

357.080

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.

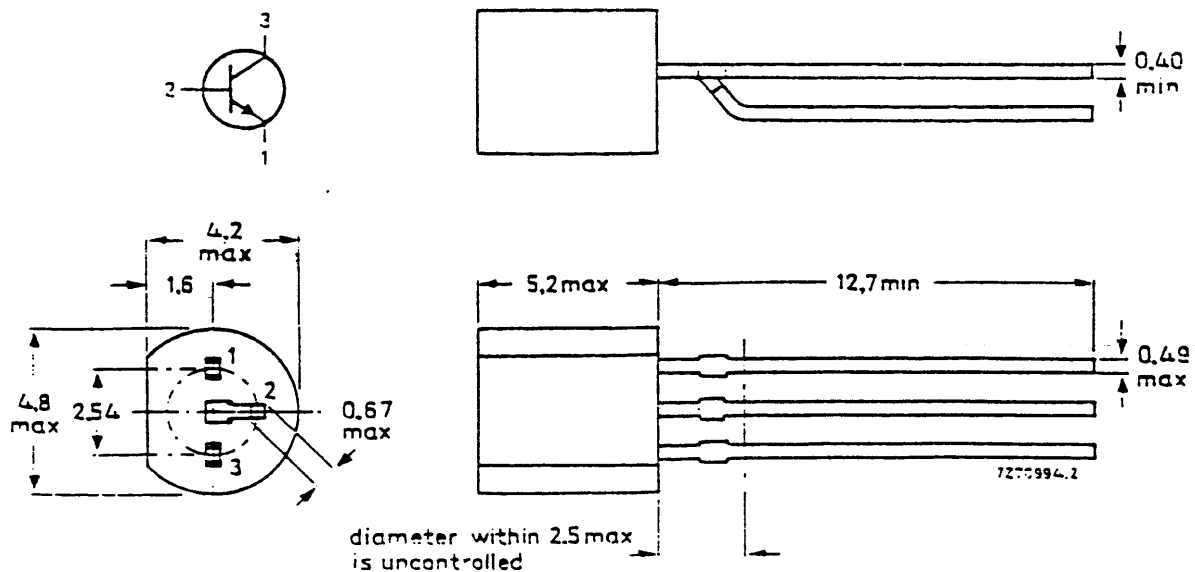
QUICK REFERENCE DATA

		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 $T_{amb} = 25^\circ C$	P_{tot} max.	500	500	500 mW
Junction temperature	T_j max.	150	150	150 $^\circ C$
D.C. current gain	h_{FE}	> 110 < 450	110 800	110 800
Transition frequency	f_T typ.	300	300	300 MHz
Noise figure at $R_S = 2\text{ k}\Omega$	F typ.	2	2	2 dB
		<small>$I_C = 2\text{ mA}; V_{CE} = 5\text{ V}$</small> <small>$I_C = 10\text{ mA}; V_{CE} = 5\text{ V}$</small> <small>$I_C = 200\ \mu A; V_{CE} = 5\text{ V}$</small> <small>$f = 1\text{ kHz}; B = 200\text{ Hz}$</small>		

MECHANICAL DATA

Dimensions in mm

Fig. 1 TO-92 variant.



BC546 to 548

RATINGS

Limiting values in accordance with the Absolute Maximum System (IEC 134)

		BC546	BC547	BC548
Collector-base voltage (open emitter)	V_{CB0}	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_{EBQ}	max. 6	6	5 V
Collector current (d.c.)	I_C	max.	100	π
Collector current (peak value)	I_{CM}	max.	200	π
Emitter current (peak value)	$-I_{EM}$	max.	200	π
Base current (peak value)	I_{BM}	max.	200	π
Total power dissipation up to $T_{amb} = 25\text{ }^\circ\text{C}$	P_{tot}	max.	500	π
Storage temperature	T_{stg}		-65 to +150	$^\circ$
Junction temperature	T_j	max.	150	$^\circ$

THERMAL RESISTANCE

From junction to ambient in free air	R_{thj-a}	=	0,25	K
From junction to case	R_{thj-c}	=	0,15	K

CHARACTERISTICS

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

Collector cut-off current				
$I_E = 0; V_{CB} = 30\text{ V}$	I_{CBO}	<	15	π
$I_E = 0; V_{CB} = 30\text{ V}; T_j = 150\text{ }^\circ\text{C}$	I_{CBO}	<	5	μ
Base-emitter voltage*				
$I_C = 2\text{ mA}; V_{CE} = 5\text{ V}$	V_{BE}	typ.	660	π
			580 to 700	π
$I_C = 10\text{ mA}; V_{CE} = 5\text{ V}$	V_{BE}	<	770	π

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

Saturation voltage*
 $I_C = 10 \text{ mA}; I_B = 0,5 \text{ mA}$

V_{CEsat} typ. 90 mV
 $<$ 250 mV

V_{BEsat} typ. 700 mV

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

V_{CEsat} typ. 200 mV
 $<$ 600 mV

V_{BEsat} typ. 900 mV

Collector capacitance at $f = 1 \text{ MHz}$
 $I_E = I_e = 0; V_{CB} = 10 \text{ V}$

