2SC2996

SILICON NPN EPITAXIAL TYPE (PCT PROCESS)

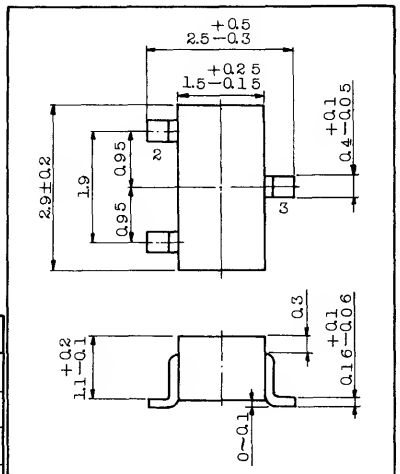
FM/AM, RF, MIX, OSC, IF
HIGH FREQUENCY AMPLIFIER APPLICATIONS.

FEATURES:

. High Stability Oscillation Voltage On FM Local Oscillator.

. Recommend FM/AM RF, MIX, OSC, and IF.

Unit in mm



1. EMITTER
2. BASE
3. COLLECTOR

JEDEC	—
EIAJ	SC-59
TOSHIBA	2-3F1A

Weight : 0.012g

MAXIMUM RATINGS (Ta=25°C)

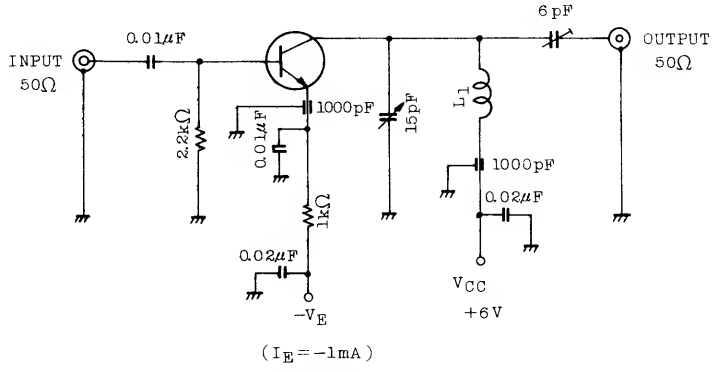
CHARACTERISTIC	SYMBOL	RATING	UNIT
Collector-Base Voltage	V_{CBO}	40	V
Collector-Emitter Voltage	V_{CEO}	30	V
Emitter-Base Voltage	V_{EBO}	4	V
Collector Current	I_C	50	mA
Emitter Current	I_E	-50	mA
Collector Power Dissipation	P_C	150	mW
Junction Temperature	T_j	125	°C
Storage Temperature Range	T_{stg}	-55~125	°C

ELECTRICAL CHARACTERISTICS (Ta=25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current	I_{CBO}	V_{CB}=40V, I_E=0	-	-	0.1	μA
Emitter Cut-off Current	I_{EBO}	V_{EB}=4V, I_C=0	-	-	0.5	μA
DC Current Gain	h_{FE} (Note)	V_{CE}=6V, I_C=1mA	40	-	240	
Reverse Transfer Capacitance	C_{re}	V_{CE}=6V, f=1MHz	-	0.9	1.3	pF
Transition Frequency	f_T	V_{CE}=6V, I_E=-1mA	150	350	-	MHz
Collector-Base Time Constant	$C_{c.rbb'}$	V_{CE}=6V, I_E=-1mA, f=30MHz	-	15	30	ps
Noise Figure	NF	V_{CC}=6V, I_E=-1mA, f=100MHz (Fig.1)	-	4.0	-	dB
Power Gain	G_{pe}		-	15	-	
Oscillation Output Voltage	V_{OSC}	V_{CC}=6V, f=100MHz (Fig.2)	-	150	-	mV

