TOSHIBA Transistor Silicon NPN Epitaxial Type (PCT process)

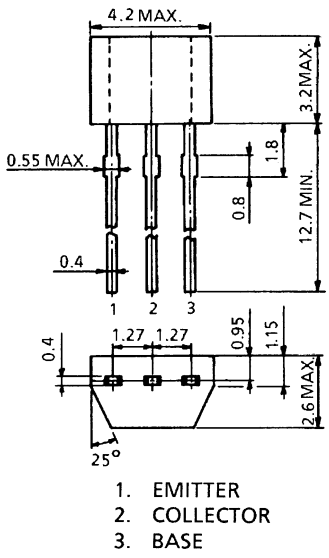
2SC2995

FM/AM RF, MIX, OSC, IF

High Frequency Amplifier Applications

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

Unit: mm



JEDEC	—
JEITA	—
TOSHIBA	2-4E1A

Weight: 0.13 g (typ.)

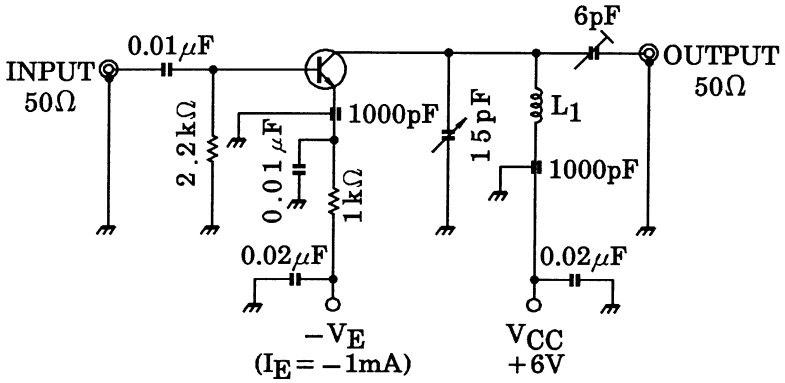
Maximum Ratings (Ta = 25°C)

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
Base current	I_B	10	mA
Collector power dissipation	P_C	200	mW
Junction temperature	T_j	125	°C
Storage temperature range	T_{stg}	−55~125	°C

Electrical Characteristics (Ta = 25°C)

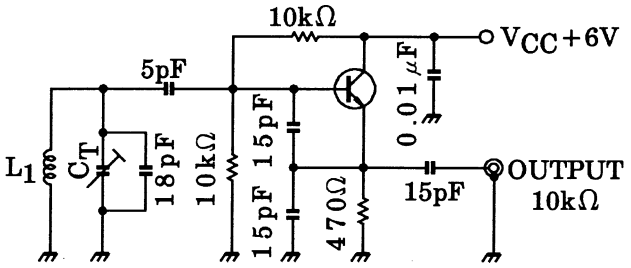
Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	I_{CBO}	V_{CB} = 40 V, I_E = 0	—	—	0.1	μA
Emitter cut-off current	I_{EBO}	V_{EB} = 4 V, I_C = 0	—	—	0.5	μA
DC current gain	h_{FE} (Note)	V_{CE} = 6 V, I_C = 1 mA	40	—	240	
Reverse transfer capacitance	C_{re}	V_{CE} = 6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

