SILICON PLANAR EPITAXIAL TRANSISTOR

N-P-N transistor in a plastic TO-92 envelope primarily intended for use in active probes, frequency multipliers and linear amplifiers.

QUICK REFERENCE DATA

Collector-base voltage (open emitter)	V_{CBO}	max.	40 V
Collector-emitter voltage (open base)	V_{CEO}	max.	15 V
Collector current (peak value)	I_{CM}	max.	500 mA
Total power dissipation up to T_{amb} = 25 °C	P_{tot}	max.	500 mW
D.C. current I_C = 10 mA; V_{CE} = 1 V	h_{FE}	>	40
Transition frequency at f = 100 MHz I_C = 10 mA; V_{CE} = 10 V	f_T	>	500 MHz

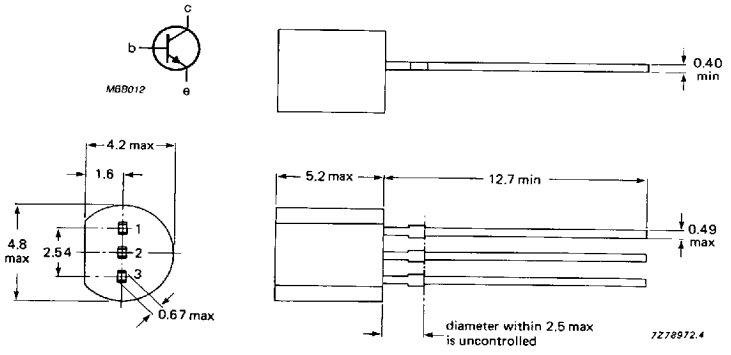
MECHANICAL DATA

Dimensions in mm

Fig. 1 TO-92.

Pinning

1 = emitter
2 = base
3 = collector



Capability approved to CECC NECC-C-002

RATINGS

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

Collector-base voltage (open emitter)	V_{CBO}	max.	40	V
Collector-emitter voltage (V_{BE} = 0)	V_{CES}	max.	40	V
Collector-emitter voltage (open base)	V_{CEO}	max.	15	V
Emitter-base voltage (open collector)	V_{EBO}	max.	4,5	V
Collector current (peak value; t_p = 10 μs)	I_{CM}	max.	500	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

CHARACTERISTICS

T_{amb} = 25 °C unless otherwise specified

Collector cut-off current				
I_E = 0; V_{CB} = 20 V	I_{CBO}	<	400	nA
I_E = 0; V_{CB} = 20 V; T_j = 125 °C	I_{CBO}	<	30	μA
Emitter cut-off current				
I_C = 0; V_{EB} = 2 V	I_{EBO}	<	100	nA
Saturation voltage				
I_C = 10 mA; I_B = 1 mA	V_{CEsat}	<	0,25	V
	V_{BEsat}	0,70 to	0,85	V
Knee voltage				
I_C = 45 mA; I_B = value for which I_C = 50 mA at V_{CE} = 2 V	V_{CEK}	<	0,8	V
D.C. current gain				
I_C = 10 mA; V_{CE} = 1 V	h_{FE}	>	40	
Transition frequency at f = 100 MHz				
I_C = 10 mA; V_{CE} = 10 V	f_T	>	500	MHz
I_C = 40 mA; V_{CE} = 10 V	f_T	>	490	MHz
Collector capacitance at f = 1 MHz				
$I_E = I_e$ = 0; V_{CB} = 5 V	C_c	<	4	pF
Emitter capacitance at f = 1 MHz				
$I_C = I_c$ = 0; V_{EB} = 1 V	C_e	<	4,5	pF
Maximum unilateral power gain (y_{re} assumed to be zero)				
$G_{UM} = 10 \log \frac{\lvert y_{fe} \rvert^2}{4 g_{ie} g_{oe}}$				
I_C = 10 mA; V_{CE} = 10 V; f = 200 MHz	G_{UM}	typ.	19	dB

