

TOSHIBA Transistor Silicon NPN Epitaxial Planar Type

2SC4249

TV VHF RF Amplifier Applications

- High gain: $G_{pe} = 24\text{dB}$ (typ.) ($f = 200\text{ MHz}$)
- Low noise: $NF = 2.0\text{dB}$ (typ.) ($f = 200\text{ MHz}$)
- Excellent forward AGC characteristics

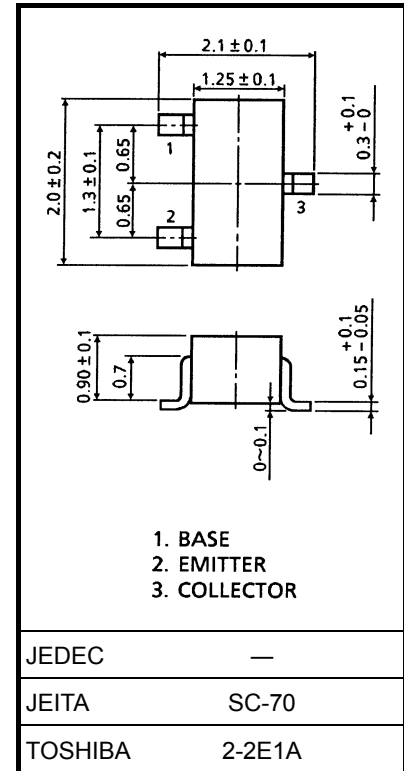
Absolute Maximum Ratings ($T_a = 25^\circ\text{C}$)

Characteristics	Symbol	Rating	Unit
Collector-base voltage	V_{CBO}	30	V
Collector-emitter voltage	V_{CEO}	30	V
Emitter-base voltage	V_{EBO}	3	V
Collector current	I_C	20	mA
Base current	I_B	10	mA
Collector power dissipation	P_C	100	mW
Junction temperature	T_j	125	$^\circ\text{C}$
Storage temperature range	T_{stg}	-55~125	$^\circ\text{C}$

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).

Unit: mm

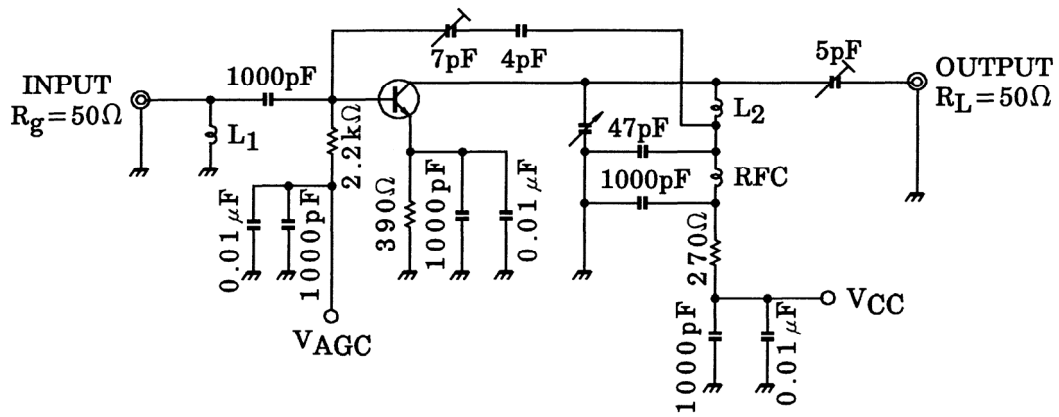


Weight: 0.006 g (typ.)

Electrical Characteristics ($T_a = 25^\circ\text{C}$)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	I_{CBO}	$V_{CB} = 25\text{ V}, I_E = 0$	—	—	100	nA
Emitter cut-off current	I_{EBO}	$V_{EB} = 2\text{ V}, I_C = 0$	—	—	100	nA
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C = 1\text{ mA}, I_B = 0$	30	—	—	V
DC current gain	h_{FE}	$V_{CE} = 10\text{ V}, I_C = 2\text{ mA}$	60	150	300	
Reverse transfer capacitance	C_{re}	$V_{CB} = 10\text{ V}, I_E = 0, f = 1\text{ MHz}$	—	0.35	0.5	pF
Transition frequency	f_T	$V_{CE} = 10\text{ V}, I_C = 2\text{ mA}$	400	650	—	MHz
Power gain	G_{pe}	$V_{CC} = 12\text{ V}, V_{AGC} = 1.4\text{ V}$	20	24	28	dB
Noise figure	NF	$f = 200\text{ MHz}$ (Figure 1)	—	2.0	3.2	dB
AGC voltage (Note)	V_{AGC}	$V_{CC} = 12\text{ V}, GR = 30\text{dB}$ $f = 200\text{ MHz}$	3.6	4.4	5.1	V

Note: V_{AGC} measured by test circuit shown in Figure 1 when power gain is reduced to 30dB compared that of V_{AGC} at 1.4 V.