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



L_1: 0.8 mmϕ silver plated copper wire, 4 T, 10ID, 8 length

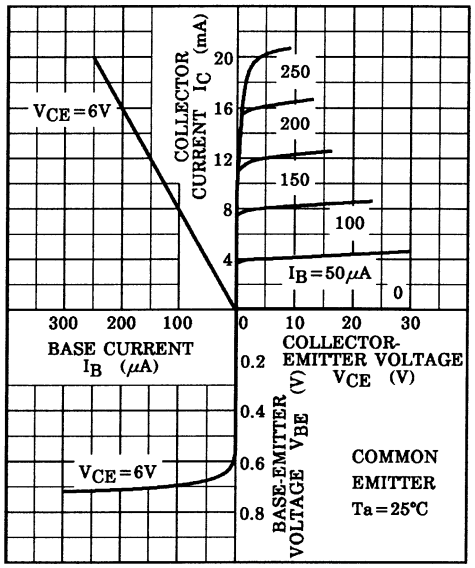
Figure 1 NF, G_{pe} Test Circuit



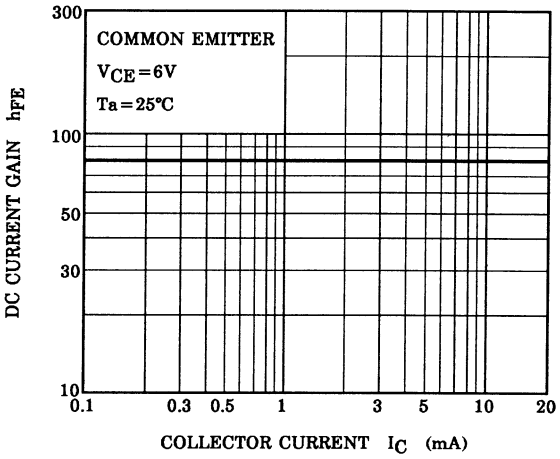
L_1: 0.8 mmϕ silver plated copper wire, 4 T, 10ID, 8 length

