

NPN general purpose transistors

BC337; BC337A; BC338

FEATURES

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

APPLICATIONS

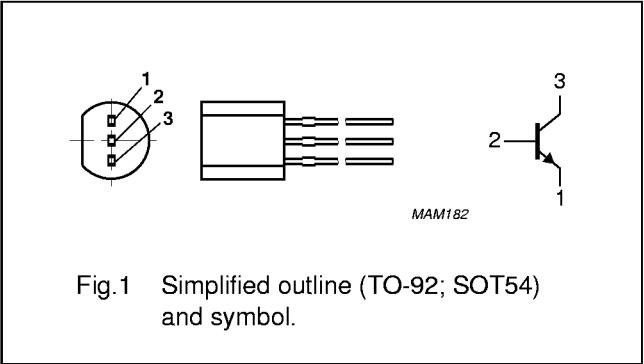
- General purpose switching and amplification, e.g. driver and output stages of audio amplifiers.

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	$T_{amb} \leq 25\text{ }^{\circ}\text{C}$	—	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	$T_{amb} \leq 25\text{ °C}$; note 1	–	625	mW
T_{stg}	storage temperature		–65	+150	°C
T_j	junction temperature		–	150	°C
T_{amb}	operating ambient temperature		–65	+150	°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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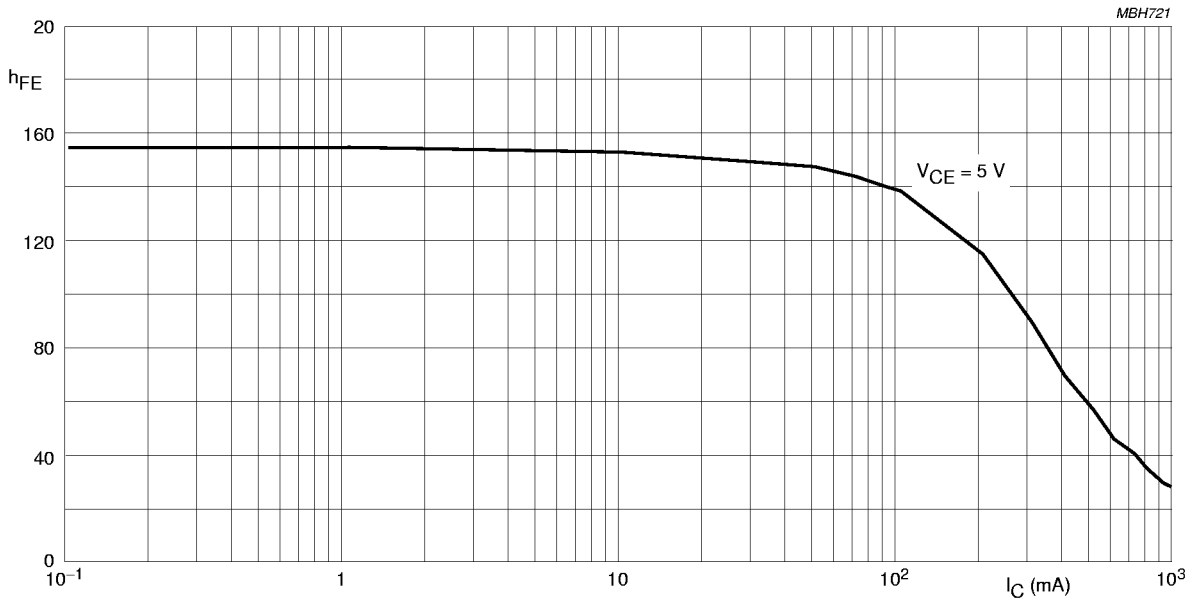
CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I _{CBO}	collector cut-off current	I _E = 0; V _{CB} = 20 V	–	–	100	nA
		I _E = 0; V _{CB} = 20 V; T _j = 150 °C	–	–	5	μA
I _{EBO}	emitter cut-off current	I _C = 0; V _{EB} = 5 V	–	–	100	nA
h _{FE}	DC current gain	I _C = 100 mA; V _{CE} = 1 V; see Figs 2, 3 and 4				
	BC337; BC338		100	–	600	
	BC337A		100	–	400	
	BC337-16; BC338-16		100	–	250	
	BC337-25; BC338-25		160	–	400	
	BC337-40; BC338-40		250	–	600	
h _{FE}	DC current gain	I _C = 500 mA; V _{CE} = 1 V; see Figs 2, 3 and 4	40	–	–	
V _{CEsat}	collector-emitter saturation voltage	I _C = 500 mA; I _B = 50 mA	–	–	700	mV
V _{BE}	base-emitter voltage	I _C = 500 mA; V _{CE} = 1 V; note 1	–	–	1.2	V
C _c	collector capacitance	I _E = i _e = 0; V _{CB} = 10 V; f = 1 MHz	–	5	–	pF
f _T	transition frequency	I _C = 10 mA; V _{CE} = 5 V; f = 100 MHz	100	–	–	MHz

Note

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



BC337-16; BC338-16.

