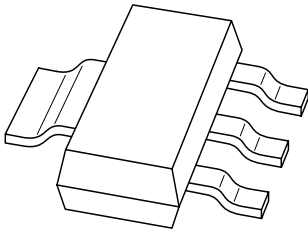


DATA SHEET



PZT4401 NPN switching transistor

Product specification

1999 May 10

NPN switching transistor

PZT4401

FEATURES

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

APPLICATIONS

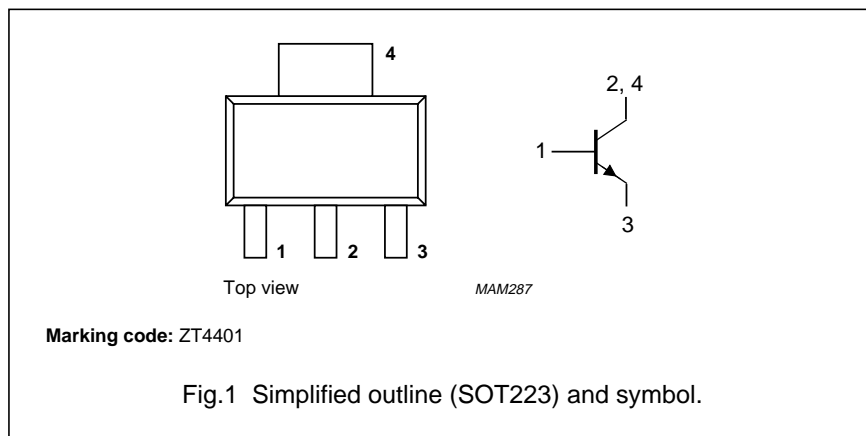
- Switching and linear amplification in industrial and consumer applications.

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	V
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	$T_{amb} \leq 25\text{ }^\circ\text{C}$; note 1	–	1 150	mW
T_{stg}	storage temperature		–65	+150	$^\circ\text{C}$
T_j	junction temperature		–	150	$^\circ\text{C}$
T_{amb}	operating ambient temperature		–65	+150	$^\circ\text{C}$

Note

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

NPN switching transistor

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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