Figure 2 V_{OSC} Test Circuit

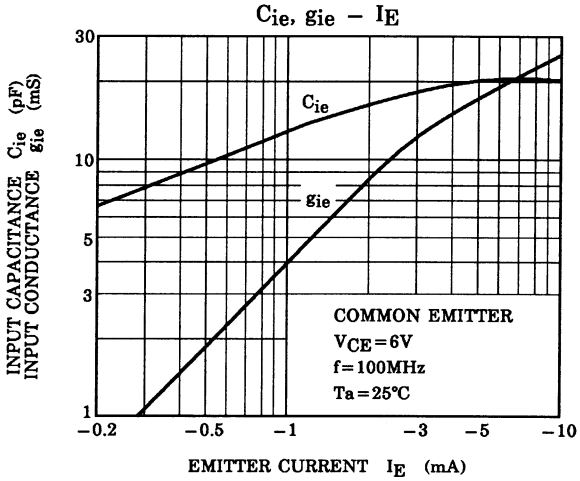
STATIC CHARACTERISTICS



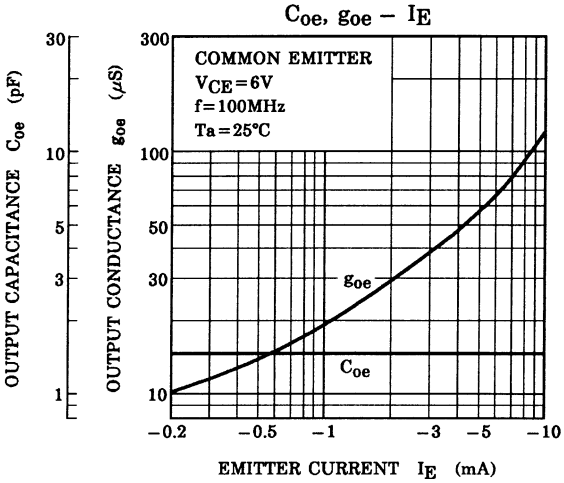
h_{FE} – I_C



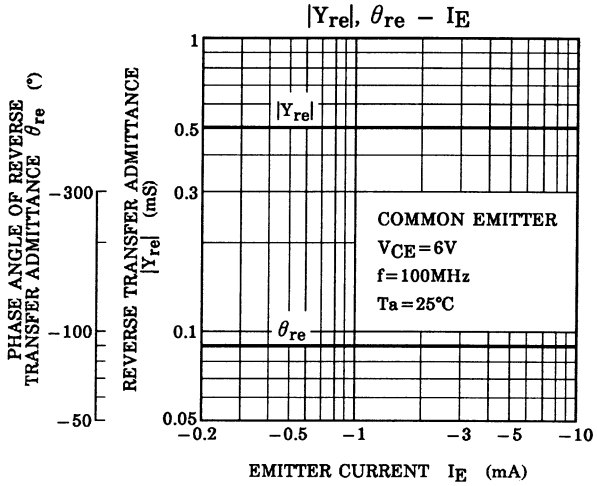
C_{ie}, g_{ie} – I_E

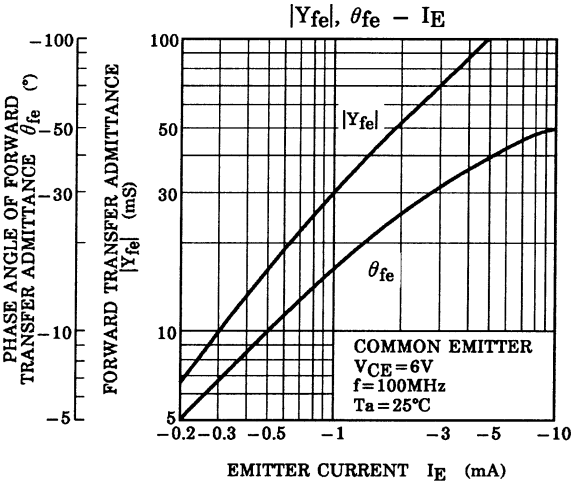


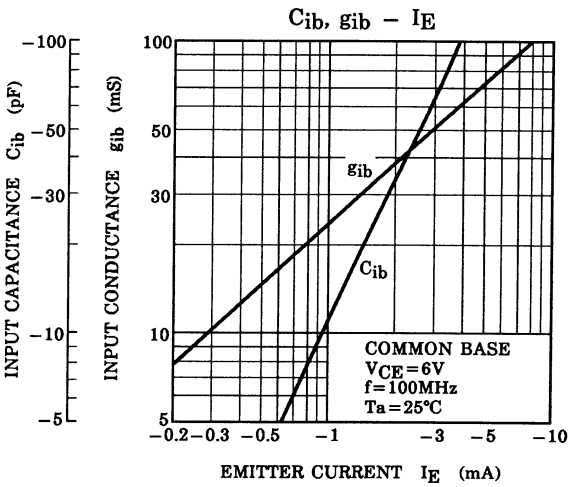
C_{oe}, g_{oe} – I_E

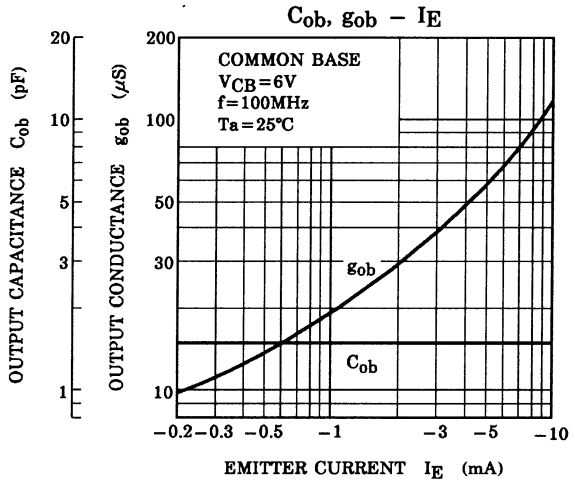


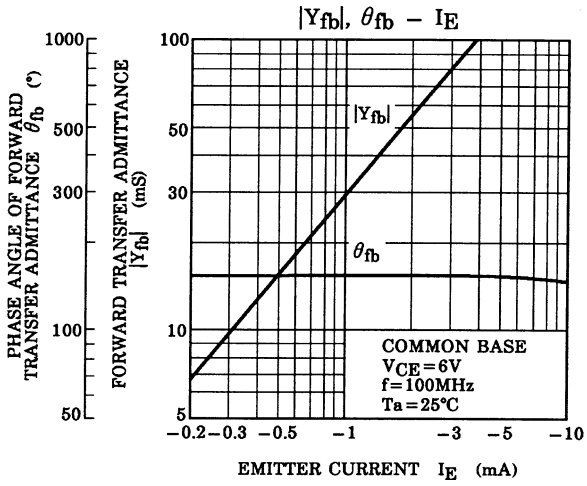
$|Y_{re}|$, θ_{re} – I_E

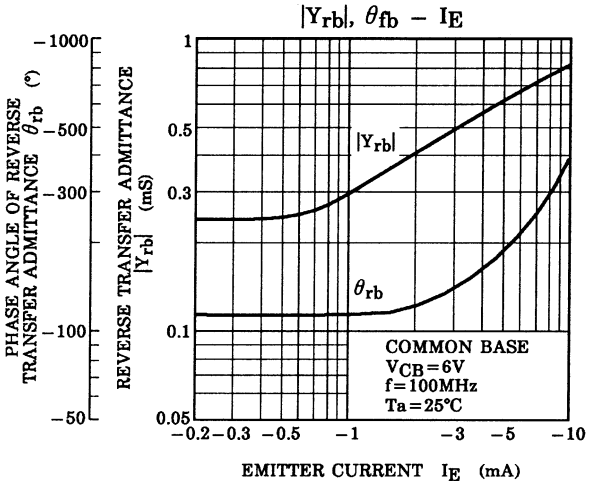


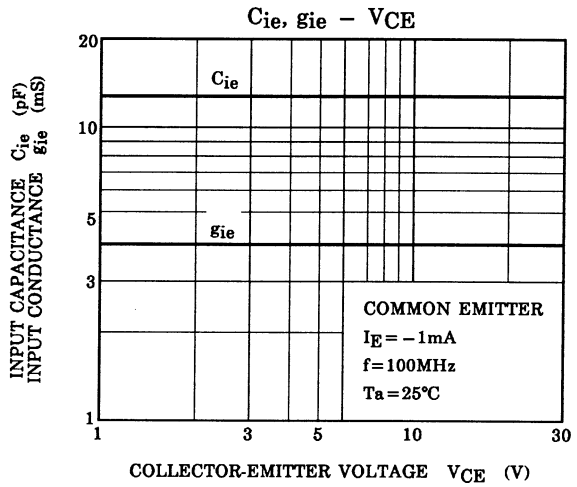

