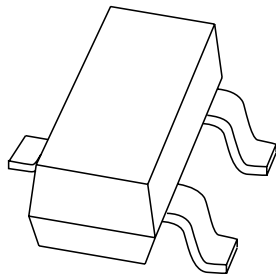


# DATA SHEET



## **PMBTA13; PMBTA14** NPN Darlington transistors

Product specification  
Supersedes data of 1999 Apr 29

2004 Jan 22

# NPN Darlington transistors

# PMBTA13; PMBTA14

### FEATURES

- High current (max. 500 mA)
- Low voltage (max. 30 V)
- High DC current gain (min. 10000).

### APPLICATIONS

- High input impedance preamplifiers.

### DESCRIPTION

NPN Darlington transistor in a SOT23 plastic package.  
PNP complement: PMBTA64.

### MARKING

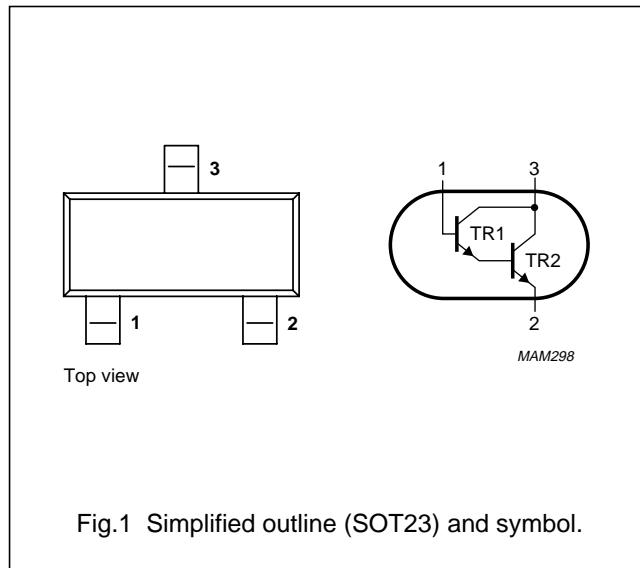
TYPE NUMBER	MARKING CODE <sup>(1)</sup>
PMBTA13	*1M
PMBTA14	*1N

### Note

- \* = p : Made in Hong Kong.  
\* = t : Made in Malaysia.  
\* = W : Made in China.

### PINNING

PIN	DESCRIPTION
1	base
2	emitter
3	collector



### ORDERING INFORMATION

TYPE NUMBER	PACKAGE		
	NAME	DESCRIPTION	VERSION
PMBTA13	–	plastic surface mounted package; 3 leads	SOT23
PMBTA14			

## NPN Darlington transistors

## PMBTA13; PMBTA14

**LIMITING VALUES**

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$V_{CBO}$	collector-base voltage	open emitter	–	30	V
$V_{CES}$	collector-emitter voltage	$V_{BE} = 0$	–	30	V
$V_{EBO}$	emitter-base voltage	open collector	–	10	V
$I_C$	collector current (DC)		–	500	mA
$I_{CM}$	peak collector current		–	800	mA
$I_B$	base current (DC)		–	200	mA
$P_{tot}$	total power dissipation	$T_{amb} \leq 25\text{ °C}$ ; note 1	–	250	mW
$T_{stg}$	storage temperature		–65	+150	°C
$T_j$	junction temperature		–	150	°C
$T_{amb}$	operating ambient temperature		–65	+150	°C

**Note**

1. Transistor mounted on an FR4 printed-circuit board.

**THERMAL CHARACTERISTICS**

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th(j-a)}$	thermal resistance from junction to ambient	note 1	500	K/W

