



## 2SB1202

## PNP PLANAR TRANSISTOR

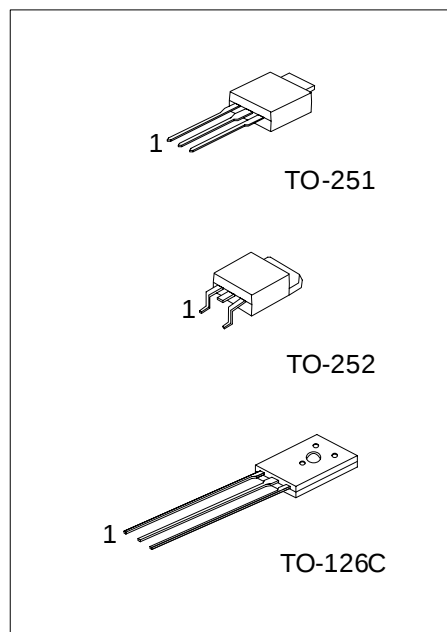
### HIGH CURRENT SWITCHING APPLICATION

#### DESCRIPTION

The UTC 2SB1202 applies to voltage regulators, relay drivers, lamp drivers, and electrical equipment.

#### FEATURES

- \* Adoption of FBET, MBIT processes
- \* Large current capacity and wide ASO
- \* Low collector-to-emitter saturation voltage
- \* Fast switching speed



\*Pb-free plating product number: 2SB1202L

#### ORDERING INFORMATION

| Order Number    |                   | Package | Pin Assignment |   |   | Packing   |
|-----------------|-------------------|---------|----------------|---|---|-----------|
| Normal          | Lead Free Plating |         | 1              | 2 | 3 |           |
| 2SB1202-x-T6C-K | 2SB1202L-x-T6C-K  | TO-126C | E              | C | B | Bulk      |
| 2SB1202-x-TM3-T | 2SB1202L-x-TM3-T  | TO-251  | B              | C | E | Tube      |
| 2SB1202-x-TN3-R | 2SB1202L-x-TN3-R  | TO-252  | B              | C | E | Tape Reel |
| 2SB1202-x-TN3-T | 2SB1202L-x-TN3-T  | TO-252  | B              | C | E | Tube      |

|                                                                                                             |                                                                                                                                                                                                         |
|-------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>2SB1202L-x-T6C-K</p> <p>(1)Packing Type</p> <p>(2)Package Type</p> <p>(3)Rank</p> <p>(4)Lead Plating</p> | <p>(1) K: Bulk, T: Tube, R: Tape Reel</p> <p>(2) T6C: TO-126C, TM3: TO-251, TN3: TO-252</p> <p>(3) x: refer to Classification of <math>h_{FE1}</math></p> <p>(4) L: Lead Free Plating, Blank: Pb/Sn</p> |
|-------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

■ ABSOLUTE MAXIMUM RATINGS (Ta=25°C, unless otherwise specified )

| PARAMETER                   |         | SYMBOL    | RATINGS    | UNIT |
|-----------------------------|---------|-----------|------------|------|
| Collector-Base Voltage      |         | $V_{CBO}$ | -60        | V    |
| Collector-Emitter Voltage   |         | $V_{CEO}$ | -50        | V    |
| Emitter-Base Voltage        |         | $V_{EBO}$ | -6         | V    |
| Collector Power Dissipation | Ta=25°C | $P_C$     | 1          | W    |
|                             | Tc=25°C |           | 15         | W    |
| Collector Current           | DC      | $I_C$     | -3         | A    |
|                             | PULSE   | $I_{CP}$  | -6         | A    |
| Junction Temperature        |         | $T_J$     | 150        | °C   |
| Storage Temperature         |         | $T_{STG}$ | -55 ~ +150 | °C   |

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged.  
Absolute maximum ratings are stress ratings only and functional device operation is not implied.