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

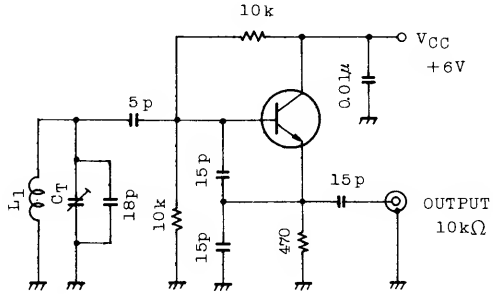
Fig. 1 NF, G_{pe} TEST CIRCUIT



(I_E = −1mA)

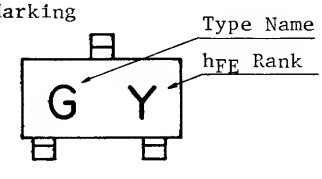
L_1 : 0.8mmφ SILVER PLATED COPPER WIRE, 4T, 10ID, 8 LENGTH

Fig. 2 V_{OSC} TEST CIRCUIT



L_1 : 0.8mmφ SILVER PLATED COPPER WIRE, 4T, 10ID, 8 LENGTH

Marking



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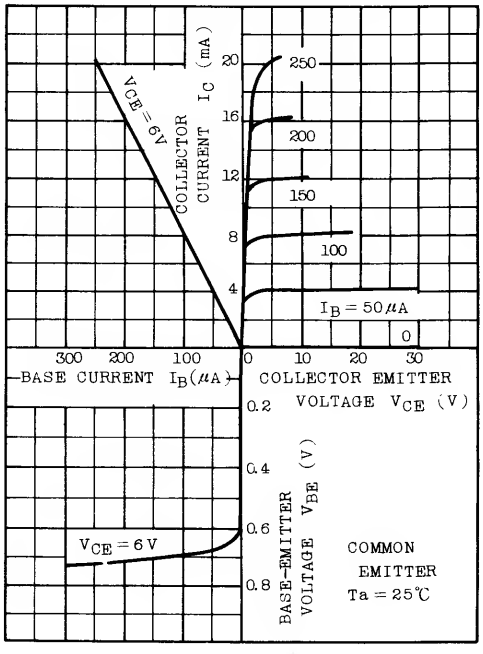
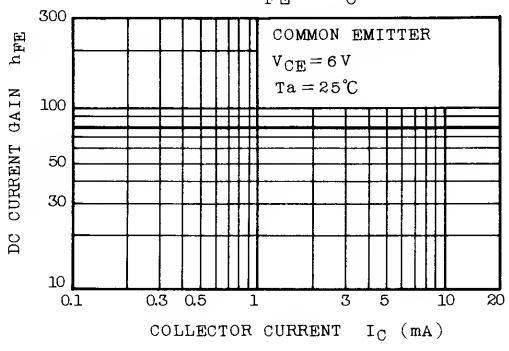
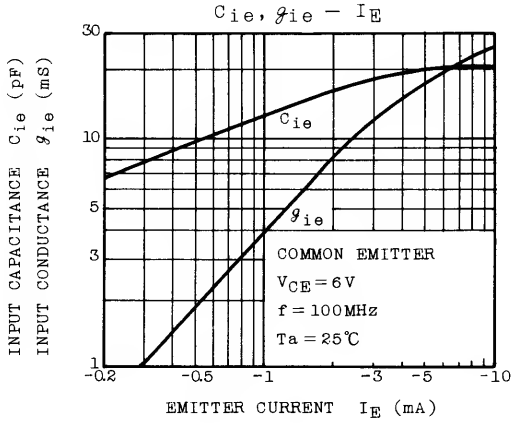
STATIC CHARACTERISTICS



