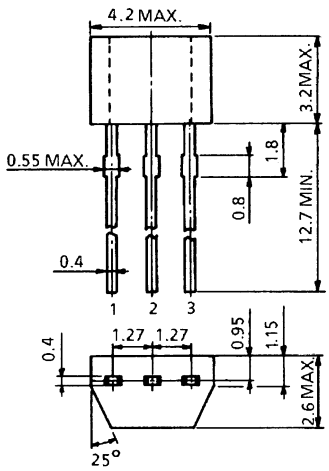
TOSHIBA Transistor Silicon NPN Epitaxial Type (PCT process)

2SC2670

High Frequency Amplifier Applications
AM High Frequency Amplifier Applications
AM Frequency Converter Applications

- Low noise figure: NF = 3.5dB (max) (f = 1 MHz)

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}	35	V
Collector-emitter voltage	V_{CEO}	30	V
Emitter-base voltage	V_{EBO}	4	V
Collector current	I_C	100	mA
Base current	I_B	20	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)

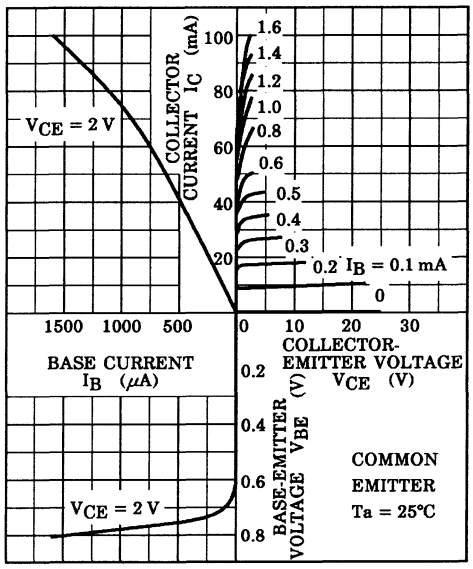
Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	I_{CBO}	V_{CB} = 35 V, I_E = 0	—	—	0.1	μA
Emitter cut-off current	I_{EBO}	V_{EB} = 4 V, I_C = 0	—	—	1.0	μA
DC current gain	h_{FE} (Note)	V_{CE} = 12 V, I_C = 2 mA	40	—	240	
Collector-emitter saturation voltage	$V_{CE\ (sat)}$	I_C = 10 mA, I_B = 1 mA	—	—	0.4	V
Base-emitter saturation voltage	$V_{BE\ (sat)}$	I_C = 10 mA, I_B = 1 mA	—	—	1.0	V
Transition frequency	f_T	V_{CE} = 10 V, I_C = 2 mA	80	—	—	MHz
Reverse transfer capacitance	C_{re}	V_{CE} = 10 V, f = 1 MHz	—	2.2	3.0	pF
Collector-base time constant	$C_c.r_{bb'}$	V_{CE} = 10 V, I_E = −1 mA, f = 30 MHz	—	—	50	ps
Noise figure	NF	V_{CE} = 10 V, I_E = −1 mA, f = 1 MHz, R_g = 50 Ω	—	2.0	3.5	dB

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

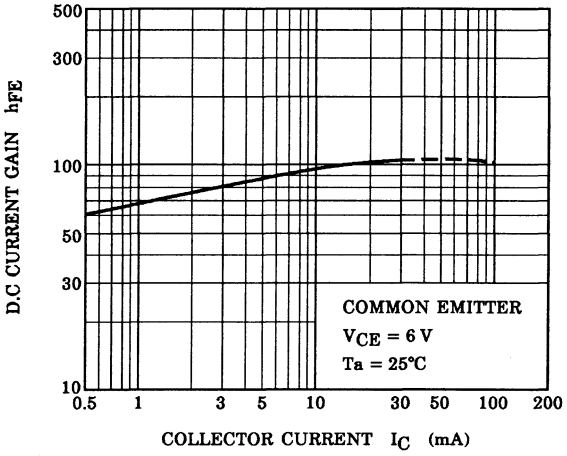
Y Parameters (typ.) (common emitter V_{CE} = 6 V, I_E = −1 mA, f = 1 MHz)

Characteristics	Symbol	2SC2670-R	2SC2670-O	2SC2670-Y	Unit
Input conductance	g_{ie}	0.5	0.35	0.22	mS
Input capacitance	C_{ie}	50	48	46	pF
Output conductance	g_{oe}	4	5	6.5	μS
Output capacitance	C_{oe}	3.7	3.4	3.2	pF
Forward transfer admittance	$\|y_{fe}\|$	36	36	36	mS
Phase angle of forward transfer admittance	θ_{fe}	−1.6	−1.6	−1.6	°
Reverse transfer admittance	$\|y_{re}\|$	14	14	14	μS
Phase angle of reverse transfer admittance	θ_{re}	−90	−90	−90	°

