DISCRETE SEMICONDUCTORS

DATA SHEET

PEMB4; PUMB4 PNP/PNP resistor-equipped transistors; R1 = 10 kΩ, R2 = open

Product data sheet Supersedes data of 2001 Sep 14

2003 Oct 15



QUICK REFERENCE DATA

voltage

PNP

PNP

bias resistor

bias resistor

PARAMETER

output current (DC)

collector-emitter

SYMBOL

 V_{CEO}

 I_{O}

TR1

TR2

R1

R2

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PEMB4; PUMB4

MAX.

-50

-100

UNIT

٧

mΑ

 $k\Omega$

TYP.

10

open

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	NPN/NPN	
TIPE NOWIBER	PHILIPS	EIAJ	WARKING CODE	COMPLEMENT	COMPLEMENT	
PEMB4	SOT666	-	B4	PEMD4	PEMH4	
PUMB4	SOT363	SC-88	B*4 ⁽¹⁾	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		
ITPE NUMBER	SIMPLIFIED OUTLINE AND STMBOL	PIN	DESCRIPTION	
PEMB4	□ c □ c □ d 6 5 4	1	emitter TR1	
PUMB4		2	base TR1	
		3	collector TR2	
		4	emitter TR2	
		5	base TR2	
	R1 R1	6	collector TR1	
	Top view MAM452			

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PEMB4; PUMB4

ORDERING INFORMATION

TYPE NUMBER		PACKAGE				
ITPE NUMBER	NAME	DESCRIPTION	VERSION			
PEMB4	_	plastic surface mounted package; 6 leads SOT				
PUMB4		plastic surface mounted package; 6 leads SOT36				

LIMITING VALUES

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

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

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PEMB4; PUMB4

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
Per transis	tor			
R _{th j-a}	thermal resistance from junction to ambient	T _{amb} ≤ 25 °C		
	SOT363	note 1	625	K/W
	SOT666	notes 1 and 2	625	K/W
Per device				
R _{th j-a} thermal resistance from junction to ambient		T _{amb} ≤ 25 °C		
SOT363		note 1	416	K/W
	SOT666	note 1	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_{amb} = 25 °C unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I _{CBO}	collector-base cut-off current	$V_{CB} = -50 \text{ V}; I_E = 0$	-	_	-100	nA
I _{CEO}	collector-emitter cut-off current	$V_{CE} = -30 \text{ V}; I_B = 0$	_	_	-1	μΑ
		$V_{CE} = -30 \text{ V}; I_{B} = 0; T_{j} = 150 ^{\circ}\text{C}$	_	_	-50	μΑ
I _{EBO}	emitter-base cut-off current	$V_{EB} = -5 \text{ V}; I_C = 0$	_	_	-100	nA
h _{FE}	DC current gain	$V_{CE} = -5 \text{ V}; I_{C} = -1 \text{ mA}$	200	_	_	
V _{CEsat}	saturation voltage	$I_C = -10 \text{ mA}; I_B = -0.5 \text{ mA}$	_	_	-150	mV
R1	input resistor		7	10	13	kΩ
C _c	collector capacitance	$I_E = i_e = 0$; $V_{CB} = -10 \text{ V}$; $f = 1 \text{ MHz}$	_	_	3	pF

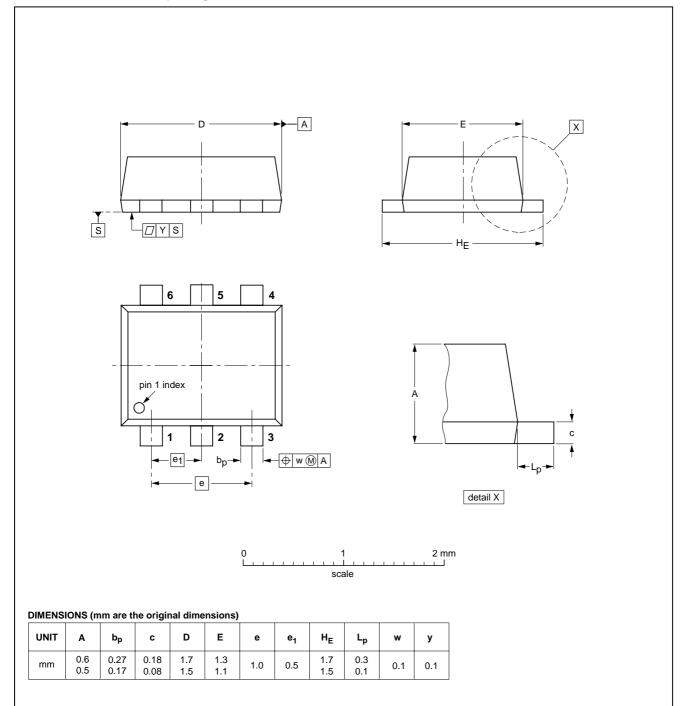
PNP/PNP resistor-equipped transistors; R1 = 10 k Ω , R2 = open

PEMB4; PUMB4

PACKAGE OUTLINES

Plastic surface mounted package; 6 leads

SOT666



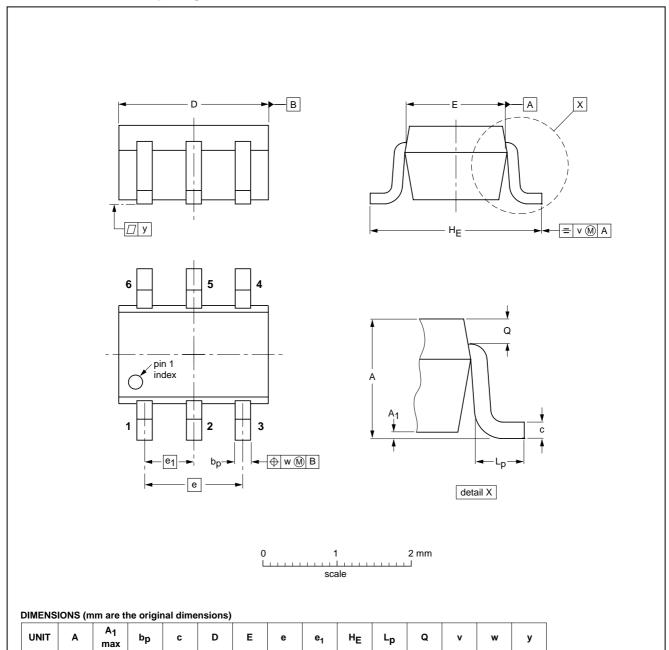
OUTLINE		REFERENCES			EUROPEAN ISSUE DATE		
VERSION	IEC	JEDEC	EIAJ		PROJECTION	ISSUE DATE	
SOT666						01-01-04 01-08-27	
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PNP/PNP resistor-equipped transistors; R1 = 10 k Ω , R2 = open

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Plastic surface mounted package; 6 leads

SOT363



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

0.65

0.45 0.15 0.25 0.15

0.2

0.1

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0.25 0.10

0.30

0.20

1.1 0.8

0.1

mm

2.2 1.8 1.35 1.15

1.3

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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.

Notes

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- 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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