

# DATA SHEET



## **BC875; BC879** NPN Darlington transistors

Product specification  
Supersedes data of 1999 May 28

2004 Nov 05

# NPN Darlington transistors

# BC875; BC879

### FEATURES

- High DC current gain (min. 1000)
- High current (max. 1 A)
- Low voltage (max. 80 V)
- Integrated diode and resistor.

### APPLICATIONS

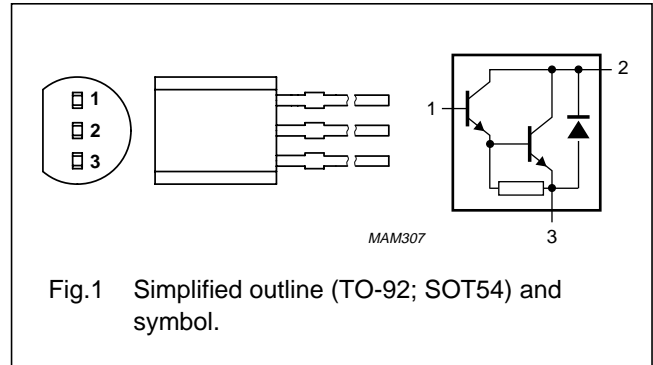
- Relay drivers.

### DESCRIPTION

NPN Darlington transistor in a TO-92 (SOT54) plastic package. PNP complement: BC878.

### PINNING

PIN	DESCRIPTION
1	base
2	collector
3	emitter



### ORDERING INFORMATION

TYPE NUMBER	PACKAGE		
	NAME	DESCRIPTION	VERSION
BC875	SC-43A	plastic single-ended leaded (through hole) package; 3 leads	SOT54
BC879			

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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	–	60	V
	BC875			100	V
V <sub>CES</sub>	collector-emitter voltage	V <sub>BE</sub> = 0 V	–	45	V
	BC875			80	V
V <sub>EBO</sub>	emitter-base voltage	open collector	–	5	V
I <sub>C</sub>	collector current (DC)		–	1	A
I <sub>CM</sub>	peak collector current		–	2	A
I <sub>B</sub>	base current (DC)		–	0.2	A
P <sub>tot</sub>	total power dissipation	T <sub>amb</sub> ≤ 25 °C; note 1	–	0.83	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**

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

**THERMAL CHARACTERISTICS**

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
R <sub>th(j-a)</sub>	thermal resistance from junction to ambient	note 1	150	K/W

