

TTC011B

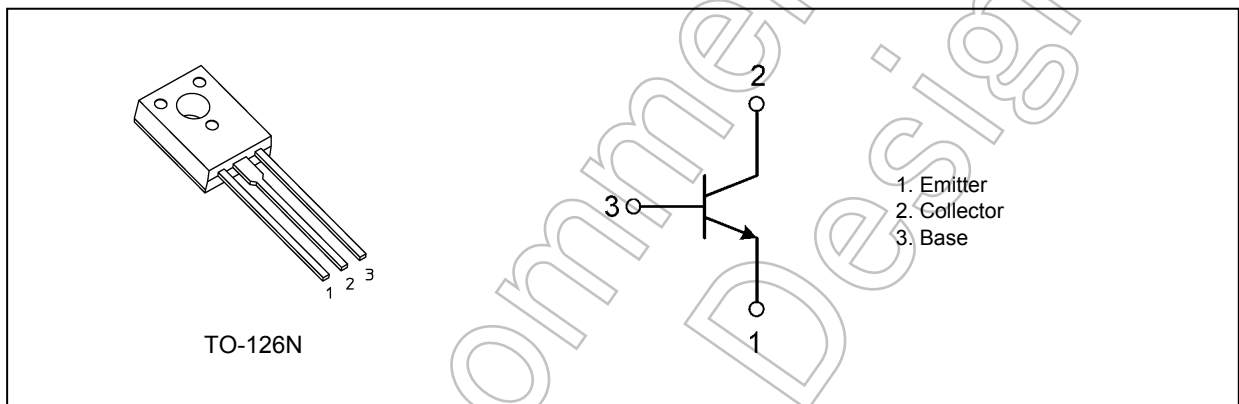
1. Applications

- Power Amplifiers
- Audio-Frequency Amplifiers

2. Features

- (1) High collector voltage : $V_{CEO} = 230 \text{ V (min)}$
- (2) Small collector output capacitance : $C_{ob} = 20 \text{ pF (typ.)}$
- (3) High transition frequency : $f_T = 100 \text{ MHz (typ.)}$
- (4) Complementary to TTA006B

3. Packaging and Internal Circuit (Note)



Note: Although this device is encapsulated in epoxy resin, it does not provide any guarantee to the maximum isolation voltage. Therefore, as with the case with non-isolated devices, care should be taken with regard to electrical isolation from surrounding parts.

4. Absolute Maximum Ratings (Note) ($T_a = 25 \text{ }^\circ\text{C}$ unless otherwise specified)

| Characteristics | Symbol | Rating | Unit |
|---|-------------------|------------|------------------|
| Collector-base voltage | V_{CBO} | 230 | V |
| Collector-emitter voltage | V_{CEO} | 230 | |
| Emitter-base voltage | V_{EBO} | 5 | |
| Collector current (DC) | (Note 1) I_C | 1 | A |
| Collector current (pulsed) | (Note 1) I_{CP} | 2 | |
| Base current | I_B | 0.5 | |
| Collector power dissipation | P_C | 1.5 | W |
| Collector power dissipation ($T_c = 25 \text{ }^\circ\text{C}$) | P_C | 10 | |
| Junction temperature | T_j | 150 | $^\circ\text{C}$ |
| Storage temperature | T_{stg} | -55 to 150 | |

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).

Note 1: Ensure that the junction temperature does not exceed $150 \text{ }^\circ\text{C}$.

Start of commercial production
2014-04

5. Electrical Characteristics

5.1. Static Characteristics ($T_a = 25\text{ }^\circ\text{C}$ unless otherwise specified)

| Characteristics | Symbol | Test Condition | Min | Typ. | Max | Unit |
|--------------------------------------|---------------|---|-----|------|-----|------|
| Collector cut-off current | I_{CBO} | $V_{CB} = 230\text{ V}, I_E = 0\text{ A}$ | — | — | 200 | nA |
| Emitter cut-off current | I_{EBO} | $V_{EB} = 5\text{ V}, I_C = 0\text{ A}$ | — | — | 100 | |
| Collector-emitter breakdown voltage | $V_{(BR)CEO}$ | $I_C = 10\text{ mA}, I_B = 0\text{ A}$ | 230 | — | — | V |
| DC current gain | h_{FE} | $V_{CE} = 5\text{ V}, I_C = 0.1\text{ A}$ | 100 | — | 320 | — |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_C = 0.5\text{ A}, I_B = 50\text{ mA}$ | — | — | 1.5 | V |
| Base-emitter voltage | V_{BE} | $V_{CE} = 5\text{ V}, I_C = 0.5\text{ A}$ | — | — | 1.0 | |

