

## NPN general purpose transistors

## BC337; BC337A; BC338

## FEATURES

- High current (max. 500 mA)
- Low voltage (max. 60 V).

## APPLICATIONS

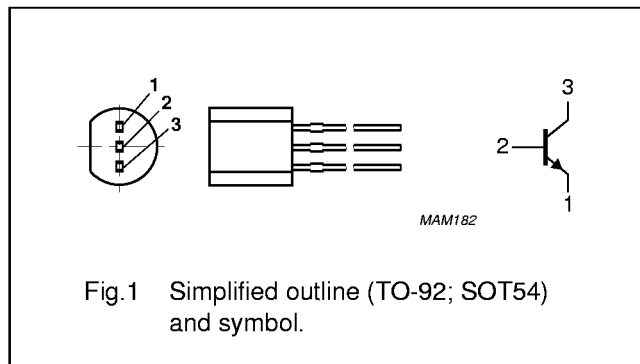
- General purpose switching and amplification, e.g. driver and output stages of audio amplifiers.

## DESCRIPTION

NPN transistor in a TO-92; SOT54 plastic package.  
PNP complements: BC327, BC327A and BC328.

## PINNING

PIN	DESCRIPTION
1	emitter
2	base
3	collector



## QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$V_{CBO}$	collector-base voltage	open emitter			
	BC337		–	50	V
	BC337A		–	60	V
	BC338		–	30	V
$V_{CEO}$	collector-emitter voltage	open base			
	BC337		–	45	V
	BC337A		–	60	V
	BC338		–	25	V
$I_{CM}$	peak collector current		–	1	A
$P_{tot}$	total power dissipation	$T_{amb} \leq 25\text{ °C}$	–	625	mW
$h_{FE}$	DC current gain	$I_C = 100\text{ mA}; V_{CE} = 1\text{ V}$			
	BC337; BC338		100	600	
	BC337A		100	400	
$f_T$	transition frequency	$I_C = 10\text{ mA}; V_{CE} = 5\text{ V}; f = 100\text{ MHz}$	100	–	MHz

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**LIMITING VALUES**

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$V_{CBO}$	collector-base voltage	open emitter			
	BC337		–	50	V
	BC337A		–	60	V
	BC338		–	30	V
$V_{CEO}$	collector-emitter voltage	open base			
	BC337		–	45	V
	BC337A		–	60	V
	BC338		–	25	V
$V_{EBO}$	emitter-base voltage	open collector	–	5	V
$I_C$	collector current (DC)		–	500	mA
$I_{CM}$	peak collector current		–	1	A
$I_{BM}$	peak base current		–	200	mA
$P_{tot}$	total power dissipation	$T_{amb} \leq 25\text{ }^\circ\text{C}$ ; note 1	–	625	mW
$T_{stg}$	storage temperature		–65	+150	$^\circ\text{C}$
$T_j$	junction temperature		–	150	$^\circ\text{C}$
$T_{amb}$	operating ambient temperature		–65	+150	$^\circ\text{C}$

**Note**

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

**THERMAL CHARACTERISTICS**

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j-a}$	thermal resistance from junction to ambient	note 1	0.2	K/mW

