

TOSHIBA Transistor Silicon NPN Epitaxial Type (PCT process)

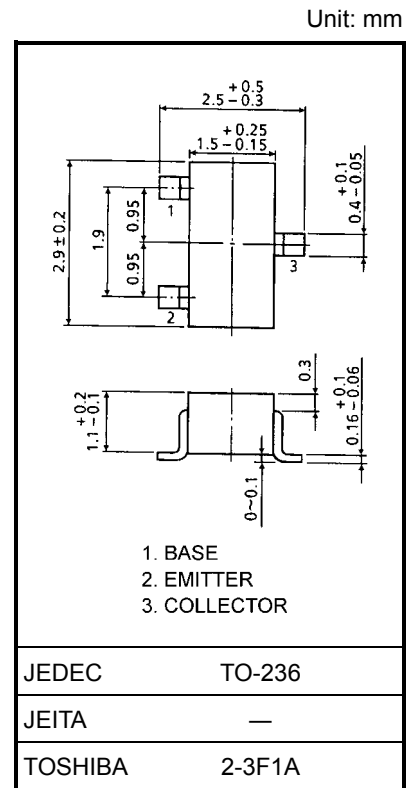
2SC2996

FM/AM RF, MIX, Local, IF
High Frequency Amplifier Applications

- High stability oscillation voltage on FM local oscillator
- Recommend FM/AM RF, MIX, local and IF

Maximum Ratings (Ta = 25°C)

Characteristics	Symbol	Rating	Unit
Collector-base voltage	V_{CBO}	40	V
Collector-emitter voltage	V_{CEO}	30	V
Emitter-base voltage	V_{EBO}	4	V
Collector current	I_C	50	mA
Emitter current	I_E	-50	mA
Collector power dissipation	P_C	150	mW
Junction temperature	T_j	125	°C
Storage temperature range	T_{stg}	-55~125	°C

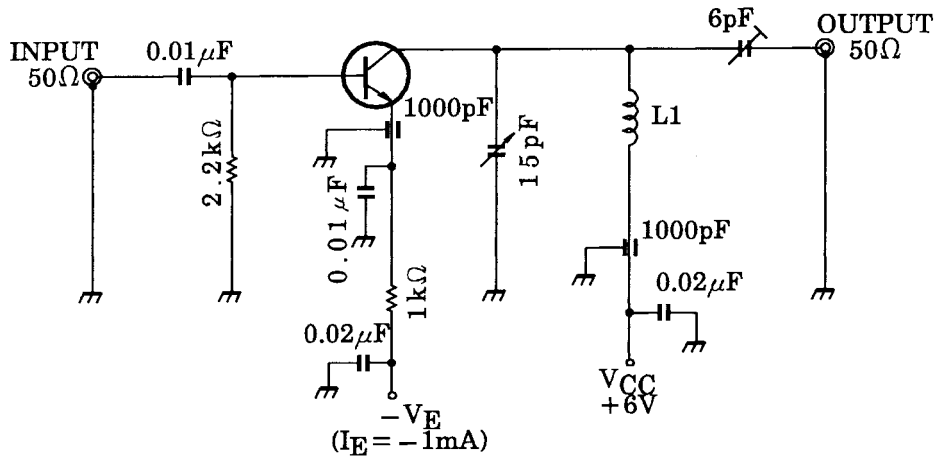


Weight: 0.012 g (typ.)

