

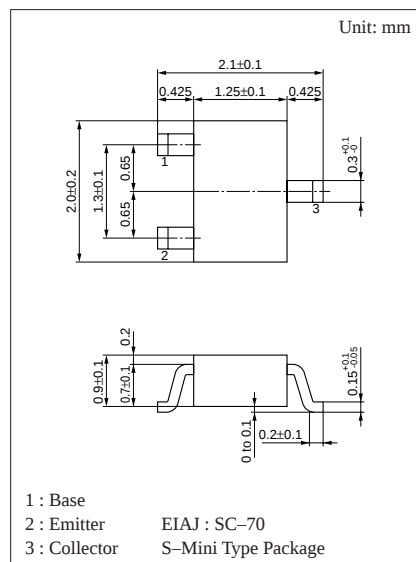
## Silicon PNP epitaxial planer transistor

## ■ Features

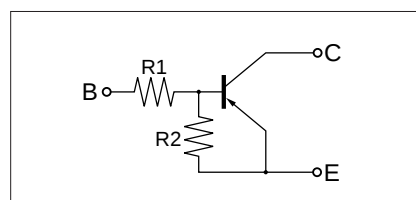
- Costs can be reduced through downsizing of the equipment and reduction of the number of parts.
- S-Mini type package, allowing automatic insertion through tape packing and magazine packing.

### ■ Resistance by Part Number

|          | Marking Symbol | (R <sub>1</sub> ) | (R <sub>2</sub> ) |
|----------|----------------|-------------------|-------------------|
| ● UN5111 | 6A             | 10kΩ              | 10kΩ              |
| ● UN5112 | 6B             | 22kΩ              | 22kΩ              |
| ● UN5113 | 6C             | 47kΩ              | 47kΩ              |
| ● UN5114 | 6D             | 10kΩ              | 47kΩ              |
| ● UN5115 | 6E             | 10kΩ              | —                 |
| ● UN5116 | 6F             | 4.7kΩ             | —                 |
| ● UN5117 | 6H             | 22kΩ              | —                 |
| ● UN5118 | 6I             | 0.51Ω             | 5.1kΩ             |
| ● UN5119 | 6K             | 1kΩ               | 10kΩ              |
| ● UN5110 | 6L             | 47kΩ              | —                 |
| ● UN511D | 6M             | 47kΩ              | 10kΩ              |
| ● UN511E | 6N             | 47kΩ              | 22kΩ              |
| ● UN511F | 6O             | 4.7kΩ             | 10kΩ              |
| ● UN511H | 6P             | 2.2kΩ             | 10kΩ              |
| ● UN511L | 6Q             | 4.7kΩ             | 4.7kΩ             |
| ● UN511M | EI             | 2.2kΩ             | 47kΩ              |
| ● UN511N | EW             | 4.7kΩ             | 47kΩ              |
| ● UN511T | EY             | 22kΩ              | 47kΩ              |
| ● UN511V | FC             | 2.2kΩ             | 2.2kΩ             |
| ● UN511Z | FE             | 4.7kΩ             | 22kΩ              |



### Internal Connection



■ Absolute Maximum Ratings (Ta=25°C)

| Parameter                    | Symbol    | Ratings     | Unit |
|------------------------------|-----------|-------------|------|
| Collector to base voltage    | $V_{CBO}$ | -50         | V    |
| Collector to emitter voltage | $V_{CEO}$ | -50         | V    |
| Collector current            | $I_C$     | -100        | mA   |
| Total power dissipation      | $P_T$     | 150         | mW   |
| Junction temperature         | $T_j$     | 150         | °C   |
| Storage temperature          | $T_{stg}$ | -55 to +150 | °C   |

UN5111/5112/5113/5114/5115/5116/5117/5118/5119/5110/  
Transistors with built-in Resistor 511D/511E/511F/511H/511L/511M/511N/511T/511V/511Z

■ Electrical Characteristics (Ta=25°C)

| Parameter                               |                                      | Symbol               | Conditions                                                           | min    | typ  | max    | Unit |
|-----------------------------------------|--------------------------------------|----------------------|----------------------------------------------------------------------|--------|------|--------|------|
| Collector cutoff current                |                                      | I <sub>CBO</sub>     | V <sub>CB</sub> = -50V, I <sub>E</sub> = 0                           |        |      | - 0.1  | μA   |
|                                         |                                      | I <sub>CEO</sub>     | V <sub>CE</sub> = -50V, I <sub>B</sub> = 0                           |        |      | - 0.5  | μA   |
| Emitter cutoff current                  | UN5111                               | I <sub>EBO</sub>     | V <sub>EB</sub> = -6V, I <sub>C</sub> = 0                            |        |      | - 0.5  | mA   |
|                                         | UN5112/5114/511E/511D/511M/511N/511T |                      |                                                                      |        |      | - 0.2  |      |
|                                         | UN5113                               |                      |                                                                      |        |      | - 0.1  |      |
|                                         | UN5115/5116/5117/5110                |                      |                                                                      |        |      | - 0.01 |      |
|                                         | UN511F/511H                          |                      |                                                                      |        |      | -1.0   |      |
|                                         | UN5119                               |                      |                                                                      |        |      | -1.5   |      |
|                                         | UN5118/511L/511V                     |                      |                                                                      |        |      | -2.0   |      |
|                                         | UN511Z                               |                      |                                                                      |        |      | - 0.4  |      |
| Collector to base voltage               |                                      | V <sub>CBO</sub>     | I <sub>C</sub> = -10μA, I <sub>E</sub> = 0                           | -50    |      |        | V    |
| UN511N/511T/511V/511Z                   |                                      |                      |                                                                      | -50    |      |        |      |
| Collector to emitter voltage            |                                      | V <sub>CEO</sub>     | I <sub>C</sub> = -2mA, I <sub>B</sub> = 0                            | -50    |      |        | V    |
| UN511N/511T                             |                                      |                      |                                                                      | -50    |      |        |      |
| Forward current transfer ratio          | UN5111                               | h <sub>FE</sub>      | V <sub>CE</sub> = -10V, I <sub>C</sub> = -5mA                        | 35     |      |        |      |
|                                         | UN5112/511E                          |                      |                                                                      | 60     |      |        |      |
|                                         | UN5113/5114/511M                     |                      |                                                                      | 80     |      |        |      |
|                                         | UN5115*/5116*/5117*/5110*            |                      |                                                                      | 160    |      | 460    |      |
|                                         | UN511F/511D/5119/511H                |                      |                                                                      | 30     |      |        |      |
|                                         | UN5118/511L                          |                      |                                                                      | 20     |      |        |      |
|                                         | UN511N/511T                          |                      |                                                                      | 80     |      | 400    |      |
|                                         | UN511V                               |                      |                                                                      | 6      |      | 20     |      |
|                                         | UN511Z                               |                      |                                                                      | 60     |      | 200    |      |
| Collector to emitter saturation voltage |                                      | V <sub>CE(sat)</sub> | I <sub>C</sub> = -10mA, I <sub>B</sub> = - 0.3mA                     |        |      | - 0.25 | V    |
| UN511V                                  |                                      |                      | I <sub>C</sub> = -10mA, I <sub>B</sub> = -1.5mA                      |        |      | - 0.25 |      |
| Output voltage high level               |                                      | V <sub>OH</sub>      | V <sub>CC</sub> = -5V, V <sub>B</sub> = - 0.5V, R <sub>L</sub> = 1kΩ | -4.9   |      |        | V    |
| Output voltage low level                |                                      | V <sub>OL</sub>      | V <sub>CC</sub> = -5V, V <sub>B</sub> = -2.5V, R <sub>L</sub> = 1kΩ  |        |      | - 0.2  | V    |
| UN5113                                  |                                      |                      | V <sub>CC</sub> = -5V, V <sub>B</sub> = -3.5V, R <sub>L</sub> = 1kΩ  |        |      | - 0.2  |      |
| UN511D                                  |                                      |                      | V <sub>CC</sub> = -5V, V <sub>B</sub> = -10V, R <sub>L</sub> = 1kΩ   |        |      | - 0.2  |      |
| UN511E                                  |                                      |                      | V <sub>CC</sub> = -5V, V <sub>B</sub> = -6V, R <sub>L</sub> = 1kΩ    |        |      | - 0.2  |      |
| Transition frequency                    |                                      | f <sub>T</sub>       | V <sub>CB</sub> = -10V, I <sub>E</sub> = 1mA, f = 200MHz             |        | 80   |        | MHz  |
| UN511Z                                  |                                      |                      | V <sub>CB</sub> = -10V, I <sub>E</sub> = 1mA, f = 200MHz             |        | 150  |        |      |
| Input resistance                        | UN5111/5114/5115                     | R <sub>i</sub>       |                                                                      | (-30%) | 10   | (+30%) | kΩ   |
|                                         | UN5112/5117/511T                     |                      |                                                                      |        | 22   |        |      |
|                                         | UN5113/5110/511D/511E                |                      |                                                                      |        | 47   |        |      |
|                                         | UN5116/511F/511L/511N/511Z           |                      |                                                                      |        | 4.7  |        |      |
|                                         | UN5118                               |                      |                                                                      |        | 0.51 |        |      |
|                                         | UN5119                               |                      |                                                                      |        | 1    |        |      |
|                                         | UN511H/511M/511V                     |                      |                                                                      |        | 2.2  |        |      |

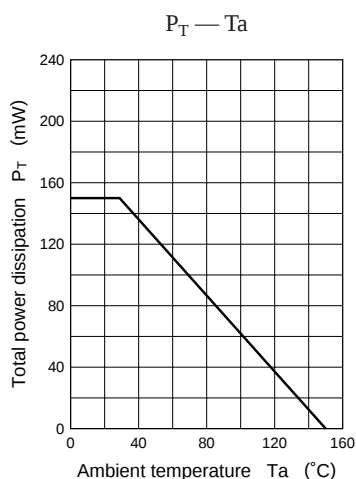
\* h<sub>FE</sub> rank classification (UN5115/5116/5117/5110)

| Rank            | Q          | R          | S          |
|-----------------|------------|------------|------------|
| h <sub>FE</sub> | 160 to 260 | 210 to 340 | 290 to 460 |

