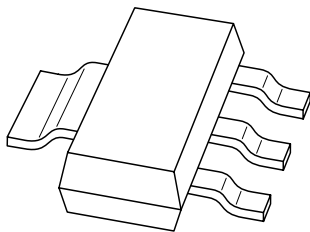


DATA SHEET



BSP60; BSP61; BSP62 PNP Darlington transistors

Product specification
Supersedes data of 1999 Apr 29

2001 May 31

PNP Darlington transistors

BSP60; BSP61; BSP62

FEATURES

- High current (max. 0.5 A)
- Low voltage (max. 80 V)
- Integrated diode and resistor.

APPLICATIONS

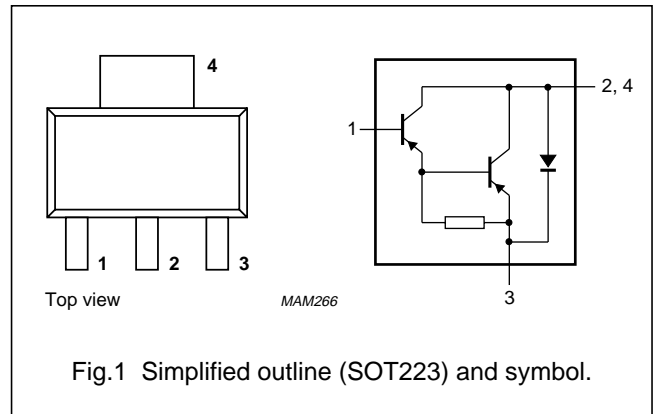
- Industrial switching applications such as:
 - Print hammer
 - Solenoid
 - Relay and lamp drivers.

DESCRIPTION

PNP Darlington transistor in a SOT223 plastic package.
NPN complements: BSP50, BSP51 and BSP52.

PINNING

PIN	DESCRIPTION
1	base
2, 4	collector
3	emitter



LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V _{CB0}	collector-base voltage	open emitter			
	BSP60		–	–60	V
	BSP61		–	–80	V
V _{CES}	collector-emitter voltage	V _{BE} = 0			
	BSP60		–	–45	V
	BSP61		–	–60	V
V _{EBO}	emitter-base voltage	open collector	–	–5	V
	I _C	collector current (DC)	–	–1	A
	I _{CM}	peak collector current	–	–2	A
I _B	base current (DC)		–	–100	mA
P _{tot}	total power dissipation	T _{amb} ≤ 25 °C; note 1	–	1.25	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 a printed-circuit board, single sided copper, tinplated, mounting pad for collector 1 cm².
For other mounting conditions, see “Thermal considerations for the SOT223 in the General Part of associated Handbook”.

PNP Darlington transistors

BSP60; BSP61; BSP62

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j-a}$	thermal resistance from junction to ambient	note 1	98	K/W
$R_{th\ j-s}$	thermal resistance from junction to solder point		17	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 the SOT223 in the General Part of associated Handbook".

