



# PUMZ2

## NPN/PNP general-purpose double transistor

31 January 2025

Product data sheet

### 1. General description

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

### 2. Features and benefits

- Simplified circuit design
- Reduced component count
- Reduced pick and place costs
- AEC-Q101 qualified

### 3. Applications

- General-purpose switching and amplification

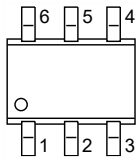
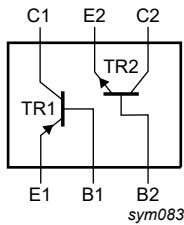
### 4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Per transistor; for the PNP transistor with negative polarity						
$V_{CE0}$	collector-emitter voltage	open base	-	-	50	V
$I_C$	collector current		-	-	150	mA

### 5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	E1	emitter TR1	 TSSOP6 (SOT363)	 sym083
2	B1	base TR1		
3	B2	base TR2		
4	C2	collector TR2		
5	E2	emitter TR2		
6	C1	collector TR1		

6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
PUMZ2	TSSOP6	plastic, surface-mounted package; 6 leads; 0.65 mm pitch; 2.1 mm x 1.25 mm x 0.95 mm body	SOT363

7. Marking

Table 4. Marking codes

Type number	Marking code[1]
PUMZ2	GZ%

[1] % = placeholder for manufacturing site code

8. Limiting values

Table 5. 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 <sub>CBO</sub>	collector-base voltage	open emitter		-	60	V
V <sub>CEO</sub>	collector-emitter voltage	open base		-	50	V
V <sub>EBO</sub>	emitter-base voltage	open collector		-	7	V
I <sub>C</sub>	collector current			-	150	mA
I <sub>CM</sub>	peak collector current			-	200	mA
I <sub>BM</sub>	peak base current			-	100	mA
P <sub>tot</sub>	total power dissipation	T <sub>amb</sub> ≤ 25 °C	[1]	-	180	mW
Per device						
P <sub>tot</sub>	total power dissipation	T <sub>amb</sub> ≤ 25 °C	[1]	-	300	mW
T <sub>j</sub>	junction temperature			-	150	°C
T <sub>amb</sub>	ambient temperature			-65	150	°C
T <sub>stg</sub>	storage temperature			-65	150	°C

[1] Device mounted on an FR4 Printed-Circuit Board (PCB).