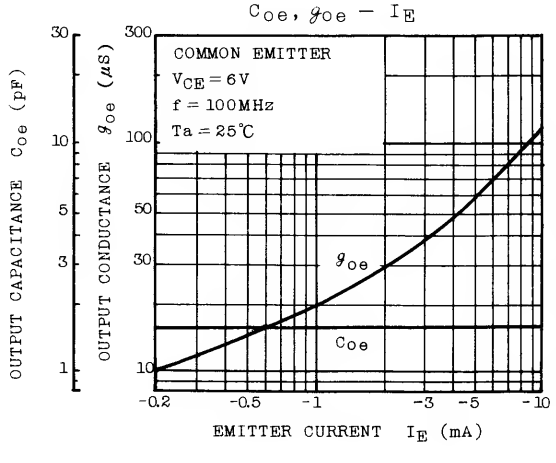
$h_{FE} - I_C$



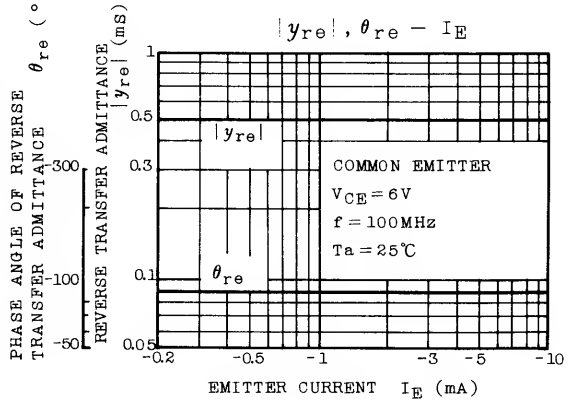
$C_{ie}, g_{ie} - I_E$

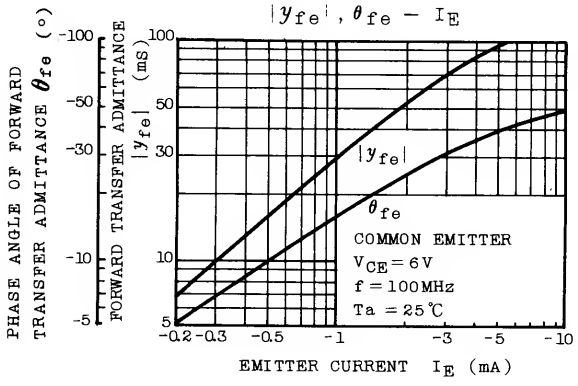


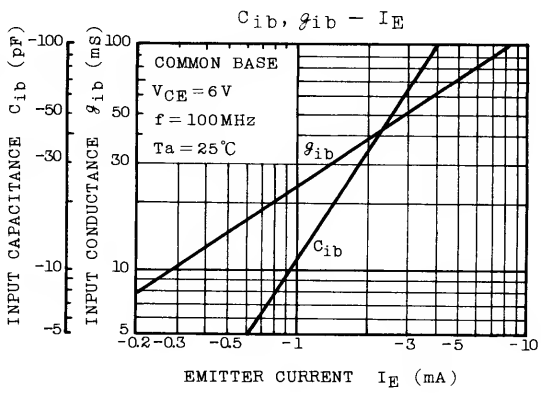
$C_{oe}, g_{oe} - I_E$

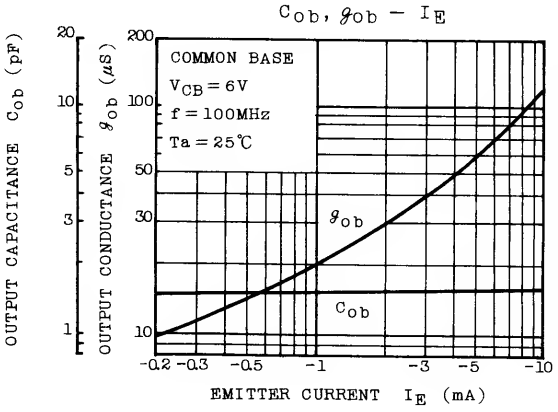


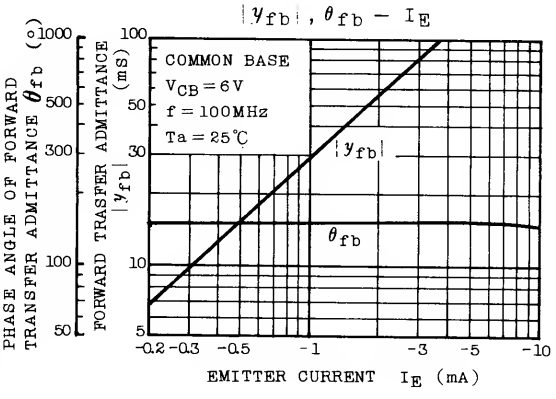
$|y_{re}|, \theta_{re} - I_E$

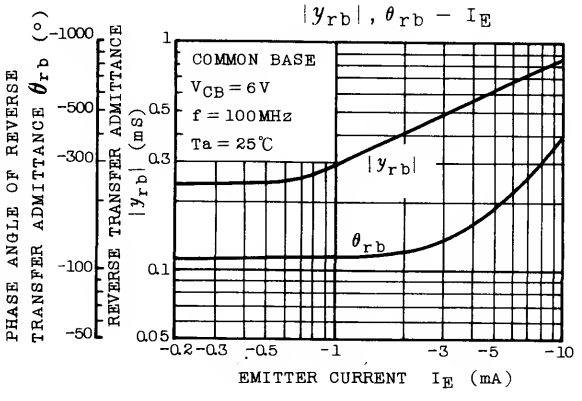


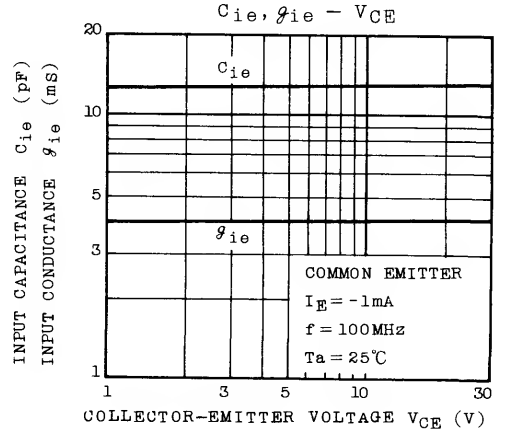

