

TOSHIBA Transistor Silicon NPN Epitaxial Type (PCT process)

## 2SC3295

Audio Frequency Amplifier Applications

Switching Applications

- High  $h_{FE}$ :  $h_{FE} = 600 \sim 3600$
- High voltage:  $V_{CEO} = 50 \text{ V}$
- High collector current:  $I_C = 150 \text{ mA (max)}$
- Small package

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

| Characteristics             | Symbol    | Rating  | Unit             |
|-----------------------------|-----------|---------|------------------|
| Collector-base voltage      | $V_{CBO}$ | 50      | 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   | $T_{stg}$ | -55~125 | $^\circ\text{C}$ |

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

|         |           |
|---------|-----------|
| JEDEC   | TO-236MOD |
| JEITA   | SC-59     |
| TOSHIBA | 2-3F1A    |

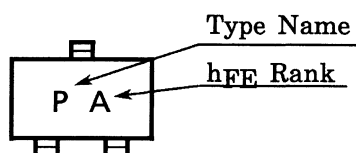
Weight: 0.012 g (typ.)

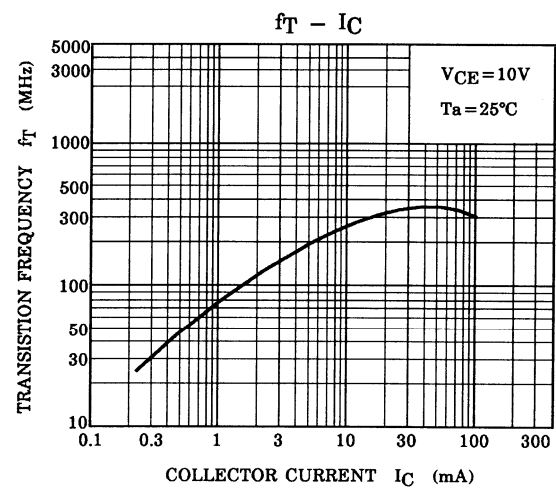
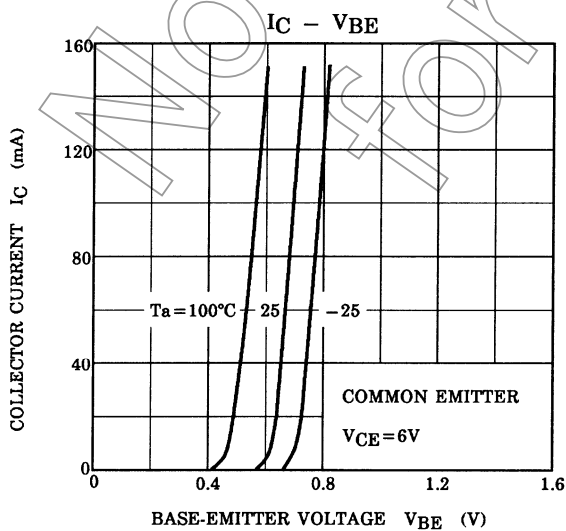
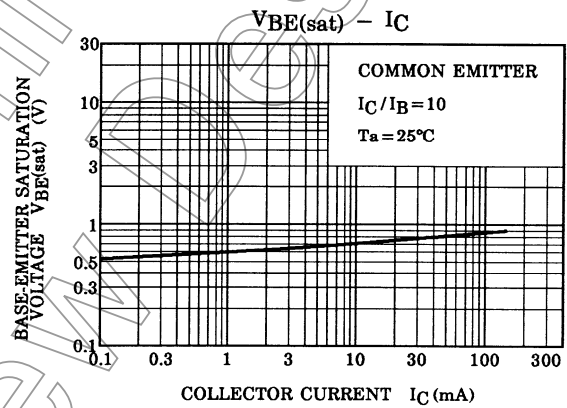
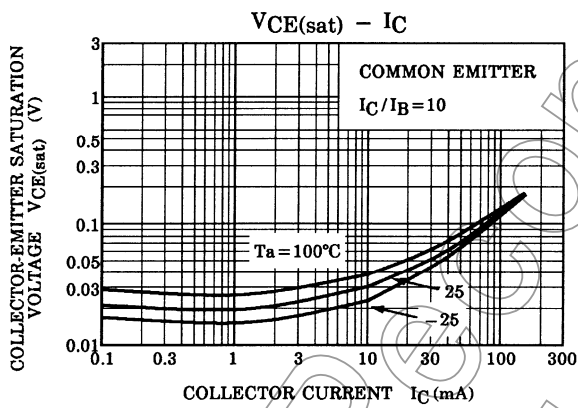
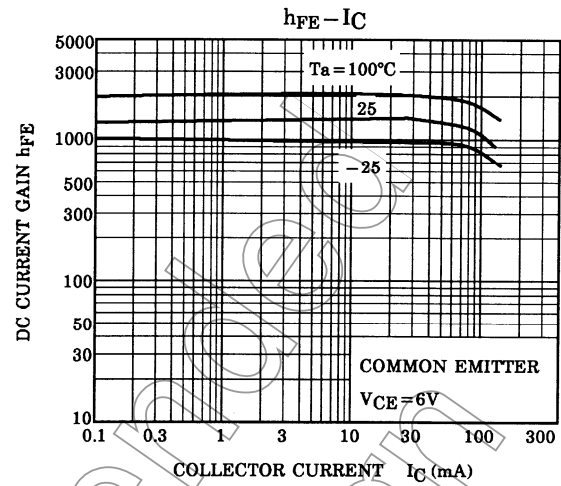
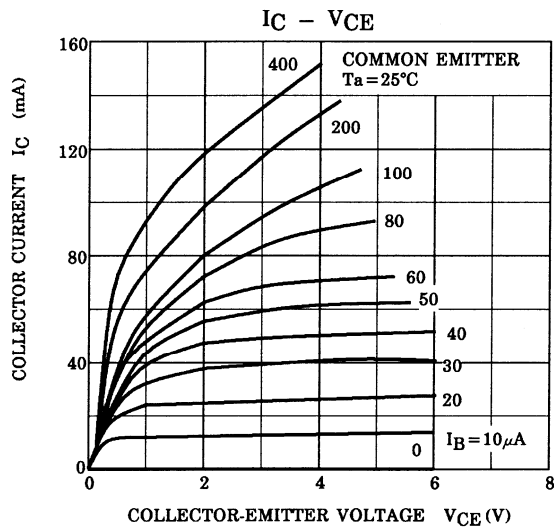
### Electrical Characteristics ( $T_a = 25^\circ\text{C}$ )

