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Kind regards,

Team Nexperia

PEMB30; PUMB30

PNP/PNP double resistor-equipped transistors;
R1 = 2.2 kΩ, R2 = open

Rev. 02 — 2 September 2009 **Product data sheet**

1. Product profile

1.1 General description

PNP/PNP double Resistor-Equipped Transistors (RET) in Surface-Mounted Device (SMD) plastic packages

Table 1. Product overview

Type number	Package		NPN/PNP complement	NPN/NPN complement
	NXP	**JEITA**		
PEMB30	SOT666	-	PEMD30	PEMH30
PUMB30	SOT363	SC-88	PUMD30	PUMH30

1.2 Features

- 100 mA output current capability
- Built-in bias resistors
- Simplifies circuit design
- Reduces component count
- Reduces pick and place costs

1.3 Applications

- Low current peripheral driver
- Control of IC inputs
- Cost-saving alternative for BC857BS and BC857BV

1.4 Quick reference data

Table 2. Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Per transistor						
V_{CEO}	collector-emitter voltage	open base	-	-	−50	V
I_O	output current		-	-	−100	mA
R1	bias resistor 1 (input)		1.54	2.2	2.86	kΩ

founded by Philips

2. Pinning information

Table 3.   Pinning

Pin	Description	Simplified outline	Symbol
1	GND (emitter) TR1		
2	input (base) TR1		
3	output (collector) TR2		
4	GND (emitter) TR2		
5	input (base) TR2		
6	output (collector) TR1		

001aab555

006aaa268

3. Ordering information

Table 4.   Ordering information

Type number	Package		
	Name	**Description**	**Version**
PEMB30	-	plastic surface-mounted package; 6 leads	SOT666
PUMB30	SC-88	plastic surface-mounted package; 6 leads	SOT363

4. Marking

Table 5.   Marking codes

Type number	Marking code[1]
PEMB30	2T
PUMB30	*B2

[1]   * = -: made in Hong Kong
   * = p: made in Hong Kong
   * = t: made in Malaysia
   * = W: made in China

5. Limiting values

Table 6.   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
I_O	output current		-	−100	mA
I_{CM}	peak collector current	single pulse; $t_p \leq 1$ ms	-	−100	mA
P_{tot}	total power dissipation	$T_{amb} \leq 25$ °C			
	SOT363		[1] -	200	mW
	SOT666		[1][2] -	200	mW
Per device					
P_{tot}	total power dissipation	$T_{amb} \leq 25$ °C			
	SOT363		[1] -	300	mW
	SOT666		[1][2] -	300	mW
T_{stg}	storage temperature		−65	+150	°C
T_j	junction temperature		-	150	°C
T_{amb}	ambient temperature		−65	+150	°C

[1] Device mounted on an FR4 Printed-Circuit Board (PCB), single-sided copper, tin-plated and standard footprint.

[2] Reflow soldering is the only recommended soldering method.