|Yfe|, θfe – IE
PHASE ANGLE OF FORWARD TRANSFER ADMITTANCE θfe (°)
FORWARD TRANSFER ADMITTANCE |Yfe| (mS)
|Yfe|
θfe
COMMON EMITTER
VCE=6V
f=100MHz
Ta=25°C
EMITTER CURRENT IE (mA)


Cib, gib – IE
INPUT CAPACITANCE Cib (pF)
INPUT CONDUCTANCE gib (mS)
gib
Cib
COMMON BASE
VCE=6V
f=100MHz
Ta=25°C
EMITTER CURRENT IE (mA)

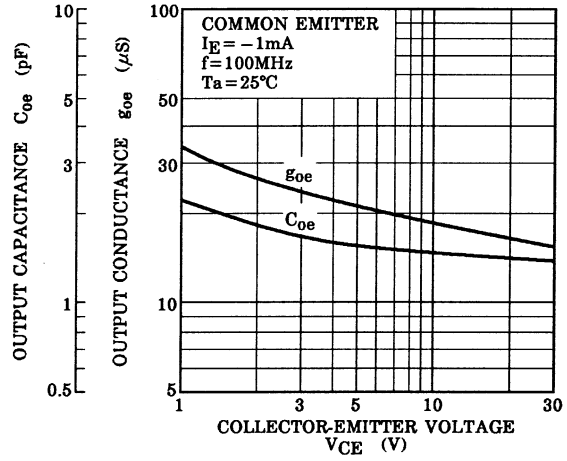

Cob, gob – IE
OUTPUT CAPACITANCE Cob (pF)
OUTPUT CONDUCTANCE gob (μS)
COMMON BASE
VCB=6V
f=100MHz
Ta=25°C
gob
Cob
EMITTER CURRENT IE (mA)


