SILICON PLANAR EPITAXIAL TRANSISTORS

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

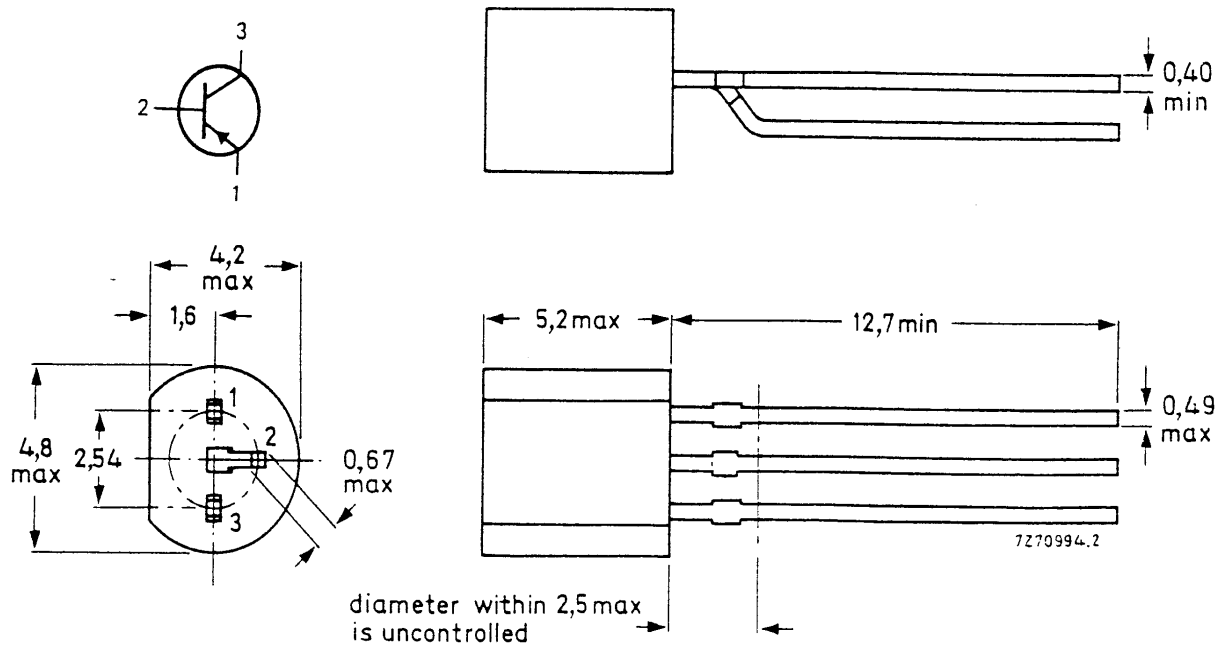
QUICK REFERENCE DATA

			BC556	BC557	BC558	
Collector-emitter voltage (+ V_{BE} = 0 V)	$-V_{CES}$	max.	80	50	30	V
Collector-emitter voltage (open base)	$-V_{CEO}$	max.	65	45	30	V
D.C. current gain						
$-I_C$ = 2 mA; $-V_{CE}$ = 5 V	h_{FE}	>	75	75	75	
		<	475	800	800	
Collector current (peak value)	$-I_{CM}$	max.		200		mA
Total power dissipation						
up to T_{amb} = 25 °C	P_{tot}	max.		500		mW
Junction temperature	T_j	max.		150		°C
Transition frequency at f = 35 MHz						
$-I_C$ = 10 mA; $-V_{CE}$ = 5 V	f_T	typ.		200		MHz
Noise figure at R_S = 2 kΩ						
$-I_C$ = 200 μA; $-V_{CE}$ = 5 V						
f = 1 kHz; B = 200 Hz	F	typ.		2		dB

MECHANICAL DATA

Dimensions in mm

Fig. 1 TO-92 variant.



RATINGS

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

			BC556	BC557	BC558	
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.	5	5	5	V
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
Total power dissipation up to T_{amb} = 25 °C	P_{tot}	max.		500		mW
Storage temperature	T_{stg}			−65 to + 150		°C
Junction temperature	T_j	max.		150		°C

THERMAL RESISTANCE

From junction to ambient in free air	$R_{th\ j\text{-}a}$	=	250	K/W
From junction to case	$R_{th\ j\text{-}c}$	=	150	K/W

CHARACTERISTICS

T_j = 25 °C unless otherwise specified.

