

TOSHIBA Transistor Silicon PNP Epitaxial Type (PCT process)

2SA1201

Voltage Amplifier Applications

Power Amplifier Applications

- High voltage:  $V_{CEO} = -120\text{ V}$
- High transition frequency:  $f_T = 120\text{ MHz (typ.)}$
- Small flat package
- $P_C = 1\text{ to }2\text{ W}$  (mounted on a ceramic substrate)
- Complementary to 2SC2881

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

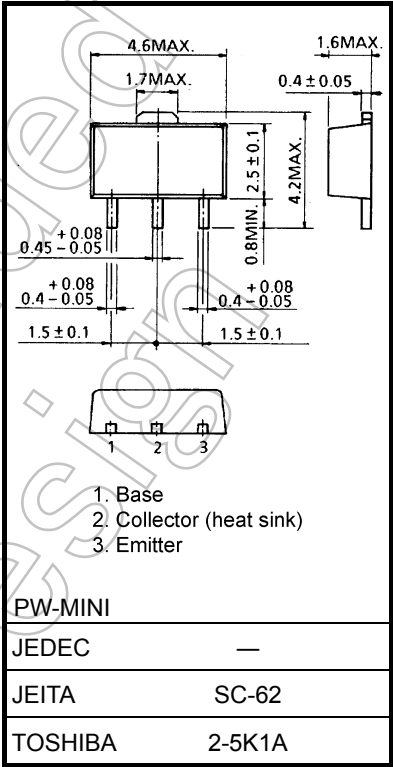
| Characteristics             | Symbol            | Rating     | Unit             |
|-----------------------------|-------------------|------------|------------------|
| Collector-base voltage      | $V_{CBO}$         | -120       | V                |
| Collector-emitter voltage   | $V_{CEO}$         | -120       | V                |
| Emitter-base voltage        | $V_{EBO}$         | -5         | V                |
| Collector current           | $I_C$             | -800       | mA               |
| Base current                | $I_B$             | -160       | mA               |
| Collector power dissipation | $P_C$             | 500        | mW               |
|                             | $P_C$<br>(Note 1) | 1000       |                  |
| Junction temperature        | $T_j$             | 150        | $^\circ\text{C}$ |
| Storage temperature range   | $T_{stg}$         | -55 to 150 | $^\circ\text{C}$ |

Note 1: Mounted on a ceramic substrate ( $250\text{ mm}^2 \times 0.8\text{ t}$ )

Note 2: 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: 0.05 g (typ.)

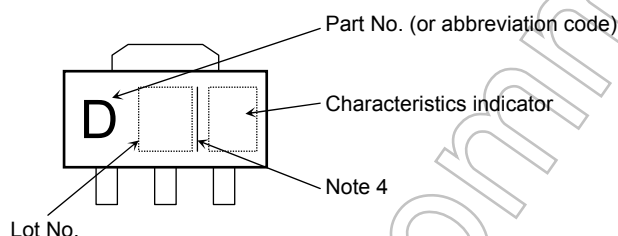
Start of commercial production  
1980-07

## Electrical Characteristics (Ta = 25°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 | $\mu\text{A}$ |
| Emitter cut-off current              | $I_{EBO}$            | $V_{EB} = -5\text{ V}, I_C = 0$                    | —    | —    | -0.1 | $\mu\text{A}$ |
| Collector-emitter breakdown voltage  | $V_{(BR)CEO}$        | $I_C = -10\text{ mA}, I_B = 0$                     | -120 | —    | —    | V             |
| Emitter-base breakdown voltage       | $V_{(BR)EBO}$        | $I_E = -1\text{ mA}, I_C = 0$                      | -5   | —    | —    | V             |
| DC current gain                      | $h_{FE}$<br>(Note 3) | $V_{CE} = -5\text{ V}, I_C = -100\text{ mA}$       | 80   | —    | 240  |               |
| Collector-emitter saturation voltage | $V_{CE(sat)}$        | $I_C = -500\text{ mA}, I_B = -50\text{ mA}$        | —    | —    | -1.0 | V             |
| Base-emitter voltage                 | $V_{BE}$             | $V_{CE} = -5\text{ V}, I_C = -500\text{ mA}$       | —    | —    | -1.0 | V             |
| Transition frequency                 | $f_T$                | $V_{CE} = -5\text{ V}, I_C = -100\text{ mA}$       | —    | 120  | —    | MHz           |
| Collector output capacitance         | $C_{ob}$             | $V_{CB} = -10\text{ V}, I_E = 0, f = 1\text{ MHz}$ | —    | —    | 30   | pF            |