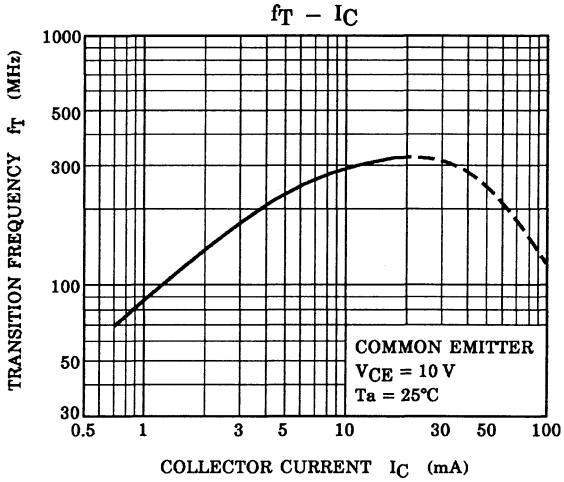
STATIC CHARACTERISTICS



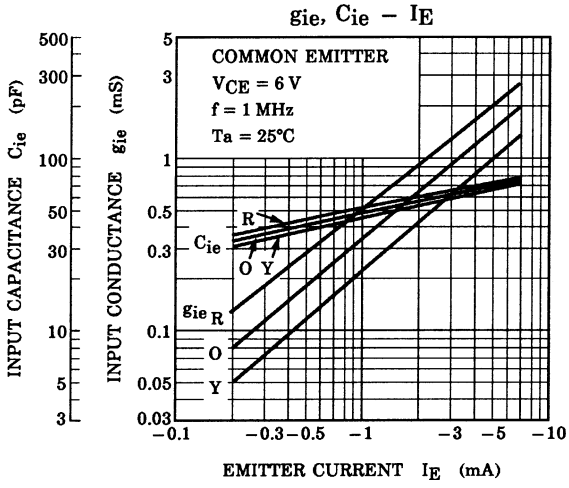
h_{FE} – I_C



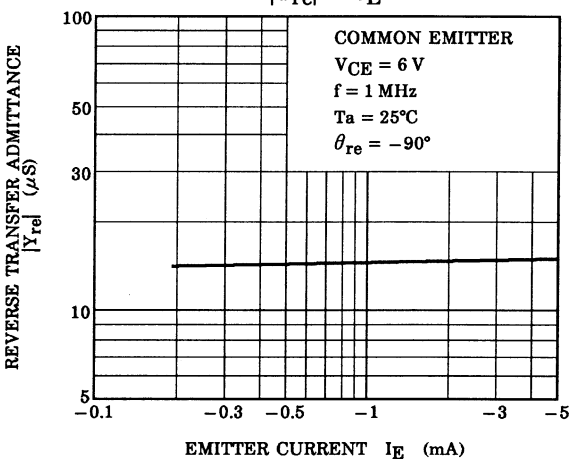
f_T – I_C



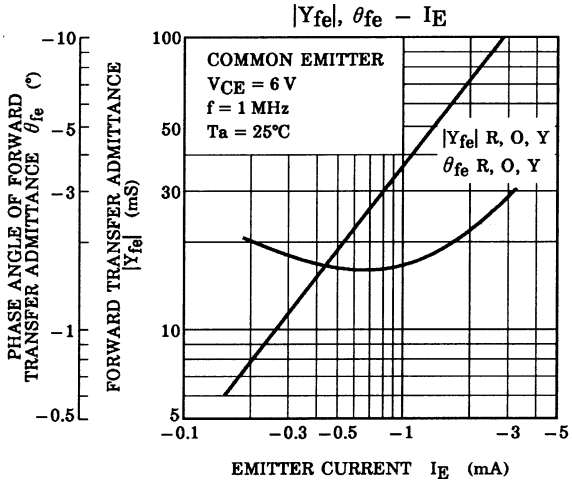
g_{ie}, C_{ie} – I_E



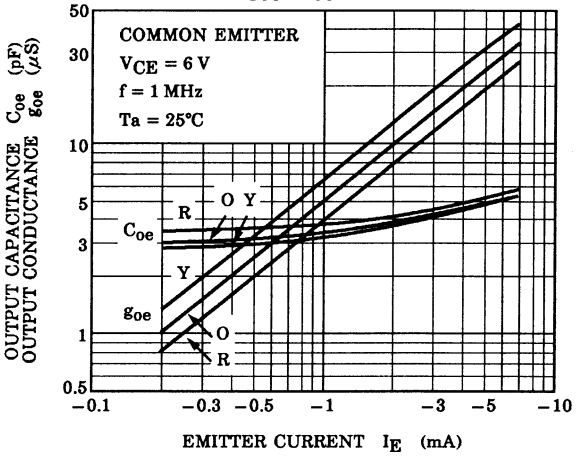
$|Y_{re}|$ – I_E



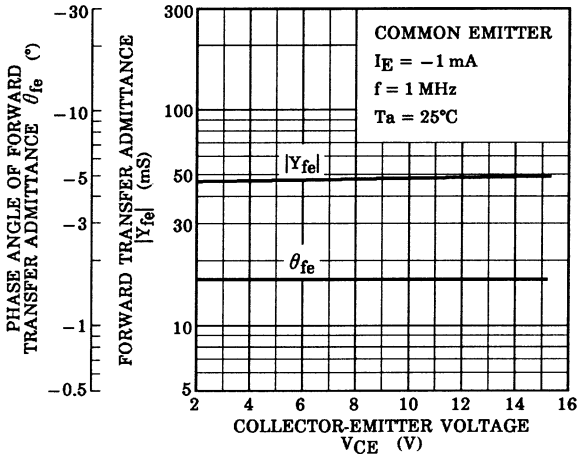
$|Y_{fe}|$, θ_{fe} – I_E



