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Kind regards,

Team Nexperia

# DATA SHEET

## **PEMD4; PUMD4**

NPN/PNP resistor-equipped  
transistors; R1 = 10 k $\Omega$ , R2 = open

Product data sheet  
Supersedes data of 2002 Jan 14

2003 Oct 10

# NPN/PNP resistor-equipped transistors; R1 = 10 k $\Omega$ , R2 = open

## PEMD4; PUMD4

### FEATURES

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

### APPLICATIONS

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

### QUICK REFERENCE DATA

SYMBOL	PARAMETER	TYP.	MAX.	UNIT
V <sub>CEO</sub>	collector-emitter voltage	–	50	V
I <sub>O</sub>	output current (DC)	–	100	mA
TR1	NPN	–	–	–
TR2	PNP	–	–	–
R1	bias resistor	10	–	k $\Omega$
R2	open	–	–	–

### DESCRIPTION

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

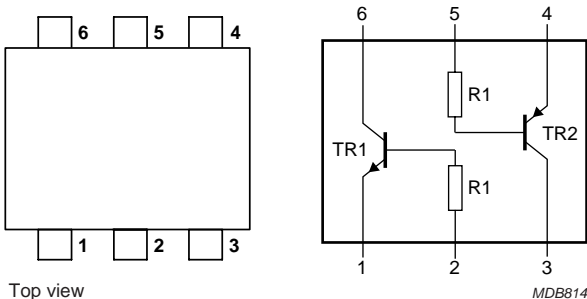
### PRODUCT OVERVIEW

TYPE NUMBER	PACKAGE		MARKING CODE	PNP/PNP COMPLEMENT	NPN/NPN COMPLEMENT
	PHILIPS	EIAJ			
PEMD4	SOT666		23	PEMB4	PEMH4
PUMD4	SOT363	SC-88	D*4	PUMB4	PUMH4

### Note

- \* = 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
PEMD4 PUMD4	 <p>Top view</p> <p>MDB814</p>	1 2 3 4 5 6	emitter TR1 base TR1 collector TR2 emitter TR2 base TR2 collector TR1

NPN/PNP resistor-equipped transistors;  
R1 = 10 k $\Omega$ , R2 = open

PEMD4; PUMD4

## ORDERING INFORMATION

TYPE NUMBER	PACKAGE		
	NAME	DESCRIPTION	VERSION
PEMD4	–	plastic surface mounted package; 6 leads	SOT666
PUMD4	–	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; for the PNP transistor with negative polarity</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	T <sub>amb</sub> ≤ 25 °C			
	SOT363	note 1	–	200	mW
	SOT666	notes 1 and 2	–	200	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	T <sub>amb</sub> ≤ 25 °C			
	SOT363	note 1	–	300	mW
	SOT666	notes 1 and 2	–	300	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.

NPN/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	T <sub>amb</sub> ≤ 25 °C note 1	625	K/W
	SOT666	notes 1 and 2	625	K/W
<b>Per device</b>				
R <sub>th j-a</sub>	thermal resistance from junction to ambient SOT363	T <sub>amb</sub> ≤ 25 °C note 1	416	K/W
	SOT666	notes 1 and 2	416	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
<b>Per transistor; for the PNP transistor with negative polarity</b>						
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>	collector-emitter saturation voltage	I <sub>C</sub> = 10 mA; I <sub>B</sub> = 0.5 mA	–	–	150	mV
R1	input resistor		7	10	13	k $\Omega$
C <sub>c</sub>	collector capacitance	I <sub>E</sub> = I <sub>e</sub> = 0; V <sub>CB</sub> = 10 V; f = 1 MHz				
	TR1 (NPN)		–	–	2.5	pF
	TR2 (PNP)		–	–	3	pF

