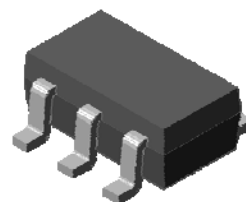


## Descriptions

- Complex type bipolar transistor

## Features

- Reduce quantity of parts and mounting cost
- High collector power dissipation:  $P_C = 500\text{mW}(\text{Max})$



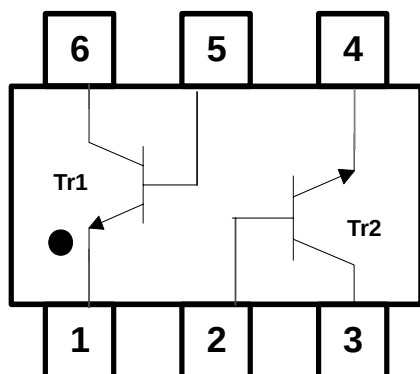
Package : SOT-26

## Ordering Information

| Type NO. | Marking | Package Code |
|----------|---------|--------------|
| SUT093N  | 93◇□    | SOT-26       |

◇ : Hfe rank, □ : Year & Week Code

## PIN Assignment & Description



[Pin Assignment]

| Pin | Description |
|-----|-------------|
| 1   | Emitter 1   |
| 2   | Base 2      |
| 3   | Collector 2 |
| 4   | Emitter 2   |
| 5   | Base 1      |
| 6   | Collector 1 |

## Absolute maximum ratings(TR1, TR2)

(Ta=25°C)

| Characteristic              | Symbol     | Ratings | Unit     |
|-----------------------------|------------|---------|----------|
| Collector-Base voltage      | $V_{CBO}$  | 100     | V        |
| Collector-Emitter voltage   | $V_{CEO}$  | 90      | V        |
| Emitter-Base voltage        | $V_{EBO}$  | 6       | V        |
| Collector current           | $I_C$      | 0.3     | A(DC)    |
|                             | $I_{CP}^*$ | 0.6     | A(Pulse) |
| Collector power dissipation | $P_C^{**}$ | 0.5     | W        |
| Junction temperature        | $T_J$      | 150     | °C       |
| Storage temperature         | $T_{stg}$  | -55~150 | °C       |

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

\*\* : Total rating(Each terminal mounted on a recommended solder land)

## Electrical Characteristics(TR1, TR2)

(Ta=25°C)

| Characteristic                       | Symbol                | Test Condition                             | Min. | Typ. | Max. | Unit    |
|--------------------------------------|-----------------------|--------------------------------------------|------|------|------|---------|
| Collector-Base breakdown voltage     | $BV_{CBO}$            | $I_C = 100 \mu A, I_E = 0$                 | 100  | -    | -    | V       |
| Collector-Emitter breakdown voltage  | $BV_{CEO}$            | $I_C = 1 \text{ mA}, I_B = 0$              | 90   | -    | -    | V       |
| Emitter-Base breakdown voltage       | $BV_{EBO}$            | $I_E = 10 \mu A, I_C = 0$                  | 6    | -    | -    | V       |
| Collector cut-off current            | $I_{CBO}$             | $V_{CB} = 100V, I_E = 0$                   | -    | -    | 0.1  | $\mu A$ |
| Emitter cut-off current              | $I_{EBO}$             | $V_{EB} = 4V, I_C = 0$                     | -    | -    | 0.1  | $\mu A$ |
| DC current gain                      | $h_{FE}^{1)}$         | $V_{CE} = 5V, I_C = 10 \text{ mA}$         | 80   | -    | 250  | -       |
| Collector-Emitter saturation voltage | $V_{CE(sat)(1)}^{2)}$ | $I_C = 10 \text{ mA}, I_B = 1 \text{ mA}$  | -    | -    | 0.2  | V       |
|                                      | $V_{CE(sat)(2)}^{2)}$ | $I_C = 50 \text{ mA}, I_B = 5 \text{ mA}$  | -    | -    | 0.5  | V       |
| Base-Emitter saturation voltage      | $V_{BE(sat)(1)}^{2)}$ | $I_C = 10 \text{ mA}, I_B = 1 \text{ mA}$  | -    | -    | 1    | V       |
|                                      | $V_{BE(sat)(2)}^{2)}$ | $I_C = 50 \text{ mA}, I_B = 5 \text{ mA}$  | -    | -    | 1    | V       |
| Transition frequency                 | $f_T$                 | $V_{CE} = 10V, I_C = 10 \text{ mA}$        | 100  | -    | 400  | MHz     |
| Collector output capacitance         | $C_{ob}$              | $V_{CB} = 10V, I_E = 0, f = 1 \text{ MHz}$ | -    | 4    | -    | pF      |