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

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

10. Characteristics

Table 7. Characteristics

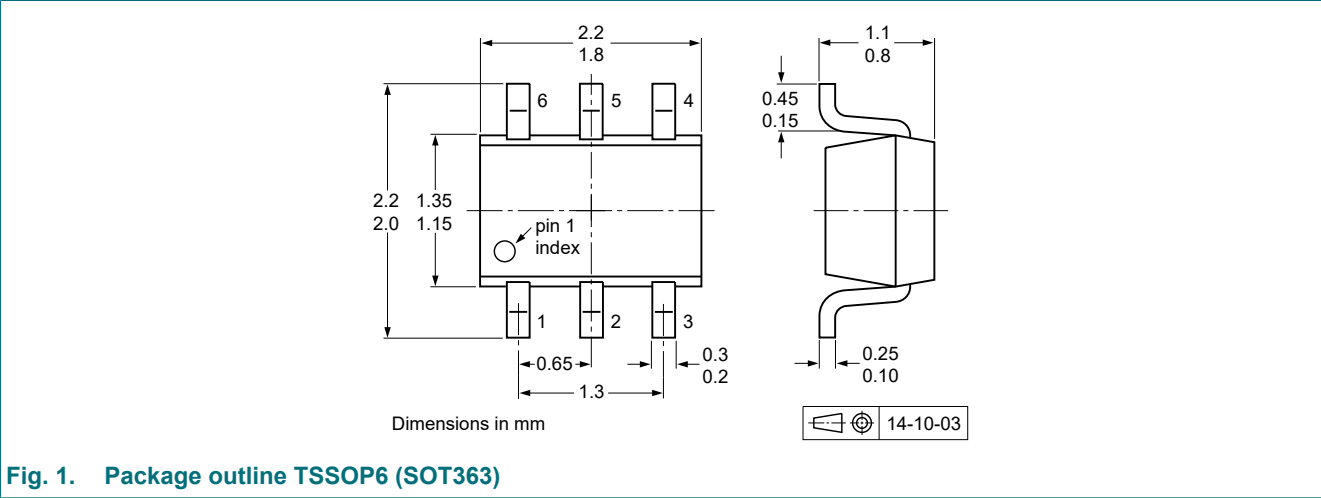
Symbol	Parameter	Conditions		Min	Typ	Max	Unit
Per transistor; for the PNP transistor with negative polarity; unless otherwise specified							
$I_{CBO}$	collector-base cut-off current	$V_{CB} = 60\text{ V}; I_E = 0\text{ A}; T_{amb} = 25\text{ }^{\circ}\text{C}$		-	-	100	nA
		$V_{CB} = 60\text{ V}; I_E = 0\text{ A}; T_j = 150\text{ }^{\circ}\text{C}; T_{amb} = 25\text{ }^{\circ}\text{C}$		-	-	50	$\mu\text{A}$
$I_{EBO}$	emitter-base cut-off current	$V_{EB} = 7\text{ V}; I_C = 0\text{ A}; T_{amb} = 25\text{ }^{\circ}\text{C}$		-	-	100	nA
$h_{FE}$	DC current gain	$V_{CE} = 6\text{ V}; I_C = 1\text{ mA}; T_{amb} = 25\text{ }^{\circ}\text{C}$		120	250	560	
TR1 (PNP)							
$V_{CEsat}$	collector-emitter saturation voltage	$I_C = -50\text{ mA}; I_B = -5\text{ mA}; T_{amb} = 25\text{ }^{\circ}\text{C}$		-	-	-500	mV
$C_c$	collector capacitance	$V_{CB} = -12\text{ V}; I_E = 0\text{ A}; i_e = 0\text{ A}; f = 1\text{ MHz}; T_{amb} = 25\text{ }^{\circ}\text{C}$		-	2.3	5	pF
$f_T$	transition frequency	$V_{CE} = -12\text{ V}; f = 100\text{ MHz}; T_{amb} = 25\text{ }^{\circ}\text{C}; I_E = -2\text{ mA}$		-	190	-	MHz
TR2 (NPN)							
$V_{CEsat}$	collector-emitter saturation voltage	$I_C = 50\text{ mA}; I_B = 5\text{ mA}; T_{amb} = 25\text{ }^{\circ}\text{C}$		-	-	250	mV
$C_c$	collector capacitance	$V_{CB} = 12\text{ V}; I_E = 0\text{ A}; i_e = 0\text{ A}; f = 1\text{ MHz}; T_{amb} = 25\text{ }^{\circ}\text{C}$		-	-	3	pF
$f_T$	transition frequency	$V_{CE} = 12\text{ V}; f = 100\text{ MHz}; T_{amb} = 25\text{ }^{\circ}\text{C}; I_E = 2\text{ mA}$		100	-	-	MHz

