

# 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

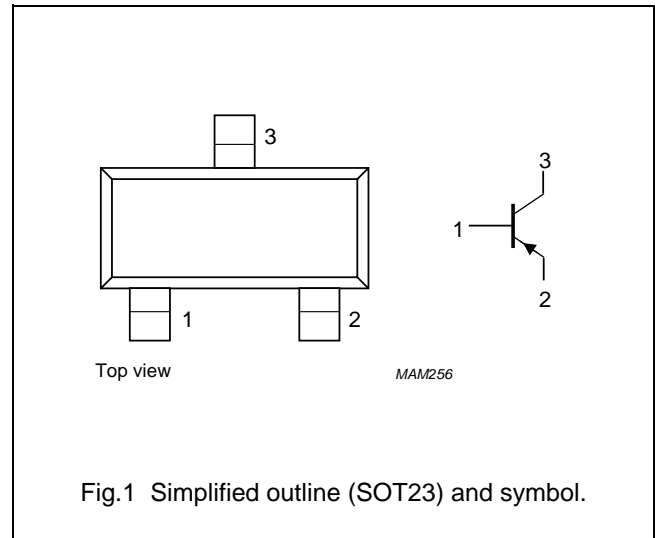
TYPE NUMBER	MARKING CODE <sup>(1)</sup>
PMBT2907	*2B
PMBT2907A	*2F

### 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
PMBT2907	–	plastic surface mounted package; 3 leads	SOT23
PMBT2907A	–	plastic surface mounted package; 3 leads	SOT23

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**LIMITING VALUES**

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V <sub>CBO</sub>	collector-base voltage	open emitter	–	–60	V
V <sub>CEO</sub>	collector-emitter voltage	open base	–	–40	V
	PMBT2907 PMBT2907A		–	–60	V
V <sub>EBO</sub>	emitter-base voltage	open collector	–	–5	V
I <sub>C</sub>	collector current (DC)		–	–600	mA
I <sub>CM</sub>	peak collector current		–	–800	mA
I <sub>BM</sub>	peak base current		–	–200	mA
P <sub>tot</sub>	total power dissipation	T <sub>amb</sub> ≤ 25 °C	–	250	mW
T <sub>stg</sub>	storage temperature		–65	+150	°C
T <sub>j</sub>	junction temperature		–	150	°C
T <sub>amb</sub>	operating ambient temperature		–65	+150	°C

**THERMAL CHARACTERISTICS**

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
R <sub>th(j-a)</sub>	thermal resistance from junction to ambient	note 1	500	K/W

**Note**

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

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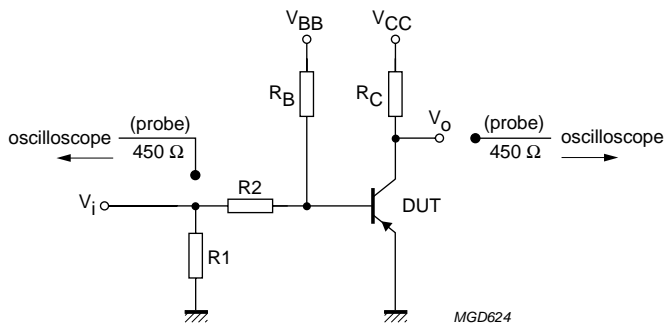
## CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$I_{CBO}$	collector-base cut-off current PMBT2907	$I_E = 0; V_{CB} = -50\text{ V}$	–	–20	nA
	PMBT2907A		–	–10	nA
	collector-base cut-off current PMBT2907	$I_E = 0; V_{CB} = -50\text{ V}; T_j = 125\text{ }^\circ\text{C}$	–	–20	$\mu\text{A}$
	PMBT2907A		–	–10	$\mu\text{A}$
$I_{EBO}$	emitter-base cut-off current	$I_C = 0; V_{EB} = -5\text{ V}$	–	–50	nA
$h_{FE}$	DC current gain PMBT2907	$I_C = -0.1\text{ mA}; V_{CE} = -10\text{ V}$	35	–	
	PMBT2907A		75	–	
	DC current gain PMBT2907	$I_C = -1\text{ mA}; V_{CE} = -10\text{ V}$	50	–	
	PMBT2907A		100	–	
	DC current gain PMBT2907	$I_C = -10\text{ mA}; V_{CE} = -10\text{ V}$	75	–	
	PMBT2907A		100	–	
DC current gain PMBT2907	$I_C = -150\text{ mA}; V_{CE} = -10\text{ V}$	100	300		
DC current gain PMBT2907	$I_C = -500\text{ mA}; V_{CE} = -10\text{ V}$	30	–		
	PMBT2907A	50	–		
$V_{CEsat}$	collector-emitter saturation voltage	$I_C = -150\text{ mA}; I_B = -15\text{ mA}$	–	–400	mV
		$I_C = -500\text{ mA}; I_B = -50\text{ mA}$	–	–1.6	V
$V_{BEsat}$	base-emitter saturation voltage	$I_C = -150\text{ mA}; I_B = -15\text{ mA}$	–	–1.3	V
		$I_C = -500\text{ mA}; I_B = -50\text{ mA}$	–	–2.6	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

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$V_i = -9.5 \text{ V}$ ;  $T = 500 \text{ } \mu\text{s}$ ;  $t_p = 10 \text{ } \mu\text{s}$ ;  $t_r = t_f \leq 3 \text{ ns}$ .  
 $R_1 = 68 \text{ } \Omega$ ;  $R_2 = 325 \text{ } \Omega$ ;  $R_B = 325 \text{ } \Omega$ ;  $R_C = 160 \text{ } \Omega$ .  
 $V_{BB} = 3.5 \text{ V}$ ;  $V_{CC} = -29.5 \text{ V}$ .  
 Oscilloscope: input impedance  $Z_i = 50 \text{ } \Omega$ .

Fig.2 Test circuit for switching times.

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PACKAGE OUTLINE

Plastic surface-mounted package; 3 leads

SOT23

