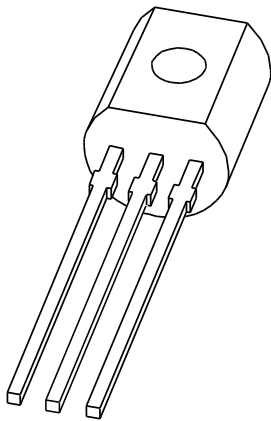


# DATA SHEET



## **BC636; BC638; BC640** PNP medium power transistors

Product specification  
Supersedes data of September 1994  
File under Discrete Semiconductors, SC04

1997 Mar 07

# PNP medium power transistors

# BC636; BC638; BC640

### FEATURES

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

### APPLICATIONS

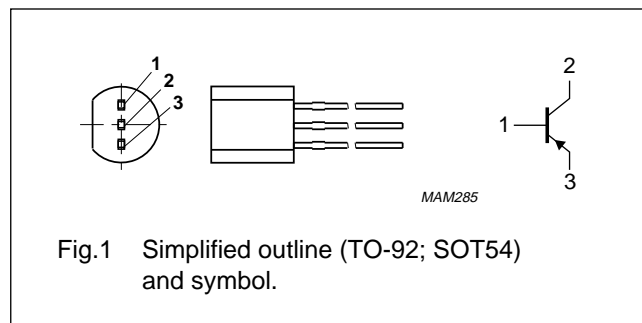
- Audio and video amplifiers.

### DESCRIPTION

PNP medium power transistor in a TO-92; SOT54 plastic package. NPN complements: BC635, BC637 and BC639.

### PINNING

PIN	DESCRIPTION
1	base
2	collector
3	emitter



### QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V <sub>CBO</sub>	collector-base voltage	open emitter			
	BC636		–	–45	V
	BC638		–	–60	V
V <sub>CEO</sub>	collector-emitter voltage	open base			
	BC636		–	–45	V
	BC638		–	–60	V
	BC640		–	–80	V
I <sub>CM</sub>	peak collector current		–	–1.5	A
P <sub>tot</sub>	total power dissipation	T <sub>amb</sub> ≤ 25 °C	–	0.83	W
h <sub>FE</sub>	DC current gain	I <sub>C</sub> = –150 mA; V <sub>CE</sub> = –2 V	40	250	
f <sub>T</sub>	transition frequency	I <sub>C</sub> = –50 mA; V <sub>CE</sub> = –5 V; f = 100 MHz	100	–	MHz

## PNP medium power transistors

## BC636; BC638; BC640

**LIMITING VALUES**

In accordance with the Absolute Maximum Rating System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V <sub>CBO</sub>	collector-base voltage	open emitter			
	BC636		–	–45	V
	BC638		–	–60	V
	BC640		–	–100	V
V <sub>CEO</sub>	collector-emitter voltage	open base			
	BC636		–	–45	V
	BC638		–	–60	V
	BC640		–	–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; 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>	operating 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.