11. Test information

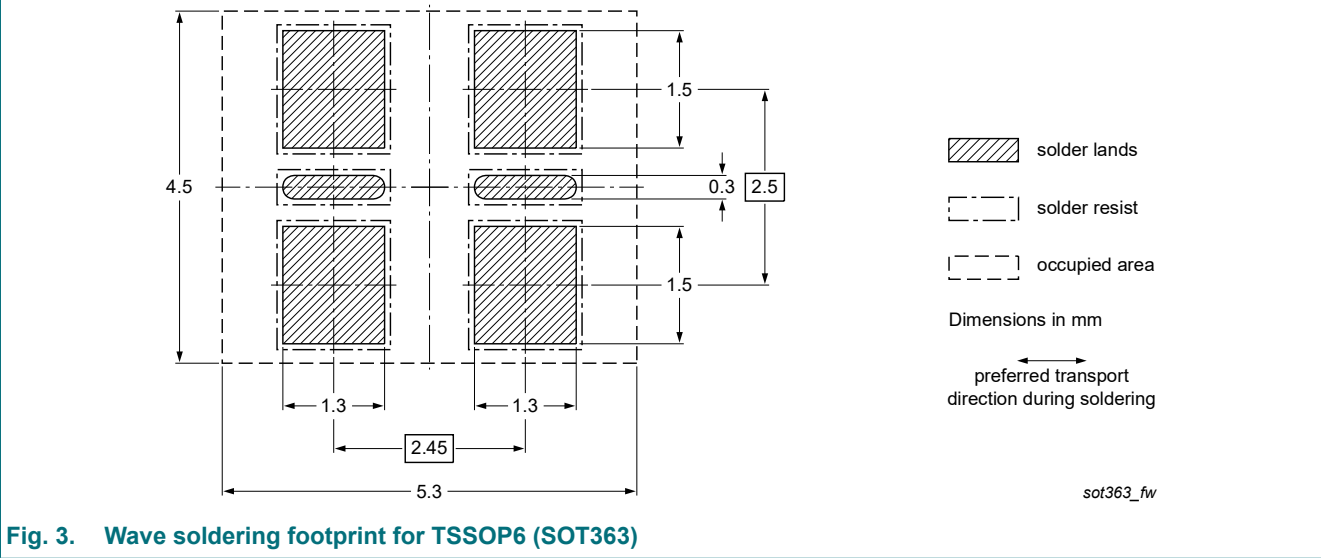
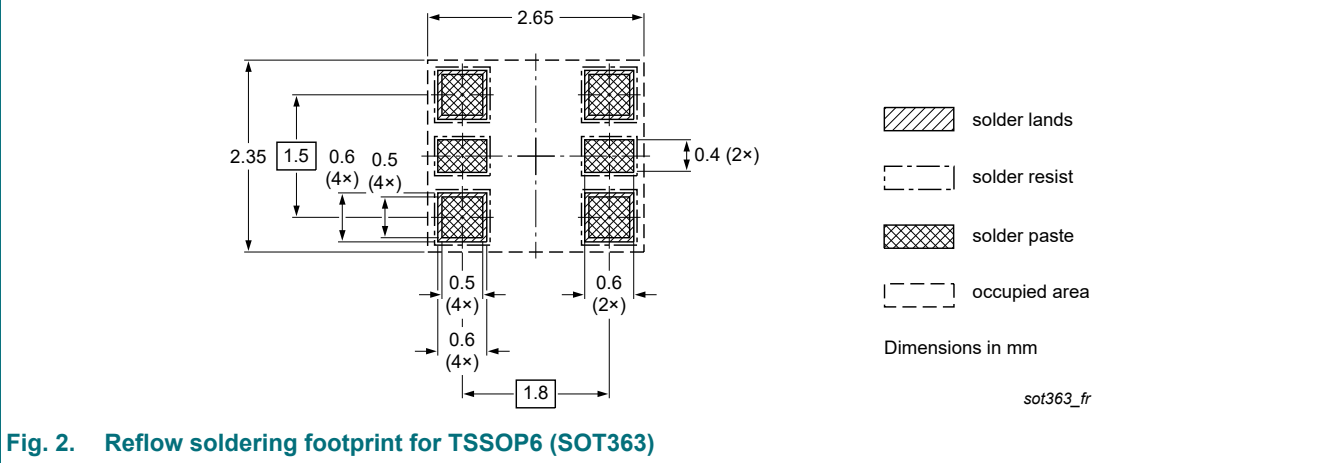
Quality information

This product has been qualified in accordance with the Automotive Electronics Council (AEC) standard *Q101 - Stress test qualification for discrete semiconductors*, and is suitable for use in automotive applications.

12. Package outline



13. Soldering



14. Revision history

Table 8. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
PUMZ2 v.7	20250131	Product data sheet	-	PIMZ2_PUMZ2_6
Modification:	• Family data sheet reduced to single type data sheet.			
PIMZ2_PUMZ2_6	20091117	Product data sheet	-	PIMZ2_PUMZ2_5
PIMZ2_PUMZ2_5	20041124	Product data sheet	-	PIMZ2_PUMZ2_4
PIMZ2_PUMZ2_4	20031217	Product specification	-	PIMZ2_2
PIMZ2_2	20030714	Product specification	-	PIMZ2_1
PIMZ2_1	20030602	Objective specification	-	-

# 15. Legal information

## 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.

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- [2] The term 'short data sheet' is explained in section "Definitions".
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