

## Description

- General purpose amplifier
- High voltage application

## Features

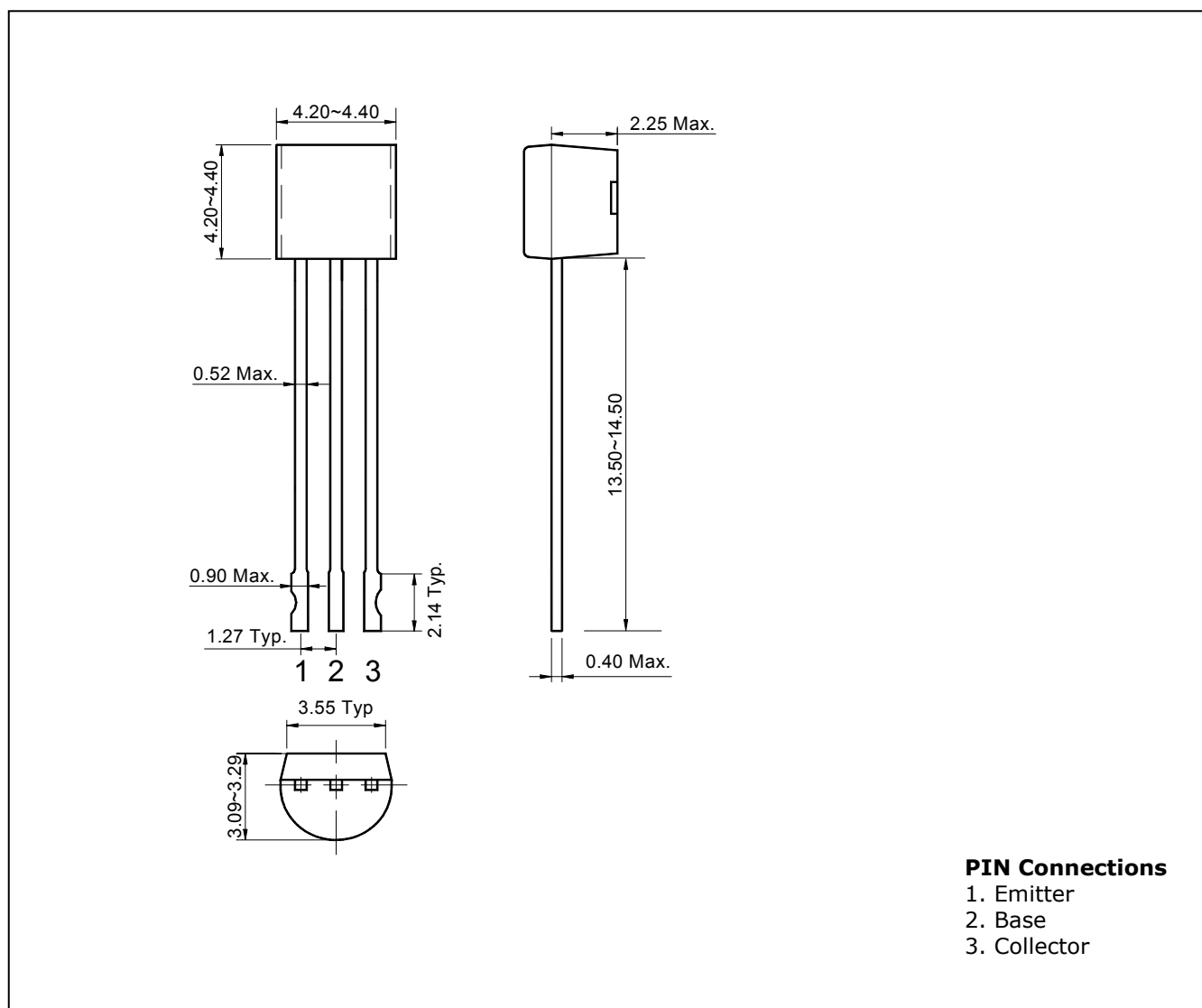
- High collector breakdown voltage :  $V_{CBO} = -160V$ ,  $V_{CEO} = -160V$
- Low collector saturation voltage :  $V_{CE(sat)} = -0.5V(MAX.)$
- Complementary pair with 2N5551N

## Ordering Information

| Type NO. | Marking | Package Code |
|----------|---------|--------------|
| 2N5401N  | 2N5401  | TO-92N       |

