

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

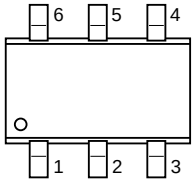
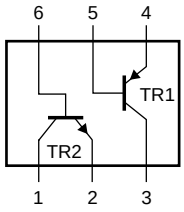
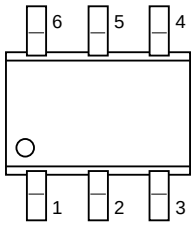
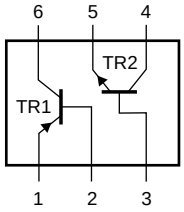
Table 2: Quick reference data

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

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2. Pinning information

Table 3: Pinning

Pin	Description	Simplified outline	Symbol
PIMZ2 (SOT457)			
1	collector TR2	 SOT457	 sym082
2	emitter TR2		
3	collector TR1		
4	emitter TR1		
5	base TR1		
6	base TR2		
PUMZ2 (SOT363)			
1	emitter TR1	 SOT363	 sym083
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

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

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

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7. Characteristics

Table 8: Characteristics

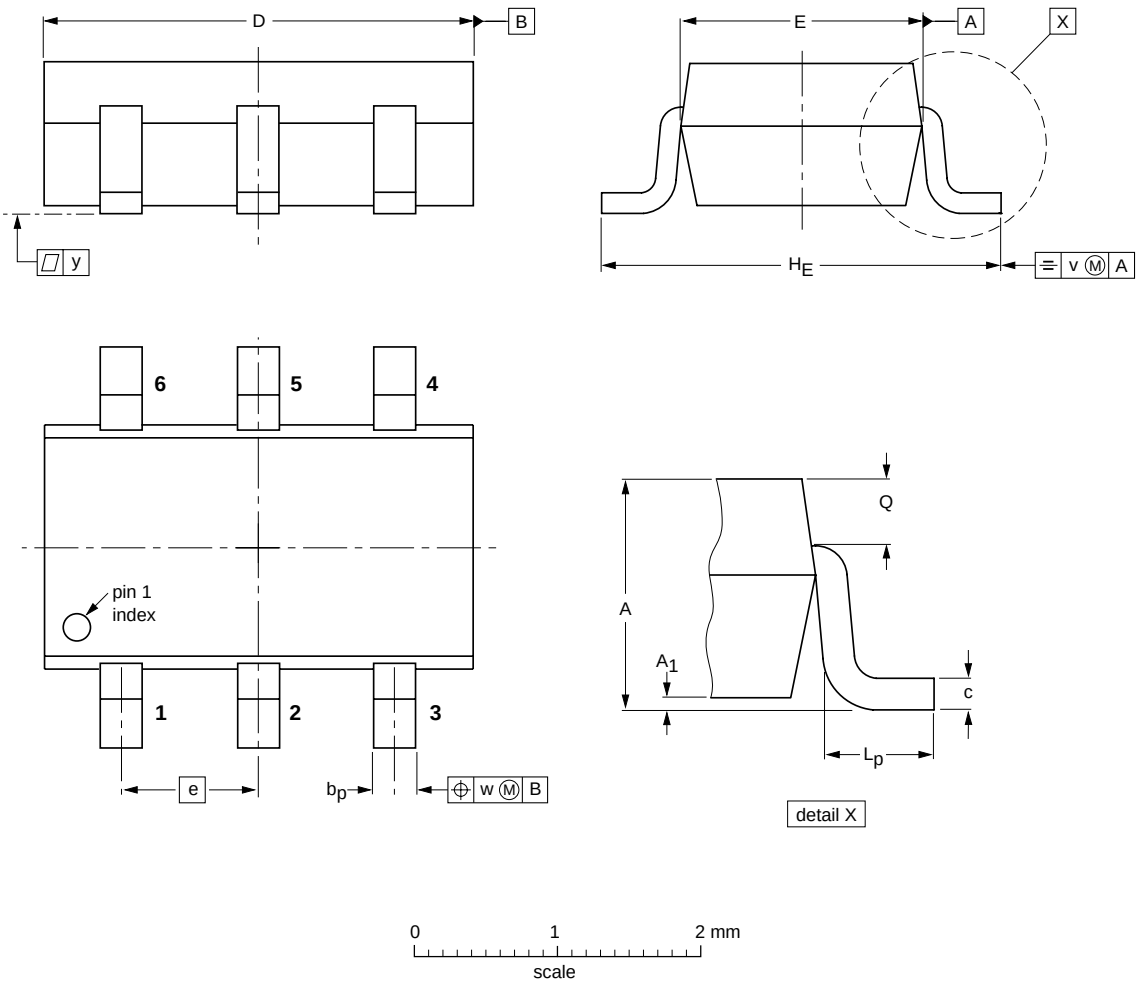
T_{amb} = 25 °C unless otherwise specified.

