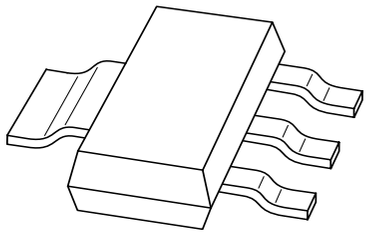
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DATA SHEET



BSP19; BSP20
NPN high-voltage transistors

Product specification
Supersedes data of 1997 Mar 03

1999 Jun 01

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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

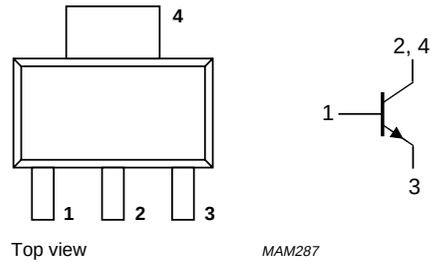


Fig.1 Simplified outline (SOT223) and symbol.

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	$T_{amb} \leq 25$ °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 cm^2. 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
$R_{th\ j\text{-}a}$	thermal resistance from junction to ambient	note 1	104	K/W
$R_{th\ j\text{-}s}$	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 cm^2. For other mounting conditions, see *"Thermal considerations for SOT223 in the General Part of associated Handbook".*

CHARACTERISTICS

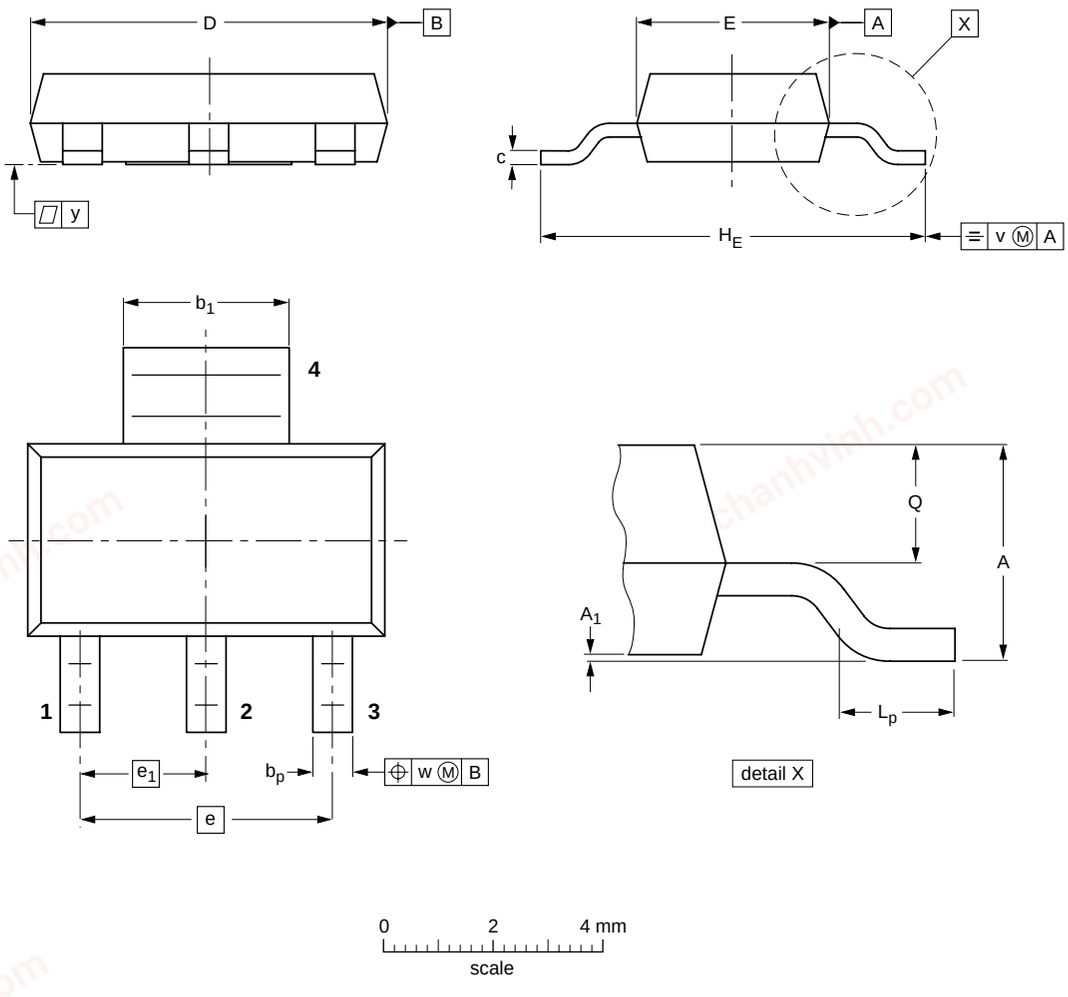
T_j = 25 °C unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
I_{CBO}	collector cut-off current	I_E = 0; V_{CE} = 300 V	–	20	nA
I_{EBO}	emitter cut-off current	I_C = 0; V_{EB} = 5 V	–	100	nA
h_{FE}	DC current gain	V_{CE} = 10 V; I_C = 20 mA	40	–	
V_{CEsat}	collector-emitter saturation voltage	I_C = 50 mA; I_B = 4 mA	–	0.5	V
C_c	collector capacitance	$I_E = i_e$ = 0; V_{CB} = 10 V; f = 1 MHz	–	2.5	pF
f_T	transition frequency	V_{CE} = 10 V; I_C = 10 mA; f = 100 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						~~96-11-11~~ 97-02-28

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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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Printed in The Netherlands 115002/03/pp8 Date of release: 1999 Jun 01 Document order number: 9397 750 05773

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