|Yfb|, θfb – IE
PHASE ANGLE OF FORWARD TRANSFER ADMITTANCE θfb (°)
FORWARD TRANSFER ADMITTANCE |Yfb| (mS)
|Yfb|
θfb
COMMON BASE
VCE=6V
f=100MHz
Ta=25°C
EMITTER CURRENT IE (mA)

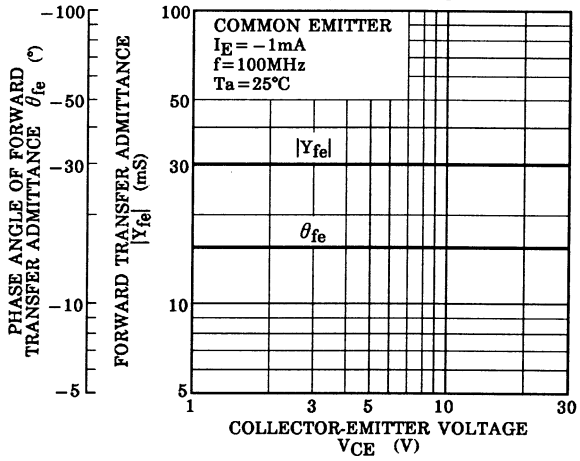

|Yrb|, θfb – IE
PHASE ANGLE OF REVERSE TRANSFER ADMITTANCE θrb (°)
REVERSE TRANSFER ADMITTANCE |Yrb| (mS)
|Yrb|
θrb
COMMON BASE
VCB=6V
f=100MHz
Ta=25°C
EMITTER CURRENT IE (mA)


Cie, gie – VCE
INPUT CAPACITANCE Cie (pF)
INPUT CONDUCTANCE gie (mS)
Cie
gie
COMMON EMITTER
IE=–1mA
f=100MHz
Ta=25°C
COLLECTOR-EMITTER VOLTAGE VCE (V)