**Note**

1. Transistor mounted on an FR4 printed-circuit board.

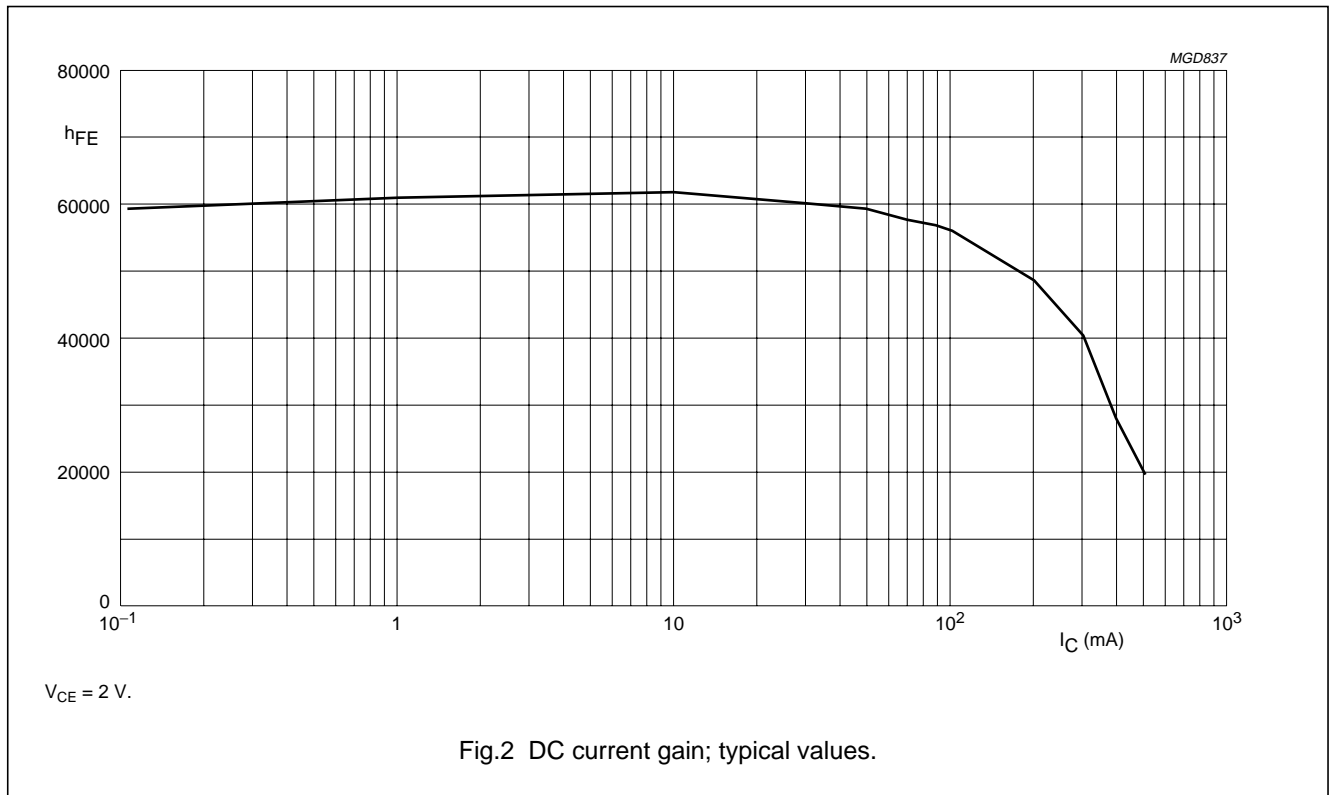
**CHARACTERISTICS**

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$I_{CBO}$	collector cut-off current	$I_E = 0$ ; $V_{CB} = 30\text{ V}$	–	100	nA
$I_{EBO}$	emitter cut-off current	$I_C = 0$ ; $V_{EB} = 10\text{ V}$	–	100	nA
$h_{FE}$	DC current gain PMBTA13 PMBTA14	$I_C = 10\text{ mA}$ ; $V_{CE} = 5\text{ V}$ ; (see Fig.2)	5000	–	
			10000	–	
	DC current gain PMBTA13 PMBTA14	$I_C = 100\text{ mA}$ ; $V_{CE} = 5\text{ V}$ ; (see Fig.2)	10000	–	
			20000	–	
$V_{CEsat}$	collector-emitter saturation voltage	$I_C = 100\text{ mA}$ ; $I_B = 0.1\text{ mA}$	–	1.5	V
$V_{BEon}$	base-emitter on-state voltage	$I_C = 100\text{ mA}$ ; $V_{CE} = 5\text{ V}$	–	1.4	V
$f_T$	transition frequency	$I_C = 10\text{ mA}$ ; $V_{CE} = 5\text{ V}$ ; $f = 100\text{ MHz}$	125	–	MHz