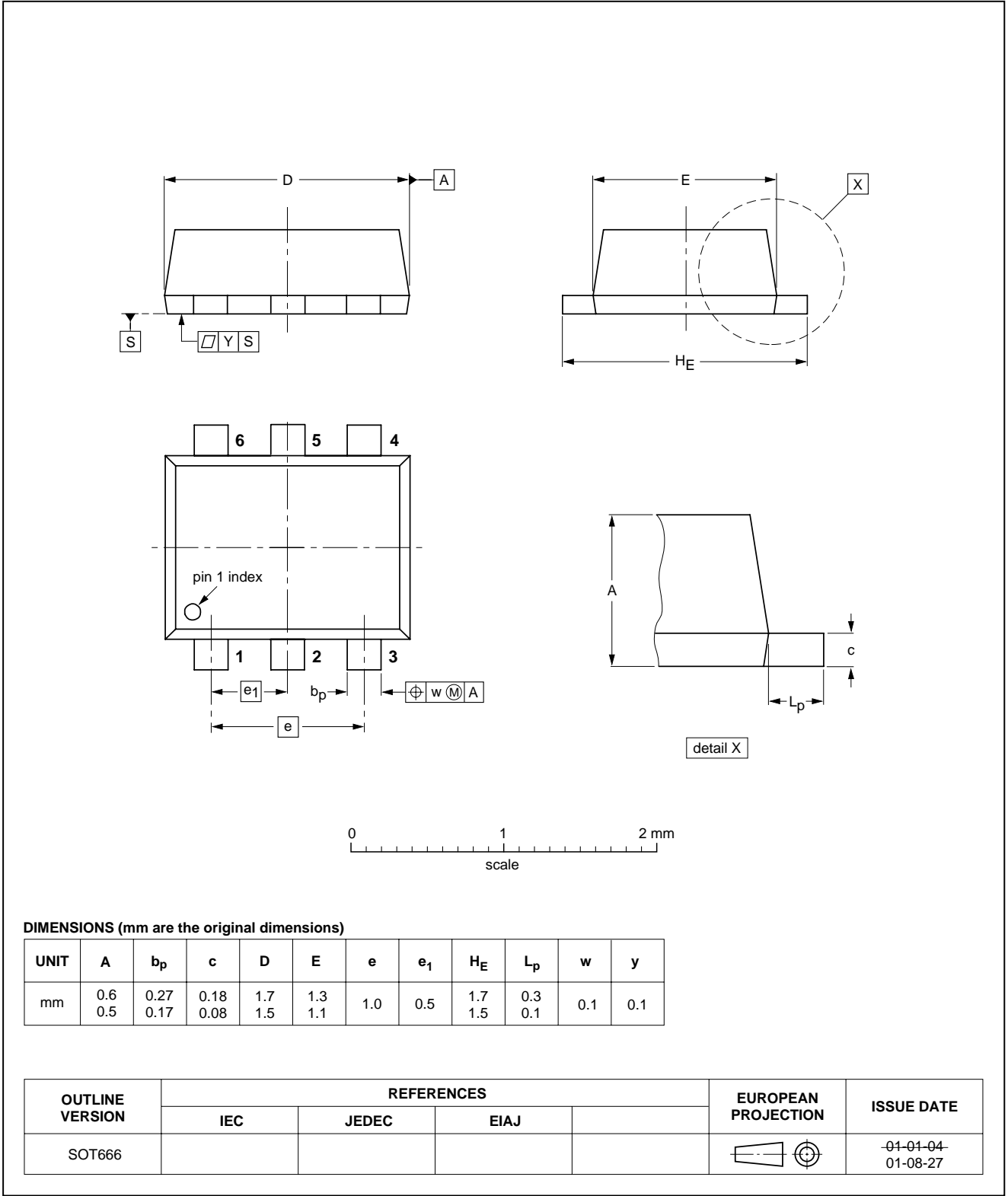
NPN/PNP resistor-equipped transistors;  
R1 = 10 kΩ, R2 = open

