

TOSHIBA Transistor Silicon NPN Epitaxial Planar Type

## 2SC4249

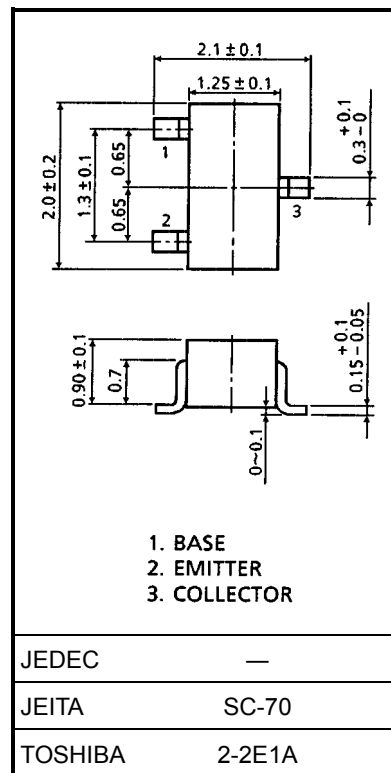
## TV VHF RF Amplifier Applications

Unit: mm

- 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

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

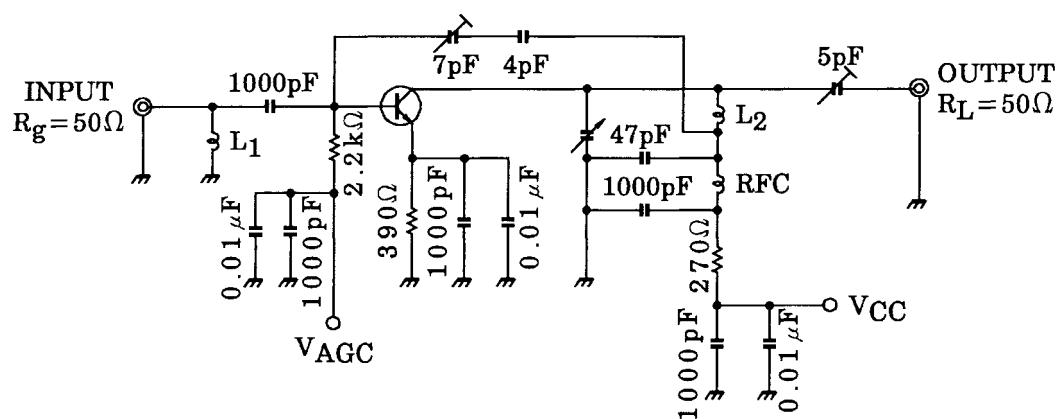
| Characteristics             | Symbol    | Rating        | Unit             |
|-----------------------------|-----------|---------------|------------------|
| Collector-base voltage      | $V_{CBO}$ | 30            | V                |
| Collector-emitter voltage   | $V_{CEO}$ | 30            | V                |
| 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   | $T_{stg}$ | $-55\sim 125$ | $^\circ\text{C}$ |

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

Weight: 0.006 g (typ.)

| 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)                  | $V_{AGC}$     | $V_{CC} = 12\text{ V}$ , $GR = 30\text{dB}$<br>$f = 200\text{ MHz}$ | 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.