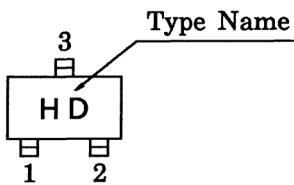


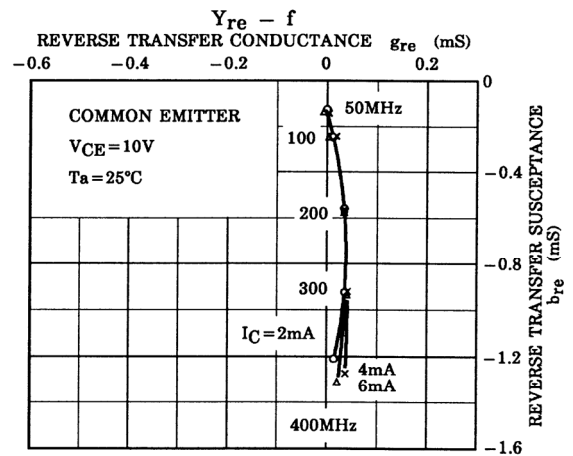
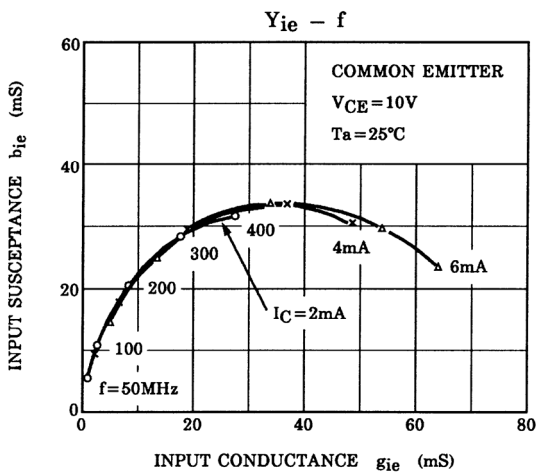
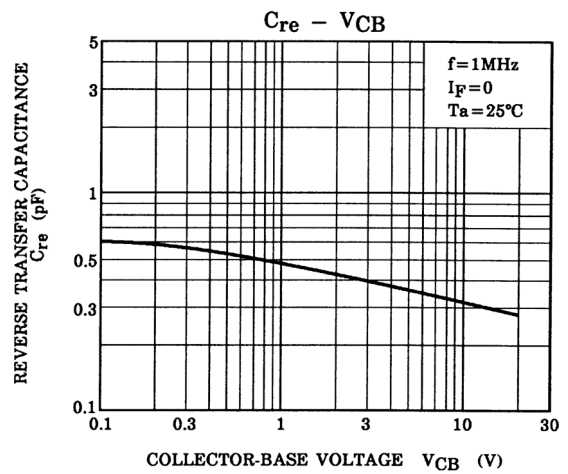
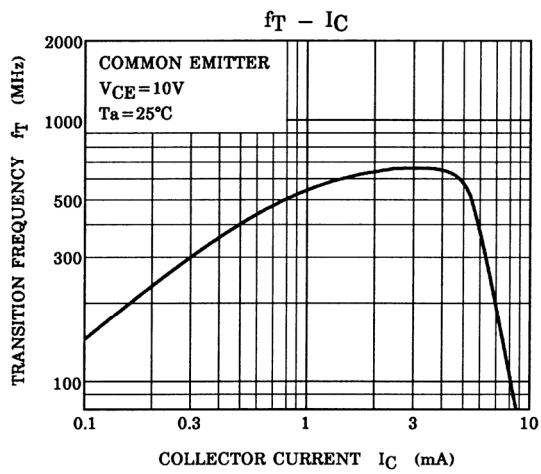
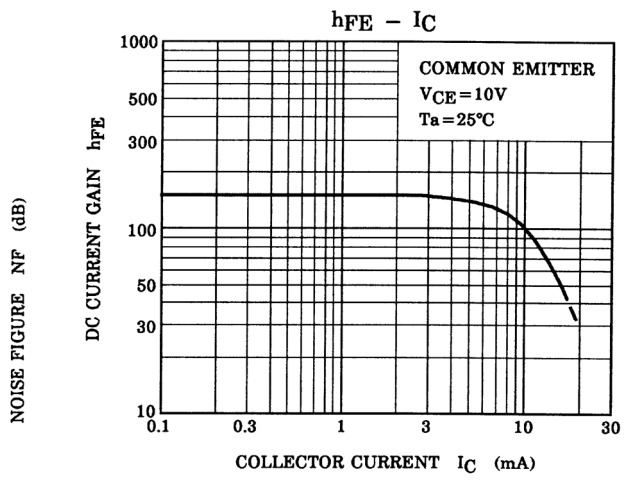
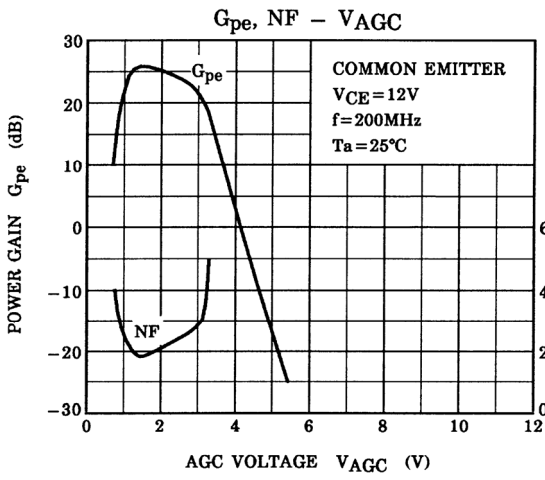
L1: RF coil M-15 T (TOKO Inc.) or equivalent

