

# SILICON POWER TRANSISTORS

## 2SB546A, 547A/2SD401A, 402A

### VERTICAL DEFLECTION OUTPUT FOR COLOR TV

### PNP/NPN SILICON TRIPLE DIFFUSED TRANSISTORS

#### DESCRIPTION

The 2SB546A (PNP), 2SD401A (NPN), 2SB547A (PNP), and 2SD402A (NPN) are high voltage triple diffused silicon transistors. These devices are designed for use in line-operated color TV vertical deflection of complementary symmetry circuit.

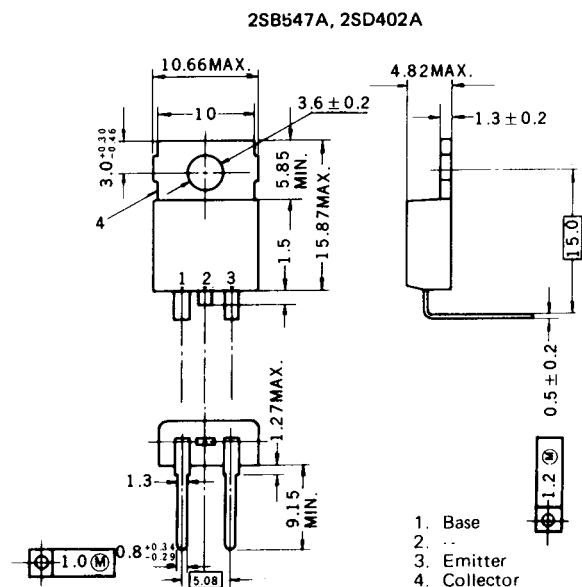
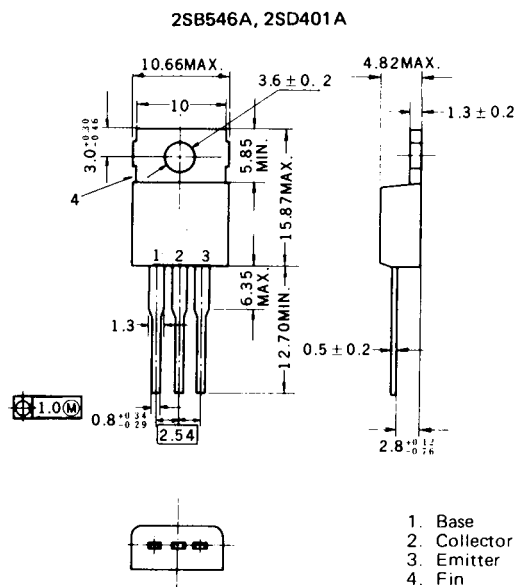
2SB546A and 2SD401A are complementary transistors, consisting of straight leads.

2SB547A and 2SD402A consist of emitter and base leads for insertion into TO-66 sockets.

| QUICK REFERENCE DATA                                   |           |      |                  |                  |   |
|--------------------------------------------------------|-----------|------|------------------|------------------|---|
|                                                        |           |      | 2SB546A, 2SB547A | 2SD401A, 2SD402A |   |
| Collector-emitter voltage (open base)                  | $V_{CEO}$ | MAX. | 150              | 150              | V |
| Collector current (peak value)                         | $I_{CM}$  | MAX. | 3                | 3                | A |
| Total power dissipation up to $T_{case} = 25^{\circ}C$ | $P_{tot}$ | MAX. | 30               | 30               | W |
| D.C. Current gain                                      |           |      |                  |                  |   |
| $I_C = -0.4/0.4A, V_{CE} = -10/10V$                    | $h_{FE}$  | MIN. | 40               | 40               |   |

#### MECHANICAL DATA

(Dimensions in mm)

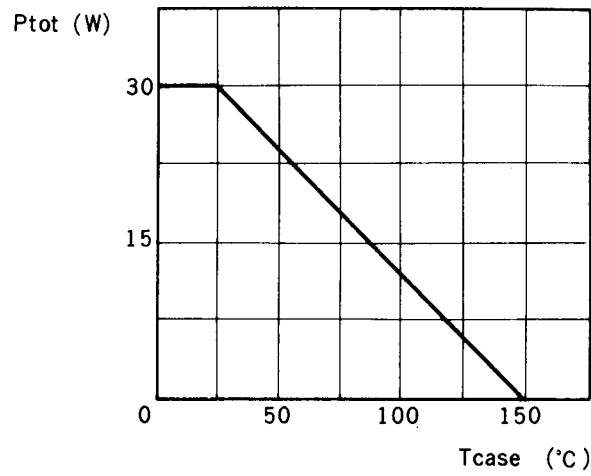


ABSOLUTE MAXIMUM RATINGS ( $T_{amb} = 25^{\circ}\text{C}$ )

