

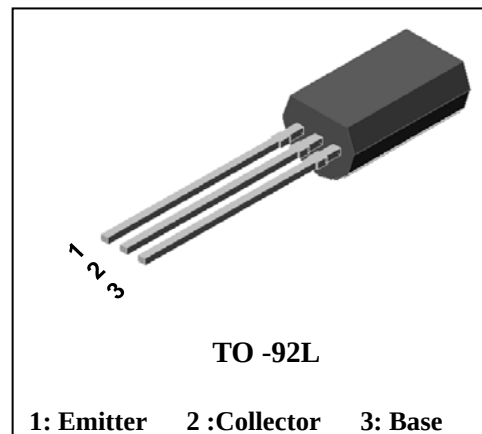
## Descriptions

- Suitable for low voltage large current drivers
- Excellent  $h_{FE}$  Linearity.
- Switching Application

## Features

- High  $h_{FE}$  :  $h_{FE}=200\sim400$
- Low collector saturation voltage.  
:  $V_{CE(sat)} = -0.5V(MAX.)$

## PIN Connection



## Ordering Information

| Type NO. | Marking           | Package Code |
|----------|-------------------|--------------|
| STB205L  | STB<br>205<br>YWW | TO-92L       |

STB205: DEVICE CODE, YWW(Y : Year code, WW : Weekly code)

## Absolute Maximum Ratings

( $T_a=25^{\circ}C$ )

| Characteristic              | Symbol     | Rating  | Unit        |
|-----------------------------|------------|---------|-------------|
| Collector-base voltage      | $V_{CBO}$  | -35     | V           |
| Collector-emitter voltage   | $V_{CEO}$  | -20     | V           |
| Emitter-base voltage        | $V_{EBO}$  | -5      | V           |
| Collector current           | $I_C$      | -5      | A(DC)       |
|                             | $I_{CP}^*$ | -10     | A(Pulse)    |
| Collector power dissipation | $P_C$      | 1       | W           |
| Junction temperature        | $T_J$      | 150     | $^{\circ}C$ |
| Storage temperature range   | $T_{stg}$  | -55~150 | $^{\circ}C$ |

\* : Single pulse,  $t_p=300\mu s$

| Characteristic     | Symbol        | Typ. | Max   | Unit          |
|--------------------|---------------|------|-------|---------------|
| Thermal resistance | $R_{th(J-a)}$ | -    | 125.0 | $^{\circ}C/W$ |

## Electrical Characteristics

(Ta=25°C)

| Characteristic                       | Symbol              | Test Condition                     | Min. | Typ. | Max. | Unit    |
|--------------------------------------|---------------------|------------------------------------|------|------|------|---------|
| Collector-Base breakdown voltage     | $BV_{CBO}$          | $I_C = -50\mu A, I_E = 0$          | -35  | -    | -    | V       |
| Collector-Emitter breakdown voltage  | $BV_{CEO}$          | $I_C = -1mA, I_B = 0$              | -20  | -    | -    | V       |
| Emitter-Base breakdown voltage       | $BV_{EBO}$          | $I_E = -50\mu A, I_C = 0$          | -5   | -    | -    | V       |
| Collector cut-off current            | $I_{CBO}$           | $V_{CB} = -35V, I_E = 0$           | -    | -    | -1   | $\mu A$ |
| Emitter cut-off current              | $I_{EBO}$           | $V_{EB} = -5V, I_C = 0$            | -    | -    | -1   | $\mu A$ |
| DC current gain                      | $*h_{FE}^{1)}$      | $V_{CE} = -2V, I_C = -0.5A$        | 200  | -    | 400  | -       |
|                                      | $h_{FE}$            | $V_{CE} = -2V, I_C = -3A$          | 40   | -    | -    | -       |
| Collector-emitter saturation voltage | $*V_{CE(sat)}^{2)}$ | $I_C = -3A, I_B = -0.15A$          | -    | -    | -0.5 | V       |
| Base-emitter saturation voltage      | $*V_{BE(sat)}^{2)}$ | $V_C = -3A, I_B = -0.15A$          | -    | -    | -1.2 | V       |
| Transition frequency                 | $f_T$               | $V_{CB} = -5V, I_C = -50mA$        | -    | 180  | -    | MHz     |
| Collector output capacitance         | $C_{ob}$            | $V_{CB} = -10V, I_E = 0, f = 1MHz$ | -    | 42   | -    | pF      |

\* Note 1)  $h_{FE}$  Rank : 200~400 only\* Note 2) Pulse Tester : Pulse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 2.0\%$

