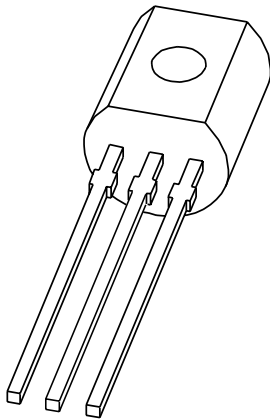


# DATA SHEET



## **BC546; BC547** NPN general purpose transistors

Product specification  
Supersedes data of 1999 Apr 15

2004 Nov 25

# NPN general purpose transistors

# BC546; BC547

### FEATURES

- Low current (max. 100 mA)
- Low voltage (max. 65 V).

### APPLICATIONS

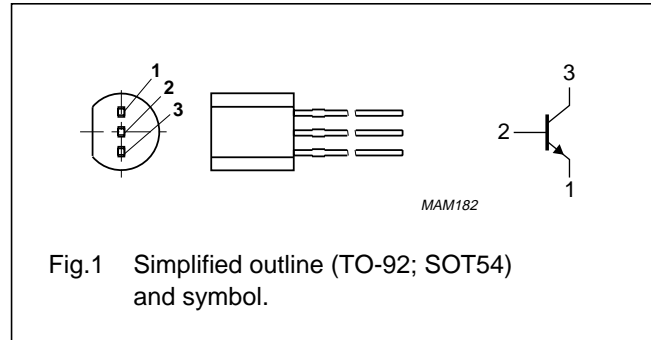
- General purpose switching and amplification.

### DESCRIPTION

NPN transistor in a TO-92; SOT54 plastic package.  
 PNP complements: BC556 and BC557.

### PINNING

PIN	DESCRIPTION
1	emitter
2	base
3	collector



### ORDERING INFORMATION

TYPE NUMBER	PACKAGE		
	NAME	DESCRIPTION	VERSION
BC546A	SC-43A	plastic single-ended leaded (through hole) package; 3 leads	SOT54
BC546B			
BC547			
BC547B			
BC547C			

## NPN general purpose transistors

## BC546; BC547

**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	–	80	V
	BC546A; BC546B BC547		–	50	V
V <sub>CEO</sub>	collector-emitter voltage	open base	–	65	V
	BC546A; BC546B BC547; BC547B; BC547C		–	45	V
V <sub>EBO</sub>	emitter-base voltage	open collector	–	6	V
	BC546A; BC546B BC547; BC547B; BC547C		–	6	V
I <sub>C</sub>	collector current (DC)		–	100	mA
I <sub>CM</sub>	peak collector current		–	200	mA
I <sub>BM</sub>	peak base current		–	200	mA
P <sub>tot</sub>	total power dissipation	T <sub>amb</sub> ≤ 25 °C; note 1	–	500	mW
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	250	K/W