| Voltages ( $T_{amb} = 25^{\circ}\text{C}$ )                   |                  |      | 2SB546A, 2SB547A | 2SD401A, 2SD402A |                      |
|---------------------------------------------------------------|------------------|------|------------------|------------------|----------------------|
| Collector-base voltage (open emitter)                         | $V_{CBO}$        | MAX. | -200             | 200              | V                    |
| Collector-emitter voltage (open base)                         | $V_{CEO}$        | MAX. | -150             | 150              | V                    |
| Emitter-base voltage (open collector)                         | $V_{EBO}$        | MAX. | -5.0             | 5.0              | V                    |
| Currents ( $T_{amb} = 25^{\circ}\text{C}$ )                   |                  |      |                  |                  |                      |
| Collector current (D.C.)                                      | $I_C$            | MAX. | -2.0             | 2.0              | A                    |
| Collector current (peak value)                                | $I_{CM}$         | MAX. | -3.0             | 3.0              | A                    |
| Base current (peak value)                                     | $I_{BM}$         | MAX. | -1.5             | 1.5              | A                    |
| Power dissipation                                             |                  |      |                  |                  |                      |
| Total power dissipation<br>at $T_{case} = 25^{\circ}\text{C}$ | $P_{tot}$        | MAX. | 30               |                  | W                    |
| TEMPERATURES                                                  |                  |      |                  |                  |                      |
| Storage temperature                                           | $T_{stg}$        |      | -55 to +150      |                  | $^{\circ}\text{C}$   |
| Junction temperature                                          | $T_j$            |      | 150              |                  | $^{\circ}\text{C}$   |
| THERMAL RESISTANCE                                            |                  |      |                  |                  |                      |
| from junction to case                                         | $R_{th\ j-case}$ |      | 4.16             |                  | $^{\circ}\text{C/W}$ |
| from junction to ambient in free air                          | $R_{th\ j-a}$    |      | 78               |                  | $^{\circ}\text{C/W}$ |

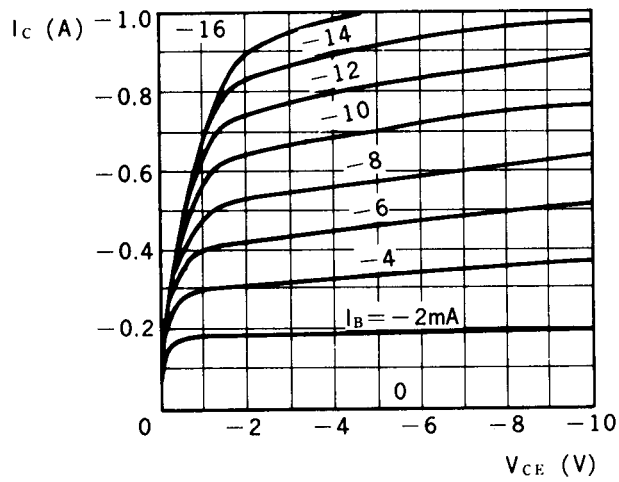
ELECTRICAL CHARACTERISTICS ( $T_{amb} = 25^{\circ}\text{C}$ )

| Collector cut-off current                             |               | 2SB546A, 2SB547A, 2SD401A, 2SD402A |          |               |
|-------------------------------------------------------|---------------|------------------------------------|----------|---------------|
| $I_E = 0, V_{CB} = -150/150\text{V}$                  | $I_{CBO}$     | <                                  | -50/50   | $\mu\text{A}$ |
| Emitter cut-off current                               |               |                                    |          |               |
| $V_{EB} = -4.0/4.0\text{V}, I_C = 0$                  | $I_{EBO}$     | <                                  | -50/50   | $\mu\text{A}$ |
| D.C. current gain                                     |               |                                    |          |               |
| $V_{CE} = -10/10\text{V}, I_C = -0.4/0.4\text{A}$     | $h_{FE}$      | >                                  | 40/40    |               |
| Collector-emitter saturation voltage                  |               |                                    |          |               |
| $I_C = -0.5/0.5\text{A}, I_B = -0.05/0.05\text{A}$    | $V_{CE(sat)}$ | <                                  | -2.0/2.0 | V             |
| Transition frequency                                  |               |                                    |          |               |
| $V_{CE} = -10/10\text{V}, I_C = -0.4/0.4\text{A}$     | $f_T$         | TYP.                               | 7/7      | MHz           |
| Collector capacitance                                 |               |                                    |          |               |
| $V_{CB} = -10/10\text{V}, f = 1.0\text{MHz}, I_E = 0$ | $C_C$         | TYP.                               | 75/45    | pF            |