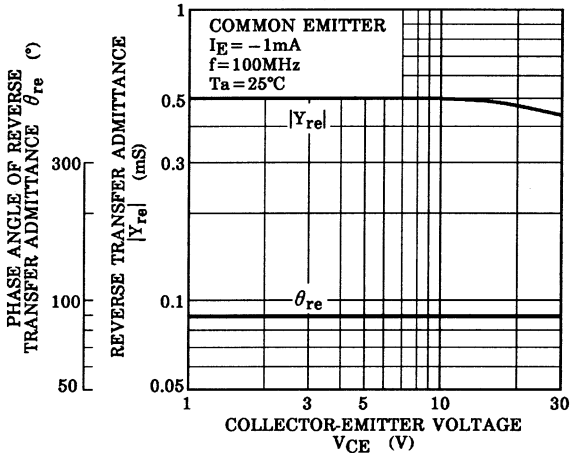
C_{oe}, g_{oe} – V_{CE}



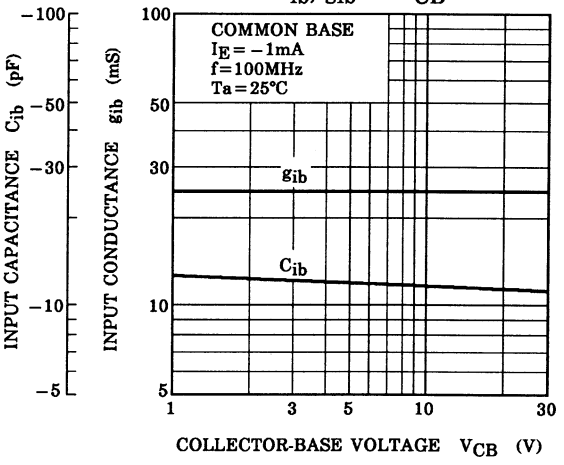
$|Y_{fe}|$, θ_{fe} – V_{CE}



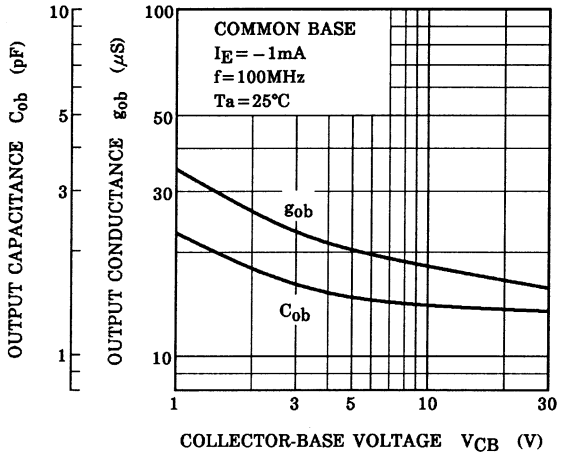
$|Y_{re}|$, θ_{re} – V_{CE}



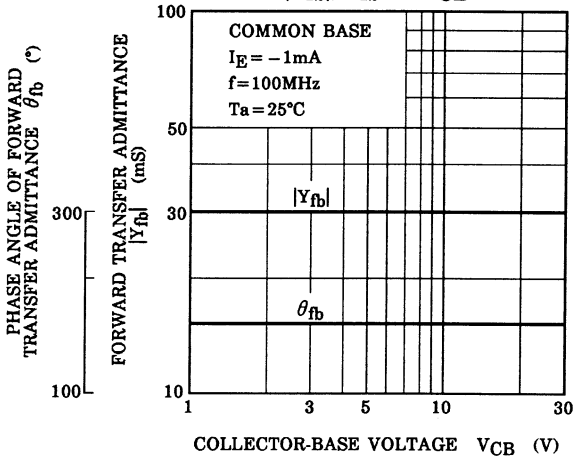
C_{ib}, g_{ib} – V_{CB}



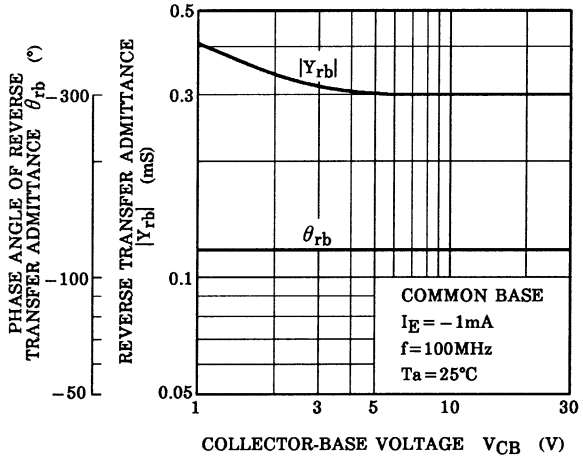
C_{ob}, g_{ob} – V_{CB}



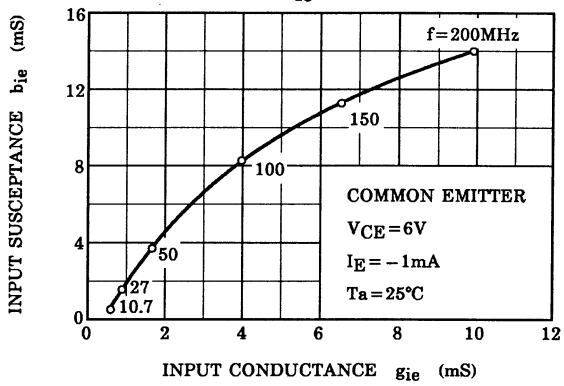