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

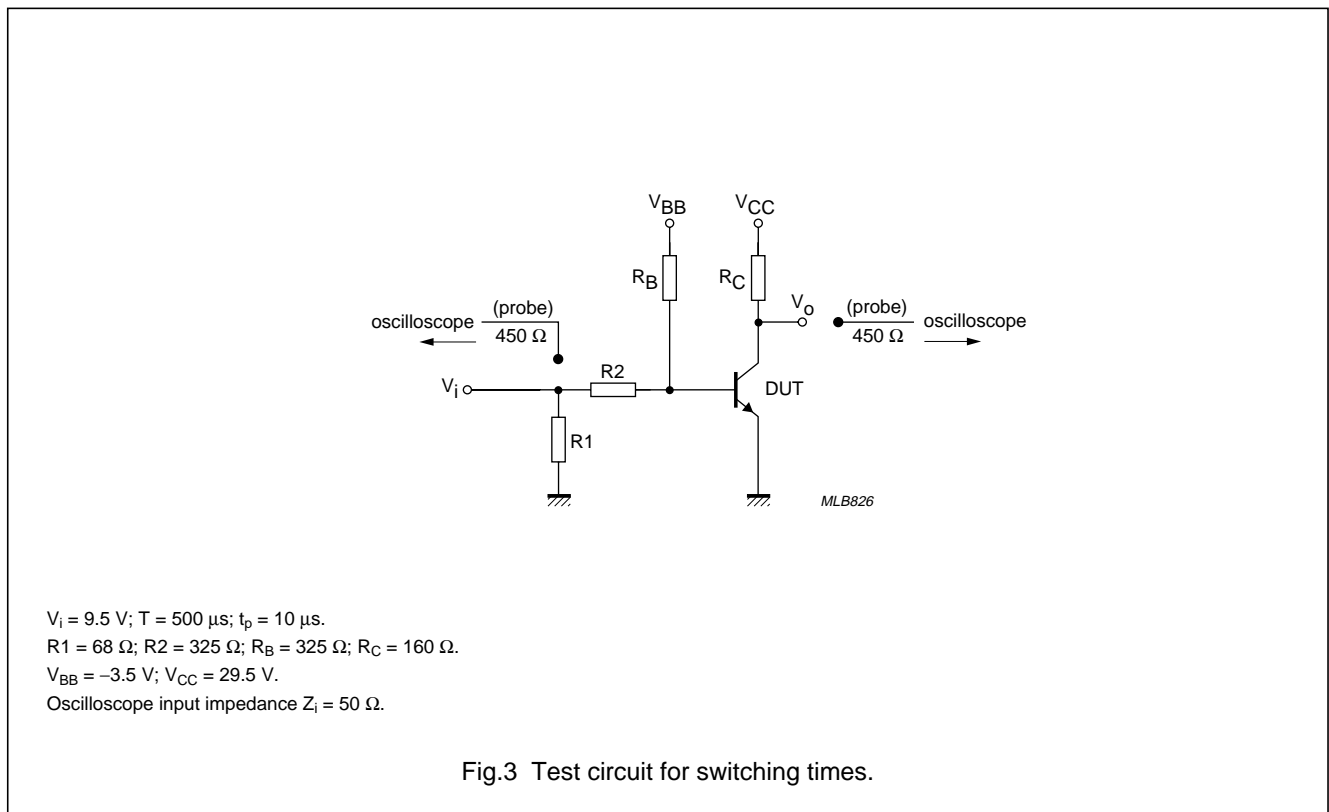
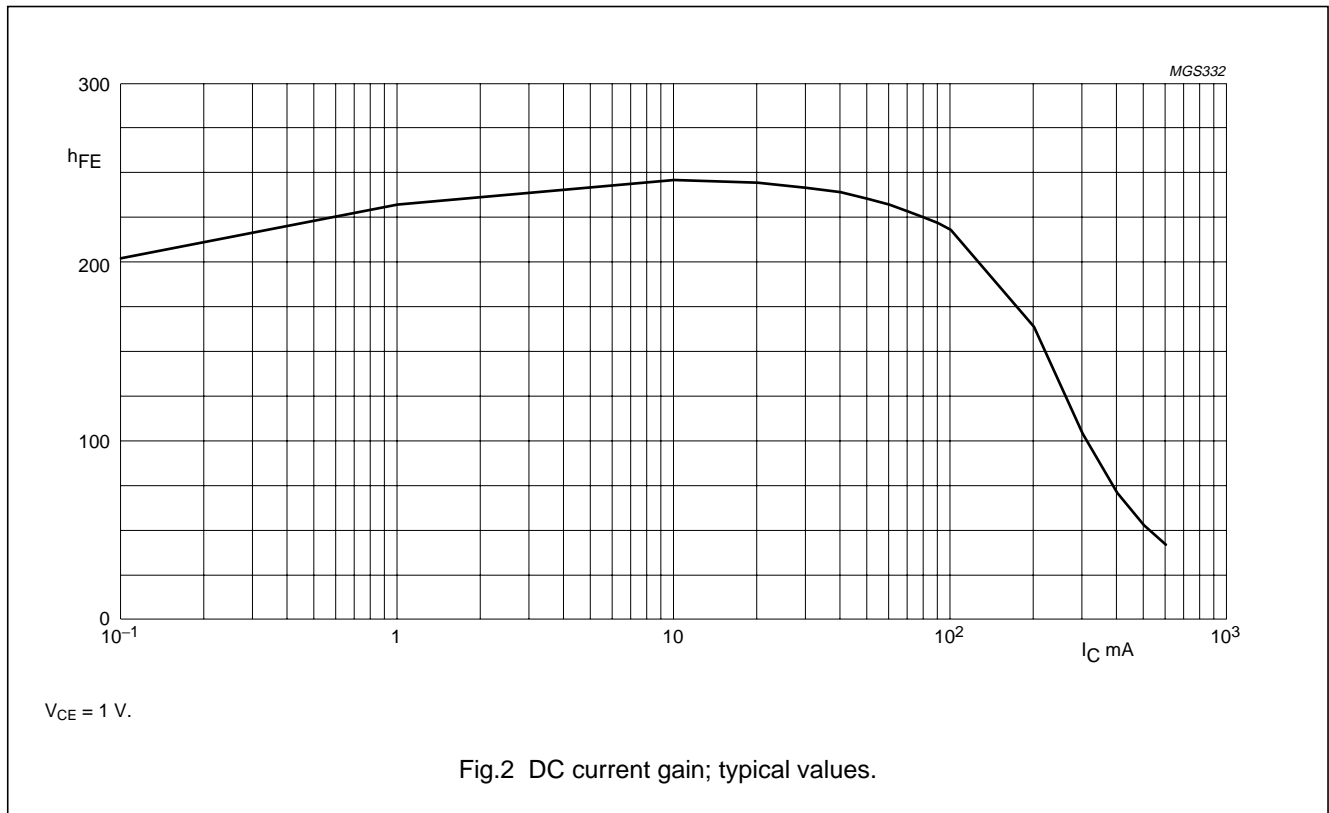
SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
I_{CBO}	collector cut-off current	$I_E = 0; V_{CB} = 60\text{ V}$	–	50	nA
I_{EBO}	emitter cut-off current	$I_C = 0; V_{EB} = 6\text{ V}$	–	50	nA
h_{FE}	DC current gain	$V_{CE} = 1\text{ V}$; see Fig.2 $I_C = 0.1\text{ mA}$ $I_C = 1\text{ mA}$ $I_C = 10\text{ mA}$ $I_C = 150\text{ mA}$; note 1	20 40 80 100	– – – 300	
		$V_{CE} = 2\text{ V}; I_C = 500\text{ mA}$; note 1	40	–	
V_{CEsat}	collector-emitter saturation voltage	$I_C = 150\text{ mA}; I_B = 15\text{ mA}$; note 1 $I_C = 500\text{ mA}; I_B = 50\text{ mA}$; note 1	– –	400 750	mV mV
V_{BEsat}	base-emitter saturation voltage	$I_C = 150\text{ mA}; I_B = 15\text{ mA}$; note 1 $I_C = 500\text{ mA}; I_B = 50\text{ mA}$; note 1	– –	950 1200	mV mV
C_c	collector capacitance	$I_E = i_e = 0; V_{CB} = 5\text{ V}; f = 1\text{ MHz}$	–	8	pF
C_e	emitter capacitance	$I_C = i_c = 0; V_{EB} = 500\text{ mV}; f = 1\text{ MHz}$	–	30	pF
f_T	transition frequency	$I_C = 20\text{ mA}; V_{CE} = 10\text{ V}; f = 100\text{ MHz}$	250	–	MHz
Switching times (between 10% and 90% levels); see Fig.3					
t_{on}	turn-on time	$I_{Con} = 150\text{ mA}; I_{Bon} = 15\text{ mA};$ $I_{Boff} = -15\text{ mA}; V_{BB} = -3.5\text{ V};$ $V_{CC} = 29.5\text{ V}$	–	35	ns
t_d	delay time		–	15	ns
t_r	rise time		–	20	ns
t_{off}	turn-off time		–	250	ns
t_s	storage time		–	200	ns
t_f	fall time		–	60	ns

