

SILICON PLANAR EPITAXIAL TRANSISTORS

General purpose n-p-n transistors in a plastic TO-92 variant, especially suitable for use in driver stages of audio amplifiers.

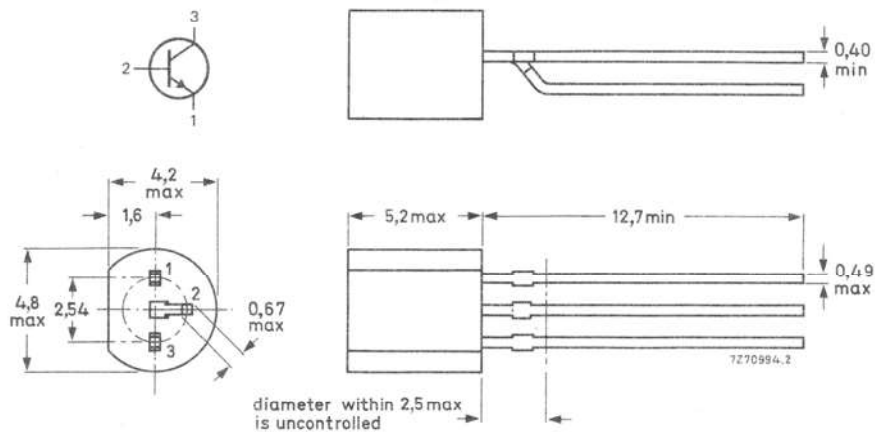
QUICK REFERENCE DATA

	BC546	BC547	BC548
Collector-emitter voltage ($V_{BE} = 0$)	V_{CES} max. 80	50	30 V
Collector-emitter voltage (open base)	V_{CEO} max. 65	45	30 V
Collector current (peak value)	I_{CM} max. 200	200	200 mA
Total power dissipation up to $T_{amb} = 25\text{ }^{\circ}\text{C}$	P_{tot} max. 500	500	500 mW
Junction temperature	T_j max. 150	150	150 $^{\circ}\text{C}$
Small-signal current gain $I_C = 2\text{ mA}; V_{CE} = 5\text{ V}; f = 1\text{ kHz}$	h_{fe} > 125 < 500	125 900	125 900
Transition frequency $I_C = 10\text{ mA}; V_{CE} = 5\text{ V}$	f_T typ. 300	300	300 MHz
Noise figure at $R_S = 2\text{ k}\Omega$ $I_C = 200\text{ }\mu\text{A}; V_{CE} = 5\text{ V}$ $f = 1\text{ kHz}; B = 200\text{ Hz}$	F typ. 2	2	2 dB

MECHANICAL DATA

Dimensions in mm

Fig. 1 TO-92 variant.



BC546 to 548

RATINGS Limiting values in accordance with the Absolute Maximum System (IEC134)

		BC546	BC547	BC548	
<u>Voltage</u>					
Collector-base voltage (open emitter)	V_{CBO} max.	80	50	30	V
Collector-emitter voltage ($V_{BE} = 0$)	V_{CES} max.	80	50	30	V
Collector-emitter voltage (open base)	V_{CEO} max.	65	45	30	V
Emitter-base voltage (open collector)	V_{EBO} max.	6	6	5	V
<u>Current</u>					
Collector current (d. c.)	I_C	max.	100		mA
Collector current (peak value)	I_{CM}	max.	200		mA
Emitter current (peak value)	$-I_{EM}$	max.	200		mA
Base current (peak value)	I_{BM}	max.	200		mA
<u>Power dissipation</u>					
Total power dissipation up to $T_{amb} = 25\text{ }^{\circ}\text{C}$	P_{tot}	max.	500		mW
<u>Temperature</u>					
Storage temperature	T_{stg}		-65 to +150		$^{\circ}\text{C}$
Junction temperature	T_j	max.	150		$^{\circ}\text{C}$
THERMAL RESISTANCE					
From junction to ambient in free air	$R_{th\ j-a}$	=	0,25		$^{\circ}\text{C}/\text{mW}$
From junction to case	$R_{th\ j-c}$	=	0,15		$^{\circ}\text{C}/\text{mW}$