**Note**

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

## NPN general purpose transistors

## BC546; BC547

## CHARACTERISTICS

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

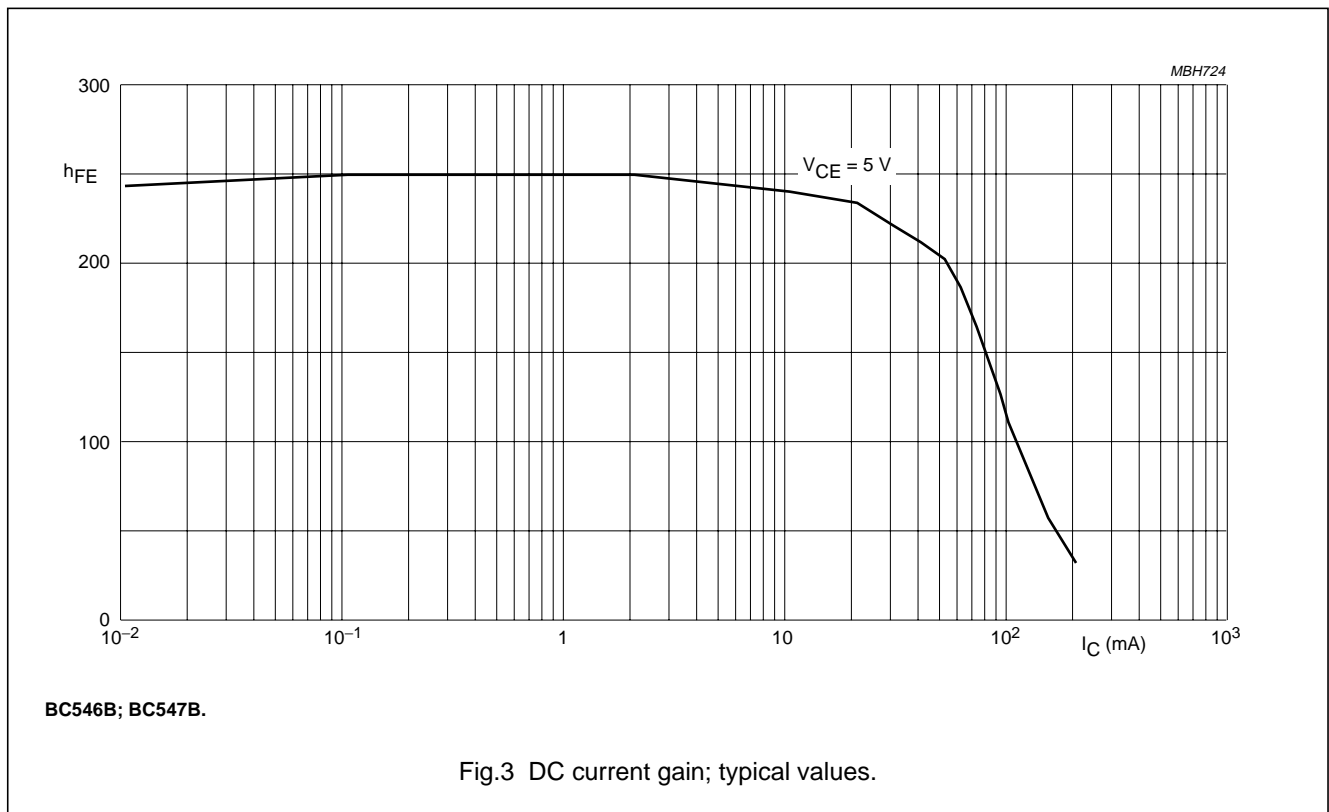
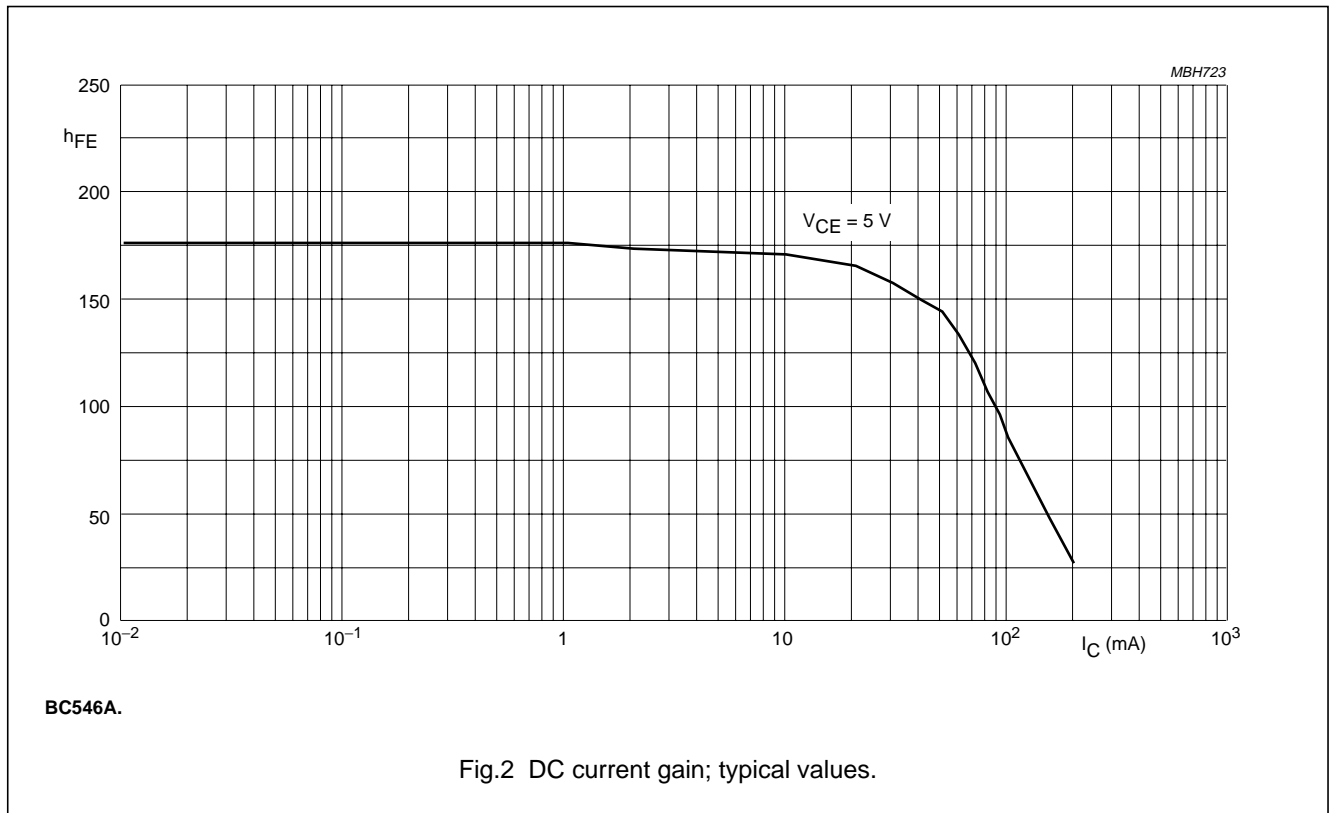
SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$I_{CBO}$	collector-base cut-off current	$V_{CB} = 30\text{ V}; I_E = 0\text{ A}$	–	–	15	nA
		$V_{CB} = 30\text{ V}; I_E = 0\text{ A}; T_j = 150\text{ °C}$	–	–	5	$\mu\text{A}$
$I_{EBO}$	emitter-base cut-off current	$V_{EB} = 5\text{ V}; I_C = 0\text{ A}$	–	–	100	nA
$h_{FE}$	DC current gain BC546A BC546B; BC547B BC547C	$V_{CE} = 5\text{ V}; I_C = 10\text{ }\mu\text{A};$ see Figs 2, 3 and 4	–	90	–	
			–	150	–	
			–	270	–	
	DC current gain BC546A BC546B; BC547B BC547C BC547	$V_{CE} = 5\text{ V}; I_C = 2\text{ mA};$ see Figs 2, 3 and 4	110	180	220	
200			290	450		
420			520	800		
110			–	800		