5.2. Dynamic Characteristics ($T_a = 25\text{ }^\circ\text{C}$ unless otherwise specified)

| Characteristics | Symbol | Test Condition | Min | Typ. | Max | Unit |
|------------------------------|----------|--|-----|------|-----|------|
| Collector output capacitance | C_{ob} | $V_{CB} = 10\text{ V}, I_E = 0\text{ A}, f = 1\text{ MHz}$ | — | 20 | — | pF |
| Transition frequency | f_T | $V_{CE} = 10\text{ V}, I_C = 0.1\text{ A}$ | — | 100 | — | MHz |

6. Marking (Note)

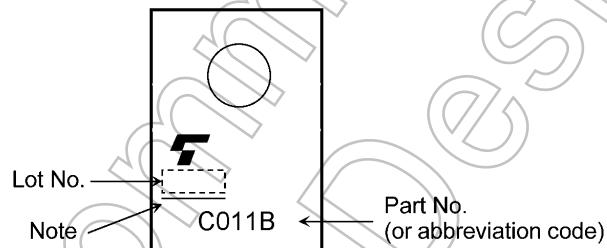


Fig. 6.1 Marking

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

[[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.

7. Characteristics Curves (Note)

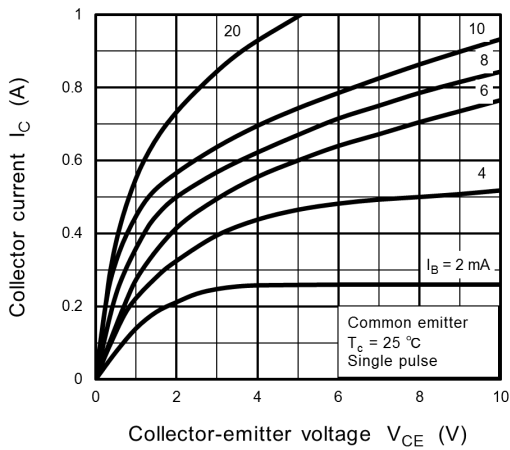


Fig. 7.1 $I_C - V_{CE}$

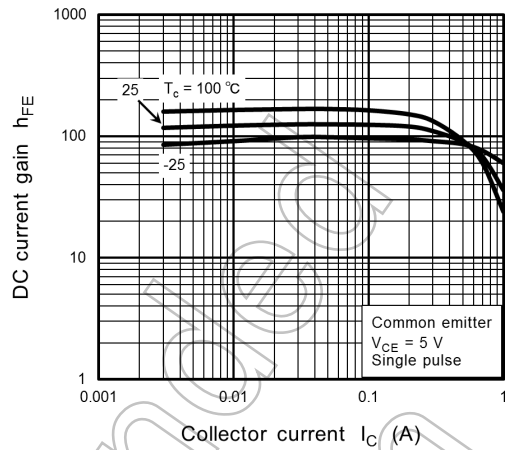


Fig. 7.2 $h_{FE} - I_C$

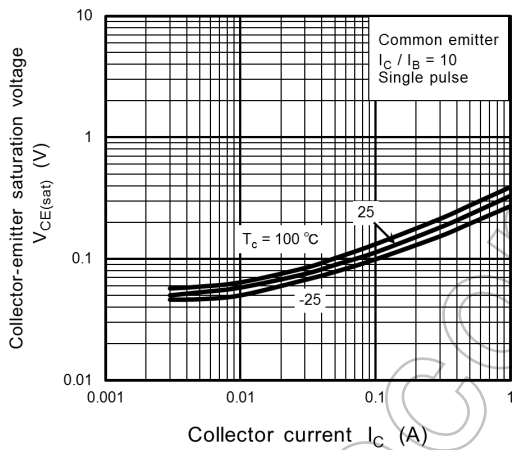


Fig. 7.3 $V_{CE(sat)} - I_C$

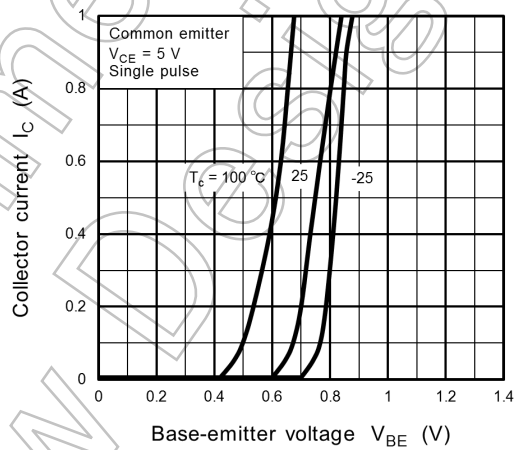


Fig. 7.4 $I_C - V_{BE}$

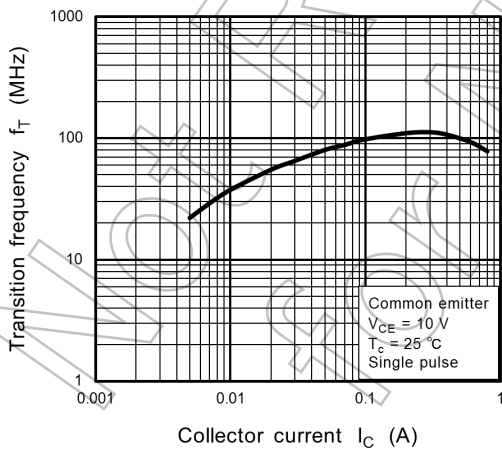


Fig. 7.5 $f_T - I_C$

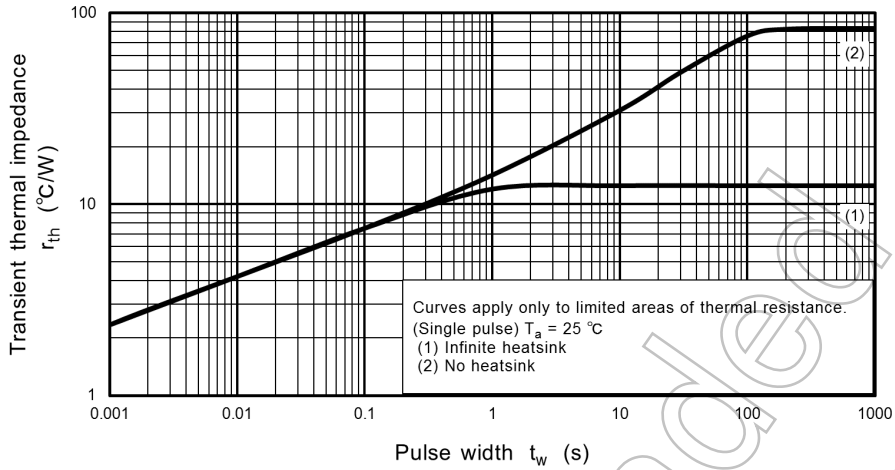


Fig. 7.6 $r_{th} - t_w$
(Guaranteed Maximum)

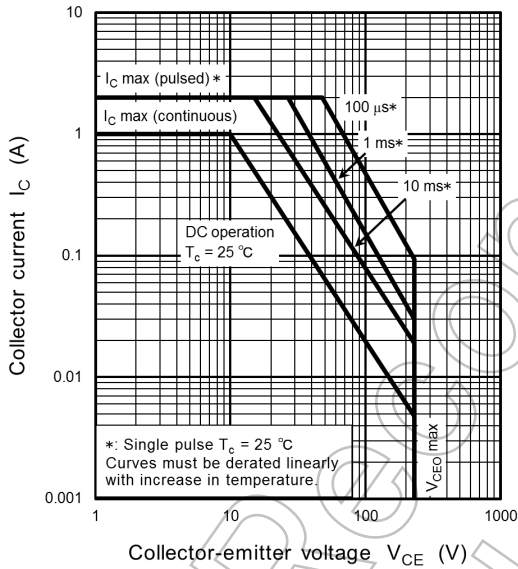


Fig. 7.7 Safe Operating Area
(Guaranteed Maximum)