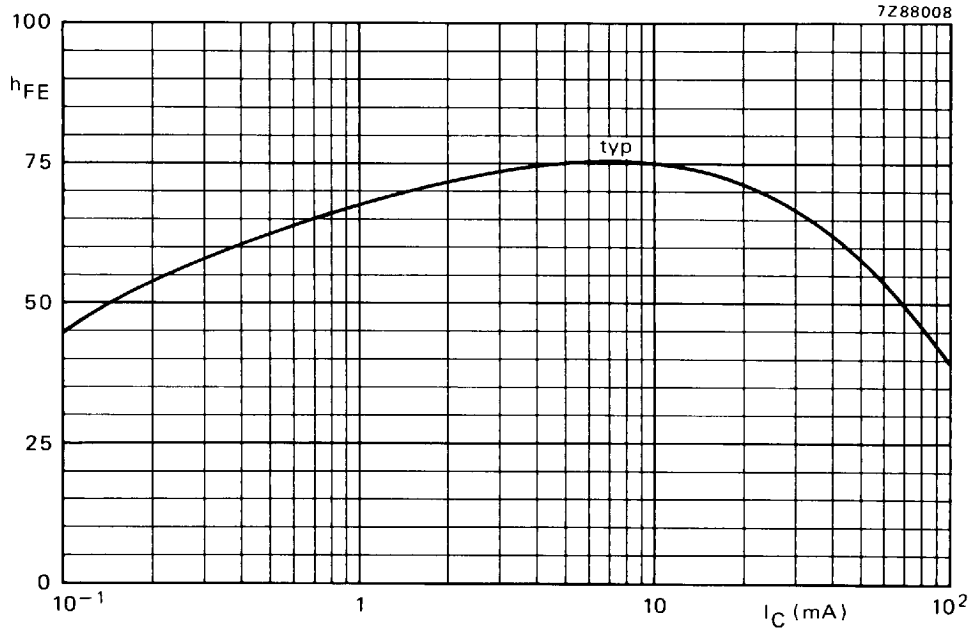


Fig. 2 V_{CE} = 1 V; T_j = 25 °C.

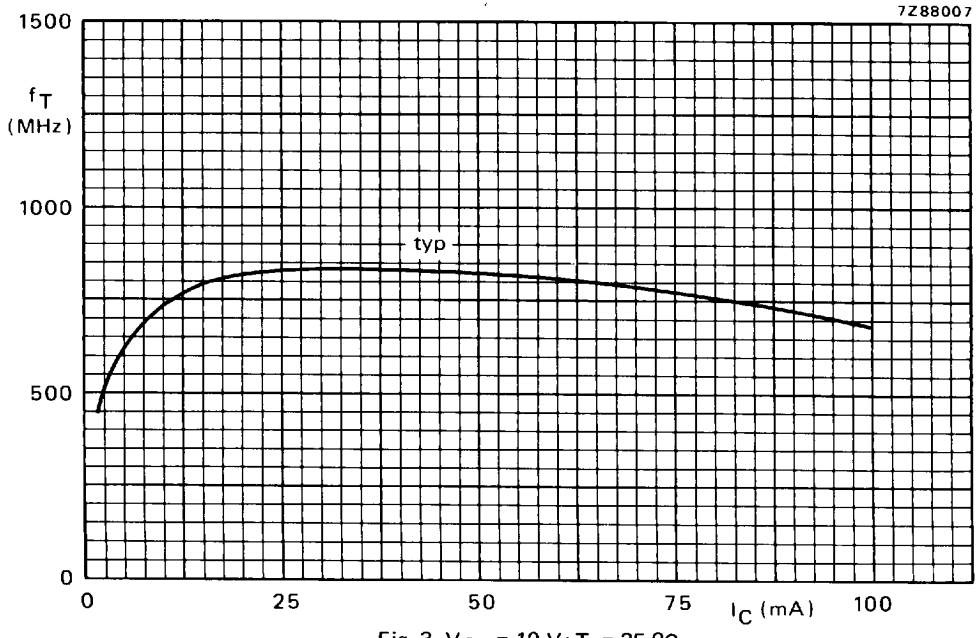


Fig. 3 V_{CE} = 10 V; T_j = 25 °C.