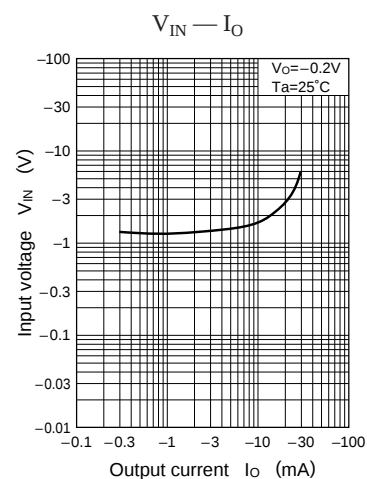
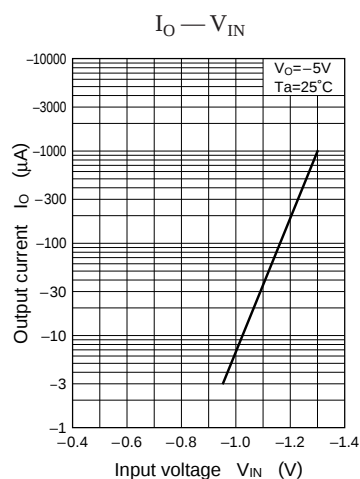
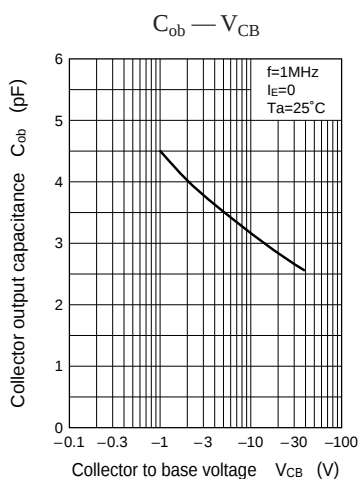
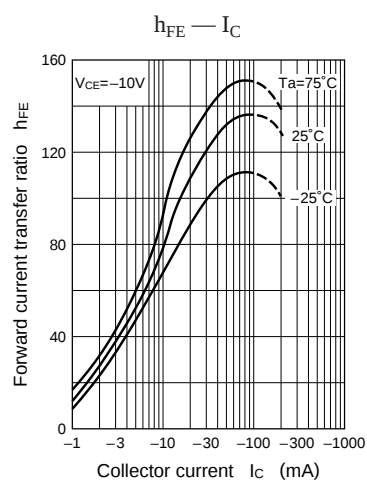
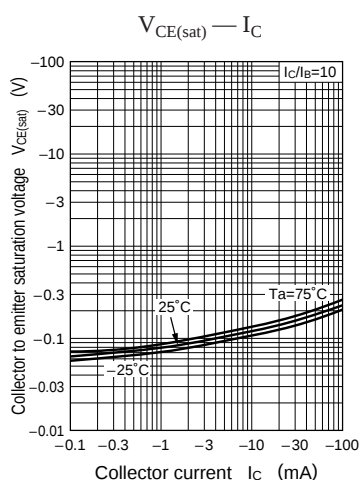
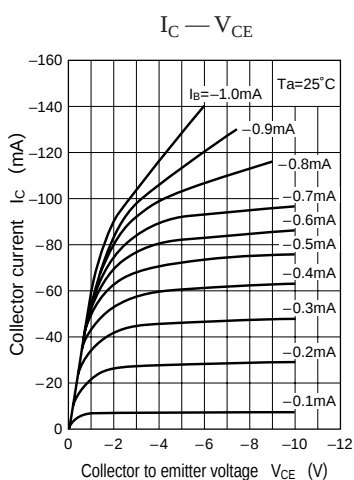
■ Electrical Characteristics (continued) (Ta=25°C)

| Parameter                |                       | Symbol    | Conditions | min  | typ   | max  | Unit |
|--------------------------|-----------------------|-----------|------------|------|-------|------|------|
| Resis-<br>tance<br>ratio | UN5111/5112/5113/511L | $R_1/R_2$ |            | 0.8  | 1.0   | 1.2  |      |
|                          | UN5114                |           |            | 0.17 | 0.21  | 0.25 |      |
|                          | UN5118/5119           |           |            | 0.08 | 0.1   | 0.12 |      |
|                          | UN511D                |           |            |      | 4.7   |      |      |
|                          | UN511E                |           |            |      | 2.14  |      |      |
|                          | UN511F/511T           |           |            |      | 0.47  |      |      |
|                          | UN511H                |           |            | 0.17 | 0.22  | 0.27 |      |
|                          | UN511M                |           |            |      | 0.047 |      |      |
|                          | UN511N                |           |            |      | 0.1   |      |      |
|                          | UN511V                |           |            |      | 1.0   |      |      |
|                          | UN511Z                |           |            |      | 0.21  |      |      |