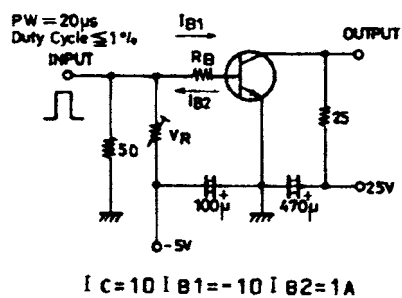
■ ELECTRICAL CHARACTERISTICS (Ta=25°C, unless otherwise specified)

| PARAMETER                | SYMBOL        | TEST CONDITIONS               | MIN | TYP   | MAX  | UNIT    |
|--------------------------|---------------|-------------------------------|-----|-------|------|---------|
| C-B Breakdown Voltage    | $BV_{CBO}$    | $I_C = -10\mu A, I_E = 0$     | -60 |       |      | V       |
| C-E Breakdown Voltage    | $BV_{CEO}$    | $I_C = -1mA, R_{BE} = \infty$ | -50 |       |      | V       |
| E-B Breakdown Voltage    | $BV_{EBO}$    | $I_E = -10\mu A, I_C = 0$     | -6  |       |      | V       |
| Collector Cutoff Current | $I_{CBO}$     | $V_{CB} = -40V, I_E = 0$      |     |       | -1   | $\mu A$ |
| Emitter Cutoff Current   | $I_{EBO}$     | $V_{EB} = -4V, I_C = 0$       |     |       | -1   | $\mu A$ |
| C-E Saturation Voltage   | $V_{CE(SAT)}$ | $I_C = -2A, I_B = -100mA$     |     | -0.35 | -0.7 | V       |
| B-E Saturation Voltage   | $V_{BE(SAT)}$ | $I_C = -2A, I_B = -100mA$     |     | -0.94 | -1.2 | V       |
| DC Current Gain          | $h_{FE1}$     | $V_{CE} = -2V, I_C = -100mA$  | 100 |       | 560  |         |
|                          | $h_{FE2}$     | $V_{CE} = -2V, I_C = -3A$     | 35  |       |      |         |
| Gain-Bandwidth Product   | $f_T$         | $V_{CE} = -10V, I_C = -50mA$  |     | 150   |      | MHz     |
| Output Capacitance       | $C_{ob}$      | $V_{CB} = -10V, f = 1MHz$     |     | 39    |      | pF      |
| Turn-on Time             | $t_{ON}$      | See test circuit              |     | 70    |      | ns      |
| Storage Time             | $t_{STG}$     | See test circuit              |     | 450   |      | ns      |
| Fall Time                | $t_F$         | See test circuit              |     | 35    |      | ns      |

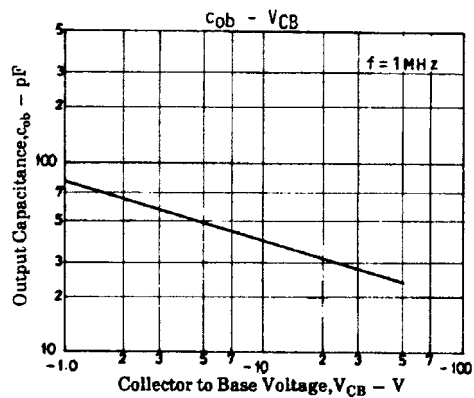
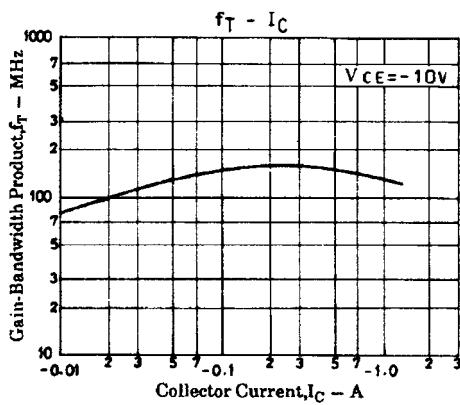
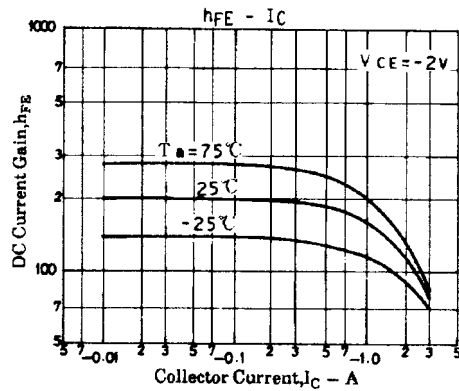
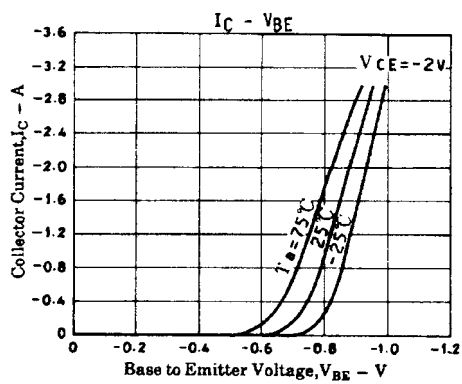
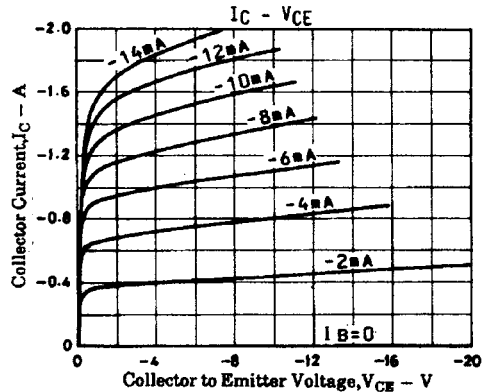
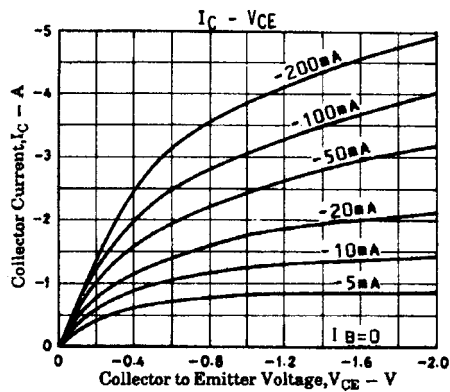
■ CLASSIFICATION OF  $h_{FE1}$