Electrical Characteristics (Ta = 25°C)

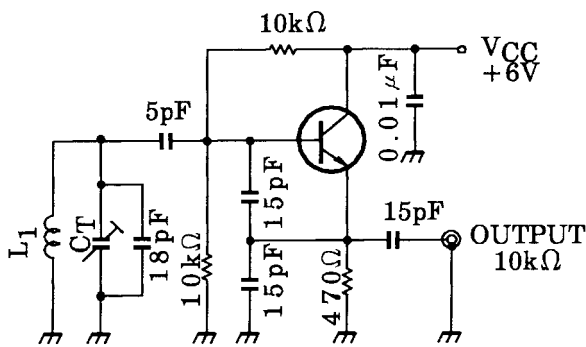
Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	I_{CBO}	$V_{CB} = 40\text{ V}, I_E = 0$	—	—	0.1	μA
Emitter cut-off current	I_{EBO}	$V_{EB} = 4\text{ V}, I_C = 0$	—	—	0.5	μA
DC current gain	h_{FE} (Note)	$V_{CE} = 6\text{ V}, I_C = 1\text{ mA}$	40	—	240	
Reverse transfer capacitance	C_{re}	$V_{CB} = 6\text{ V}, f = 1\text{ MHz}$	—	0.9	1.3	pF
Transition frequency	f_T	$V_{CE} = 6\text{ V}, I_C = -1\text{ mA}$	150	350	—	MHz
Collector-base time constant	$C_c \cdot r_{bb'}$	$V_{CE} = 6\text{ V}, I_E = -1\text{ mA}, f = 30\text{ MHz}$	—	15	30	ps
Noise figure	NF	$V_{CE} = 6\text{ V}, I_E = -1\text{ mA}, f = 100\text{ MHz}$	—	4.0	—	dB
Power gain	G_{pe}	(Figure 1)	—	15	—	dB
Oscillation output voltage	V_{OSC}	$V_{CE} = 6\text{ V}, f = 100\text{ MHz}$ (Figure 2)	—	150	—	mV

Note: h_{FE} classification R: 40~80, O: 70~140, Y: 120~240



L₁: 0.8 mmφ silver plated copper wire, 4 T, 10ID, 8 length

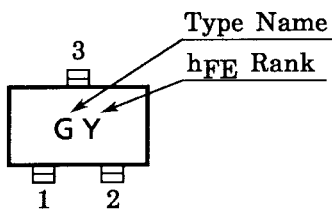
Figure 1 NF, G_{pe} Test Circuit



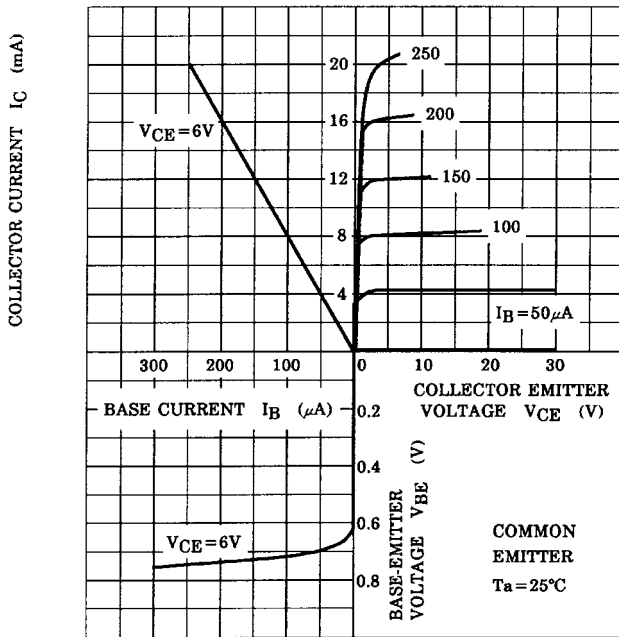
L₁: 0.8 mmφ silver plated copper wire, 4 T, 10ID, 8 length

