC current gain PMBT2907 PMBT2907A	$I_C = -500 \text{ mA}; V_{CE} = -10 \text{ V}$	30 50	– –	
$V_{CEsat}$	collector-emitter saturation voltage	$I_C = -150 \text{ mA}; I_B = -15 \text{ mA}$ $I_C = -500 \text{ mA}; I_B = -50 \text{ mA}$	– –	–400 –1.6	mV V
$V_{BEsat}$	base-emitter saturation voltage	$I_C = -150 \text{ mA}; I_B = -15 \text{ mA}$ $I_C = -500 \text{ mA}; I_B = -50 \text{ mA}$	– –	–1.3 –2.6	V V
$C_c$	collector capacitance	$I_E = i_e = 0; V_{CB} = -10 \text{ V}; f = 1 \text{ MHz}$	–	8	pF
$C_e$	emitter capacitance	$I_C = i_c = 0; V_{EB} = -2 \text{ V}; f = 1 \text{ MHz}$	–	30	pF
$f_T$	transition frequency	$I_C = -50 \text{ mA}; V_{CE} = -20 \text{ V}; f = 100 \text{ MHz}$	200	–	MHz
<b>Switching times (between 10% and 90% levels); see Fig.2</b>					
$t_{on}$	turn-on time	$I_{Con} = -150 \text{ mA}; I_{Bon} = -15 \text{ mA};$ $I_{Boff} = 15 \text{ mA}$	–	40	ns
$t_d$	delay time		–	12	ns
$t_r$	rise time		–	30	ns
$t_{off}$	turn-off time		–	365	ns
$t_s$	storage time		–	300	ns
$t_f$	fall time		–	65	ns



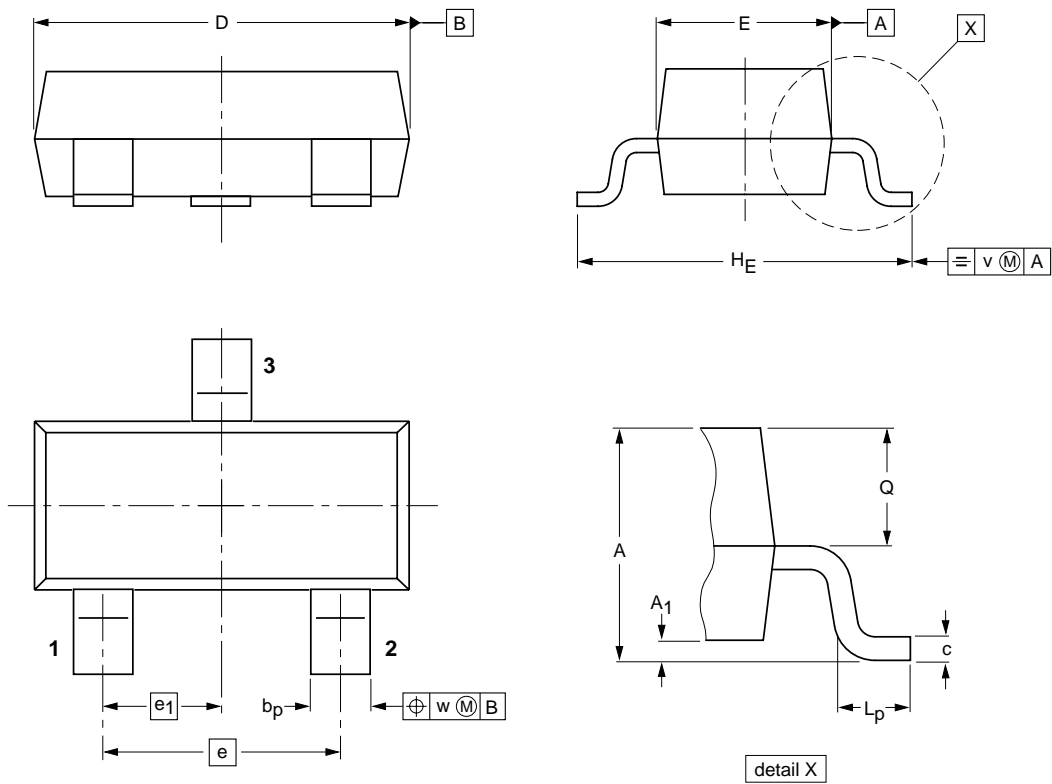
PNP switching transistors

PMBT2907; PMBT2907A

PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT23



DIMENSIONS (mm are the original dimensions)

UNIT	A	A <sub>1</sub> max.	b <sub>p</sub>	c	D	E	e	e <sub>1</sub>	H <sub>E</sub>	L <sub>p</sub>	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						97-02-28

## PNP switching transistors

## PMBT2907; PMBT2907A

**DEFINITIONS**

<b>Data sheet status</b>	
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.
<b>Limiting values</b>	
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.	
<b>Application information</b>	
Where application information is given, it is advisory and does not form part of the specification.	

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PNP switching transistors

PMBT2907; PMBT2907A

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Printed in The Netherlands

117047/00/03/pp8

Date of release: 1997 Sep 04

Document order number: 9397 750 02801

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