**Note**

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

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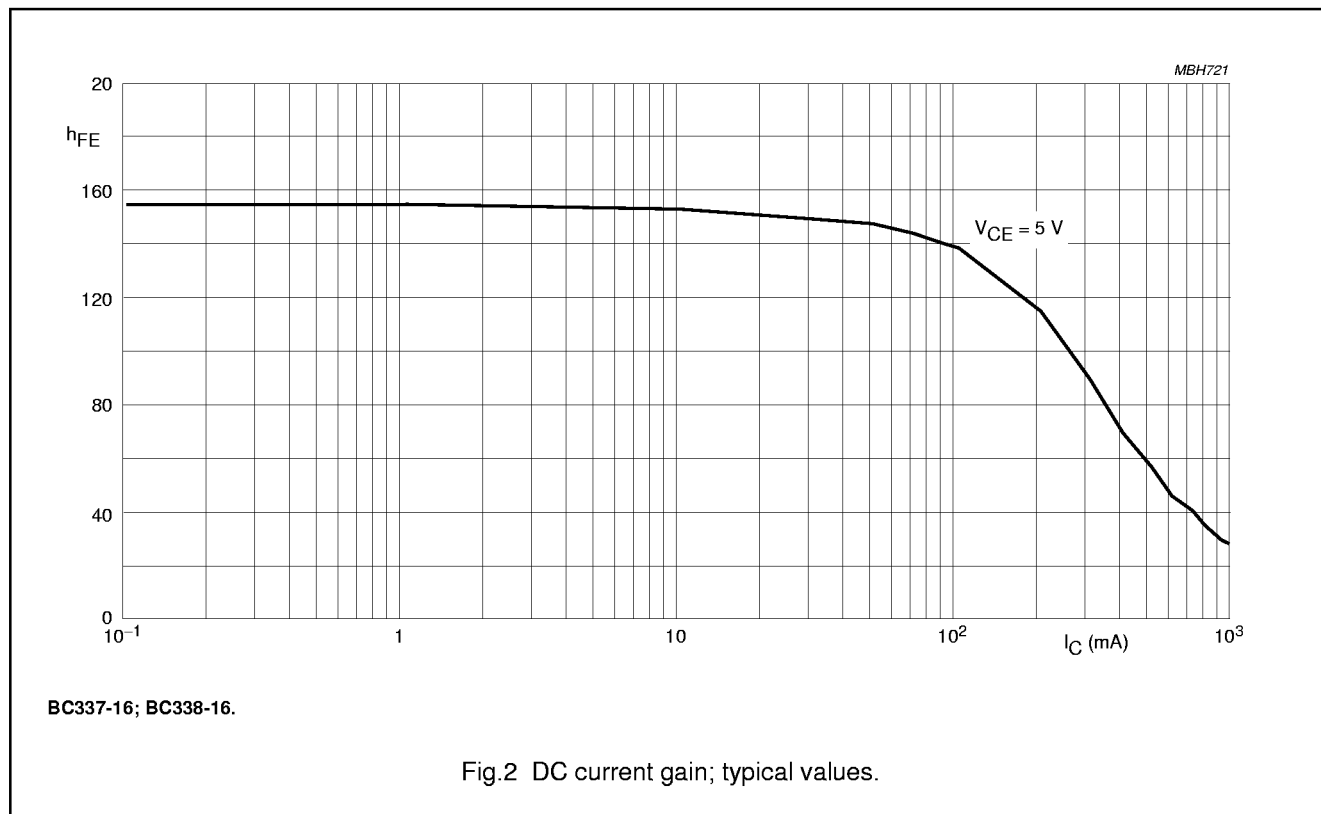
**CHARACTERISTICS**

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$I_{CBO}$	collector cut-off current	$I_E = 0; V_{CB} = 20\text{ V}$	–	–	100	nA
		$I_E = 0; V_{CB} = 20\text{ V}; T_j = 150\text{ }^\circ\text{C}$	–	–	5	$\mu\text{A}$
$I_{EBO}$	emitter cut-off current	$I_C = 0; V_{EB} = 5\text{ V}$	–	–	100	nA
$h_{FE}$	DC current gain BC337; BC338 BC337A BC337-16; BC338-16 BC337-25; BC338-25 BC337-40; BC338-40	$I_C = 100\text{ mA}; V_{CE} = 1\text{ V};$ see Figs 2, 3 and 4	100	–	600	
			100	–	400	
			100	–	250	
			160	–	400	
			250	–	600	
$h_{FE}$	DC current gain	$I_C = 500\text{ mA}; V_{CE} = 1\text{ V};$ see Figs 2, 3 and 4	40	–	–	
$V_{CEsat}$	collector-emitter saturation voltage	$I_C = 500\text{ mA}; I_B = 50\text{ mA}$	–	–	700	mV
$V_{BE}$	base-emitter voltage	$I_C = 500\text{ mA}; V_{CE} = 1\text{ V};$ note 1	–	–	1.2	V
$C_c$	collector capacitance	$I_E = I_B = 0; V_{CB} = 10\text{ V}; f = 1\text{ MHz}$	–	5	–	pF
$f_T$	transition frequency	$I_C = 10\text{ mA}; V_{CE} = 5\text{ V}; f = 100\text{ MHz}$	100	–	–	MHz

