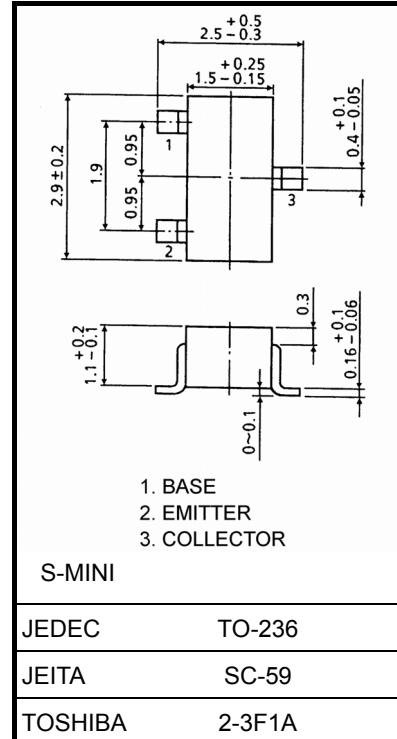


TOSHIBA Transistor Silicon NPN Epitaxial Planar Type (PCT process)

2SC2714

High Frequency Amplifier Applications
FM, RF, MIX, IF Amplifier Applications

Unit: mm



- Small reverse transfer capacitance: $C_{re} = 0.7 \text{ pF}$ (typ.)
- Low noise figure: $NF = 2.5 \text{ dB}$ (typ.)

Absolute 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	20	mA
Base current	I_B	4	mA
Collector power dissipation	P_C	100	mW
Junction temperature	T_j	125	°C
Storage temperature range	T_{stg}	-55 to 125	°C

Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings.

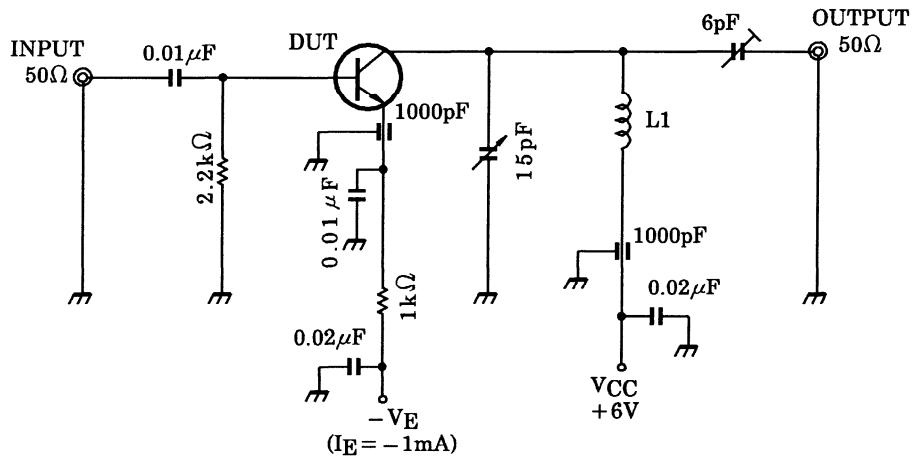
Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc.).

Weight: 12 mg (typ.)

Electrical Characteristics (Ta = 25°C)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	I_{CBO}	$V_{CB} = 40 \text{ V}, I_E = 0$	—	—	0.5	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	—	200	—
Reverse transfer capacitance	C_{re}	$V_{CB} = 6 \text{ V}, f = 1 \text{ MHz}$	—	0.70	—	pF
Transition frequency	f_T	$V_{CE} = 6 \text{ V}, I_C = 1 \text{ mA}$	—	550	—	MHz
Collector-base time constant	$C_{C,rb}$	$V_{CB} = 6 \text{ V}, I_E = -1 \text{ mA}, f = 30 \text{ MHz}$	—	—	30	ps
Noise figure	NF	$V_{CC} = 6 \text{ V}, I_E = -1 \text{ mA}, f = 100 \text{ MHz}$	—	2.5	5.0	dB
Power gain	G_{pe}	Figure 1	17	23	—	dB

Note: h_{FE} classification R: 40 to 80, O: 70 to 140, Y: 100 to 200



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

Figure1 NF, G_{pe} Test Circuit

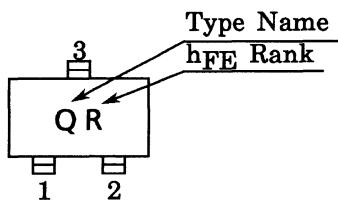
y Parameter (typ.)