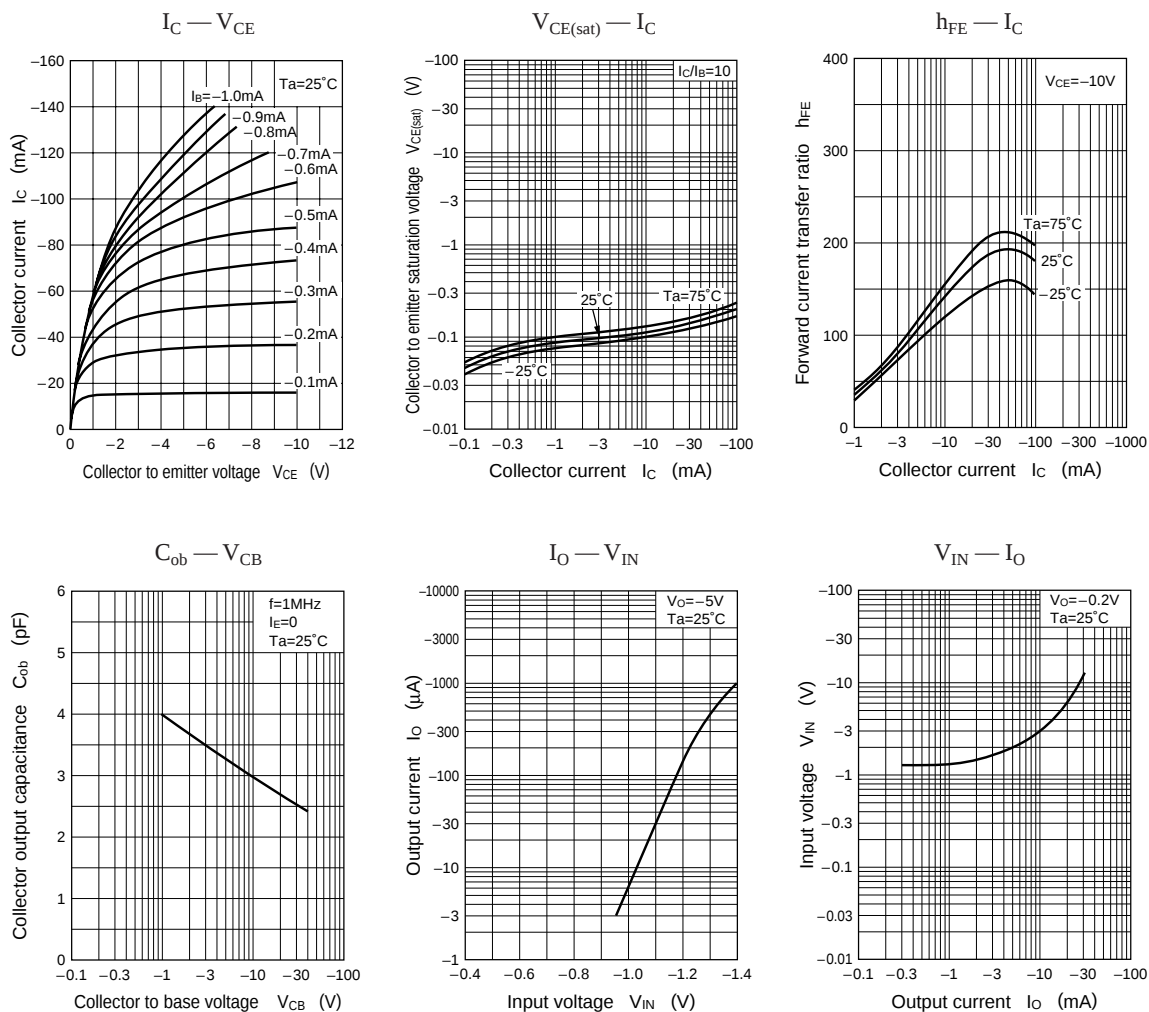
Common characteristics chart



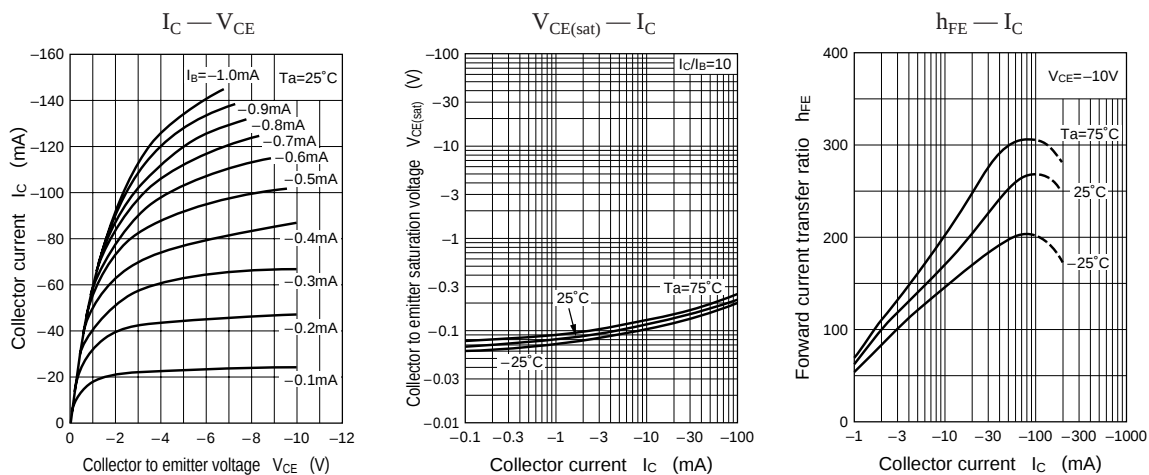
Characteristics charts of UN5111

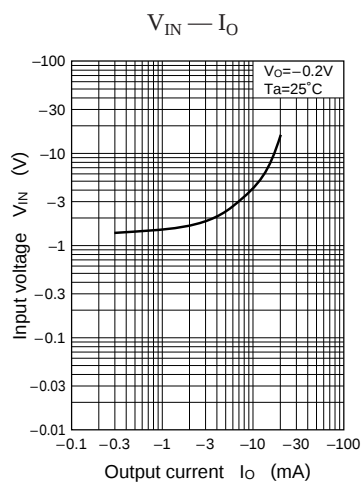
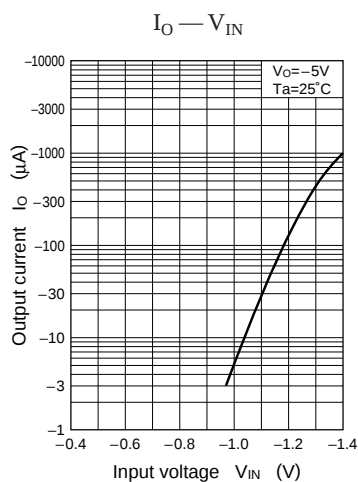
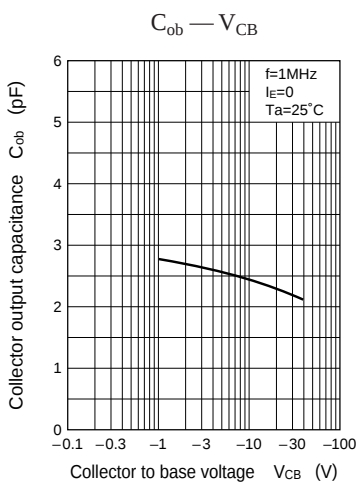


Characteristics charts of UN5112

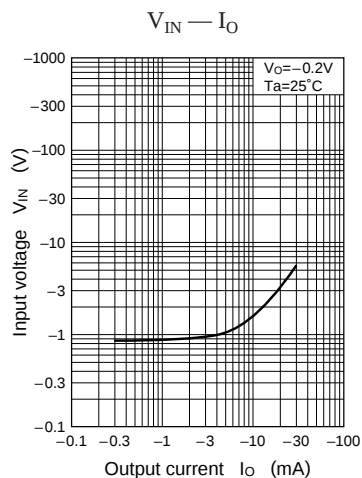
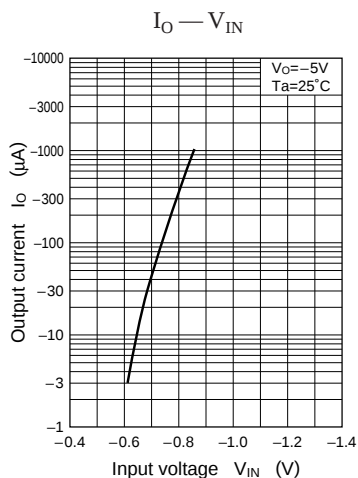
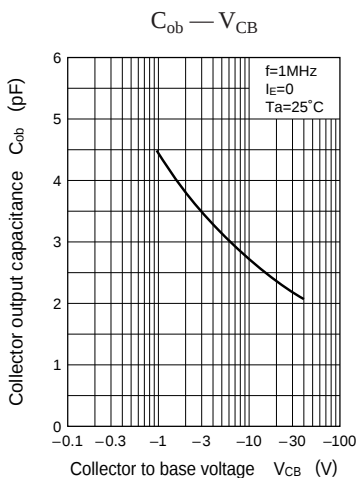
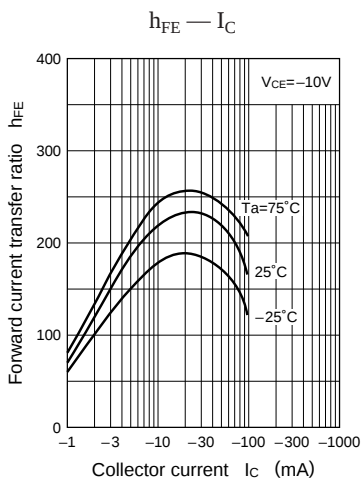
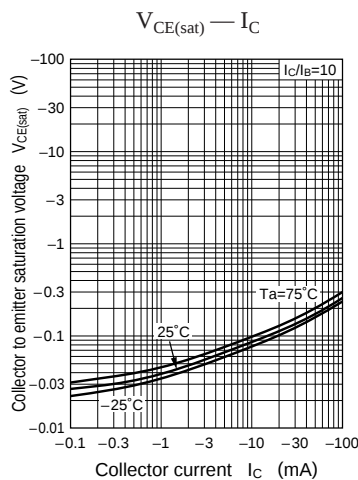
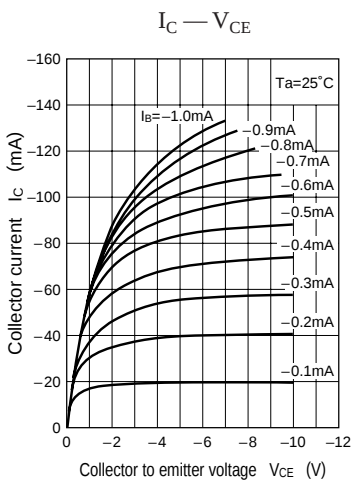