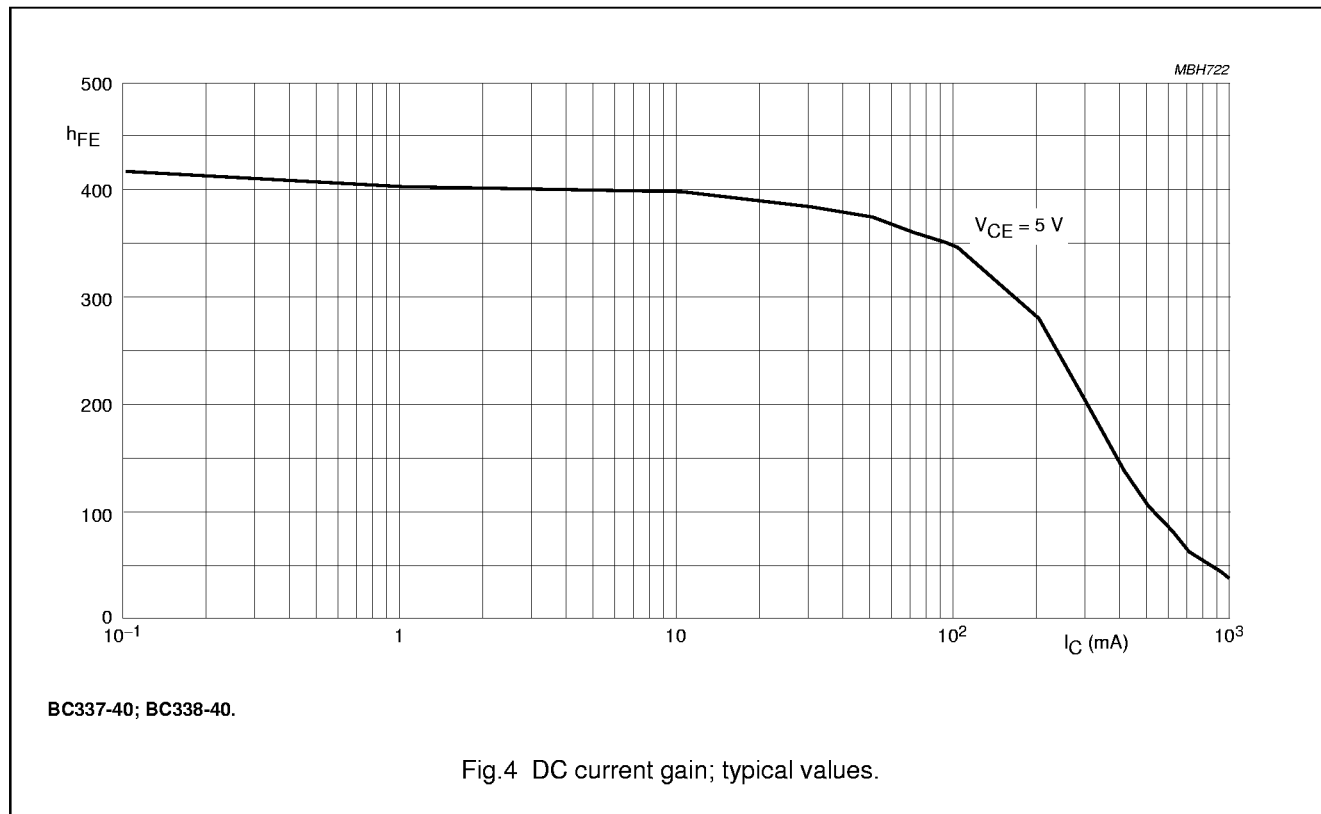
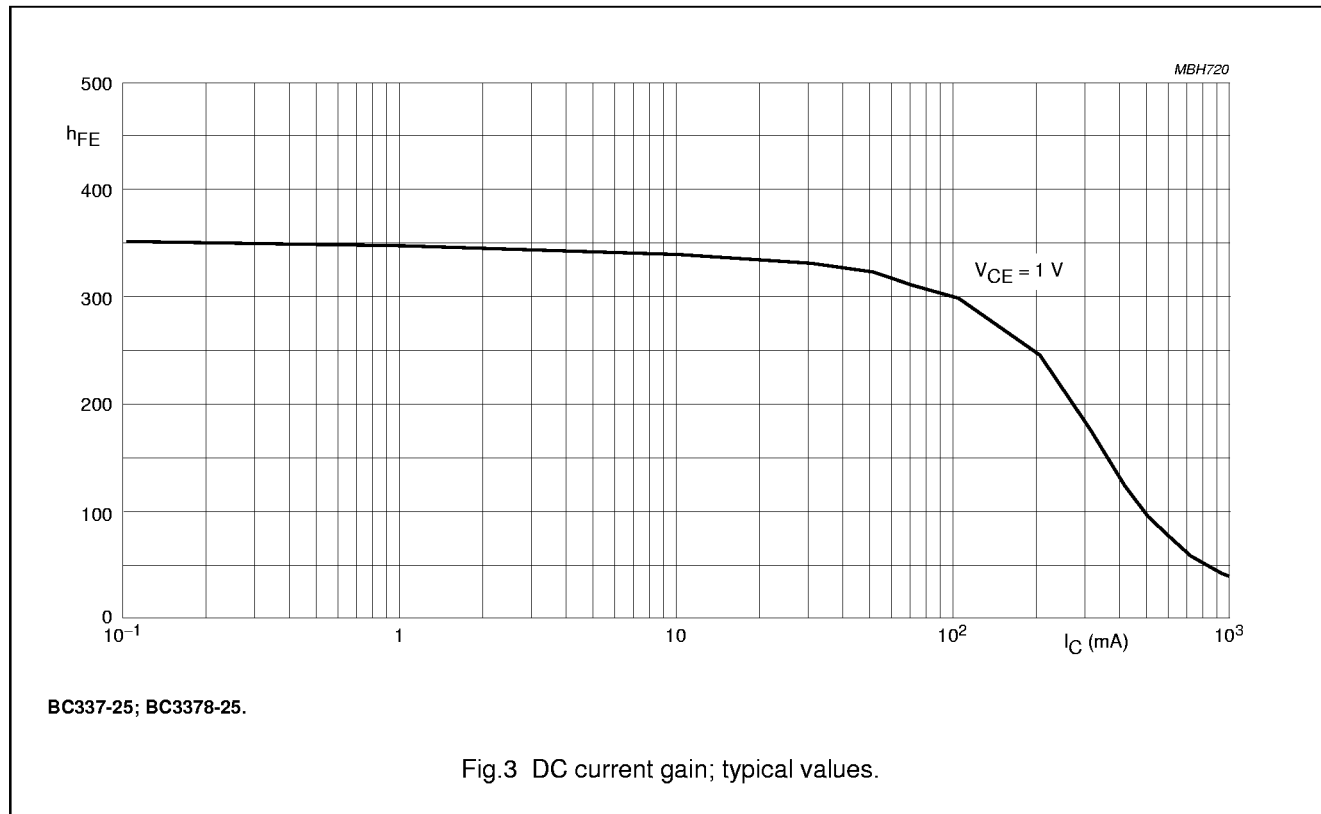
**Note**