C_c typ. 2,5 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

Small signal current gain at $f = 1 \text{ kHz}$
 $I_C = 2 \text{ mA}; V_{CE} = 5 \text{ V}$

h_{fe} 125 to 900

	BC546	BC547	BC548
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Noise figure at $R_S = 2 \text{ k}\Omega$
 $I_C = 200 \mu\text{A}; V_{CE} = 5 \text{ V}$
 $f = 1 \text{ kHz}; B = 200 \text{ Hz}$

F	typ. 2	2	2 dB
	$<$ 10	10	10 dB

	BC546A	BC546B	
	BC547A	BC547B	BC547C
	BC548A	BC548B	BC548C

D.C. current gain
 $I_C = 10 \mu\text{A}; V_{CE} = 5 \text{ V}$

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

* V_{BEsat} decreases by about 1,7 mV/K with increasing temperature.

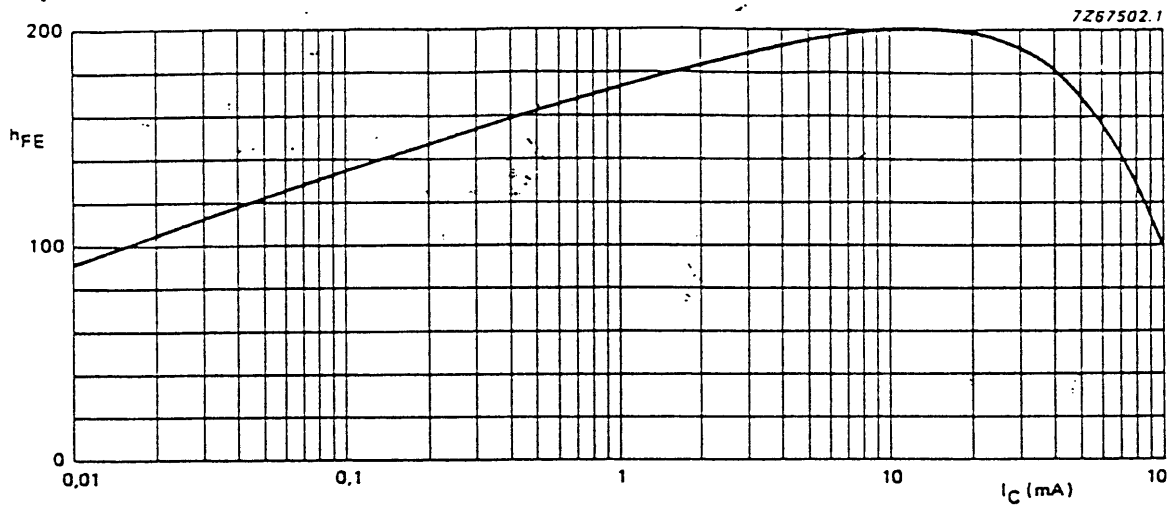


Fig. 2 BC546A, BC547A and BC548A
 $V_{CE} = 5\text{ V}$; $T_j = 25\text{ }^\circ\text{C}$; typical values.

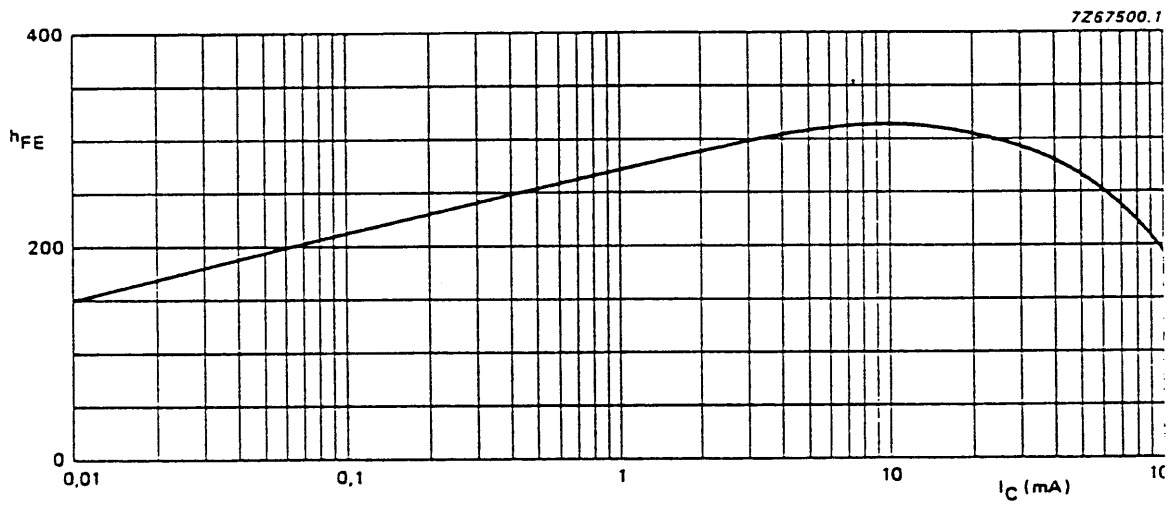


Fig. 3 BC546B, BC547B and BC548B
 $V_{CE} = 5\text{ V}$; $T_j = 25\text{ }^\circ\text{C}$; typical values.

