

# SILICON PNP EPITAXIAL TYPE (PCT PROCESS)

2SA499  
2SA500

HIGH FREQUENCY AMPLIFIER APPLICATIONS.

HIGH SPEED SWITCHING APPLICATIONS.

## FEATURES:

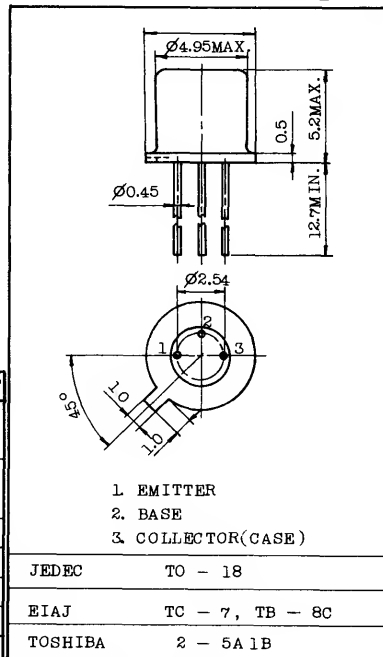
- High Breakdown Voltage :  $V_{CBO} = -50V$  (Min.) (2SA499)  
:  $V_{CBO} = -30V$  (Min.) (2SA500)
- High Transition Frequency :  $f_T = 250MHz$  (Typ.)
- Fast Switching Speed :  $t_{on} = 25ns$  (Typ.)
- Complementary to 2SC400 and 2SC979.

## MAXIMUM RATINGS (Ta=25°C)

| CHARACTERISTIC              | SYMBOL    | RATING  | UNIT |
|-----------------------------|-----------|---------|------|
| Collector-Base Voltage      | $V_{CBO}$ | -50     | V    |
|                             |           | -30     |      |
| Collector-Emitter Voltage   | $V_{CEO}$ | -40     | V    |
|                             |           | -20     |      |
| Emitter-Base Voltage        | $V_{EBO}$ | -5      | V    |
| Collector Current           | $I_C$     | -100    | mA   |
| Base Current                | $I_B$     | -20     | mA   |
| Collector Power Dissipation | $P_C$     | 250     | mW   |
| Junction Temperature        | $T_j$     | 175     | °C   |
| Storage Temperature Range   | $T_{stg}$ | -65~175 | °C   |

## INDUSTRIAL APPLICATIONS

Unit in mm



Weight : 0.31g

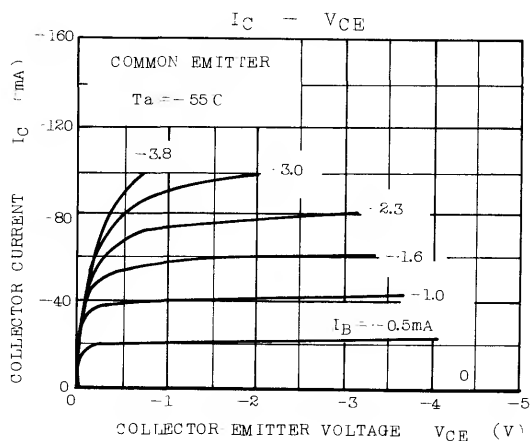
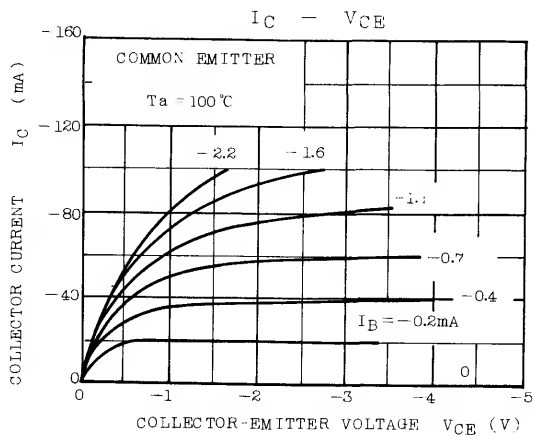
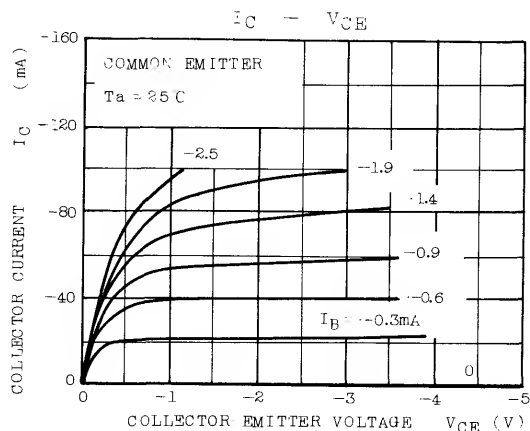
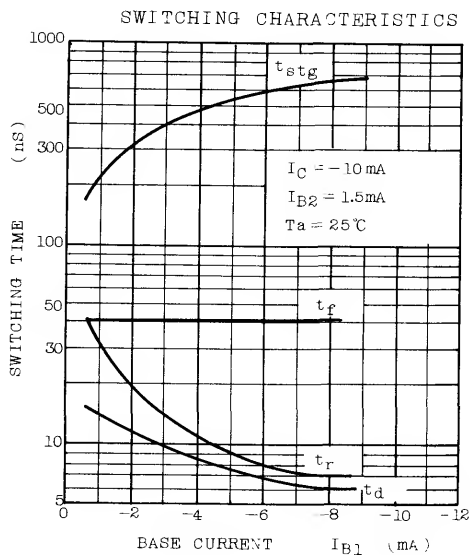
## ELECTRICAL CHARACTERISTICS (Ta=25°C)