CHARACTERISTICS

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

Collector cut-off current

$I_E = 0; V_{CB} = 30\text{ V}$
 $I_E = 0; V_{CB} = 30\text{ V}; T_j = 150\text{ }^\circ\text{C}$

$I_{CBO} < 15\text{ nA}$
 $I_{CBO} < 5\text{ }\mu\text{A}$

Base-emitter voltage 1)

$I_C = 2\text{ mA}; V_{CE} = 5\text{ V}$
 $I_C = 10\text{ mA}; V_{CE} = 5\text{ V}$

V_{BE} typ. 660 mV
 580 to 700 mV
 $V_{BE} < 770\text{ mV}$

Saturation voltage 2)

$I_C = 10\text{ mA}; I_B = 0.5\text{ mA}$

V_{CEsat} typ. 90 mV
 $< 250\text{ mV}$
 V_{BEsat} typ. 700 mV

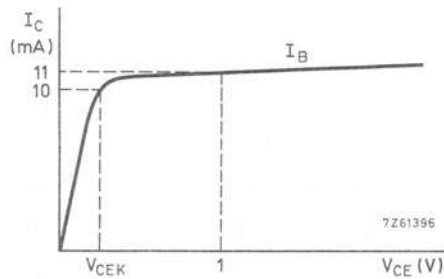
$I_C = 100\text{ mA}; I_B = 5\text{ mA}$

V_{CEsat} typ. 200 mV
 $< 600\text{ mV}$
 V_{BEsat} typ. 900 mV

Knee voltage

$I_C = 10\text{ mA}; I_B = \text{value for which}$
 $I_C = 11\text{ mA at } V_{CE} = 1\text{ V}$

$V_{CEK} < 300\text{ mV}$
 $< 600\text{ mV}$



Collector capacitance at $f = 1\text{ MHz}$

$I_E = I_e = 0; V_{CB} = 10\text{ V}$

C_c typ. 2,5 pF
 $< 4,5\text{ pF}$

Emitter capacitance at $f = 1\text{ MHz}$

$I_C = I_c = 0; V_{EB} = 0,5\text{ V}$

C_e typ. 9 pF

Transition frequency at $f = 35\text{ MHz}$

$I_C = 10\text{ mA}; V_{CE} = 5\text{ V}$

f_T typ. 300 MHz

1) V_{BE} decreases by about $2\text{ mV}/^\circ\text{C}$ with increasing temperature.

2) V_{BEsat} decreases by about $1,7\text{ mV}/^\circ\text{C}$ with increasing temperature.

