

TOSHIBA TRANSISTOR SILICON NPN EPITAXIAL PLANAR TYPE (PCT PROCESS)

# 2SC2668

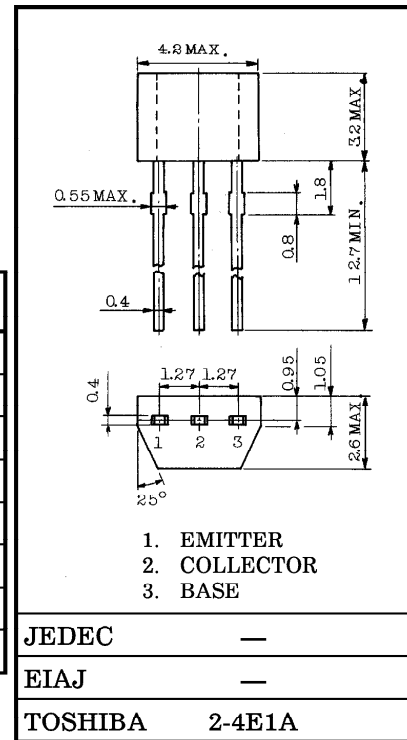
HIGH FREQUENCY AMPLIFIER APPLICATIONS.  
FM, RF, IF AMPLIFIER APPLICATIONS.

Unit in mm

- Small Reverse Transfer Capacitance :  $C_{re}=0.70\text{pF}$  (Typ.)
- Low Noise Figure :  $NF=2.5\text{dB}$  (Typ.)

**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	$I_C$	20	mA
Emitter Current	$I_B$	4	mA
Collector Power Dissipation	$P_C$	100	mW
Junction Temperature Range	$T_j$	125	°C
Storage Temperature Range	$T_{stg}$	-55~125	°C



Weight : 0.13g

**ELECTRICAL CHARACTERISTICS (Ta = 25°C)**

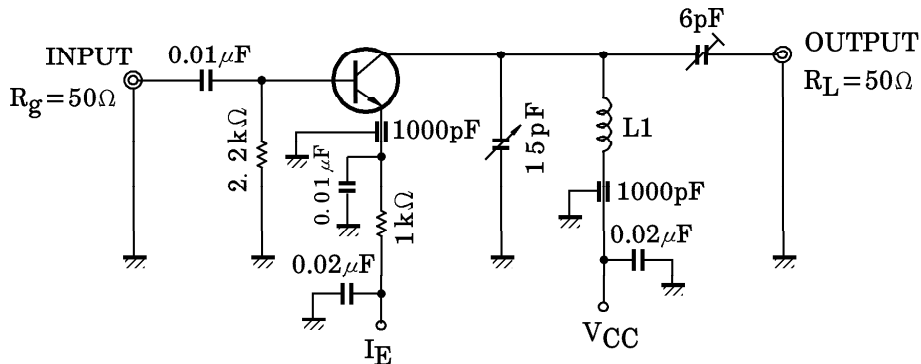
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current	$I_{CBO}$	$V_{CB}=40\text{V}, I_E=0$	—	—	0.5	$\mu\text{A}$
Emitter Cut-off Current	$I_{EBO}$	$V_{EB}=4\text{V}, I_C=0$	—	—	0.5	$\mu\text{A}$
DC Current Gain	$h_{FE}$ (Note)	$V_{CE}=6\text{V}, I_C=1\text{mA}$	40	—	200	—
Reverse Transfer Capacitance	$C_{re}$	$V_{CE}=6\text{V}, f=1\text{MHz}$	—	0.70	—	pF
Transistion Frequency	$f_T$	$V_{CE}=6\text{V}, I_C=1\text{mA}$	—	550	—	MHz
Collector-Base Time Constant	$C_c \cdot r_{bb}'$	$V_{CE}=6\text{V}, I_E=-1\text{mA}, f=30\text{MHz}$	—	—	30	ps
Noise Figure	NF	$V_{CC}=6\text{V}, I_E=-1\text{mA}, f=100\text{MHz}$ (Fig.1)	—	2.5	5.0	dB
Power Gain	$G_{pe}$		—	18	—	dB

Note :  $h_{FE}$  Classification R : 40~80, O : 70~140, Y : 100~200

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Fig.1. NF,  $G_{pe}$  TEST CIRCUIT



L1 : 0.8mmφ SILVER PLATED COPPER WIRE, 4Turns. 10mm ID, 8mm Length.

Y PARAMETER (Typ.)

(1) COMMON EMITTER ( $V_{CE} = 6V, I_E = -1mA, f = 100MHz$ )

CHARACTERISTIC	SYMBOL	TYP.	UNIT
Input Conductance	$g_{ie}$	2.9	ms
Input Capacitance	$C_{ie}$	10.2	pF
Reverse Transfer Admittance	$ Y_{re} $	0.33	ms
Phase Angle of Reverse Transfer Admittance	$\theta_{re}$	-90	°
Forward transfer Admittance	$ Y_{fe} $	40	ms
Phase Angle of Forward Transfer Admittance	$\theta_{fe}$	-20	°
Output Conductance	$g_{oe}$	45	$\mu S$
Output Capacitance	$C_{oe}$	1.1	pF

(2) COMMON BASE ( $V_{CB} = 6V, I_E = -1mA, f = 100MHz$ )

CHARACTERISTIC	SYMBOL	TYP.	UNIT
Input Conductance	$g_{ib}$	34	ms
Input Capacitance	$C_{ib}$	-10	pF
Reverse Transfer Admittance	$ Y_{rb} $	0.27	ms
Phase Angle of Reverse Transfer Admittance	$\theta_{rb}$	-105	°
Forward Transfer Admittance	$ Y_{fb} $	34	ms
Phase Angle of Forward Transfer Admittance	$\theta_{fb}$	165	°
Output Conductance	$g_{ob}$	45	$\mu S$
Output Capacitance	$C_{ob}$	1.1	pF