Collector cut-off current				
I_E = 0; $-V_{CB}$ = 30 V; T_j = 25 °C	$-I_{CBO}$	typ.	1	nA
		<	15	nA
T_j = 150 °C	$-I_{CBO}$	<	4	μA
Base-emitter voltage*				
$-I_C$ = 2 mA; $-V_{CE}$ = 5 V	$-V_{BE}$	typ.	650	mV
			600 to 750	mV
$-I_C$ = 10 mA; $-V_{CE}$ = 5 V	$-V_{BE}$	<	820	mV
Saturation voltages**				
$-I_C$ = 10 mA; $-I_B$ = 0,5 mA	$-V_{CEsat}$	typ.	60	mV
		<	300	mV
	$-V_{BEsat}$	typ.	750	mV
$-I_C$ = 100 mA; $-I_B$ = 5 mA	$-V_{CEsat}$	typ.	180	mV
		<	650	mV
	$-V_{BEsat}$	typ.	930	mV

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

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

Collector capacitance at f = 1 MHz $I_E = I_e = 0$; $-V_{CE} = 10$ V	C_c	typ.	4	pF
Transition frequency at f = 35 MHz $-I_C = 10$ mA; $-V_{CE} = 5$ V	f_T	typ.	200	MHz
Small-signal current gain at f = 1 kHz $-I_C = 2$ mA; $-V_{CE} = 5$ V	h_{fe}		75 to 900	
Noise figure at $R_S = 2$ kΩ $-I_C = 200$ μA; $-V_{CE} = 5$ V f = 1 kHz; B = 200 Hz	F	typ. <	2 10	dB dB

			BC556	BC557 BC558	BC556A BC557A BC558A	BC556B BC557B BC558B	BC557C BC558C
D.C. current gain $-I_C = 2$ mA; $-V_{CE} = 5$ V	h_{FE}	>	75	75	125	220	420
		<	475	800	250	475	800

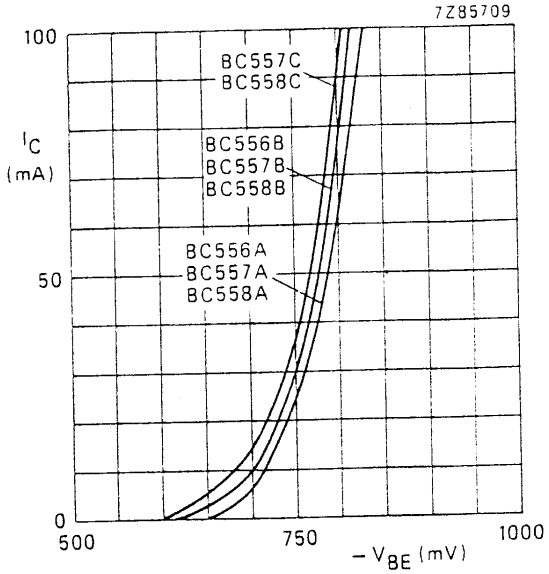


Fig. 2 $-V_{CE}$ = 5 V; T_j = 25 °C.

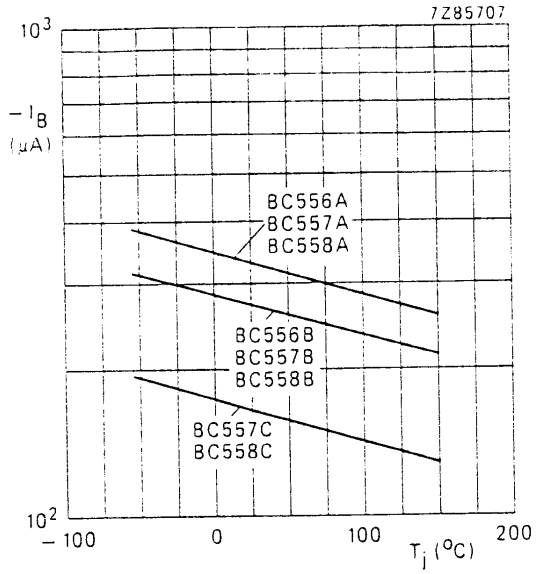


Fig. 3 $-V_{CE}$ = 5 V; I_C = 50 mA.