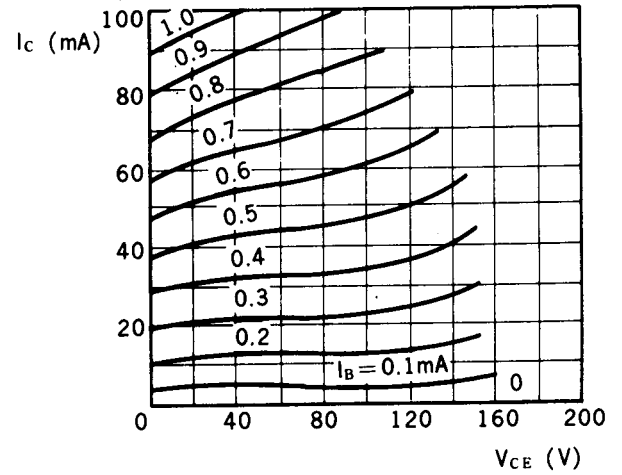
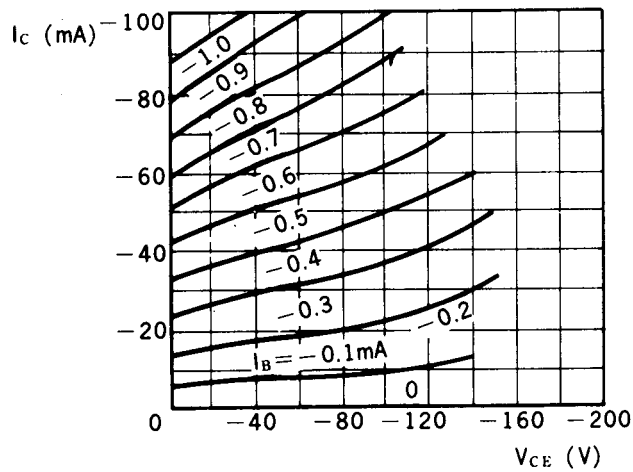
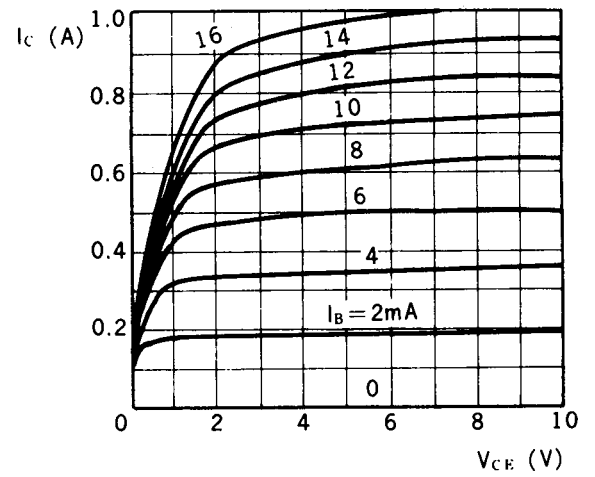


TYPICAL CHARACTERISTICS ( $T_{amb} = 25^{\circ}C$ )