BC546 to 548

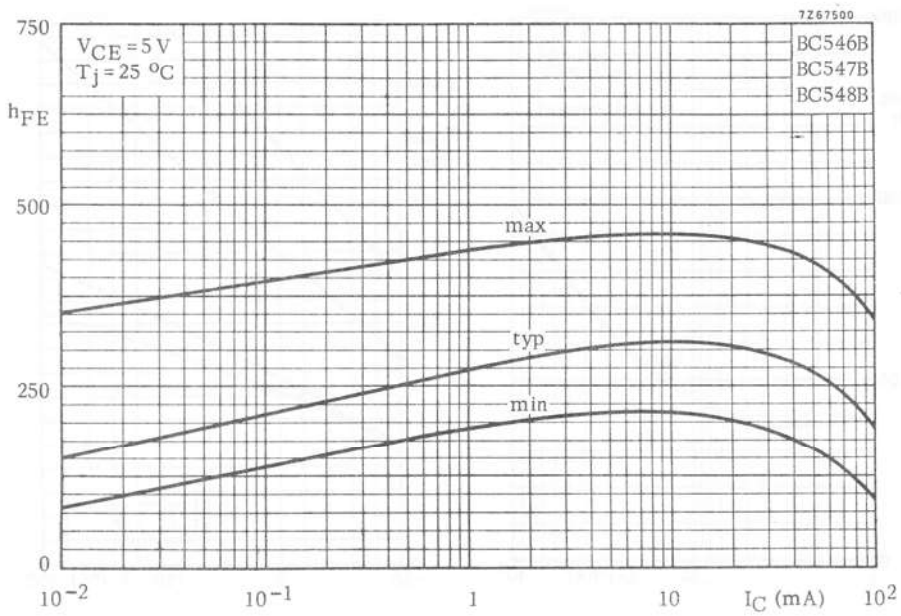
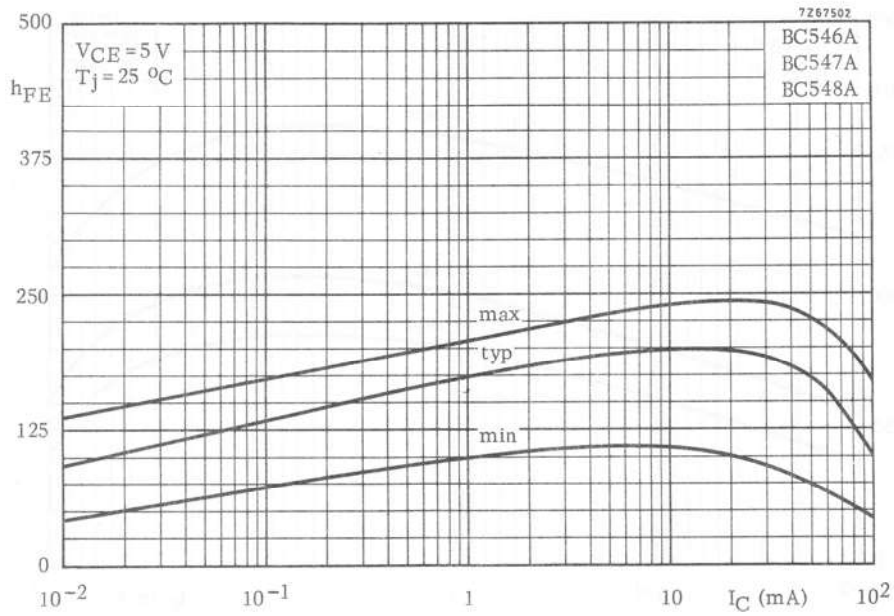
CHARACTERISTICS (continued)

