

No. 2960

# SANYO

2SC4002

### NPN Triple Diffused Planar Silicon Transistor

## High-Voltage Driver Applications

## Features

- High breakdown voltage
- Adoption of MBIT process
- Excellent  $h_{FE}$  linearity

### Absolute Maximum Ratings at $T_a = 25^\circ\text{C}$

|                              |           |             |    |
|------------------------------|-----------|-------------|----|
| Collector to Base Voltage    | $V_{CB0}$ | 400         | V  |
| Collector to Emitter Voltage | $V_{CE0}$ | 400         | V  |
| Emitter to Base Voltage      | $V_{EB0}$ | 5           | V  |
| Collector Current            | $I_C$     | 200         | mA |
| Collector Current(Pulse)     | $I_{CP}$  | 400         | mA |
| Collector Dissipation        | $P_C$     | 600         | mW |
| Junction Temperature         | $T_j$     | 150         | °C |
| Storage Temperature          | $T_{stg}$ | -55 to +150 | °C |

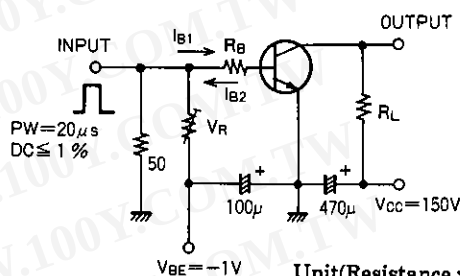
### Electrical Characteristics at $T_a = 25^\circ\text{C}$

| Parameter                    | Symbol        | Test Conditions              | Typ  | Max  | Unit    |
|------------------------------|---------------|------------------------------|------|------|---------|
| Collector Cutoff Current     | $I_{CBO}$     | $V_{CB} = 300V, I_E = 0$     |      | 0.1  | $\mu A$ |
| Emitter Cutoff Current       | $I_{EBO}$     | $V_{EB} = 4V, I_C = 0$       |      | 0.1  | $\mu A$ |
| DC Current Gain              | $h_{FE}$      | $V_{CE} = 10V, I_C = 50mA$   | 60*  | 200* |         |
| Gain-Bandwidth Product       | $f_T$         | $V_{CE} = 30V, I_C = 10mA$   | 70   |      | MHz     |
| C-E Saturation Voltage       | $V_{CE(sat)}$ | $I_C = 50mA, I_B = 5mA$      |      | 0.6  | V       |
| B-E Saturation Voltage       | $V_{BE(sat)}$ | $I_C = 50mA, I_B = 5mA$      |      | 1.0  | V       |
| C-B Breakdown Voltage        | $V_{(BR)CBO}$ | $I_C = 10\mu A, I_E = 0$     | 400  |      | V       |
| C-E Breakdown Voltage        | $V_{(BR)CEO}$ | $I_C = 1mA, R_{BE} = \infty$ | 400  |      | V       |
| E-B Breakdown Voltage        | $V_{(BR)EBO}$ | $I_E = 10\mu A, I_C = 0$     | 5    |      | V       |
| Output Capacitance           | $C_{ob}$      | $V_{CB} = 30V, f = 1MHz$     | 4    |      | pF      |
| Reverse Transfer Capacitance | $C_{re}$      | $V_{CB} = 30V, f = 1MHz$     | 3    |      | pF      |
| Turn-ON Time                 | $t_{on}$      | See specified Test Circuit.  | 0.25 |      | $\mu s$ |
| Turn-OFF Time                | $t_{off}$     | "                            | 5.0  |      | $\mu s$ |

※ : The 2SC4002 is classified by 50mA  $h_{FE}$  as follows :

|    |   |     |     |   |     |
|----|---|-----|-----|---|-----|
| 60 | D | 120 | 100 | E | 200 |
|----|---|-----|-----|---|-----|

