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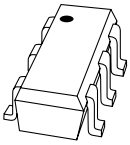
Team Nexperia



PUMX2

NPN/NPN general-purpose double transistors

Rev. 02 — 17 November 2009 Product data sheet

1. Product profile

1.1 General description

NPN/NPN general-purpose double transistors in a small SOT363 (SC-88) Surface Mounted Device (SMD) plastic package.

1.2 Features

- Simplifies circuit design
- Reduces component count
- Reduces pick and place costs

1.3 Applications

- General-purpose switching and amplification

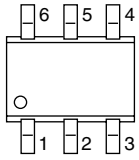
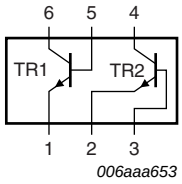
1.4 Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Per transistor						
V_{CEO}	collector-emitter voltage	open base	-	-	50	V
I_C	collector current		-	-	150	mA
h_{FE}	DC current gain	V_{CE} = 6 V; I_C = 1 mA	120	250	560	

2. Pinning information

Table 2. Pinning

Pin	Description	Simplified outline	Symbol
1	emitter TR1		
2	emitter TR2		
3	base TR2		
4	collector TR2		
5	base TR1		
6	collector TR1		

3. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
PUMX2	SC-88	plastic surface mounted package; 6 leads	SOT363

4. Marking

Table 4. Marking codes

Type number	Marking code[1]
PUMX2	Z1*

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

5. Limiting values

Table 5. 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		-	60	V
V_{CEO}	collector-emitter voltage	open base		-	50	V
V_{EBO}	emitter-base voltage	open collector		-	7	V
I_C	collector current			-	150	mA
I_{CM}	peak collector current	single pulse; $t_p \leq 1$ ms		-	200	mA
I_{BM}	peak base current	single pulse; $t_p \leq 1$ ms		-	100	mA
P_{tot}	total power dissipation	$T_{amb} \leq 25$ °C	[1]	-	180	mW
Per device						
P_{tot}	total power dissipation	$T_{amb} \leq 25$ °C	[1]	-	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.

6. Thermal characteristics

Table 6. Thermal characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
Per transistor							
$R_{th(j-a)}$	thermal resistance from junction to ambient	in free air	[1]	-	-	694	K/W
Per device							
$R_{th(j-a)}$	thermal resistance from junction to ambient	in free air	[1]	-	-	417	K/W

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

7. Characteristics

Table 7. 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} = 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	
V_{CEsat}	collector-emitter saturation voltage	I_C = 50 mA; I_B = 5 mA	-	-	250	mV
f_T	transition frequency	V_{CE} = 12 V; I_E = 2 mA; f = 100 MHz	100	-	-	MHz
C_c	collector capacitance	V_{CB} = 12 V; I_E = i_e = 0 A; f = 1 MHz	-	-	3	pF

8. Package outline

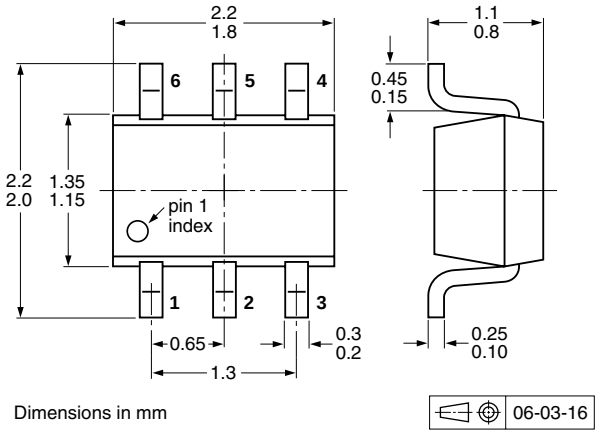


Fig 1. Package outline SOT363 (SC-88)

9. Packing information

Table 8. Packing methods

The indicated -xxx are the last three digits of the 12NC ordering code.[1]

Type number	Package	Description		Packing quantity	
				3000	10000
PUMX2	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

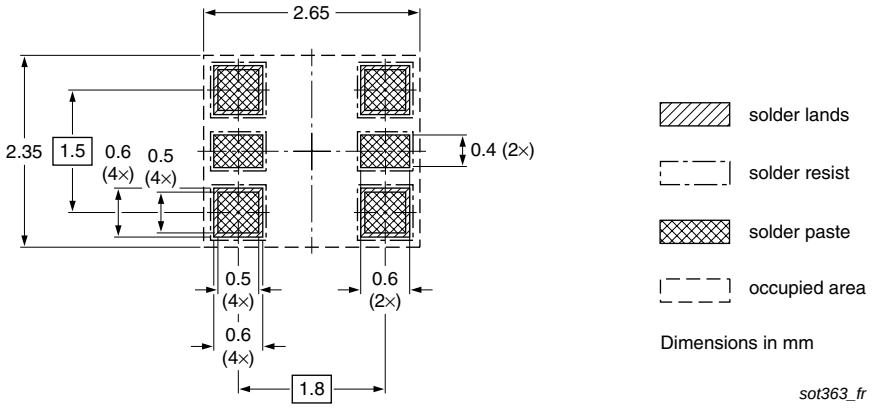


Fig 2. Reflow soldering footprint SOT363 (SC-88)

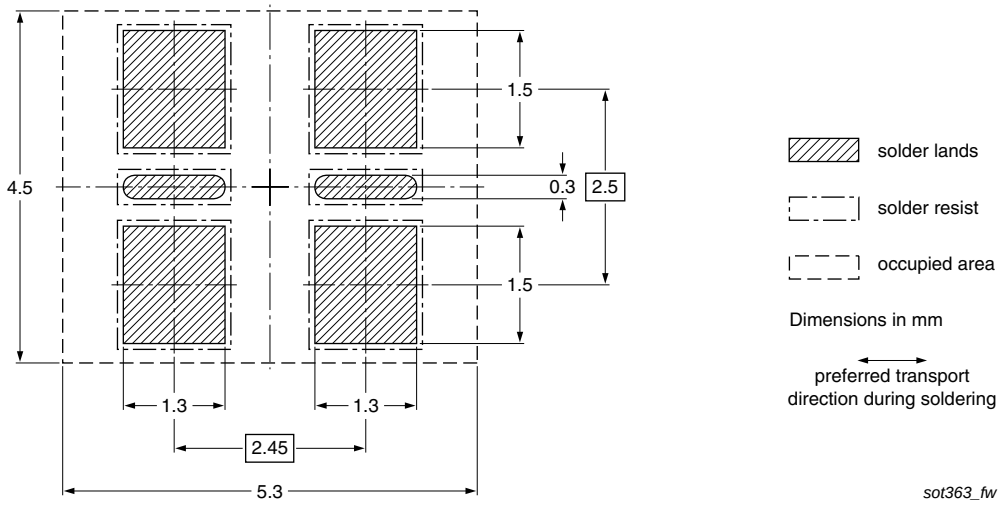


Fig 3. Wave soldering footprint SOT363 (SC-88)

11. Revision history

Table 9. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
PUMX2_2	20091117	Product data sheet	-	PUMX2_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 1 “Package outline SOT363 (SC-88)”: updated • Figure 2 “Reflow soldering footprint SOT363 (SC-88)”: updated • Figure 3 “Wave soldering footprint SOT363 (SC-88)”: updated			
PUMX2_1	20051110	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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