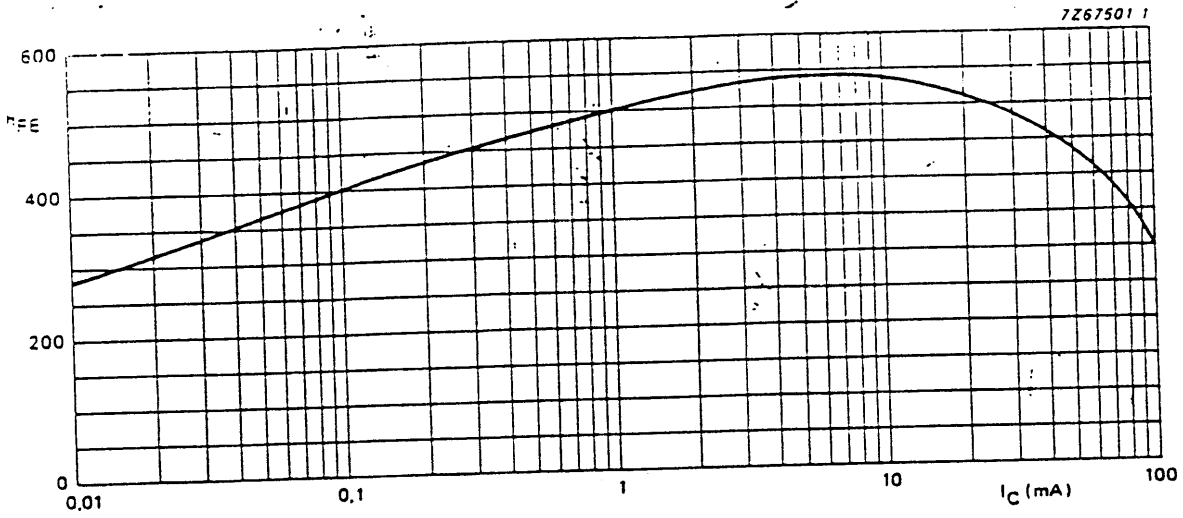


Fig. 4 BC547C and BC548C
 $V_{CE} = 5 \text{ V}; T_j = 25 \text{ }^\circ\text{C};$ typical values.

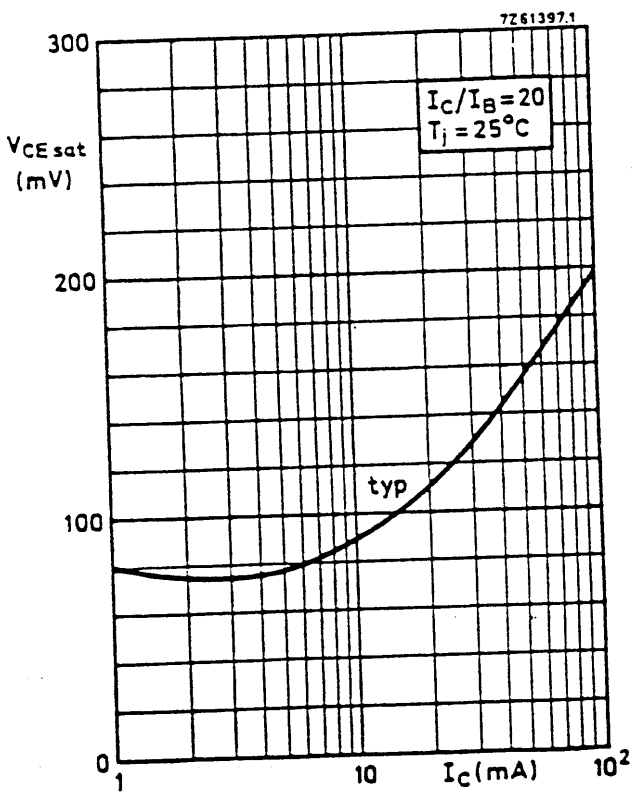


Fig. 5.