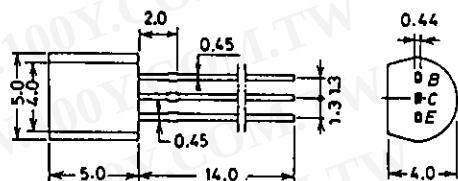
### Switching Time Test Circuit



$$10I_{B1} = -10I_{B2} = I_C = 50\text{mA}$$

$$R_L = 3k\Omega, R_B = 200\Omega \text{ at } I_C = 50mA$$

**Package Dimensions 2003A**  
(unit: mm)



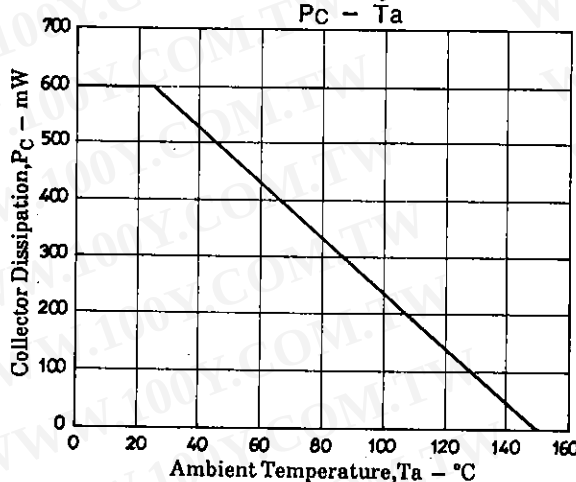
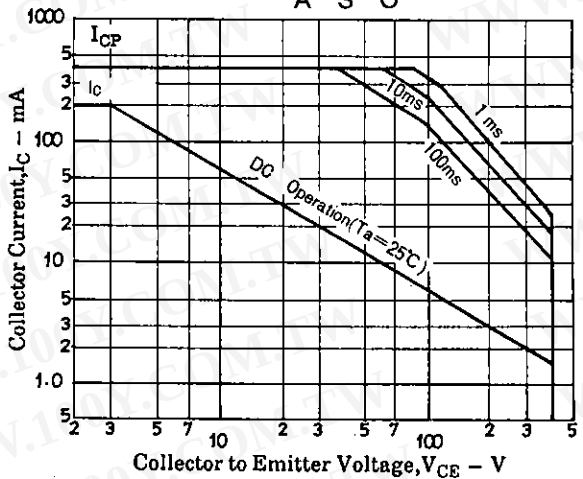
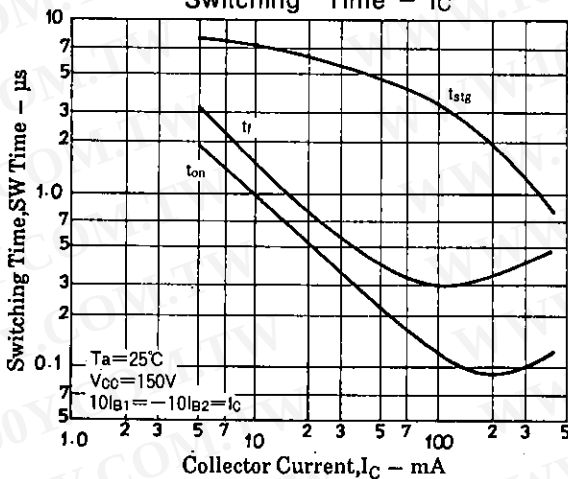
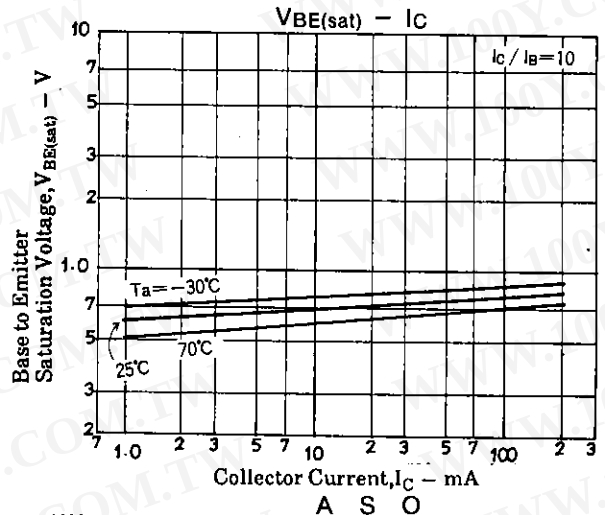
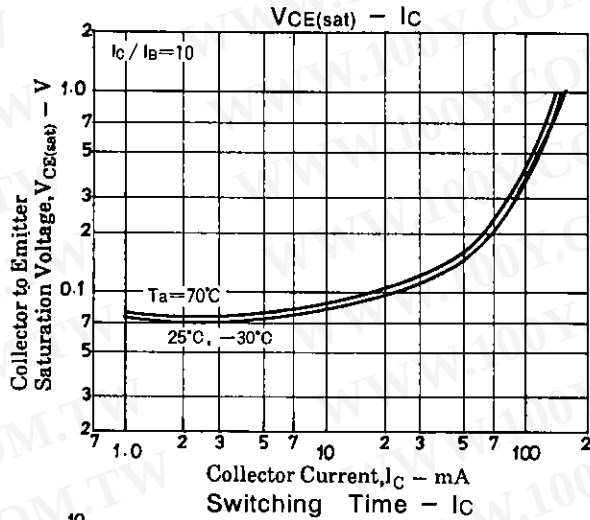
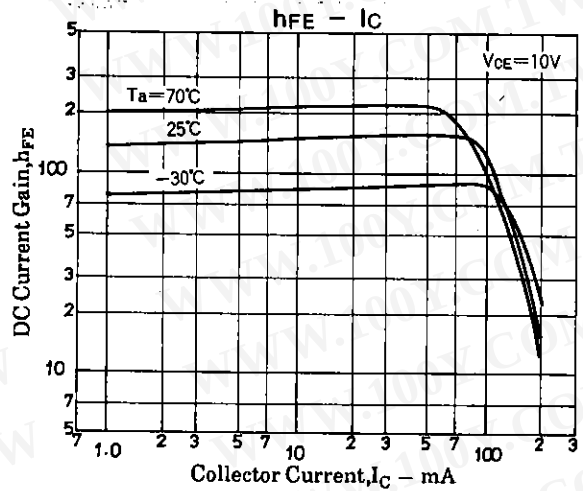
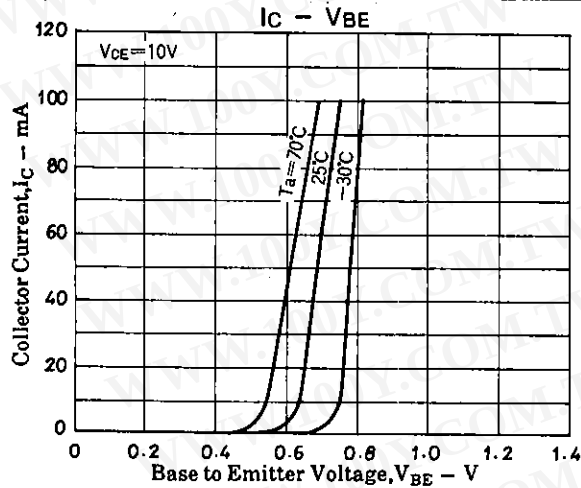
JEDEC: TO-92  
EIAJ : SC-43  
SANYO: NP

B. Base  
C. Collector  
E. Emitter

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# 25C4002



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