CHARACTERISTICS

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

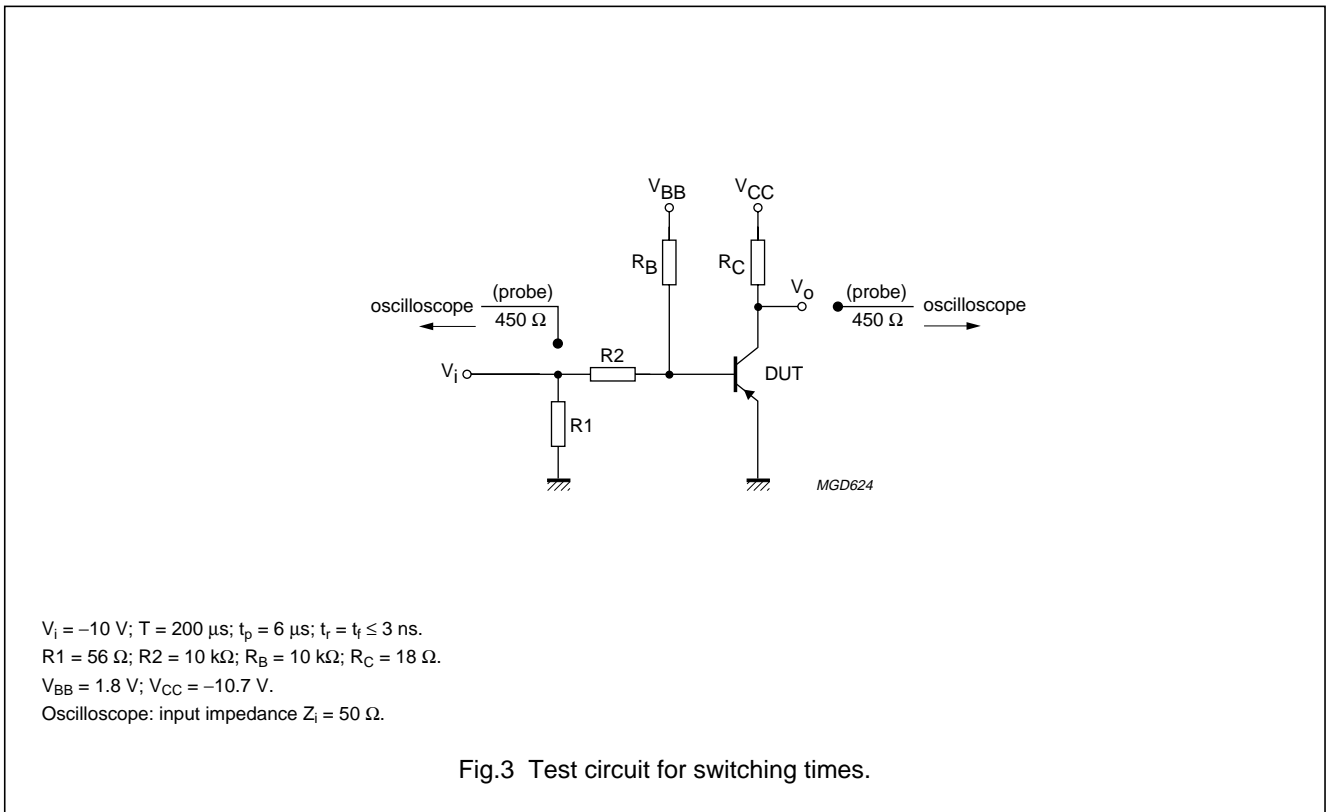
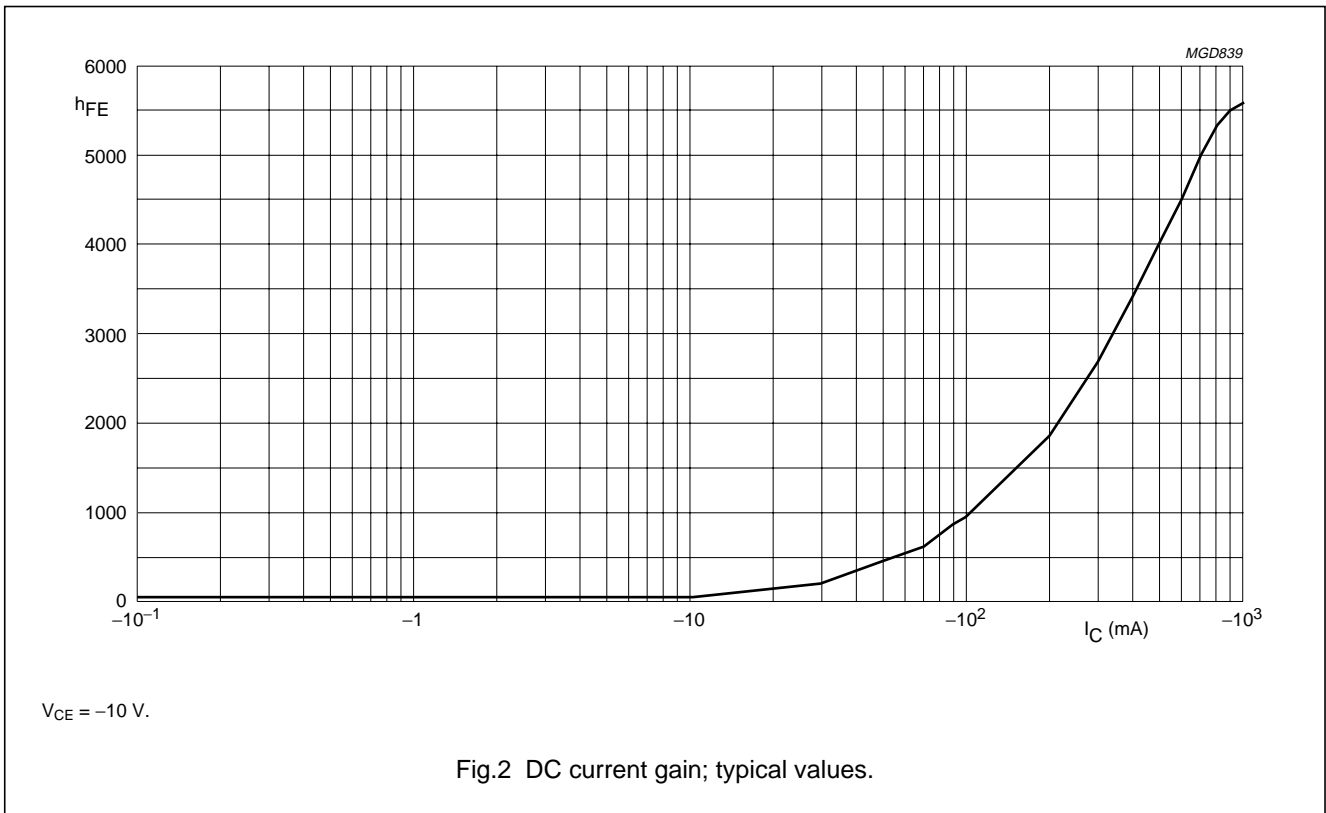
SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I_{CES}	collector cut-off current					
	BSP60	$V_{BE} = 0; V_{CE} = -45\text{ V}$	–	–	–50	nA
	BSP61	$V_{BE} = 0; V_{CE} = -60\text{ V}$	–	–	–50	nA
	BSP62	$V_{BE} = 0; V_{CE} = -80\text{ V}$	–	–	–50	nA
I_{EBO}	emitter cut-off current	$I_C = 0; V_{EB} = -4\text{ V}$	–	–	–50	nA
h_{FE}	DC current gain	$V_{CE} = -10\text{ V}$; note 1; see Fig.2				
		$I_C = -150\text{ mA}$	1000	–	–	
		$I_C = -500\text{ mA}$	2000	–	–	
V_{CEsat}	collector-emitter saturation voltage	$I_C = -500\text{ mA}; I_B = -0.5\text{ mA}$	–	–	–1.3	V
		$I_C = -500\text{ mA}; I_B = -0.5\text{ mA}; T_j = 150\text{ °C}$	–	–	–1.3	V
V_{BEsat}	base-emitter saturation voltage	$I_C = -500\text{ mA}; I_B = -0.5\text{ mA}$	–	–	–1.9	V
f_T	transition frequency	$I_C = -500\text{ mA}; V_{CE} = -5\text{ V}; f = 100\text{ MHz}$	–	200	–	MHz
Switching times (between 10% and 90% levels); see Fig.3						
t_{on}	turn-on time	$I_{Con} = -500\text{ mA}; I_{Bon} = -0.5\text{ mA}; I_{Boff} = 0.5\text{ mA}$	–	400	–	ns
t_{off}	turn-off time		–	1500	–	ns

