TOSHIBA TRANSISTOR SILICON NPN EPITAXIAL TYPE (PCT PROCESS)

2SC941TM

HIGH FREQUENCY AMPLIFIER APPLICATIONS

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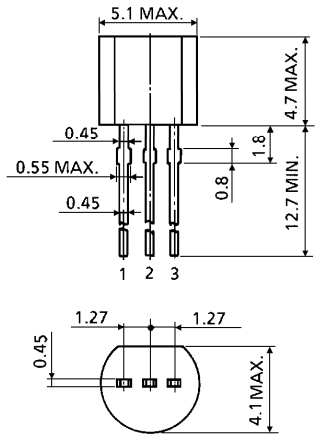
AM FREQUENCY CONVERTER APPLICATIONS

- Low Noise Figure : NF = 3.5dB (Max.) (f = 1 MHz)

Unit in mm



1. EMITTER
2. COLLECTOR
3. BASE

JEDEC	TO-92
EIAJ	SC-43
TOSHIBA	2-5F1B

Weight : 0.21 g

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	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	400	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} = 20 V, I_E = 0	—	—	0.1	μA
Emitter Cut-off Current	I_{EBO}	V_{EB} = 2 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	120	—	MHz
Reverse Transfer Capacitance	C_{re}	V_{CB} = 10 V, I_E = 0, 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	—	30	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

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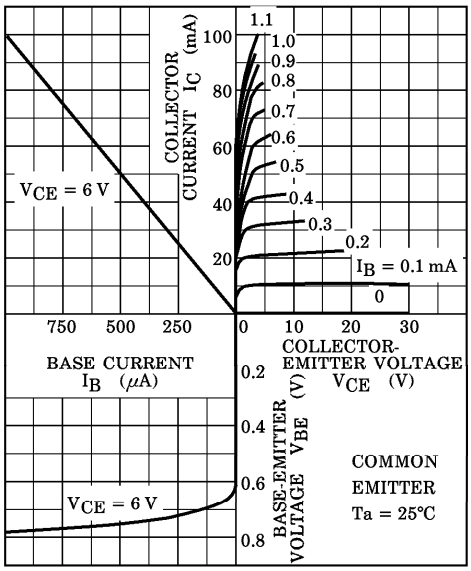
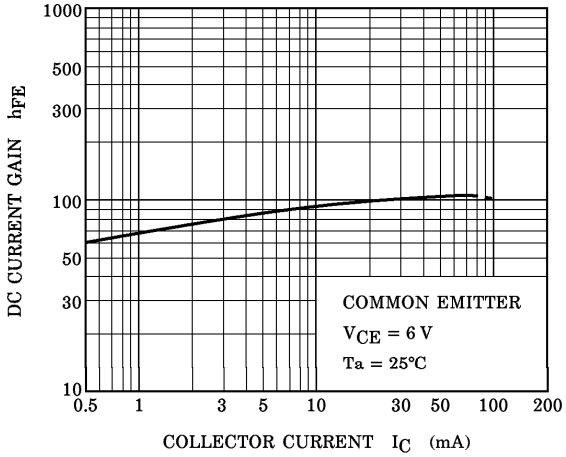
y PARAMETERS (Typ.) (COMMON EMITTER V_{CE} = 6 V, I_E = −1 mA, f = 1 MHz)

CHARACTERISTIC	SYMBOL	2SC941-R	2SC941-O	2SC941-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	°

