

PIMZ2; PUMZ2

NPN/PNP general-purpose double transistors

Rev. 05 — 24 November 2004

Product data sheet

1. Product profile

1.1 General description

NPN/PNP general-purpose double transistors.

Table 1: Product overview

Type number	Package		Configuration
	Philips	JEITA	
PIMZ2	SOT457	SC-74	NPN/PNP double transistors
PUMZ2	SOT363	SC-88	NPN/PNP double transistors

1.2 Features

- Simplified circuit design
- Reduced component count
- Reduced pick and place costs.

1.3 Applications

- General-purpose switching and amplification.

1.4 Quick reference data

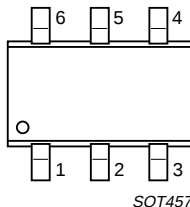
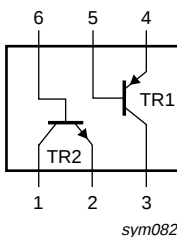
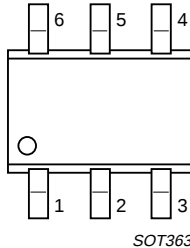
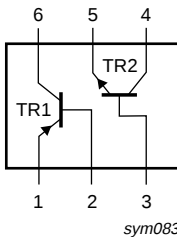
Table 2: Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V_{CEO}	collector-emitter voltage	open base	-	-	50	V
I_C	collector current (DC)		-	-	150	mA

PHILIPS

2. Pinning information

Table 3: Pinning

Pin	Description	Simplified outline	Symbol
PIMZ2 (SOT457)			
1	collector TR2		
2	emitter TR2		
3	collector TR1		
4	emitter TR1		
5	base TR1		
6	base TR2		
PUMZ2 (SOT363)			
1	emitter TR1		
2	base TR1		
3	base TR2		
4	collector TR2		
5	emitter TR2		
6	collector TR1		

3. Ordering information

Table 4: Ordering information

Type number	Package		
	Name	Description	Version
PIMZ2	SC-74	plastic surface mounted package; 6 leads	SOT457
PUMZ2	SC-88	plastic surface mounted package; 6 leads	SOT363

4. Marking

Table 5: Marking codes

Type number	Marking code ^[1]
PIMZ2	M6
PUMZ2	GZ*

[1] * = -: 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; for the PNP transistor with negative polarity					
V_{CBO}	collector-base voltage	open emitter	-	60	V
V_{CEO}	collector-emitter voltage	open base	-	50	V
V_{EBO}	emitter-base voltage	open collector	-	7	V
I_C	collector current (DC)		-	150	mA
I_{CM}	peak collector current		-	200	mA
I_{BM}	peak base current		-	100	mA
P_{tot}	total power dissipation	$T_{amb} \leq 25\text{ °C}$			
	SOT457		[1] -	200	mW
	SOT363		[1] -	180	mW
T_{stg}	storage temperature		-65	+150	°C
T_j	junction temperature		-	150	°C
T_{amb}	ambient temperature		-65	+150	°C
Per device					
P_{tot}	total power dissipation	$T_{amb} \leq 25\text{ °C}$			
	SOT457		[1] -	300	mW
	SOT363		[1] -	300	mW

[1] Device mounted on an FR4 printed-circuit board.

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	$T_{amb} \leq 25\text{ °C}$				
	SOT457		[1] -	-	625	K/W
	SOT363		[1] -	-	694	K/W
Per device						
$R_{th(j-a)}$	thermal resistance from junction to ambient	$T_{amb} \leq 25\text{ °C}$				
	SOT457		[1] -	-	417	K/W
	SOT363		[1] -	-	417	K/W

[1] Device mounted on an FR4 printed-circuit board.