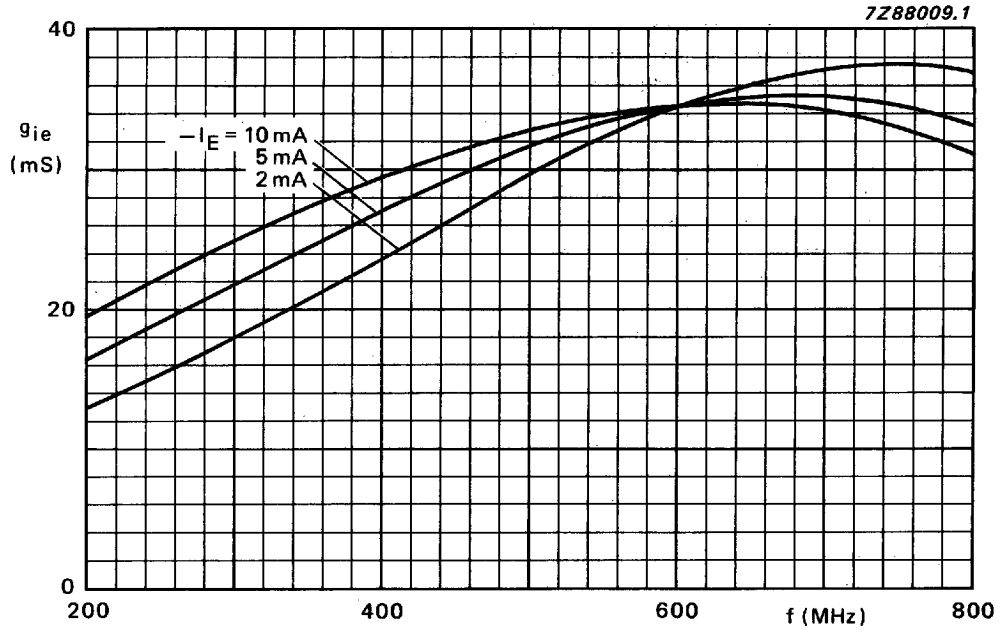


Fig. 4 V_{CB} = 10 V; T_{amb} = 25 °C; typical values.

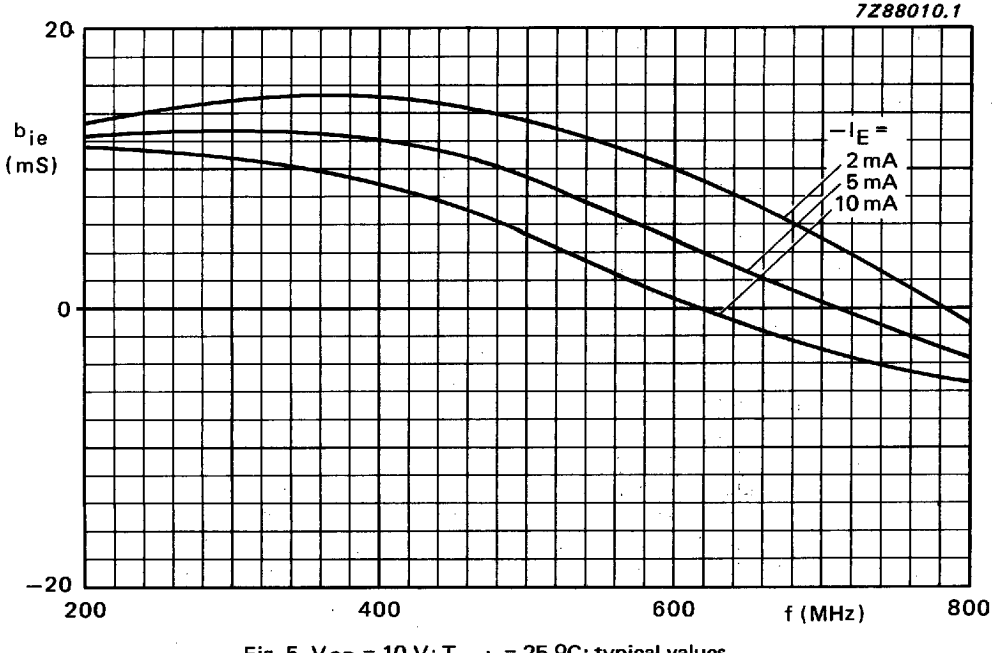


Fig. 5 V_{CB} = 10 V; T_{amb} = 25 °C; typical values.