$V_{CEsat}$	collector-emitter saturation voltage	$I_C = 10\text{ mA}; I_B = 0.5\text{ mA}$	–	90	250	mV
		$I_C = 100\text{ mA}; I_B = 5\text{ mA}$	–	200	600	mV
$V_{BEsat}$	base-emitter saturation voltage	$I_C = 10\text{ mA}; I_B = 0.5\text{ mA};$ note 1	–	700	–	mV
		$I_C = 100\text{ mA}; I_B = 5\text{ mA};$ note 1	–	900	–	mV
$V_{BE}$	base-emitter voltage	$V_{CE} = 5\text{ V}; I_C = 2\text{ mA};$ note 2	580	660	700	mV
		$V_{CE} = 5\text{ V}; I_C = 10\text{ mA}$	–	–	770	mV
$C_c$	collector capacitance	$V_{CB} = 10\text{ V}; I_E = i_e = 0\text{ A}; f = 1\text{ MHz}$	–	1.5	–	pF
$C_e$	emitter capacitance	$V_{EB} = 0.5\text{ V}; I_C = i_c = 0\text{ A};$ $f = 1\text{ MHz}$	–	11	–	pF
$f_T$	transition frequency	$V_{CE} = 5\text{ V}; I_C = 10\text{ mA}; f = 100\text{ MHz}$	100	–	–	MHz
F	noise figure	$V_{CE} = 5\text{ V}; I_C = 200\text{ }\mu\text{A}; R_S = 2\text{ k}\Omega;$ $f = 1\text{ kHz}; B = 200\text{ Hz}$	–	2	10	dB

