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Kind regards,

Team Nexperia

# DATA SHEET

**PEMB4; PUMB4**  
PNP/PNP resistor-equipped  
transistors;  $R1 = 10 \text{ k}\Omega$ ,  $R2 = \text{open}$

Product data sheet  
Supersedes data of 2001 Sep 14

2003 Oct 15



## PNP/PNP resistor-equipped transistors; R1 = 10 kΩ, R2 = open

**PEMB4; PUMB4**

### FEATURES

- Built-in bias resistors
- Simplified circuit design
- Reduction of component count
- Reduced pick and place costs.

### APPLICATIONS

- Low current peripheral drivers
- Replacement of general purpose transistors in digital applications
- Control of IC inputs.

### DESCRIPTION

PNP/PNP resistor-equipped transistors (see "Simplified outline, symbol and pinning" for package details).

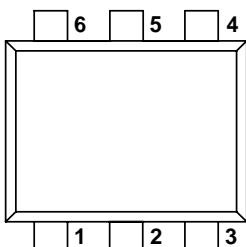
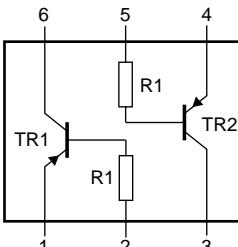
### PRODUCT OVERVIEW

TYPE NUMBER	PACKAGE		MARKING CODE	NPN/PNP COMPLEMENT	NPN/NPN COMPLEMENT
	PHILIPS	EIAJ			
PEMB4	SOT666	—	B4	PEMD4	PEMH4
PUMB4	SOT363	SC-88	B*4 <sup>(1)</sup>	PUMD4	PUMH4

### Note

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

### SIMPLIFIED OUTLINE, SYMBOL AND PINNING

TYPE NUMBER	SIMPLIFIED OUTLINE AND SYMBOL	PINNING	
		PIN	DESCRIPTION
PEMB4 PUMB4	  Top view MAM452	1 2 3 4 5 6	emitter TR1 base TR1 collector TR2 emitter TR2 base TR2 collector TR1

PNP/PNP resistor-equipped transistors;  
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PEMB4; PUMB4

#### ORDERING INFORMATION

TYPE NUMBER	PACKAGE		
	NAME	DESCRIPTION	VERSION
PEMB4	–	plastic surface mounted package; 6 leads	SOT666
PUMB4	–	plastic surface mounted package; 6 leads	SOT363

#### LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
<b>Per transistor</b>					
V <sub>CBO</sub>	collector-base voltage	open emitter	–	–50	V
V <sub>CEO</sub>	collector-emitter voltage	open base	–	–50	V
V <sub>EBO</sub>	emitter-base voltage	open collector	–	–5	V
I <sub>O</sub>	output current (DC)		–	–100	mA
I <sub>CM</sub>	peak collector current		–	–100	mA
P <sub>tot</sub>	total power dissipation SOT363 SOT666	T <sub>amb</sub> ≤ 25 °C note 1 notes 1 and 2	–	200 200	mW mW
T <sub>stg</sub>	storage temperature		–65	+150	°C
T <sub>j</sub>	junction temperature		–	150	°C
T <sub>amb</sub>	operating ambient temperature		–65	+150	°C
<b>Per device</b>					
P <sub>tot</sub>	total power dissipation SOT363 SOT666	T <sub>amb</sub> ≤ 25 °C note 1 notes 1 and 2	–	300 300	mW mW

#### Notes

1. Device mounted on an FR4 printed-circuit board, single-sided copper, standard footprint.
2. Reflow soldering is the only recommended soldering method.

PNP/PNP resistor-equipped transistors;  
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### THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
<b>Per transistor</b>				
R <sub>th j-a</sub>	thermal resistance from junction to ambient SOT363 SOT666	T <sub>amb</sub> ≤ 25 °C note 1 notes 1 and 2	625 625	K/W K/W
<b>Per device</b>				
R <sub>th j-a</sub>	thermal resistance from junction to ambient SOT363 SOT666	T <sub>amb</sub> ≤ 25 °C note 1 note 1	416 416	K/W K/W

### Notes

1. Device mounted on an FR4 printed-circuit board, single-sided copper, standard footprint.
2. Reflow soldering is the only recommended soldering method.

