

# 2SC2712

## Audio Frequency General Purpose Amplifier Applications

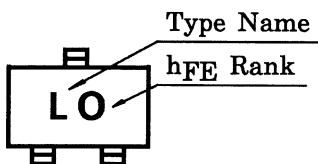
- High voltage and high current:  $V_{CEO} = 50\text{ V}$ ,  $I_C = 150\text{ mA}$  (max)
- Excellent  $h_{FE}$  linearity:  $h_{FE}(I_C = 0.1\text{ mA})/h_{FE}(I_C = 2\text{ mA}) = 0.95$  (typ.)
- High  $h_{FE}$ :  $h_{FE} = 70\sim 700$
- Low noise:  $NF = 1\text{ dB}$  (typ.),  $10\text{ dB}$  (max)
- Complementary to 2SA1162
- Small package

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

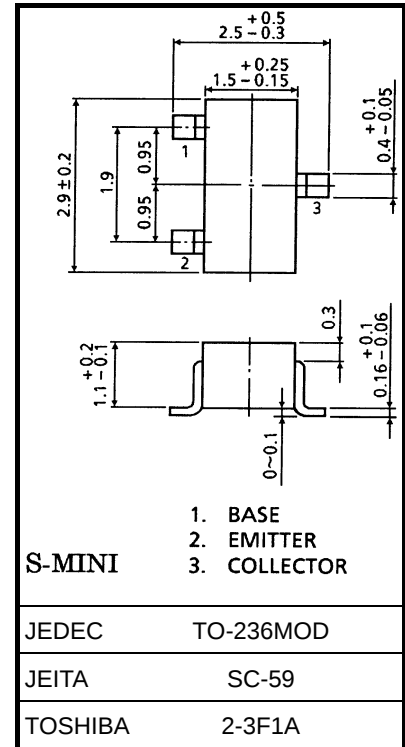
| Characteristics             | Symbol    | Rating        | Unit             |
|-----------------------------|-----------|---------------|------------------|
| Collector-base voltage      | $V_{CBO}$ | 60            | V                |
| Collector-emitter voltage   | $V_{CEO}$ | 50            | V                |
| Emitter-base voltage        | $V_{EBO}$ | 5             | V                |
| Collector current           | $I_C$     | 150           | mA               |
| Base current                | $I_B$     | 30            | 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).