6. Thermal characteristics

Table 7.   Thermal characteristics

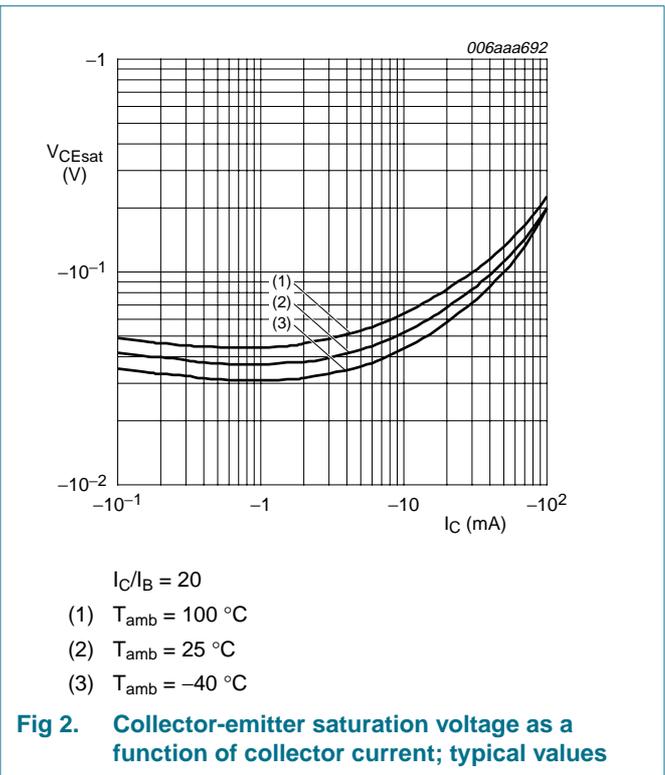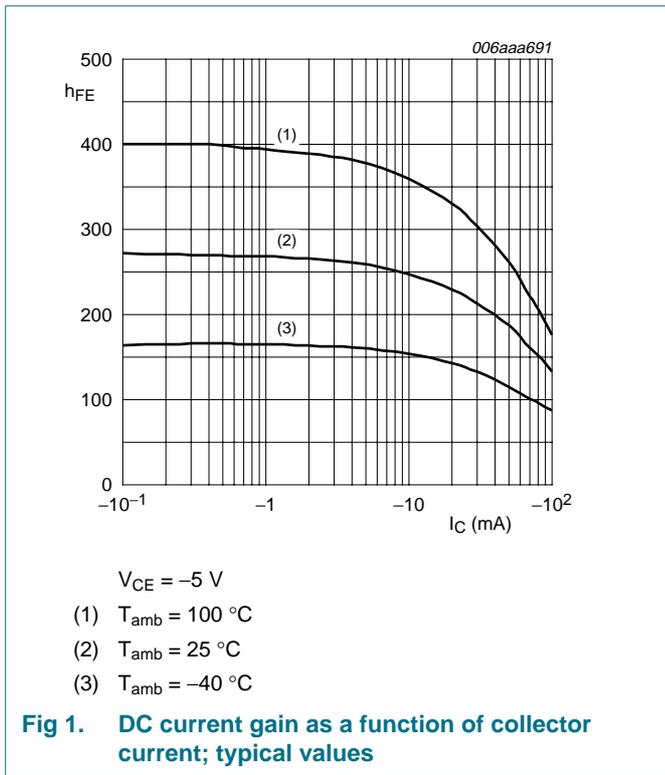| Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Per transistor						
$R_{th(j-a)}$	thermal resistance from junction to ambient	in free air				
	SOT363		[1] -	-	625	K/W
	SOT666		[1][2] -	-	625	K/W
Per device						
$R_{th(j-a)}$	thermal resistance from junction to ambient	in free air				
	SOT363		[1] -	-	416	K/W
	SOT666		[1][2] -	-	416	K/W

[1] Device mounted on an FR4 PCB, single-sided copper, tin-plated and standard footprint.

[2] Reflow soldering is the only recommended soldering method.

7. Characteristics

Table 8.   Characteristics

T$_{amb}$ = 25 °C unless otherwise specified.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Per transistor						
I$_{CBO}$	collector-base cut-off current	V$_{CB}$ = −50 V; I$_E$ = 0 A	-	-	−100	nA
I$_{CEO}$	collector-emitter cut-off current	V$_{CE}$ = −30 V; I$_B$ = 0 A	-	-	−1	µA
		V$_{CE}$ = −30 V; I$_B$ = 0 A; T$_j$ = 150 °C	-	-	−50	µA
I$_{EBO}$	emitter-base cut-off current	V$_{EB}$ = −5 V; I$_C$ = 0 A	-	-	−100	nA
h$_{FE}$	DC current gain	V$_{CE}$ = −5 V; I$_C$ = −20 mA	30	-	-	
V$_{CEsat}$	collector-emitter saturation voltage	I$_C$ = −10 mA; I$_B$ = −0.5 mA	-	-	−150	mV
R1	bias resistor 1 (input)		1.54	2.2	2.86	kΩ
C$_c$	collector capacitance	V$_{CB}$ = −10 V; I$_E$ = i$_e$ = 0 A; f = 1 MHz	-	-	3	pF