## Electrical Characteristic Curves

Fig. 1  $P_C - T_a$

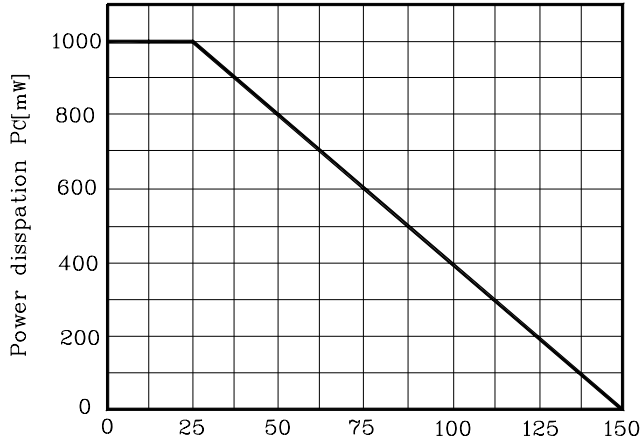


Fig. 2  $I_C - V_{BE}$

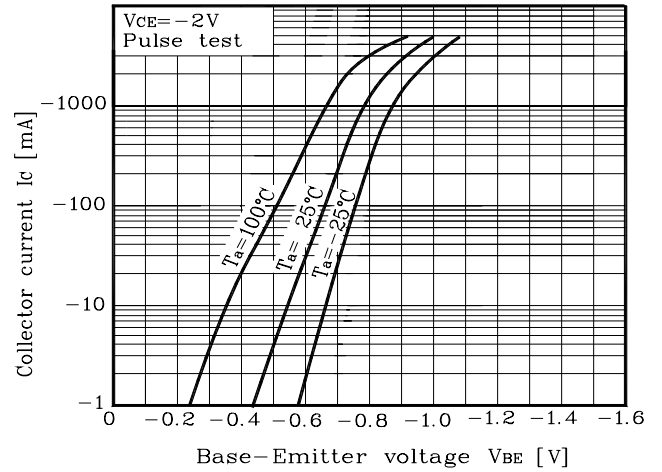


Fig. 3  $h_{FE} - I_C$

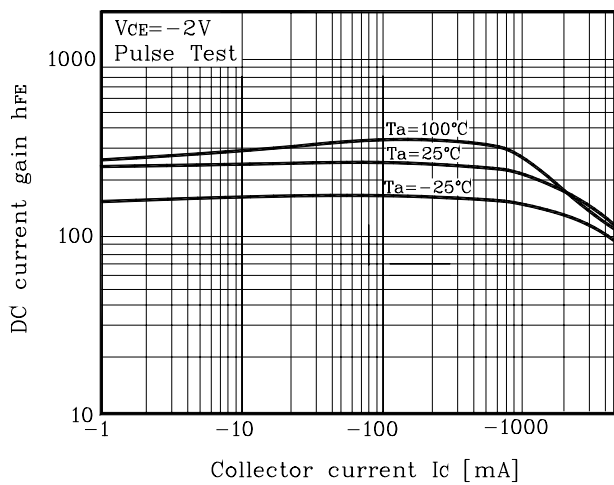


Fig. 4  $V_{CE(sat)} - I_C$

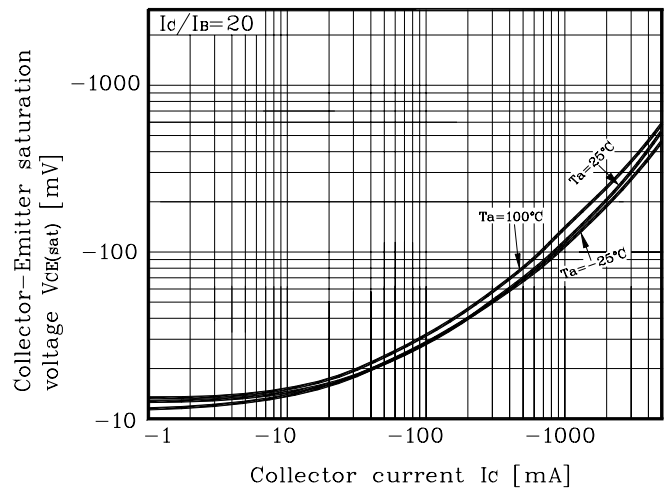


Fig. 5  $C_{ob} - V_{CB}$

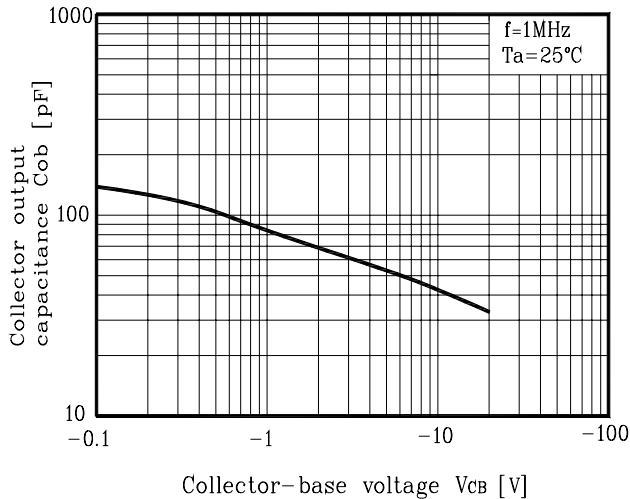
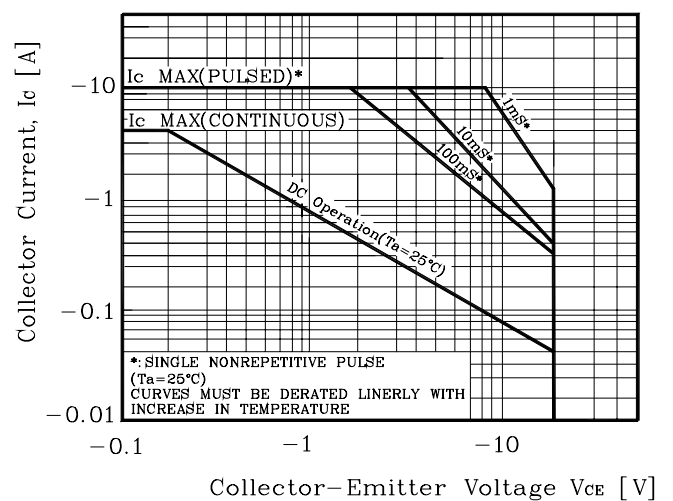
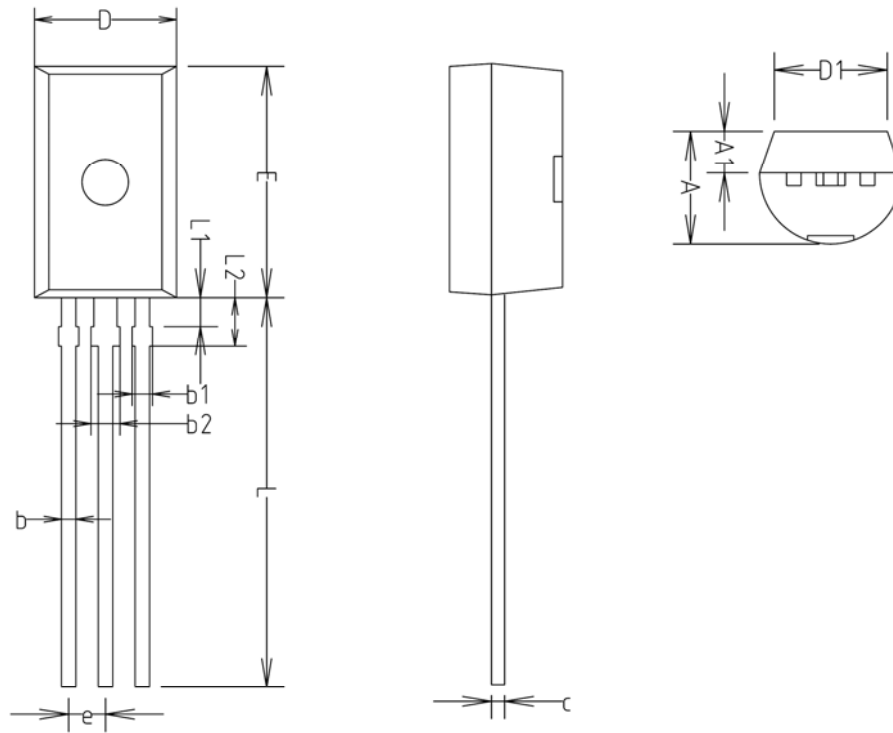


Fig. 6 Safe Operating Area



## Outline Dimension



| SYMBOL | MILLIMETERS(mm) |         |         | NOTE |
|--------|-----------------|---------|---------|------|
|        | MINIMUM         | NOMINAL | MAXIMUM |      |
| A      | 3.70            | 3.90    | 4.10    |      |
| A1     | 1.25            | 1.45    | 1.65    |      |
| b      | 0.40            | 0.50    | 0.60    |      |
| b1     | —               | —       | 0.70    |      |
| b2     | —               | —       | 1.00    |      |
| c      | 0.35            | 0.45    | 0.55    |      |
| D      | 4.70            | 4.90    | 5.10    |      |
| D1     | 3.70            | 3.90    | 4.10    |      |
| E      | 7.80            | 8.00    | 8.20    |      |
| e      | 1.27 TYP        |         |         |      |
| L      | 13.10           | 13.50   | 13.90   |      |
| L1     | 0.90            | 1.00    | 1.10    |      |
| L2     | 1.50            | 1.70    | 1.90    |      |

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