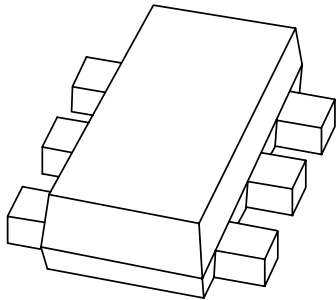


DATA SHEET



PEMZ1 NPN/PNP general purpose transistors

Product data sheet
Supersedes data of 2001 Sep 25

2001 Nov 07

NPN/PNP general purpose transistors

PEMZ1

FEATURES

- 300 mW total power dissipation
- Very small 1.6 × 1.2 mm ultra thin package
- Self alignment during soldering due to straight leads
- Replaces two SC-75/SC-89 packaged transistors on same PCB area
- Reduced required PCB area
- Reduced pick and place costs.

APPLICATIONS

- General purpose switching and amplification
- Complementary MOSFET driver for switch mode power supply
- Complementary driver for audio amplifiers.

DESCRIPTION

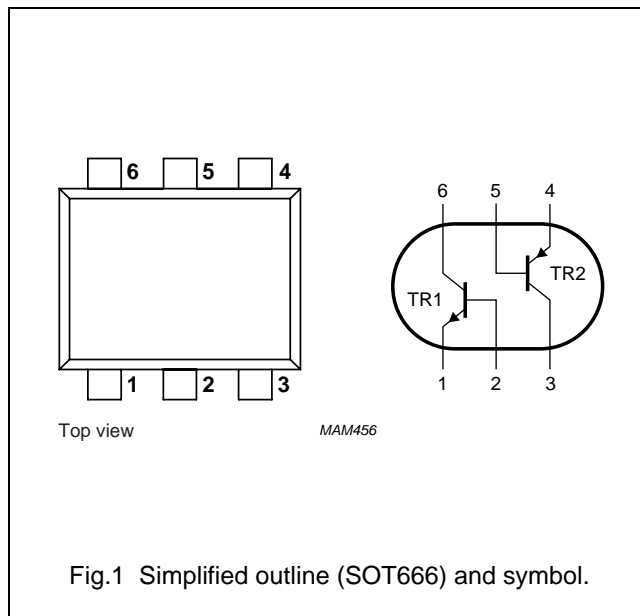
NPN/PNP transistor pair in a SOT666 plastic package.

MARKING

| TYPE NUMBER | MARKING CODE |
|-------------|--------------|
| PEMZ1 | FZ |

PINNING

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



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; 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 |
| Per device | | | | | |
| P _{tot} | total power dissipation | T _{amb} ≤ 25 °C; note 1 | – | 300 | mW |

Note

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

NPN/PNP general purpose transistors

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THERMAL CHARACTERISTICS

| SYMBOL | PARAMETER | CONDITIONS | VALUE | UNIT |
|---------------|---|---------------|-------|------|
| $R_{th\ j-a}$ | thermal resistance from junction to ambient | notes 1 and 2 | 416 | K/W |