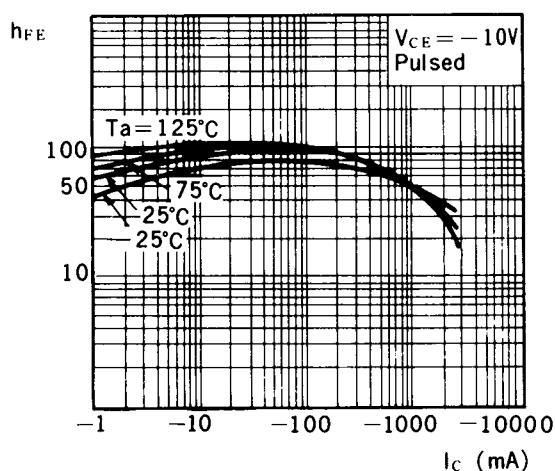
2SB546A, 2SB547A



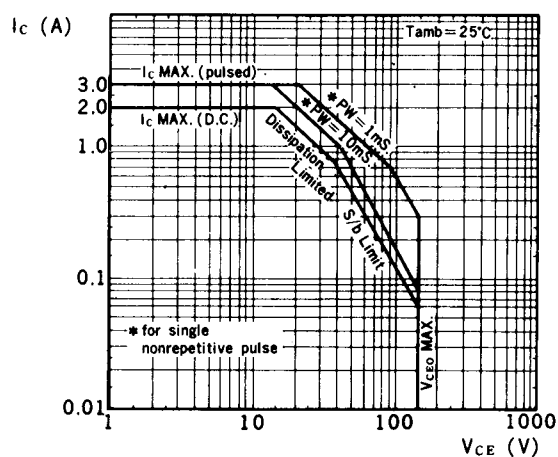
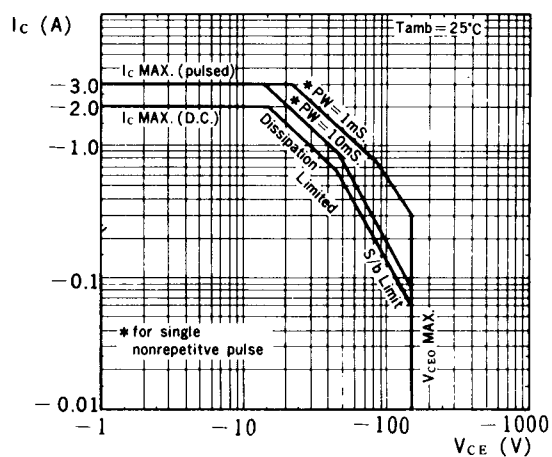
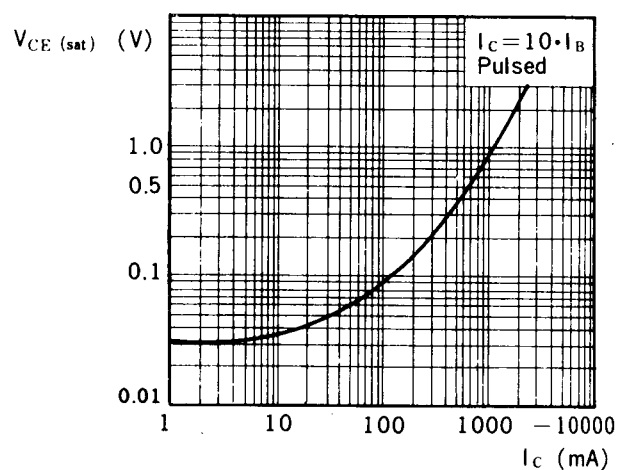
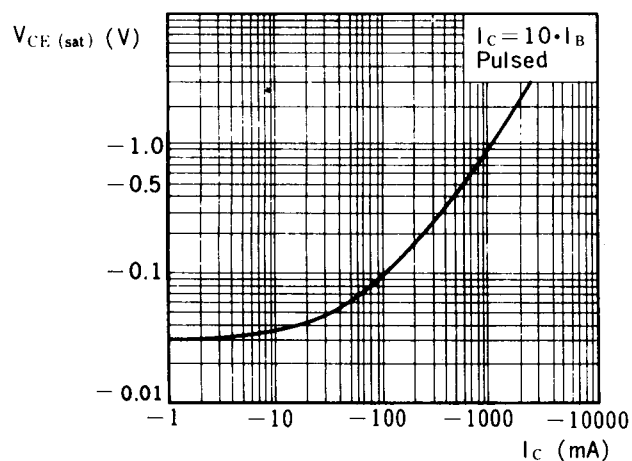
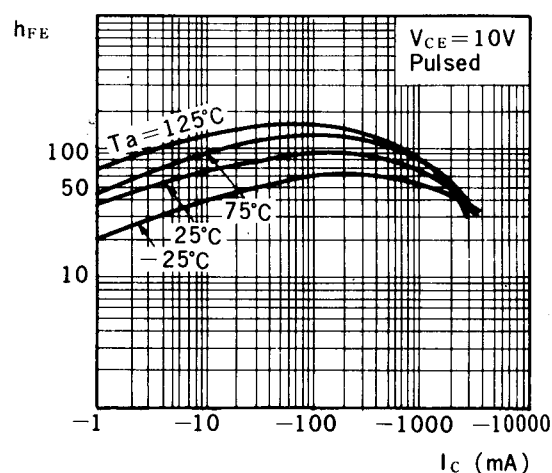
2SD401A, 2SD402A



2SB546A, 547A



2SD401A, 2SD402A



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