Figure 2 V_{osc} Test Circuit

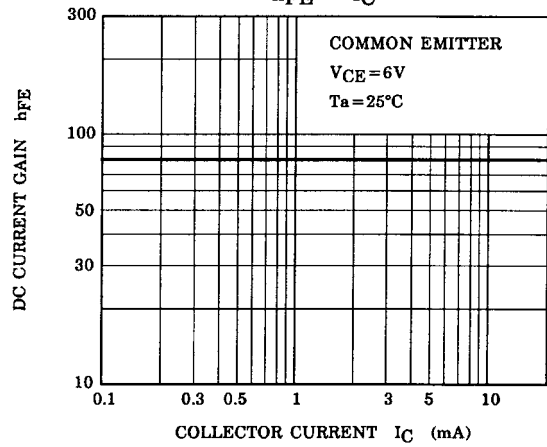
Marking



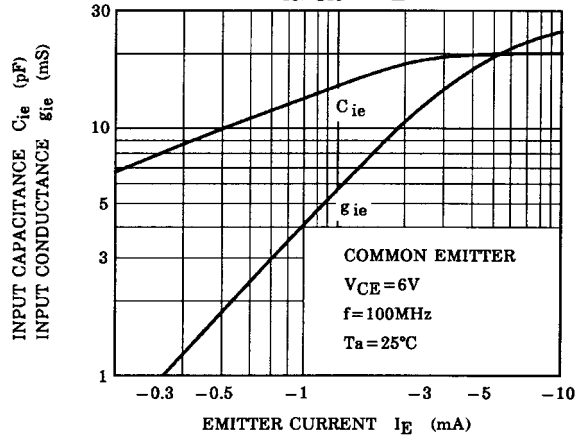
STATIC CHARACTERISTICS



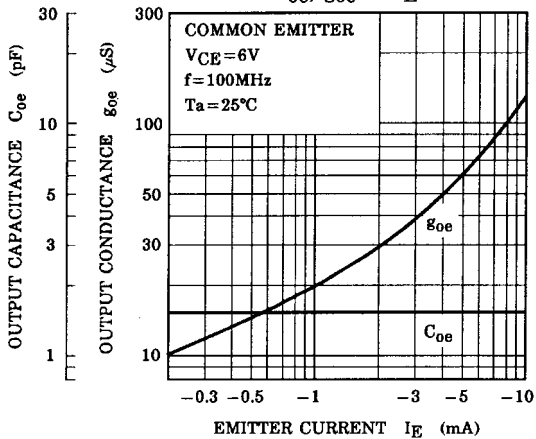
$h_{FE} - I_C$



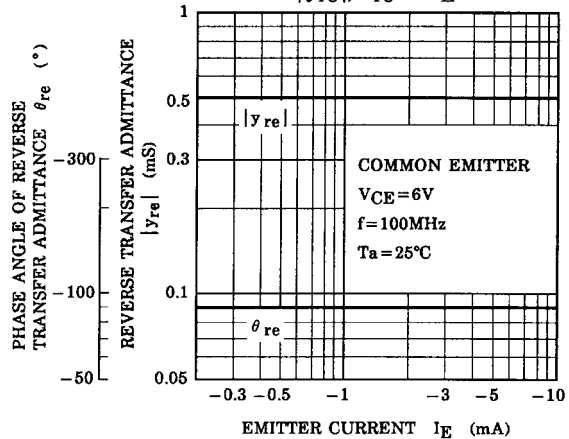