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 V; I_E = 0 A	-	-	100	nA
		V_{CB} = 60 V; I_E = 0 A; T_j = 150 °C	-	-	50	µA
I_{EBO}	emitter-base cut-off current	V_{EB} = 7 V; I_C = 0 A	-	-	100	nA
h_{FE}	DC current gain	V_{CE} = 6 V; I_C = 1 mA	120	250	560	
TR1 (PNP)						
V_{CEsat}	collector-emitter saturation voltage	I_C = –50 mA; I_B = –5 mA	-	-	–500	mV
f_T	transition frequency	I_E = –2 mA; V_{CE} = –12 V; f = 100 MHz	-	190	-	MHz
C_c	collector capacitance	$I_E = i_e$ = 0 A; V_{CB} = –12 V; f = 1 MHz	-	2.3	5	pF
TR2 (NPN)						
V_{CEsat}	collector-emitter saturation voltage	I_C = 50 mA; I_B = 5 mA	-	-	250	mV
f_T	transition frequency	I_E = 2 mA; V_{CE} = 12 V; f = 100 MHz	100	-	-	MHz
C_c	collector capacitance	$I_E = i_e$ = 0 A; V_{CB} = 12 V; f = 1 MHz	-	-	3	pF

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8. Package outline

Plastic surface mounted package; 6 leads **SOT457**



DIMENSIONS (mm are the original dimensions)

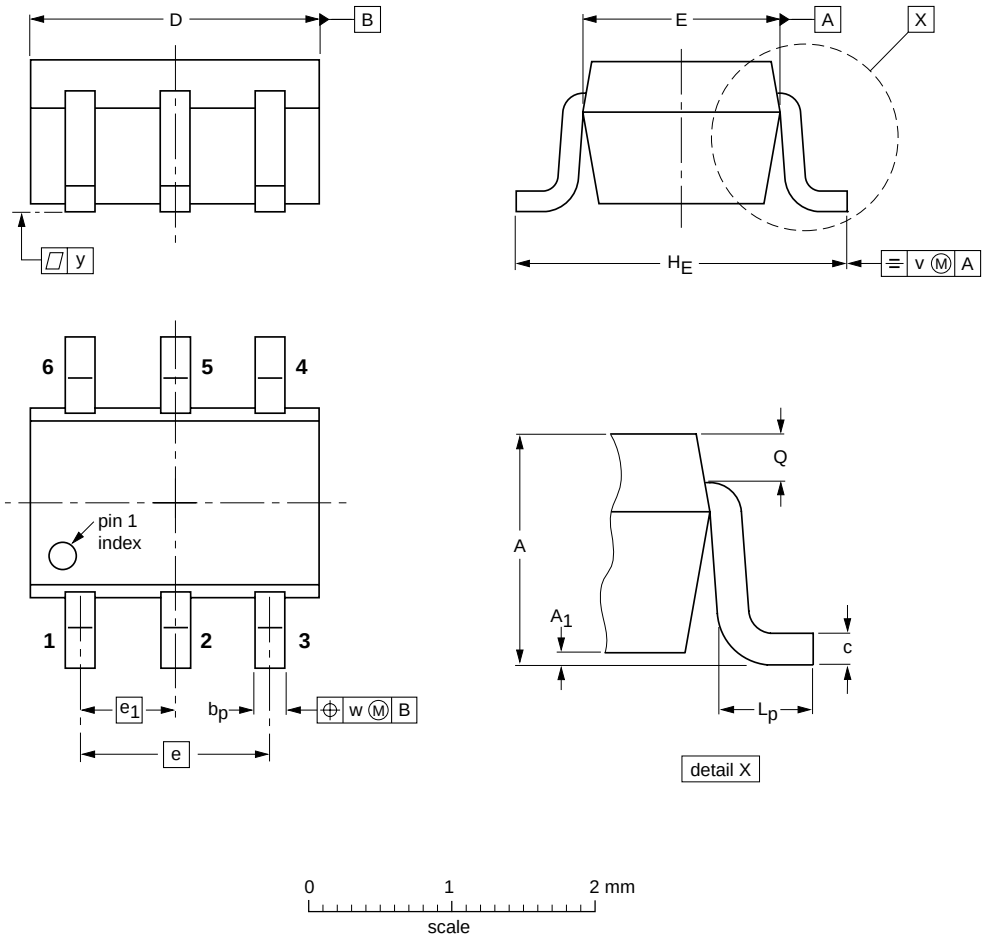
UNIT	A	A_1	b_p	c	D	E	e	H_E	L_p	Q	v	w	y
mm	1.1 0.9	0.1 0.013	0.40 0.25	0.26 0.10	3.1 2.7	1.7 1.3	0.95	3.0 2.5	0.6 0.2	0.33 0.23	0.2	0.2	0.1

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA			
SOT457			SC-74			~~01-05-04~~ 04-11-08

Fig 1. Package outline SOT457 (SC-74)

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Plastic surface mounted package; 6 leads **SOT363**



DIMENSIONS (mm are the original dimensions)

UNIT	A	A_1 max	b_p	c	D	E	e	e_1	H_E	L_p	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	JEITA			
SOT363			SC-88			~~97-02-28~~ 04-11-08

Fig 2. Package outline SOT363 (SC-88)

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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	-

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

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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.

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