\* Note 1)  $h_{FE}$  Rank / A : 80~150, B : 130~250

\* Note 2) Pulse Tester : Pulse Width  $\leq 300 \mu s$ , Duty Cycle  $\leq 2.0\%$

# Electrical Characteristic Curves(TR1, TR2)

Fig. 1  $P_C - T_a$

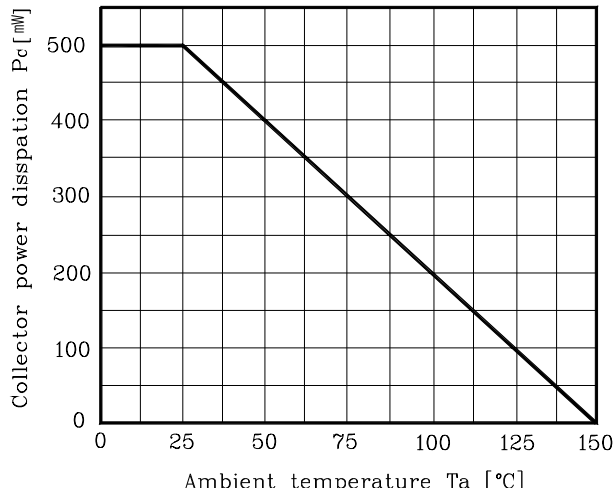


Fig. 2  $I_C - V_{BE}$

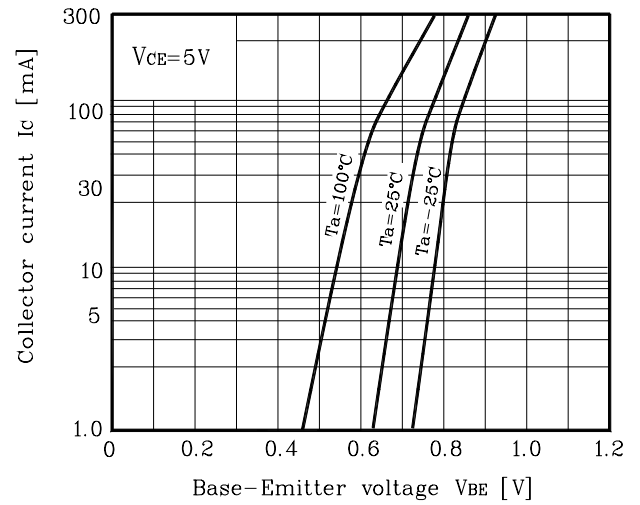


Fig. 3  $h_{FE} - I_C$

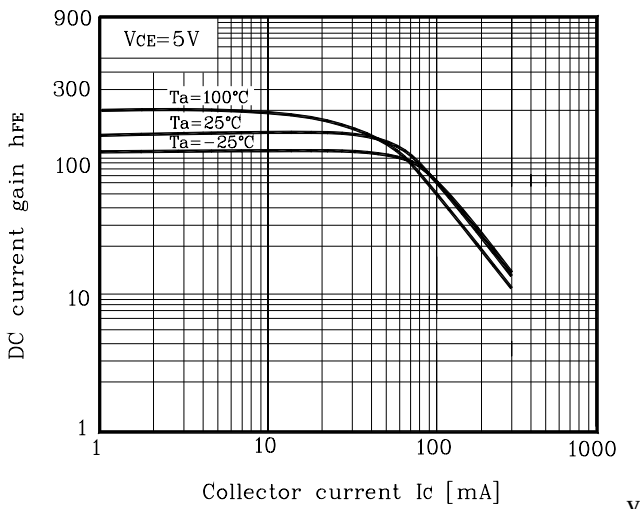


Fig. 4  $V_{CE(sat)}, V_{BE(sat)} - I_C$

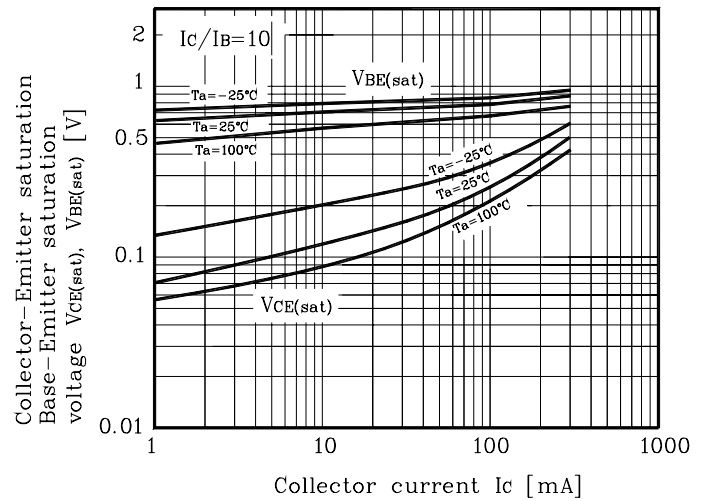


Fig. 5  $f_T - I_C$

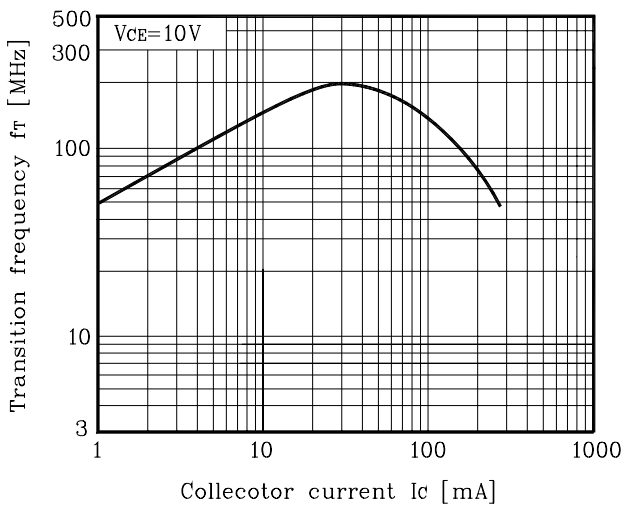