**Note**

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

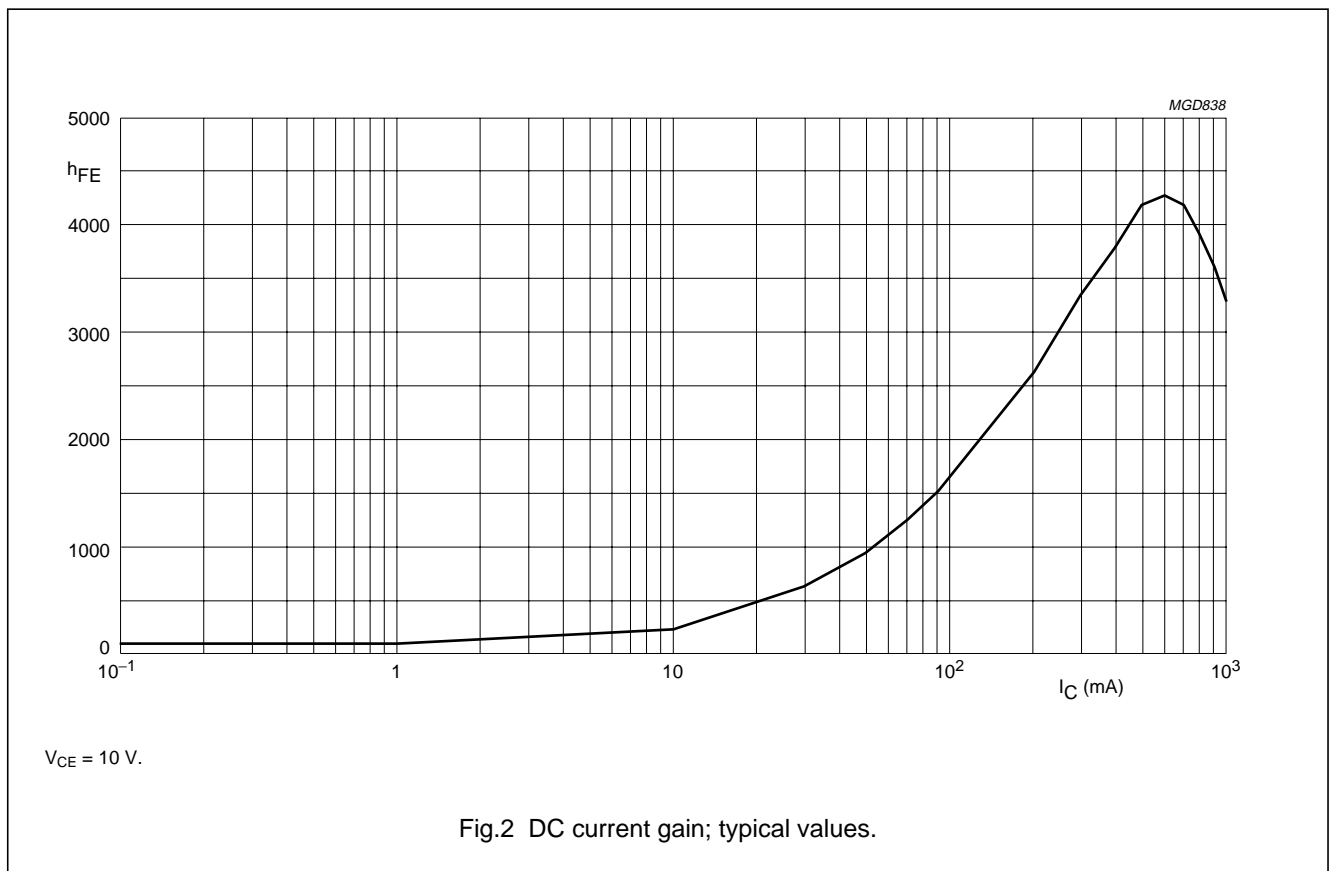
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**CHARACTERISTICS**

T<sub>amb</sub> = 25 °C unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I <sub>CES</sub>	collector-emitter cut-off current	V <sub>BE</sub> = 0 V	–	–	–	–
	BC875	V <sub>CE</sub> = 45 V	–	–	50	nA
	BC879	V <sub>CE</sub> = 80 V	–	–	50	nA
I <sub>EBO</sub>	emitter-base cut-off current	V <sub>EB</sub> = 4 V; I <sub>C</sub> = 0 A	–	–	50	nA
h <sub>FE</sub>	DC current gain	V <sub>CE</sub> = 10 V; see Fig.2	–	–	–	–
		I <sub>C</sub> = 150 mA	1000	–	–	–
		I <sub>C</sub> = 0.5 A	2000	–	–	–
V <sub>CEsat</sub>	collector-emitter saturation voltage	I <sub>C</sub> = 0.5 A; I <sub>B</sub> = 0.5 mA	–	–	1.3	V
		I <sub>C</sub> = 1 A; I <sub>B</sub> = 1 mA	–	–	1.8	V
V <sub>BEsat</sub>	base-emitter saturation voltage	I <sub>C</sub> = 1 A; I <sub>B</sub> = 1 mA	–	–	2.2	V
f <sub>T</sub>	transition frequency	V <sub>CE</sub> = 5 V; I <sub>C</sub> = 0.5 A; f = 100 MHz	–	200	–	MHz
<b>Switching times (between 10% and 90% levels)</b>						
t <sub>on</sub>	turn-on time	I <sub>Con</sub> = 500 mA; I <sub>Bon</sub> = 0.5 mA;	–	500	–	ns
t <sub>off</sub>	turn-off time	I <sub>Boff</sub> = –0.5 mA	–	1300	–	ns