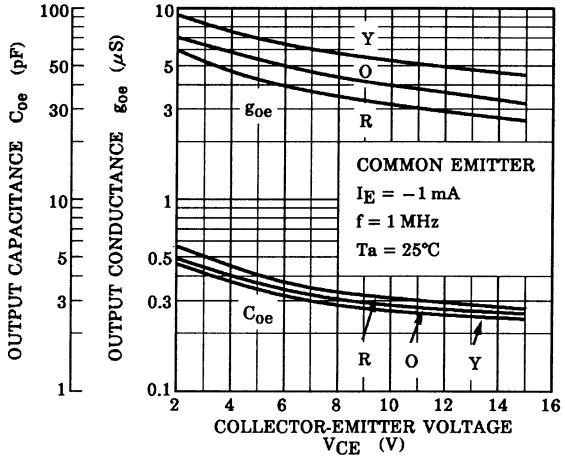
g_{oe}, C_{oe} – I_E



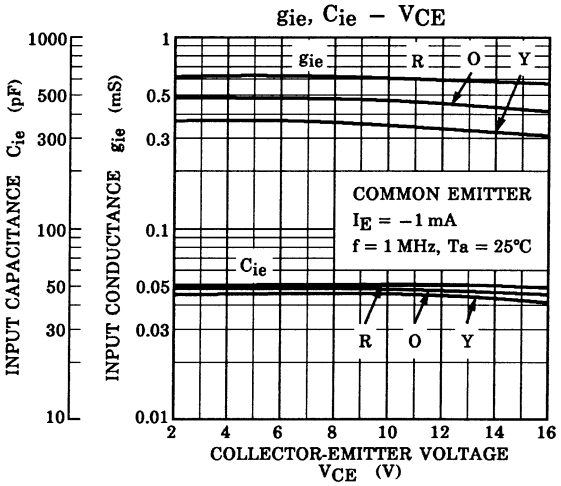
$|Y_{fe}|$, θ_{fe} – V_{CE}



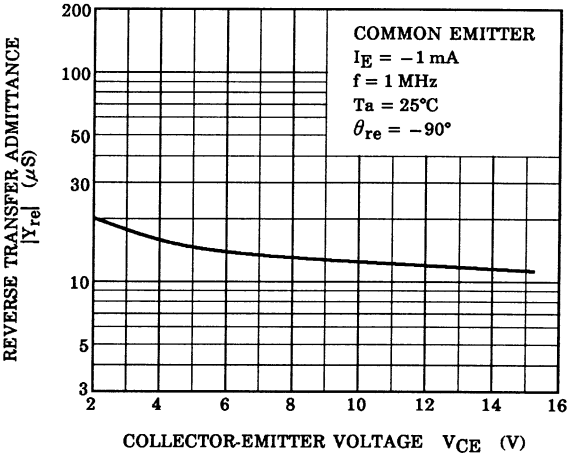
g_{oe}, C_{oe} – I_E



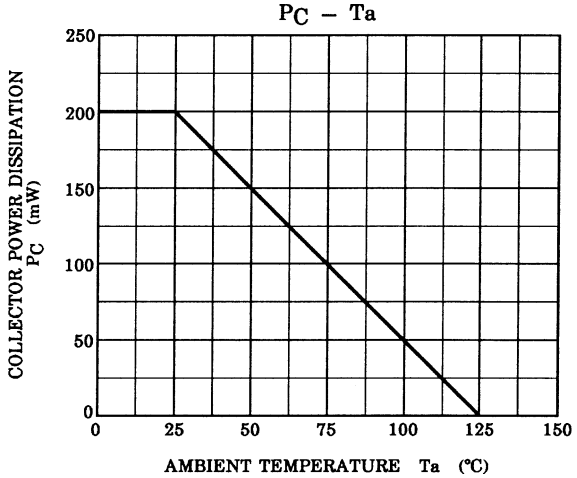
g_{ie}, C_{ie} – V_{CE}



$|Y_{re}|$ – V_{CE}



P_C – Ta



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