### CHARACTERISTICS

T<sub>amb</sub> = 25 °C unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I <sub>CBO</sub>	collector-base cut-off current	V <sub>CB</sub> = -50 V; I <sub>E</sub> = 0	—	—	-100	nA
I <sub>CEO</sub>	collector-emitter cut-off current	V <sub>CE</sub> = -30 V; I <sub>B</sub> = 0	—	—	-1	μA
		V <sub>CE</sub> = -30 V; I <sub>B</sub> = 0; T <sub>j</sub> = 150 °C	—	—	-50	μA
I <sub>EBO</sub>	emitter-base cut-off current	V <sub>EB</sub> = -5 V; I <sub>C</sub> = 0	—	—	-100	nA
h <sub>FE</sub>	DC current gain	V <sub>CE</sub> = -5 V; I <sub>C</sub> = -1 mA	200	—	—	
V <sub>CEsat</sub>	saturation voltage	I <sub>C</sub> = -10 mA; I <sub>B</sub> = -0.5 mA	—	—	-150	mV
R1	input resistor		7	10	13	kΩ
C <sub>c</sub>	collector capacitance	I <sub>E</sub> = i <sub>e</sub> = 0; V <sub>CB</sub> = -10 V; f = 1 MHz	—	—	3	pF

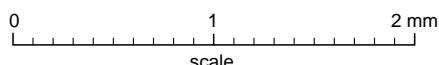
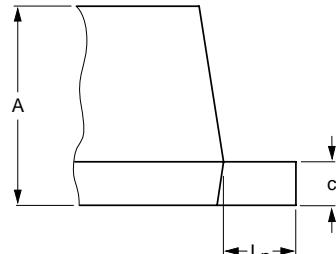
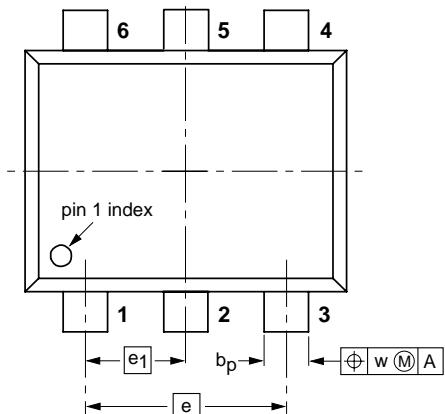
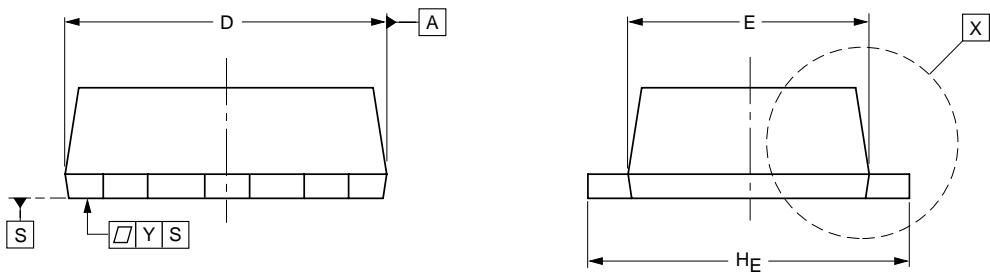
PNP/PNP resistor-equipped transistors;  
R1 = 10 kΩ, R2 = open

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## PACKAGE OUTLINES

Plastic surface mounted package; 6 leads

SOT666



## DIMENSIONS (mm are the original dimensions)

UNIT	A	b <sub>p</sub>	c	D	E	e	e <sub>1</sub>	H <sub>E</sub>	L <sub>p</sub>	w	y
mm	0.6	0.27	0.18	1.7	1.3	1.0	0.5	1.7	0.3	0.1	0.1
	0.5	0.17	0.08	1.5	1.1			1.5	0.1		