| RANK  | R       | S       | T       | U       |
|-------|---------|---------|---------|---------|
| RANGE | 100-200 | 140-280 | 200-400 | 280-560 |

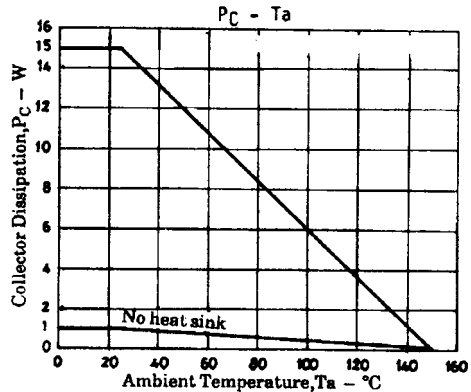
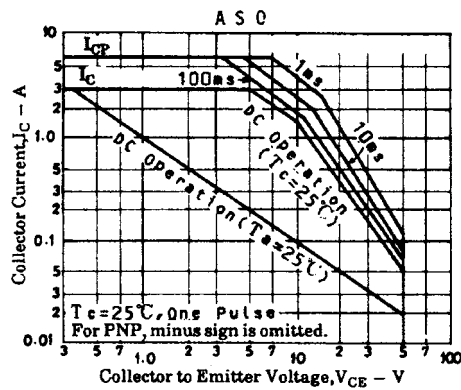
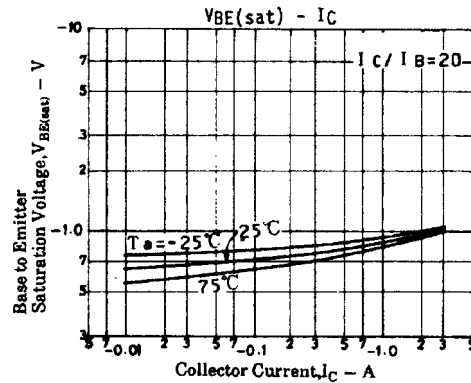
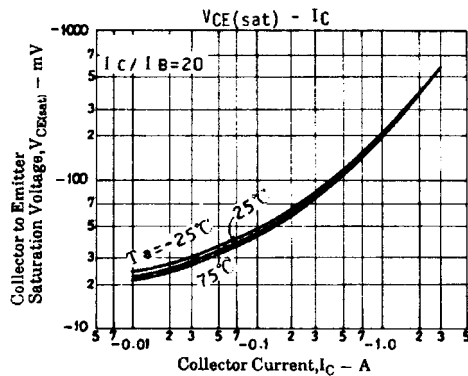
- TEST CIRCUIT FOR NPN (PNP: the polarity is reversed; Unit: resistance:  $\Omega$ , capacitance: F)



■ TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS(Cont.)



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