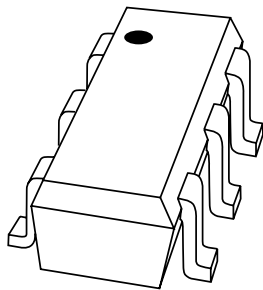


DATA SHEET



PUMZ1 NPN/PNP general purpose transistors

Product specification
Supersedes data of 2002 May 6

2004 Oct 15

NPN/PNP general purpose transistors

PUMZ1

FEATURES

- Low current (max. 100 mA)
- Low voltage (max. 40 V)
- Reduces number of components and boardspace.

APPLICATIONS

- General purpose switching and amplification.

DESCRIPTION

Two independently operating NPN/PNP transistors in an SC-88; SOT363 plastic package.

MARKING

| TYPE NUMBER | MARKING CODE ⁽¹⁾ |
|-------------|-----------------------------|
| PUMZ1 | F*Z |

Note

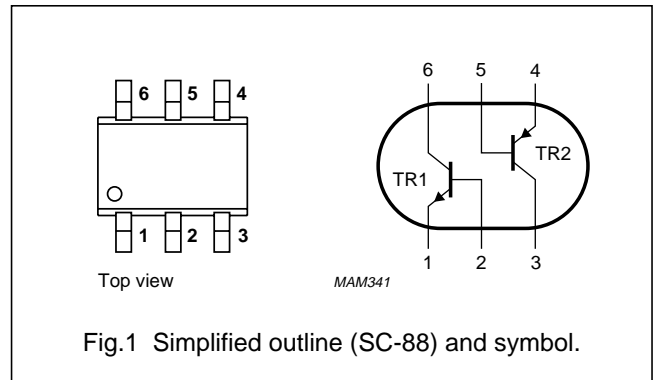
- * = -: Made in Hong Kong.
 * = t: Made in Malaysia.
 * = W: Made in China.

ORDERING INFORMATION

| TYPE NUMBER | PACKAGE | | |
|-------------|---------|--|---------|
| | NAME | DESCRIPTION | VERSION |
| PUMZ1 | – | plastic surface mounted package; 6 leads | SOT363 |

PINNING

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



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LIMITING VALUES

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

| SYMBOL | PARAMETER | CONDITIONS | MIN. | MAX. | UNIT |
|--|-------------------------------|----------------------------------|------|------|------|
| Per transistor; for the PNP transistor with negative polarity | | | | | |
| 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 |
| I _{CM} | peak collector current | | – | 200 | mA |
| I _{BM} | peak base current | | – | 200 | mA |
| P _{tot} | total power dissipation | T _{amb} ≤ 25 °C | – | 200 | mW |
| T _{stg} | storage temperature | | –65 | +150 | °C |
| T _j | junction temperature | | – | 150 | °C |
| T _{amb} | operating ambient temperature | | –65 | +150 | °C |
| Per device | | | | | |
| P _{tot} | total power dissipation | T _{amb} ≤ 25 °C; note 1 | – | 300 | mW |

Note

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

THERMAL CHARACTERISTICS

| SYMBOL | PARAMETER | CONDITIONS | VALUE | UNIT |
|----------------------|---|------------|-------|------|
| Per device | | | | |
| R _{th(j-a)} | thermal resistance from junction to ambient | note 1 | 416 | K/W |

Note

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

NPN/PNP general purpose transistors

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CHARACTERISTICS

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

| SYMBOL | PARAMETER | CONDITIONS | MIN. | MAX. | UNIT |
|--|--------------------------------------|--|------|------|---------------|
| Per transistor; for the PNP transistor with negative polarity | | | | | |
| I_{CBO} | collector-base cut-off current | $I_E = 0\text{ A}; V_{CB} = 30\text{ V}$ | – | 100 | nA |
| | | $I_E = 0\text{ A}; V_{CB} = 30\text{ V}; T_j = 150\text{ °C}$ | – | 10 | μA |
| I_{EBO} | emitter-base cut-off current | $I_C = 0\text{ A}; V_{EB} = 4\text{ V}$ | – | 100 | nA |
| h_{FE} | DC current gain | $I_C = 1\text{ mA}; V_{CE} = 6\text{ V}$ | 120 | – | |
| V_{CEsat} | collector-emitter saturation voltage | $I_C = 50\text{ mA}; I_B = 5\text{ mA}; \text{note 1}$ | – | 200 | mV |
| C_c | collector capacitance TR1 TR2 | $I_E = i_e = 0\text{ A}; V_{CB} = 12\text{ V}; f = 1\text{ MHz}$ | – | 1.5 | pF |
| | | | – | 2.2 | pF |
| f_T | transition frequency | $I_C = 2\text{ mA}; V_{CE} = 12\text{ V}; f = 100\text{ MHz}$ | 100 | – | MHz |

