

TOSHIBA Transistor Silicon NPN Epitaxial Type (PCT process)

2SC2713

Audio Frequency General Purpose Amplifier Applications

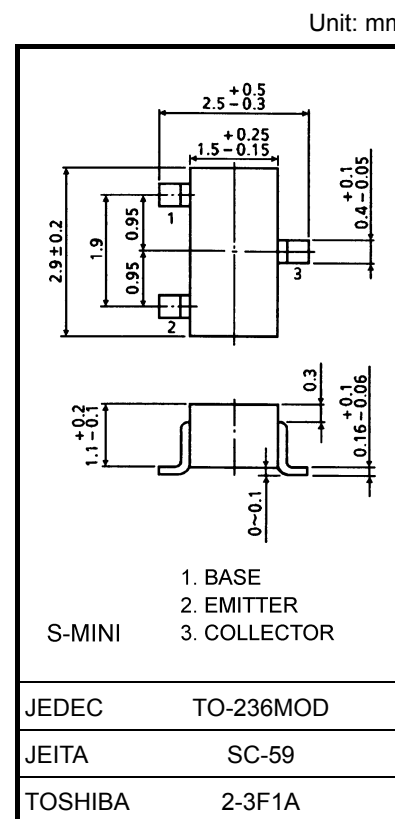
- High voltage: $V_{CEO} = 120\text{ V}$
- Excellent h_{FE} linearity: $h_{FE} (I_C = 0.1\text{ mA})/h_{FE} (I_C = 2\text{ mA}) = 0.95$ (typ.)
- High h_{FE} : $h_{FE} = 200\sim 700$
- Low noise: $NF = 1\text{ dB}$ (typ.), 10 dB (max)
- Complementary to 2SA1163
- Small package

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

| Characteristics | Symbol | Rating | Unit |
|-----------------------------|-----------|---------------|------------------|
| Collector-base voltage | V_{CBO} | 120 | V |
| Collector-emitter voltage | V_{CEO} | 120 | V |
| Emitter-base voltage | V_{EBO} | 5 | V |
| Collector current | I_C | 100 | mA |
| Base current | I_B | 20 | mA |
| Collector power dissipation | P_C | 150 | mW |
| Junction temperature | T_j | 125 | $^\circ\text{C}$ |
| Storage temperature range | T_{stg} | $-55\sim 125$ | $^\circ\text{C}$ |

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).



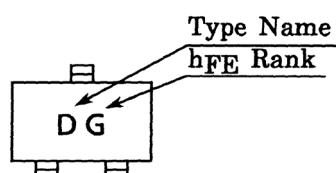
Weight: 0.012 g (typ.)