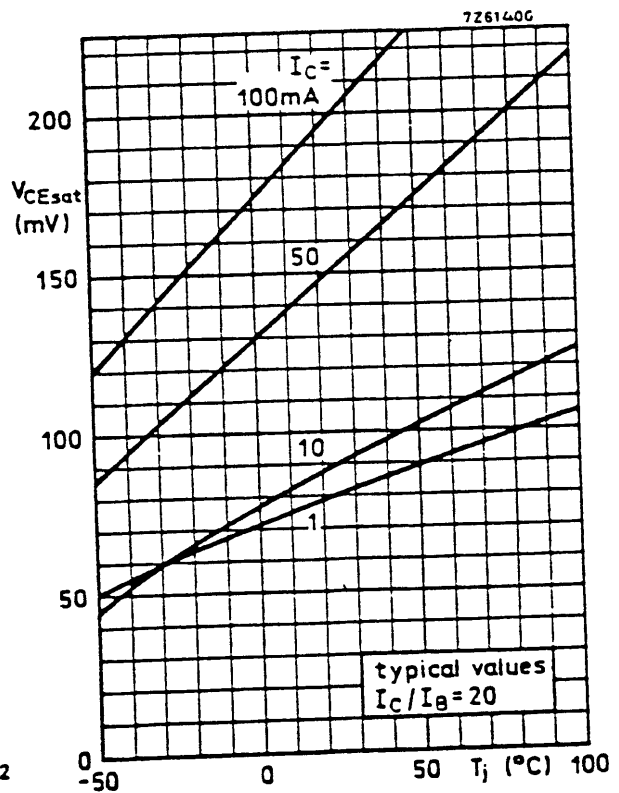


Fig. 6.

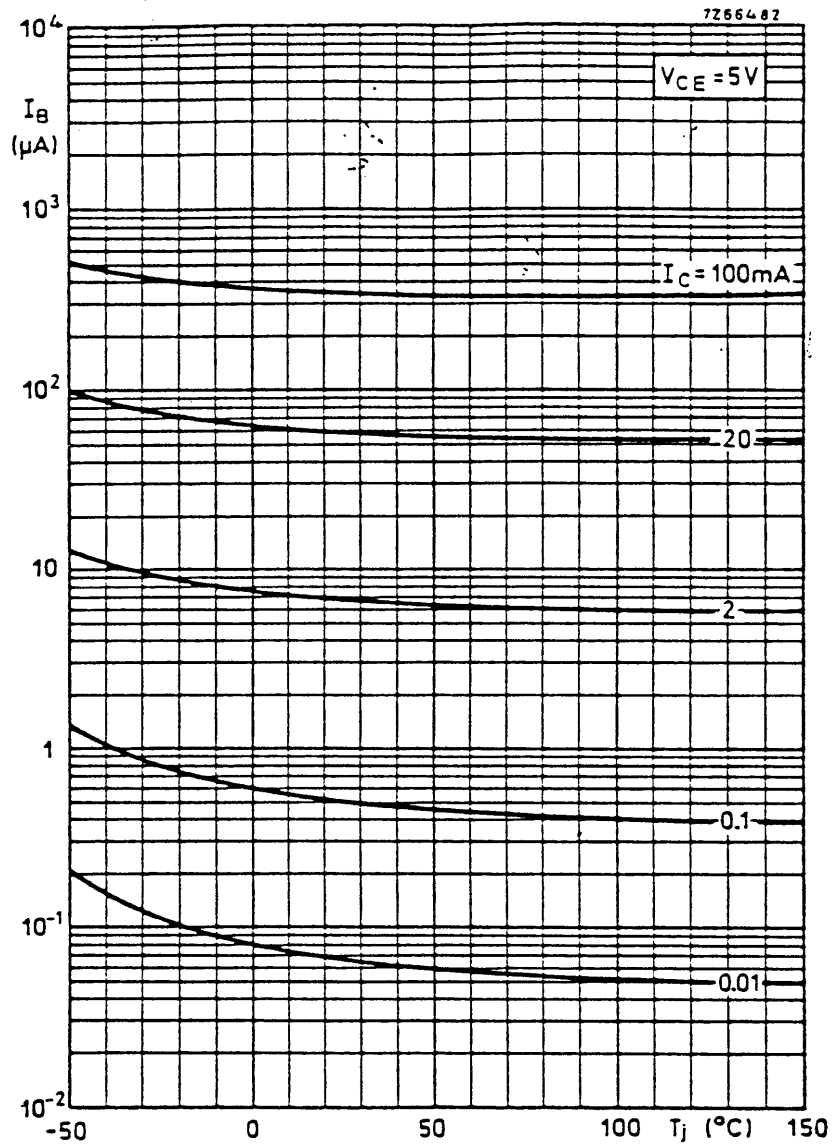


Fig. 7.

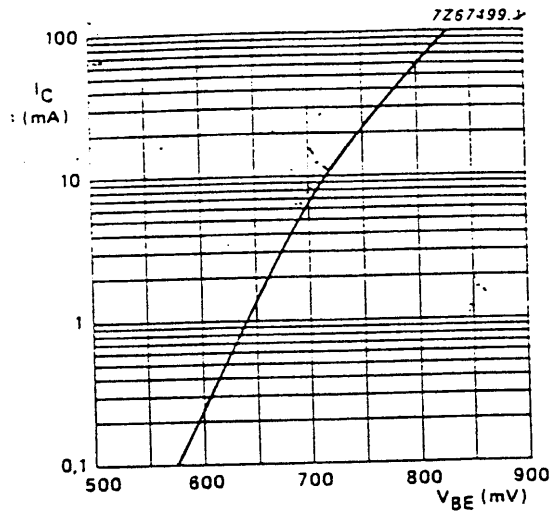


Fig. 8 $V_{CE} = 5 V$; $T_j = 25^\circ C$; typical values.

