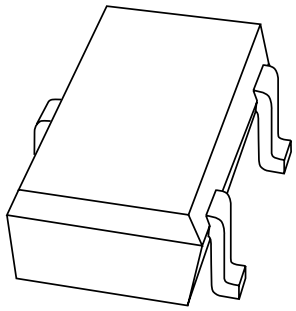
# DATA SHEET



# PMST2907A
## PNP switching transistor

Product specification
Supersedes data of 1999 Apr 22

2001 Nov 19

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# PNP switching transistor PMST2907A

## FEATURES

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

## APPLICATIONS

- Medium power switching
- General purpose amplification.

## DESCRIPTION

PNP switching transistor in an SC-70; SOT323 plastic package. NPN complement: PMST2222A.

## MARKING

| TYPE NUMBER | MARKING CODE(1) |
|---|---|
| PMST2907A | ∗2F |

**Note**

1. ∗ = - : Made in Hong Kong.
   ∗ = t : Made in Malaysia.

## PINNING

| PIN | DESCRIPTION |
|---|---|
| 1 | base |
| 2 | emitter |
| 3 | collector |

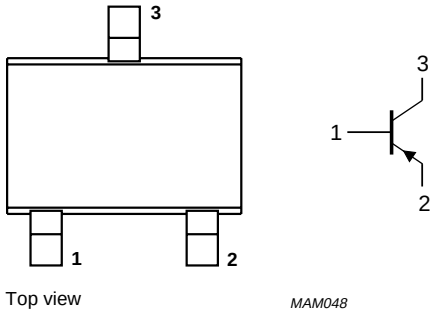



Fig.1 Simplified outline (SC-70; SOT323) and symbol.

## 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 | – | –60 | V |
| $V_{CEO}$ | collector-emitter voltage | open base | – | –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 | $T_{amb} \leq 25$ °C; note 1 | – | 200 | 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 |
|---|---|---|---|---|
| $R_{th\ j\text{-}a}$ | thermal resistance from junction to ambient | note 1 | 625 | K/W |

**Note**

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

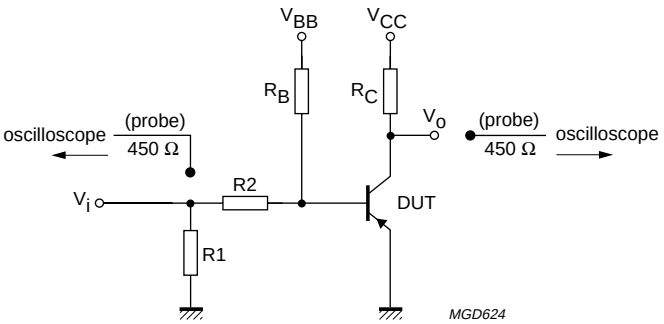
## CHARACTERISTICS

$T_{amb}$ = 25 °C unless otherwise specified.

| SYMBOL | PARAMETER | CONDITIONS | MIN. | MAX. | UNIT |
|---|---|---|---|---|---|
| $I_{CBO}$ | collector cut-off current | $I_E$ = 0; $V_{CB}$ = –50 V | – | –10 | nA |
| | | $I_E$ = 0; $V_{CB}$ = –50 V; $T_j$ = 150 °C | – | –10 | μA |
| $I_{EBO}$ | emitter cut-off current | $I_C$ = 0; $V_{EB}$ = –3 V | – | –50 | nA |
| $h_{FE}$ | DC current gain | $V_{CE}$ = –10 V | | | |
| | | $I_C$ = –0.1 mA | 75 | – | |
| | | $I_C$ = –1 mA | 100 | – | |
| | | $I_C$ = –10 mA; note 1 | 100 | – | |
| | | $I_C$ = –150 mA; note 1 | 100 | 300 | |
| | | $I_C$ = –500 mA; note 1 | 50 | – | |
| $V_{CEsat}$ | collector-emitter saturation voltage | $I_C$ = –150 mA; $I_B$ = –15 mA; note 1 | – | –400 | mV |
| | | $I_C$ = –500 mA; $I_B$ = –50 mA; note 1 | – | –1.6 | V |
| $V_{BEsat}$ | base-emitter saturation voltage | $I_C$ = –150 mA; $I_B$ = –15 mA; note 1 | – | –1.3 | V |
| | | $I_C$ = –500 mA; $I_B$ = –50 mA; note 1 | – | –2.6 | V |
| $C_c$ | collector capacitance | $I_E = i_e$ = 0; $V_{CB}$ = –10 V; f = 1 MHz | – | 8 | pF |
| $C_e$ | emitter capacitance | $I_C = i_c$ = 0; $V_{EB}$ = –2 V; f = 1 MHz | – | 30 | pF |
| $f_T$ | transition frequency | $I_C$ = –50 mA; $V_{CE}$ = –20 V; f = 100 MHz; note 1 | 200 | – | MHz |
| **Switching times (between 10% and 90% levels);** (see Fig.2) | | | | | |
| $t_{on}$ | turn-on time | $I_{Con}$ = –150 mA; $I_{Bon}$ = –15 mA; $I_{Boff}$ = 15 mA | – | 45 | ns |
| $t_d$ | delay time | | – | 15 | ns |
| $t_r$ | rise time | | – | 35 | ns |
| $t_{off}$ | turn-off time | | – | 300 | ns |
| $t_s$ | storage time | | – | 250 | ns |
| $t_f$ | fall time | | – | 50 | ns |