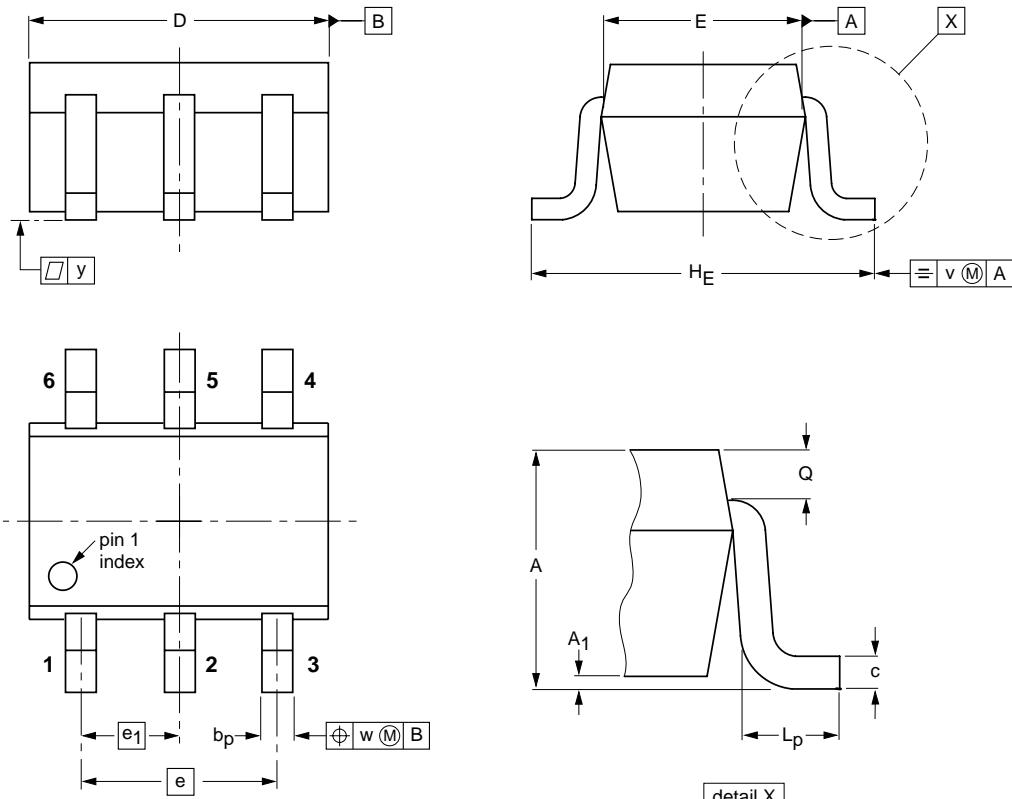
OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT666						01-01-04 01-08-27

PNP/PNP resistor-equipped transistors;  
R1 = 10 kΩ, R2 = open

PEMB4; PUMB4

Plastic surface mounted package; 6 leads

SOT363



## DIMENSIONS (mm are the original dimensions)

UNIT	A	A <sub>1</sub> max	b <sub>p</sub>	c	D	E	e	e <sub>1</sub>	H <sub>E</sub>	L <sub>p</sub>	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

## PNP/PNP resistor-equipped transistors; R1 = 10 kΩ, R2 = open

PEMB4; PUMB4

### 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.

### Notes

1. Please consult the most recently issued document before initiating or completing a design.
2. The product status of device(s) described in this document may have changed since this document was published and may differ in case of multiple devices. The latest product status information is available on the Internet at URL <http://www.nxp.com>.

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# **NXP Semiconductors**

## **Customer notification**

This data sheet was changed to reflect the new company name NXP Semiconductors. No changes were made to the content, except for the legal definitions and disclaimers.

## **Contact information**

For additional information please visit: <http://www.nxp.com>

For sales offices addresses send e-mail to: [salesaddresses@nxp.com](mailto:salesaddresses@nxp.com)

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