$|y_{fe}|, \theta_{fe} - I_E$
PHASE ANGLE OF FORWARD TRANSFER ADMITTANCE θ_{fe} (°)
FORWARD TRANSFER ADMITTANCE $|y_{fe}|$ (mS)
$|y_{fe}|$
θ_{fe}
COMMON EMITTER
V_{CE} = 6V
f = 100MHz
Ta = 25℃
EMITTER CURRENT I_E (mA)

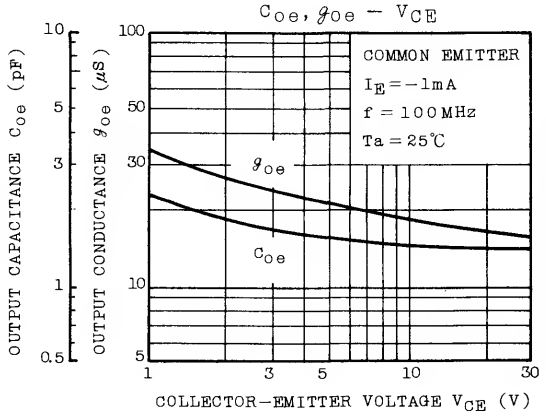

$C_{ib}, g_{ib} - I_E$
INPUT CAPACITANCE C_{ib} (pF)
INPUT CONDUCTANCE g_{ib} (mS)
COMMON BASE
V_{CE} = 6V
f = 100MHz
Ta = 25℃
g_{ib}
C_{ib}
EMITTER CURRENT I_E (mA)