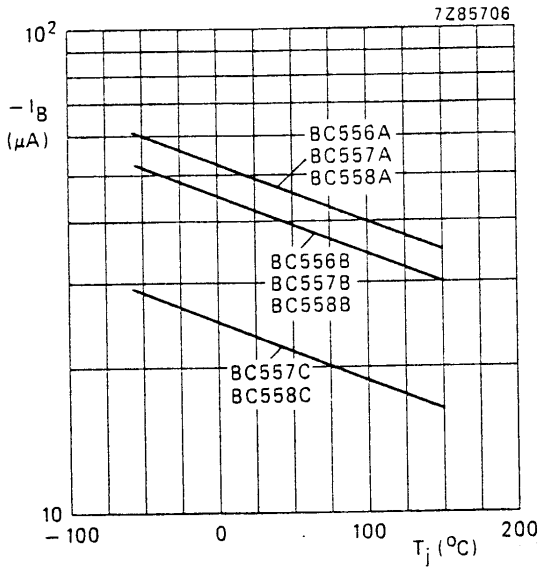


Fig. 4 $-V_{CE}$ = 5 V; I_C = 10 mA.

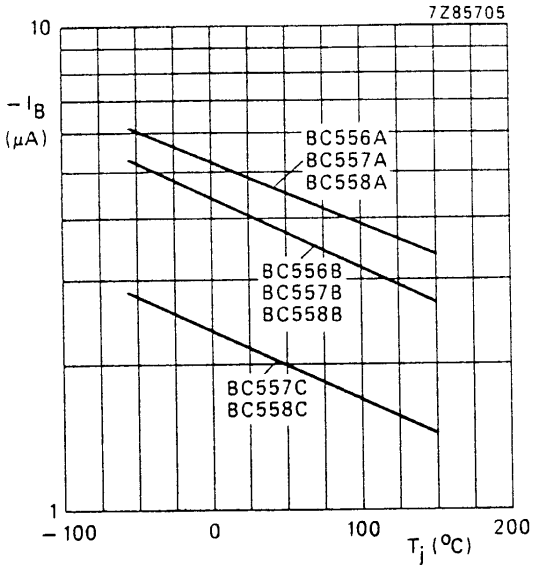


Fig. 5 $-V_{CE}$ = 5 V; I_C = 1 mA.

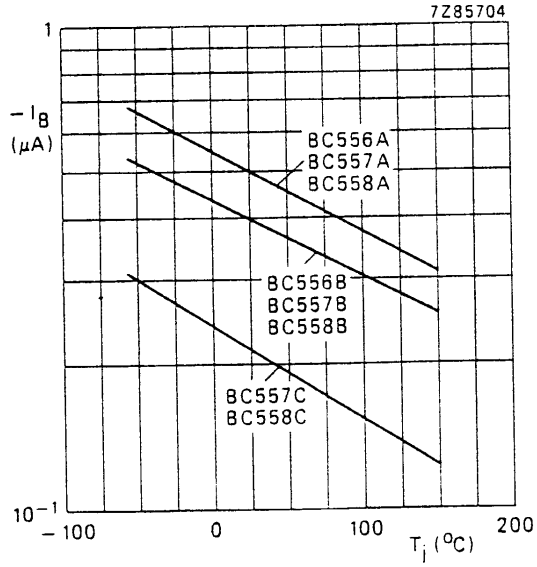


Fig. 6 $-V_{CE}$ = 5 V; I_C = 0,1 mA.

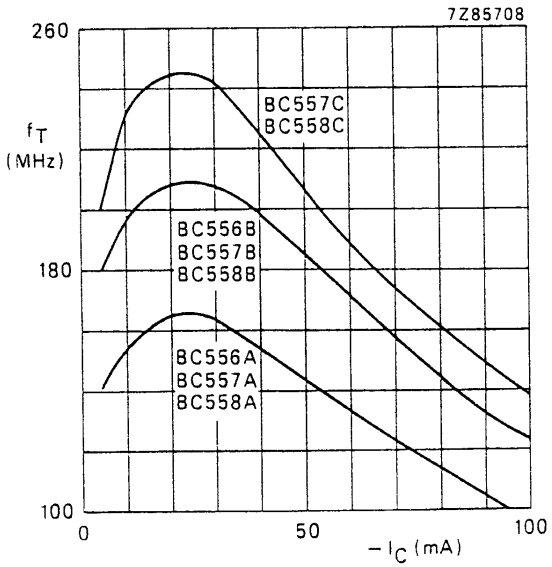


Fig. 7 $-V_{CE}$ = 5 V; T_j = 25 °C; f = 35 MHz.