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

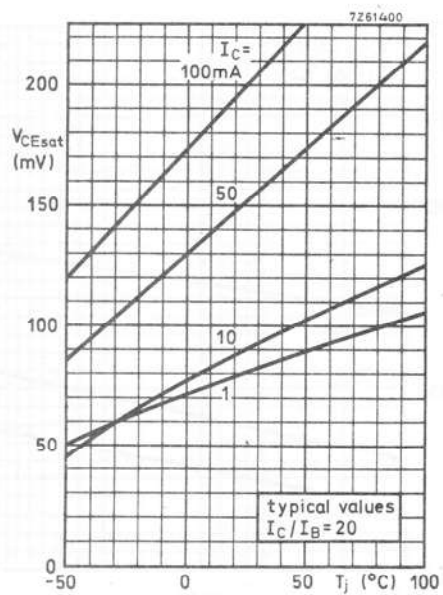
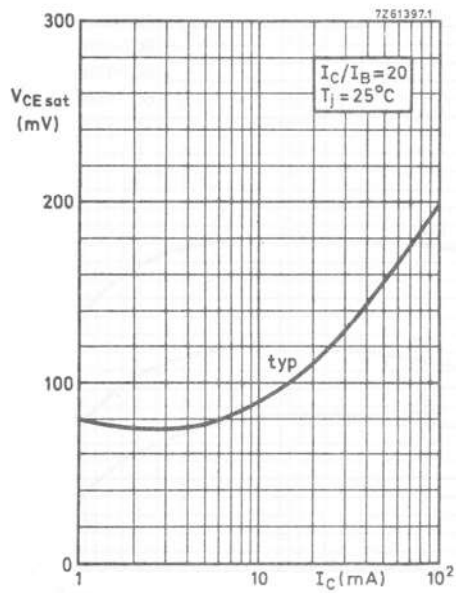
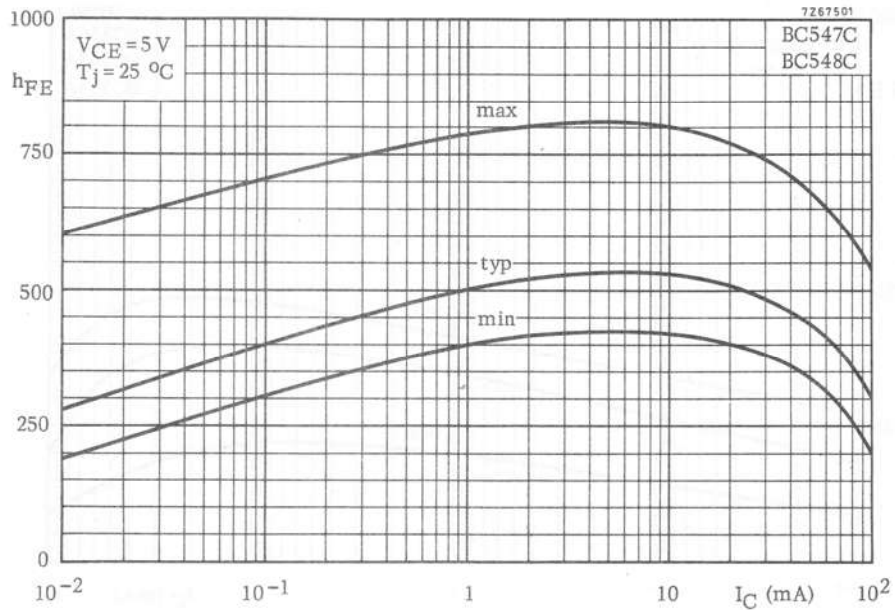
		BC546	BC547	BC548
<u>Small signal current gain</u> at $f = 1\text{ kHz}$				
$I_C = 2\text{ mA}; V_{CE} = 5\text{ V}$		125	125	125
h_{fe}	>	125	125	125
	<	500	900	900
<u>Noise figure</u> at $R_S = 2\text{ k}\Omega$				
$I_C = 200\text{ }\mu\text{A}; V_{CE} = 5\text{ V}$				
$f = 1\text{ kHz}; B = 200\text{ Hz}$				
F	typ.	2	2	2 dB
	<	10	10	10 dB
		BC546A	BC546B	
		BC547A	BC547B	BC547C
		BC548A	BC548B	BC548C
<u>D. C. current gain</u>				
$I_C = 10\text{ }\mu\text{A}; V_{CE} = 5\text{ V}$				
h_{FE}	typ.	90	150	270
	>	110	200	420
$I_C = 2\text{ mA}; V_{CE} = 5\text{ V}$				
h_{FE}	typ.	180	290	520
	<	220	450	800