Note

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

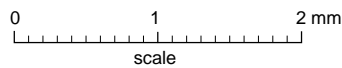
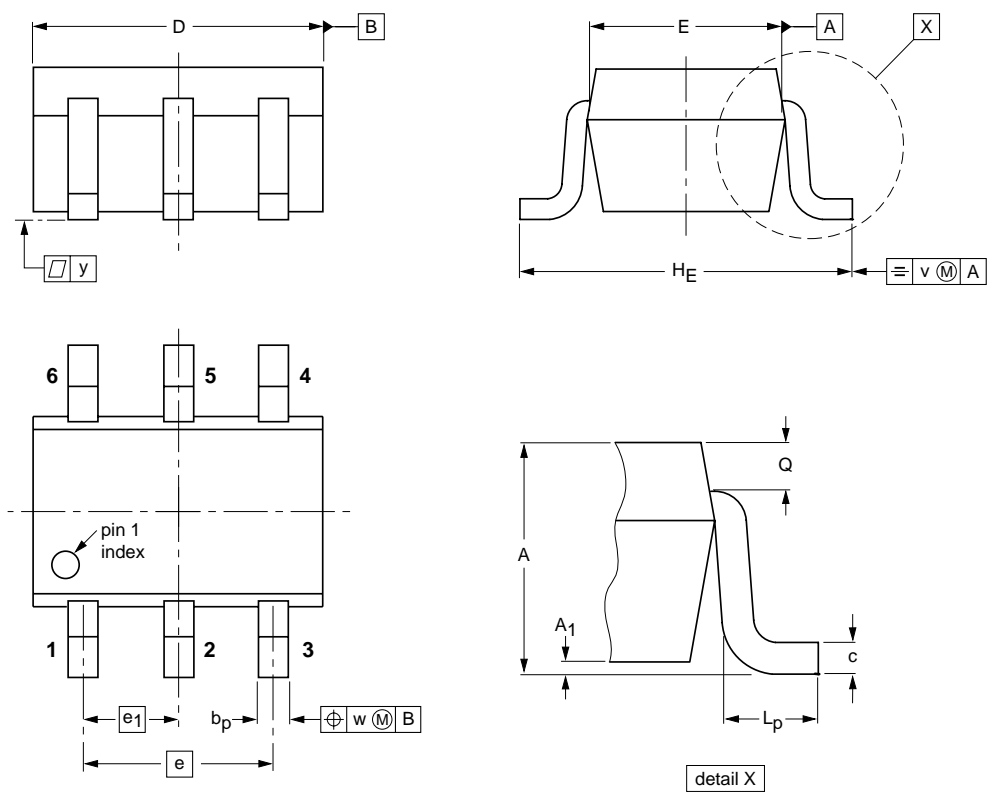
NPN/PNP general purpose transistors

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PACKAGE OUTLINE

Plastic surface mounted package; 6 leads

SOT363



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 | y |
|------|------------|--------------------|----------------|--------------|------------|--------------|-----|----------------|----------------|----------------|--------------|-----|-----|-----|
| mm | 1.1 0.8 | 0.1 | 0.30 0.20 | 0.25 0.10 | 2.2 1.8 | 1.35 1.15 | 1.3 | 0.65 | 2.2 2.0 | 0.45 0.15 | 0.25 0.15 | 0.2 | 0.2 | 0.1 |

| OUTLINE VERSION | REFERENCES | | | | EUROPEAN PROJECTION | ISSUE DATE |
|-----------------|------------|-------|-------|--|---------------------|------------|
| | IEC | JEDEC | EIAJ | | | |
| SOT363 | | | SC-88 | | | 97-02-28 |

NPN/PNP general purpose transistors

PUMZ1

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. |
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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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