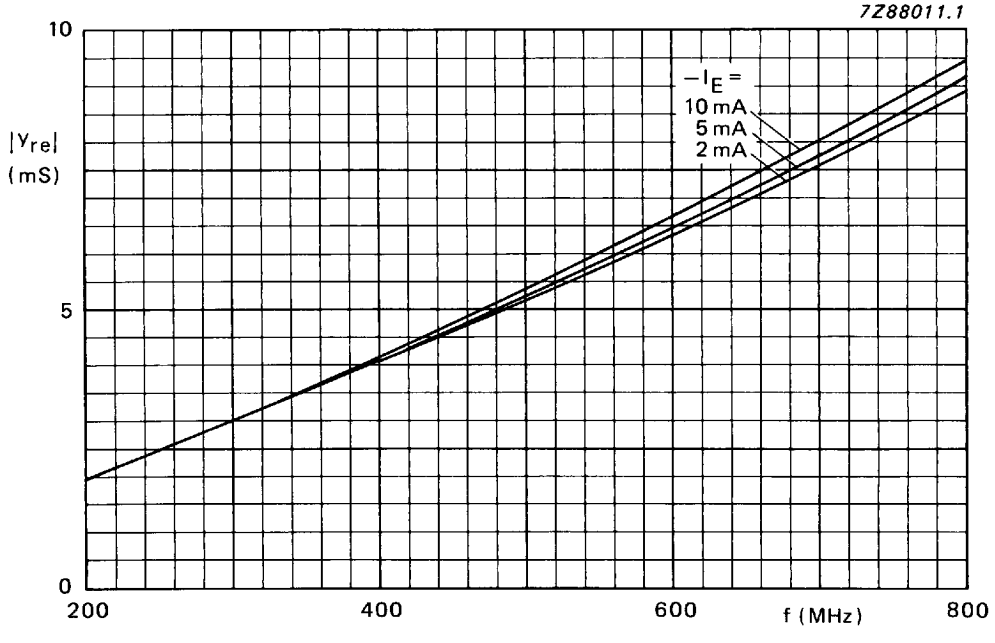


Fig. 6 V_{CB} = 10 V; T_{amb} = 25 °C; typical values.

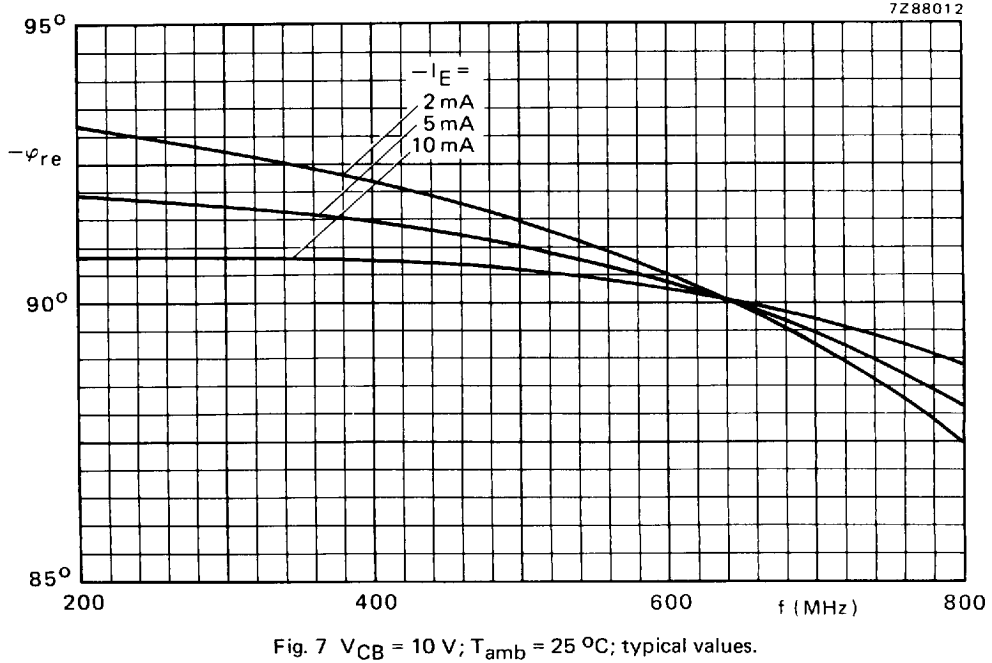


Fig. 7 V_{CB} = 10 V; T_{amb} = 25 °C; typical values.