Fig.2 DC current gain; typical values.

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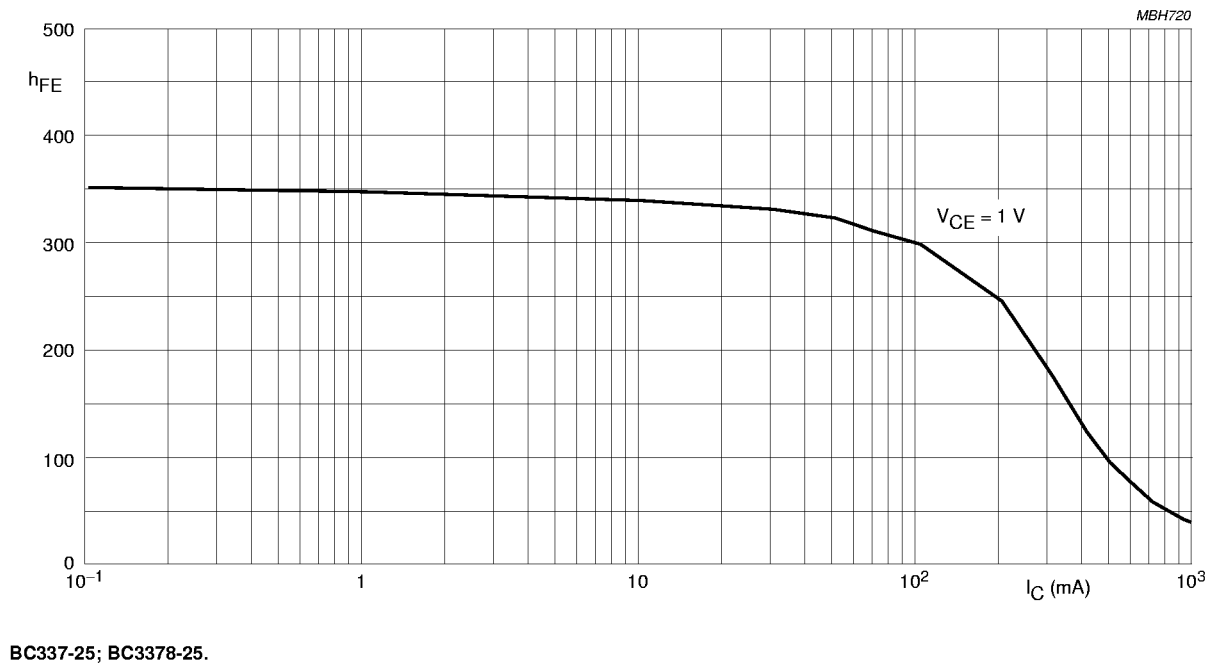


Fig.3 DC current gain; typical values.

