

# DATA SHEET



## **BCV28; BCV48** PNP Darlington transistors

Product data sheet  
Supersedes data of 1999 Apr 08

2004 Dec 06

# PNP Darlington transistors

# BCV28; BCV48

### FEATURES

- Very high DC current gain (min. 10000)
- High current (max. 500 mA)
- Low voltage (max. 60 V).

### APPLICATIONS

- Where very high amplification is required.

### DESCRIPTION

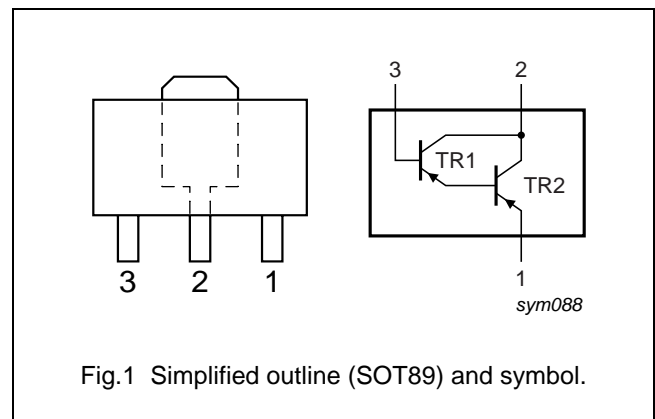
PNP Darlington transistor in a SOT89 plastic package.  
NPN complements: BCV29 and BCV49.

### MARKING

TYPE NUMBER	MARKING CODE
BCV28	ED
BCV48	EE

### PINNING

PIN	DESCRIPTION
1	emitter
2	collector
3	base



### ORDERING INFORMATION

TYPE NUMBER	PACKAGE		
	NAME	DESCRIPTION	VERSION
BCV28	SC-62	plastic surface mounted package; collector pad for good heat transfer; 3 leads	SOT89
BCV48			

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**LIMITING VALUES**

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V <sub>CBO</sub>	collector-base voltage	open emitter			
	BCV28		–	–40	V
	BCV48		–	–80	V
V <sub>CES</sub>	collector-emitter voltage	V <sub>BE</sub> = 0 V			
	BCV28		–	–30	V
	BCV48		–	–60	V
V <sub>EBO</sub>	emitter-base voltage	open collector	–	–10	V
I <sub>C</sub>	collector current (DC)		–	–500	mA
I <sub>CM</sub>	peak collector current		–	–800	mA
I <sub>B</sub>	base current (DC)		–	–100	mA
P <sub>tot</sub>	total power dissipation	T <sub>amb</sub> ≤ 25 °C; note 1	–	1.3	W
T <sub>stg</sub>	storage temperature		–65	+150	°C
T <sub>j</sub>	junction temperature		–	150	°C
T <sub>amb</sub>	ambient temperature		–65	+150	°C

**Note**

- Device mounted on a printed-circuit board, single-sided copper, tin-plated, mounting pad for collector 6 cm<sup>2</sup>.  
For other mounting conditions, see *“Thermal considerations for SOT89 in the General Part of associated Handbook”*.

**THERMAL CHARACTERISTICS**

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
R <sub>th(j-a)</sub>	thermal resistance from junction to ambient	note 1	96	K/W
R <sub>th(j-s)</sub>	thermal resistance from junction to soldering point		16	K/W

**Note**

- Device mounted on a printed-circuit board, single-sided copper, tin-plated, mounting pad for collector 6 cm<sup>2</sup>.  
For other mounting conditions, see *“Thermal considerations for SOT89 in the General Part of associated Handbook”*.