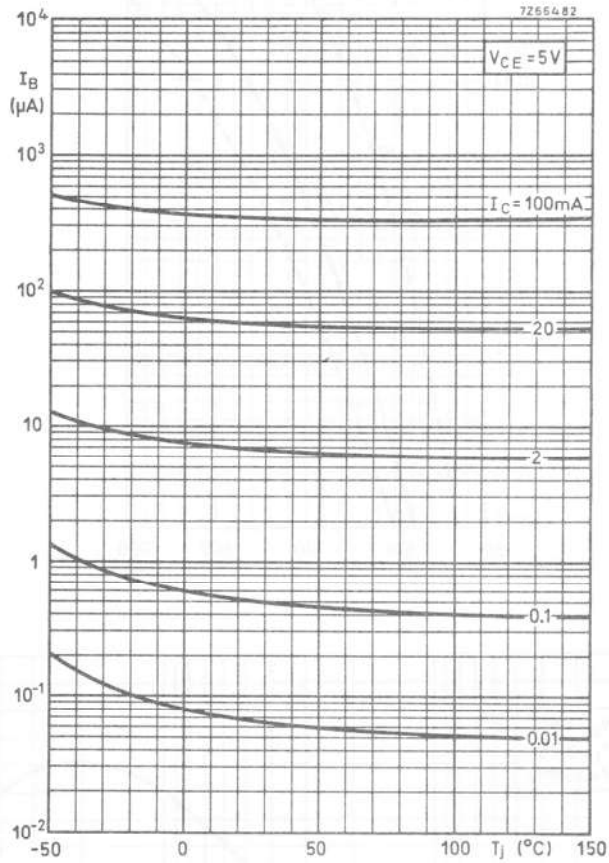


BC546 to 548



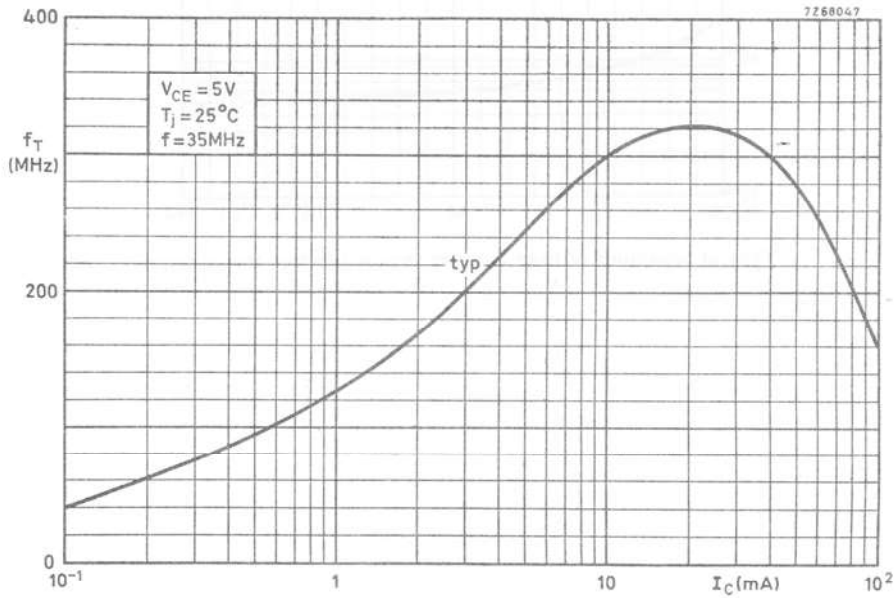
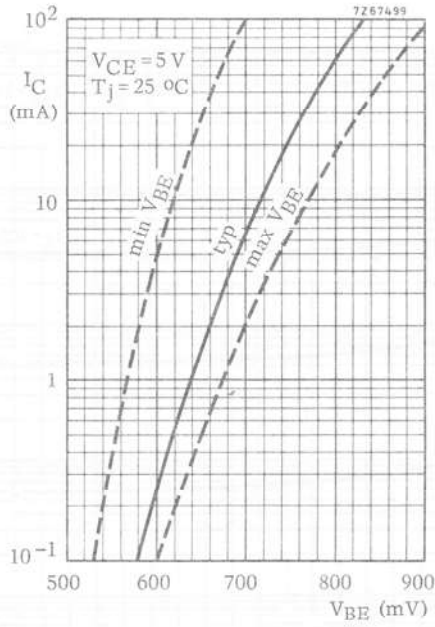
BC546 to 548

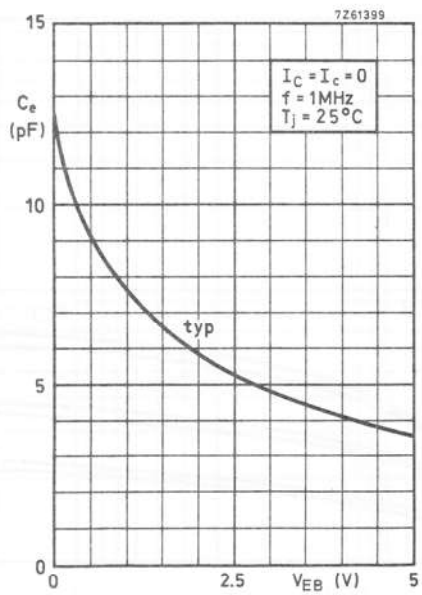
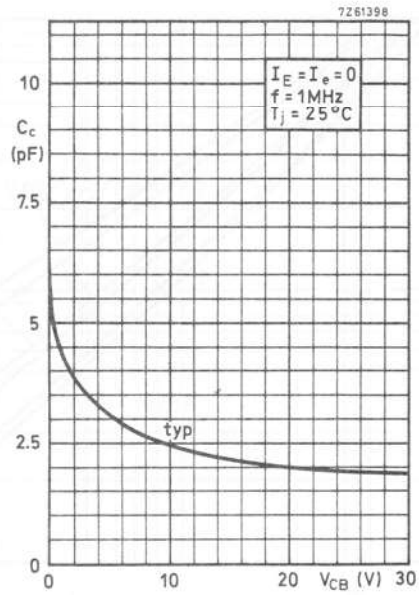