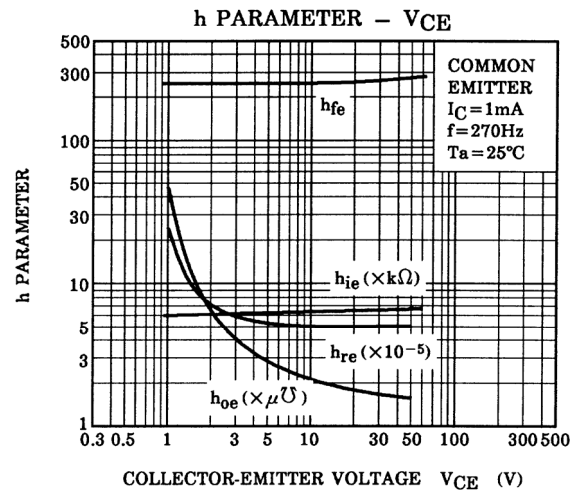
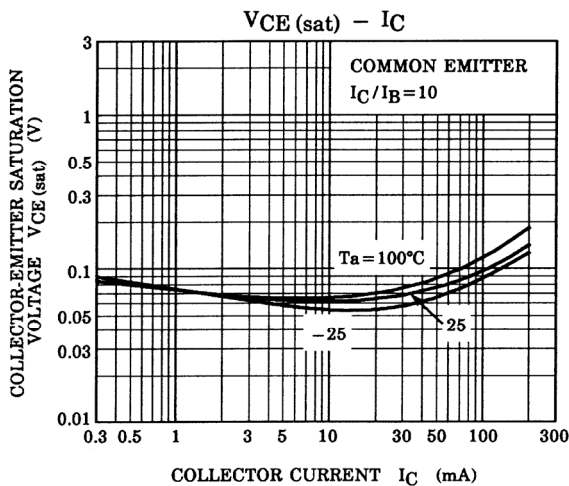
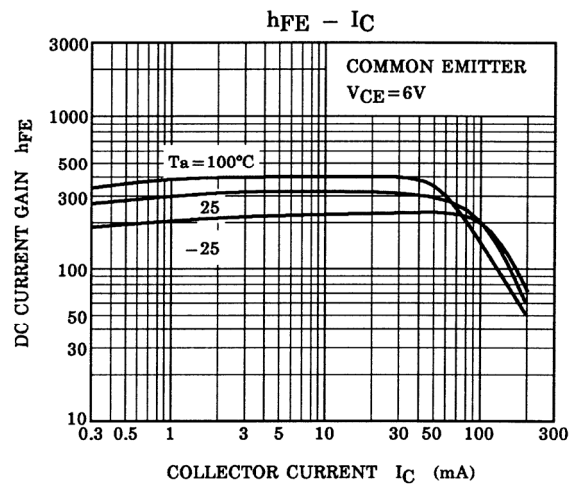
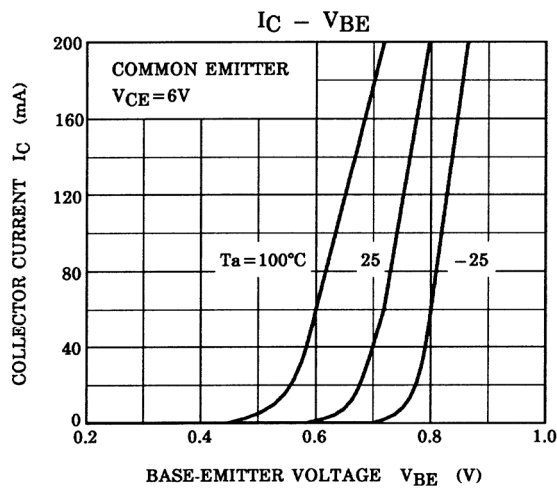
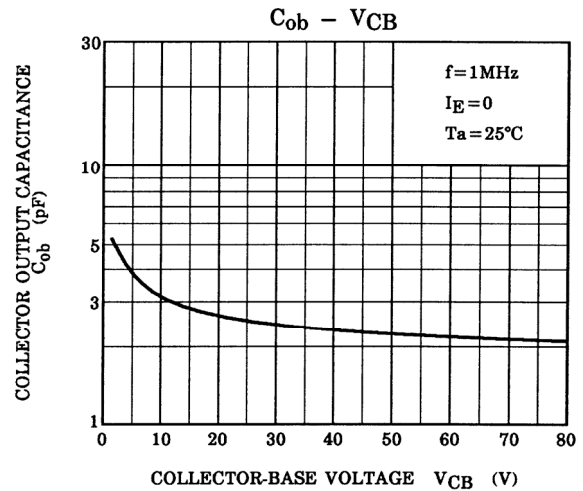
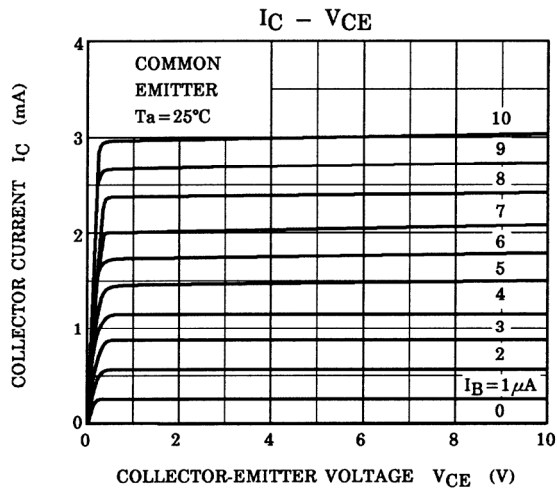
Electrical Characteristics ($T_a = 25^\circ\text{C}$)