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



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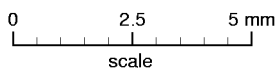
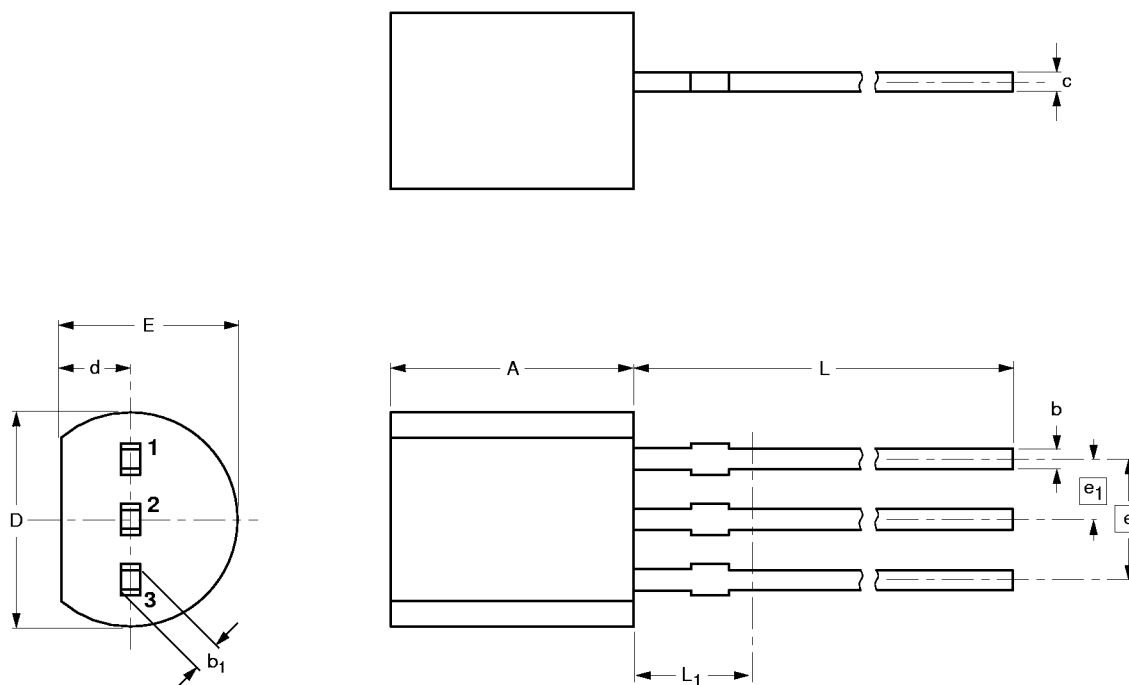
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## PACKAGE OUTLINE

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>
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