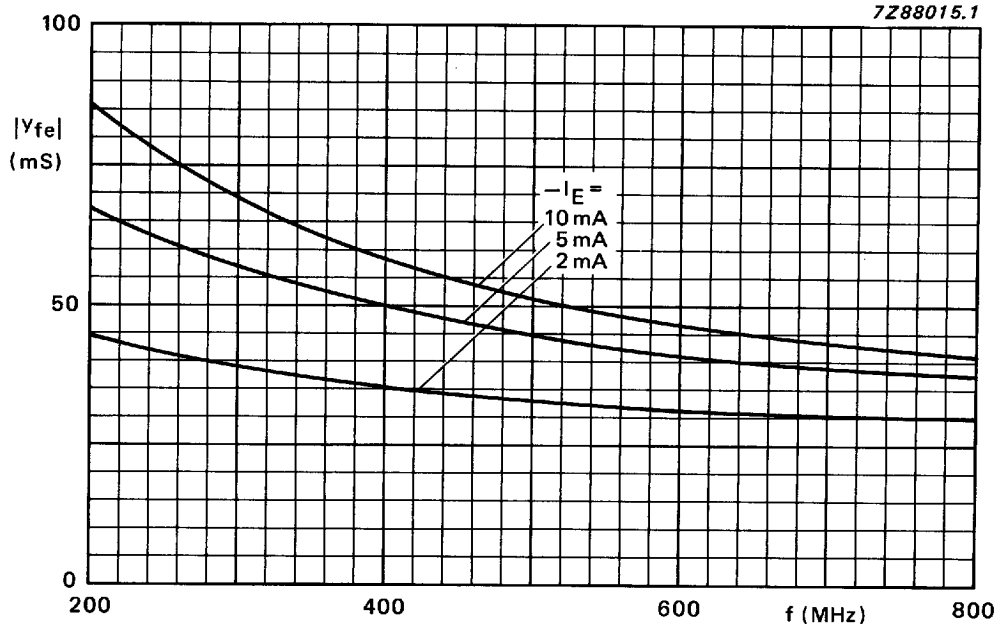


Fig. 8 V_{CB} = 10 V; T_{amb} = 25 °C; typical values.

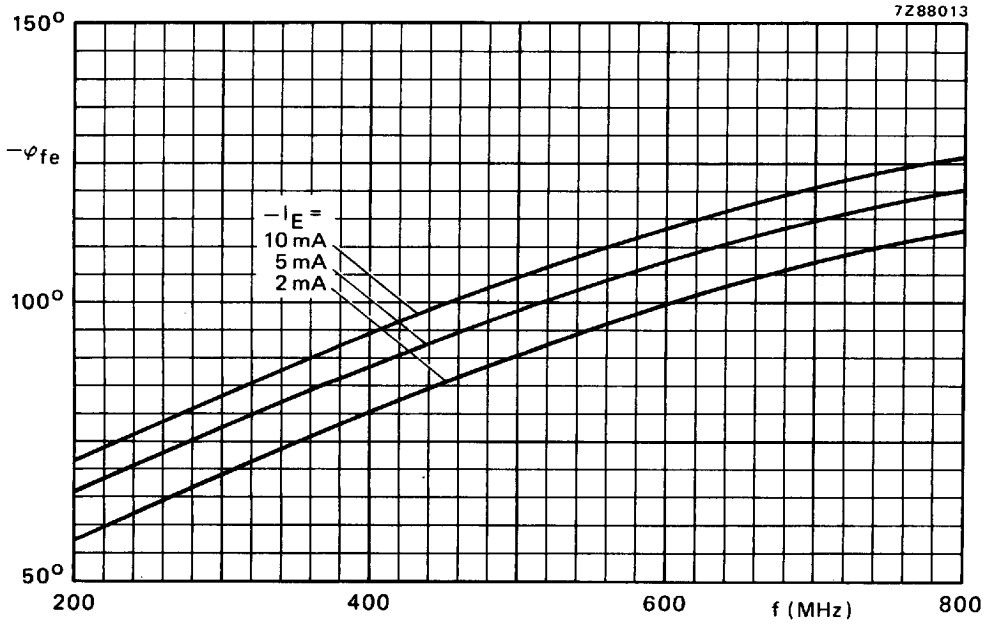


Fig. 9 V_{CB} = 10 V; T_{amb} = 25 °C; typical values.