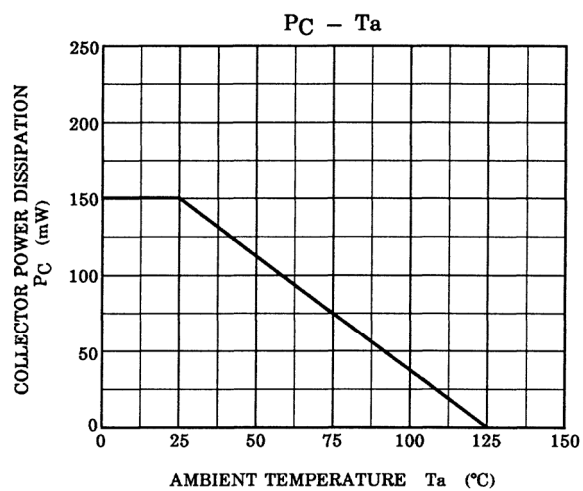
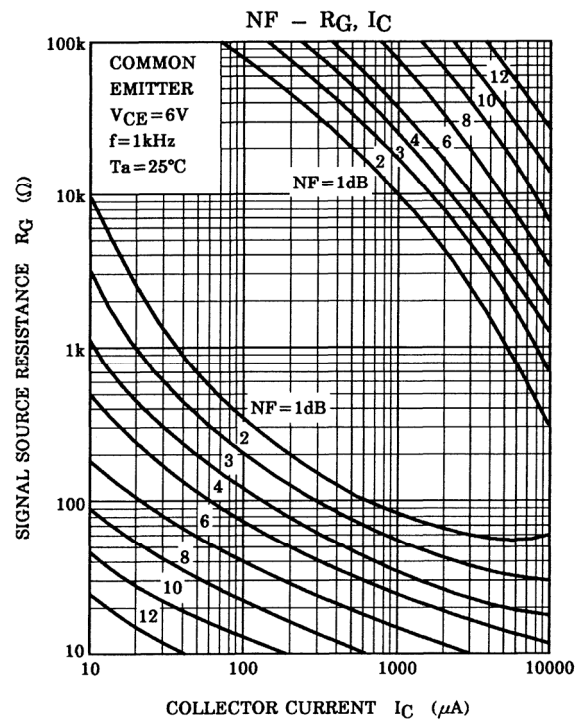
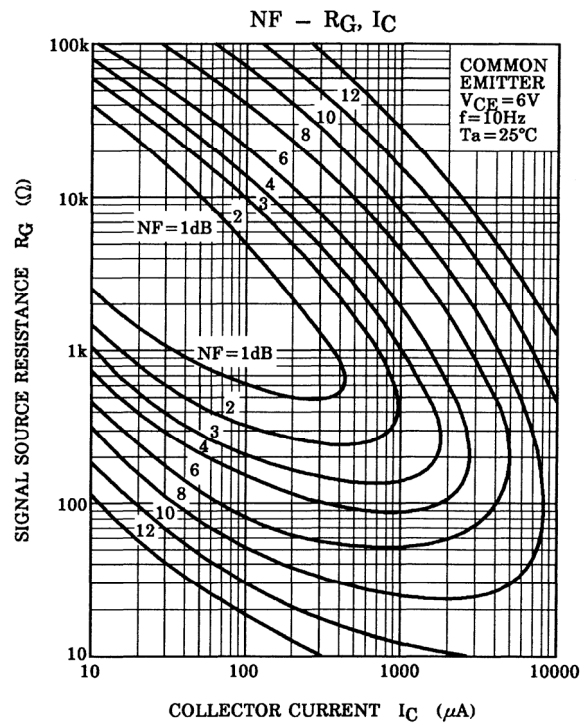
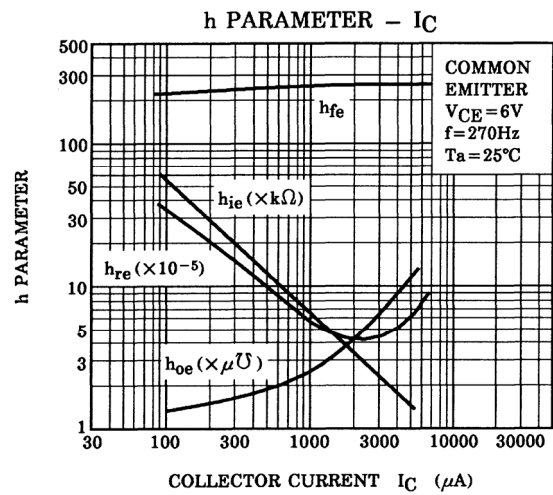
| Characteristics | Symbol | Test Condition | Min | Typ. | Max | Unit |
|--------------------------------------|--------------------|---|-----|------|-----|---------------|
| Collector cut-off current | I_{CBO} | $V_{CB} = 120\text{ V}, I_E = 0$ | — | — | 0.1 | μA |
| Emitter cut-off current | I_{EBO} | $V_{EB} = 5\text{ V}, I_C = 0$ | — | — | 0.1 | μA |
| DC current gain | h_{FE} (Note) | $V_{CE} = 6\text{ V}, I_C = 2\text{ mA}$ | 200 | — | 700 | |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_C = 10\text{ mA}, I_B = 1\text{ mA}$ | — | — | 0.3 | V |
| Transition frequency | f_T | $V_{CE} = 6\text{ V}, I_C = 1\text{ mA}$ | — | 100 | — | MHz |
| Collector output capacitance | C_{ob} | $V_{CB} = 10\text{ V}, I_E = 0, f = 1\text{ MHz}$ | — | 3.0 | — | pF |
| Noise figure | NF | $V_{CE} = 6\text{ V}, I_C = 0.1\text{ mA}$ $f = 1\text{ kHz}, R_G = 10\text{ k}\Omega$ | — | 1.0 | 10 | dB |

Note: h_{FE} classification GR (G): 200~400, BL (L): 350~700

Marking







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20070701-EN GENERAL

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