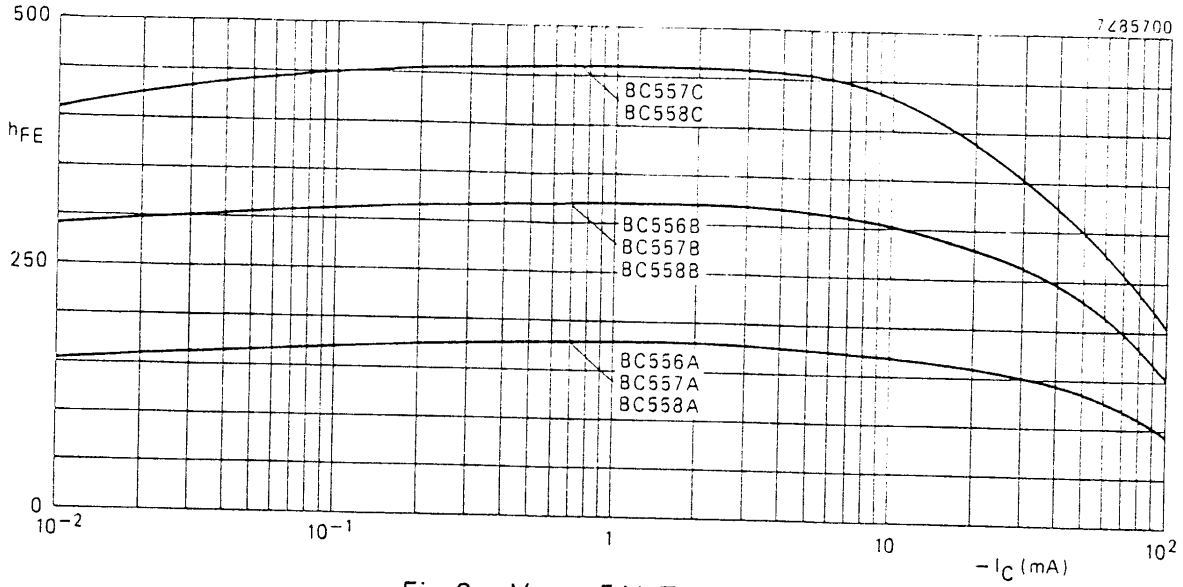


Fig. 8 $-V_{CE} = 5$ V; $T_j = 25$ °C.

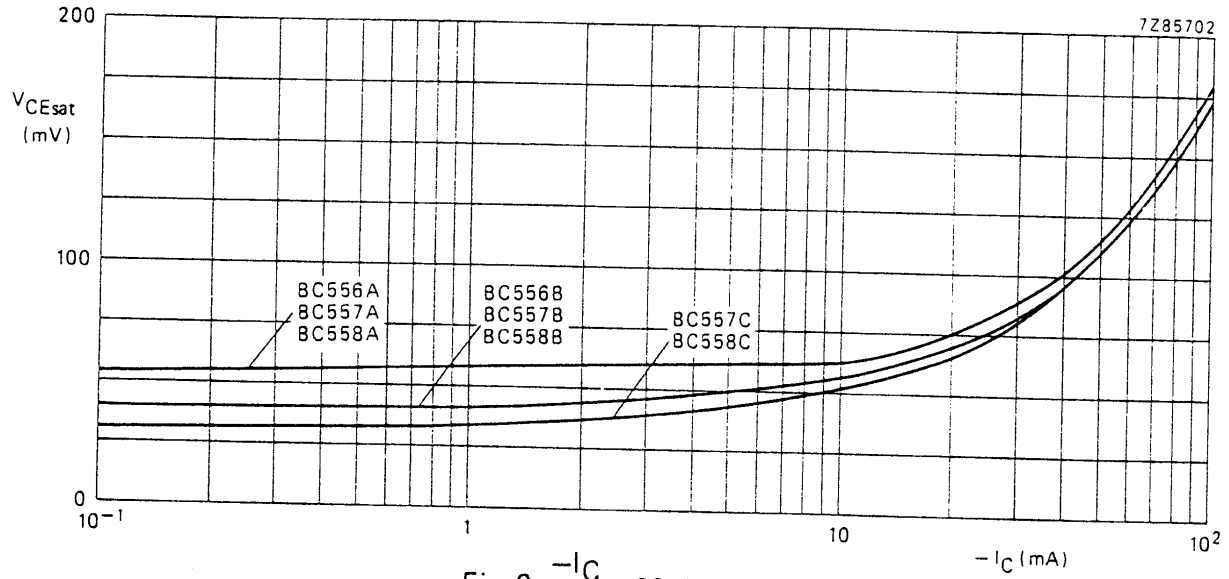


Fig. 9 $\frac{-I_C}{-I_B} = 20$; $T_j = 25$ °C.