## Marking



Unit: mm



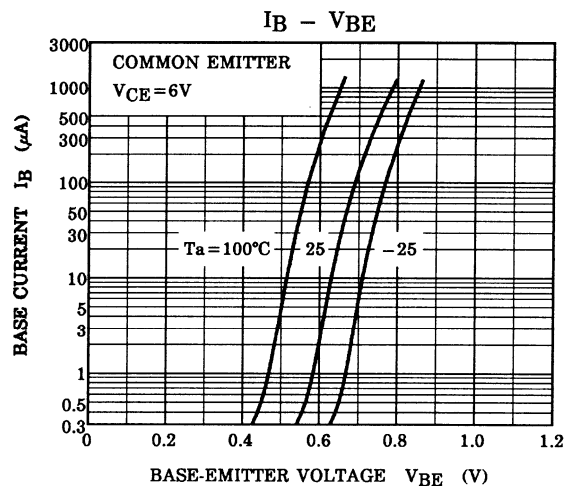
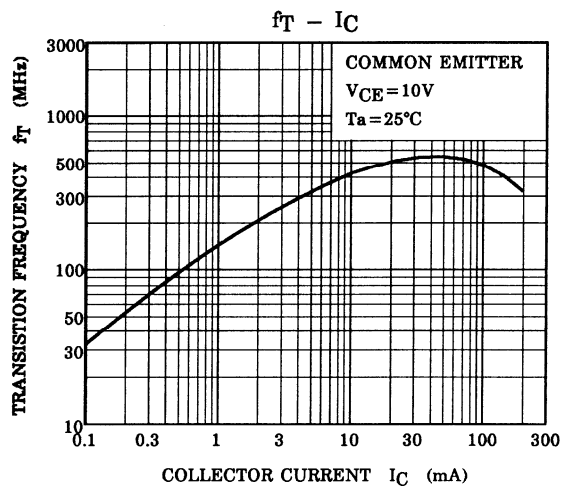
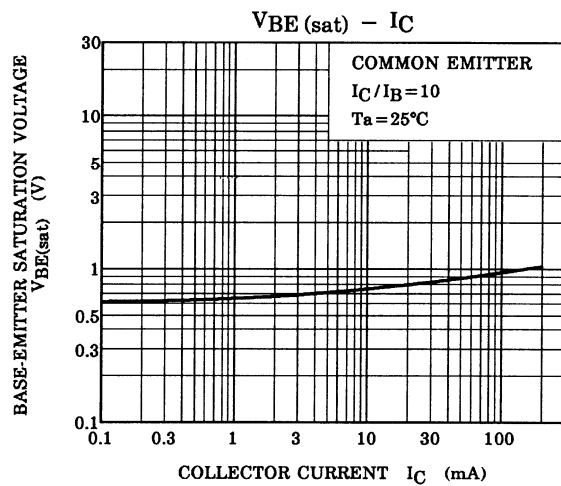
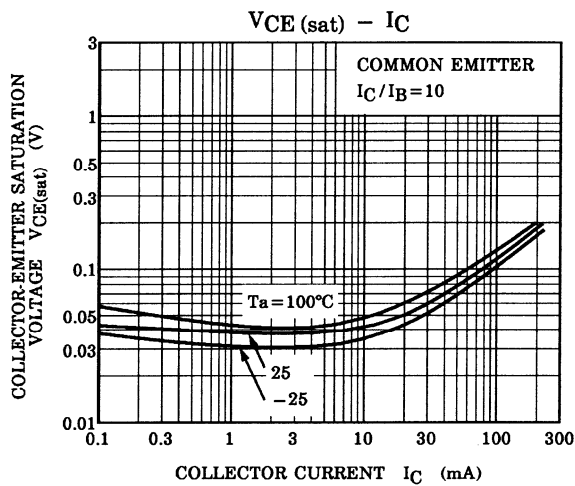
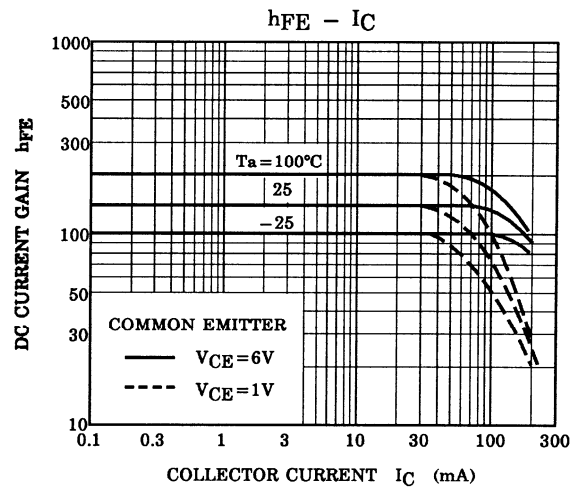
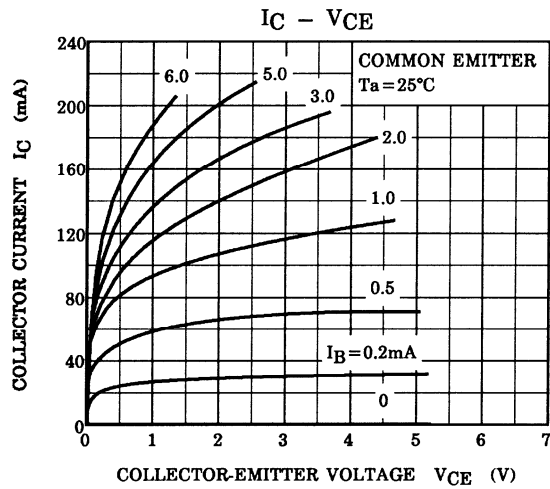
Weight: 0.012 g (typ.)