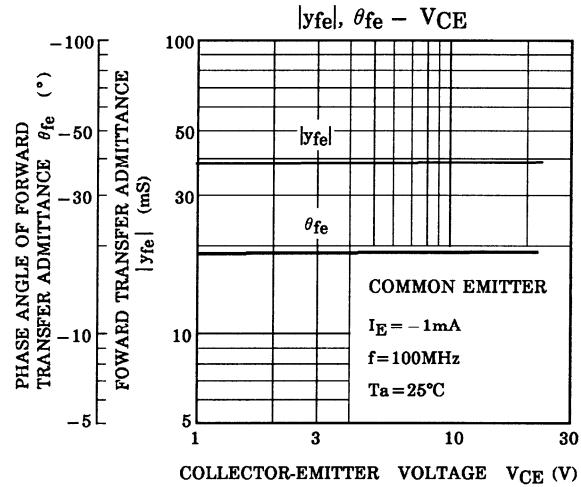
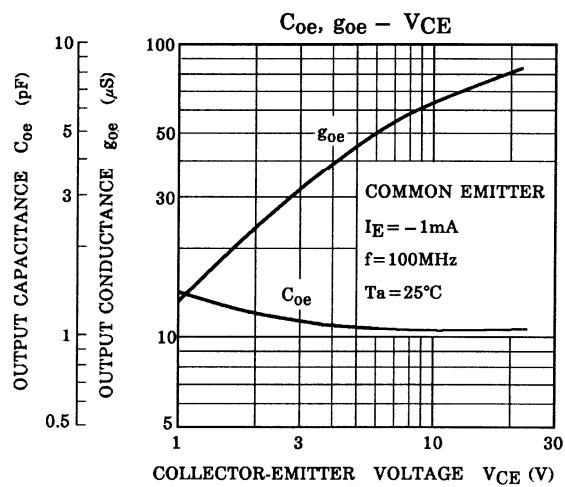
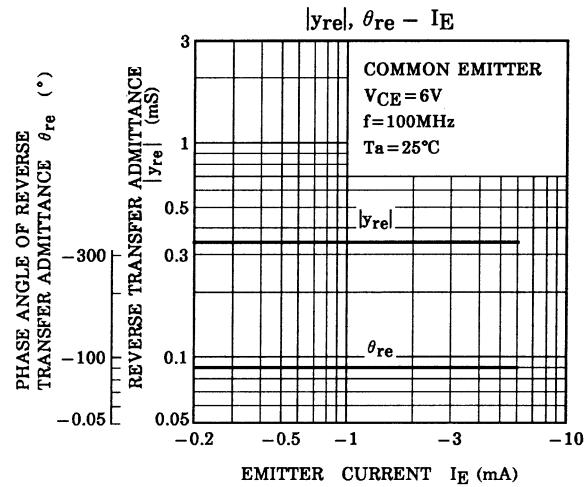
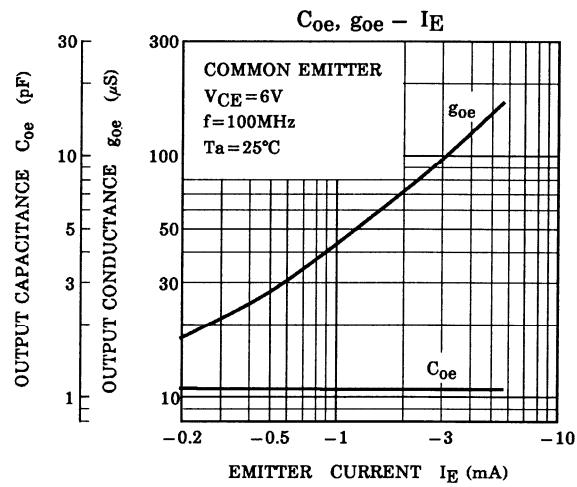
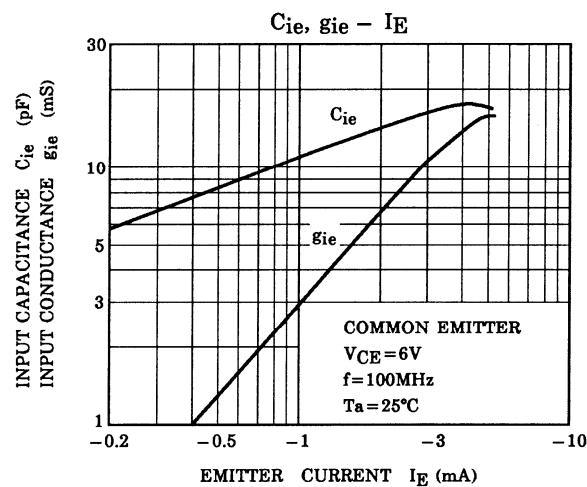
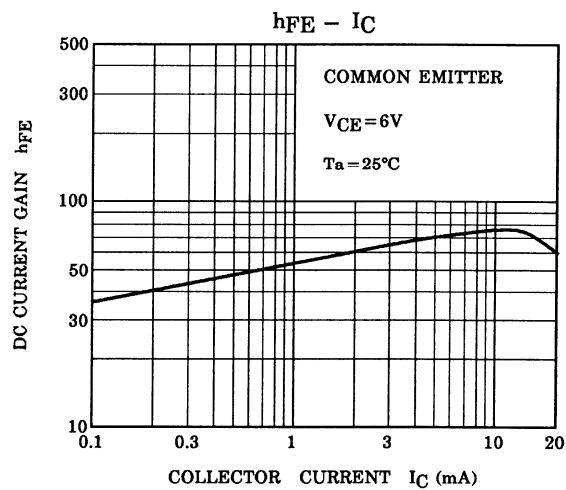
(1) Common emitter (V_{CE} = 6 V, I_E = -1 mA, f = 100 MHz, Ta = 25°C)