Characteristics charts of UN5113

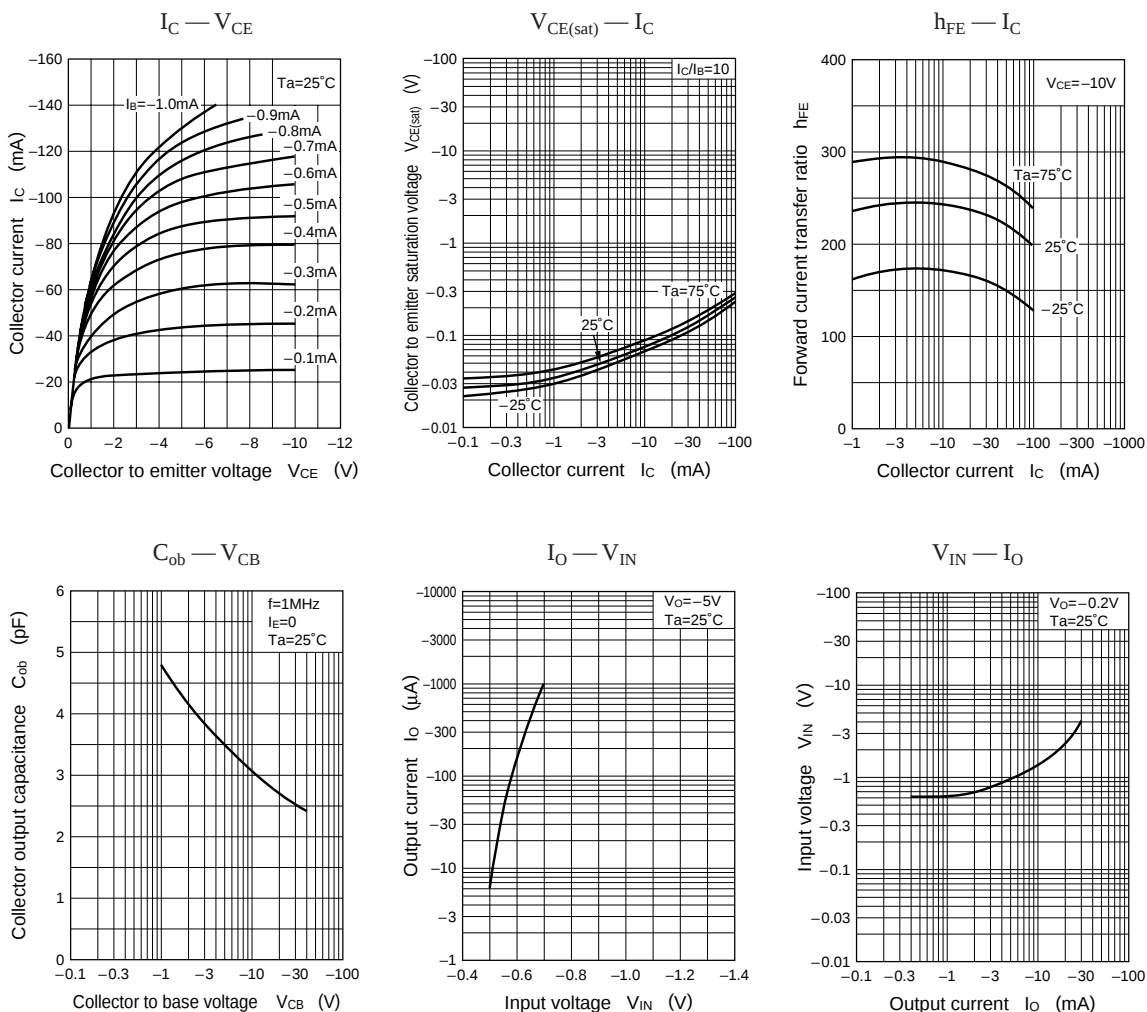




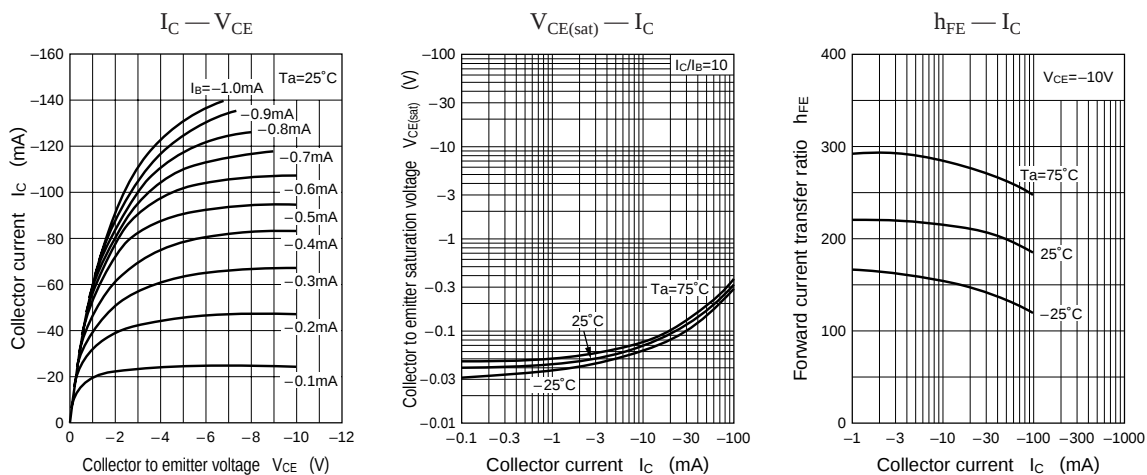
Characteristics charts of UN5114

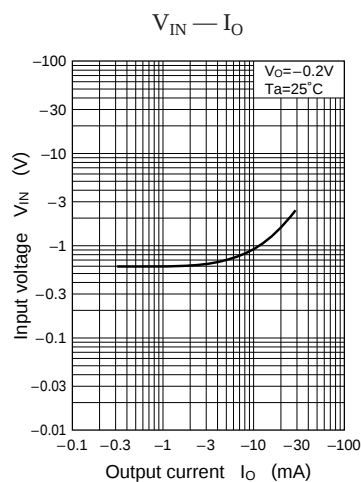
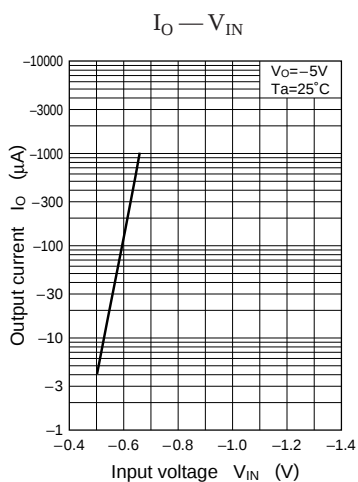
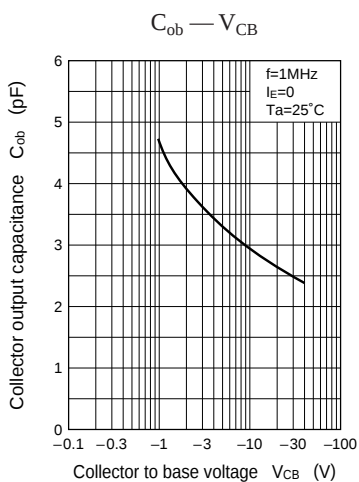


Characteristics charts of UN5115

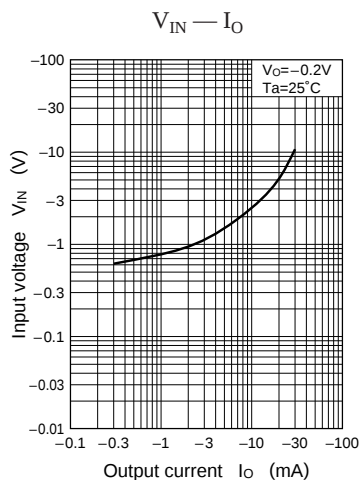
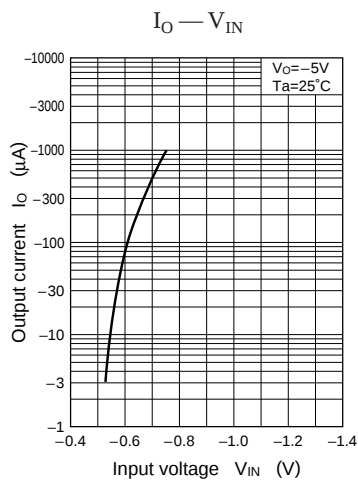
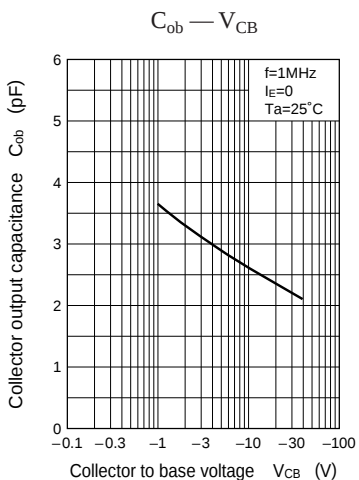
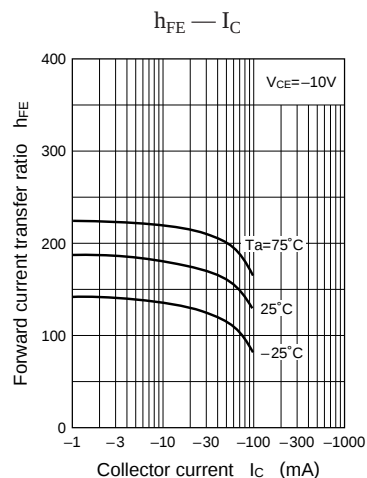
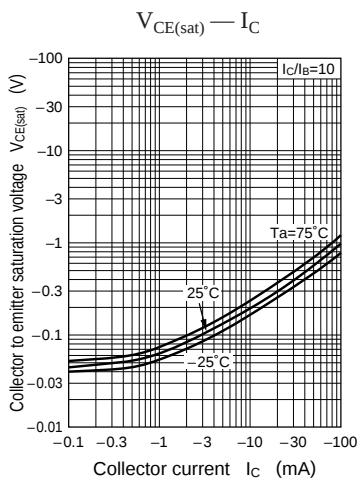
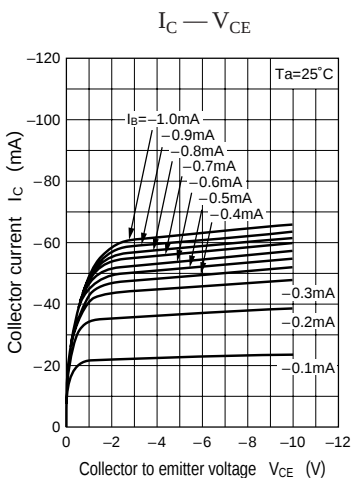