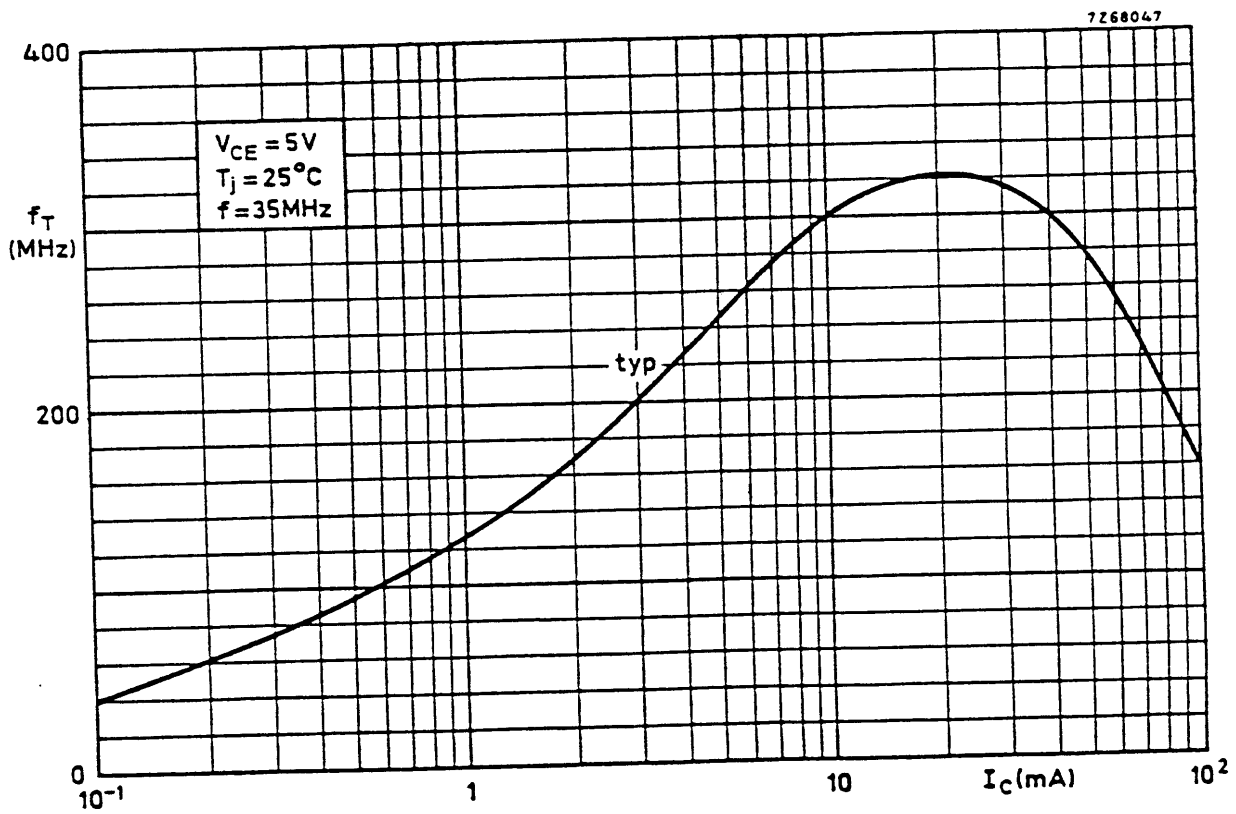


Fig. 9.

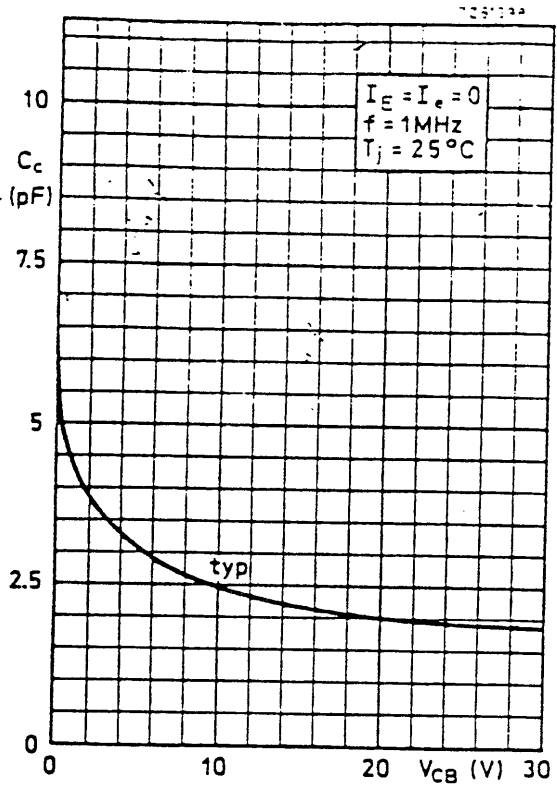


Fig. 10.