$C_{ie}, g_{ie} - I_E$

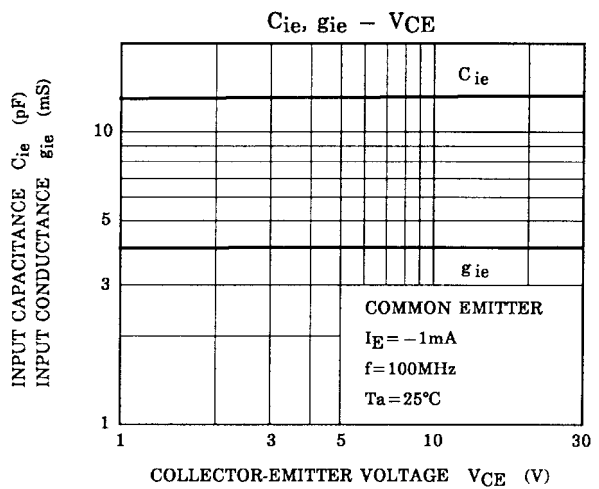
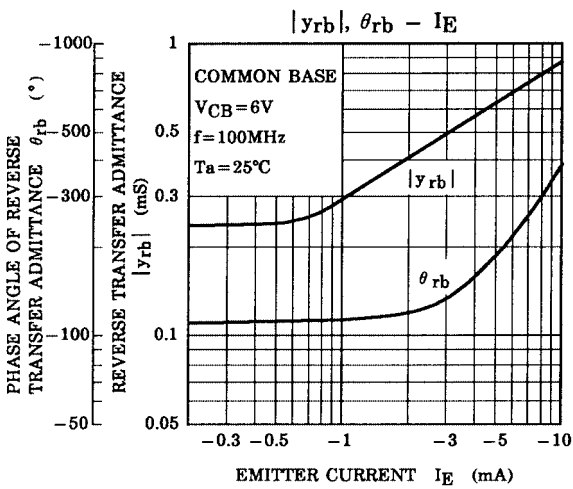
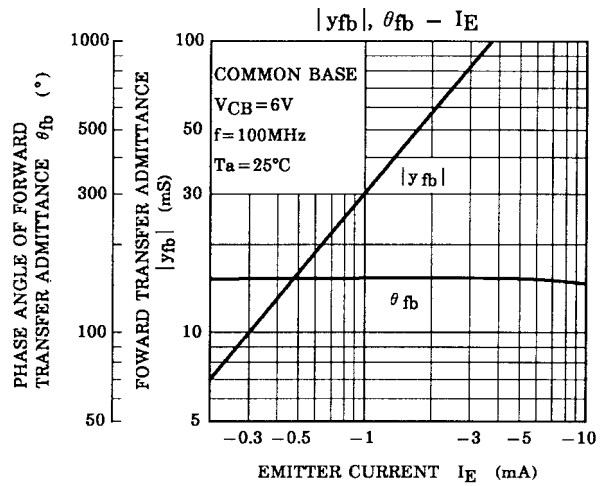
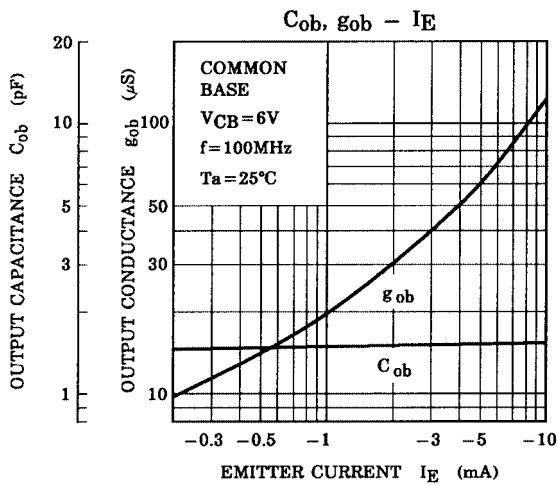
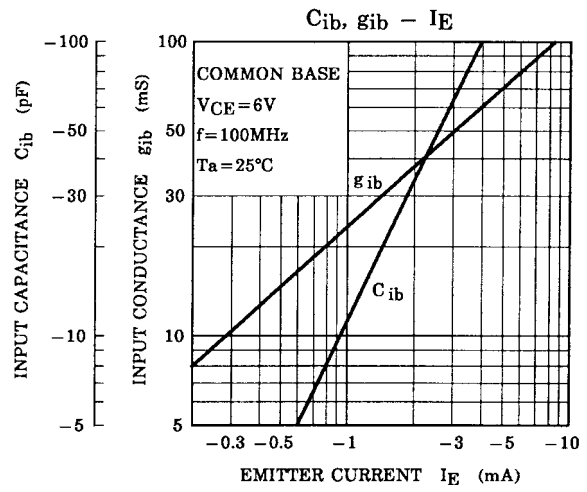
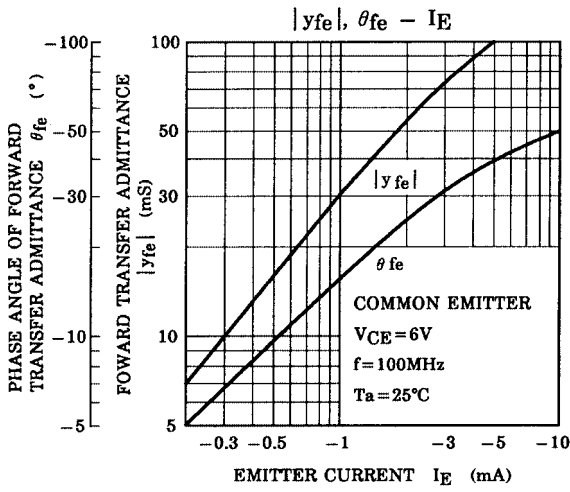