Characteristics charts of UN5116

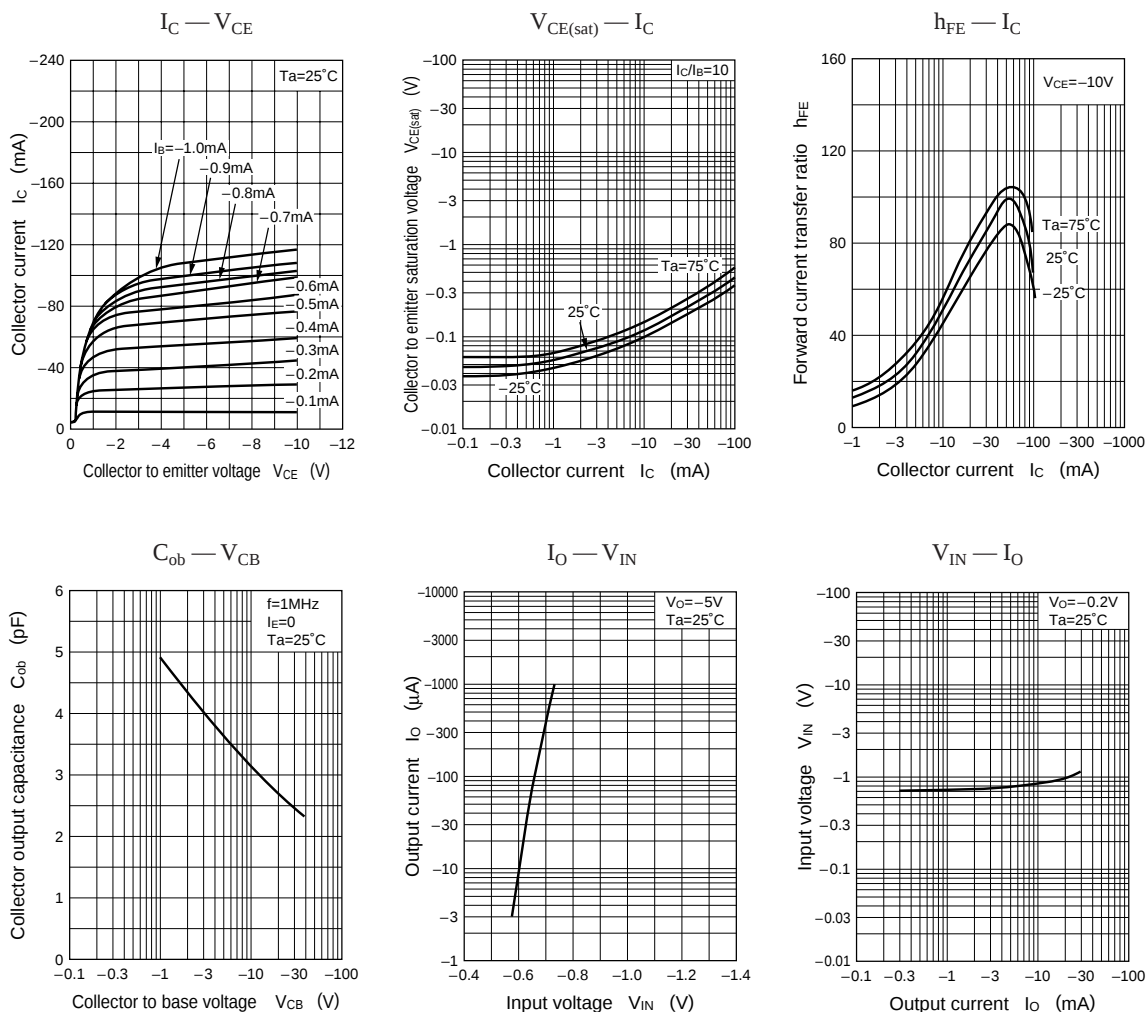




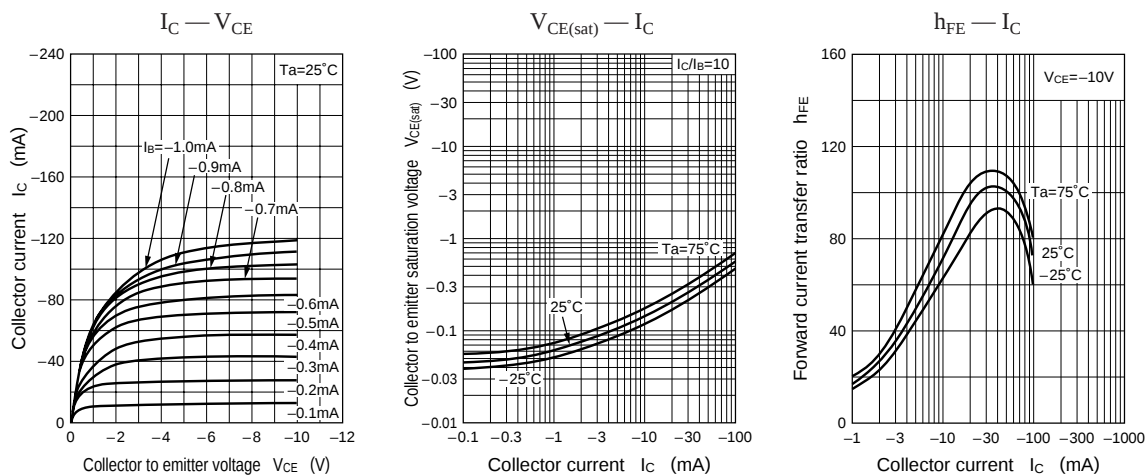
Characteristics charts of UN5117

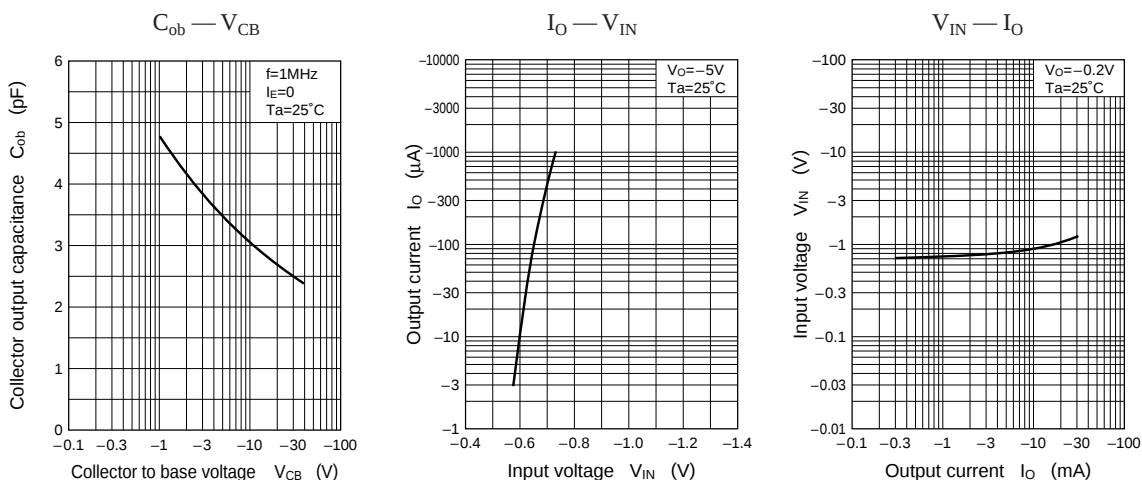


Characteristics charts of UN5118

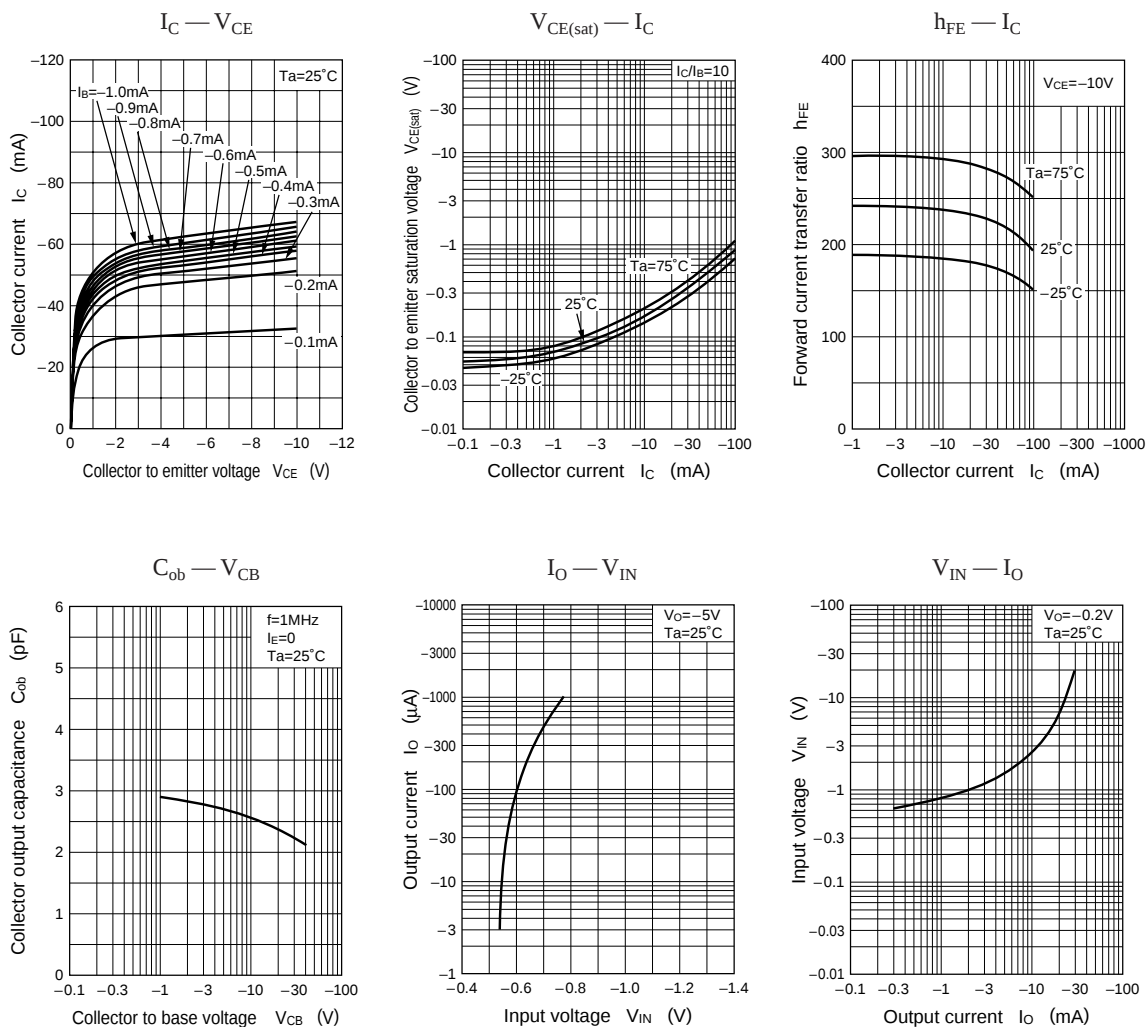


Characteristics charts of UN5119

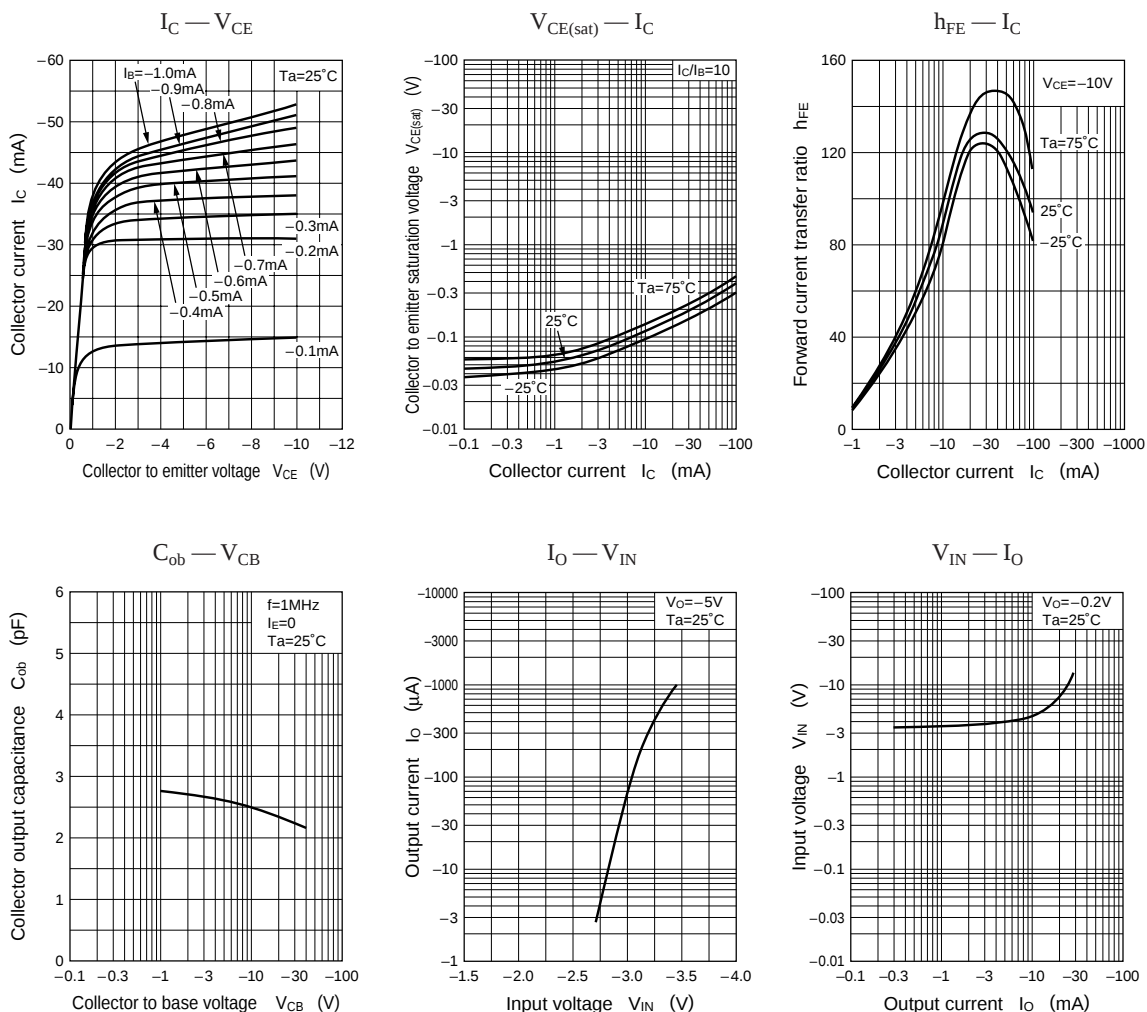




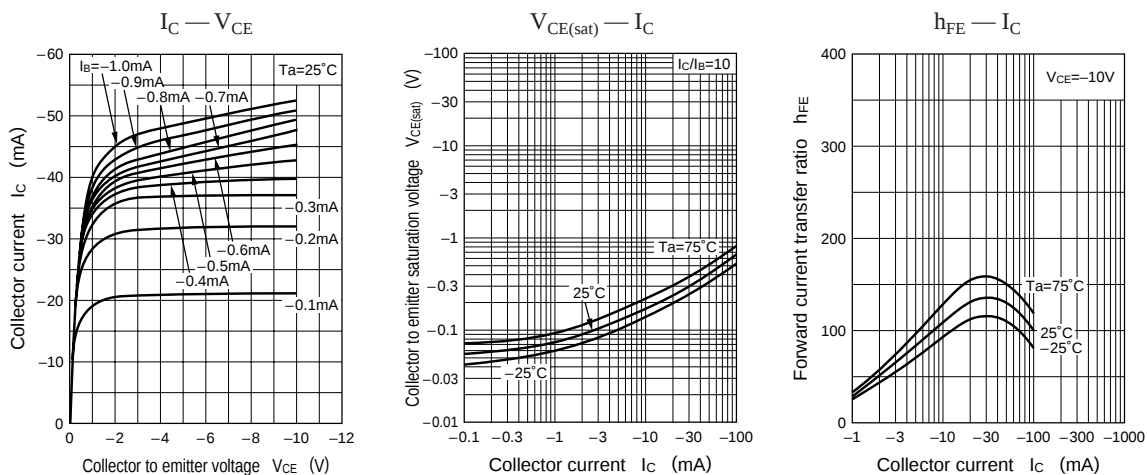
Characteristics charts of UN5110