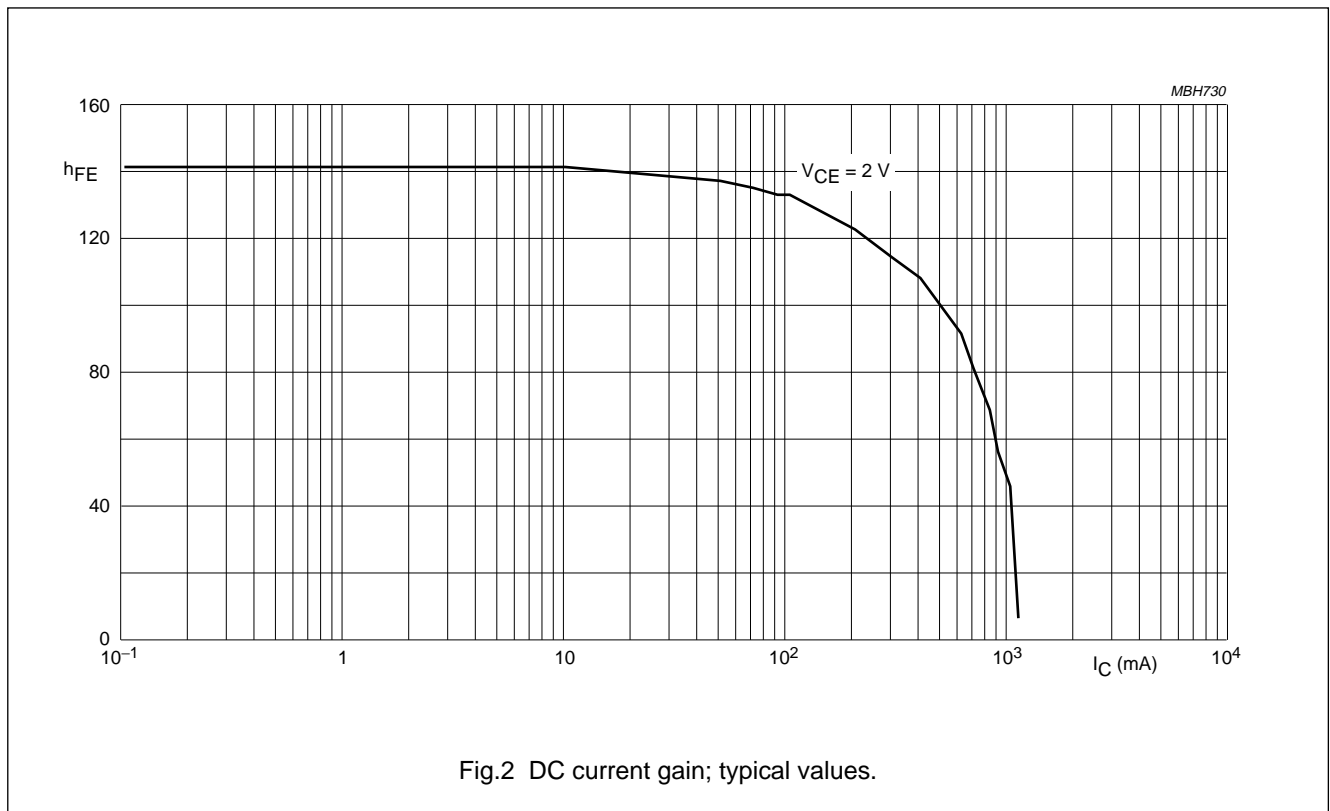
PNP medium power transistors

BC636; BC638; BC640

**CHARACTERISTICS**

$T_j = 25\text{ }^\circ\text{C}$  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
		$I_E = 0; V_{CB} = -30\text{ V}; T_j = 150\text{ }^\circ\text{C}$	-	-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			
		$I_C = -5\text{ mA}$	40	-	
		$I_C = -150\text{ mA}$	40	250	
$h_{FE}$	DC current gain BC636-10; BC638-10; BC640-10 BC636-16; BC638-16; BC640-16	$I_C = -150\text{ mA}; V_{CE} = -2\text{ V}$ ; see Fig.2			
			63	160	
			100	250	
$V_{CEsat}$	collector-emitter saturation voltage	$I_C = -500\text{ mA}; I_B = -50\text{ mA}$	-	-0.5	V
$V_{BE}$	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	



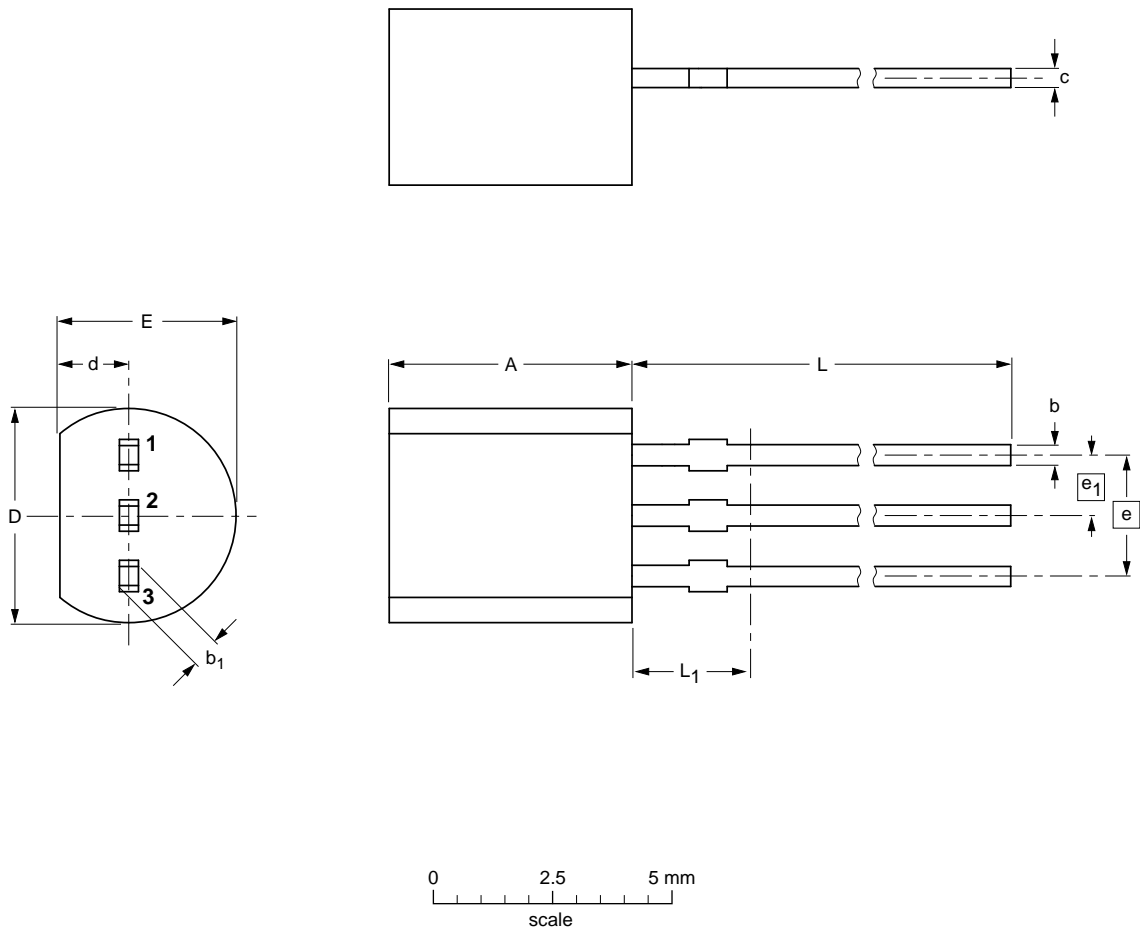
PNP medium power transistors

BC636; BC638; BC640

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

## PNP medium power transistors

BC636; BC638; BC640

**DEFINITIONS**

<b>Data Sheet Status</b>	
Objective specification	This data sheet contains target or goal specifications for product development.
Preliminary specification	This data sheet contains preliminary data; supplementary data may be published later.
Product specification	This data sheet contains final product specifications.
<b>Limiting values</b>	
Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability.	
<b>Application information</b>	
Where application information is given, it is advisory and does not form part of the specification.	

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PNP medium power transistors

BC636; BC638; BC640

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