| CHARACTERISTIC                       | SYMBOL                   | TEST CONDITION                       | MIN. | TYP. | MAX. | UNIT     |
|--------------------------------------|--------------------------|--------------------------------------|------|------|------|----------|
| Collector Cut-off Current            | $I_{CBO}$                | $V_{CB} = -15V, I_E = 0$             | -    | -    | -0.5 | $\mu A$  |
| Emitter Cut-off Current              | $I_{EBO}$                | $V_{EB} = -5V, I_C = 0$              | -    | -    | -1.0 | $\mu A$  |
| DC Current Gain                      | $h_{FE}$<br>( $N_{FE}$ ) | $V_{CE} = -1V, I_C = -10mA$          | 60   | -    | 200  |          |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)}$            | $I_C = -10mA, I_B = -1mA$            | -    | -0.1 | -0.4 | V        |
| Base-Emitter Saturation Voltage      | $V_{BE(sat)}$            | $I_C = -10mA, I_B = -1mA$            | -    | -0.8 | -1.0 | V        |
| Transition Frequency                 | $f_T$                    | $V_{CE} = -10V, I_C = -10mA$         | 100  | 250  | -    | MHz      |
| Collector Output Capacitance         | $C_{ob}$                 | $V_{CB} = -10V, I_E = 0, f = 1MHz$   | -    | 5    | 7    | pF       |
| Base Intrinsic Resistance            | $r_{bb'}$                | $V_{CB} = -6V, I_E = 1mA, f = 30MHz$ | -    | 30   | 70   | $\Omega$ |
| Switching Time                       | Turn-on Time             |                                      | -    | 25   | -    | ns       |
|                                      | Storage Time             |                                      | -    | 400  | -    |          |
|                                      | Fall Time                |                                      | -    | 40   | -    |          |

Note :  $h_{FE}$  Classification O : 60~120, Y : 100~200

2SA499

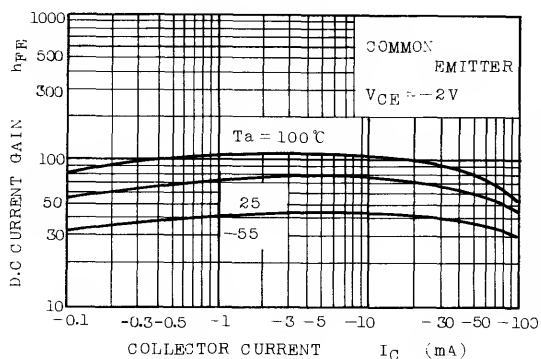
2SA500



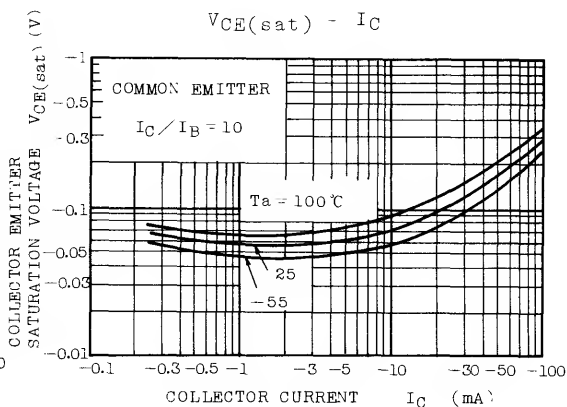
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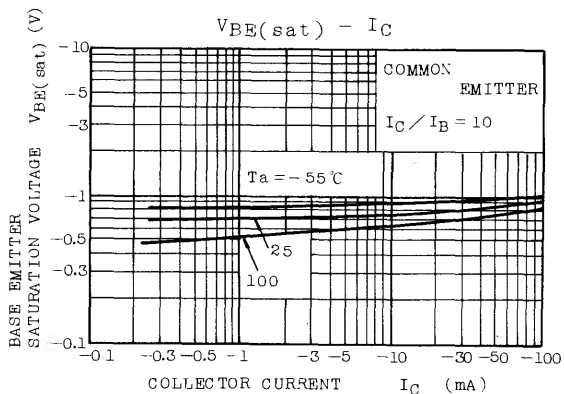
$h_{FE} - I_C$



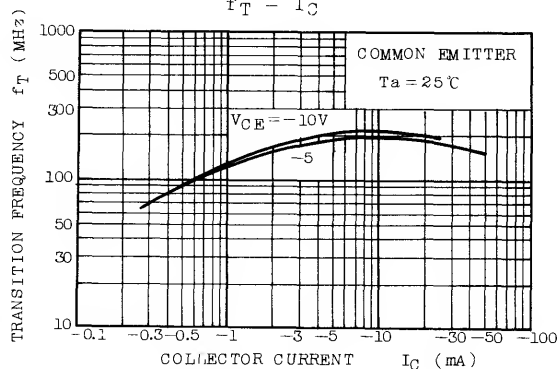
$V_{CE(sat)} - I_C$



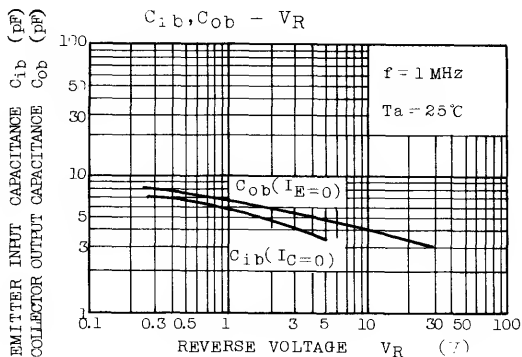
$V_{BE(sat)} - I_C$



$f_T - I_C$



$C_{ib}, C_{ob} - V_R$



$P_C - T_a$