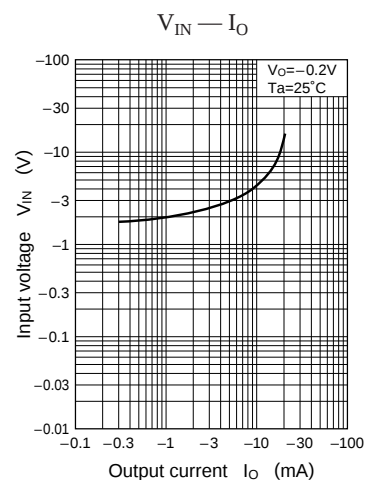
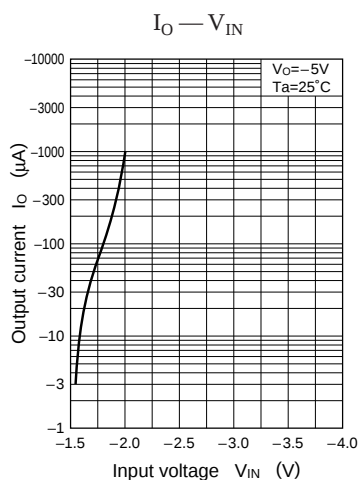
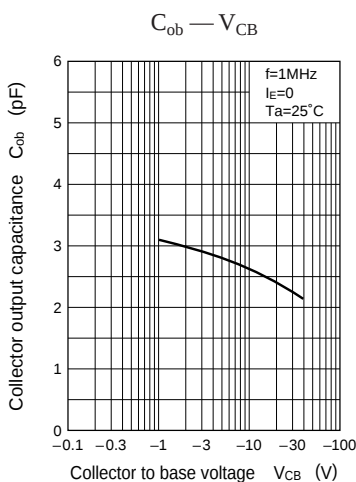


Characteristics charts of UN511D

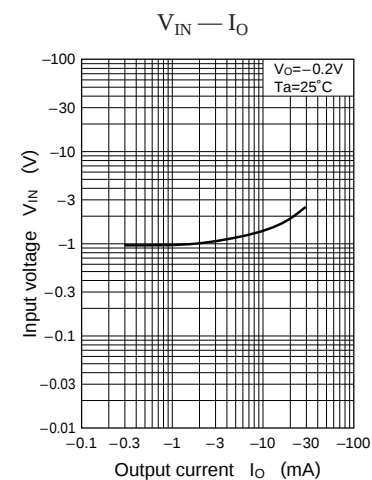
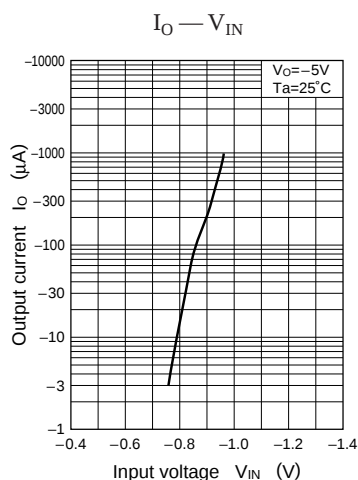
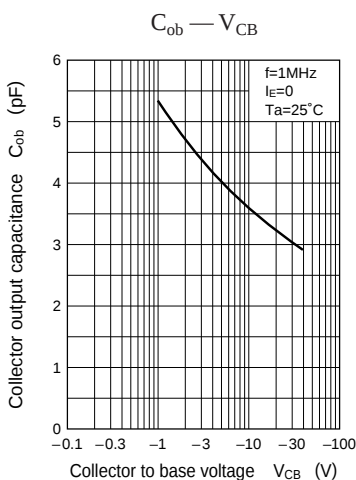
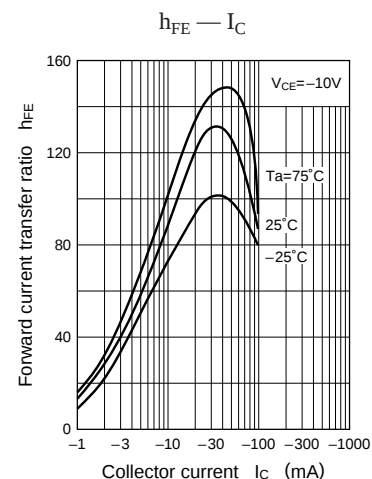
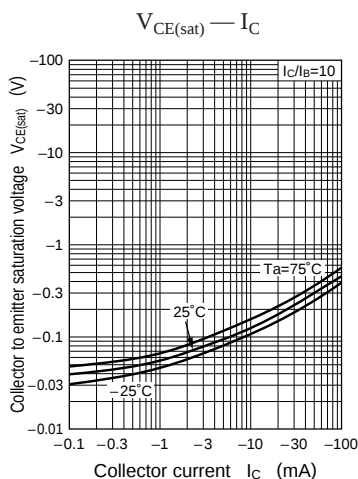
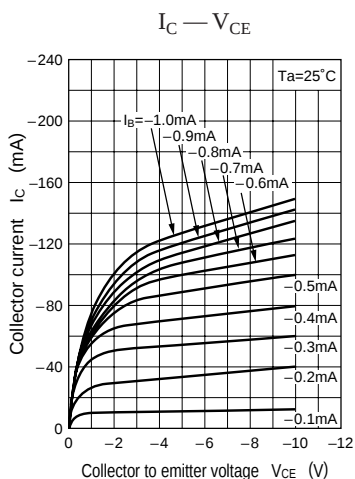