PEMD4; PUMD4

PACKAGE OUTLINES

Plastic surface mounted package; 6 leads

SOT666

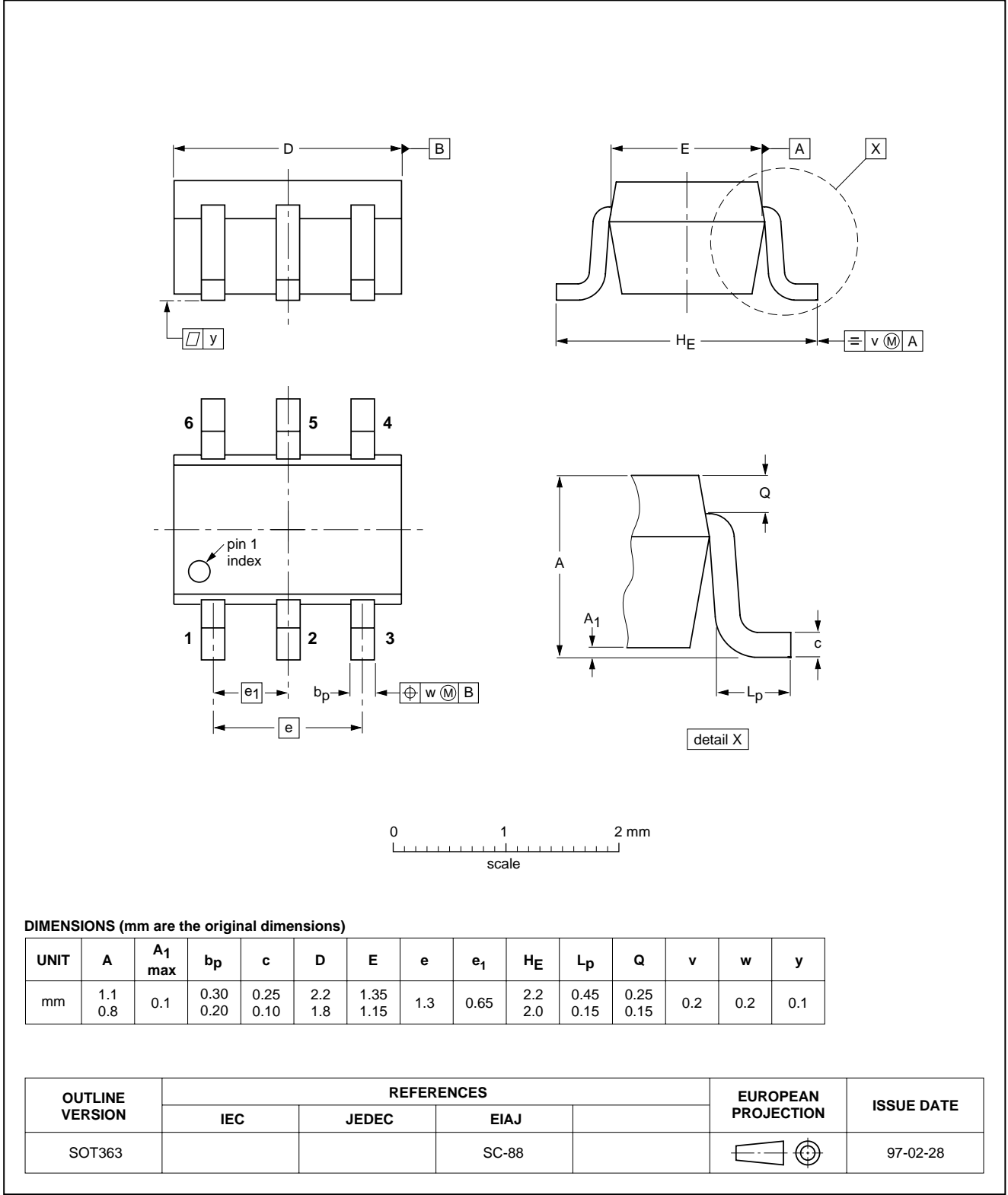


NPN/PNP resistor-equipped transistors;  
R1 = 10 kΩ, R2 = open

PEMD4; PUMD4

Plastic surface mounted package; 6 leads

SOT363



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

PEMD4; PUMD4

## 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**

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## **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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