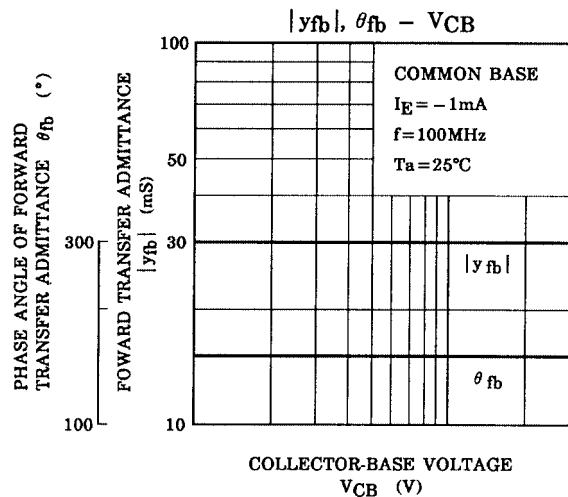
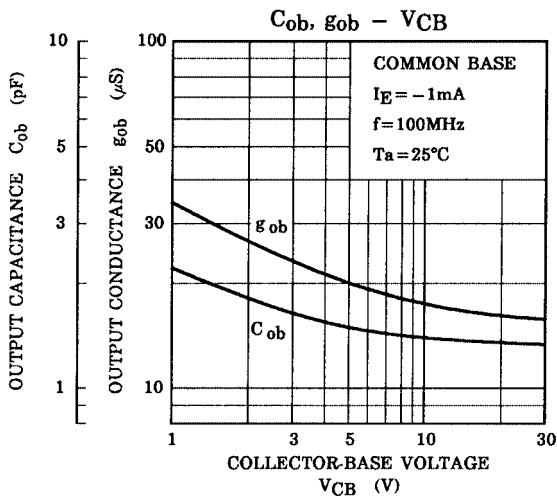
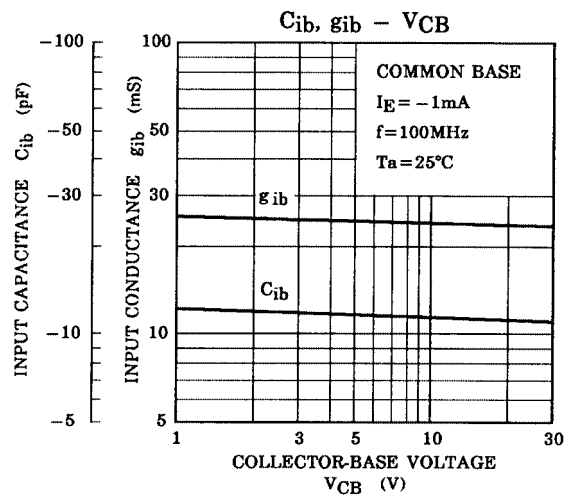