$|Y_{fb}|$, θ_{fb} – V_{CB}



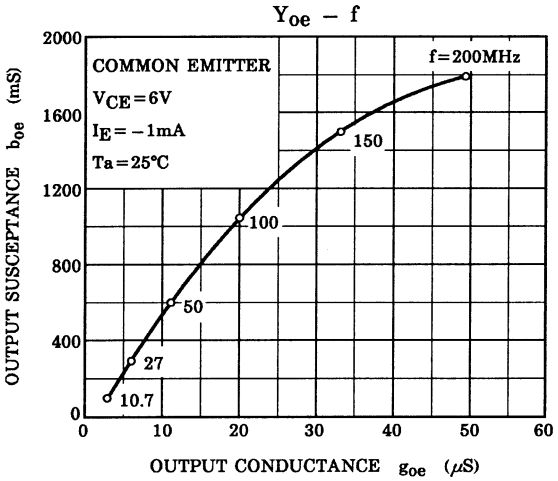
$|Y_{rb}|, \theta_{rb} - V_{CB}$



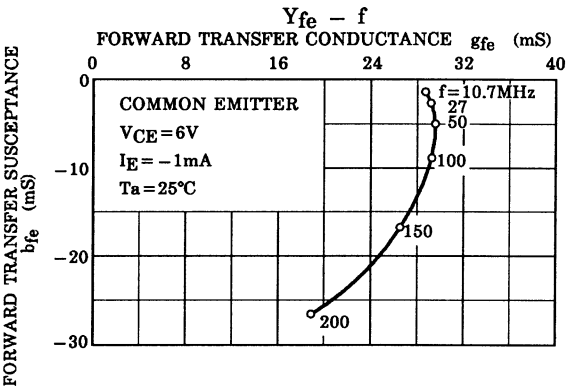
$Y_{ie} - f$



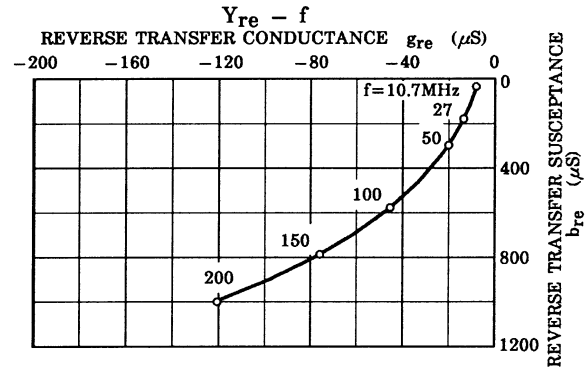
$Y_{oe} - f$



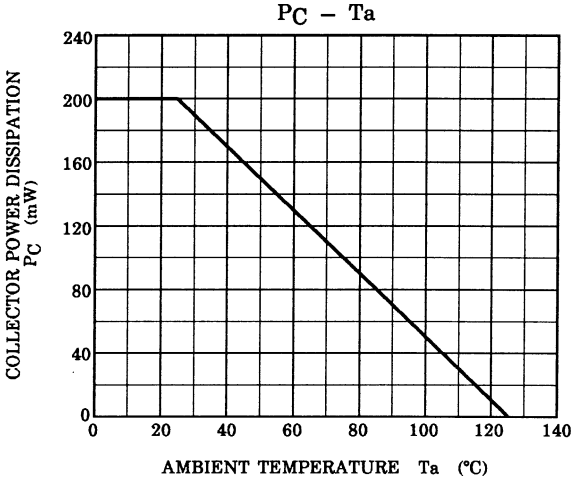
$Y_{fe} - f$



$Y_{re} - f$



$P_C - Ta$



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