Notes

1. Transistor mounted on an FR4 printed-circuit board.
2. The only recommended soldering method is reflow soldering.

CHARACTERISTICS

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

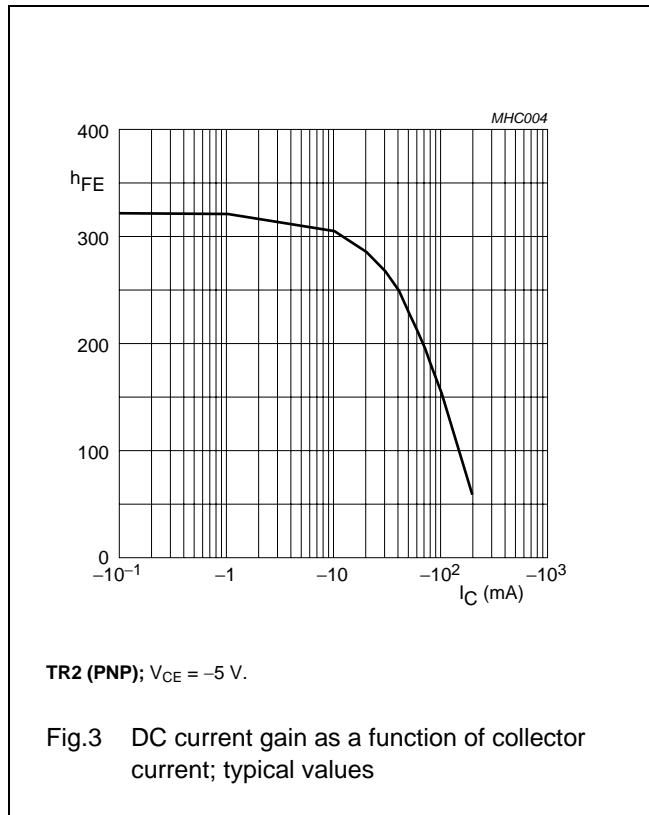
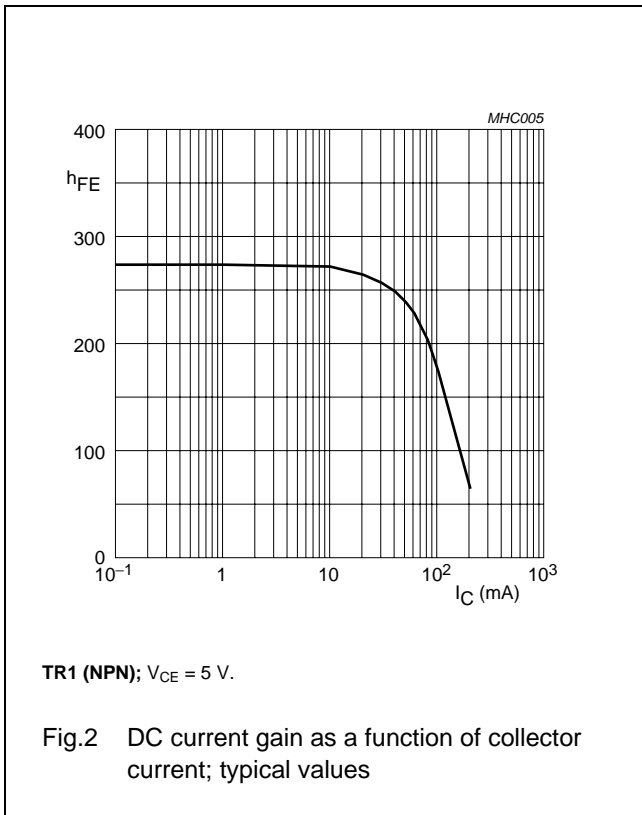
| SYMBOL | PARAMETER | CONDITIONS | MIN. | TYP. | MAX. | UNIT |
|--|--------------------------------------|---|------|------|------|---------------|
| Per transistor; for the PNP transistor with negative polarity | | | | | | |
| I_{CBO} | collector-base cut-off current | $V_{CB} = 30\text{ V}; I_E = 0$ | – | – | 100 | nA |
| | | $V_{CB} = 30\text{ V}; I_E = 0; T_j = 150\text{ °C}$ | – | – | 10 | μA |
| I_{EBO} | emitter-base cut-off current | $V_{EB} = 4\text{ V}; I_C = 0$ | – | – | 100 | nA |
| h_{FE} | DC current gain | $V_{CE} = 6\text{ V}; I_C = 1\text{ mA}$ | 120 | – | – | |
| V_{CEsat} | collector-emitter saturation voltage | $I_C = 50\text{ mA}; I_B = 5.0\text{ mA}; \text{note 1}$ | – | – | 200 | mV |
| f_T | transition frequency | $I_C = 2\text{ mA}; V_{CE} = 12\text{ V}; f = 100\text{ MHz}$ | 100 | – | – | MHz |
| C_c | collector capacitance | $I_E = I_e = 0; V_{CB} = 12\text{ V}; f = 1\text{ MHz}$ | – | – | – | – |
| | TR1 (NPN) | | – | – | 1.5 | pF |
| | TR2 (PNP) | | – | – | 2.2 | pF |