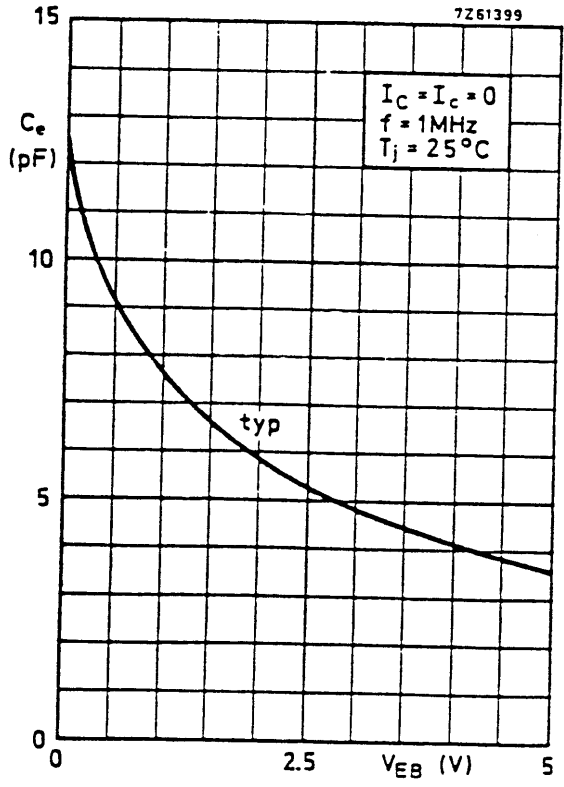


Fig. 11.

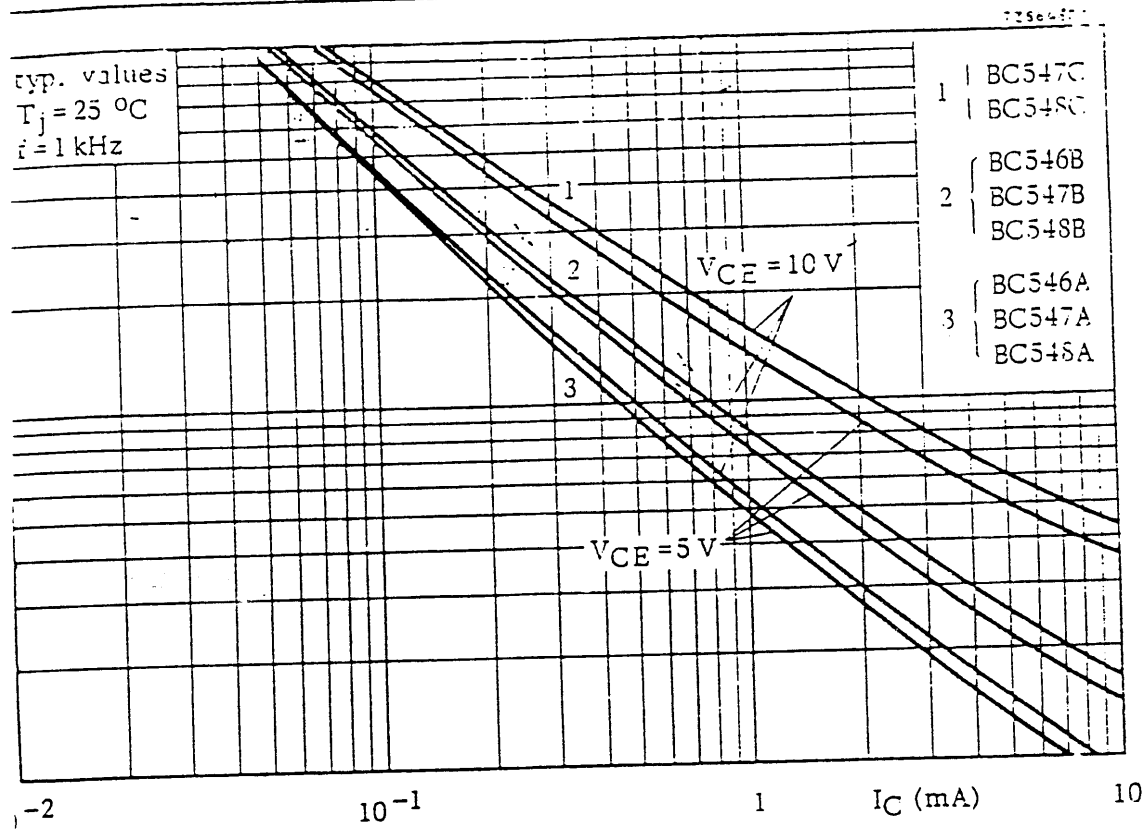


Fig. 12.

