

## PNP general purpose transistors BC556; BC557

### Features

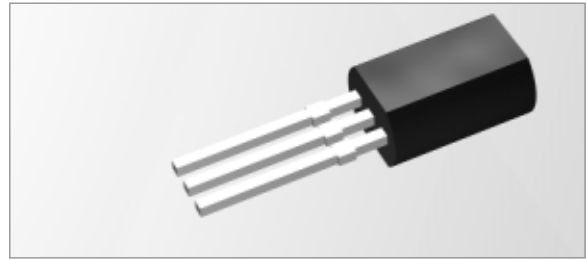
- Low current (max. 100 mA)
- Low voltage (max. 65 V)

### Applications

- General purpose switching and amplification

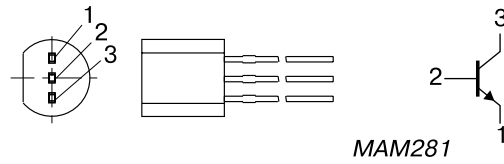
### Description

- PNP transistor in a TO-92; SOT54 plastic package
- NPN complements: BC546 and BC547.



### Pinning

PIN	DESCRIPTION
1	emitter
2	base
3	collector



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

### 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			
	BC556		–	–80	V
	BC557		–	–50	V
$V_{CEO}$	collector-emitter voltage	open base			
	BC556		–	–65	V
	BC557		–	–45	V
$V_{EBO}$	emitter-base voltage	open collector	–	–5	V
$I_C$	collector current (DC)		–	–100	mA
$I_{CM}$	peak collector current		–	–200	mA
$I_{BM}$	peak base current		–	–200	mA
$P_{tot}$	total power dissipation	$T_{amb} \leq 25\text{ }^\circ\text{C}$ ;	–	500	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	$^\circ\text{C}$

### Thermal Characteristics

Symbol	Parameter	Conditions	Value	Unit
$R_{thj-a}$	thermal resistance from junction to ambient	note 1	250	K/W

#### Note

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

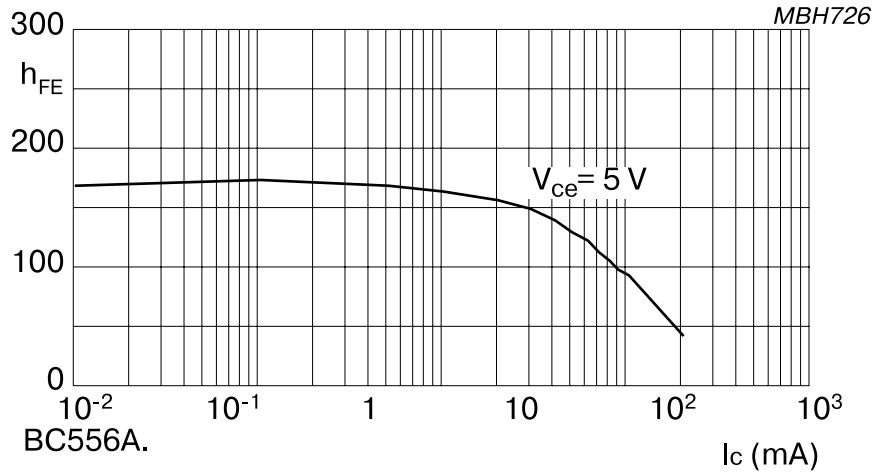
### Characteristics

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

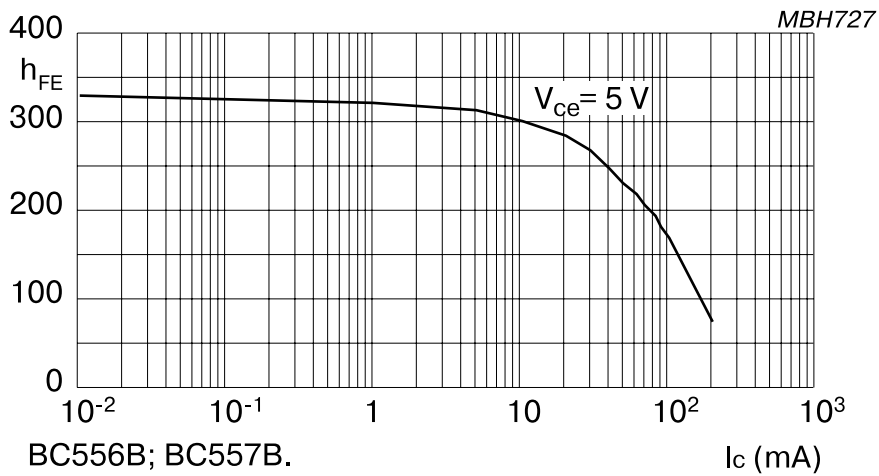
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$I_{CBO}$	collector cut-off current	$I_E = 0; V_{CB} = -30\text{ V}$	–	–1	15	nA
		$I_E = 0; V_{CB} = -30\text{ V}; T_j = 150\text{ °C}$	–	–	–4	$\mu\text{A}$
$I_{EBO}$	emitter cut-off current	$I_C = 0; V_{EB} = -5\text{ V}$	–	–	–100	nA
$h_{FE}$	DC current gain BC556 BC557 BC556A BC556B; BC557B BC557C	$I_C = -2\text{ mA}; V_{CE} = -5\text{ V};$ see Figs 2, 3 and 4	125	–	475	
			125	–	800	
			125	–	250	
			220	–	475	
			420	–	800	
$V_{CEsat}$	collector-emitter saturation voltage	$I_C = -10\text{ mA}; I_B = -0.5\text{ mA}$	–	–60	–300	mV
		$I_C = -100\text{ mA}; I_B = -5\text{ mA}$	–	–180	–650	mV
$V_{BEsat}$	base-emitter saturation voltage	$I_C = -10\text{ mA}; I_B = -0.5\text{ mA};$ note 1	–	–750	–	mV
		$I_C = -100\text{ mA}; I_B = -5\text{ mA};$ note 1	–	–930	–	mV
$V_{BE}$	base-emitter voltage	$I_C = -2\text{ mA}; V_{CE} = -5\text{ V};$ note 2	–600	–650	–750	mV
		$I_C = -10\text{ mA}; V_{CE} = -5\text{ V}$ note 2	–	–	–820	mV
$C_c$	collector capacitance	$I_E = I_e = 0; V_{CB} = -10\text{ V}; f = 1\text{ MHz}$	–	3	–	pF
$C_e$	emitter capacitance	$I_C = I_c = 0; V_{EB} = -0.5\text{ V}; f = 1\text{ MHz}$	–	10	–	pF
$f_T$	transition frequency	$I_C = -10\text{ mA}; V_{CE} = -5\text{ V}; f = 100\text{ MHz}$	100	–	–	MHz
F	noise figure	$I_C = -200\text{ }\mu\text{A}; V_{CE} = -5\text{ V};$ $R_S = 2\text{ k}\Omega; f = 1\text{ kHz}; B = 200\text{ Hz}$	–	2	10	dB