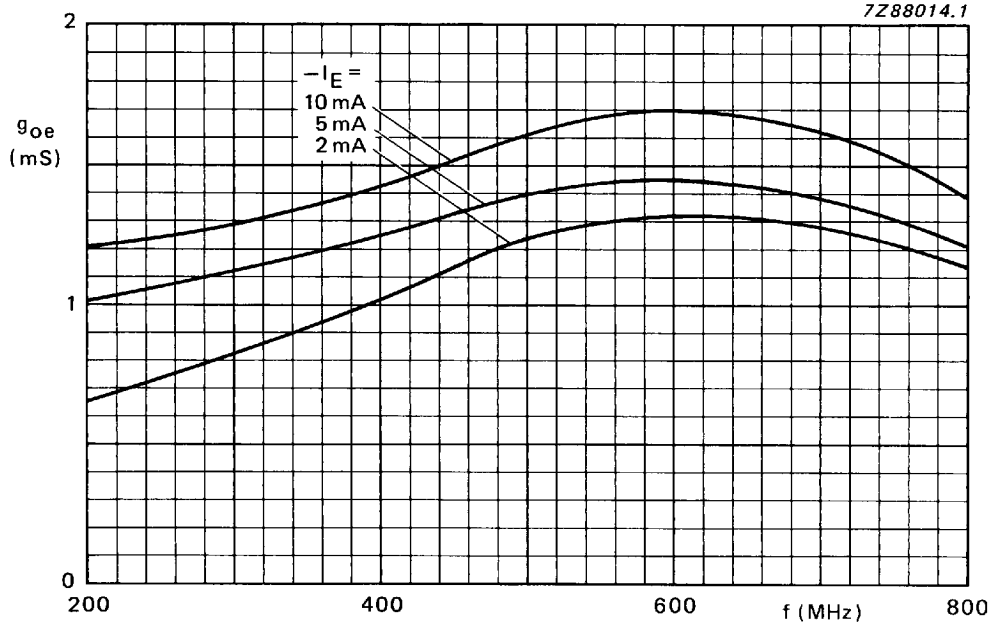


Fig. 10 V_{CB} = 10 V; T_{amb} = 25 °C; typical values.

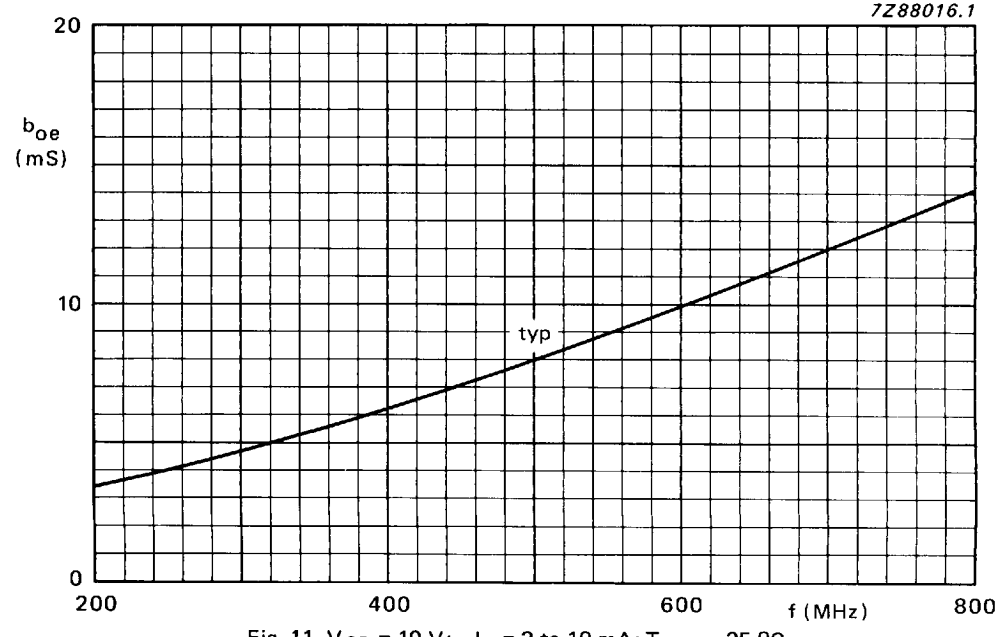


Fig. 11 V_{CB} = 10 V; $-I_E$ = 2 to 10 mA; T_{amb} = 25 °C