7. Characteristics

Table 8: Characteristics

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

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Per transistor; for the PNP transistor with negative polarity; unless otherwise specified						
I_{CBO}	collector-base cut-off current	$V_{CB} = 60\text{ V}; I_E = 0\text{ A}$	-	-	100	nA
		$V_{CB} = 60\text{ V}; I_E = 0\text{ A}; T_j = 150\text{ }^{\circ}\text{C}$	-	-	50	μA
I_{EBO}	emitter-base cut-off current	$V_{EB} = 7\text{ V}; I_C = 0\text{ A}$	-	-	100	nA
h_{FE}	DC current gain	$V_{CE} = 6\text{ V}; I_C = 1\text{ mA}$	120	250	560	
TR1 (PNP)						
V_{CEsat}	collector-emitter saturation voltage	$I_C = -50\text{ mA}; I_B = -5\text{ mA}$	-	-	-500	mV
f_T	transition frequency	$I_E = -2\text{ mA}; V_{CE} = -12\text{ V}; f = 100\text{ MHz}$	-	190	-	MHz
C_c	collector capacitance	$I_E = i_e = 0\text{ A}; V_{CB} = -12\text{ V}; f = 1\text{ MHz}$	-	2.3	5	pF
TR2 (NPN)						
V_{CEsat}	collector-emitter saturation voltage	$I_C = 50\text{ mA}; I_B = 5\text{ mA}$	-	-	250	mV
f_T	transition frequency	$I_E = 2\text{ mA}; V_{CE} = 12\text{ V}; f = 100\text{ MHz}$	100	-	-	MHz
C_c	collector capacitance	$I_E = i_e = 0\text{ A}; V_{CB} = 12\text{ V}; f = 1\text{ MHz}$	-	-	3	pF