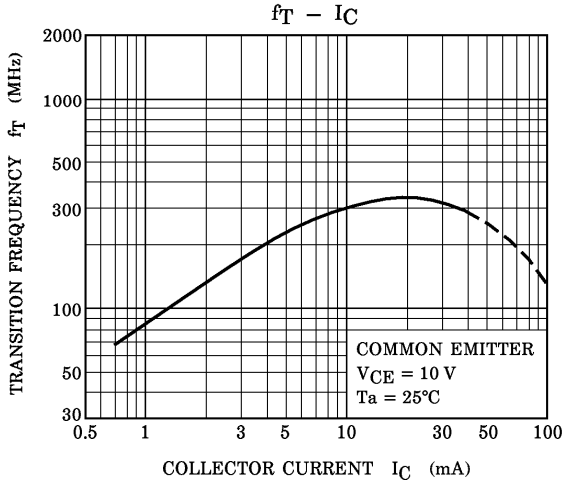
STATIC CHARACTERISTICS



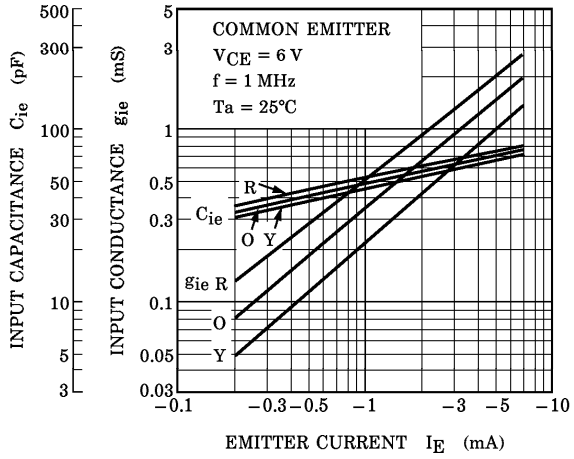
h_{FE} – I_C



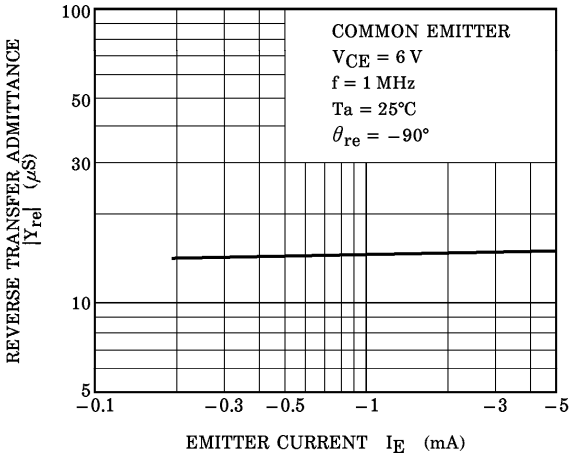
f_T – I_C



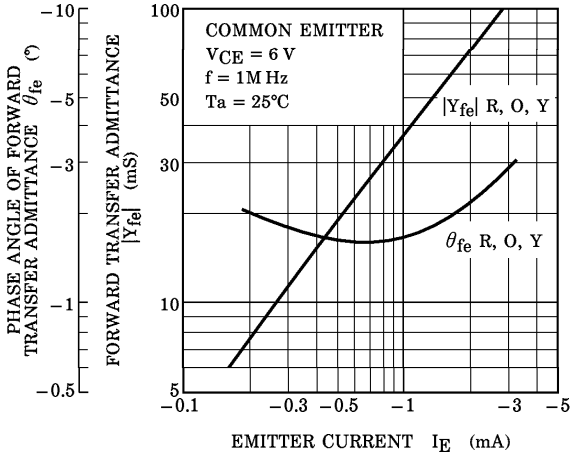
g_{ie}, C_{ie} – I_E



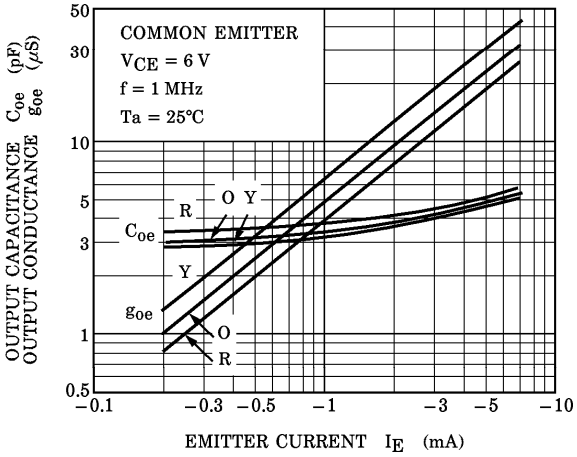
$|Y_{re}|$ – I_E



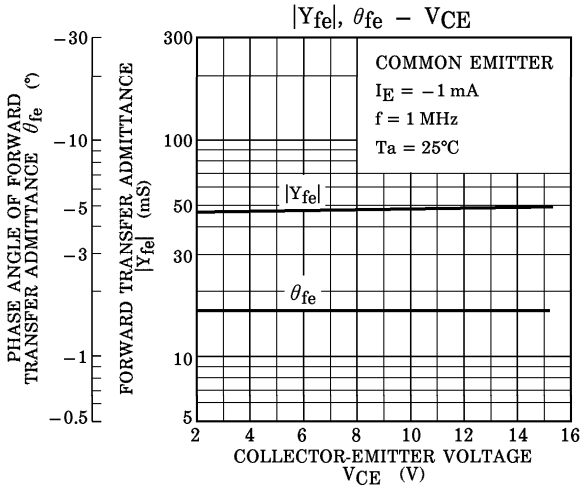
$|Y_{fe}|$, θ_{fe} – I_E



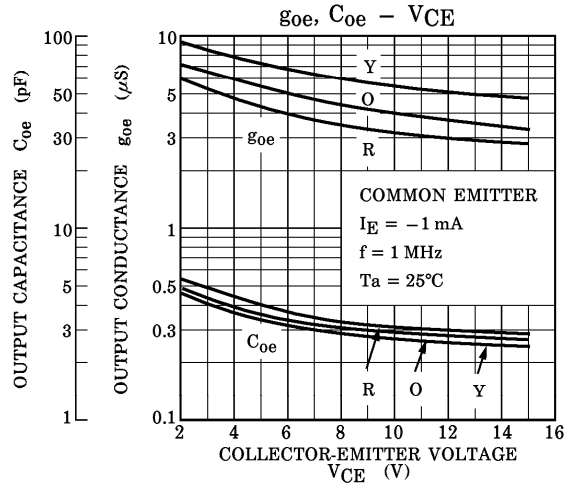
g_{oe}, C_{oe} – I_E



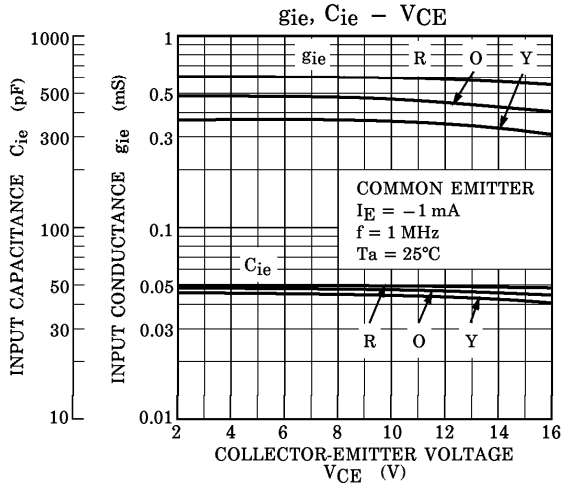
$|Y_{fe}|$, θ_{fe} – V_{CE}



g_{oe}, C_{oe} – V_{CE}



g_{ie}, C_{ie} – V_{CE}



$|Y_{re}|$ – V_{CE}