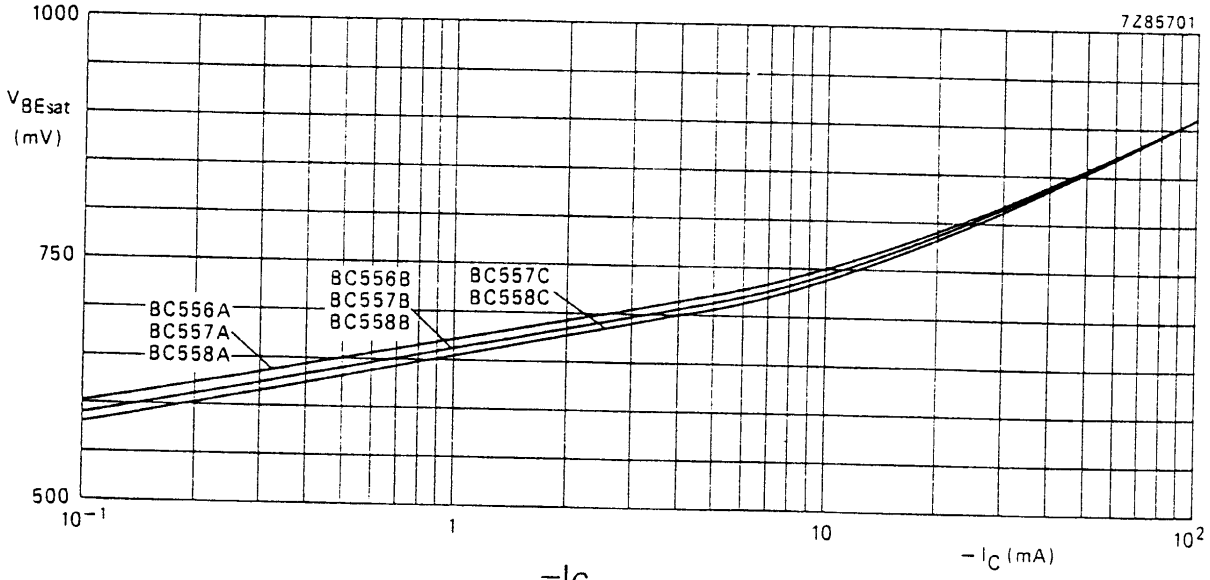


Fig. 10 $\frac{-I_C}{-I_B} = 20$; $T_j = 25$ °C.

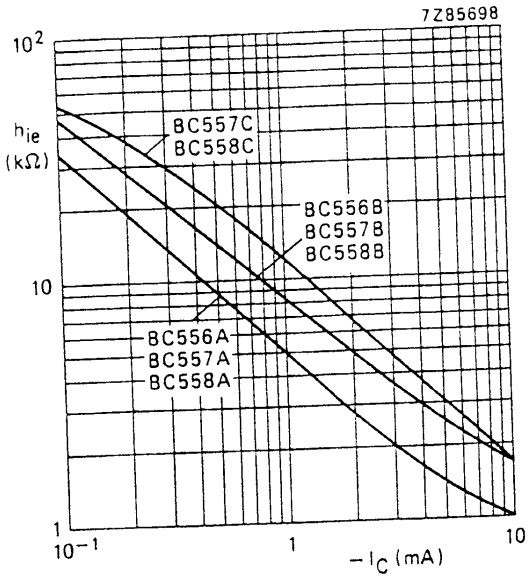


Fig. 11.