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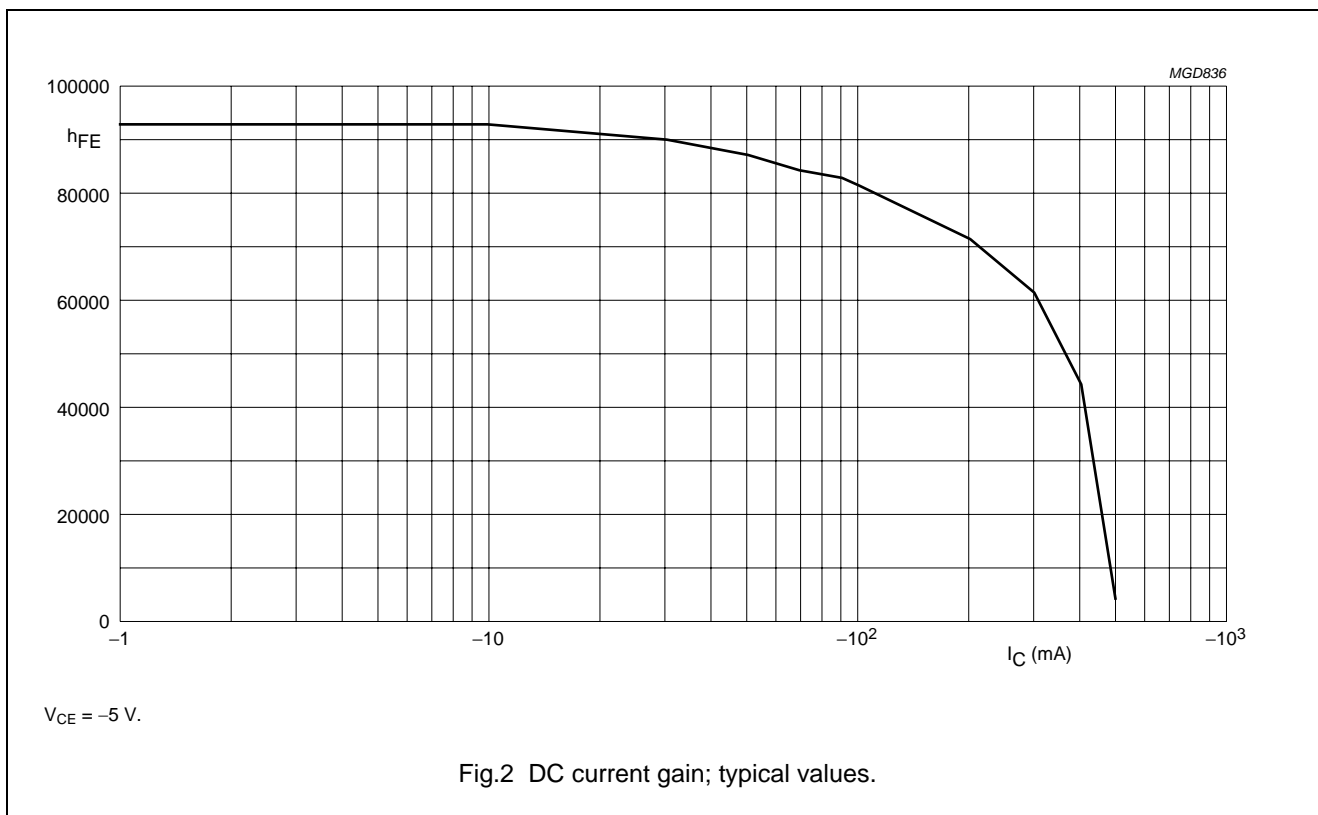
**CHARACTERISTICS**

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$I_{CBO}$	collector-base cut-off current					
	BCV28	$I_E = 0\text{ A}; V_{CB} = -30\text{ V}$	–	–	–100	nA
	BCV48	$I_E = 0\text{ A}; V_{CB} = -60\text{ V}$	–	–	–100	nA
$I_{EBO}$	emitter-base cut-off current	$I_C = 0\text{ A}; V_{BE} = -10\text{ V}$	–	–	–100	nA
$h_{FE}$	DC current gain	$I_C = -1\text{ mA}; V_{CE} = -5\text{ V};$ see Fig.2				
	BCV28		4000	–	–	
	BCV48		2000	–	–	
	DC current gain	$I_C = -10\text{ mA}; V_{CE} = -5\text{ V};$ see Fig.2				
	BCV28		10000	–	–	
	BCV48		4000	–	–	
	DC current gain	$I_C = -100\text{ mA}; V_{CE} = -5\text{ V};$ see Fig.2				
	BCV28		20000	–	–	
BCV48		10000	–	–		
	DC current gain	$I_C = -500\text{ mA}; V_{CE} = -5\text{ V};$ see Fig.2				
	BCV28		4000	–	–	
	BCV48		2000	–	–	
$V_{CEsat}$	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	$I_C = -10\text{ mA}; I_B = -5\text{ mA}$	–	–	–1.4	V
$f_T$	transition frequency	$I_C = -30\text{ mA}; V_{CE} = -5\text{ V};$ $f = 100\text{ MHz}$	–	220	–	MHz

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PACKAGE OUTLINE

Plastic surface-mounted package; collector pad for good heat transfer; 3 leads

SOT89



DIMENSIONS (mm are the original dimensions)

UNIT	A	b <sub>p1</sub>	b <sub>p2</sub>	b <sub>p3</sub>	c	D	E	e	e <sub>1</sub>	H <sub>E</sub>	L <sub>p</sub>	w
mm	1.6 1.4	0.48 0.35	0.53 0.40	1.8 1.4	0.44 0.23	4.6 4.4	2.6 2.4	3.0	1.5	4.25 3.75	1.2 0.8	0.13

OUTLINE VERSION	REFERENCES			EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA		
SOT89		TO-243	SC-62		04-08-03 06-03-16

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## DATA SHEET STATUS

DOCUMENT STATUS <sup>(1)</sup>	PRODUCT STATUS <sup>(2)</sup>	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.

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## **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>

For sales offices addresses send e-mail to: [salesaddresses@nxp.com](mailto:salesaddresses@nxp.com)

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