

TOSHIBA Transistor Silicon NPN Epitaxial Type (PCT process)

2SC2670

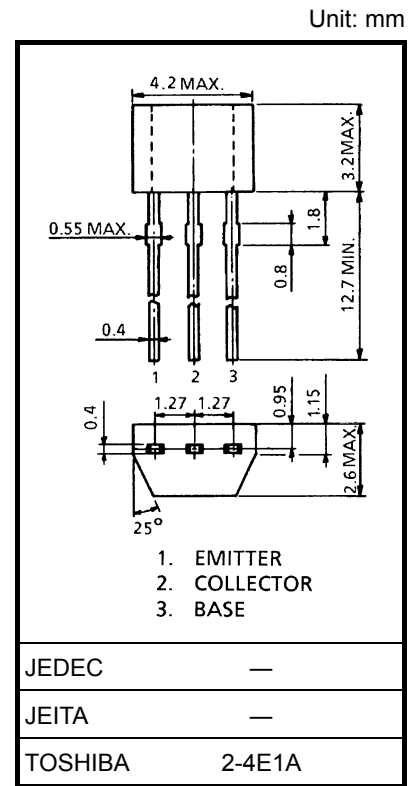
High Frequency Amplifier Applications
 AM High Frequency Amplifier Applications
 AM Frequency Converter Applications

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

Absolute Maximum Ratings (Ta = 25°C)

Characteristics	Symbol	Rating	Unit
Collector-base voltage	V _{CB0}	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

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: 0.13 g (typ.)

Electrical Characteristics (Ta = 25°C)

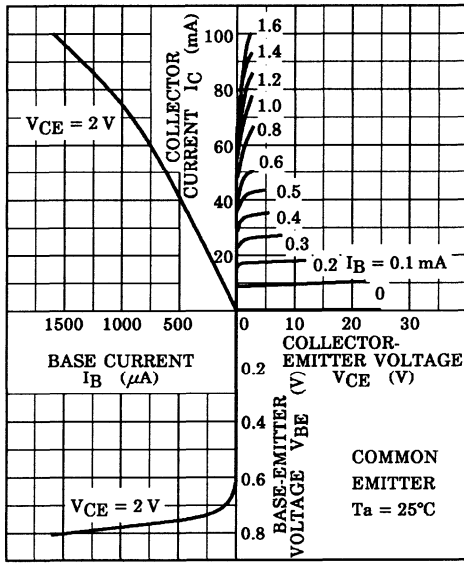
Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	I _{CB0}	V _{CB} = 35 V, I _E = 0	—	—	0.1	μA
Emitter cut-off current	I _{EBO}	V _{EB} = 4 V, I _C = 0	—	—	1.0	μA
DC current gain	h _{FE} (Note)	V _{CE} = 12 V, I _C = 2 mA	40	—	240	
Collector-emitter saturation voltage	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

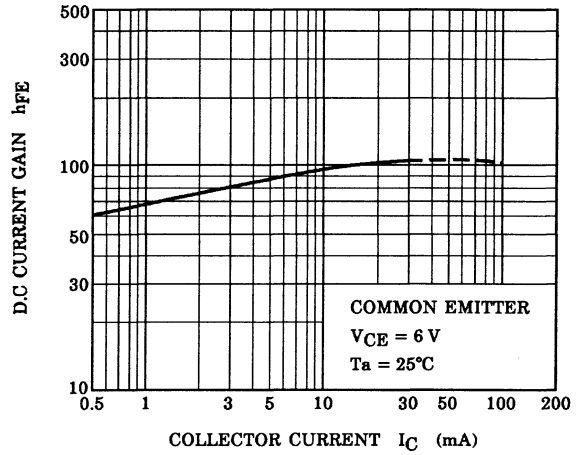
Y Parameters (typ.) (common emitter $V_{CE} = 6\text{ V}$, $I_E = -1\text{ mA}$, $f = 1\text{ MHz}$)

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	$^\circ$
Reverse transfer admittance	$ y_{re} $	14	14	14	μS
Phase angle of reverse transfer admittance	θ_{re}	-90	-90	-90	$^\circ$

