

Important notice

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Should be replaced with:

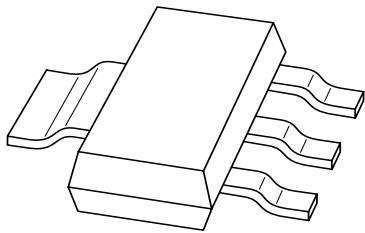
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If you have any questions related to the data sheet, please contact our nearest sales office via e-mail or telephone (details via salesaddresses@nexperia.com). Thank you for your cooperation and understanding,

Kind regards,

Team Nexperia

DATA SHEET



BSP19; BSP20 NPN high-voltage transistors

Product data sheet
Supersedes data of 1997 Mar 03

1999 Jun 01

NPN high-voltage transistors

BSP19; BSP20

FEATURES

- Low current (max. 100 mA)
- High voltage (max. 350 V).

APPLICATIONS

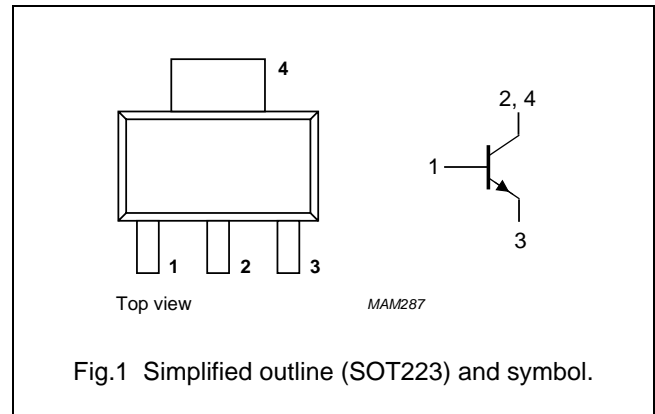
- Switching and amplification
- Especially used in telephony and automotive applications.

DESCRIPTION

NPN transistor in a SOT223 plastic package.
PNP complement: BSP16.

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			
	BSP19		–	400	V
	BSP20		–	300	V
V _{CEO}	collector-emitter voltage	open base			
	BSP19		–	350	V
	BSP20		–	250	V
V _{EBO}	emitter-base voltage	open collector	–	5	V
I _C	collector current (DC)		–	100	mA
I _B	base current (DC)		–	100	mA
P _{tot}	total power dissipation	T _{amb} ≤ 25 °C; note 1	–	1.2	W
T _{stg}	storage temperature		–65	+150	°C
T _j	junction temperature		–	150	°C
T _{amb}	operating ambient temperature		–65	+150	°C

Note

1. Device mounted on 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	104	K/W
$R_{th\ j-s}$	thermal resistance from junction to soldering point		23	K/W

Note

1. Device mounted on 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	$I_E = 0$; $V_{CE} = 300\text{ V}$	–	20	nA
I_{EBO}	emitter cut-off current	$I_C = 0$; $V_{EB} = 5\text{ V}$	–	100	nA
h_{FE}	DC current gain	$V_{CE} = 10\text{ V}$; $I_C = 20\text{ mA}$	40	–	
V_{CEsat}	collector-emitter saturation voltage	$I_C = 50\text{ mA}$; $I_B = 4\text{ mA}$	–	0.5	V
C_c	collector capacitance	$I_E = i_e = 0$; $V_{CB} = 10\text{ V}$; $f = 1\text{ MHz}$	–	2.5	pF
f_T	transition frequency	$V_{CE} = 10\text{ V}$; $I_C = 10\text{ mA}$; $f = 100\text{ MHz}$	70	–	MHz

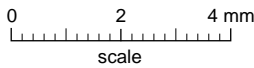
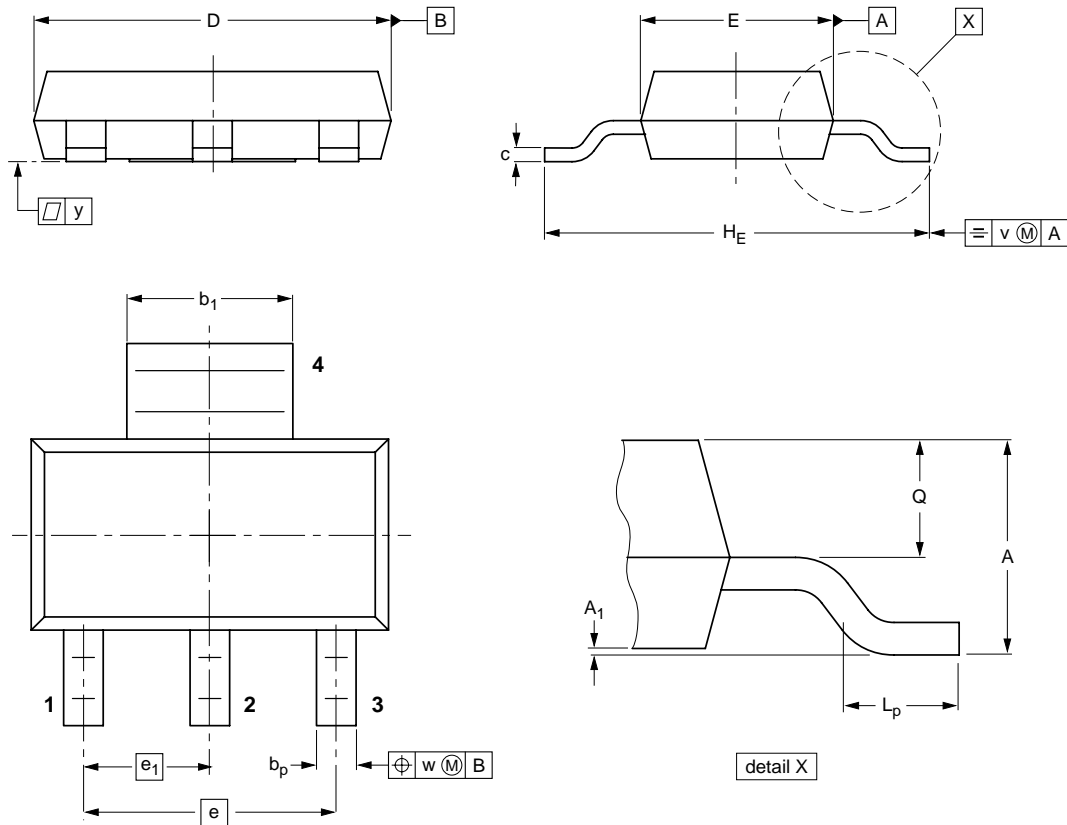
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PACKAGE OUTLINE

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

SOT223



DIMENSIONS (mm are the original dimensions)

UNIT	A	A ₁	b _p	b ₁	c	D	E	e	e ₁	H _E	L _p	Q	v	w	y
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 VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT223			SC-73			97-02-28 99-09-13

NPN high-voltage transistors

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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

1. Please consult the most recently issued document before initiating or completing a design.
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NXP Semiconductors

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

For additional information please visit: <http://www.nxp.com>

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