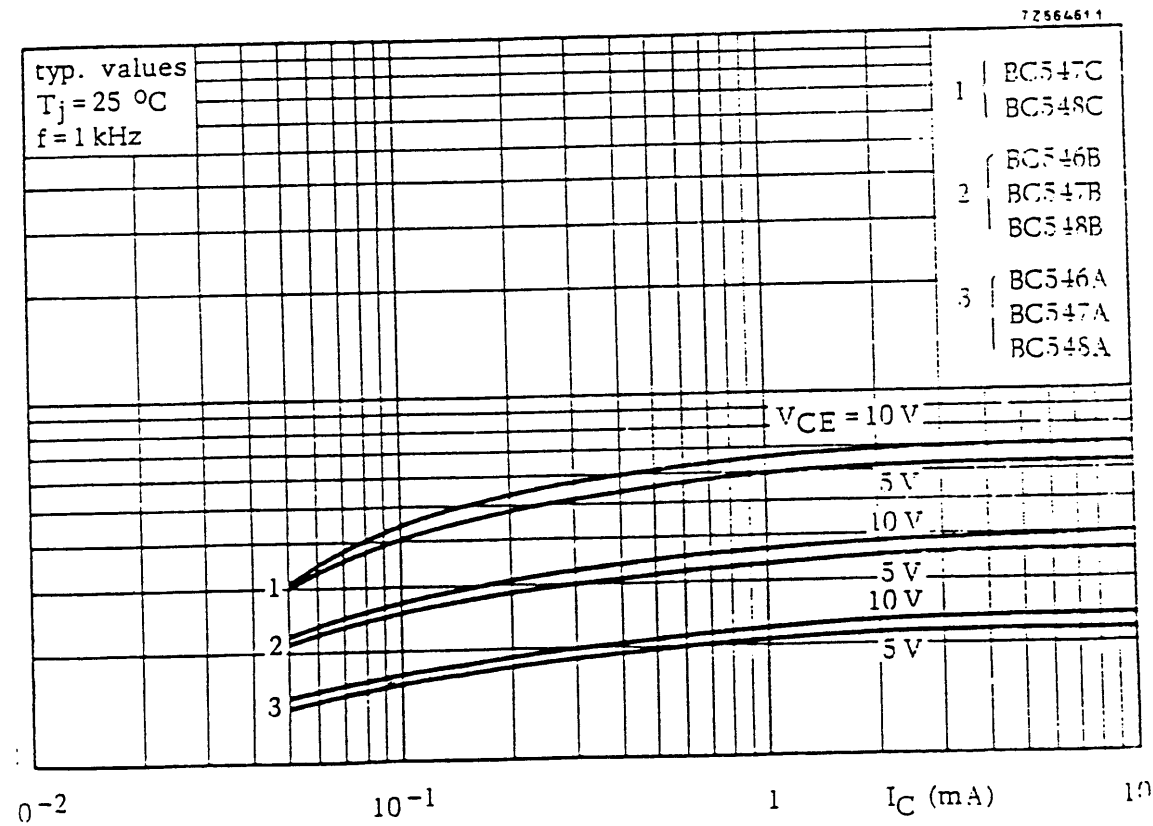


Fig. 13.