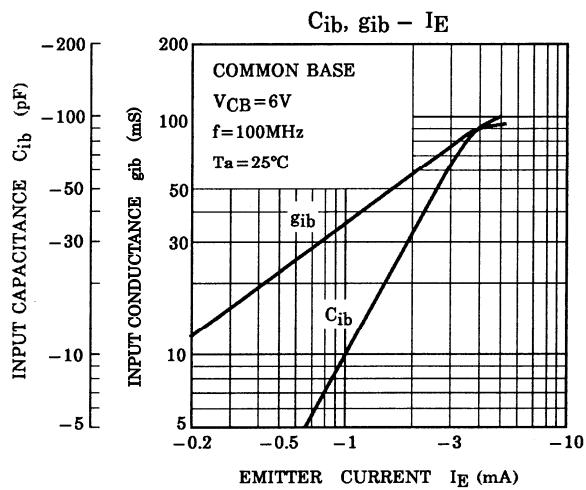
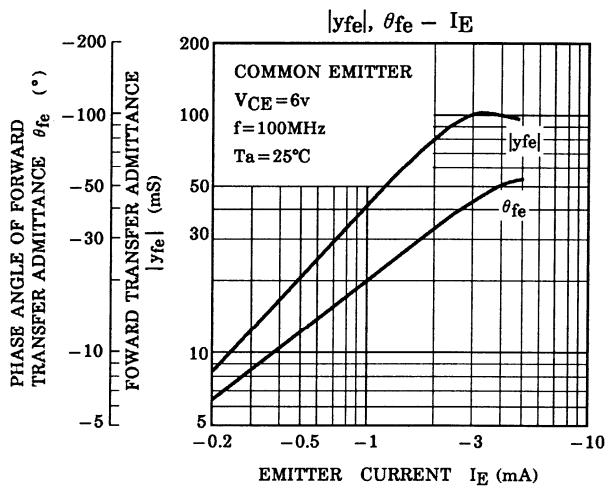
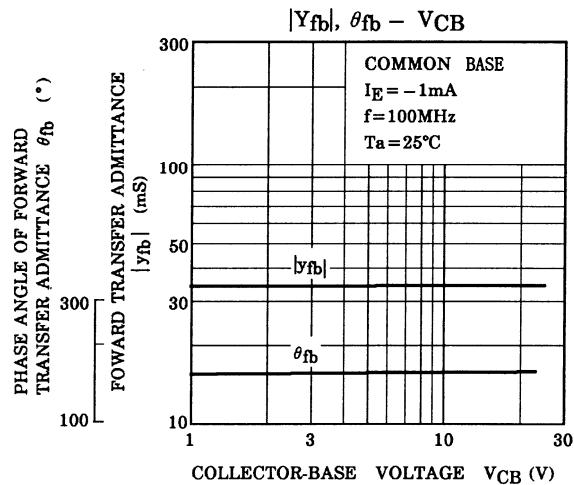
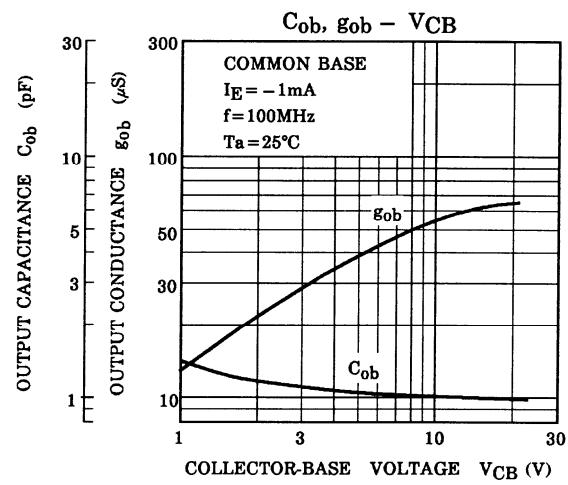
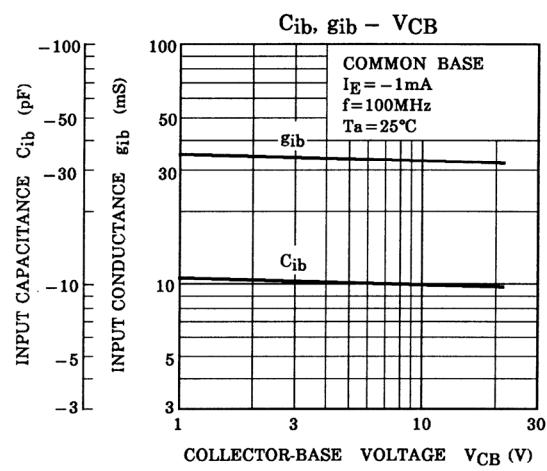
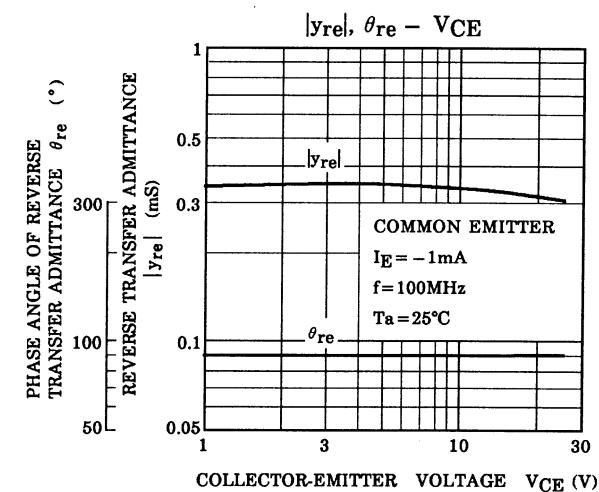
Characteristics	Symbol	Typ.	Unit
Input conductance	g _{ie}	2.9	mS
Input capacitance	C _{ie}	10.2	pF
Reverse transfer admittance	y _{re}	0.33	mS
Phase angle of reverse transfer admittance	θ _{re}	-90	°
Forward transfer admittance	y _{fe}	40	mS
Phase angle of forward transfer admittance	θ _{fe}	-20	°
Output conductance	g _{oe}	45	μS
Output capacitance	C _{oe}	1.1	pF