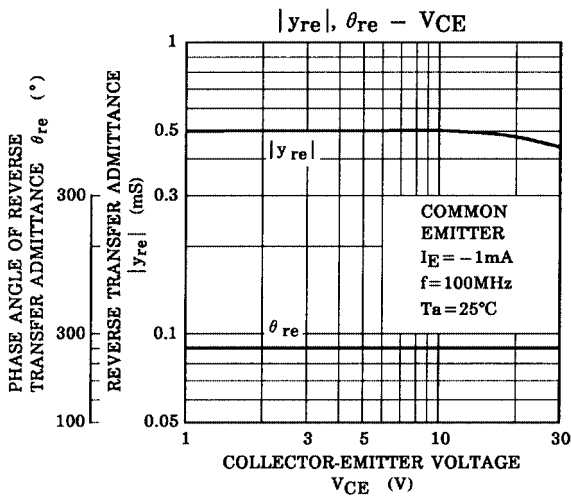
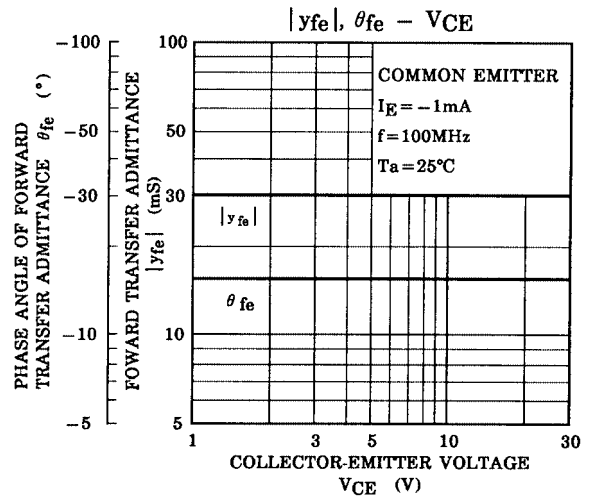
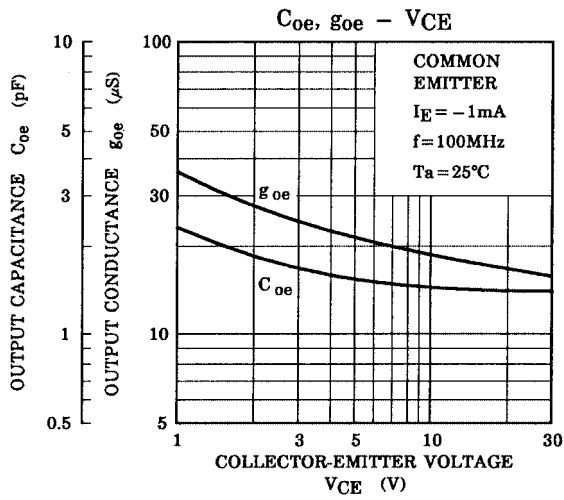
$C_{oe}, g_{oe} - I_E$

