# DATA SHEET

# PUMT1

## Dual PNP transistor

Preliminary specification
File under Discrete Semiconductors, SC04

1995 Dec 07

Philips
Semiconductors

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## FEATURES

- Two transistors in one SC70 package
- Reduces number of components and boardspace
- No mutual interference between the transistors.

## PINNING

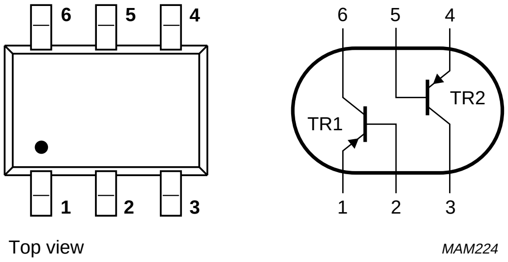
| PIN | DESCRIPTION |
|---|---|
| 1 | emitter TR1 |
| 2 | base TR1 |
| 3 | collector TR2 |
| 4 | emitter TR2 |
| 5 | base TR2 |
| 6 | collector TR1 |

## APPLICATIONS

- General purpose switching
- Small signal amplification.

## DESCRIPTION

Two PNP transistors in a plastic six lead SC70-6 (S-mini) package.



**Marking code:** FF.

Fig.1 Simplified outline (SC70-6), pin configuration and symbol.

## QUICK REFERENCE DATA

| SYMBOL | PARAMETER | CONDITIONS | MIN. | MAX. | UNIT |
|---|---|---|---|---|---|
| **Per transistor** | | | | | |
| $V_{CBO}$ | collector-base voltage | open emitter | – | –50 | V |
| $V_{CEO}$ | collector-emitter voltage | open base | – | –40 | V |
| $V_{EBO}$ | emitter-base voltage | open collector | – | –5 | V |
| $I_C$ | collector current (DC) | | – | –100 | mA |
| $h_{FE}$ | DC current gain | $I_C$ = –1 mA; $V_{CE}$ = –6 V | 120 | – | |
| $f_T$ | transition frequency | $I_C$ = –2 mA; $V_{CE}$ = –12 V;<br>f = 100 MHz; $T_{amb}$ = 25 °C | 100 | – | MHz |
| **Per package** | | | | | |
| $P_{tot}$ | total power dissipation | up to $T_{amb}$ = 25 °C | – | 300 | mW |

## LIMITING VALUES

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

| SYMBOL | PARAMETER | CONDITIONS | MIN. | MAX. | UNIT |
|---|---|---|---|---|---|
| **Per transistor** | | | | | |
| $V_{CBO}$ | collector-base voltage | open emitter | – | –50 | V |
| $V_{CEO}$ | collector-emitter voltage | open base | – | –40 | V |
| $V_{EBO}$ | emitter-base voltage | open collector | – | –5 | V |
| $I_C$ | collector current (DC) | | – | –100 | mA |
| $P_{tot}$ | total power dissipation | | – | 200 | mW |
| $T_{amb}$ | operating ambient temperature | | –65 | +150 | °C |
| $T_{stg}$ | storage temperature | | –65 | +150 | °C |
| $T_j$ | junction temperature | | – | 150 | °C |
| **Per package** | | | | | |
| $P_{tot}$ | total power dissipation | up to $T_{amb}$ = 25 °C; note 1 | – | 300 | mW |

## THERMAL CHARACTERISTICS

| SYMBOL | PARAMETER | CONDITIONS | VALUE | UNIT |
|---|---|---|---|---|
| $R_{th\ j\text{-}a}$ | thermal resistance from junction to ambient | in free air; note 1 | 416 | K/W |

**Note to the 'Limiting values' and 'Thermal characteristics'**

1. In accordance with standard mounting conditions SC70, six lead version.

## ELECTRICAL CHARACTERISTICS

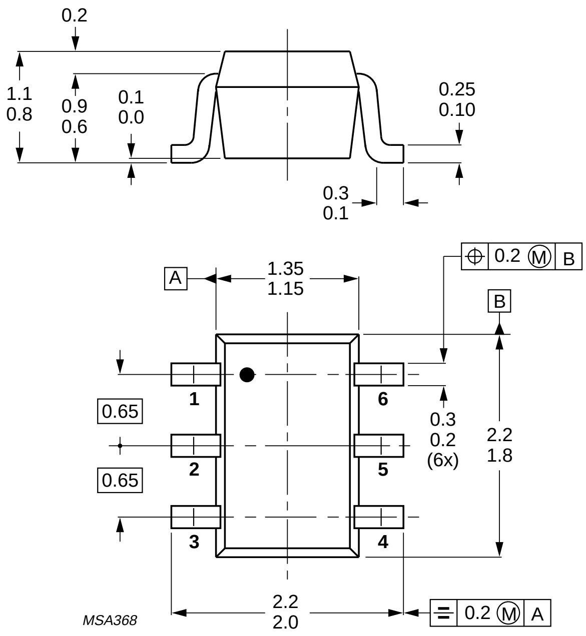
$T_{amb}$ = 25 °C unless otherwise specified.

| SYMBOL | PARAMETER | CONDITIONS | MIN. | MAX. | UNIT |
|---|---|---|---|---|---|
| **Per transistor** | | | | | |
| $V_{(BR)CBO}$ | collector-base breakdown voltage | open emitter; $I_C$ = –50 µA; $I_E$ = 0 | –50 | – | V |
| $V_{(BR)CEO}$ | collector-emitter breakdown voltage | open base; $I_C$ = –1 mA; $I_B$ = 0 | –40 | – | V |
| $V_{(BR)EBO}$ | emitter-base breakdown voltage | open collector; $I_E$ = –50 µA; $I_C$ = 0 | –5 | – | V |
| $V_{CEsat}$ | collector-emitter saturation voltage | $I_C$ = –50 mA; $I_B$ = –5 mA; note 1 | – | –200 | mV |
| $I_{CBO}$ | collector-base cut-off current | $V_{CB}$ = –30 V; $I_E$ = 0 | – | –100 | nA |
| | | $V_{CB}$ = –30 V; $I_E$ = 0; $T_j$ = 150 °C | – | –10 | µA |
| $I_{EBO}$ | emitter-base cut-off current | $V_{EB}$ = –4 V; $I_C$ = 0 | – | –100 | nA |
| $h_{FE}$ | DC current gain | $I_C$ = –1 mA; $V_{CE}$ = –6 V | 120 | – | |
| $f_T$ | transition frequency | $I_C$ = –2 mA; $V_{CE}$ = –12 V; f = 100 MHz | 100 | – | MHz |
| $C_c$ | collector capacitance | $I_E = i_e = 0$; $V_{CB}$ = –12 V; f = 1 MHz | – | 2.2 | pF |

**Note to the 'Electrical characteristics'**

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

## PACKAGE OUTLINE



Dimensions in mm.

Fig.2 SC70-6.

## DEFINITIONS

| **Data sheet status** | |
|---|---|
| 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. |
| **Limiting values** | |
| 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. | |
| **Application information** | |
| Where application information is given, it is advisory and does not form part of the specification. | |

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## NOTES

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