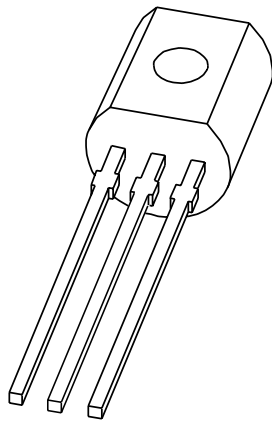


# DATA SHEET



## **BC635; BC637; BC639** NPN medium power transistors

Product specification  
Supersedes data of 1999 Apr 23

2001 Oct 10

# NPN medium power transistors

# BC635; BC637; BC639

### FEATURES

- High current (max. 1 A)
- Low voltage (max. 80 V).

### APPLICATIONS

- Driver stages of audio/video amplifiers.

### DESCRIPTION

NPN transistor in a TO-92; SOT54 plastic package.  
 PNP complements: BC636, BC638 and BC640.

### PINNING

PIN	DESCRIPTION
1	base
2	collector
3	emitter

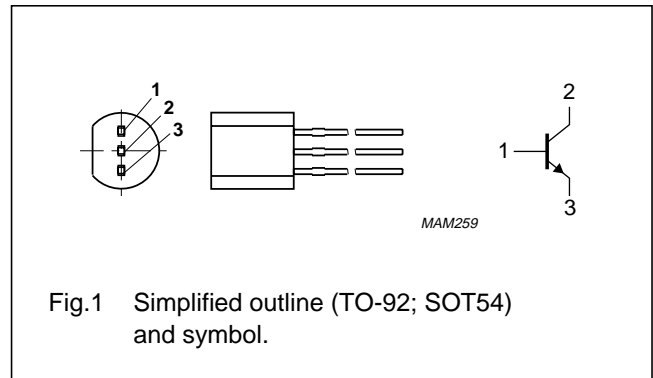


Fig.1 Simplified outline (TO-92; SOT54) and symbol.

### LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V <sub>CB0</sub>	collector-base voltage	open emitter			
	BC635		–	45	V
	BC637		–	60	V
	BC639		–	100	V
V <sub>CEO</sub>	collector-emitter voltage	open base			
	BC635		–	45	V
	BC637		–	60	V
	BC639		–	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		–	1.5	A
I <sub>BM</sub>	peak base current		–	200	mA
P <sub>tot</sub>	total power dissipation	T <sub>amb</sub> ≤ 25 °C	–	0.83	W
T <sub>stg</sub>	storage temperature		–65	+150	°C
T <sub>j</sub>	junction temperature		–	150	°C
T <sub>amb</sub>	operating ambient temperature		–65	+150	°C

## NPN medium power transistors

## BC635; BC637; BC639

## THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j-a}$	thermal resistance from junction to ambient	note 1	150	K/W