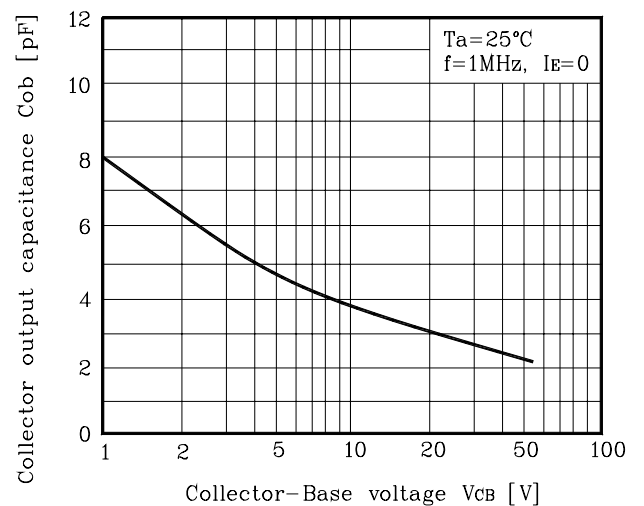
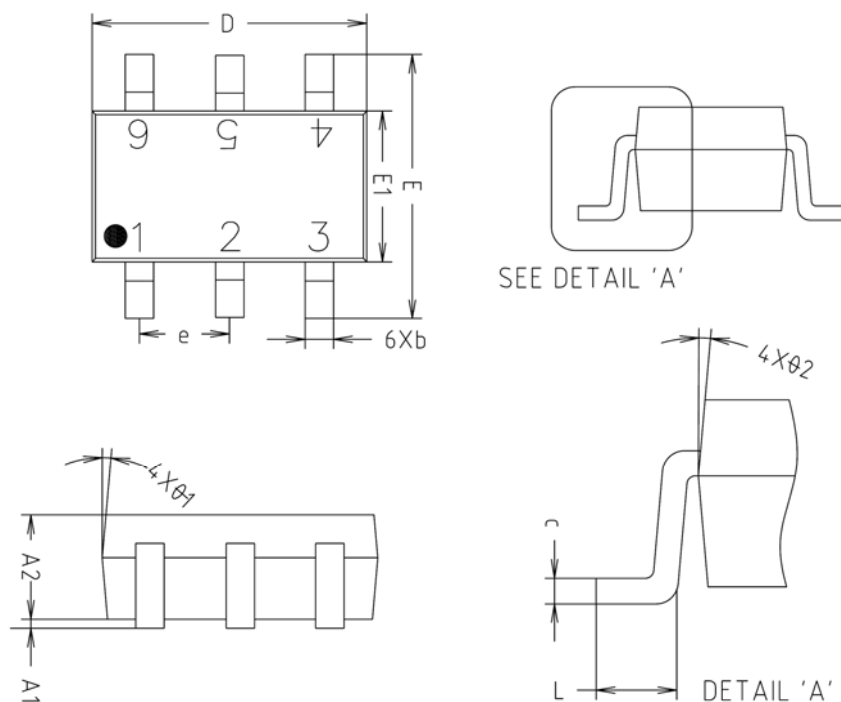


Fig. 6  $C_{ob} - V_{CB}$

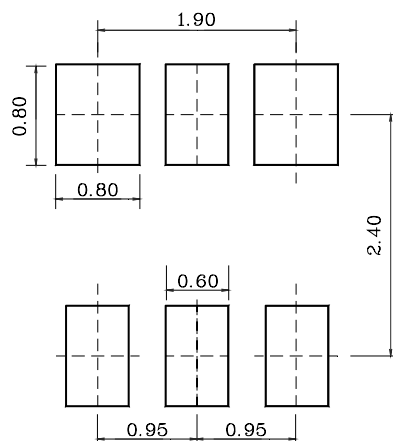


## SOT-26 Outline Dimension(mm)



| SYMBOL | MILLIMETERS(mm) |         |         | NOTE |
|--------|-----------------|---------|---------|------|
|        | MINIMUM         | NOMINAL | MAXIMUM |      |
| A1     | 0.000           | 0.050   | 0.100   |      |
| A2     | 1.000           | 1.100   | 1.200   |      |
| b      | -               | 0.400   | 0.450   |      |
| c      | 0.110           | 0.150   | 0.190   |      |
| D      | 2.800           | 2.900   | 3.000   |      |
| E      | 2.600           | 2.800   | 3.000   |      |
| E1     | 1.500           | 1.600   | 1.700   |      |
| e      | 0.930           | 0.950   | 0.970   |      |
| L      | 0.400           | -       | -       |      |
| Ø1     | 5° REF          |         |         |      |
| Ø2     | 5° REF          |         |         |      |

## ※ Recommend PCB solder land [Unit: mm]



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