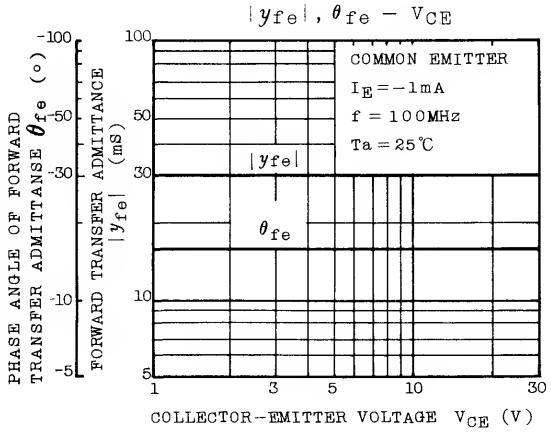

$C_{ob}, g_{ob} - I_E$
OUTPUT CAPACITANCE C_{ob} (pF)
OUTPUT CONDUCTANCE g_{ob} (μS)
COMMON BASE
V_{CB} = 6V
f = 100MHz
Ta = 25℃
g_{ob}
C_{ob}
EMITTER CURRENT I_E (mA)

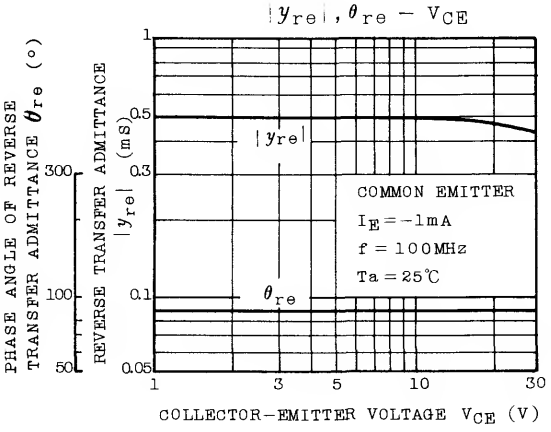

$|y_{fb}|, \theta_{fb} - I_E$
PHASE ANGLE OF FORWARD TRANSFER ADMITTANCE θ_{fb} (°)
FORWARD TRASFER ADMITTANCE $|y_{fb}|$ (mS)
COMMON BASE
V_{CB} = 6V
f = 100MHz
Ta = 25℃
$|y_{fb}|$
θ_{fb}
EMITTER CURRENT I_E (mA)

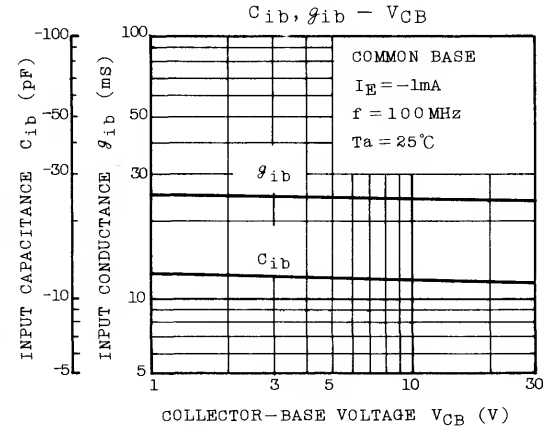

$|y_{rb}|, \theta_{rb} - I_E$
PHASE ANGLE OF REVERSE TRANSFER ADMITTANCE θ_{rb} (°)
REVERSE TRANSFER ADMITTANCE $|y_{rb}|$ (mS)
COMMON BASE
V_{CB} = 6V
f = 100MHz
Ta = 25℃
$|y_{rb}|$
θ_{rb}
EMITTER CURRENT I_E (mA)