**Note**

1. Pulse test: $t_p \leq 300\ \mu s$; $\delta \leq 0.02$.

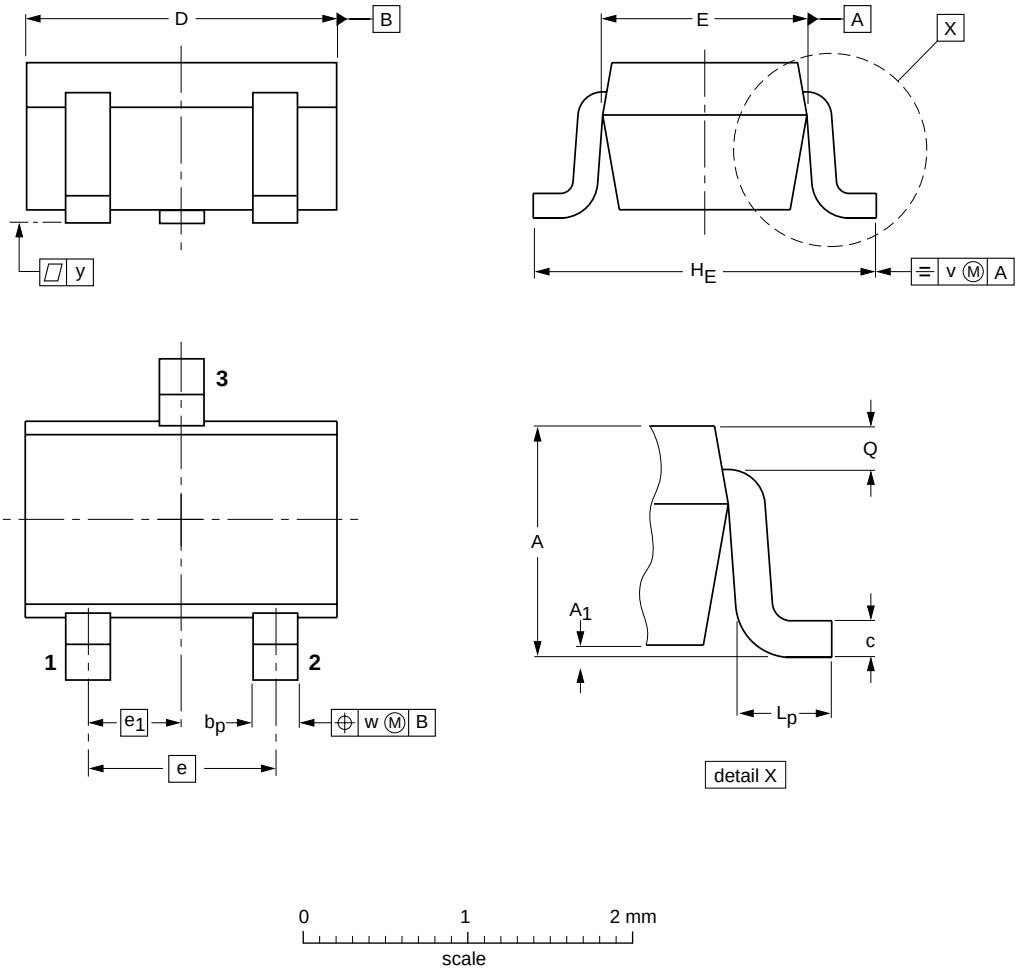



$V_i$ = –9.5 V; T = 500 µs; $t_p$ = 10 µs; $t_r = t_f \leq 3$ ns.
R1 = 68 Ω; R2 = 325 Ω; $R_B$ = 325 Ω; $R_C$ = 160 Ω.
$V_{BB}$ = 3.5 V; $V_{CC}$ = –29.5 V.
Oscilloscope input impedance $Z_i$ = 50 Ω.

Fig.2 Test circuit for switching times.

## PACKAGE OUTLINE

**Plastic surface mounted package; 3 leads** **SOT323**




**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<br>0.8 | 0.1 | 0.4<br>0.3 | 0.25<br>0.10 | 2.2<br>1.8 | 1.35<br>1.15 | 1.3 | 0.65 | 2.2<br>2.0 | 0.45<br>0.15 | 0.23<br>0.13 | 0.2 | 0.2 |

| OUTLINE VERSION | REFERENCES | | | | EUROPEAN PROJECTION | ISSUE DATE |
|---|---|---|---|---|---|---|
| | IEC | JEDEC | EIAJ | | | |
| SOT323 | | | SC-70 | | | 97-02-28 |

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