8. Package outline

Plastic surface mounted package; 6 leads

SOT457

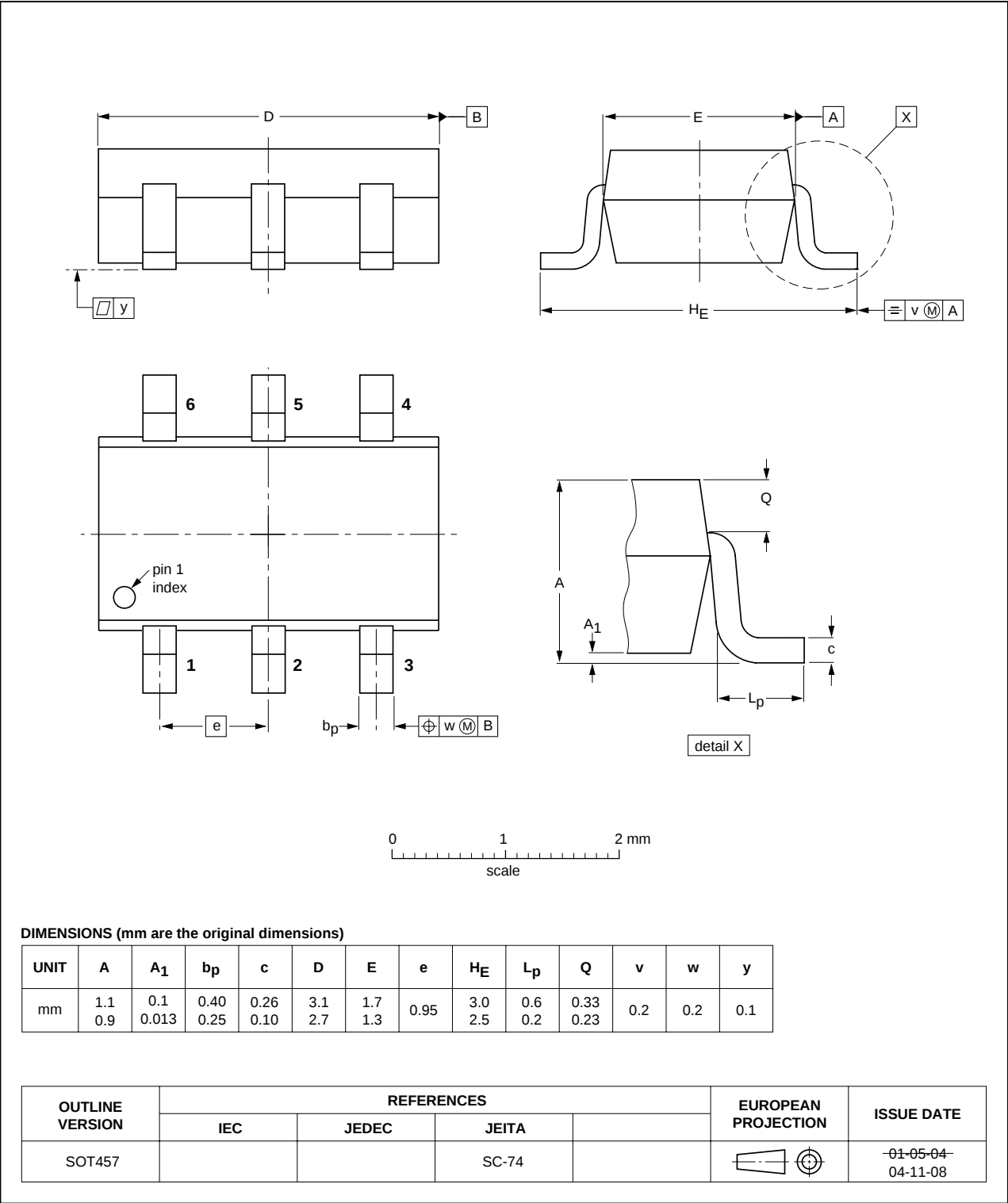


Fig 1. Package outline SOT457 (SC-74)

Plastic surface mounted package; 6 leads

SOT363

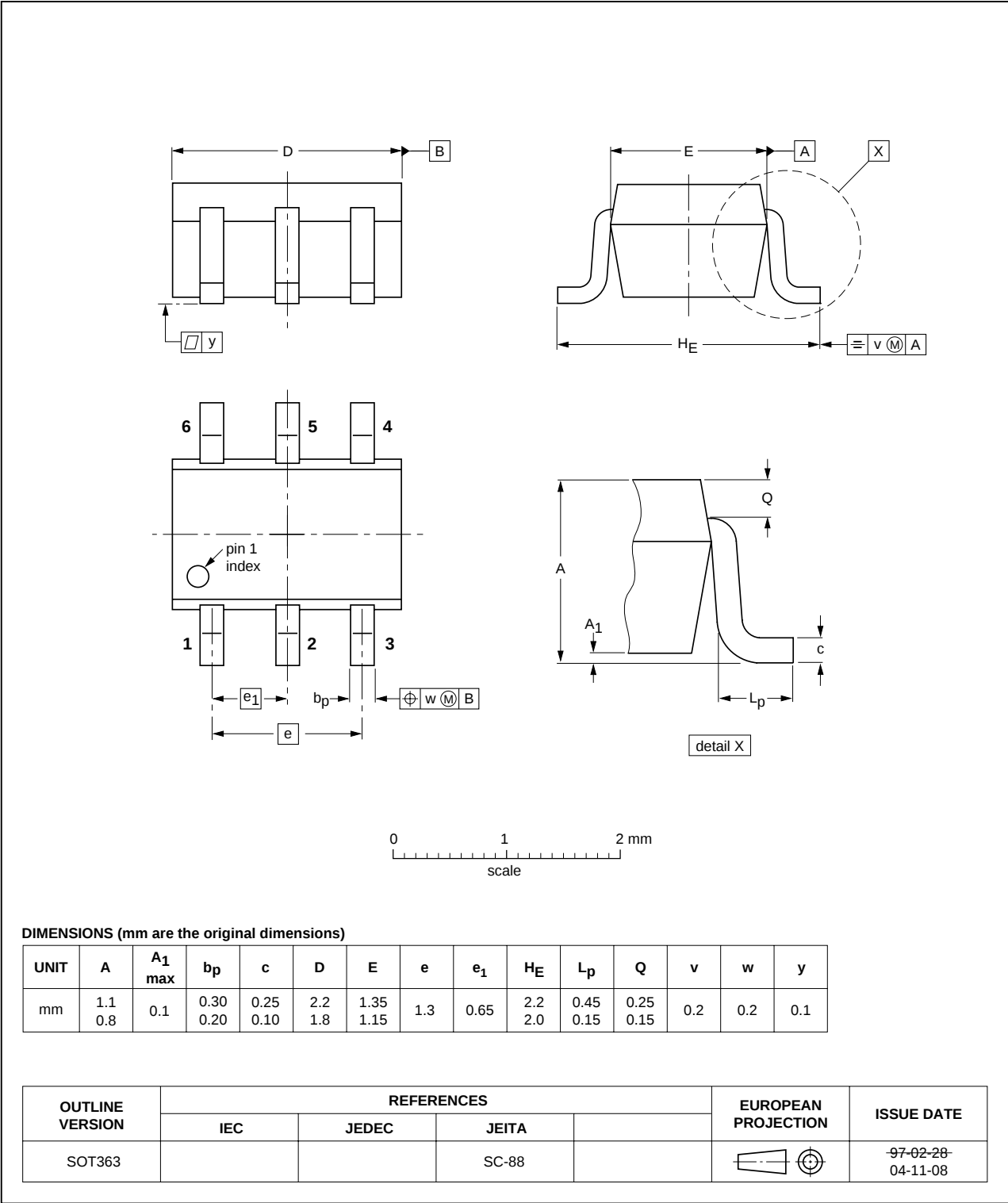


Fig 2. Package outline SOT363 (SC-88)



