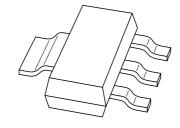
DISCRETE SEMICONDUCTORS

DATA SHEET



PZT4401NPN switching transistor

Product data sheet

1999 May 10



NPN switching transistor

PZT4401

FEATURES

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

APPLICATIONS

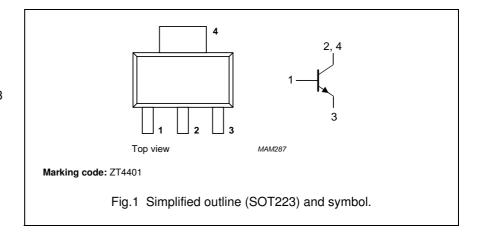
 Switching and linear amplification in industrial and consumer applications.

DESCRIPTION

NPN switching transistor in a SOT223 plastic package. PNP complement: PZT4403.

PINNING

PIN	DESCRIPTION
1	base
2, 4	collector
3	emitter



LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V _{CBO}	collector-base voltage	open emitter	_	60	V
V_{CEO}	collector-emitter voltage	open base	_	40	V
V_{EBO}	emitter-base voltage	open collector	_	6	٧
I _C	collector current (DC)		-	600	mA
I _{CM}	peak collector current		-	800	mA
I _{BM}	peak base current		-	200	mA
P _{tot}	total power dissipation	T _{amb} ≤ 25 °C; note 1	-	1150	mW
T _{stg}	storage temperature		-65	+150	°C
Tj	junction temperature		_	150	°C
T _{amb}	operating ambient temperature		-65	+150	°C

Note

1. Device mounted on a printed-circuit board, single-sided copper, tinplated, mounting pad for collector 1 cm². For other mounting conditions, see *"Thermal considerations for SOT223 in the General Part of associated Handbook"*.

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THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
R _{th j-a}	thermal resistance from junction to ambient	note 1	109	K/W
R _{th j-s}	thermal resistance from junction to soldering point		28	K/W

Note

1. Device mounted on a printed-circuit board, single-sided copper, tinplated, mounting pad for collector 1 cm². For other mounting conditions, see *"Thermal considerations for SOT223 in the General Part of associated Handbook"*.

CHARACTERISTICS

 $T_j = 25$ °C unless otherwise specified.

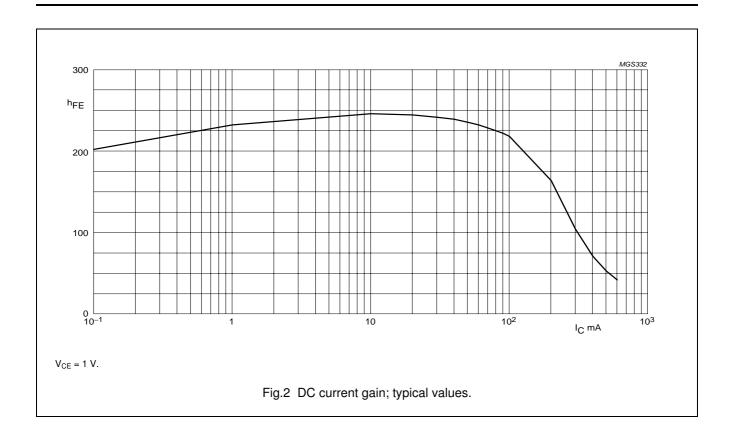
SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
I _{CBO}	collector cut-off current	I _E = 0; V _{CB} = 60 V	_	50	nA
I _{EBO}	emitter cut-off current	I _C = 0; V _{EB} = 6 V	_	50	nA
h _{FE}	DC current gain	V _{CE} = 1 V; see Fig.2			
		$I_{\rm C} = 0.1 \text{mA}$	20	_	
		I _C = 1 mA	40	_	
		I _C = 10 mA	80	_	
		IC = 150 mA; note 1	100	300	
		V _{CE} = 2 V; I _C = 500 mA; note 1	40	_	
V _{CEsat}	collector-emitter saturation	I _C = 150 mA; I _B = 15 mA; note 1	_	400	mV
	voltage	I _C = 500 mA; I _B = 50 mA; note 1	_	750	mV
V _{BEsat}	base-emitter saturation voltage	I _C = 150 mA; I _B = 15 mA; note 1	_	950	mV
		IC = 500 mA; IB = 50 mA; note 1	_	1200	mV
C _c	collector capacitance	I _E = i _e = 0; V _{CB} = 5 V; f = 1 MHz	_	8	pF
Ce	emitter capacitance	$I_C = i_c = 0$; $V_{EB} = 500 \text{ mV}$; $f = 1 \text{ MHz}$	_	30	pF
f _T	transition frequency	I _C = 20 mA; V _{CE} = 10 V; f = 100 MHz	250	_	MHz
Switching t	imes (between 10% and 90% lev	els); see Fig.3			
t _{on}	turn-on time	I _{Con} = 150 mA; I _{Bon} = 15 mA;	_	35	ns
t _d	delay time	$I_{Boff} = -15 \text{ mA}; V_{BB} = -3.5 \text{ V};$	_	15	ns
t _r	rise time	V _{CC} = 29.5 V	_	20	ns
t _{off}	turn-off time		_	250	ns
ts	storage time		_	200	ns
t _f	fall time		_	60	ns