V$_{CE}$ = −5 V

(1) T$_{amb}$ = 100 °C
(2) T$_{amb}$ = 25 °C
(3) T$_{amb}$ = −40 °C

Fig 1.   DC current gain as a function of collector current; typical values

I$_C$/I$_B$ = 20

(1) T$_{amb}$ = 100 °C
(2) T$_{amb}$ = 25 °C
(3) T$_{amb}$ = −40 °C

Fig 2.   Collector-emitter saturation voltage as a function of collector current; typical values
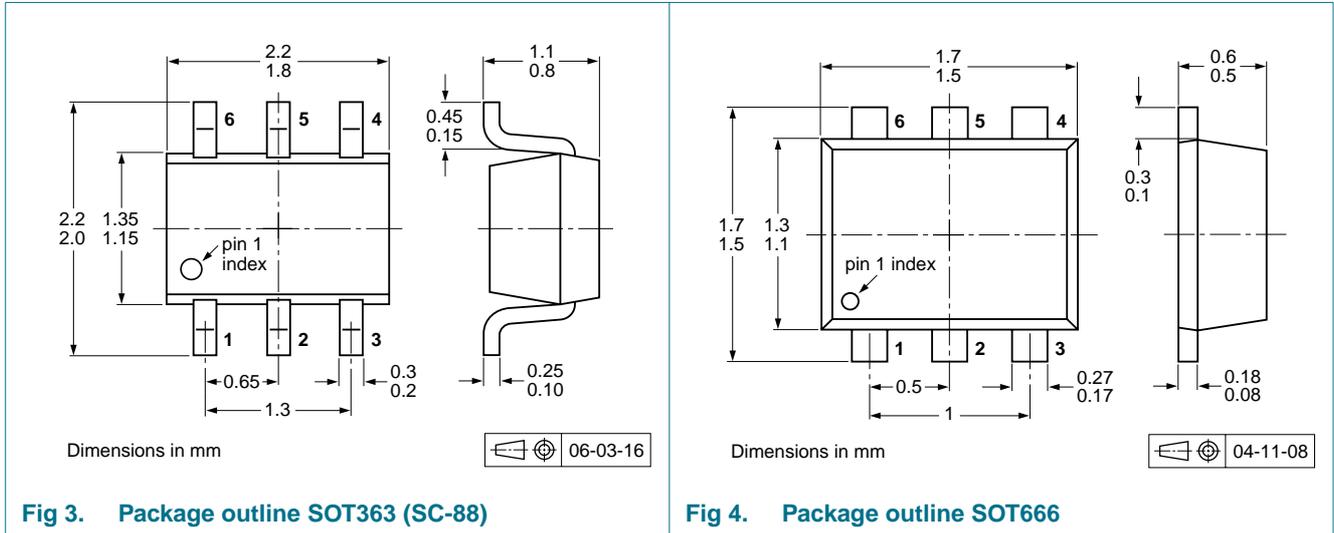
8. Package outline