Characteristics charts of UN511E

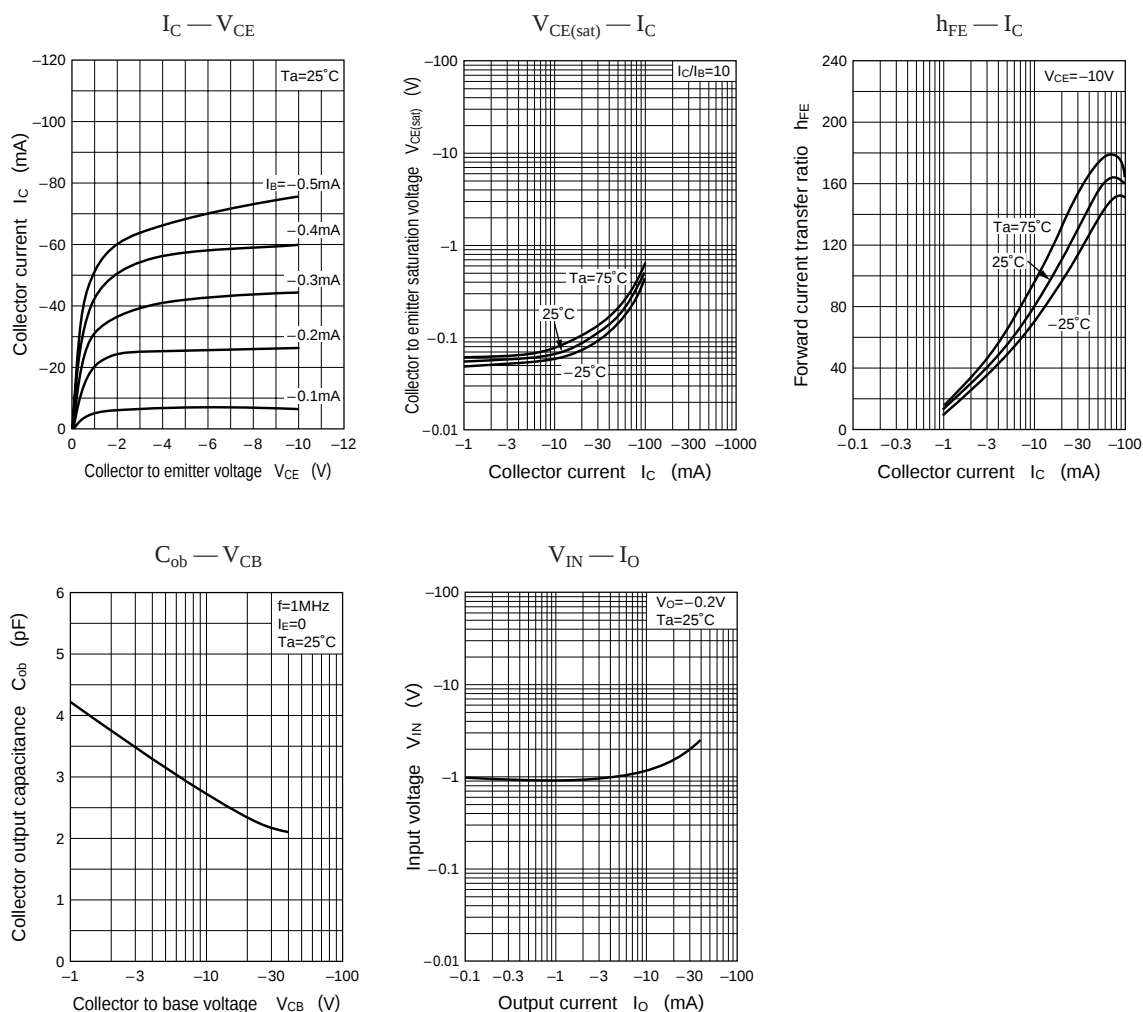




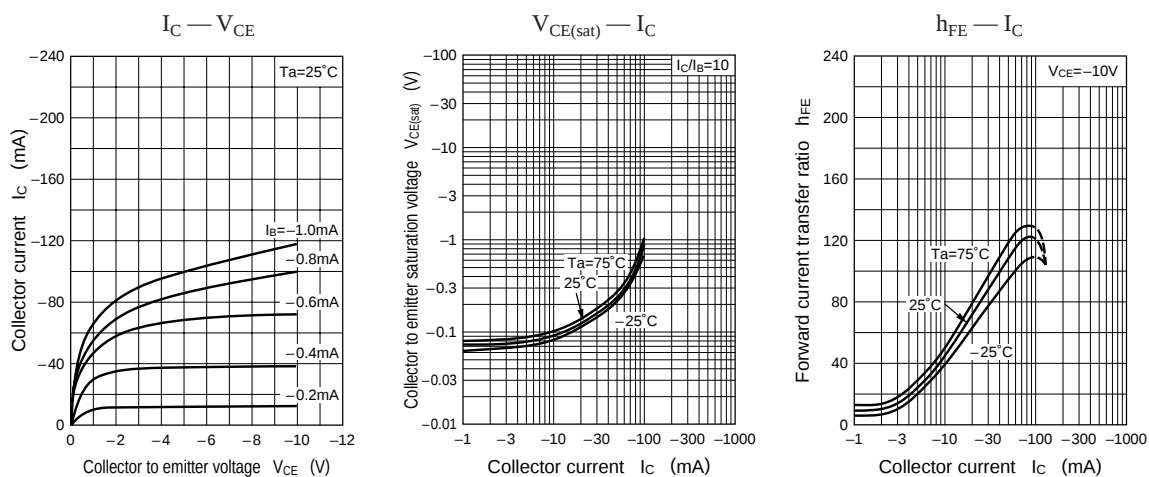
Characteristics charts of UN511F

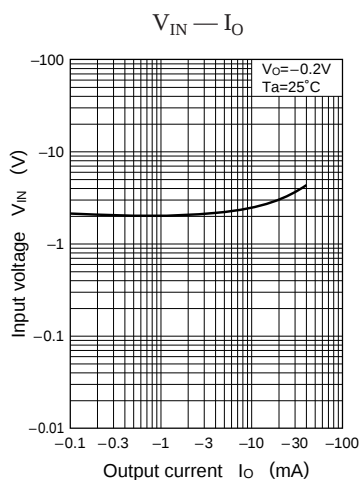
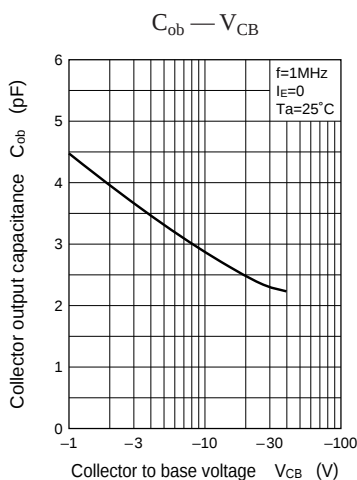


Characteristics charts of UN511H

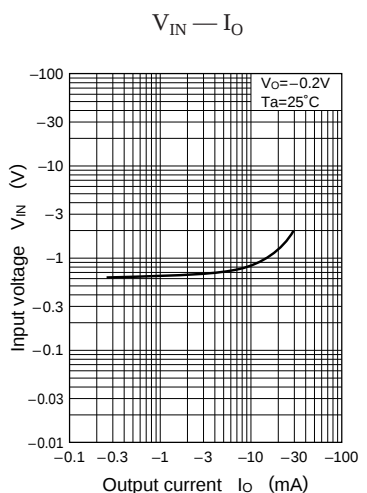
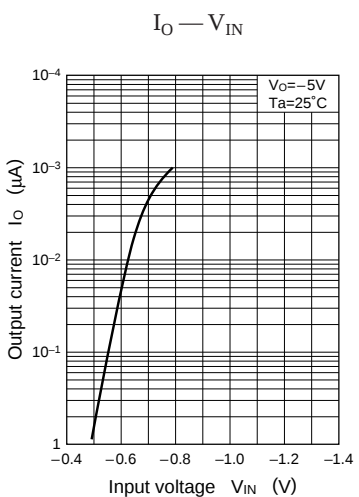
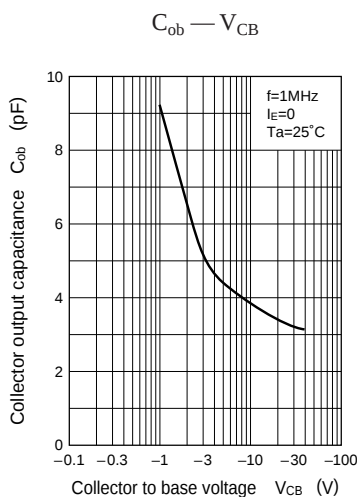
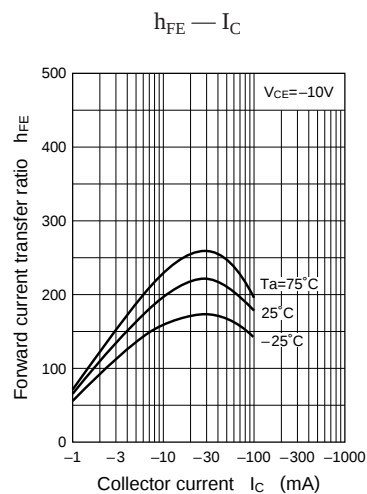
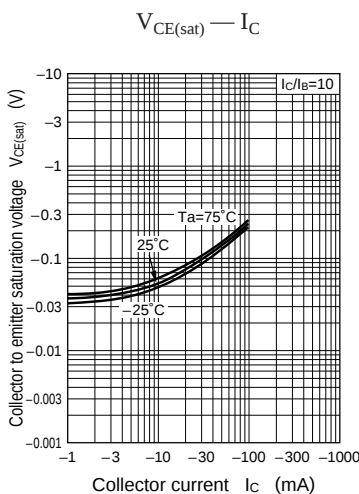
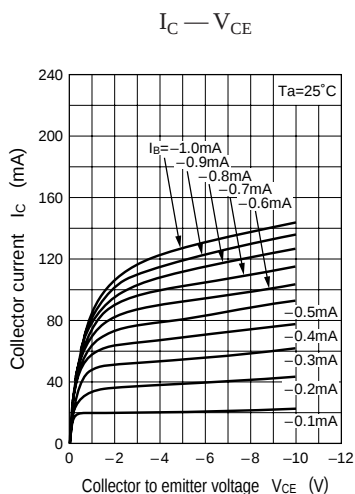