## Note

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

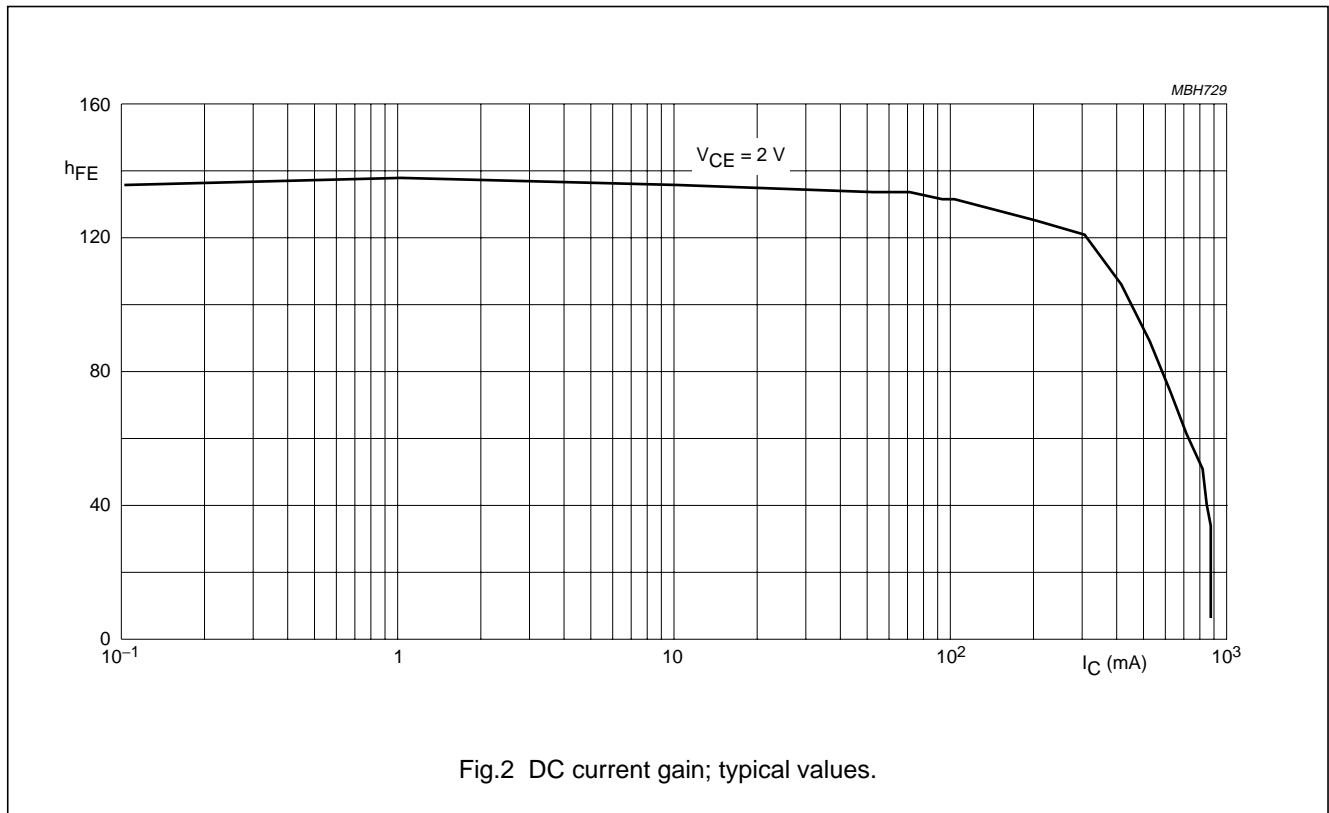
## CHARACTERISTICS

$T_j = 25\text{ °C}$  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
		$I_E = 0; V_{CB} = 30\text{ V}; T_j = 150\text{ °C}$	–	10	$\mu\text{A}$
$I_{EBO}$	emitter cut-off current	$I_C = 0; V_{EB} = 5\text{ V}$	–	100	nA
$h_{FE}$	DC current gain	$V_{CE} = 2\text{ V}$ ; see Fig.2 $I_C = 5\text{ mA}$	63	–	
		$I_C = 150\text{ mA}$ $I_C = 500\text{ mA}$	63 40	250 –	
	DC current gain BC639-10 BC635-16; BC637-16; BC639-16	$I_C = 150\text{ mA}; V_{CE} = 2\text{ V}$ ; see Fig.2	63 100	160 250	
$V_{CEsat}$	collector-emitter saturation voltage	$I_C = 500\text{ mA}; I_B = 50\text{ mA}$	–	500	mV
$V_{BE}$	base-emitter voltage	$I_C = 500\text{ mA}; V_{CE} = 2\text{ V}$	–	1	V
$f_T$	transition frequency	$I_C = 50\text{ mA}; V_{CE} = 5\text{ V}; f = 100\text{ MHz}$	100	–	MHz
$\frac{h_{FE1}}{h_{FE2}}$	DC current gain ratio of the complementary pairs	$ I_C  = 150\text{ mA};  V_{CE}  = 2\text{ V}$	–	1.6	