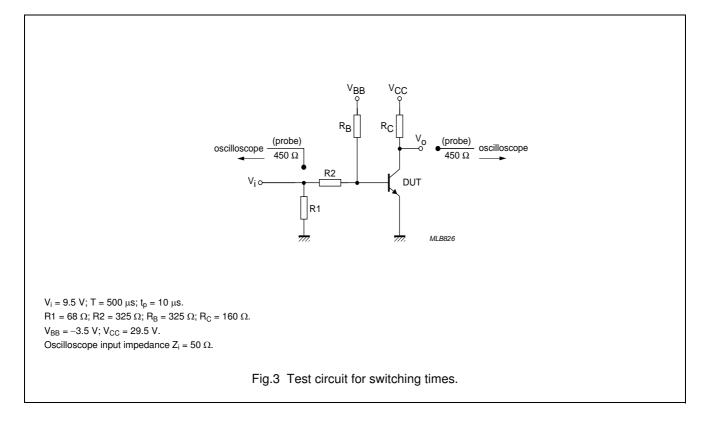
Note

1. Pulse test: $t_p \le 300~\mu s;~\delta \le 0.02.$

NPN switching transistor

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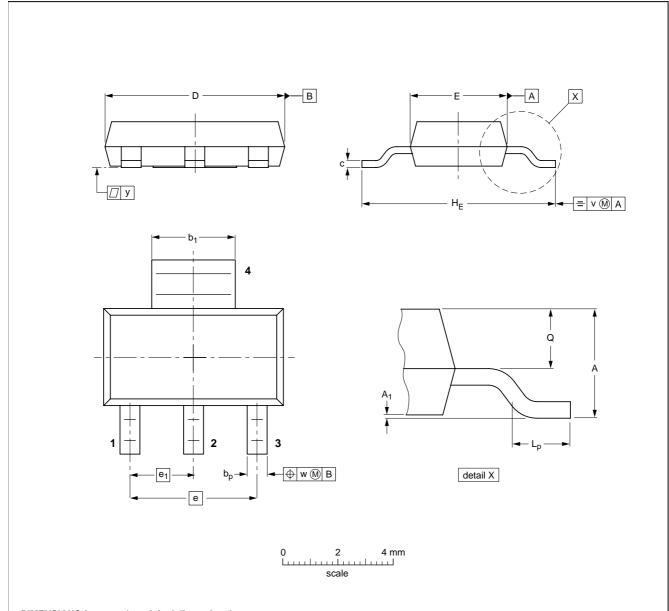
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PACKAGE OUTLINE

Plastic surface mounted package; collector pad for good heat transfer; 4 leads

SOT223



DIMENSIONS (mm are the original dimensions)

UNIT	Α	A ₁	bp	b ₁	С	D	E	е	e ₁	HE	L _p	Q	v	w	у
mm	1.8 1.5	0.10 0.01	0.80 0.60	3.1 2.9	0.32 0.22	6.7 6.3	3.7 3.3	4.6	2.3	7.3 6.7	1.1 0.7	0.95 0.85	0.2	0.1	0.1

OUTLINE		REFER	EUROPEAN	ISSUE DATE		
VERSION	IEC	JEDEC	EIAJ		PROJECTION	ISSUE DATE
SOT223			SC-73		$ \ \ \bigoplus \bigoplus$	-97-02-28 99-09-13

NPN switching transistor

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DATA SHEET STATUS

DOCUMENT STATUS(1)	PRODUCT STATUS ⁽²⁾	DEFINITION
Objective data sheet	Development	This document contains data from the objective specification for product development.
Preliminary data sheet	Qualification	This document contains data from the preliminary specification.
Product data sheet	Production	This document contains the product specification.

Notes

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Customer notification

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, except for package outline drawings which were updated to the latest version.

Contact information

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