Characteristics charts of UN511L

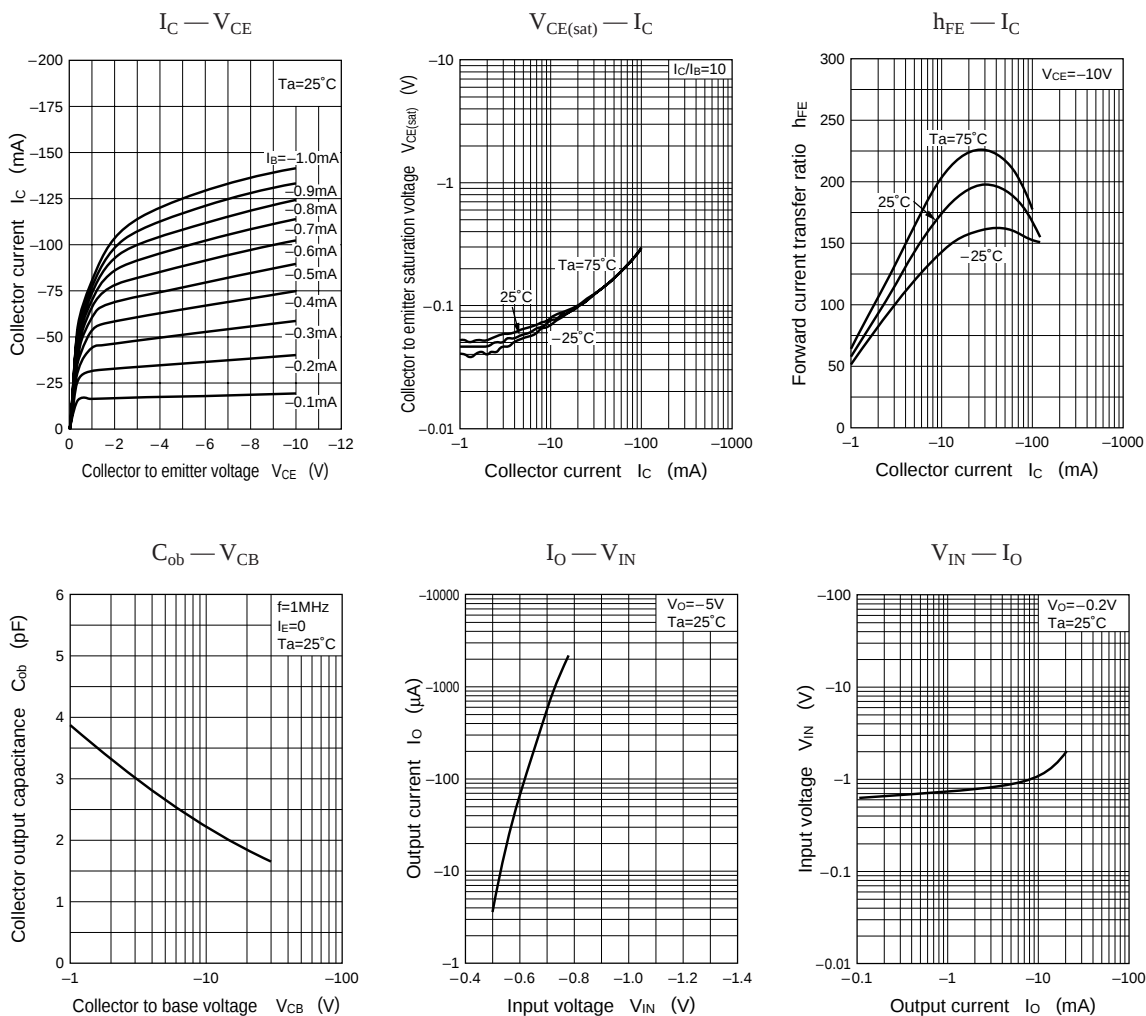




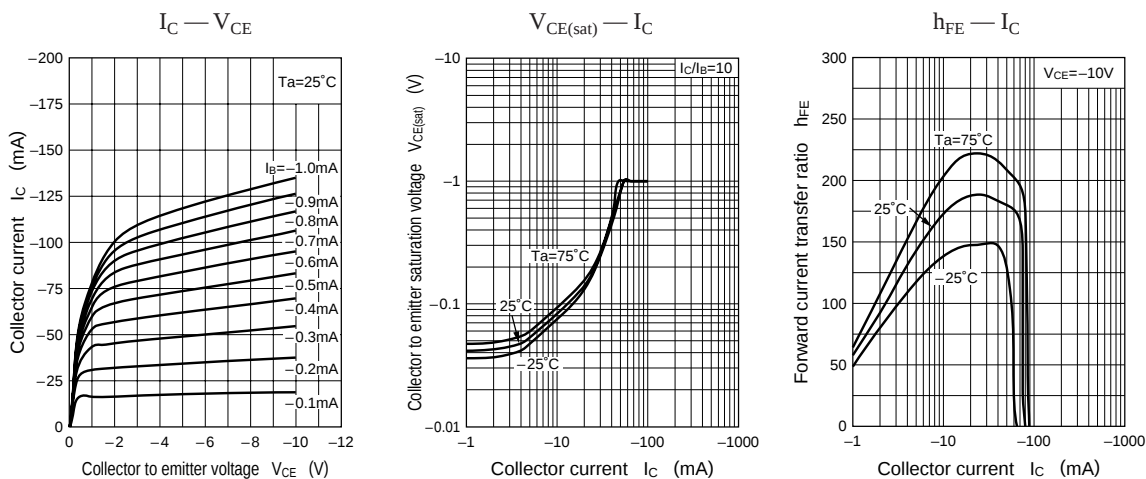
Characteristics charts of UN511M

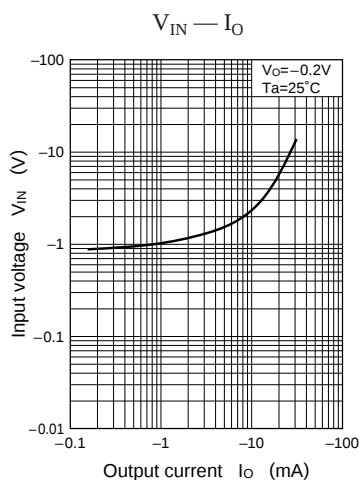
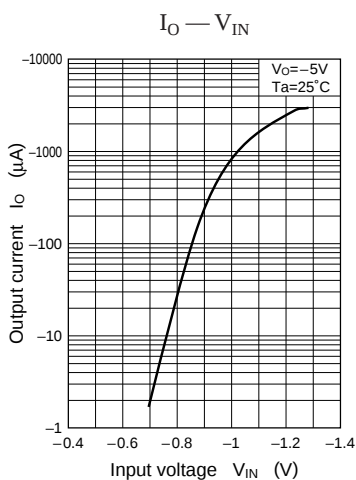


Characteristics charts of UN511N

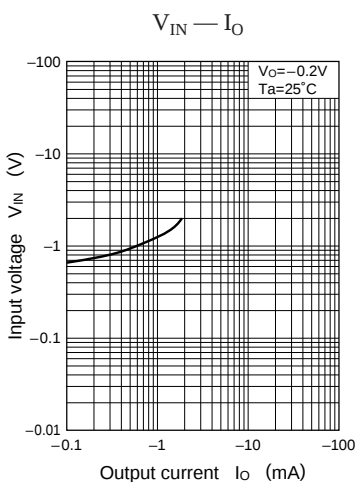
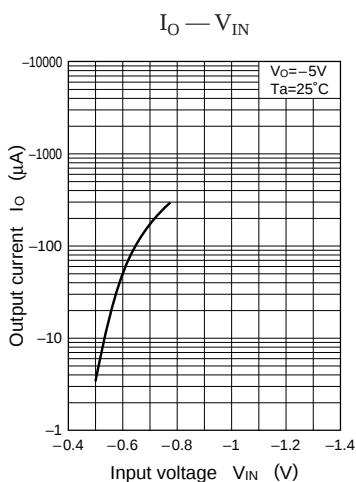
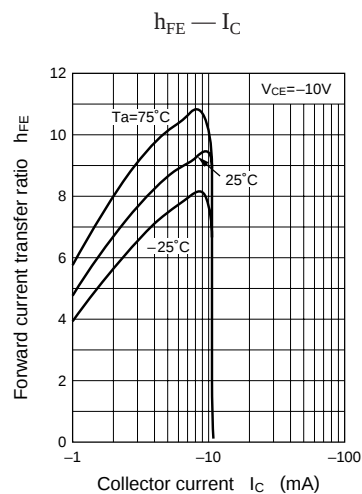
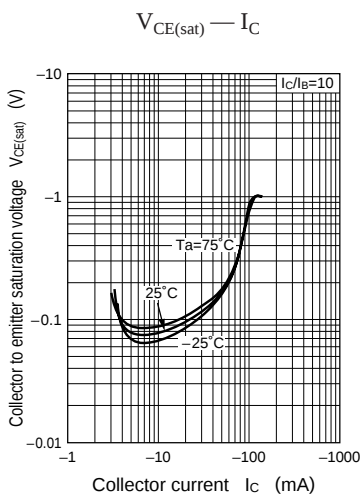
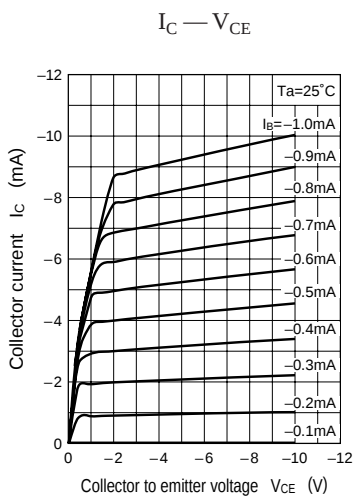


Characteristics charts of UN511T





Characteristics charts of UN511V



Characteristics charts of UN511Z