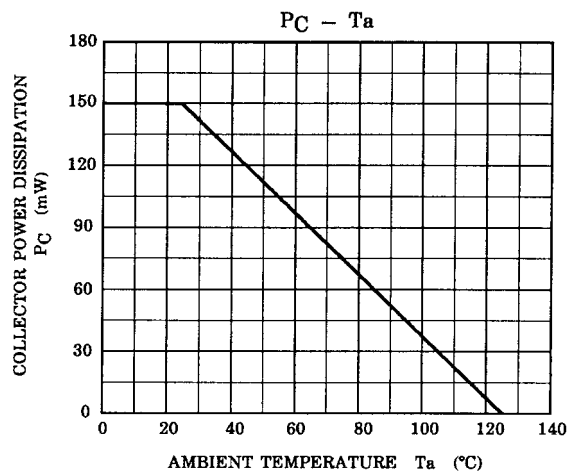
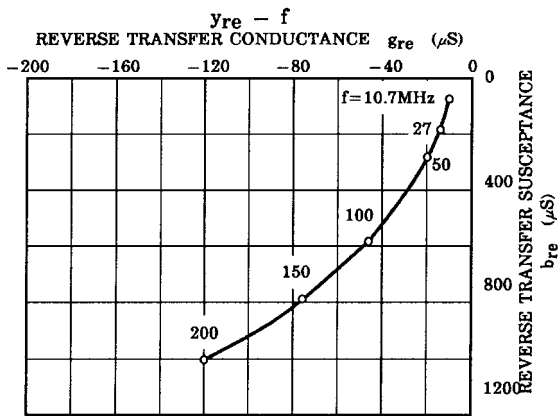
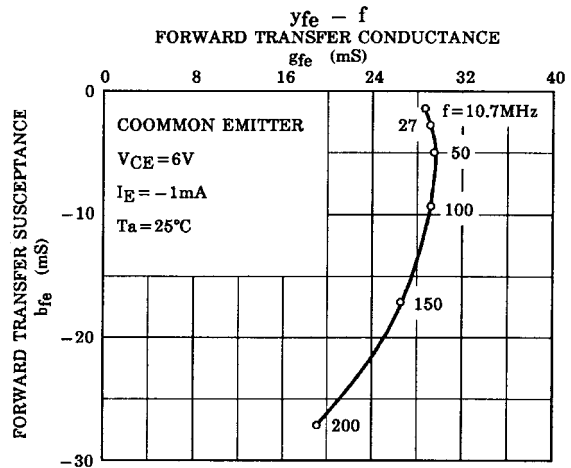
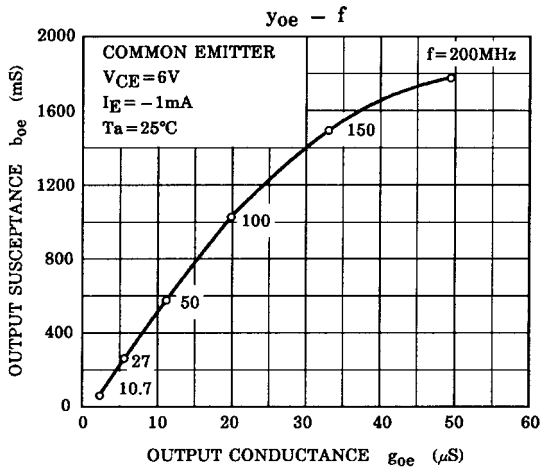
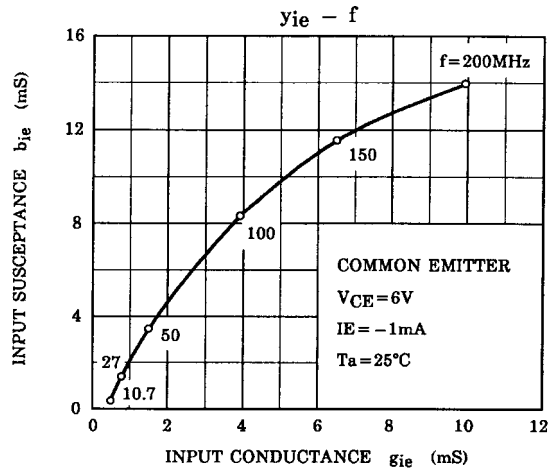
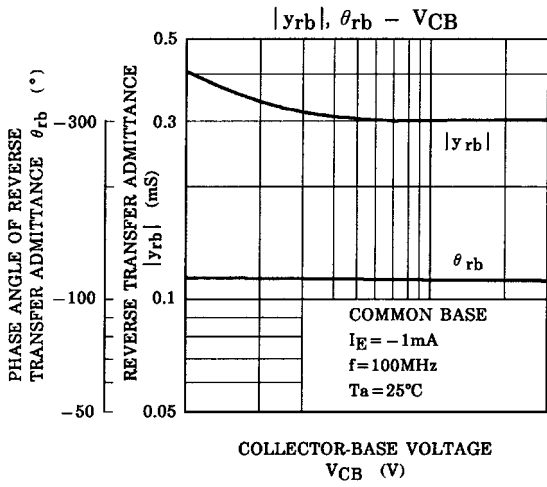


$|y_{re}|, \theta_{re} - I_E$









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