9. Revision history

Table 9: Revision history

Document ID	Release date	Data sheet status	Change notice	Doc. number	Supersedes
PIMZ2_PUMZ2_5	20041124	Product data sheet	-	9397 750 13966	PIMZ2_PUMZ2_4
Modifications:					
- The format of this data sheet has been redesigned to comply with the new presentation and information standard of Philips Semiconductors. Table 3 PUMZ2 symbol drawing amended Table 5 PIMZ2 marking code and PUMZ2 table note amended					
PIMZ2_PUMZ2_4	20031217	Product specification	-	9397 750 12385	PIMZ2_2
PIMZ2_2	20030714	Product specification	-	9397 750 11659	PIMZ2_1
PIMZ2_1	20030602	Objective specification	-	9397 750 11456	-

10. Data sheet status

Level	Data sheet status ^[1]	Product status ^{[2] [3]}	Definition
I	Objective data	Development	This data sheet contains data from the objective specification for product development. Philips Semiconductors reserves the right to change the specification in any manner without notice.
II	Preliminary data	Qualification	This data sheet contains data from the preliminary specification. Supplementary data will be published at a later date. Philips Semiconductors reserves the right to change the specification without notice, in order to improve the design and supply the best possible product.
III	Product data	Production	This data sheet contains data from the product specification. Philips Semiconductors reserves the right to make changes at any time in order to improve the design, manufacturing and supply. Relevant changes will be communicated via a Customer Product/Process Change Notification (CPCN).

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

[2] The product status of the device(s) described in this data sheet may have changed since this data sheet was published. The latest information is available on the Internet at URL <http://www.semiconductors.philips.com>.

[3] For data sheets describing multiple type numbers, the highest-level product status determines the data sheet status.

11. Definitions

Short-form specification — The data in a short-form specification is extracted from a full data sheet with the same type number and title. For detailed information see the relevant data sheet or data handbook.

Limiting values definition — Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 60134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability.

Application information — Applications that are described herein for any of these products are for illustrative purposes only. Philips Semiconductors make no representation or warranty that such applications will be suitable for the specified use without further testing or modification.

12. Disclaimers

Life support — These products are not designed for use in life support appliances, devices, or systems where malfunction of these products can reasonably be expected to result in personal injury. Philips Semiconductors customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Philips Semiconductors for any damages resulting from such application.

Right to make changes — Philips Semiconductors reserves the right to make changes in the products - including circuits, standard cells, and/or software - described or contained herein in order to improve design and/or performance. When the product is in full production (status 'Production'), relevant changes will be communicated via a Customer Product/Process Change Notification (CPCN). Philips Semiconductors assumes no responsibility or liability for the use of any of these products, conveys no license or title under any patent, copyright, or mask work right to these products, and makes no representations or warranties that these products are free from patent, copyright, or mask work right infringement, unless otherwise specified.

13. Contact information

For additional information, please visit: <http://www.semiconductors.philips.com>

For sales office addresses, send an email to: sales.addresses@www.semiconductors.philips.com



14. Contents

1	Product profile	1
1.1	General description.....	1
1.2	Features	1
1.3	Applications	1
1.4	Quick reference data.....	1
2	Pinning information.....	2
3	Ordering information.....	2
4	Marking	2
5	Limiting values.....	3
6	Thermal characteristics.....	3
7	Characteristics.....	4
8	Package outline	5
9	Revision history.....	7
10	Data sheet status	8
11	Definitions	8
12	Disclaimers.....	8
13	Contact information	8



© Koninklijke Philips Electronics N.V. 2004

All rights are reserved. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. The information presented in this document does not form part of any quotation or contract, is believed to be accurate and reliable and may be changed without notice. No liability will be accepted by the publisher for any consequence of its use. Publication thereof does not convey nor imply any license under patent- or other industrial or intellectual property rights.

Date of release: 24 November 2004
Document number: 9397 750 13966

Published in The Netherlands