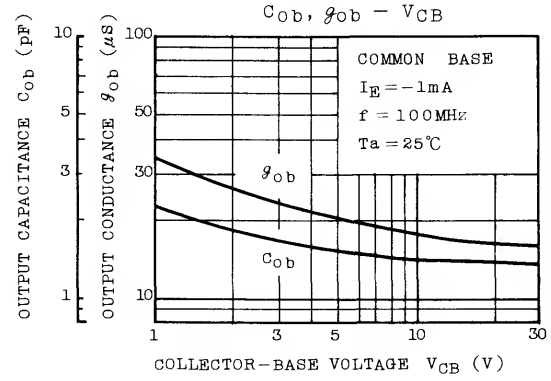

$C_{ie}, g_{ie} - V_{CE}$
INPUT CAPACITANCE C_{ie} (pF)
INPUT CONDUCTANCE g_{ie} (mS)
C_{ie}
g_{ie}
COMMON EMITTER
I_E = -1mA
f = 100MHz
Ta = 25℃
COLLECTOR-EMITTER VOLTAGE V_{CE} (V)

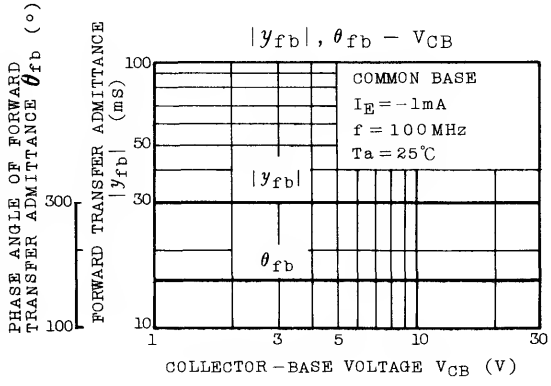

$C_{oe}, g_{oe} - V_{CE}$
COMMON EMITTER
$I_E = -1mA$
f = 100MHz
Ta = 25℃
g_{oe}
C_{oe}
OUTPUT CAPACITANCE C_{oe} (pF)
OUTPUT CONDUCTANCE g_{oe} (μS)
COLLECTOR-EMITTER VOLTAGE V_{CE} (V)


$|y_{fe}|, \theta_{fe} - V_{CE}$
COMMON EMITTER
$I_E = -1mA$
f = 100MHz
Ta = 25℃
$|y_{fe}|$
θ_{fe}
PHASE ANGLE OF FORWARD TRANSFER ADMITTANSE θ_{fe} (°)
FORWARD TRANSFER ADMITTANCE $|y_{fe}|$ (mS)
COLLECTOR-EMITTER VOLTAGE V_{CE} (V)

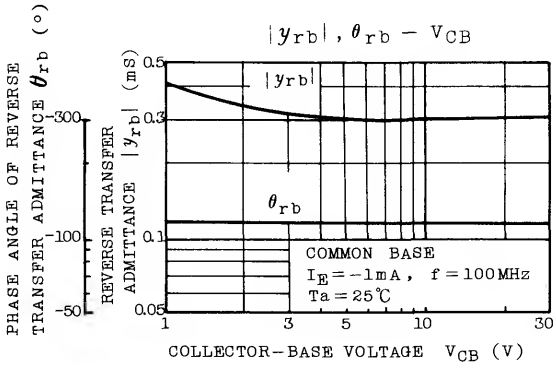

$|y_{re}|, \theta_{re} - V_{CE}$
COMMON EMITTER
$I_E = -1mA$
f = 100MHz
Ta = 25℃
$|y_{re}|$
θ_{re}
PHASE ANGLE OF REVERSE TRANSFER ADMITTANCE θ_{re} (°)
REVERSE TRANSFER ADMITTANCE $|y_{re}|$ (mS)
COLLECTOR-EMITTER VOLTAGE V_{CE} (V)


$C_{ib}, g_{ib} - V_{CB}$
COMMON BASE
$I_E = -1mA$
f = 100MHz
Ta = 25℃
g_{ib}
C_{ib}
INPUT CAPACITANCE C_{ib} (pF)
INPUT CONDUCTANCE g_{ib} (mS)
COLLECTOR-BASE VOLTAGE V_{CB} (V)

