

# DATA SHEET



## **BC516** PNP Darlington transistor

Product specification  
Supersedes data of 1999 Apr 23

2004 Nov 05

## PNP Darlington transistor

BC516

## FEATURES

- High current (max. 500 mA)
- Low voltage (max. 30 V)
- Very high DC current gain (min. 30000).

## APPLICATIONS

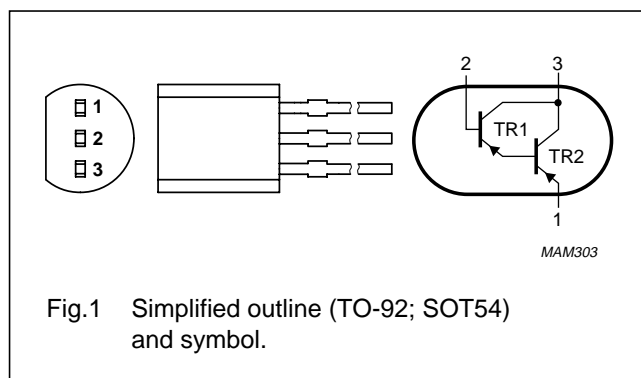
- Where very high amplification is required.

## DESCRIPTION

PNP Darlington transistor in a TO-92; SOT54 plastic package. NPN complement: BC517.

## PINNING

PIN	DESCRIPTION
1	emitter
2	base
3	collector



## ORDERING INFORMATION

TYPE NUMBER	PACKAGE		
	NAME	DESCRIPTION	VERSION
BC516	SC-43A	plastic single-ended (through hole) package; 3 leads	SOT54

## 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)	open emitter	–	–40	V
$V_{CES}$	collector-emitter voltage	$V_{BE} = 0$ V	–	–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)		–	–100	mA
$P_{tot}$	total power dissipation	$T_{amb} \leq 25$ °C; note 1	–	500	mW
$T_{stg}$	storage temperature		–65	+150	°C
$T_j$	junction temperature		–	150	°C
$T_{amb}$	ambient temperature		–65	+150	°C

## Note

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

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**THERMAL CHARACTERISTICS**

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th(j-a)}$	thermal resistance from junction to ambient	note 1	250	K/W