#### Notes

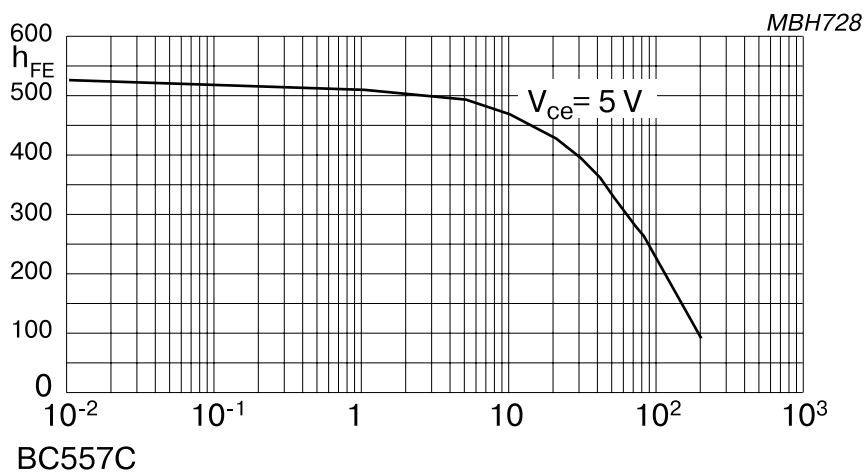
- $V_{BEsat}$  decreases by about  $-1.7\text{ mV/K}$  with increasing temperature.
- $V_{BE}$  decreases by about  $-2\text{ mV/K}$  with increasing temperature.



**Fig.2** DC current gain; typical values.



**Fig.3** DC current gain; typical values.

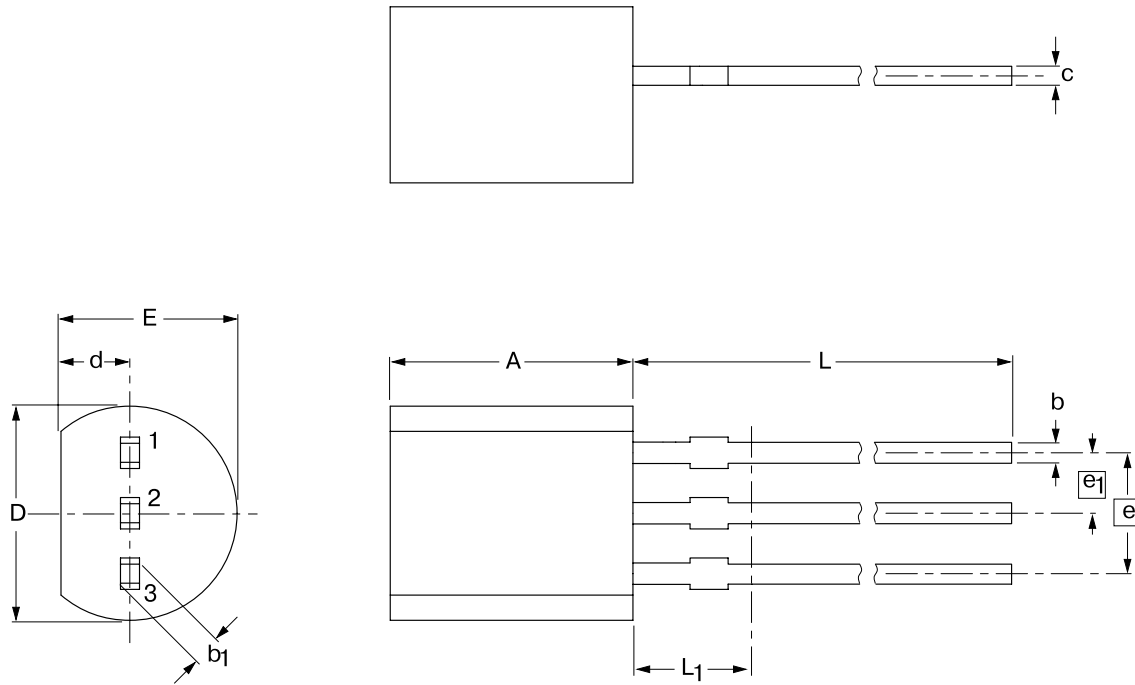


**Fig.4** DC current gain; typical values.

## 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	0.48	0.66	0.45	4.8	1.7	4.2	2.54	1.27	14.5	2.5
	5.0	0.40	0.56	0.40	4.4	1.4	3.6			12.7	

**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