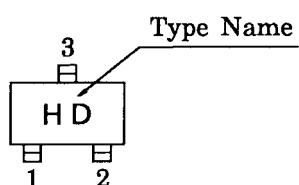


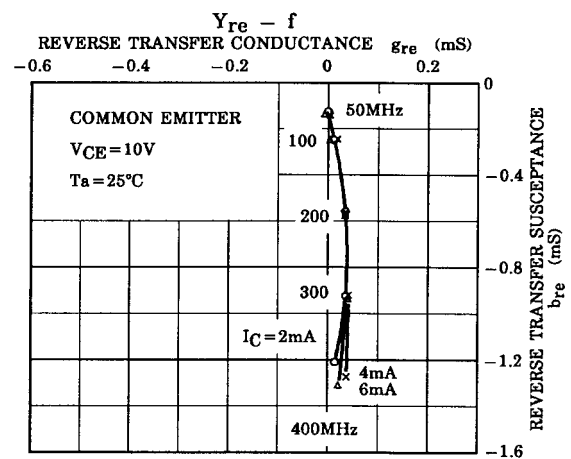
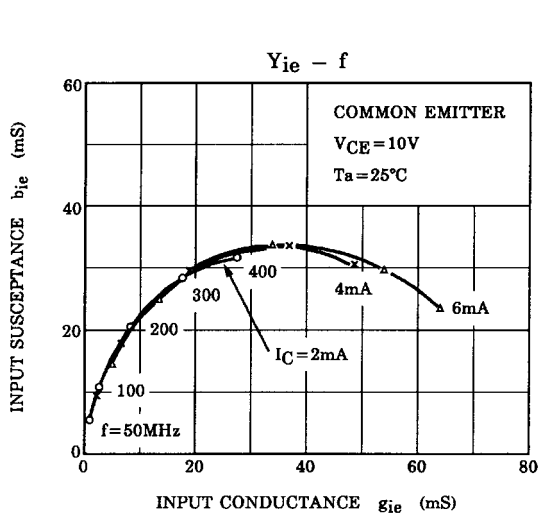
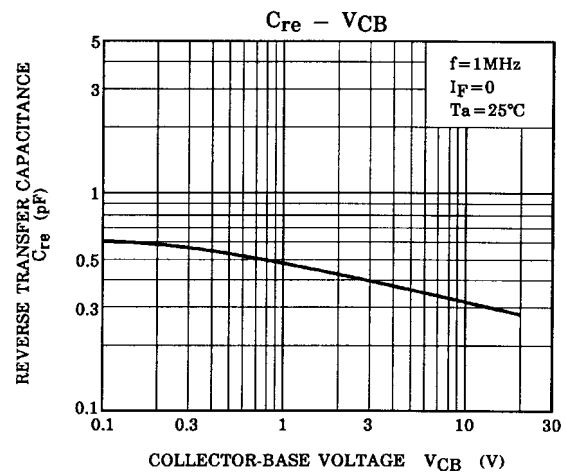
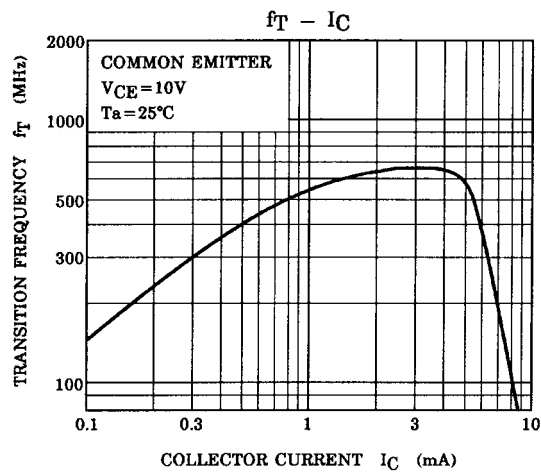
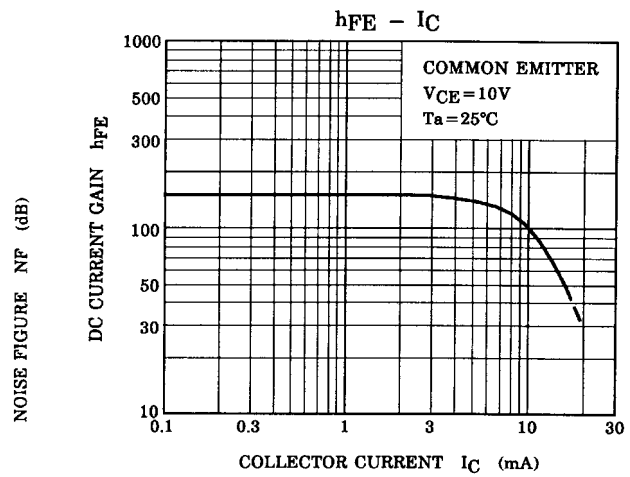
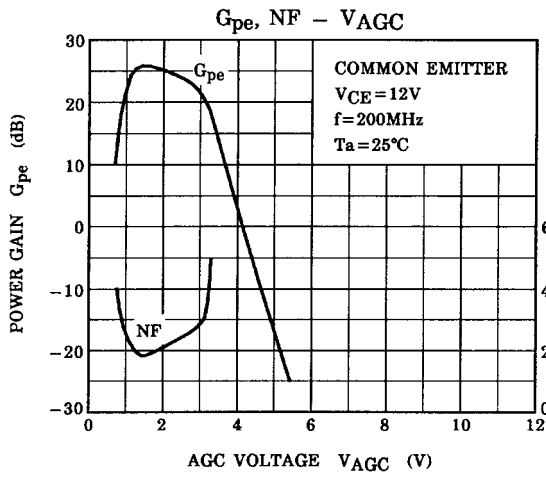
L<sub>1</sub>: RF coil M-15 T (TOKO Inc.) or equivalent

