

PZT4403

40 V, 600 mA PNP switching transistor

Rev. 03 — 2 March 2010 Product data sheet

1. Product profile

1.1 General description

PNP switching transistor in a medium power SOT223 (SC-73) small Surface-Mounted Device (SMD) plastic package.

NPN complement: PZT4401.

1.2 Features and benefits

- High current (max. 600 mA)
- Low voltage (max. 40 V)

1.3 Applications

- Switching and linear amplification

1.4 Quick reference data

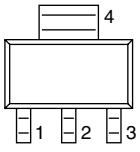
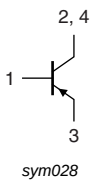
Table 1. Quick reference data

Symbol	Parameter	Conditions		Min		Max	Unit
V_{CEO}	collector-emitter voltage	open base		-	-	–40	V
I_C	collector current			-	-	–600	mA
h_{FE}	DC current gain	V_{CE} = –1 V; I_C = –150 mA	[1]	100	-	300	

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

2. Pinning information

Table 2. Pinning

Pin	Description	Simplified outline	Graphic symbol
1	base		
2, 4	collector		
3	emitter		

sym028

3. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
PZT4403	SC-73	plastic surface-mounted package with increased heatsink; 4 leads	SOT223

4. Marking

Table 4. Marking codes

Type number	Marking code
PZT4403	ZT4403

5. Limiting values

Table 5. Limiting values

In accordance with the Absolute Maximum Rating System (IEC 60134).

Symbol	Parameter	Conditions		Min	Max	Unit
V_{CBO}	collector-base voltage	open emitter		-	–40	V
V_{CEO}	collector-emitter voltage	open base		-	–40	V
V_{EBO}	emitter-base voltage	open collector		-	–6	V
I_C	collector current			-	–600	mA
I_{CM}	peak collector current			-	–800	mA
I_{BM}	peak base current			-	–200	mA
P_{tot}	total power dissipation	$T_{amb} \leq 25$ °C	[1]	-	1150	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, mounting pad for collector 1 cm^2.

6. Thermal characteristics

Table 6. Thermal characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
$R_{th(j-a)}$	thermal resistance from junction to ambient	in free air	[1]	-	-	106	K/W
$R_{th(j-sp)}$	thermal resistance from junction to solder point			-	-	25	K/W

[1] Device mounted on an FR4 PCB, single-sided copper, tin-plated, mounting pad for collector 1 cm^2.

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7. Characteristics

Table 7. Characteristics

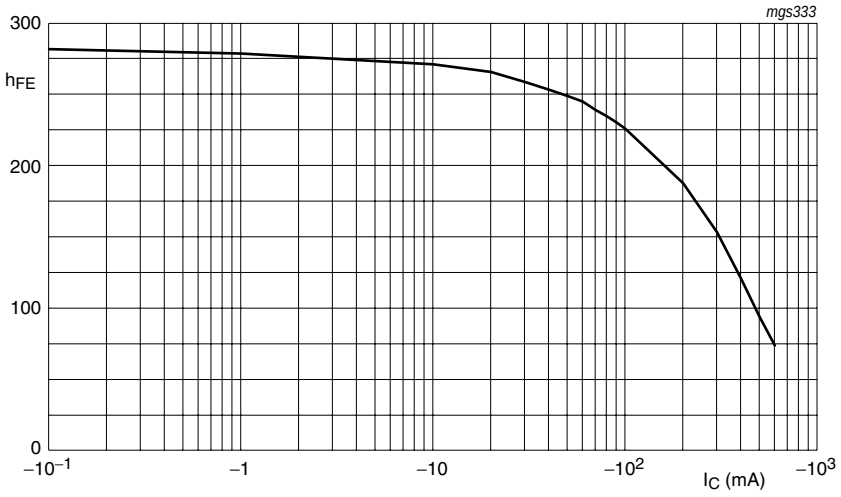
T_{amb} = 25 °C unless otherwise specified.