## Outline Dimensions

unit : mm



**Absolute Maximum Ratings**

(Ta=25°C)

| Characteristic              | Symbol    | Rating  | Unit |
|-----------------------------|-----------|---------|------|
| Collector-base voltage      | $V_{CBO}$ | -160    | V    |
| Collector-emitter voltage   | $V_{CEO}$ | -160    | V    |
| Emitter-base voltage        | $V_{EBO}$ | -5      | V    |
| Collector current           | $I_C$     | -600    | mA   |
| Collector power dissipation | $P_C$     | 400     | mW   |
| Junction temperature        | $T_J$     | 150     | °C   |
| Storage temperature range   | $T_{stg}$ | -55~150 | °C   |

**Electrical Characteristics**

(Ta=25°C)

| Characteristic                       | Symbol             | Test Condition                     | Min. | Typ. | Max. | Unit |
|--------------------------------------|--------------------|------------------------------------|------|------|------|------|
| Collector-emitter breakdown voltage  | $BV_{CEO}$         | $I_C = -1mA, I_B = 0$              | -160 | -    | -    | V    |
| Collector cut-off current            | $I_{CBO}$          | $V_{CB} = -160V, I_E = 0$          | -    | -    | -100 | nA   |
| Emitter cut-off current              | $I_{EBO}$          | $V_{EB} = -5V, I_C = 0$            | -    | -    | -100 | nA   |
| DC current gain                      | $h_{FE(1)}$        | $V_{CE} = -5V, I_C = -1mA$         | 50   | -    | -    | -    |
| DC current gain                      | $h_{FE(2)}$        | $V_{CE} = -5V, I_C = -10mA$        | 60   | -    | 240  | -    |
| DC current gain                      | $h_{FE(3)}$        | $V_{CE} = -5V, I_C = -50mA$        | 50   | -    | -    | -    |
| Collector-emitter saturation voltage | $V_{CE(sat)(1)}^*$ | $I_C = -10mA, I_B = -1mA$          | -    | -    | -0.2 | V    |
| Collector-emitter saturation voltage | $V_{CE(sat)(2)}^*$ | $I_C = -50mA, I_B = -5mA$          | -    | -    | -0.5 | V    |
| Base-emitter saturation voltage      | $V_{BE(sat)(1)}^*$ | $I_C = -10mA, I_B = -1mA$          | -    | -    | -1   | V    |
| Base-emitter saturation voltage      | $V_{BE(sat)(2)}^*$ | $I_C = -50mA, I_B = -5mA$          | -    | -    | -1   | V    |
| Base-emitter voltage                 | $V_{BE}$           | $V_{CE} = -5V, I_C = -50mA$        | -    | -0.7 | -0.9 | V    |
| Transition frequency                 | $f_T$              | $V_{CE} = -10V, I_C = -10mA$       | 100  | -    | 400  | MHz  |
| Collector output capacitance         | $C_{ob}$           | $V_{CB} = -10V, I_E = 0, f = 1MHz$ | -    | -    | 6    | pF   |

\* : Pulse Tester : Pulse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 2.0\%$