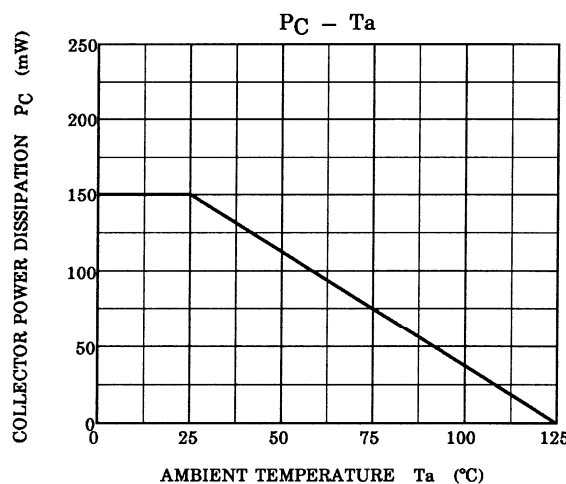
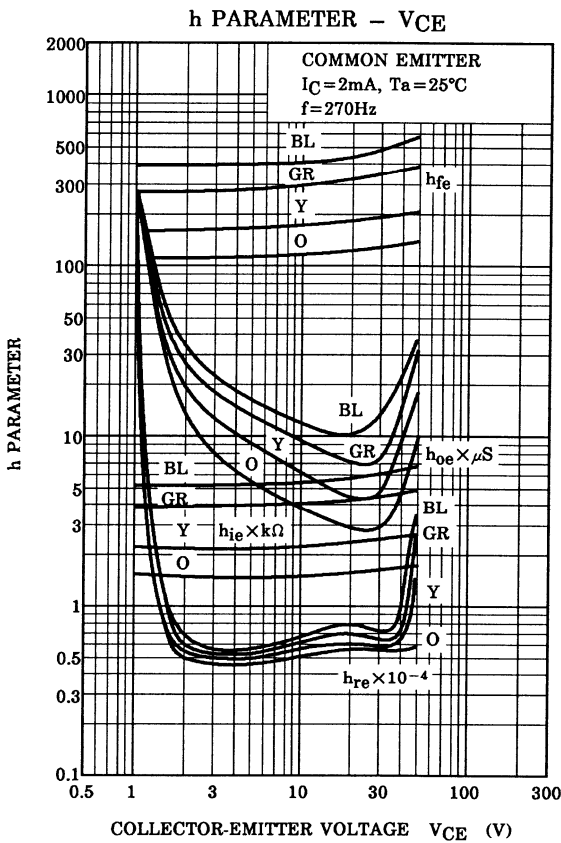
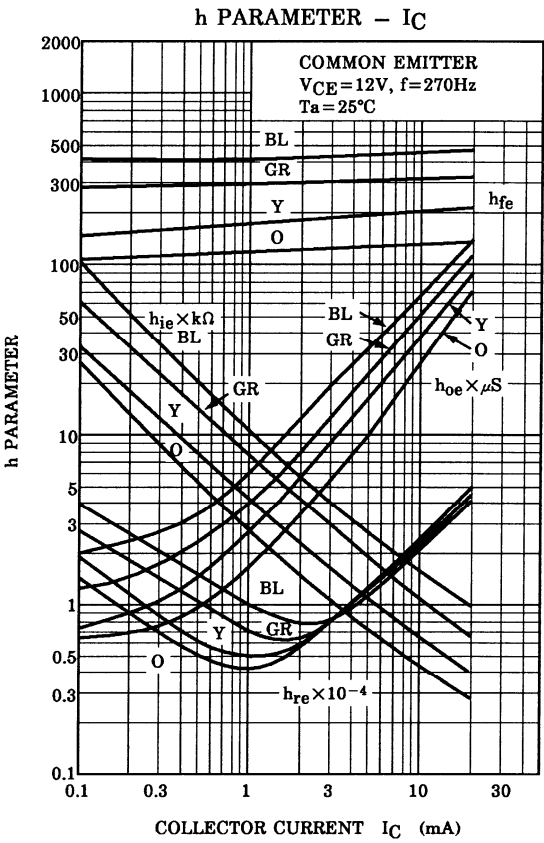
## Electrical Characteristics (Ta = 25°C)

| Characteristics                      | Symbol             | Test Condition                                                                             | Min | Typ. | Max  | Unit          |
|--------------------------------------|--------------------|--------------------------------------------------------------------------------------------|-----|------|------|---------------|
| Collector cut-off current            | $I_{CBO}$          | $V_{CB} = 60\text{ V}, I_E = 0$                                                            | —   | —    | 0.1  | $\mu\text{A}$ |
| Emitter cut-off current              | $I_{EBO}$          | $V_{EB} = 5\text{ V}, I_C = 0$                                                             | —   | —    | 0.1  | $\mu\text{A}$ |
| DC current gain                      | $h_{FE}$<br>(Note) | $V_{CE} = 6\text{ V}, I_C = 2\text{ mA}$                                                   | 70  | —    | 700  |               |
| Collector-emitter saturation voltage | $V_{CE(sat)}$      | $I_C = 100\text{ mA}, I_B = 10\text{ mA}$                                                  | —   | 0.1  | 0.25 | V             |
| Transition frequency                 | $f_T$              | $V_{CE} = 10\text{ V}, I_C = 1\text{ mA}$                                                  | 80  | —    | —    | MHz           |
| Collector output capacitance         | $C_{ob}$           | $V_{CB} = 10\text{ V}, I_E = 0, f = 1\text{ MHz}$                                          | —   | 2.0  | 3.5  | pF            |
| Noise figure                         | NF                 | $V_{CE} = 6\text{ V}, I_C = 0.1\text{ mA}, f = 1\text{ kHz},$<br>$R_g = 10\text{ k}\Omega$ | —   | 1.0  | 10   | dB            |

Note:  $h_{FE}$  classification O (O): 70~140, Y (Y): 120~240, GR (G): 200~400, BL (L): 350~700

( ) marking symbol





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### Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: [info@moschip.ru](mailto:info@moschip.ru)

Skype отдела продаж:

moschip.ru

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