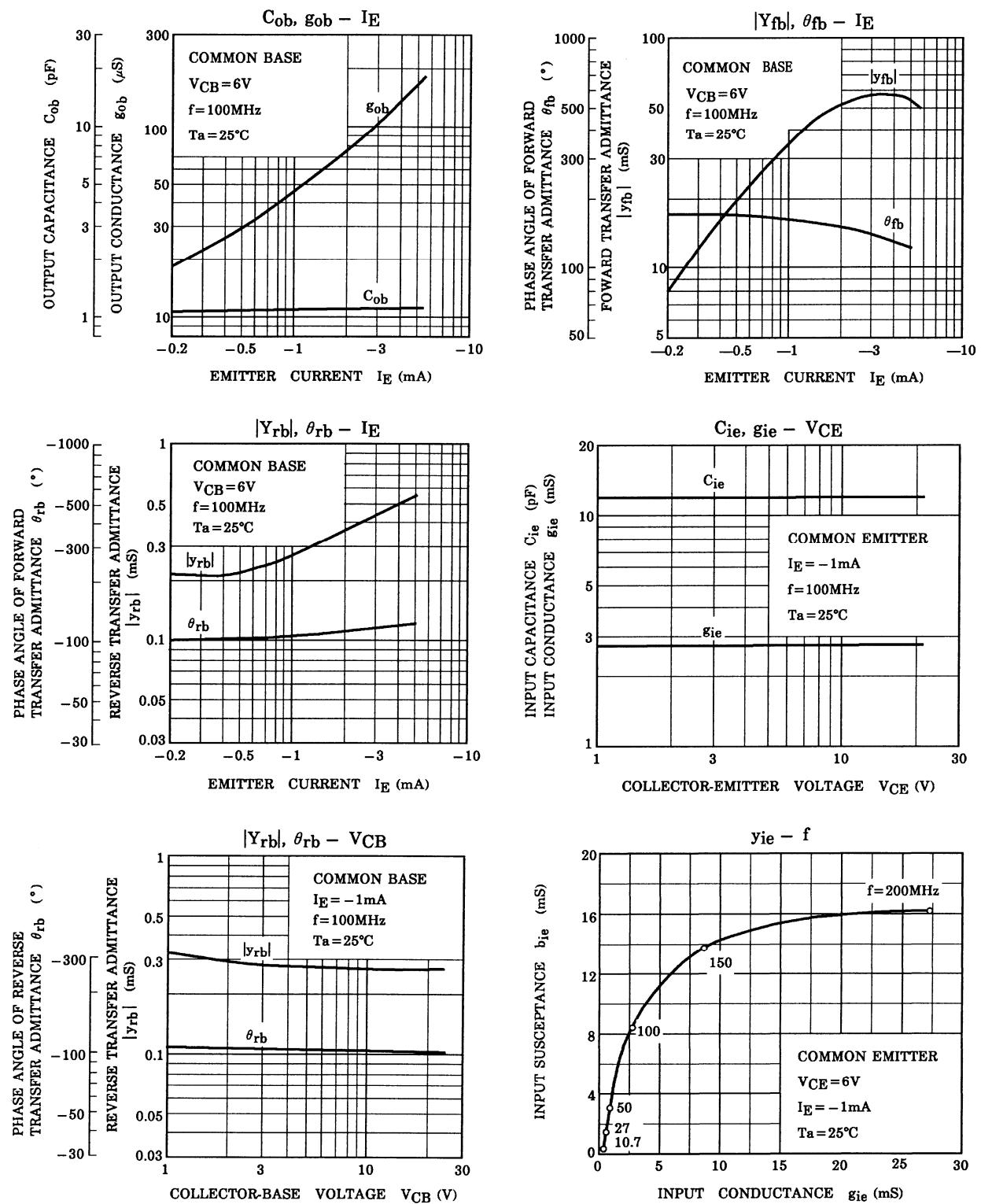
(2) Common base (V_{CE} = 6 V, I_E = -1 mA, f = 100 MHz, Ta = 25°C)