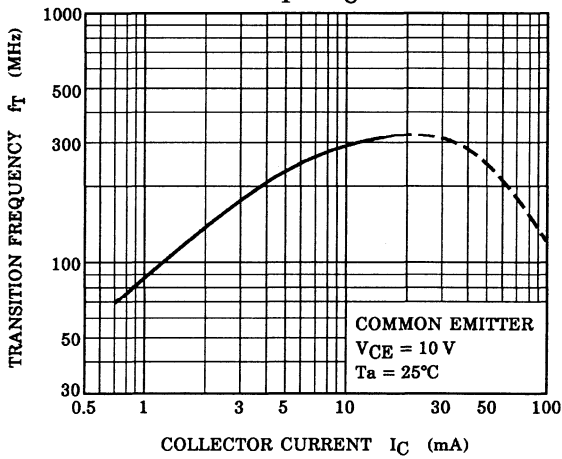
STATIC CHARACTERISTICS



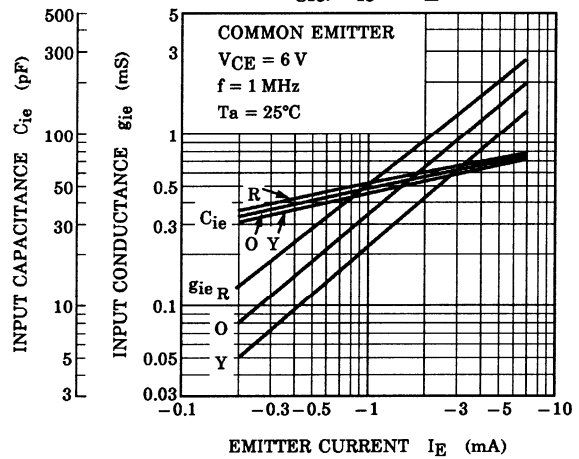
$h_{FE} - I_C$



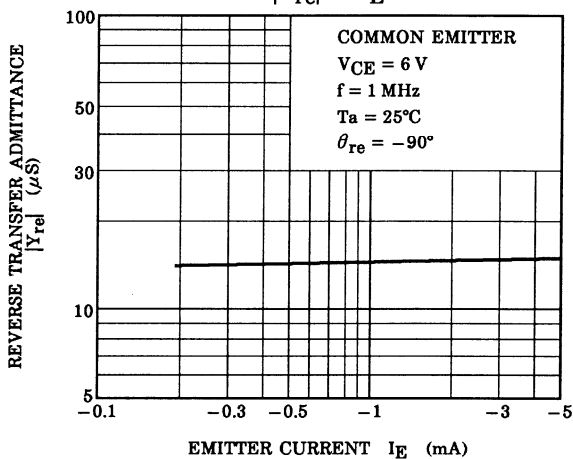
$f_T - I_C$



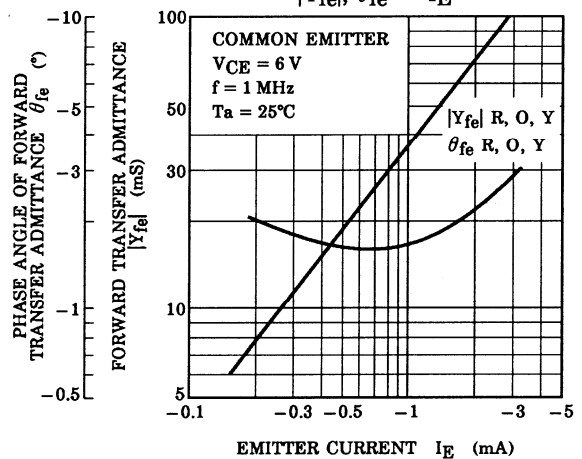
$g_{ie}, C_{ie} - I_E$

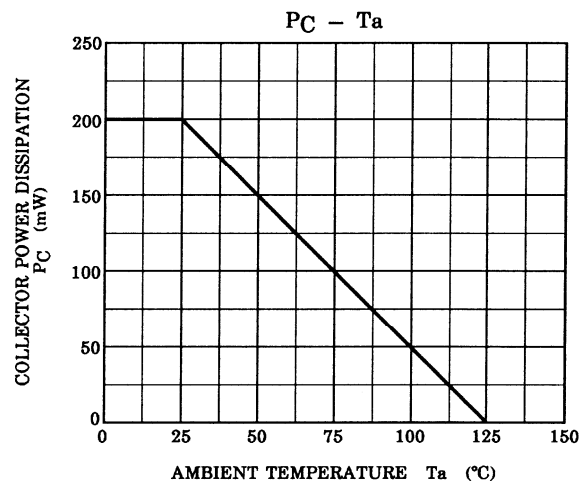