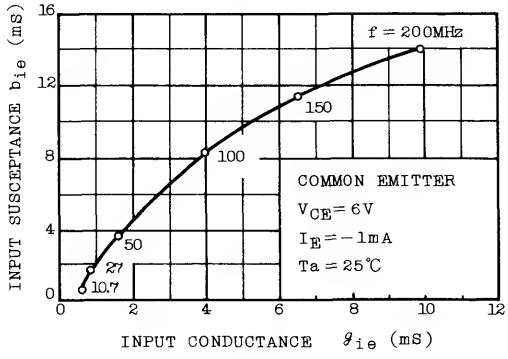

$C_{ob}, g_{ob} - V_{CB}$
COMMON BASE
$I_E = -1mA$
f = 100MHz
Ta = 25℃
g_{ob}
C_{ob}
OUTPUT CAPACITANCE C_{ob} (pF)
OUTPUT CONDUCTANCE g_{ob} (μS)
COLLECTOR-BASE VOLTAGE V_{CB} (V)


$|y_{fb}|, \theta_{fb} - V_{CB}$
COMMON BASE
$I_E = -1mA$
f = 100MHz
Ta = 25℃
$|y_{fb}|$
θ_{fb}
PHASE ANGLE OF FORWARD TRANSFER ADMITTANCE θ_{fb} (°)
FORWARD TRANSFER ADMITTANCE $|y_{fb}|$ (mS)
COLLECTOR-BASE VOLTAGE V_{CB} (V)

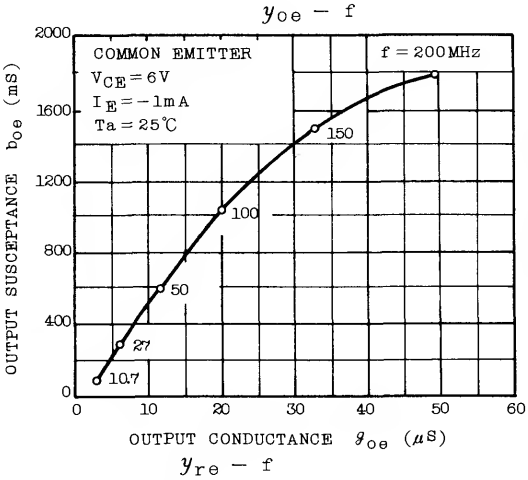
$|y_{rb}|, \theta_{rb} - V_{CB}$



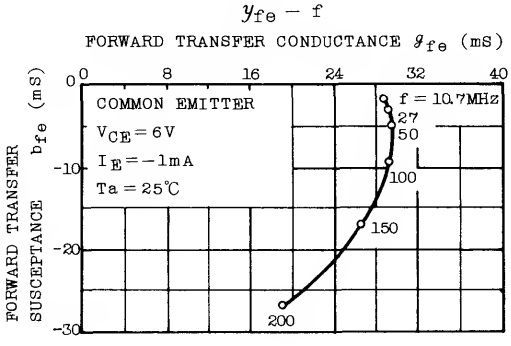
$y_{ie} - f$



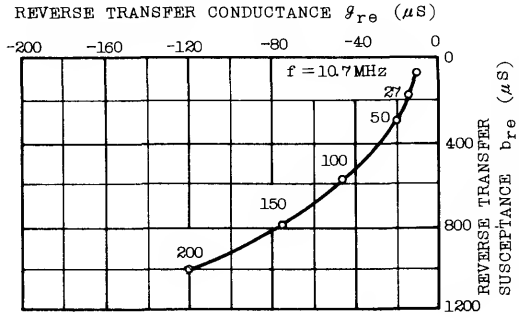
$y_{oe} - f$



$y_{fe} - f$



$y_{re} - f$



$P_C - Ta$