

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	$V_{CE} = 6\text{ V}; I_C = 1\text{ mA}$	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		Version
	Name	Description	
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.

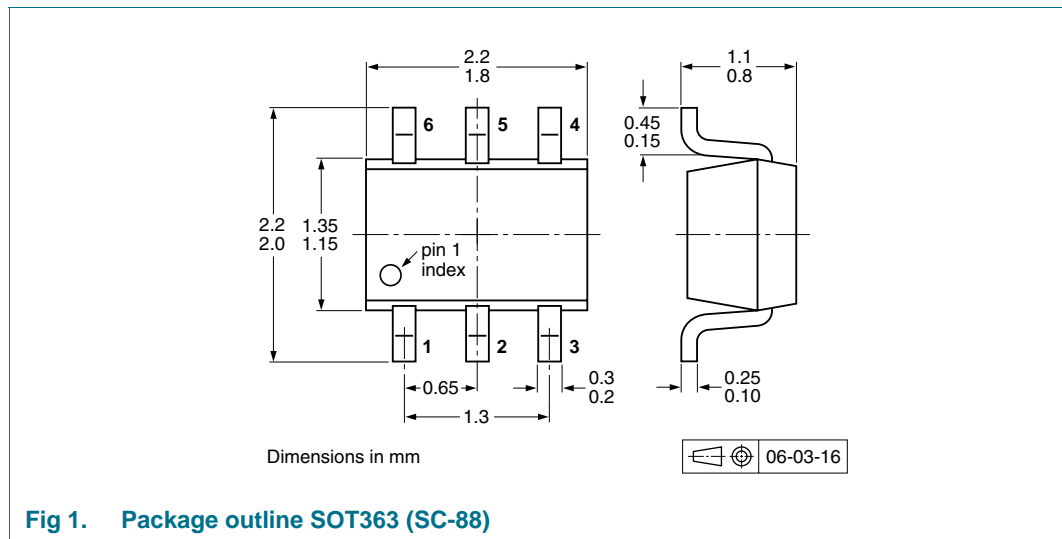
7. Characteristics

Table 7. Characteristics

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

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Per transistor						
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	
V_{CEsat}	collector-emitter saturation voltage	$I_C = 50\text{ mA}; I_B = 5\text{ mA}$	-	-	250	mV
f_T	transition frequency	$V_{CE} = 12\text{ V}; I_E = 2\text{ mA}; f = 100\text{ MHz}$	100	-	-	MHz
C_c	collector capacitance	$V_{CB} = 12\text{ V}; I_E = I_e = 0\text{ A}; f = 1\text{ MHz}$	-	-	3	pF

8. Package outline



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

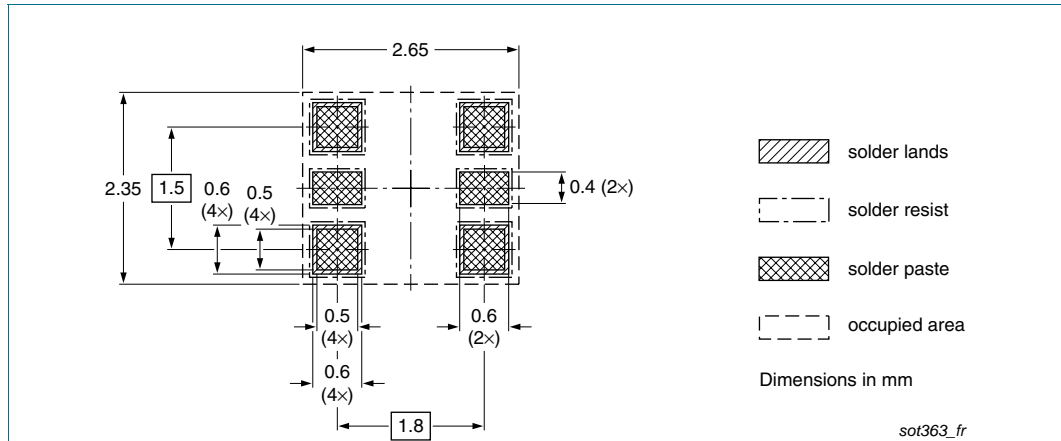


Fig 2. Reflow soldering footprint SOT363 (SC-88)

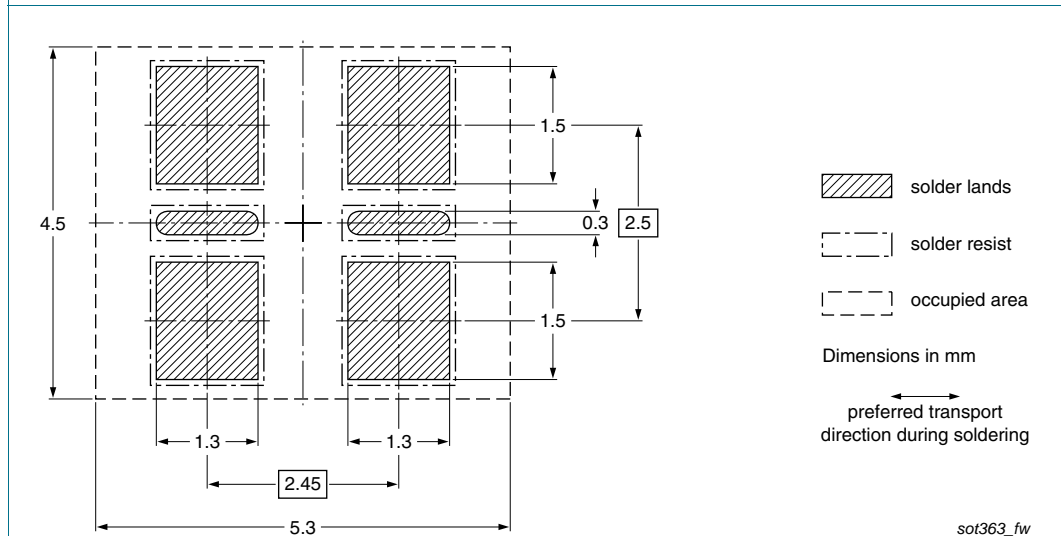


Fig 3. Wave soldering footprint SOT363 (SC-88)

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:	<ul style="list-style-type: none">• 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".

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