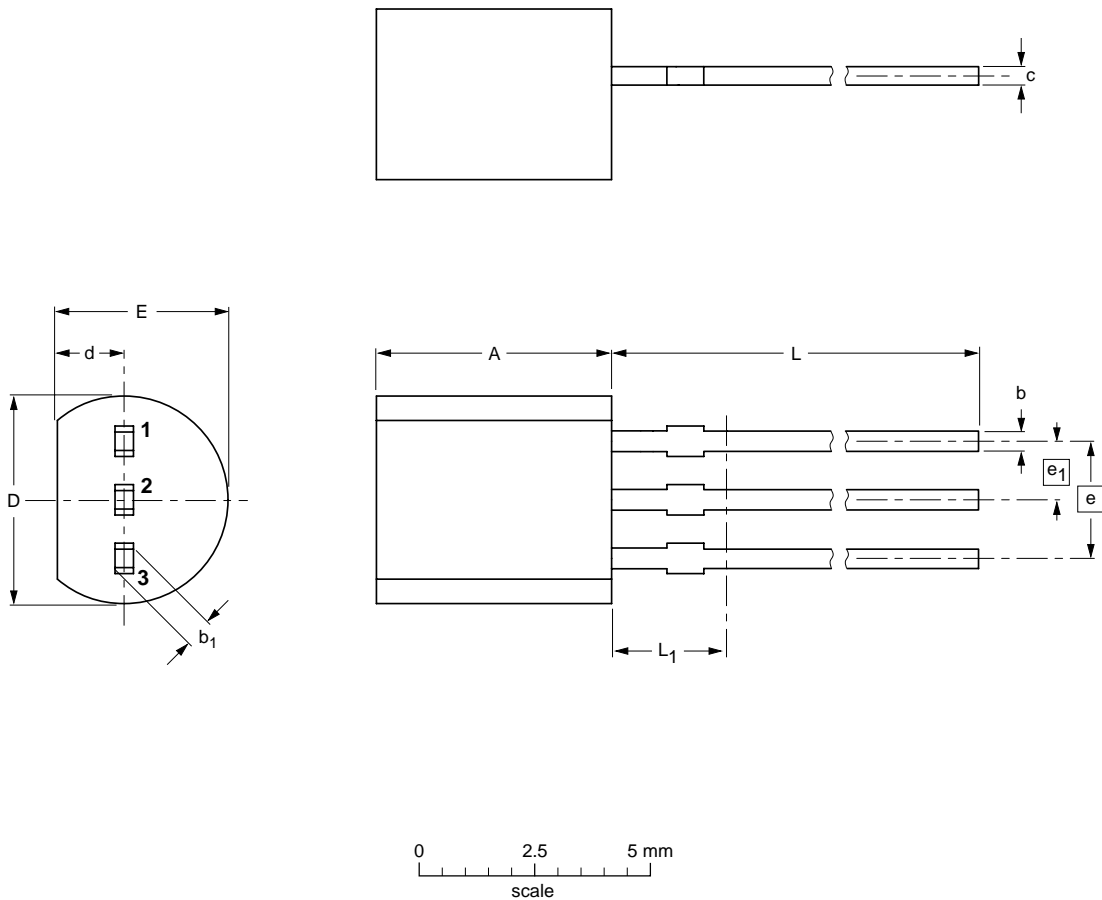
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PACKAGE OUTLINE

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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## DATA SHEET STATUS

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Printed in The Netherlands

R75/05/pp7

Date of release: 2004 Nov 05

Document order number: 9397 750 13576

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