

TOSHIBA Transistor Silicon NPN Epitaxial Type (PCT process)

# 2SC4209

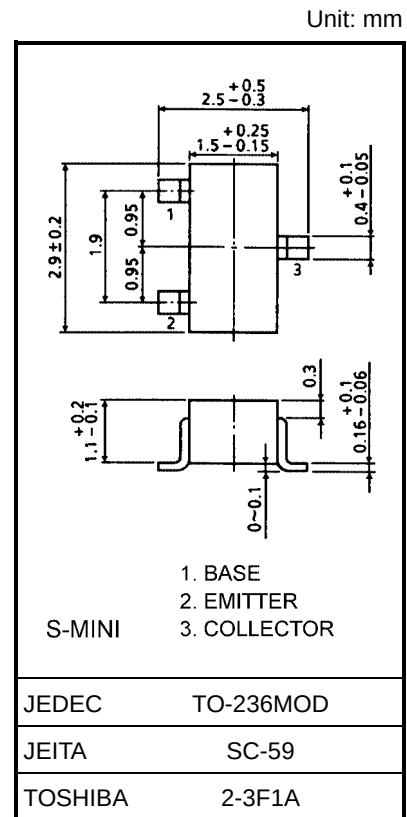
Driver Stage Amplifier Applications

Voltage Amplifier Applications

- Complementary to 2SA1620

## Maximum Ratings (Ta = 25°C)

| Characteristics             | Symbol    | Rating  | Unit |
|-----------------------------|-----------|---------|------|
| Collector-base voltage      | $V_{CBO}$ | 80      | V    |
| Collector-emitter voltage   | $V_{CEO}$ | 80      | V    |
| Emitter-base voltage        | $V_{EBO}$ | 5       | V    |
| Collector current           | $I_C$     | 300     | mA   |
| Base current                | $I_B$     | 60      | mA   |
| Collector power dissipation | $P_C$     | 200     | mW   |
| Junction temperature        | $T_j$     | 150     | °C   |
| Storage temperature range   | $T_{stg}$ | -55~150 | °C   |



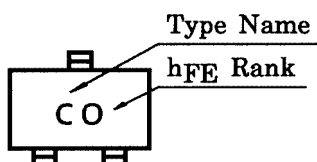
## Electrical Characteristics (Ta = 25°C)