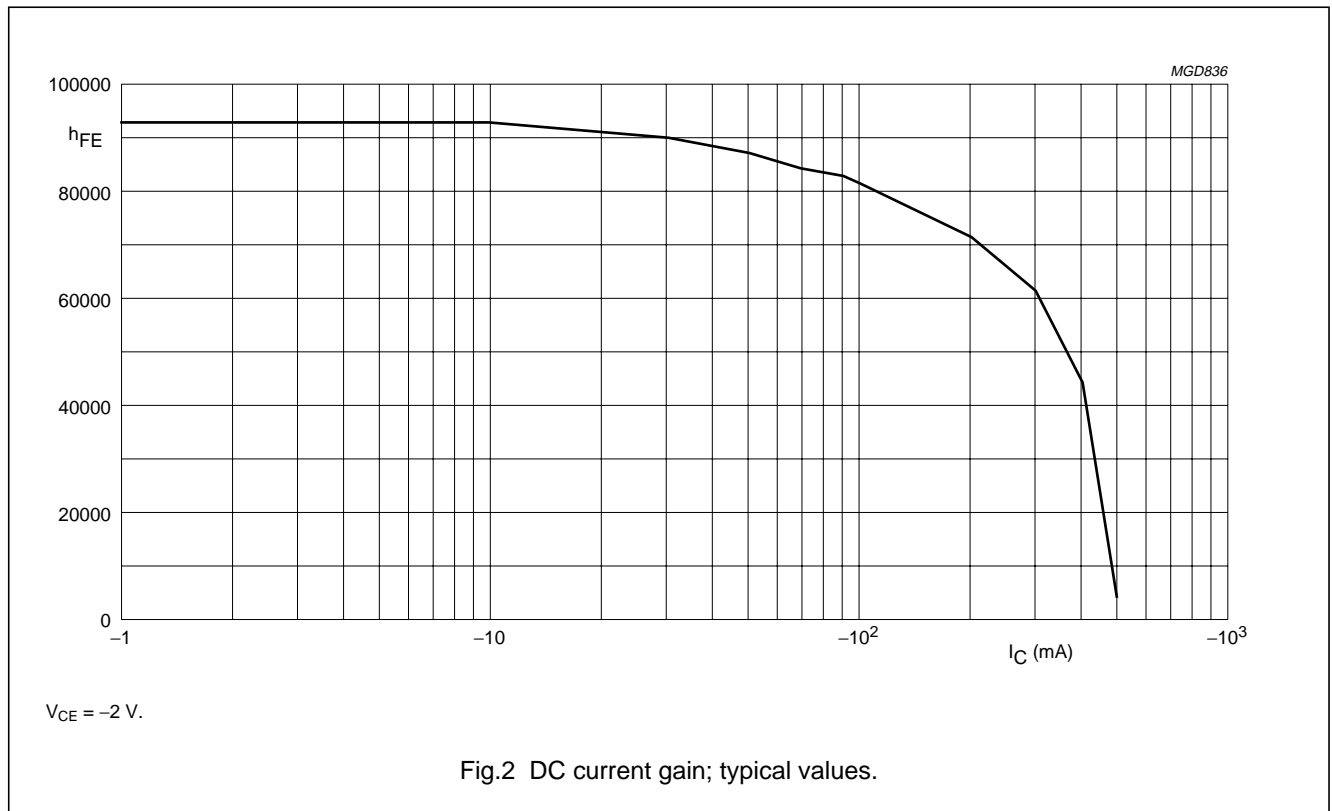
**Note**

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

**CHARACTERISTICS**

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$I_{CBO}$	collector-base cut-off current	$V_{CB} = -30\text{ V}; I_E = 0\text{ A}$	-	-	-100	nA
$I_{EBO}$	emitter-base cut-off current	$V_{EB} = -10\text{ V}; I_C = 0\text{ A}$	-	-	-100	nA
$h_{FE}$	DC current gain	$I_C = -20\text{ mA}; V_{CE} = -2\text{ V}$ ; see Fig.2	30000	-	-	
$V_{CEsat}$	collector-emitter saturation voltage	$I_C = -100\text{ mA}; I_B = -0.1\text{ mA}$	-	-	-1	V
$V_{BEsat}$	base-emitter saturation voltage	$I_C = -100\text{ mA}; I_B = -0.1\text{ mA}$	-	-	-1.5	V
$V_{BEon}$	base-emitter on-state voltage	$V_{CE} = -5\text{ V}; I_C = -10\text{ mA}$	-	-	-1.4	V
$f_T$	transition frequency	$V_{CE} = -5\text{ V}; I_C = -30\text{ mA}; f = 100\text{ MHz}$	-	220	-	MHz



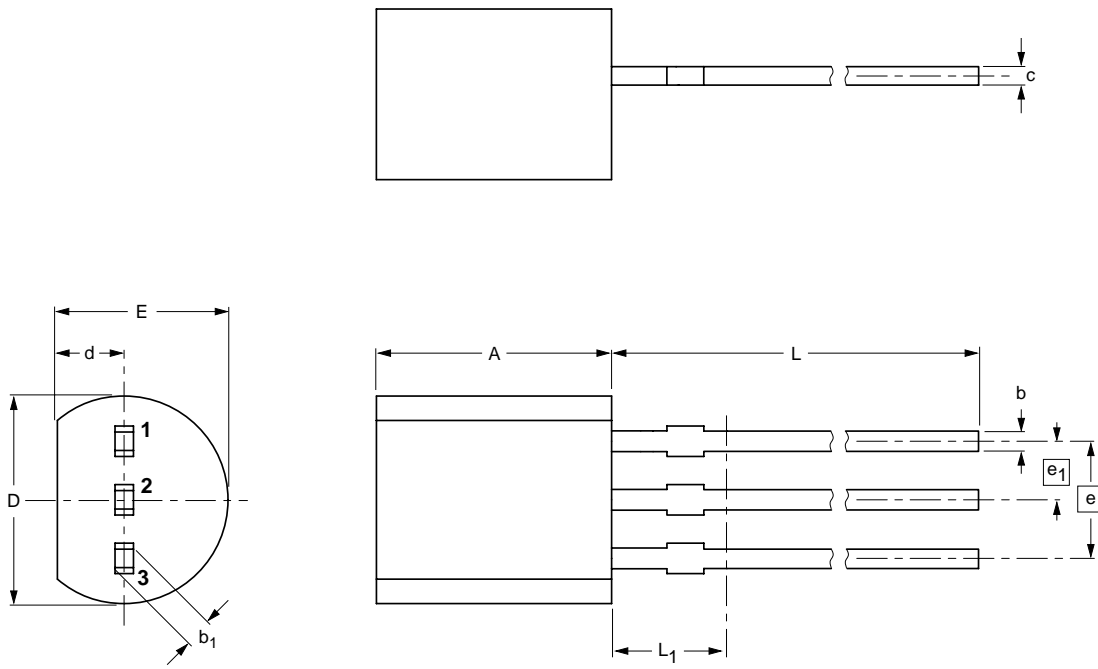
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PACKAGE OUTLINE

Plastic single-ended leaded (through hole) package; 3 leads

SOT54



DIMENSIONS (mm are the original dimensions)

UNIT	A	b	b <sub>1</sub>	c	D	d	E	e	e <sub>1</sub>	L	L <sub>1</sub> <sup>(1)</sup> max.
mm	5.2 5.0	0.48 0.40	0.66 0.55	0.45 0.38	4.8 4.4	1.7 1.4	4.2 3.6	2.54	1.27	14.5 12.7	2.5

Note

1. Terminal dimensions within this zone are uncontrolled to allow for flow of plastic and terminal irregularities.

OUTLINE VERSION	REFERENCES			EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA		
SOT54		TO-92	SC-43A		-97-02-28 04-06-28

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BC516

## 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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