

TOSHIBA Transistor Silicon PNP Triple Diffused Type

2SA1943

Power Amplifier Applications

- High collector voltage:  $V_{CEO} = -230\text{ V (min)}$
- Complementary to 2SC5200
- Recommended for 100-W high-fidelity audio frequency amplifier output stage.

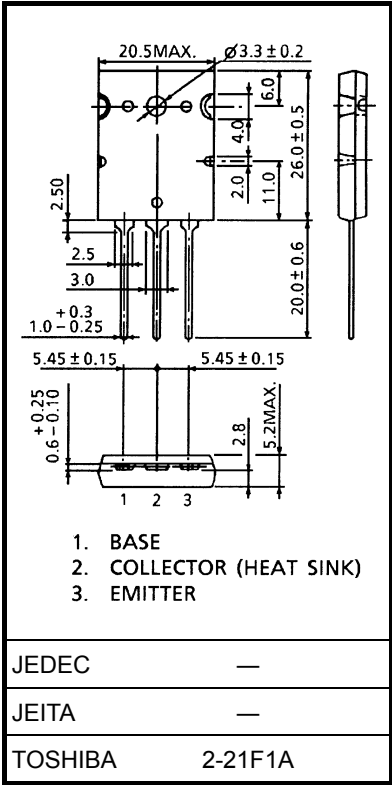
Absolute Maximum Ratings (Ta = 25°C)

| Characteristics                            | Symbol    | Rating     | Unit |
|--------------------------------------------|-----------|------------|------|
| Collector-base voltage                     | $V_{CBO}$ | -230       | V    |
| Collector-emitter voltage                  | $V_{CEO}$ | -230       | V    |
| Emitter-base voltage                       | $V_{EBO}$ | -5         | V    |
| Collector current                          | $I_C$     | -15        | A    |
| Base current                               | $I_B$     | -1.5       | A    |
| Collector power dissipation<br>(Tc = 25°C) | $P_C$     | 150        | W    |
| Junction temperature                       | $T_j$     | 150        | °C   |
| Storage temperature range                  | $T_{stg}$ | -55 to 150 | °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



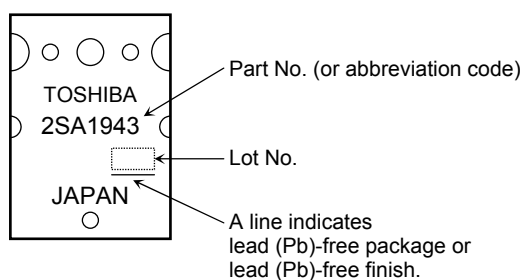
Weight: 9.75 g (typ.)

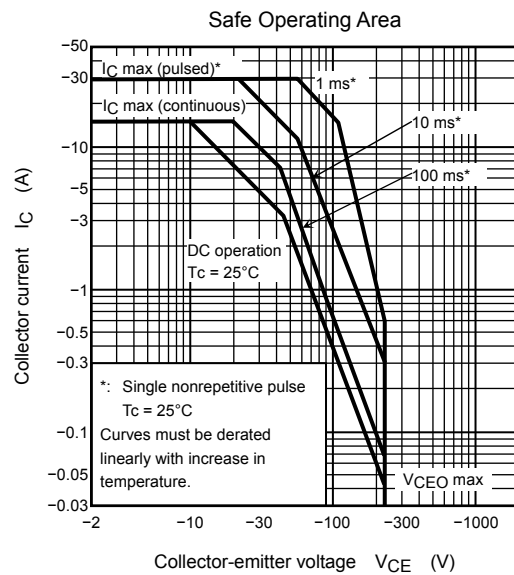
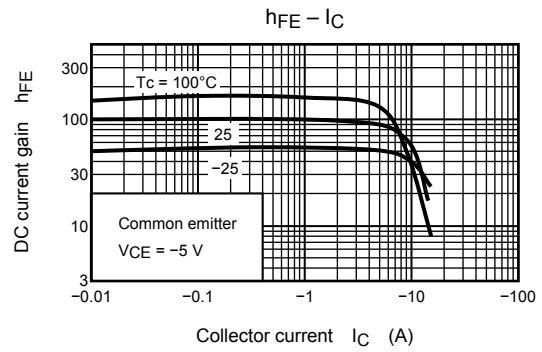
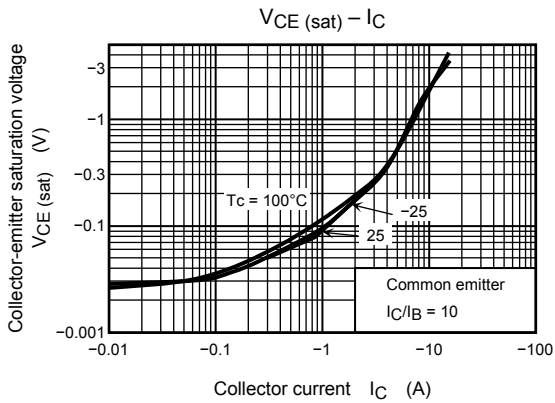
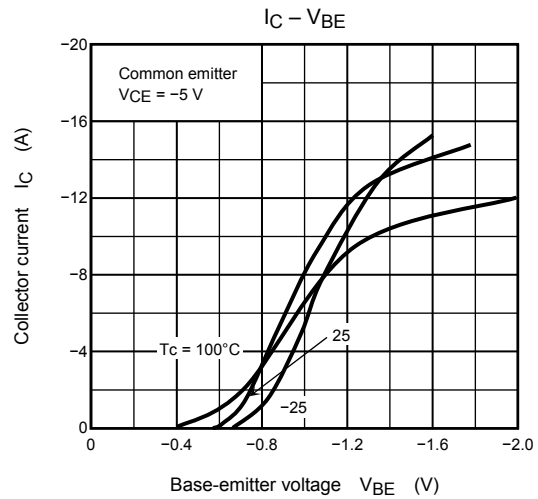
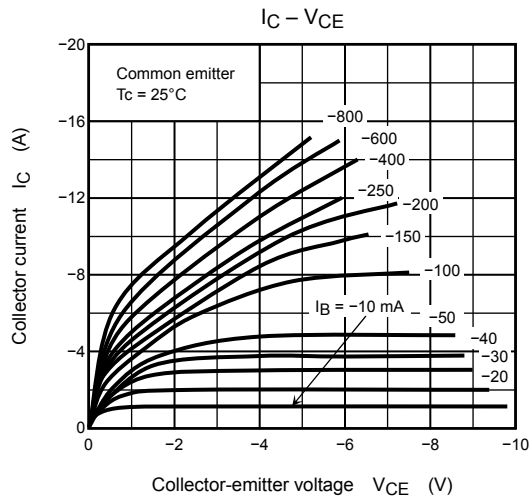
## Electrical Characteristics (Ta = 25°C)