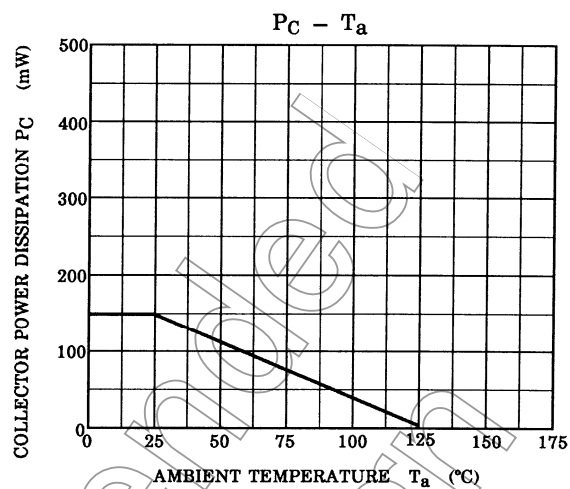
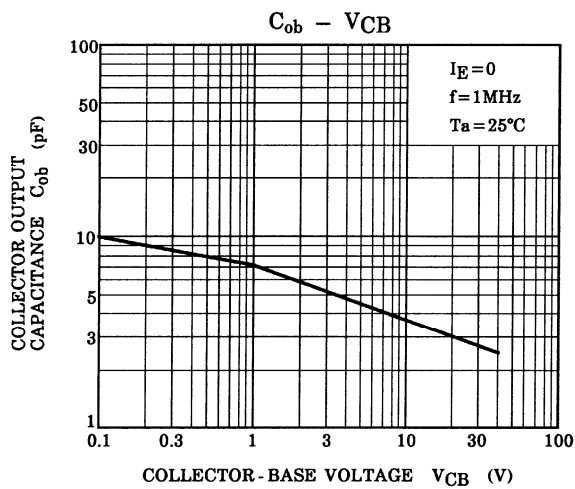
| Characteristics                      | Symbol             | Test Condition                                                                             | Min | Typ. | Max  | Unit          |
|--------------------------------------|--------------------|--------------------------------------------------------------------------------------------|-----|------|------|---------------|
| Collector cut-off current            | $I_{CBO}$          | $V_{CB} = 50 \text{ V}, I_E = 0$                                                           | —   | —    | 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) | $V_{CE} = 6 \text{ V}, I_C = 2 \text{ mA}$                                                 | 600 | —    | 3600 |               |
| Collector-emitter saturation voltage | $V_{CE(sat)}$      | $I_C = 100 \text{ mA}, I_B = 10 \text{ mA}$                                                | —   | 0.12 | 0.25 | V             |
| Transition frequency                 | $f_T$              | $V_{CE} = 10 \text{ V}, I_C = 10 \text{ mA}$                                               | 100 | 250  | —    | MHz           |
| Collector output capacitance         | $C_{ob}$           | $V_{CB} = 10 \text{ V}, I_E = 0, f = 1 \text{ MHz}$                                        | —   | 3.5  | —    | pF            |
| Noise figure                         | NF (1)             | $V_{CE} = 6 \text{ V}, I_C = 0.1 \text{ mA}, f = 100 \text{ Hz}, R_g = 10 \text{ k}\Omega$ | —   | 0.5  | —    | dB            |
|                                      | NF (2)             | $V_{CE} = 6 \text{ V}, I_C = 0.1 \text{ mA}, f = 1 \text{ kHz}, R_g = 10 \text{ k}\Omega$  | —   | 0.3  | —    |               |

Note:  $h_{FE}$  classification A: 600~1800, B: 1200~3600

### Marking







Not Recommended for New Design

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