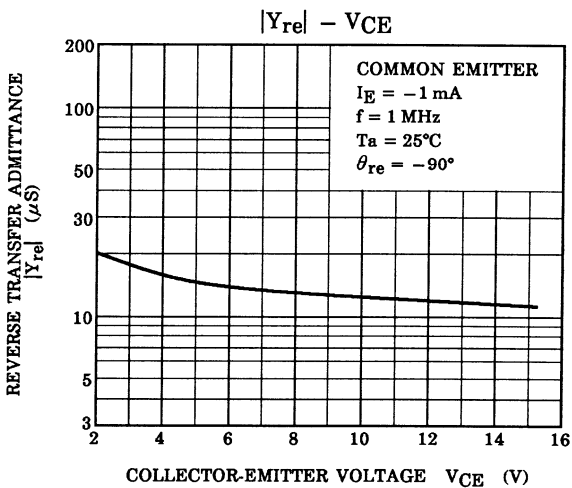
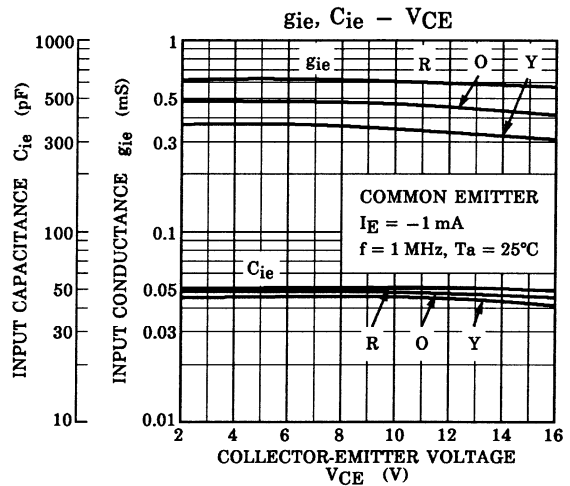
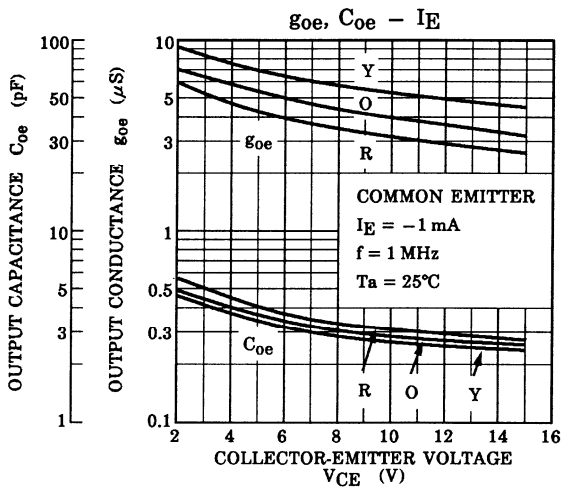
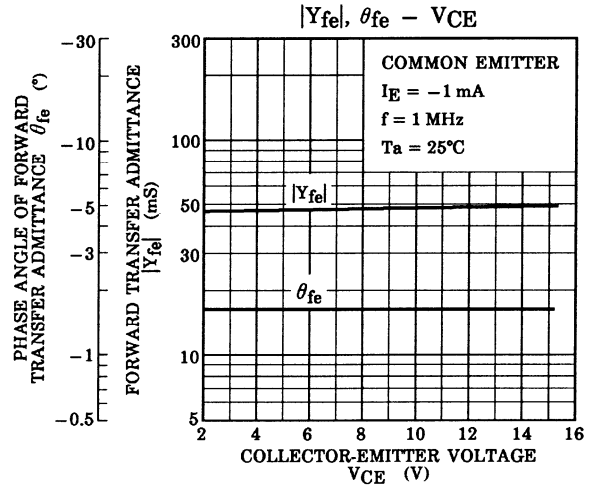
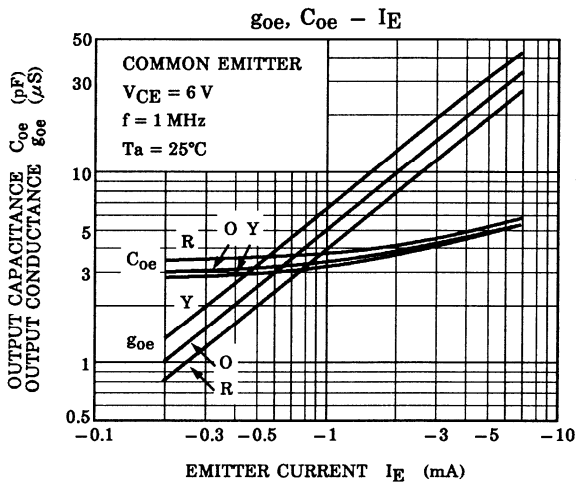


$|Y_{re}| - I_E$



$|Y_{fe}|, \theta_{fe} - I_E$





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