## Notes

- $V_{BEsat}$  decreases by about 1.7 mV/K with increasing temperature.
- $V_{BE}$  decreases by about 2 mV/K with increasing temperature.

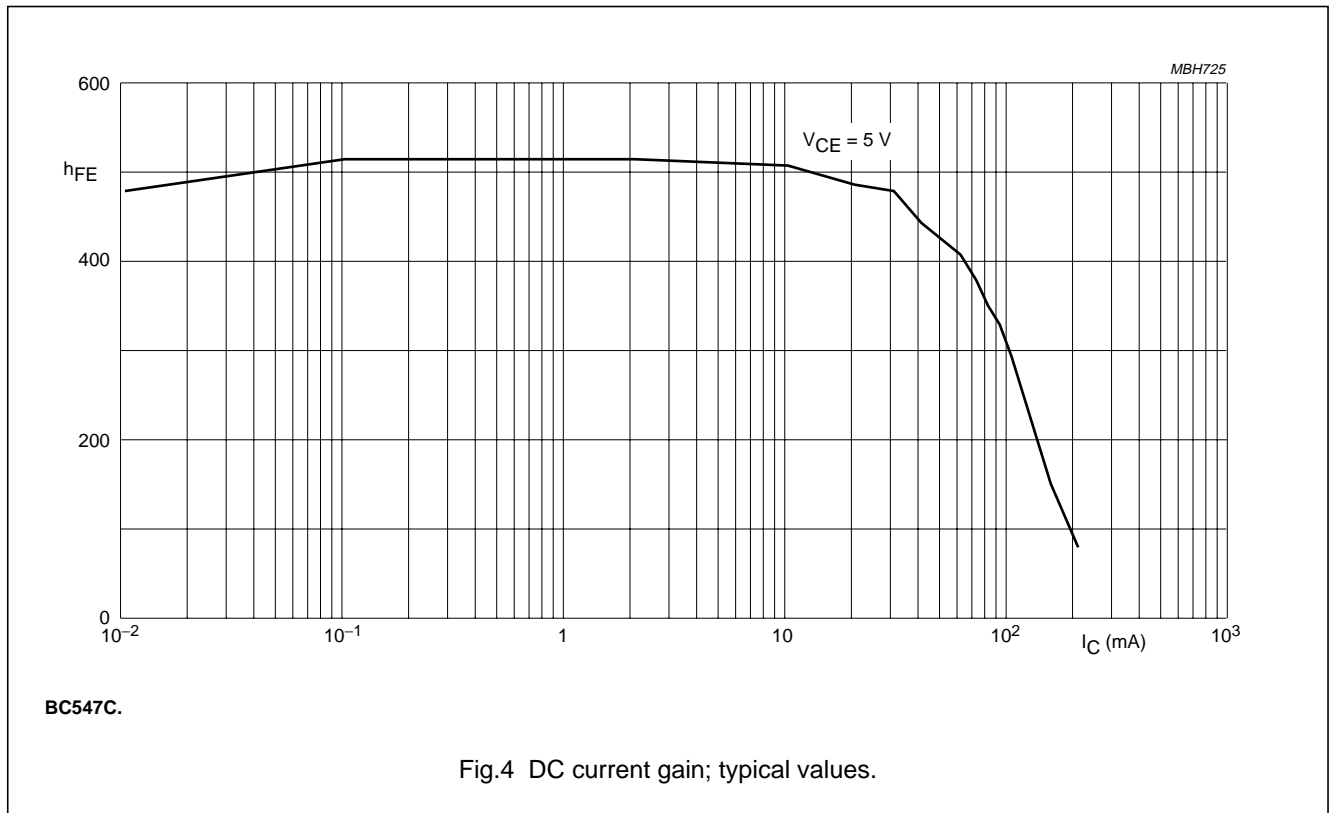
NPN general purpose transistors

BC546; BC547



NPN general purpose transistors