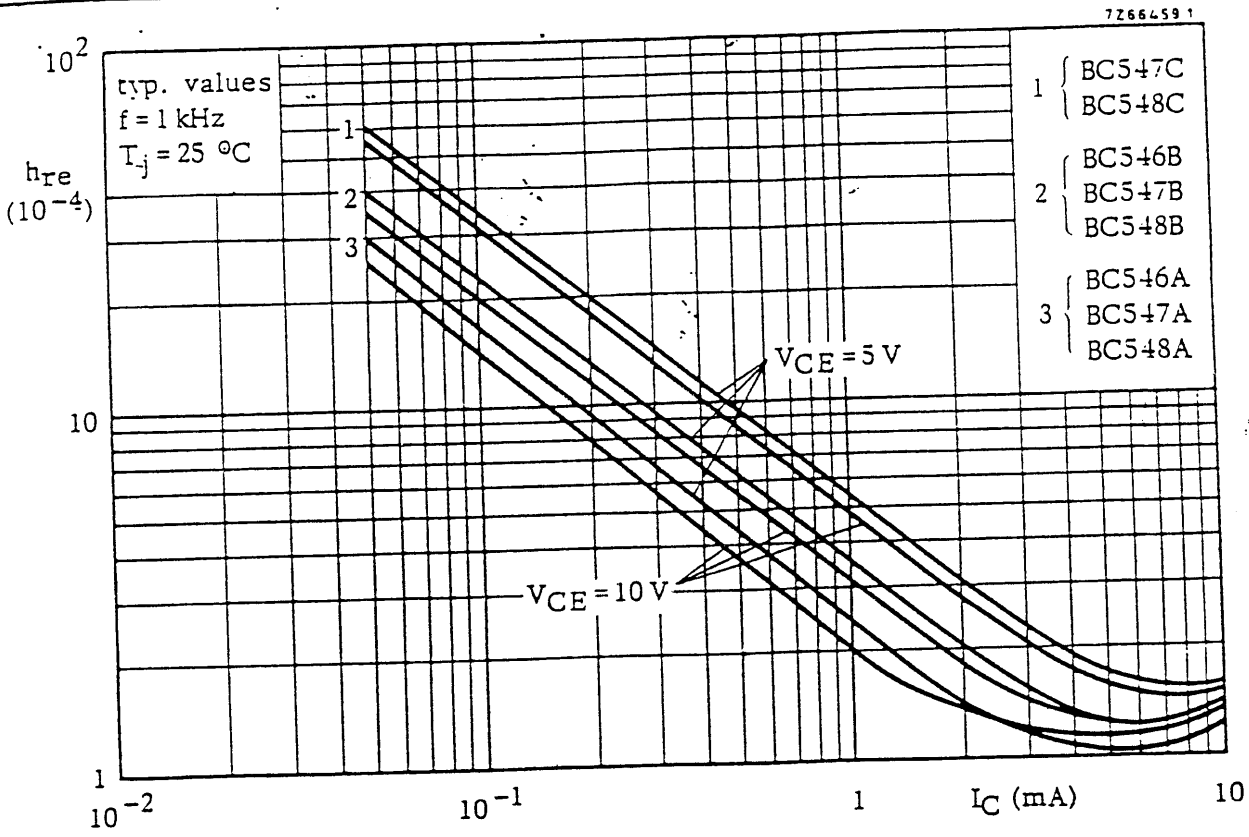


Fig. 14.

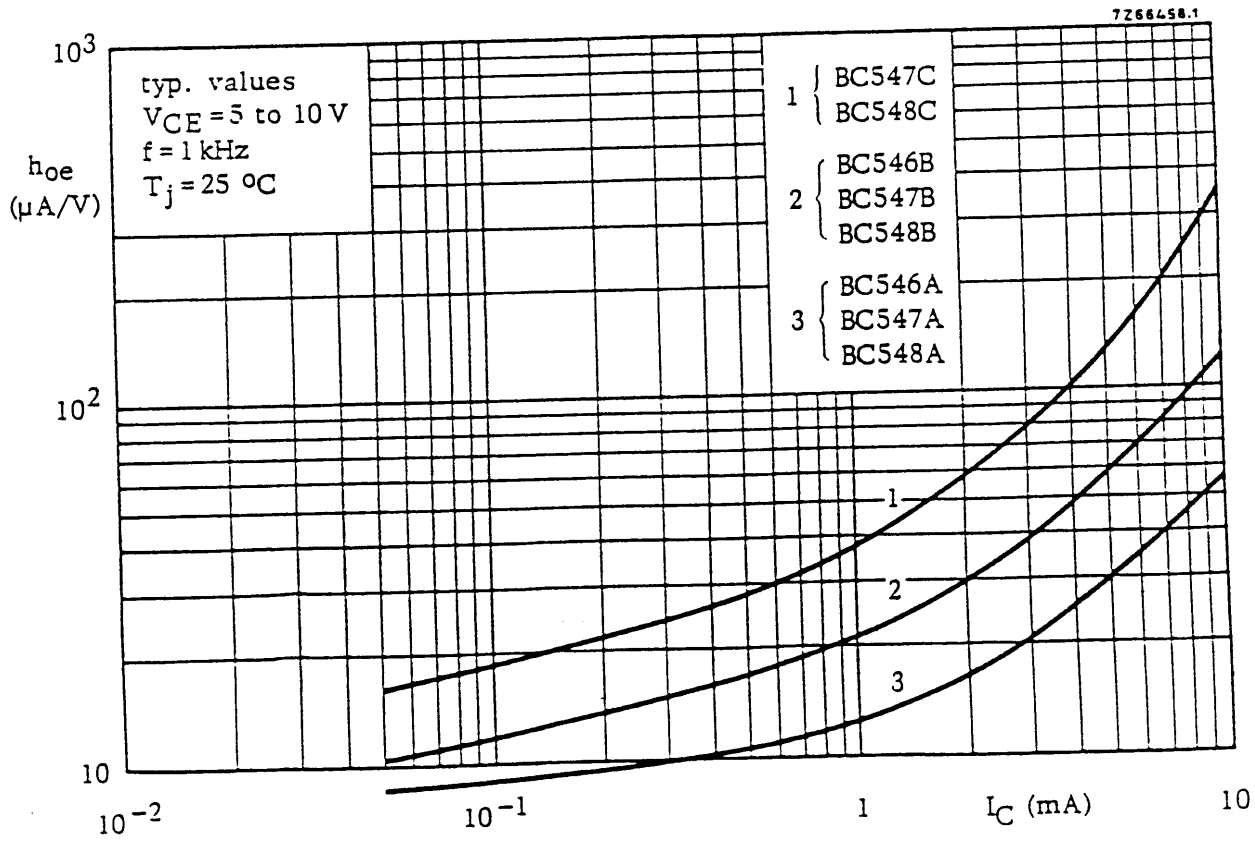


Fig. 15.