Note 3:  $h_{FE}$  classification O: 80 to 160, Y: 120 to 240

## Marking

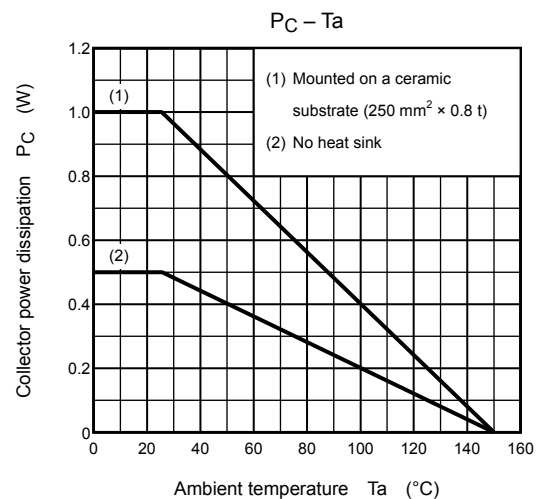
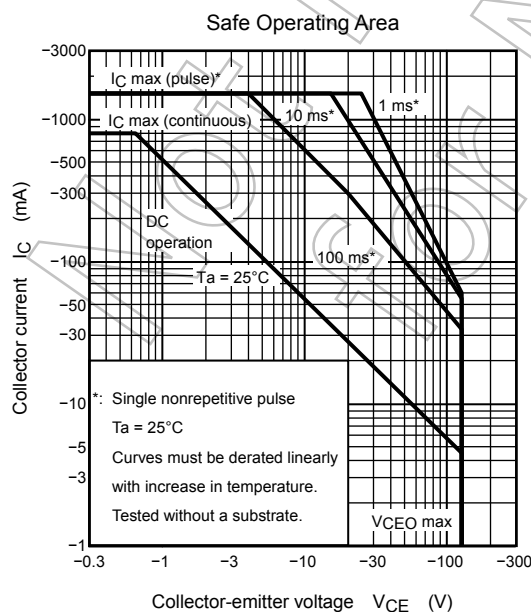
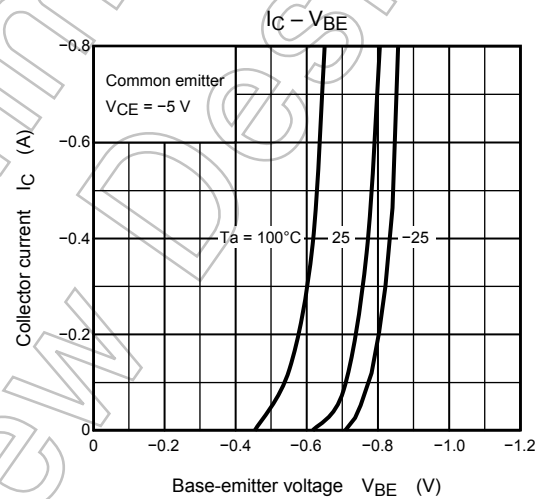
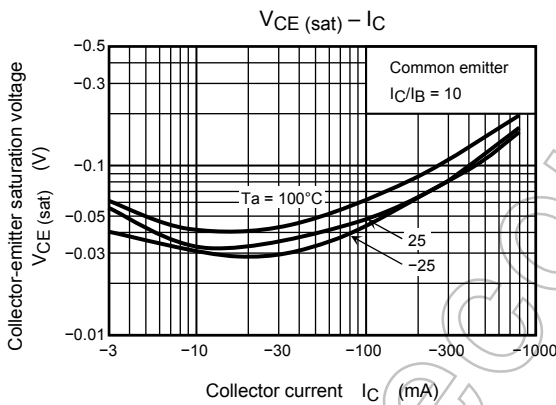
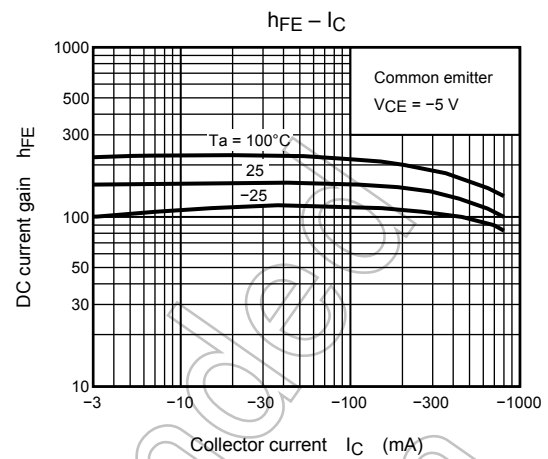
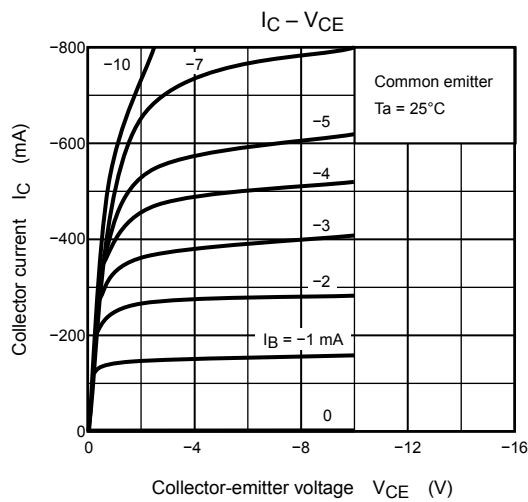


Note 4: A line beside a Lot No. identifies the indication of product Labels.

Without a line: [[Pb]]/INCLUDES > MCV

With a line: [[G]]/RoHS COMPATIBLE or [[G]]/RoHS [[Pb]]

Please contact your TOSHIBA sales representative for details as to environmental matters such as the RoHS compatibility of Product. The RoHS is the Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment.



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