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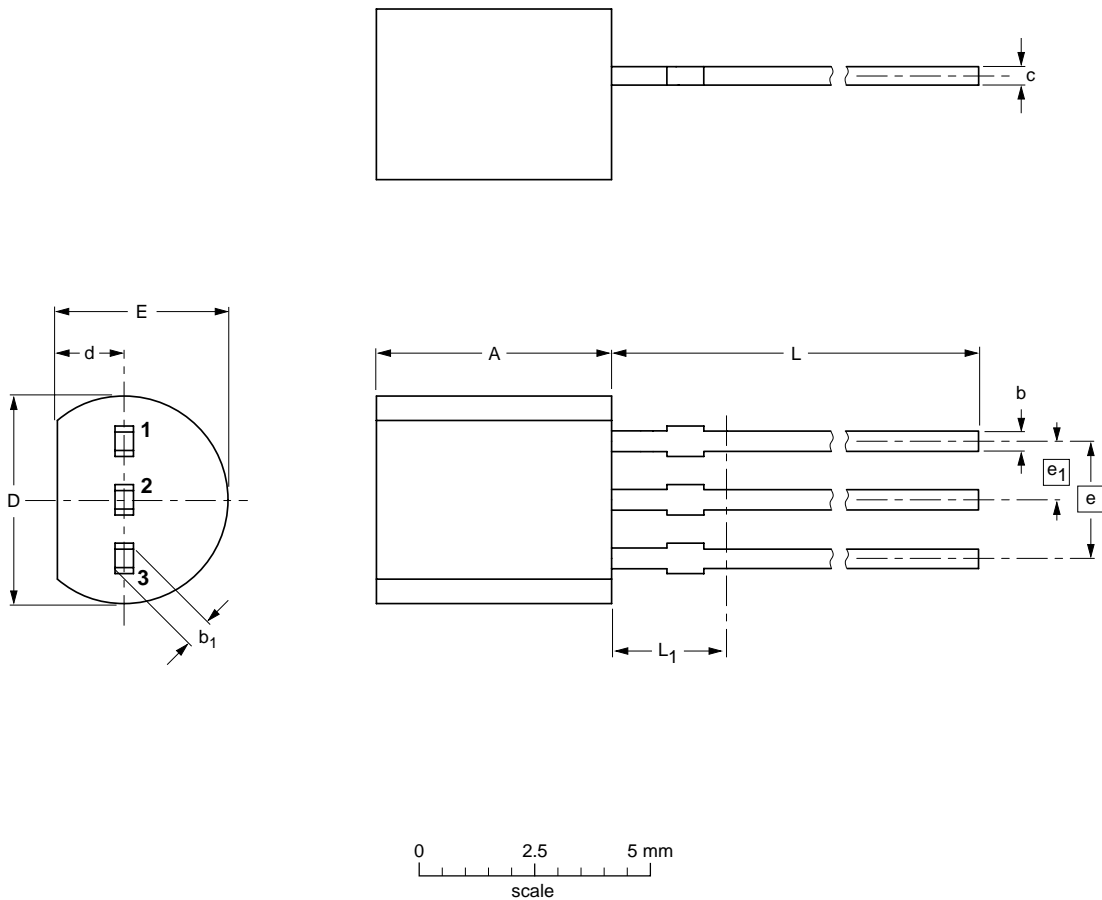
NPN general purpose transistors

BC546; BC547

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		<del>04-06-28</del> 04-11-16

## NPN general purpose transistors

BC546; BC547

## DATA SHEET STATUS

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