Note

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

PNP Darlington transistors

BSP60; BSP61; BSP62



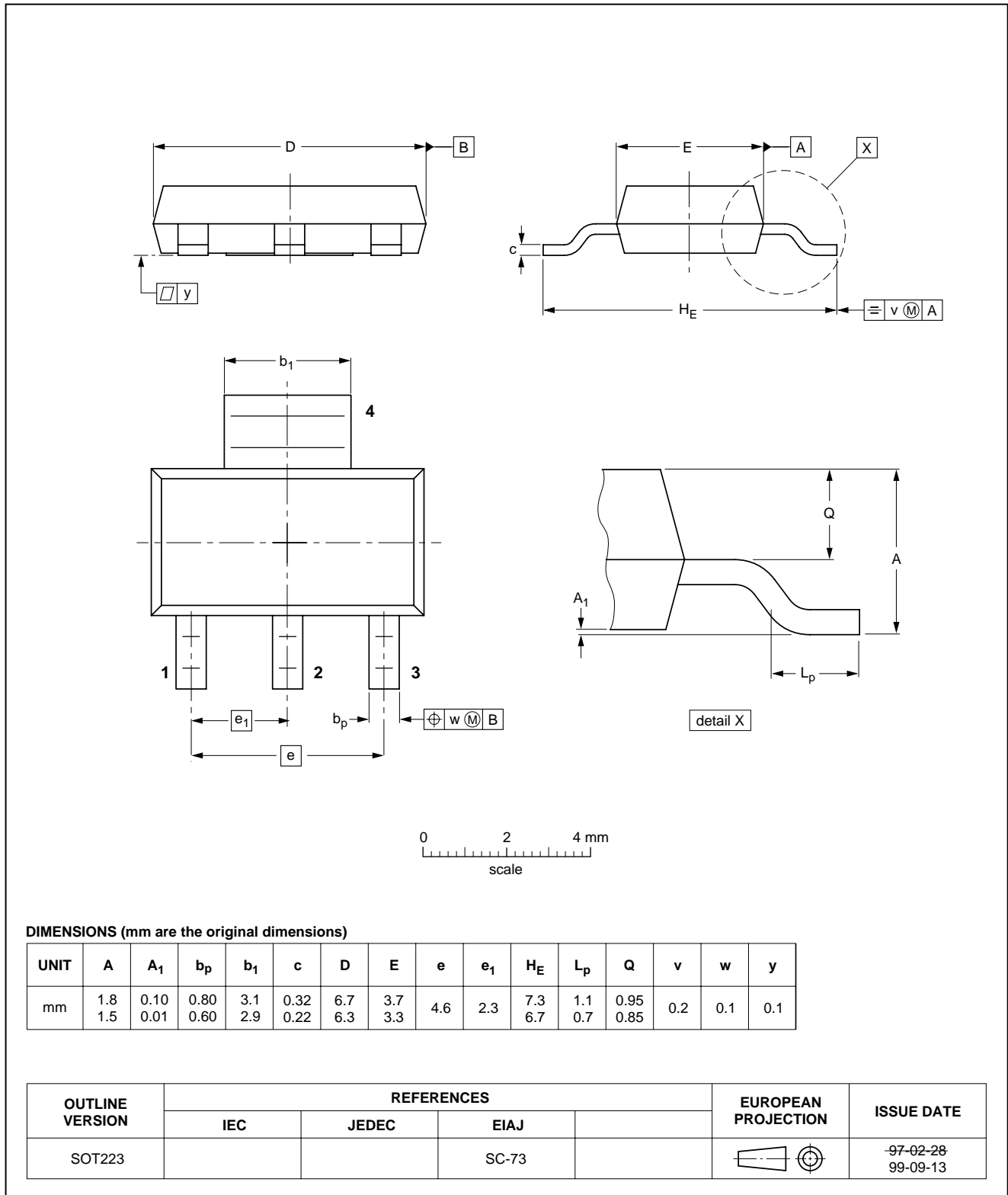
PNP Darlington transistors

BSP60; BSP61; BSP62

PACKAGE OUTLINE

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

SOT223



PNP Darlington transistors

BSP60; BSP61; BSP62

DATA SHEET STATUS

DATA SHEET STATUS ⁽¹⁾	PRODUCT STATUS ⁽²⁾	DEFINITIONS
Objective data	Development	This data sheet contains data from the objective specification for product development. Philips Semiconductors reserves the right to change the specification in any manner without notice.
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PNP Darlington transistors

BSP60; BSP61; BSP62

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Printed in The Netherlands

613514/05/pp8

Date of release: 2001 May 31

Document order number: 9397 750 07906

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