NPN medium power transistors

BC635; BC637; BC639



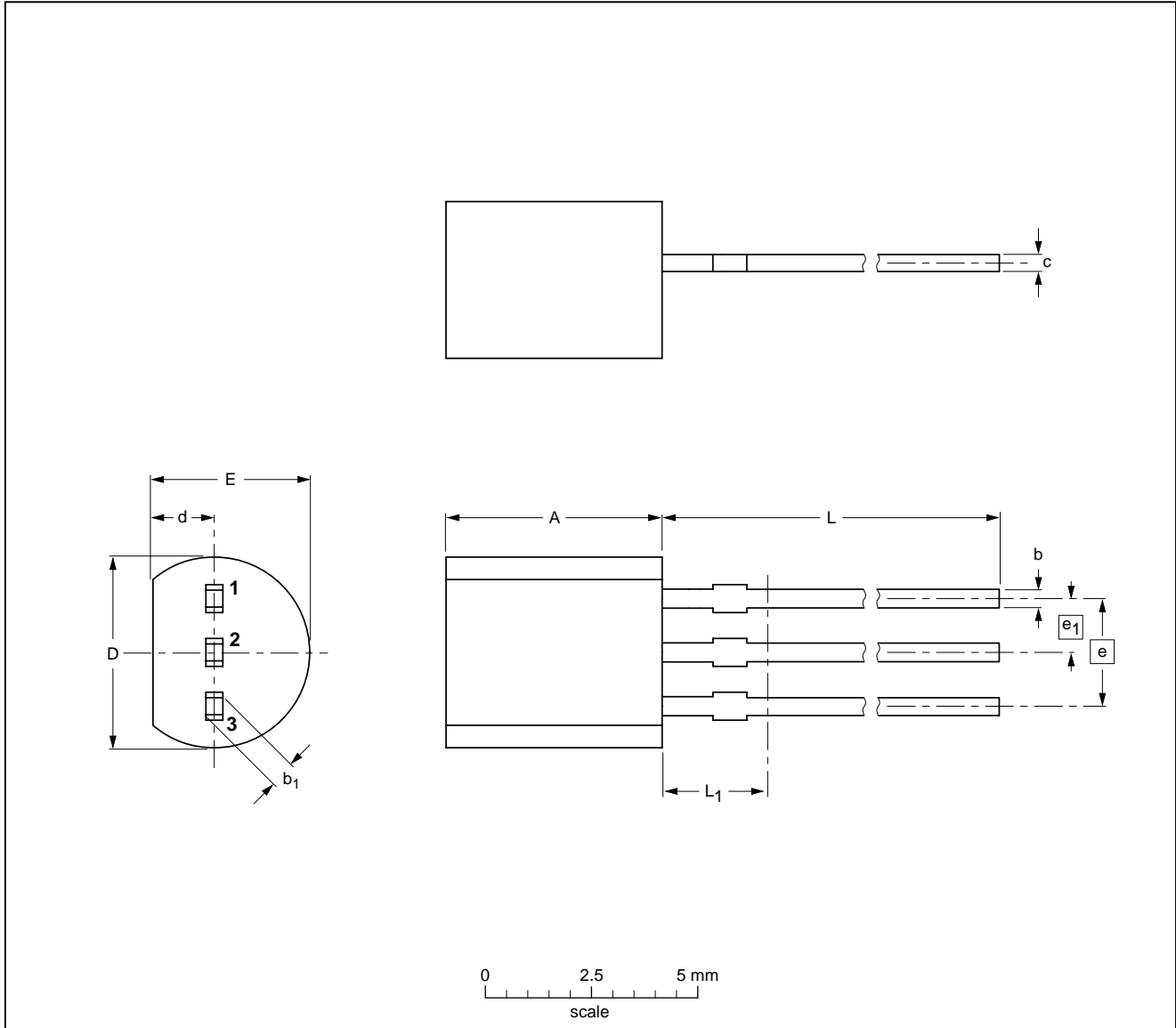
NPN medium power transistors

BC635; BC637; BC639

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>
mm	5.2 5.0	0.48 0.40	0.66 0.56	0.45 0.40	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	EIAJ		
SOT54		TO-92	SC-43		97-02-28

## NPN medium power transistors

BC635; BC637; BC639

## DATA SHEET STATUS

DATA SHEET STATUS <sup>(1)</sup>	PRODUCT STATUS <sup>(2)</sup>	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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NPN medium power transistors

BC635; BC637; BC639

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**NOTES**

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