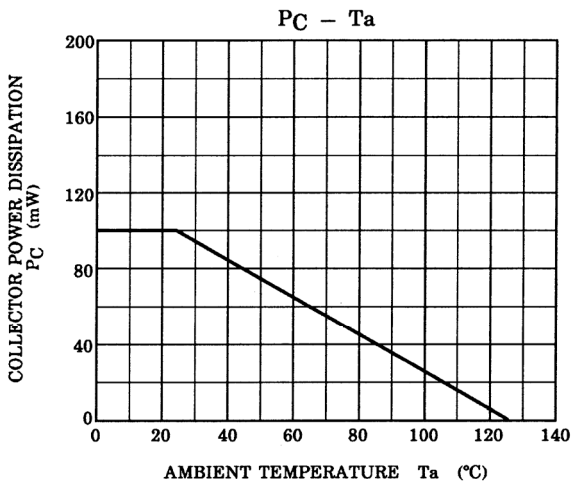
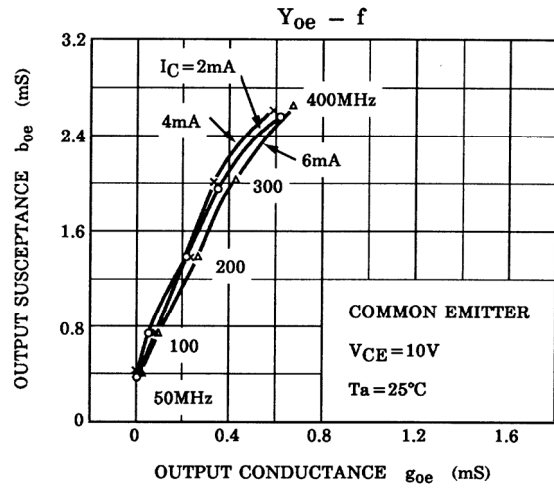
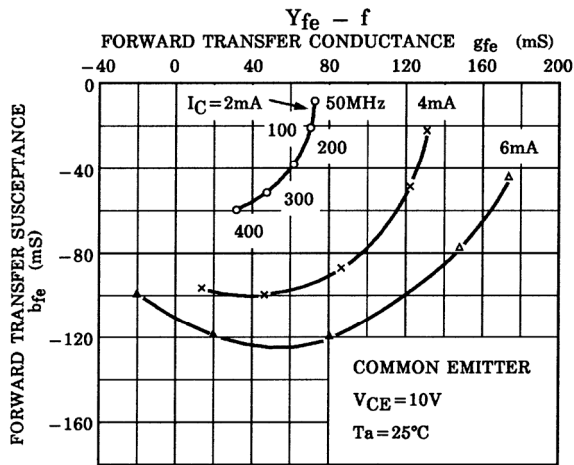
L2: RF coil M-25 T (TOKO Inc.) or equivalent

Figure 1 200 MHz G_{pe} , NF Test Circuit

Marking







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20070701-EN GENERAL

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