Note

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

NPN/PNP general purpose transistors

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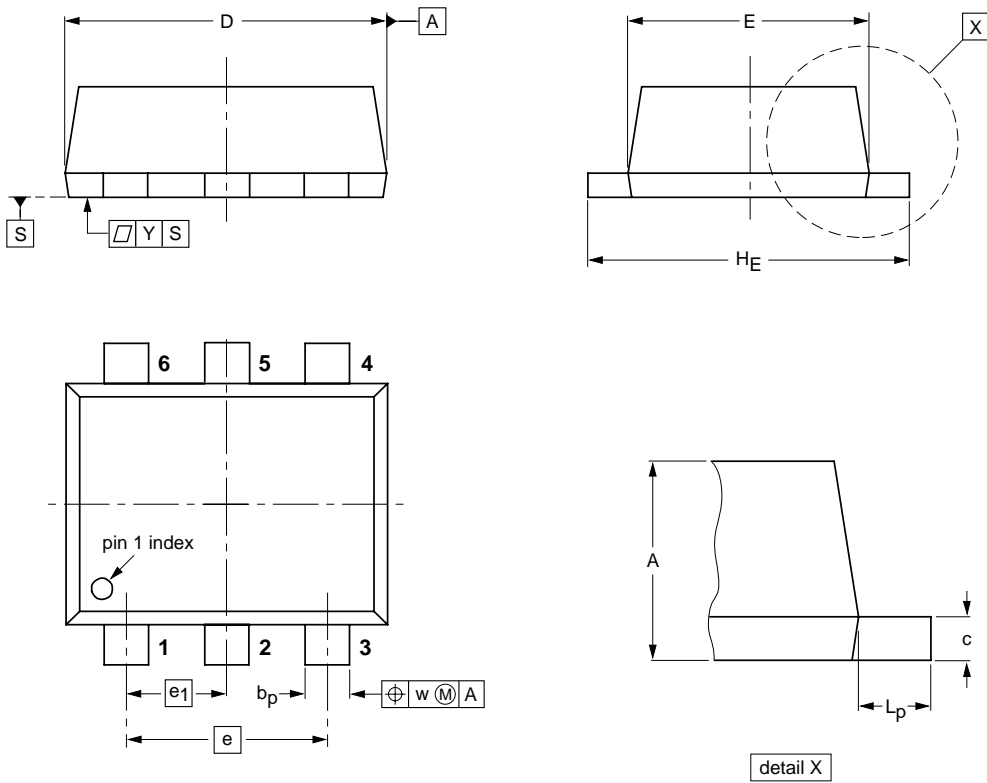
NPN/PNP general purpose transistors

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PACKAGE OUTLINE

Plastic surface mounted package; 6 leads

SOT666



DIMENSIONS (mm are the original dimensions)

| UNIT | A | b_p | c | D | E | e | e_1 | H_E | L_p | w | y |
|------|------------|--------------|--------------|------------|------------|-----|-------|------------|------------|-----|-----|
| mm | 0.6 0.5 | 0.27 0.17 | 0.18 0.08 | 1.7 1.5 | 1.3 1.1 | 1.0 | 0.5 | 1.7 1.5 | 0.3 0.1 | 0.1 | 0.1 |

| OUTLINE VERSION | REFERENCES | | | | EUROPEAN PROJECTION | ISSUE DATE |
|-----------------|------------|-------|------|--|---------------------|----------------------|
| | IEC | JEDEC | EIAJ | | | |
| SOT666 | | | | | | 01-01-04 01-08-27 |

NPN/PNP general purpose transistors

PEMZ1

DATA SHEET STATUS

| DOCUMENT STATUS ⁽¹⁾ | PRODUCT STATUS ⁽²⁾ | DEFINITION |
|--------------------------------|-------------------------------|---|
| Objective data sheet | Development | This document contains data from the objective specification for product development. |
| Preliminary data sheet | Qualification | This document contains data from the preliminary specification. |
| Product data sheet | Production | This document contains the product specification. |

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Printed in The Netherlands

613514/02/pp7

Date of release: 2001 Nov 07

Document order number: 9397 750 09053



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