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

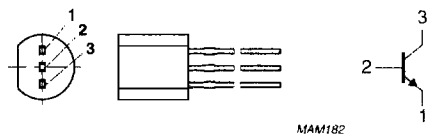


Fig.1 Simplified outline (TO-92; SOT54) and symbol.

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	$T_{amb} \leq 25$ °C	–	625	mW
h_{FE}	DC current gain	$I_C = 100$ mA; $V_{CE} = 1$ V			
	BC337; BC338		100	600	
	BC337A		100	400	
f_T	transition frequency	$I_C = 10$ mA; $V_{CE} = 5$ V; f = 100 MHz	100	–	MHz

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	$T_{amb} \leq 25$ °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
$R_{th\ j\text{-}a}$	thermal resistance from junction to ambient	note 1	0.2	K/mW

Note

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

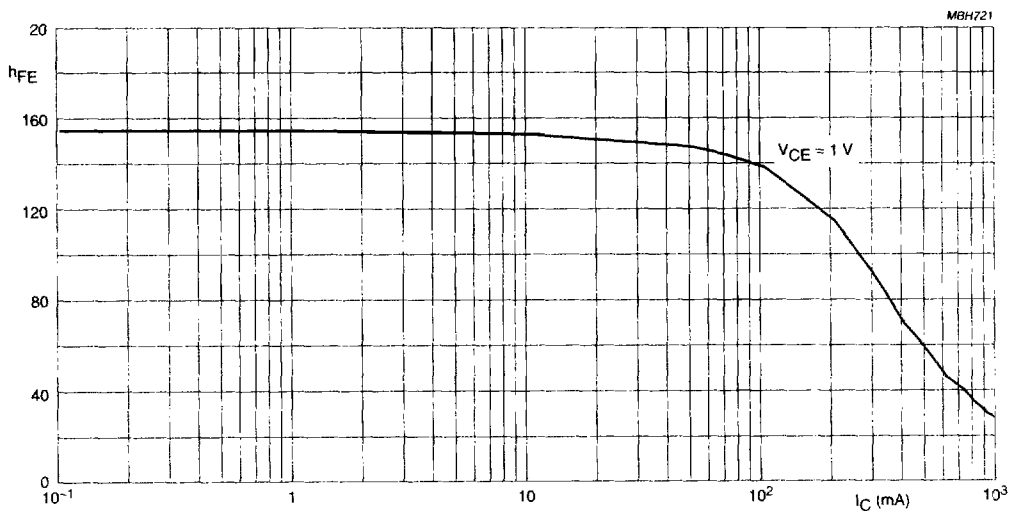
CHARACTERISTICS

T_j = 25 °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

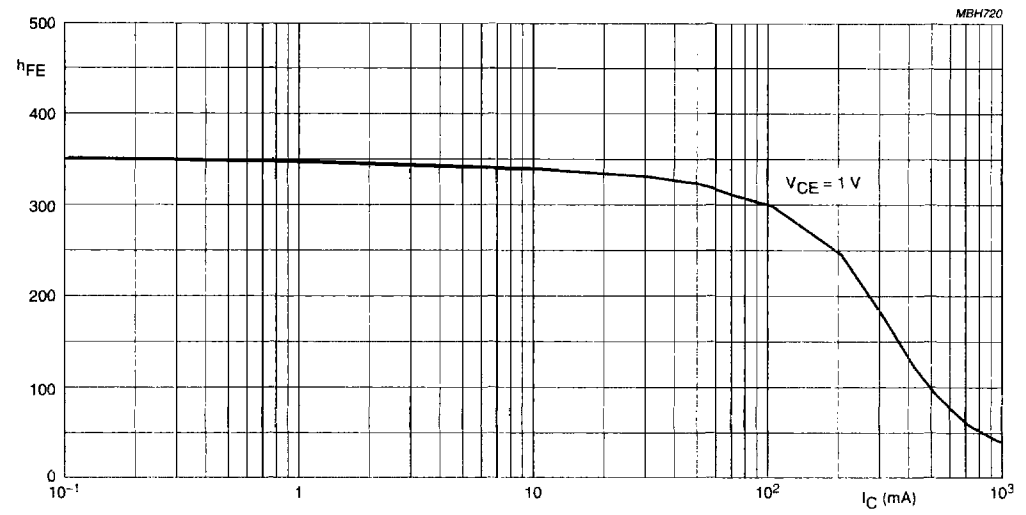
Note

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



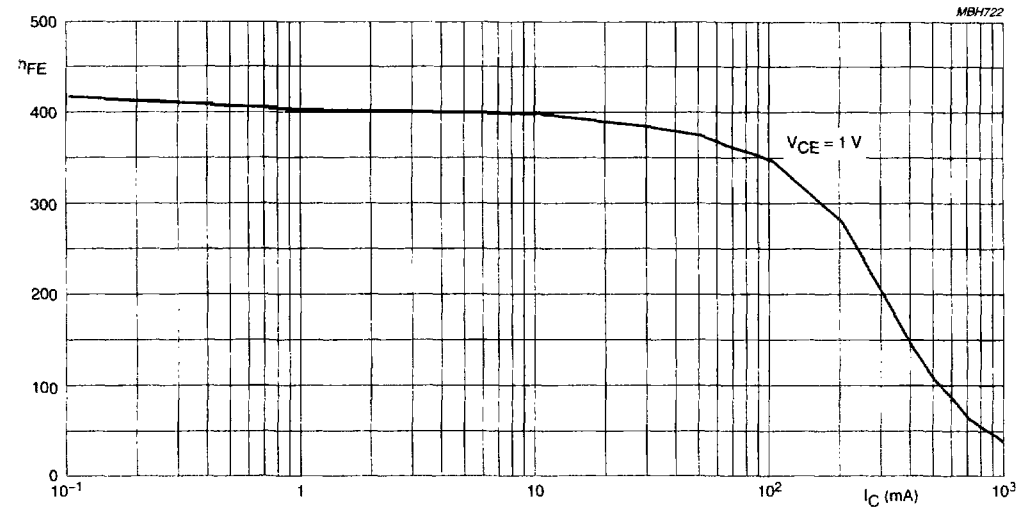
BC337-16; BC338-16.

Fig.2 DC current gain; typical values.



BC337-25; BC3378-25.

Fig.3 DC current gain; typical values.



BC337-40; BC338-40.

Fig.4 DC current gain; typical values.