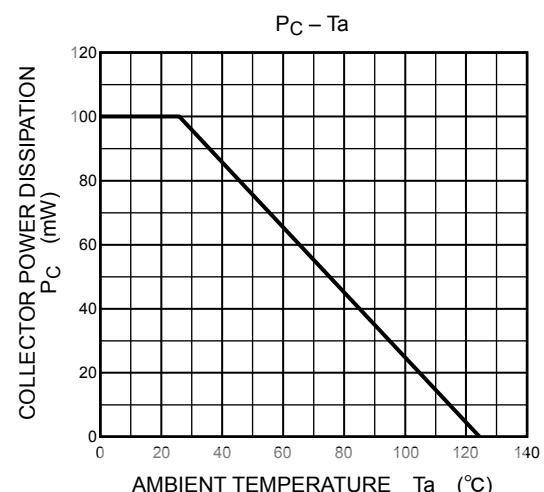
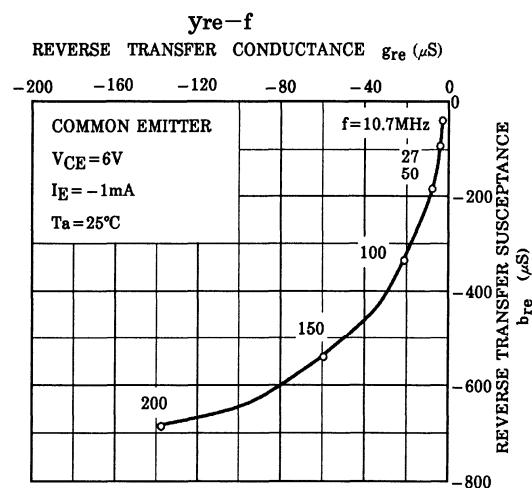
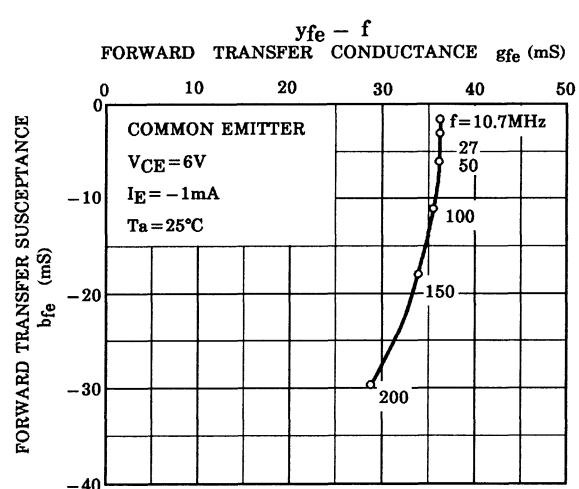
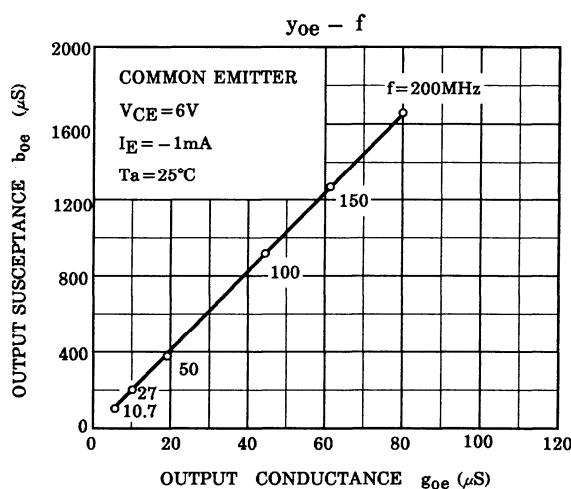
Characteristics	Symbol	Typ.	Unit
Input conductance	g _{ib}	34	mS
Input capacitance	C _{ib}	-10	pF
Reverse transfer admittance	y _{rb}	0.27	mS
Phase angle of reverse transfer admittance	θ _{rb}	-105	°
Forward transfer admittance	y _{fb}	34	mS
Phase angle of forward transfer admittance	θ _{fb}	165	°
Output conductance	g _{ob}	45	μS
Output capacitance	C _{ob}	1.1	pF

Marking









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