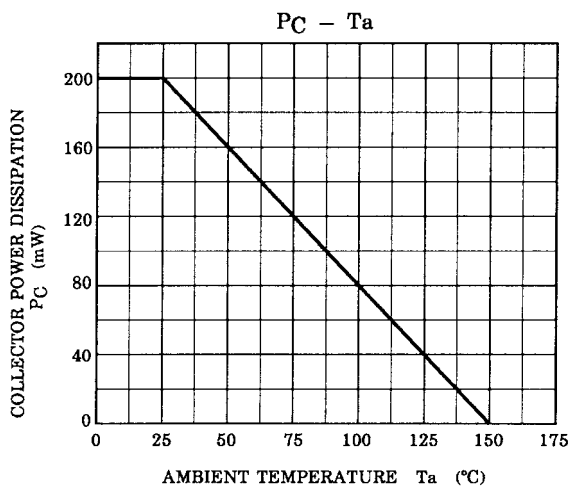
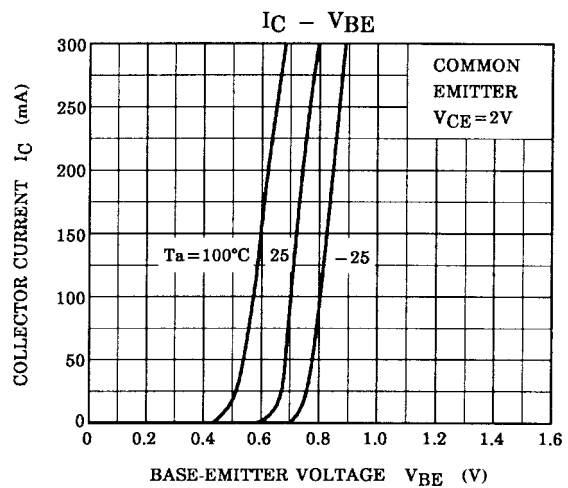
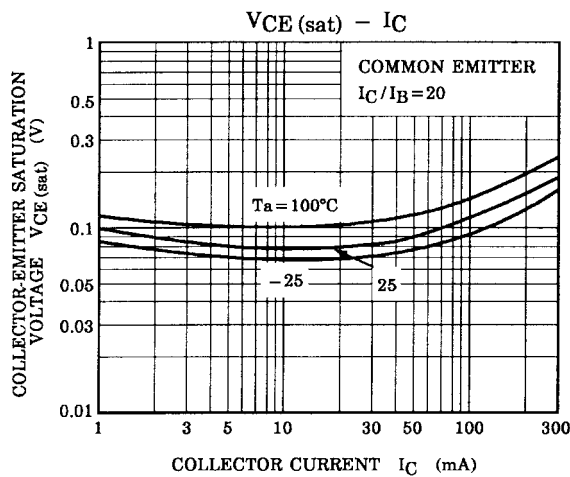
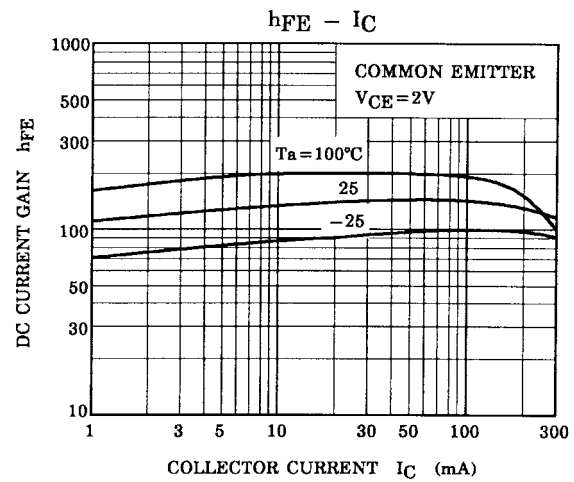
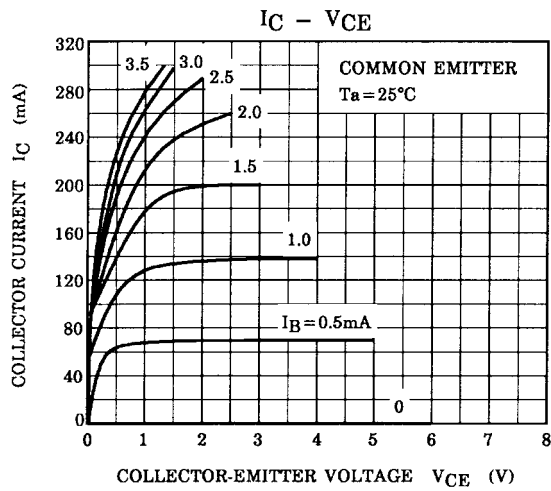
Weight: 0.012 g (typ.)

| Characteristics                      | Symbol                 | Test Condition                                      | Min  | Typ. | Max | Unit |
|--------------------------------------|------------------------|-----------------------------------------------------|------|------|-----|------|
| Collector cut-off current            | $I_{CBO}$              | $V_{CB} = 50 \text{ V}, I_E = 0$                    | —    | —    | 0.1 | μA   |
| Emitter cut-off current              | $I_{EBO}$              | $V_{EB} = 5 \text{ V}, I_C = 0$                     | —    | —    | 0.1 | μA   |
| Collector-emitter breakdown voltage  | $V_{(BR) CEO}$         | $I_C = 5 \text{ mA}, I_B = 0$                       | 80   | —    | —   | V    |
| DC current gain                      | $h_{FE} (1)$<br>(Note) | $V_{CE} = 2 \text{ V}, I_C = 50 \text{ mA}$         | 70   | —    | 240 |      |
|                                      | $h_{FE} (2)$           | $V_{CE} = 2 \text{ V}, I_C = 200 \text{ mA}$        | 40   | —    | —   |      |
| Collector-emitter saturation voltage | $V_{CE (sat)}$         | $I_C = 200 \text{ mA}, I_B = 10 \text{ mA}$         | —    | —    | 0.5 | V    |
| Base-emitter voltage                 | $V_{BE}$               | $V_{CE} = 2 \text{ V}, I_C = 5 \text{ mA}$          | 0.55 | —    | 0.8 | V    |
| Transition frequency                 | $f_T$                  | $V_{CE} = 10 \text{ V}, I_C = 10 \text{ mA}$        | —    | 100  | —   | MHz  |
| Collector output capacitance         | $C_{ob}$               | $V_{CB} = 10 \text{ V}, I_E = 0, f = 1 \text{ MHz}$ | —    | 10   | —   | pF   |

Note:  $h_{FE} (1)$  classification O: 70~140, Y: 120~240

## Marking





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