NPN Darlington transistors

PMBTA13; PMBTA14



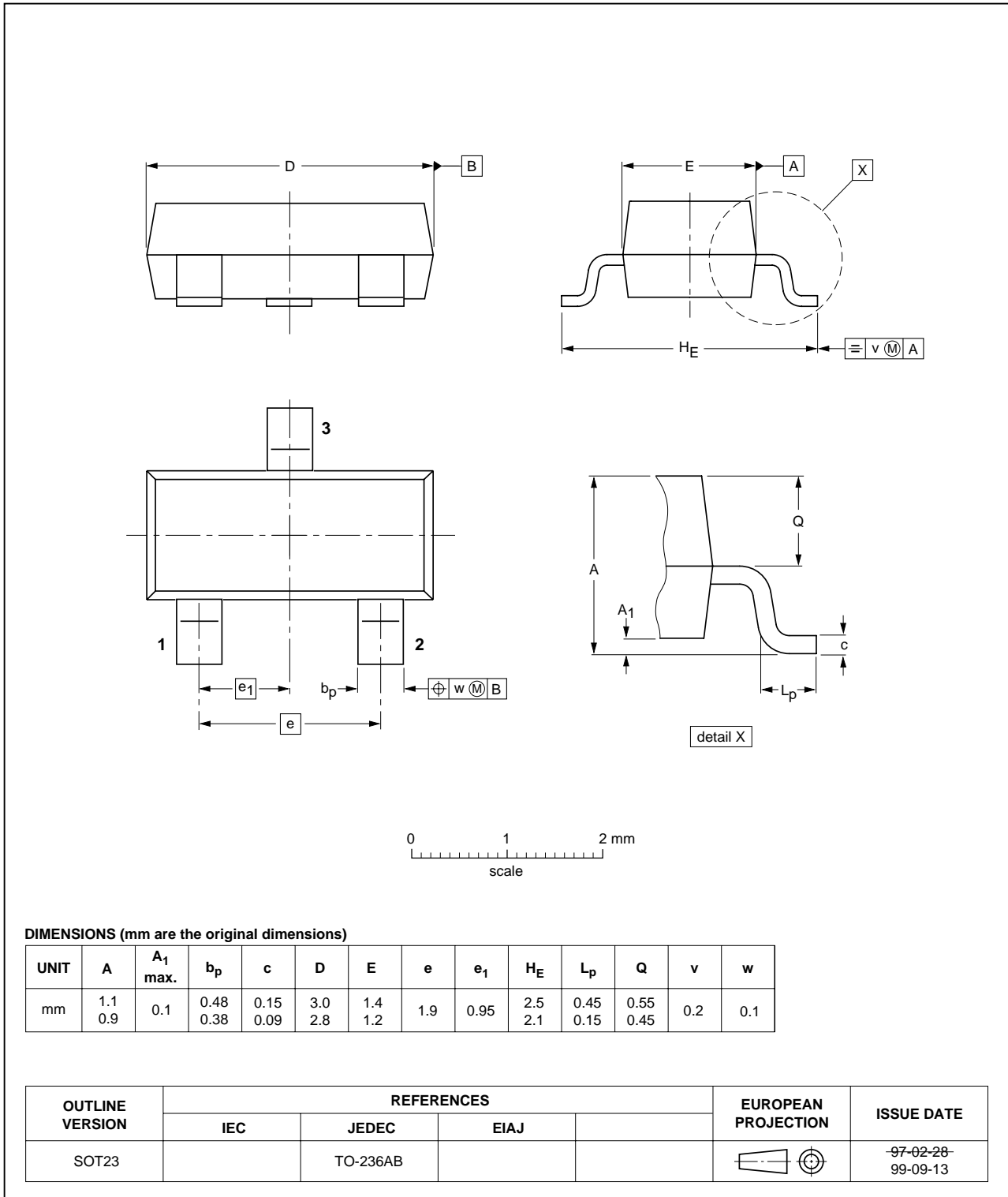
NPN Darlington transistors

PMBTA13; PMBTA14

PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT23



## NPN Darlington transistors

## PMBTA13; PMBTA14

## DATA SHEET STATUS

LEVEL	DATA SHEET STATUS <sup>(1)</sup>	PRODUCT STATUS <sup>(2)(3)</sup>	DEFINITION
I	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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