# Electrical Characteristic Curves

Fig. 1  $P_c - T_a$

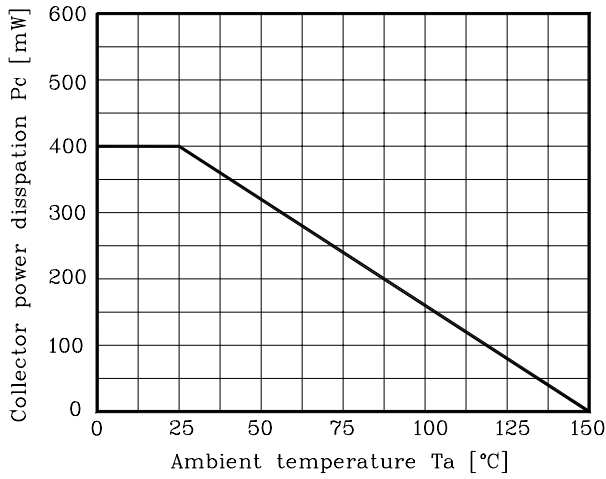


Fig. 2  $I_C - V_{BE}$

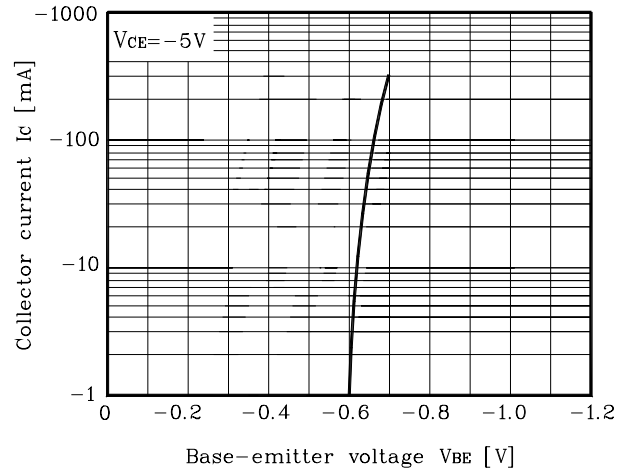


Fig. 3  $f_T - I_C$

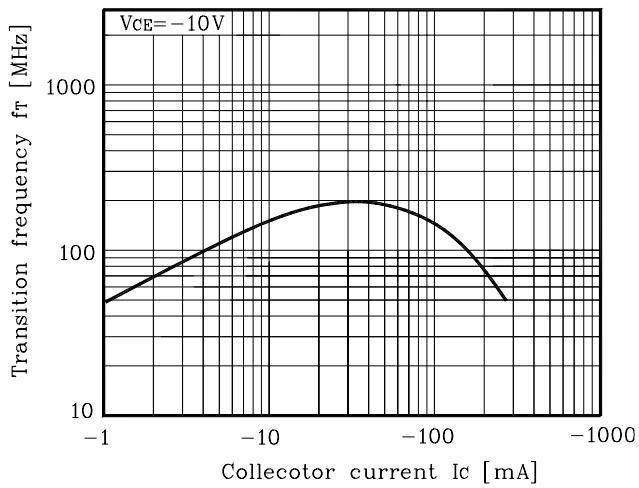


Fig. 4  $V_{CE(sat)}, V_{BE(sat)} - I_C$

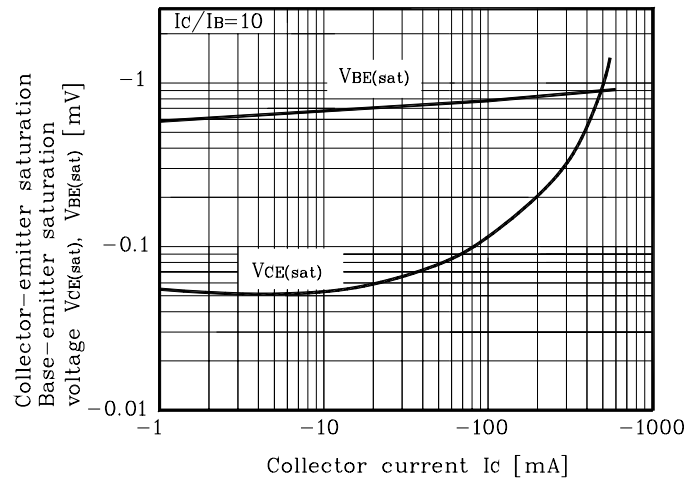
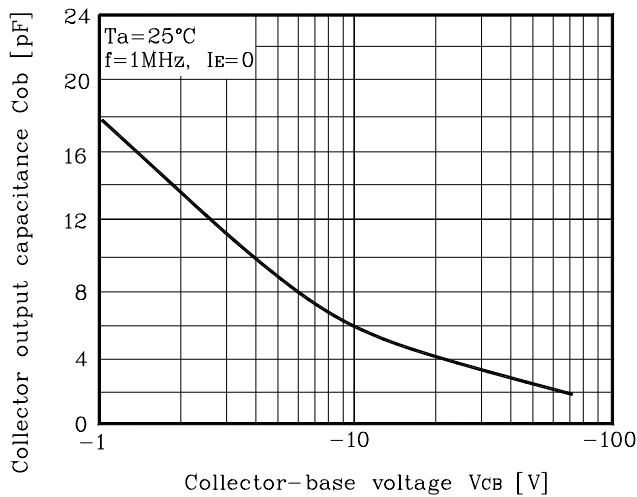


Fig. 5  $C_{ob} - V_{CB}$



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