PUMX1

40 V, 100 mA NPN/NPN general-purpose transistor

Rev. 04 — 20 January 2010   **Product data sheet**

1. Product profile

1.1 General description

NPN/NPN general-purpose transistor with two independently operating transistors in a SOT363 (SC-88) very small Surface-Mounted Device (SMD) plastic package.

Table 1.   Product overview

Type number	Package		PNP/PNP complement	NPN/PNP complement
	NXP	JEITA		
PUMX1	SOT363	SC-88	PUMT1	PUMZ1

1.2 Features

- Double general-purpose transistor
- Board-space reduction
- Very small SMD plastic package

1.3 Applications

- General-purpose switching and amplification

2. Pinning information

Table 2.   Pinning

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

sym020

3. Ordering information

Table 3.   Ordering information

Type number	Package		Version
	Name	Description	
PUMX1	SC-88	plastic surface-mounted package; 6 leads	SOT363

4. Marking

Table 4.   Marking codes

Type number	Marking code[1]
PUMX1	Z*Z

[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	-	50	V
V_{CEO}	collector-emitter voltage	open base	-	40	V
V_{EBO}	emitter-base voltage	open collector	-	5	V
I_C	collector current		-	100	mA
I_{CM}	peak collector current		-	200	mA
I_{BM}	peak base current		-	200	mA
P_{tot}	total power dissipation	$T_{amb} \leq 25$ °C	-	200	mW
Per device					
P_{tot}	total power dissipation	$T_{amb} \leq 25$ °C [1]	-	300	mW
T_j	junction temperature		-	150	°C
T_{amb}	ambient temperature		−65	+150	°C
T_{stg}	storage 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 device						
$R_{th(j-a)}$	thermal resistance from junction to ambient	in free air [1]	-	-	416	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	$V_{CB} = 30$ V; $I_E = 0$ A	-	-	100	nA
		$V_{CB} = 30$ V; $I_E = 0$ A; $T_j = 150$ °C	-	-	10	µA
I_{EBO}	emitter-base cut-off current	$V_{EB} = 4$ V; $I_C = 0$ A	-	-	100	nA
h_{FE}	DC current gain	$V_{CE} = 6$ V; $I_C = 1$ mA	120	-	-	
V_{CEsat}	collector-emitter saturation voltage	$I_C = 50$ mA; $I_B = 5$ mA [1]	-	-	200	mV
f_T	transition frequency	$I_C = 2$ mA; $V_{CE} = 12$ V; $f = 100$ MHz	100	-	-	MHz
C_c	collector capacitance	$V_{CB} = 12$ V; $I_E = i_e = 0$ A; $f = 1$ MHz	-	-	1.5	pF

[1]   Pulse test: $t_p \leq 300$ µs; $\delta \leq 0.02$.

8. Package outline

Fig 1. **Package outline PUMX1 (SOT363/SC-88)**
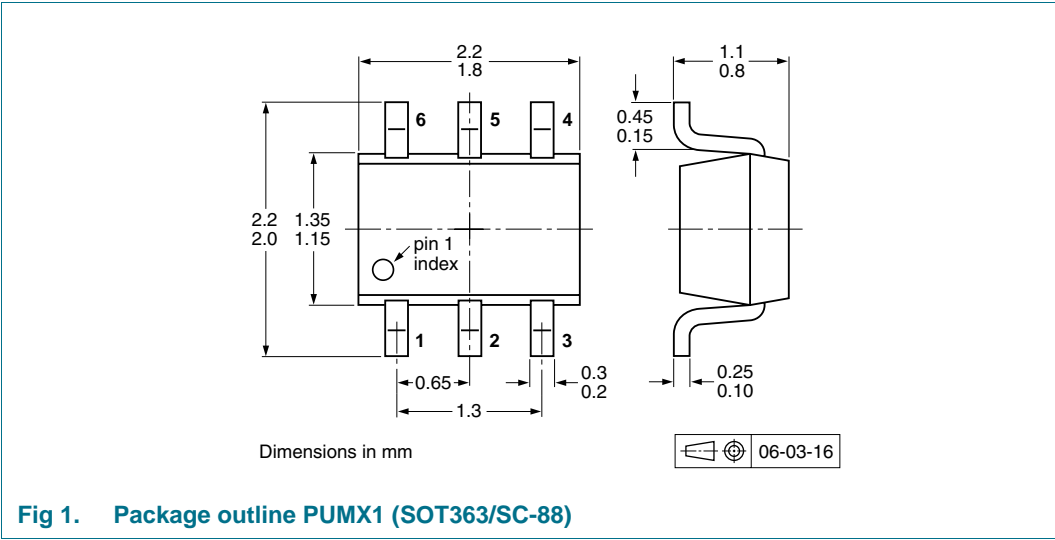
9. Packing information

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**
PUMX1	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 12.

[2] T1: normal taping

[3] T2: reverse taping

10. Revision history

Table 9.   Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
PUMX1_4	20100120	Product data sheet	-	PUMX1_3
Modifications:	• The format of this data sheet has been redesigned to comply with the new identity guidelines of NXP Semiconductors.			
	• Legal texts have been adapted to the new company name where appropriate.			
	• Table 1 "Product overview": added			
	• Section 1.2 "Features": updated			
	• Section 1.3 "Applications": amended			
	• Section 2 "Pinning information": amended			
	• Figure 1: superseded by minimized package outline drawing			
	• Section 9 "Packing information": added			
	• Section 11 "Legal information": updated			
PUMX1_3	19990414	Preliminary specification	-	PUMX1_2
PUMX1_2	19970709	Preliminary specification	-	PUMX1_1

PUMX1_4

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11. Legal information

11.1 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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