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
I_{CBO}	collector-base cut-off current	V_{CB} = –40 V; I_E = 0 A		-	-	–50	nA
I_{EBO}	emitter-base cut-off current	V_{EB} = –5 V; I_C = 0 A		-	-	–50	nA
h_{FE}	DC current gain	V_{CE} = –1 V; I_C = –0.1 mA		30	-	-	
		V_{CE} = –1 V; I_C = –1 mA		60	-	-	
		V_{CE} = –1 V; I_C = –10 mA		100	-	-	
		V_{CE} = –1 V; I_C = –150 mA	[1]	100	-	300	
		V_{CE} = –2 V; I_C = –500 mA	[1]	20	-	-	
V_{CEsat}	collector-emitter saturation voltage	I_C = –150 mA; I_B = –15 mA	[1]	-	-	–400	mV
		I_C = –500 mA; I_B = –50 mA	[1]	-	-	–750	mV
V_{BEsat}	base-emitter saturation voltage	I_C = –150 mA; I_B = –15 mA	[1]	-	-	–950	mV
		I_C = –500 mA; I_B = –50 mA	[1]	-	-	–1300	mV
t_d	delay time	V_{CC} = –29.5 V; I_C = –150 mA; I_{Bon} = –15 mA; I_{Boff} = 15 mA; V_{BB} = 3.5 V		-	-	15	ns
t_r	rise time			-	-	30	ns
t_{on}	turn-on time			-	-	40	ns
t_s	storage time			-	-	300	ns
t_f	fall time			-	-	50	ns
t_{off}	turn-off time			-	-	350	ns
f_T	transition frequency	V_{CE} = –10 V; I_C = –20 mA; f = 100 MHz		200	-	-	MHz
C_c	collector capacitance	V_{CB} = –5 V; I_E = i_e = 0 A; f = 1 MHz		-	-	8.5	pF
C_e	emitter capacitance	V_{EB} = –500 mV; I_C = i_c = 0 A; f = 1 MHz		-	-	35	pF

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

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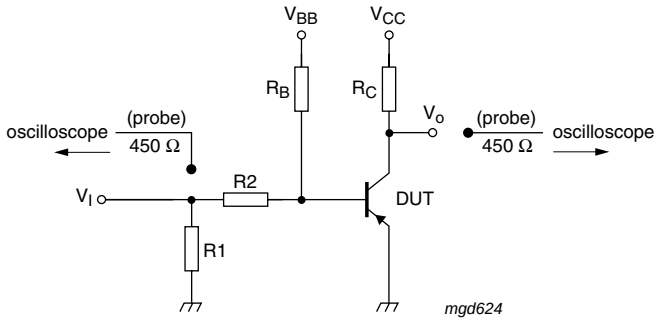
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V_{CE} = −1 V

Fig 1. DC current gain as a function of collector current; typical values

8. Test information



V_i = −9.5 V; T = 500 μs; t_p = 10 μs

R1 = 68 Ω; R2 = 325 Ω; R_B = 325 Ω; R_C = 160 Ω

V_{BB} = 3.5 V; V_{CC} = −29.5 V

Oscilloscope input impedance Z_i = 50 Ω

Fig 2. Test circuit for switching times

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9. Package outline

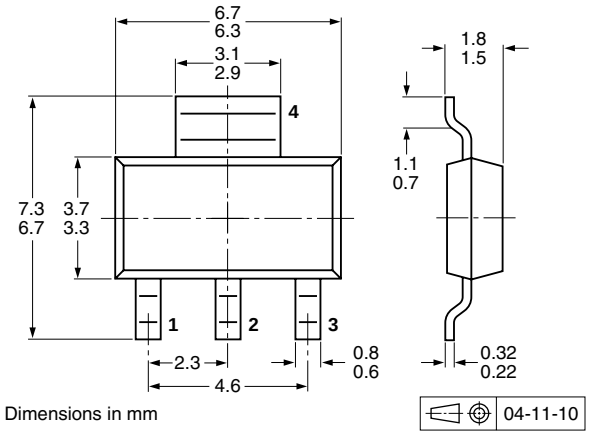


Fig 3. Package outline SOT223 (SC-73)

10. 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	
			1000	4000
PZT4403	SOT223	8 mm pitch, 12 mm tape and reel	-115	-135

[1] For further information and the availability of packing methods, see Section 13.

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11. Revision history

Table 9. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
PZT4403_3	20100302	Product data sheet	-	PZT4403_N_2
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. • Section 1.1 “General description”: amended • Section 1.4 “Quick reference data”: added • Section 3 “Ordering information”: added • Section 4 “Marking”: added • Section 7 “Characteristics”: amended • Section 8 “Test information”: added • Figure 3: superseded by minimized package outline drawing • Section 10 “Packing information”: added • Section 12 “Legal information”: updated			
PZT4403_N_2	20080117	Product data sheet	-	PZT4403_1
PZT4403_1	19990510	Product specification	-	-

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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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