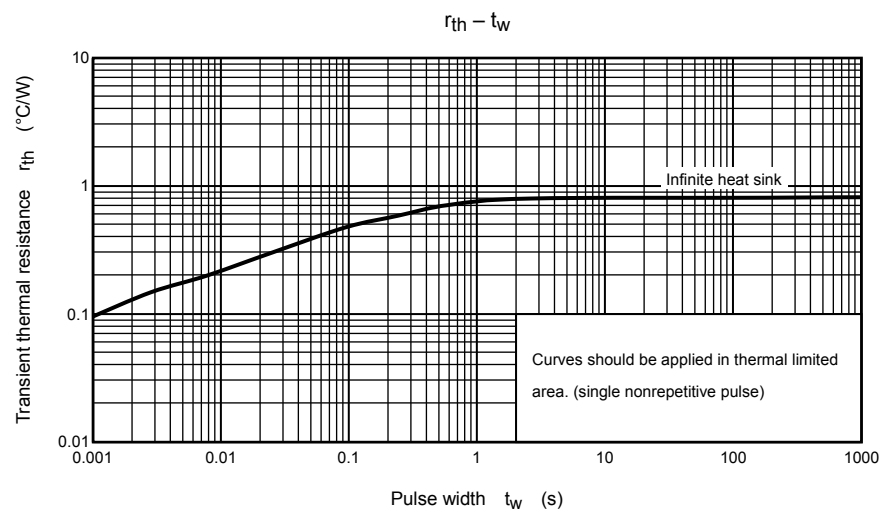
| Characteristics                      | Symbol                 | Test Condition                                     | Min  | Typ. | Max  | Unit          |
|--------------------------------------|------------------------|----------------------------------------------------|------|------|------|---------------|
| Collector cut-off current            | $I_{CBO}$              | $V_{CB} = -230\text{ V}, I_E = 0$                  | —    | —    | -5.0 | $\mu\text{A}$ |
| Emitter cut-off current              | $I_{EBO}$              | $V_{EB} = -5\text{ V}, I_C = 0$                    | —    | —    | -5.0 | $\mu\text{A}$ |
| Collector-emitter breakdown voltage  | $V_{(BR) CEO}$         | $I_C = -50\text{ mA}, I_B = 0$                     | -230 | —    | —    | V             |
| DC current gain                      | $h_{FE} (1)$<br>(Note) | $V_{CE} = -5\text{ V}, I_C = -1\text{ A}$          | 55   | —    | 160  |               |
|                                      | $h_{FE} (2)$           | $V_{CE} = -5\text{ V}, I_C = -7\text{ A}$          | 35   | 60   | —    |               |
| Collector-emitter saturation voltage | $V_{CE (sat)}$         | $I_C = -8\text{ A}, I_B = -0.8\text{ A}$           | —    | -1.5 | -3.0 | V             |
| Base-emitter voltage                 | $V_{BE}$               | $V_{CE} = -5\text{ V}, I_C = -7\text{ A}$          | —    | -1.0 | -1.5 | V             |
| Transition frequency                 | $f_T$                  | $V_{CE} = -5\text{ V}, I_C = -1\text{ A}$          | —    | 30   | —    | MHz           |
| Collector output capacitance         | $C_{ob}$               | $V_{CB} = -10\text{ V}, I_E = 0, f = 1\text{ MHz}$ | —    | 360  | —    | pF            |

Note:  $h_{FE} (1)$  classification R: 55 to 110, O: 80 to 160

## Marking







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20070701-EN

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