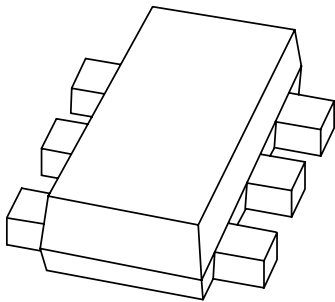


# DATA SHEET



## **PEMX1**

NPN general purpose double  
transistor

Product data sheet  
Supersedes data of 2001 Aug 30

2001 Nov 07

## NPN general purpose double transistor

## PEMX1

## FEATURES

- 300 mW total power dissipation
- Very small 1.6 mm x 1.2 mm ultra thin package
- Excellent coplanarity 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.

## DESCRIPTION

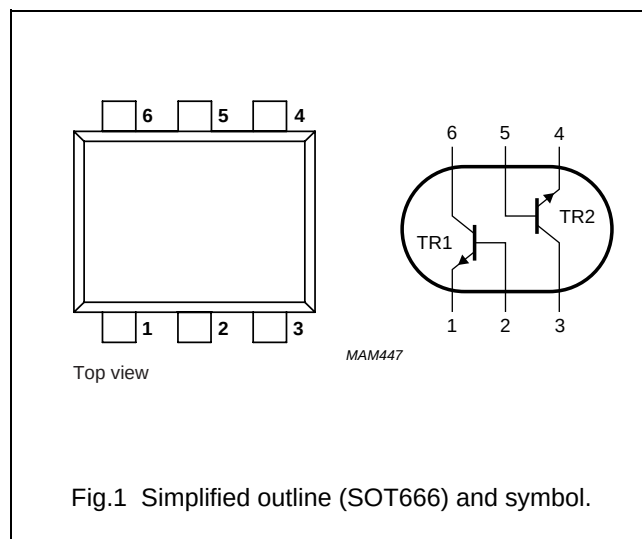
NPN double transistor pair in a SOT666 plastic package.  
PNP complement: PENT1.

## MARKING

| TYPE NUMBER | MARKING CODE |
|-------------|--------------|
| PEMX1       | ZZ           |

## 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 |
|-----------------------|-------------------------------|--------------------------------------|------|------|------|
| <b>Per transistor</b> |                               |                                      |      |      |      |
| $V_{CBO}$             | 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       | $T_{amb} \leq 25\text{ °C}$ ; 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   |
| <b>Per device</b>     |                               |                                      |      |      |      |
| $P_{tot}$             | total power dissipation       | $T_{amb} \leq 25\text{ °C}$ ; note 1 | –    | 300  | mW   |

## Note

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

## NPN general purpose double transistor

PEMX1

## 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 is reflow soldering.

## CHARACTERISTICS

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

| SYMBOL                | PARAMETER                            | CONDITIONS                                                    | MIN. | MAX. | UNIT          |
|-----------------------|--------------------------------------|---------------------------------------------------------------|------|------|---------------|
| <b>Per transistor</b> |                                      |                                                               |      |      |               |
| $I_{CBO}$             | 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   | $\mu\text{A}$ |
| $I_{EBO}$             | 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 | $I_C = 50\text{ mA}; I_B = 5\text{ mA}; \text{note 1}$        | –    | 200  | mV            |
| $C_c$                 | collector capacitance                | $V_{CB} = 12\text{ V}; I_E = I_e = 0; f = 1\text{ MHz}$       | –    | 1.5  | 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 general purpose double transistor