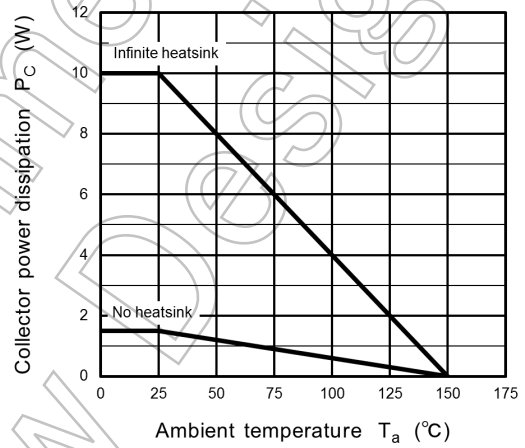
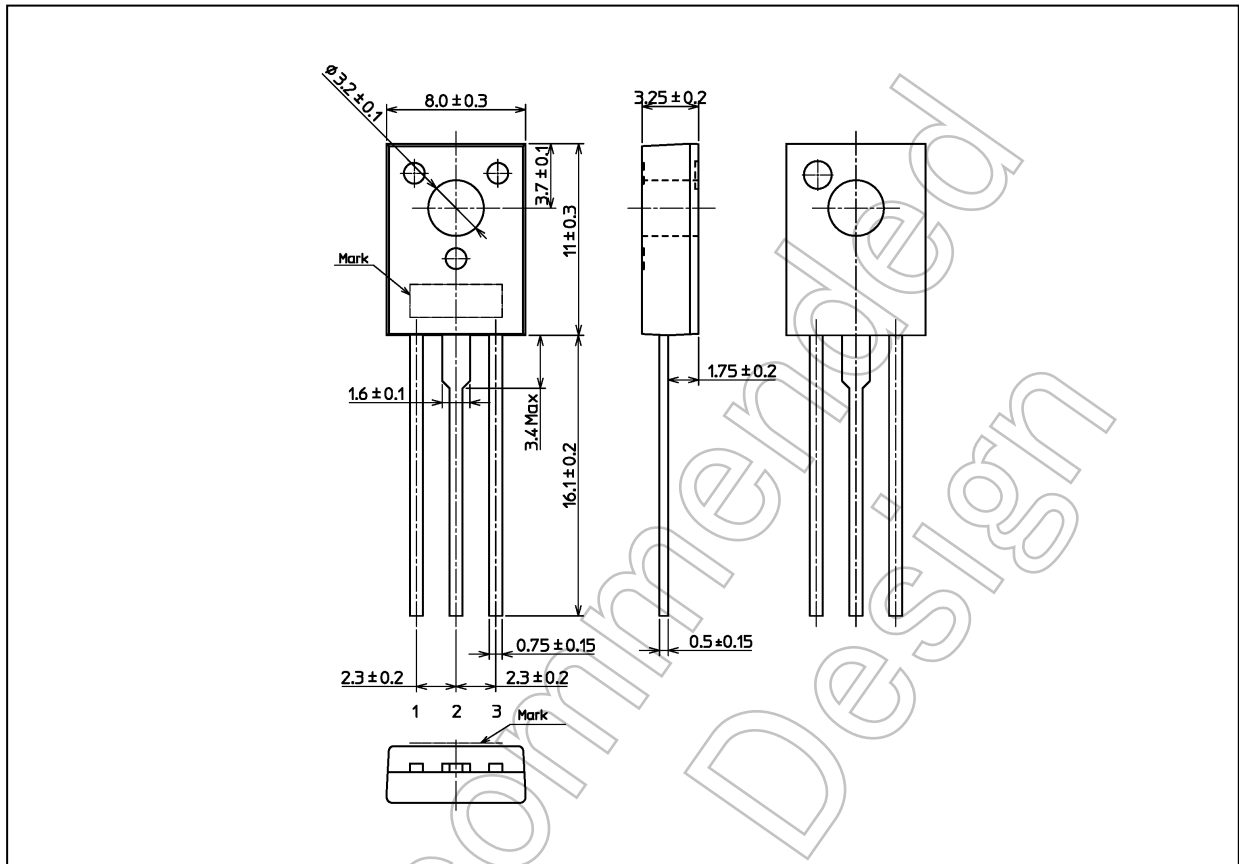


Fig. 7.8 $P_C - T_a$

Note: The above characteristics curves are presented for reference only and not guaranteed by production test, unless otherwise noted.

Package Dimensions

Unit: mm



Weight: 0.84 g (typ.)

| Package Name(s) |
|-------------------|
| TOSHIBA: 2-8U1A |
| Nickname: TO-126N |

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