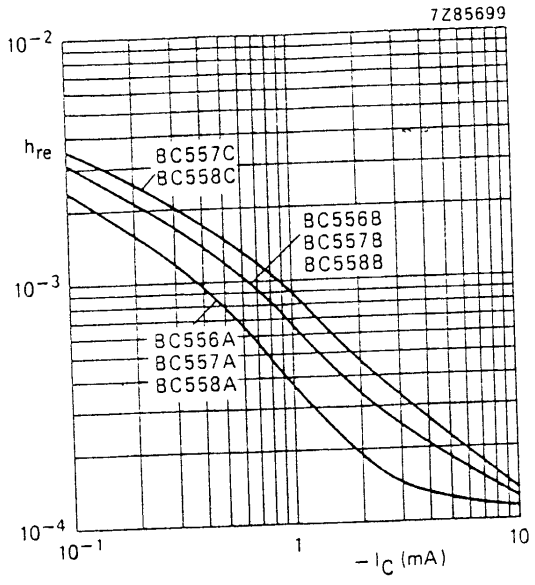


Fig. 12.

For Figs 11, 12, 13 and 14 the following conditions apply: $-V_{CE}$ = 5 V; f = 1 kHz; T_j = 25 °C.

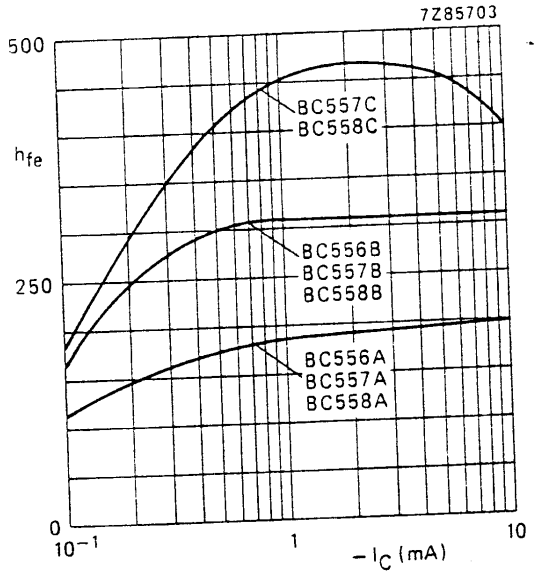


Fig. 13.

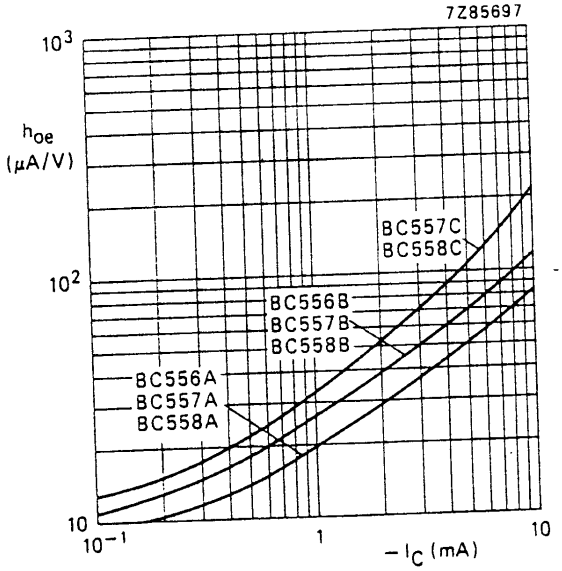


Fig. 14.

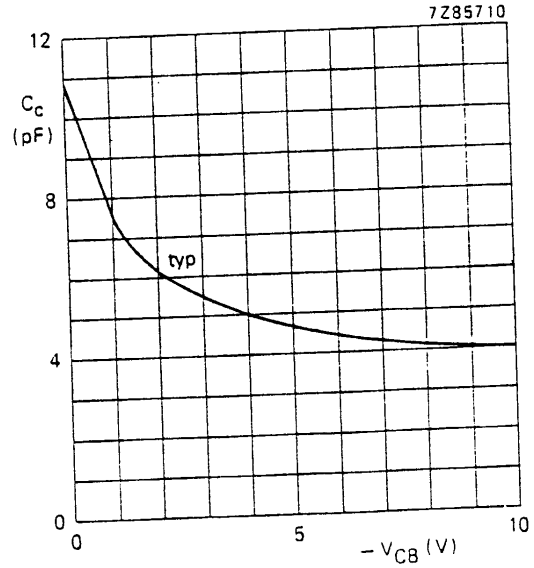


Fig. 15 f = 1 MHz; T_j = 25 °C.