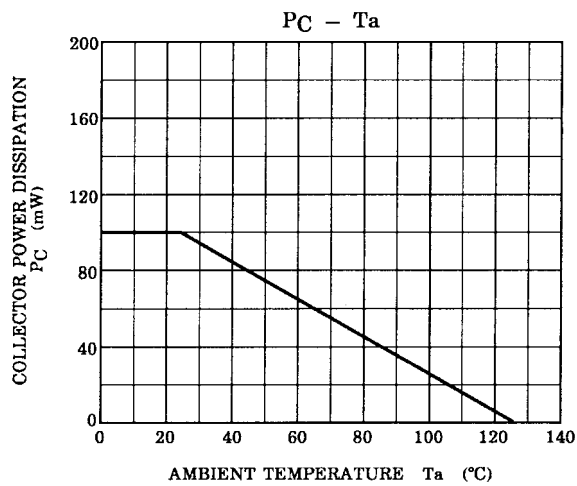
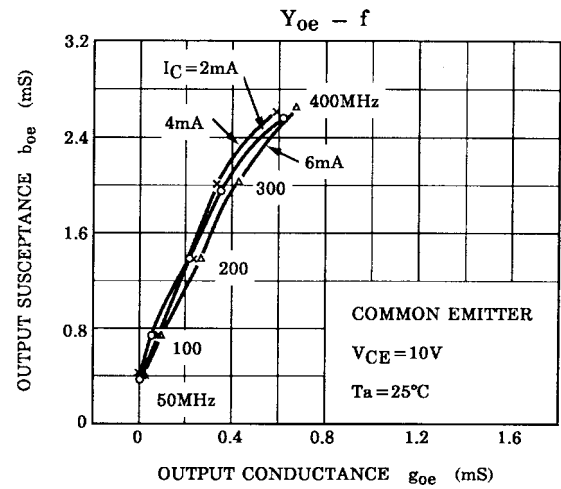
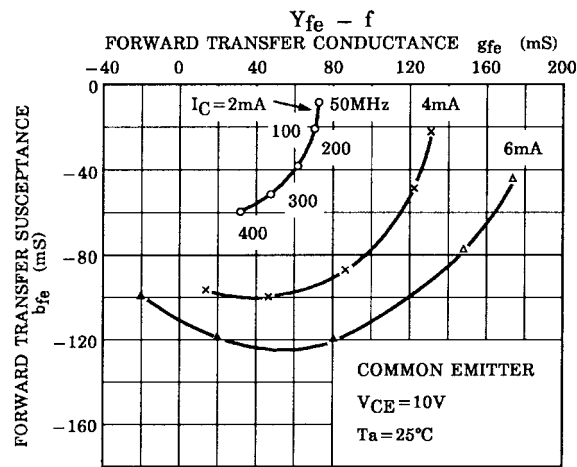
L<sub>2</sub>: RF coil M-25 T (TOKO Inc.) or equivalent

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

### Marking







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