Fig 3. **Package outline SOT363 (SC-88)**

Fig 4. **Package outline SOT666**
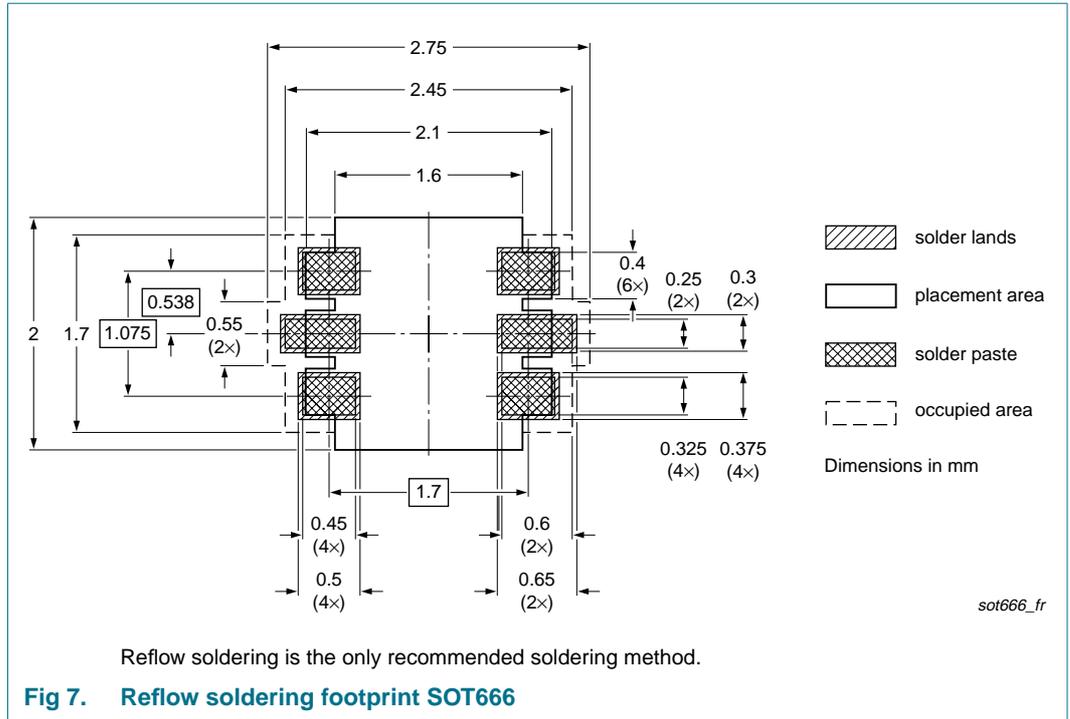
9. Packing information

Table 9. **Packing methods**
The indicated -xxx are the last three digits of the 12NC ordering code.[1]

Type number	Package	Description	Packing quantity			
			3000	4000	8000	10000
PEMB30	SOT666	2 mm pitch, 8 mm tape and reel	-	-	-315	-
		4 mm pitch, 8 mm tape and reel	-	-115	-	-
PUMB30	SOT363	4 mm pitch, 8 mm tape and reel; T1 [2]	-115	-	-	-135
		4 mm pitch, 8 mm tape and reel; T2 [3]	-125	-	-	-165

[1] For further information and the availability of packing methods, see Section 13.

[2] T1: normal taping

[3] T2: reverse taping

10. Soldering

Fig 5. **Reflow soldering footprint SOT363 (SC-88)**

Fig 6. **Wave soldering footprint SOT363 (SC-88)**

PNP/PNP double resistor-equipped transistors; R1 = 2.2 kΩ, R2 = open

Reflow soldering is the only recommended soldering method.

Fig 7.   **Reflow soldering footprint SOT666**

11. Revision history

Table 10.   Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
PEMB30_PUMB30_2	20090902	Product data sheet	-	PEMB30_PUMB30_1
Modifications:	• This data sheet was changed to reflect the new company name NXP Semiconductors, including new legal definitions and disclaimers. No changes were made to the technical content.			
	• Figure 3 "Package outline SOT363 (SC-88)": updated			
	• Figure 5 "Reflow soldering footprint SOT363 (SC-88)": updated			
	• Figure 6 "Wave soldering footprint SOT363 (SC-88)": updated			
	• Figure 7 "Reflow soldering footprint SOT666": updated			
PEMB30_PUMB30_1	20060331	Product data sheet	-	-

12. Legal information

12.1 Data sheet status

Document status[1][2]	Product status[3]	Definition
Objective [short] data sheet	Development	This document contains data from the objective specification for product development.
Preliminary [short] data sheet	Qualification	This document contains data from the preliminary specification.
Product [short] data sheet	Production	This document contains the product specification.

[1] Please consult the most recently issued document before initiating or completing a design.

[2] The term 'short data sheet' is explained in section "Definitions".

[3] 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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14. Contents

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