PEMX1

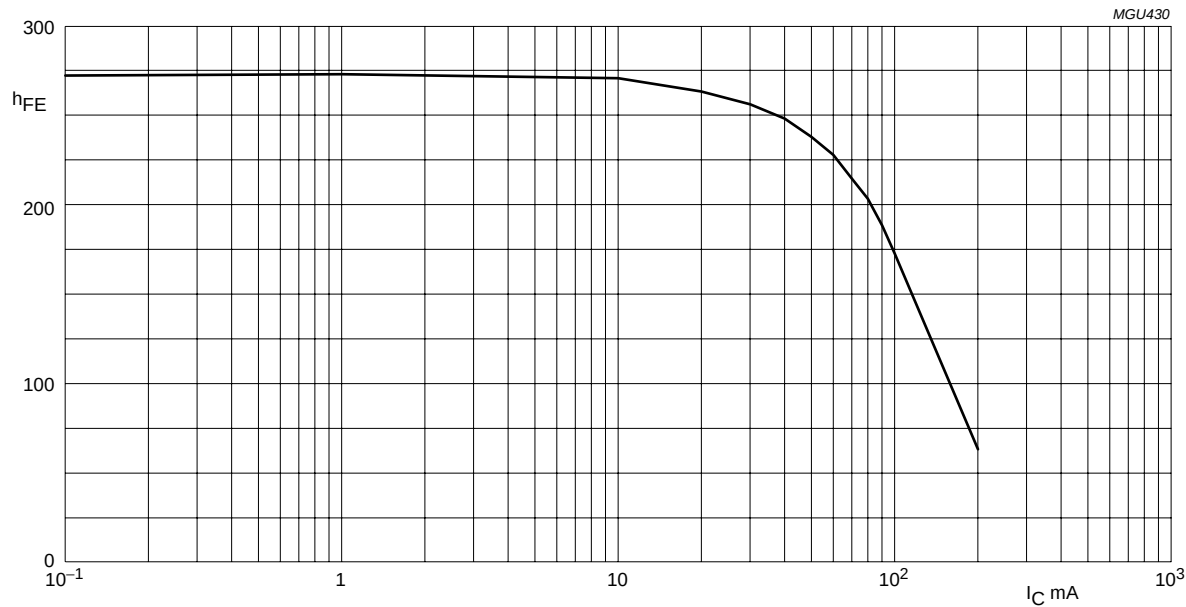


Fig.2 DC current gain as a function of collector current; typical values.

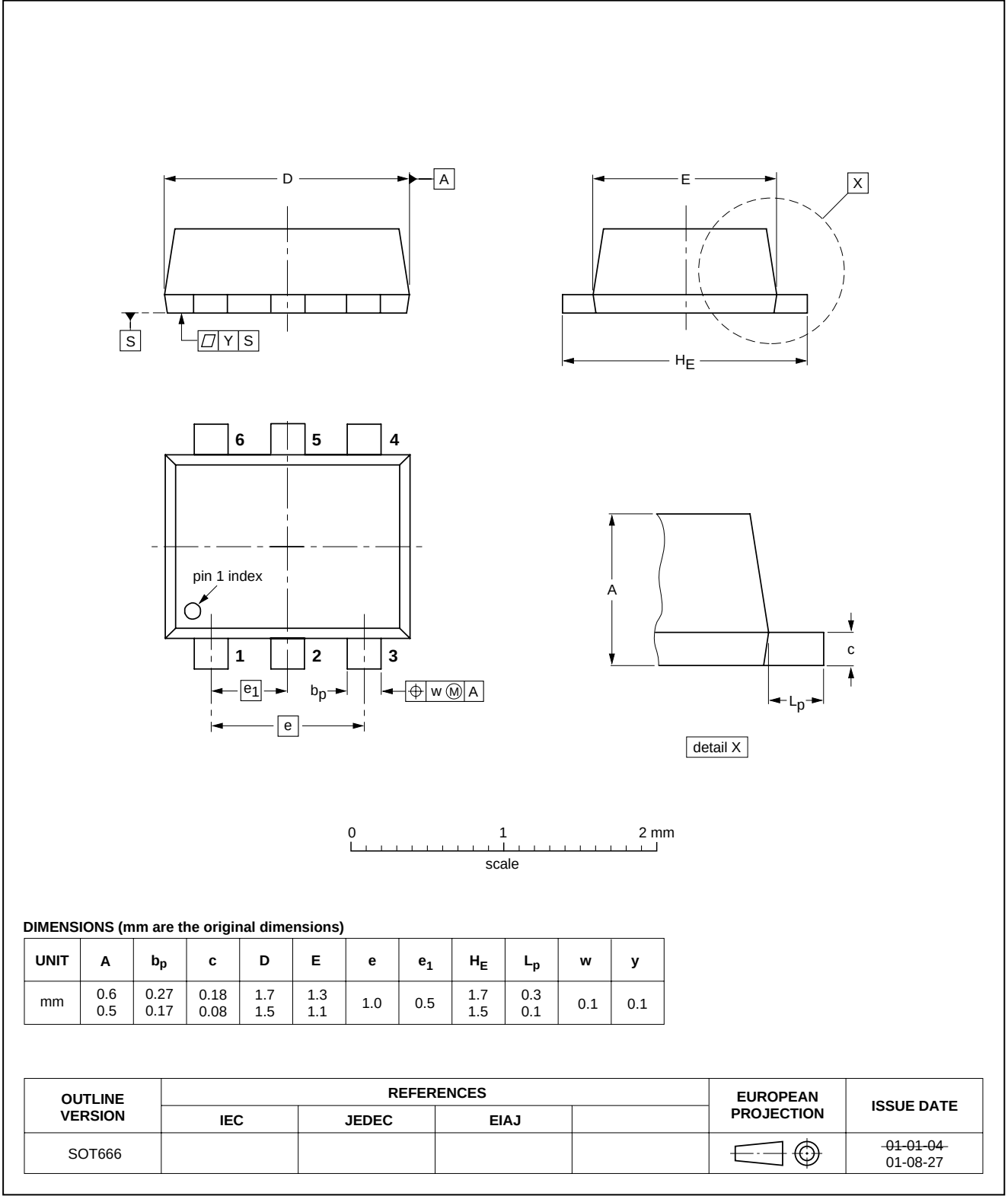
NPN general purpose double transistor

PEMX1

PACKAGE OUTLINE

Plastic surface mounted package; 6 leads

SOT666



## NPN general purpose double transistor

## PEMX1

## DATA SHEET STATUS

| DOCUMENT STATUS <sup>(1)</sup> | PRODUCT STATUS <sup>(2)</sup> | 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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