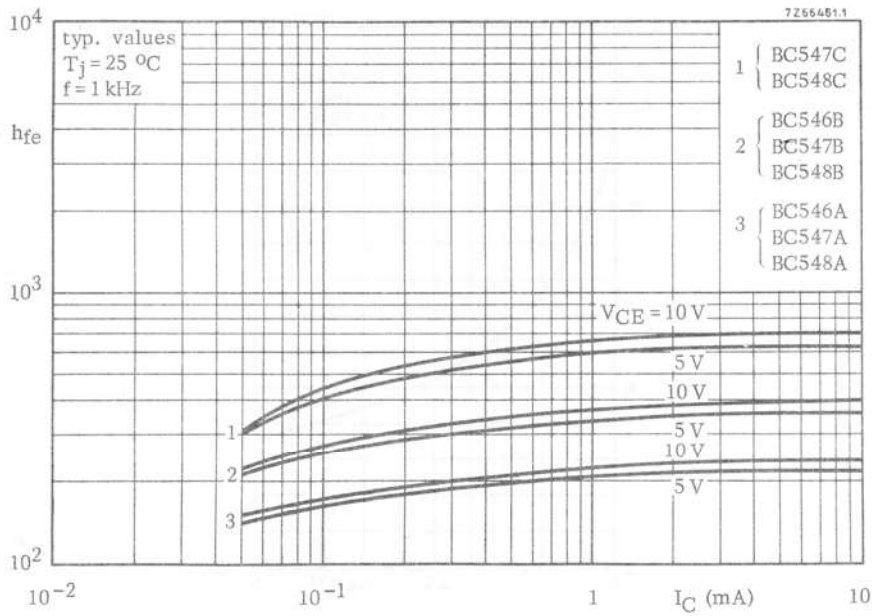
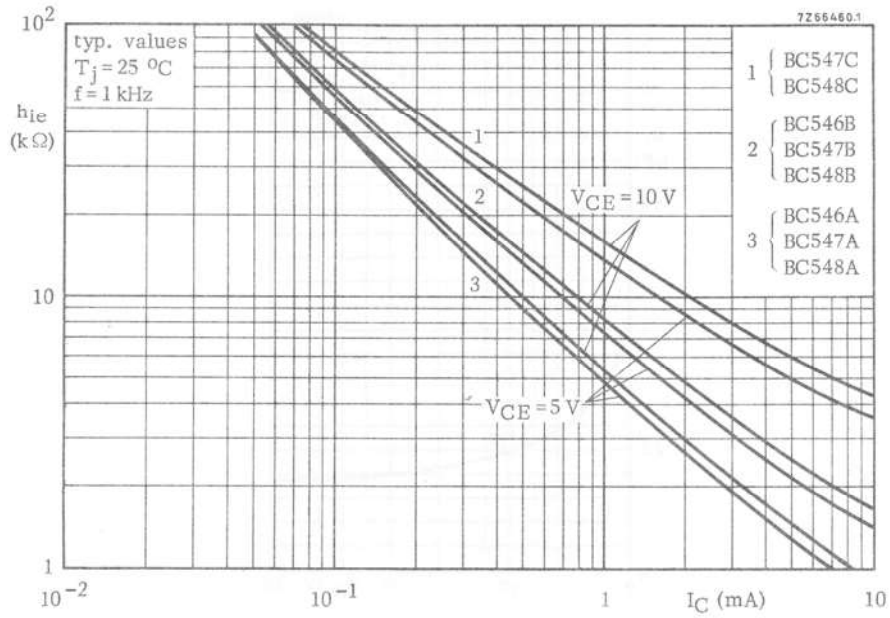
Typical behaviour of base current versus junction temperature

BC546 to 548





BC546 to 548



BC546 to 548