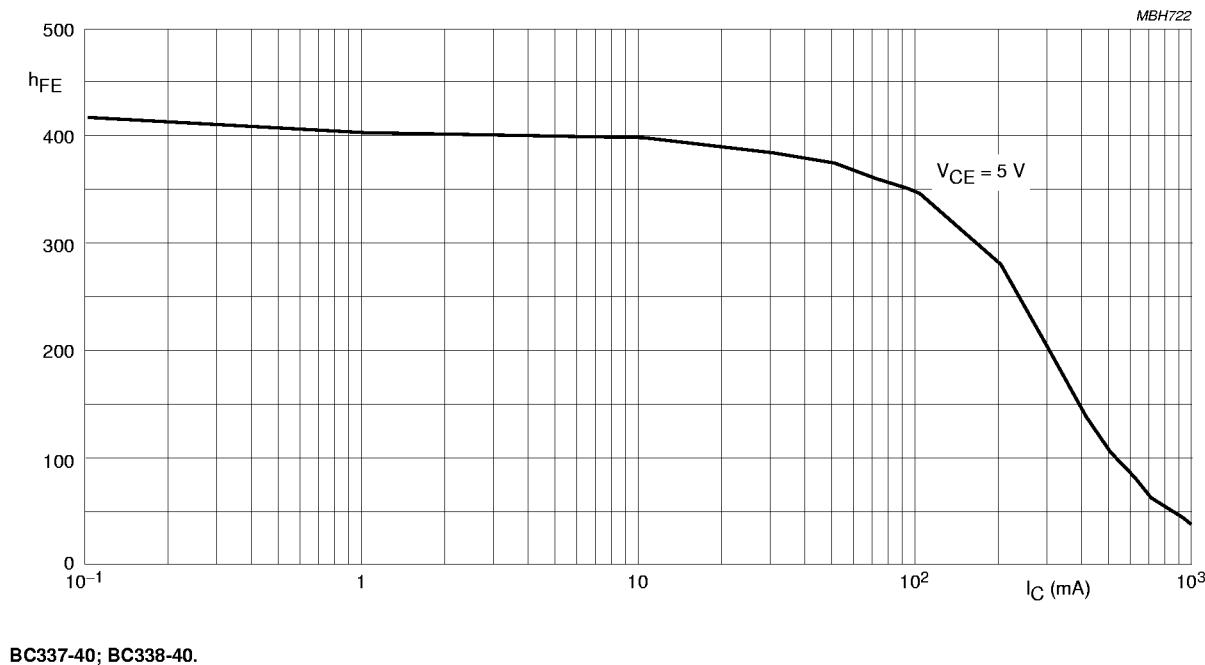


Fig.4 DC current gain; typical values.

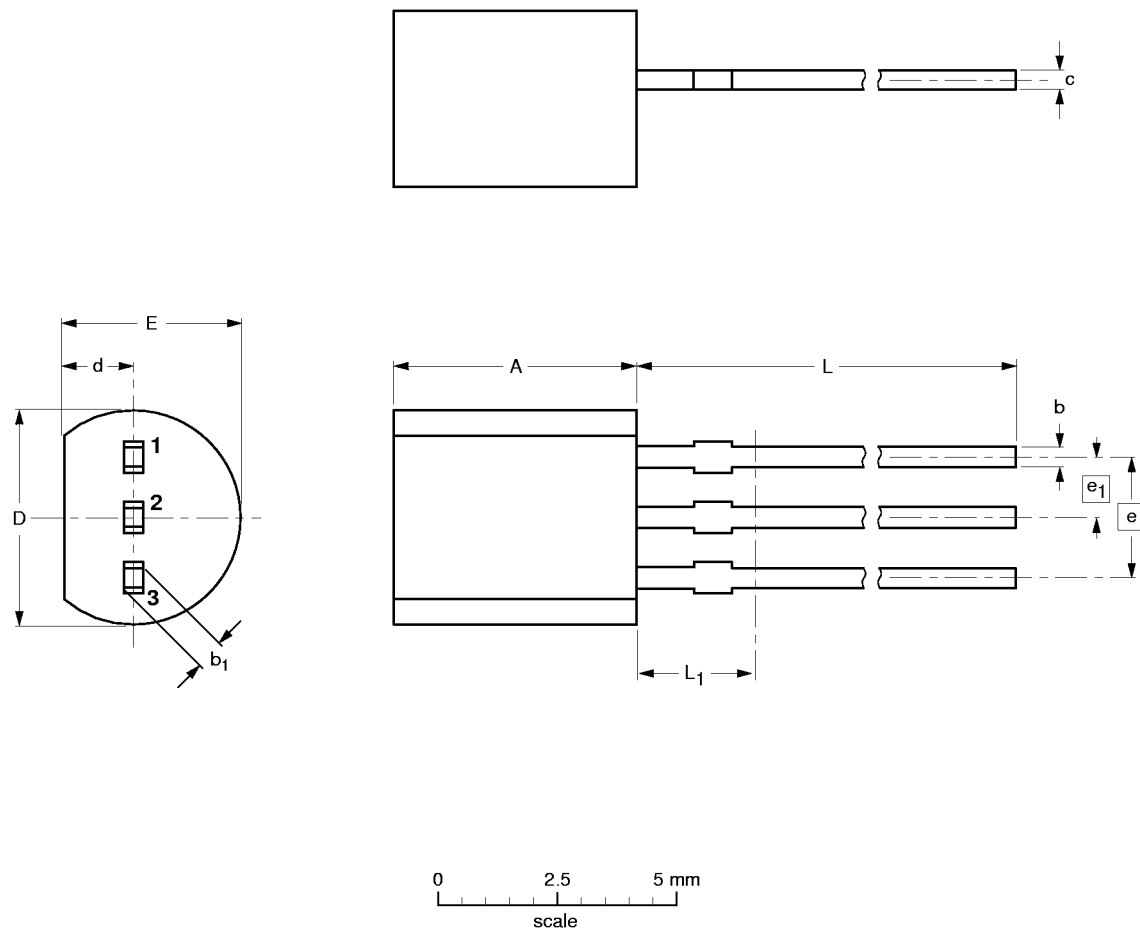
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PACKAGE OUTLINE

Plastic single-ended leaded (through hole) package; 3 leads

SOT54



DIMENSIONS (mm are the original dimensions)

UNIT	A	b	b ₁	c	D	d	E	e	e ₁	L	L ₁ ⁽¹⁾
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