Note

1. Pulse test: $t_p \leq 300\text{ }\mu\text{s}$; $\delta \leq 0.02$.

NPN switching transistor

PZT4401



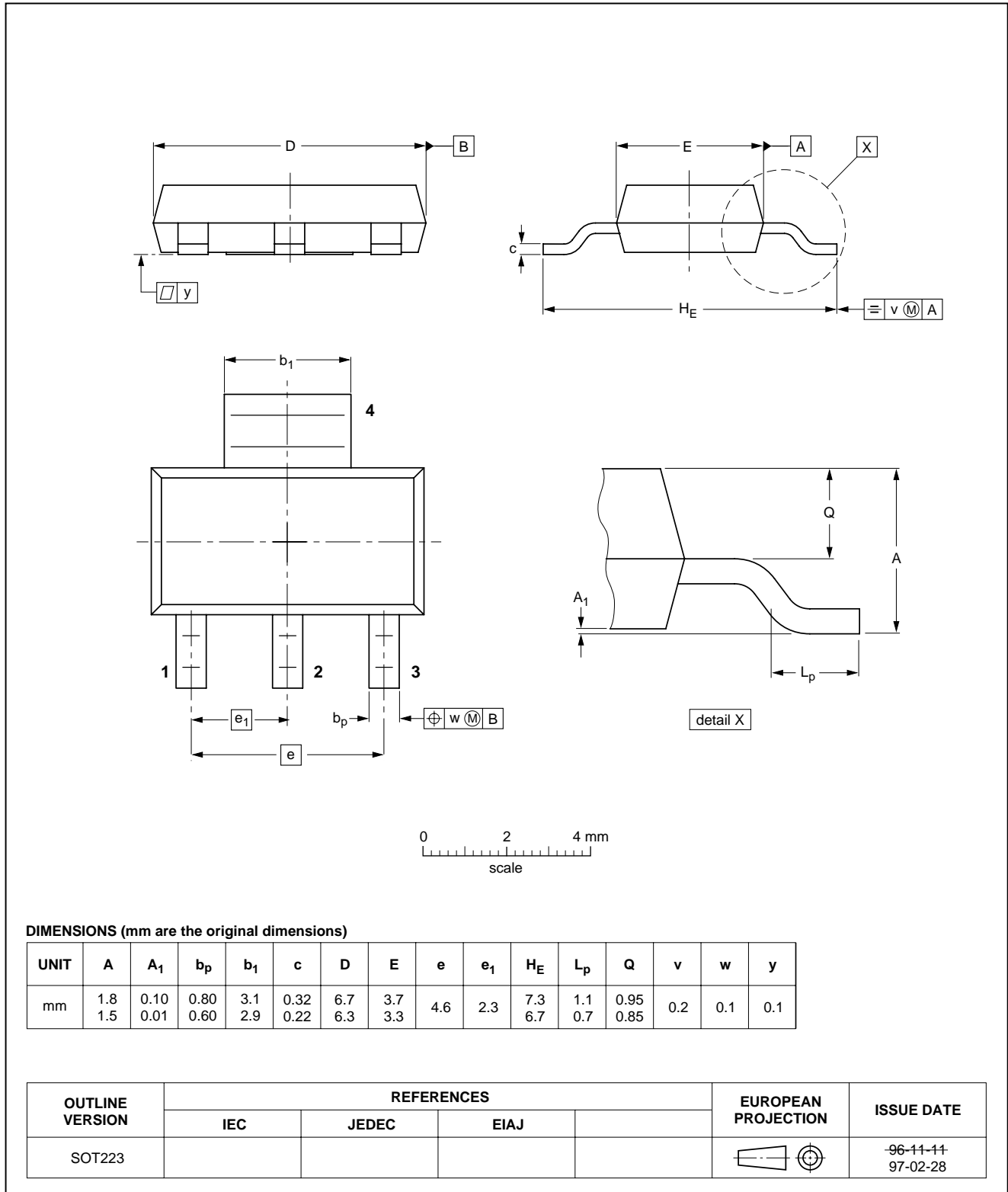
NPN switching transistor

PZT4401

PACKAGE OUTLINE

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

SOT223



NPN switching transistor

PZT4401

DEFINITIONS

Data sheet status	
Objective specification	This data sheet contains target or goal specifications for product development.
Preliminary specification	This data sheet contains preliminary data; supplementary data may be published later.
Product specification	This data sheet contains final product specifications.
Limiting values	
Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability.	
Application information	
Where application information is given, it is advisory and does not form part of the specification.	

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NPN switching transistor

PZT4401

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Austria: Computerstr. 6, A-1101 WIEN, P.O. Box 213,
Tel. +43 1 60 101 1248, Fax. +43 1 60 101 1210

Belarus: Hotel Minsk Business Center, Bld. 3, r. 1211, Volodarski Str. 6,
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Bulgaria: Philips Bulgaria Ltd., Energoproject, 15th floor,
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Canada: PHILIPS SEMICONDUCTORS/COMPONENTS,
Tel. +1 800 234 7381, Fax. +1 800 943 0087

China/Hong Kong: 501 Hong Kong Industrial Technology Centre,
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Colombia: see South America

Czech Republic: see Austria

Denmark: Sydhavnsgade 23, 1780 COPENHAGEN V,
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Finland: Sinikalliontie 3, FIN-02630 ESPOO,
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France: 51 Rue Carnot, BP317, 92156 SURESNES Cedex,
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Germany: Hammerbrookstraße 69, D-20097 HAMBURG,
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Hungary: see Austria

India: Philips INDIA Ltd, Band Box Building, 2nd floor,
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Gedung Philips, Jl. Buncit Raya Kav.99-100, JAKARTA 12510,
Tel. +62 21 794 0040 ext. 2501, Fax. +62 21 794 0080

Ireland: Newstead, Clonskeagh, DUBLIN 14,
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Israel: RAPAC Electronics, 7 Kehilat Saloniki St, PO Box 18053,
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Japan: Philips Bldg 13-37, Kohnan 2-chome, Minato-ku,
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Korea: Philips House, 260-199 Itaewon-dong, Yongsan-ku, SEOUL,
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Malaysia: No. 76 Jalan Universiti, 46200 PETALING JAYA, SELANGOR,
Tel. +60 3 750 5214, Fax. +60 3 757 4880

Mexico: 5900 Gateway East, Suite 200, EL PASO, TEXAS 79905,
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Middle East: see Italy

Netherlands: Postbus 90050, 5600 PB EINDHOVEN, Bldg. VB,
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Philippines: Philips Semiconductors Philippines Inc.,
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Spain: Balmes 22, 08007 BARCELONA,
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United Kingdom: Philips Semiconductors Ltd., 276 Bath Road, Hayes,
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