

# UN6211/6212/6213/6214/6215/6216/6217/6218/ 6219/6210/621D/621E/621F/621K/621L

Silicon NPN epitaxial planer transistor

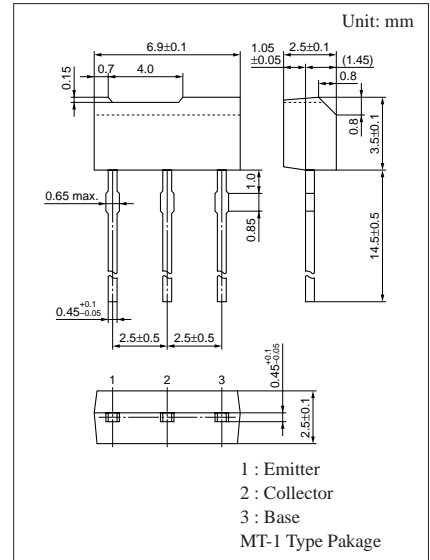
For digital circuits

## Features

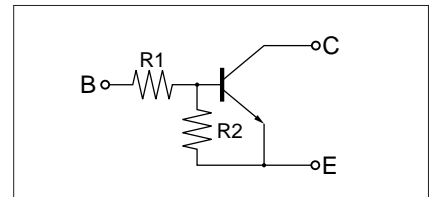
- Costs can be reduced through downsizing of the equipment and reduction of the number of parts.
- MT-1 type package, allowing supply with the radial taping.

## Resistance by Part Number

|          | (R <sub>1</sub> ) | (R <sub>2</sub> ) |
|----------|-------------------|-------------------|
| • UN6211 | 10kΩ              | 10kΩ              |
| • UN6212 | 22kΩ              | 22kΩ              |
| • UN6213 | 47kΩ              | 47kΩ              |
| • UN6214 | 10kΩ              | 47kΩ              |
| • UN6215 | 10kΩ              | —                 |
| • UN6216 | 4.7kΩ             | —                 |
| • UN6217 | 22kΩ              | —                 |
| • UN6218 | 0.51kΩ            | 5.1kΩ             |
| • UN6219 | 1kΩ               | 10kΩ              |
| • UN6210 | 47kΩ              | —                 |
| • UN621D | 47kΩ              | 10kΩ              |
| • UN621E | 47kΩ              | 22kΩ              |
| • UN621F | 4.7kΩ             | 10kΩ              |
| • UN621K | 10kΩ              | 4.7kΩ             |
| • UN621L | 4.7kΩ             | 4.7kΩ             |



## Internal Connection



## Absolute Maximum Ratings (Ta=25°C)

| Parameter                    | Symbol           | Rated       | Unit |
|------------------------------|------------------|-------------|------|
| Collector to base voltage    | V <sub>CBO</sub> | 50          | V    |
| Collector to emitter voltage | V <sub>CEO</sub> | 50          | V    |
| Collector current            | I <sub>C</sub>   | 100         | mA   |
| Total power dissipation      | P <sub>T</sub>   | 400         | mW   |
| Junction temperature         | T <sub>j</sub>   | 150         | °C   |
| Storage temperature          | T <sub>stg</sub> | -55 to +150 | °C   |

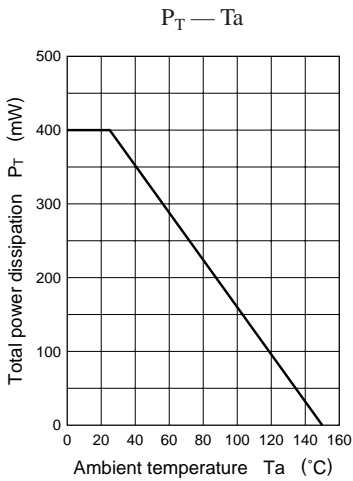
■ Electrical Characteristics (Ta=25°C)

| 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                  | UN6211                    | I <sub>EBO</sub>               | V <sub>EB</sub> = 6V, I <sub>C</sub> = 0                          |        |     | 0.5  | mA     |      |
|   | UN6212/6214/621E/621D     |                                |   |        |     | 0.2  |        |      |
|   | UN6213                    |                                |   |        |     | 0.1  |        |      |
|   | UN6215/6216/6217/6210     |                                |   |        |     | 0.01 |        |      |
|   | UN621F/621K               |                                |   |        |     | 1.0  |        |      |
|   | UN6219                    |                                |   |        |     | 1.5  |        |      |
|   | UN6218/621L               |                                |   |        |     | 2.0  |        |      |
| Collector to base voltage               |                           | V <sub>CBO</sub>               | I <sub>C</sub> = 10μA, I <sub>E</sub> = 0                         | 50     |     |      | V      |      |
| Collector to emitter voltage            |                           | V <sub>CEO</sub>               | I <sub>C</sub> = 2mA, I <sub>B</sub> = 0                          | 50     |     |      | V      |      |
| Forward current transfer ratio          | UN6211                    | h <sub>FE</sub>                | V <sub>CE</sub> = 10V, I <sub>C</sub> = 5mA                       | 35     |     |      | V      |      |
|   | UN6212/621E               |                                |   | 60     |     |      |        |      |
|   | UN6213/6214               |                                |   | 80     |     |      |        |      |
|   | UN6215*/6216*/6217*/6210* |                                |   | 160    |     | 460  |        |      |
|   | UN621F/621D/6219          |                                |   | 30     |     |      |        |      |
|   | UN6218/621K/621L          |                                |   | 20     |     |      |        |      |
| Collector to emitter saturation voltage |                           | V <sub>CE(sat)</sub>           | I <sub>C</sub> = 10mA, I <sub>B</sub> = 0.3mA                     |        |     | 0.25 | V      |      |
| 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      |      |
|   |                           |                                | V <sub>OC</sub> = 5V, V <sub>B</sub> = 3.5V, R <sub>1</sub> = 1kΩ |        |     | 0.2  |        |      |
|   |                           |                                | V <sub>CC</sub> = 5V, V <sub>B</sub> = 10V, R <sub>1</sub> = 1kΩ  |        |     | 0.2  |        |      |
|   |                           |                                | 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> = -2mA, f = 200MHz          |        | 150 |      | MHz    |      |
| Input resistance                        | UN6211/6214/6215/621K     | R <sub>1</sub>                 |   | (-30%) |     | 10   | (+30%) | kΩ   |
|   | UN6212/6217               |                                |   |        |     | 22   |        |      |
|   | UN6213/621D/621E/6210     |                                |   |        |     | 47   |        |      |
|   | UN6216/621F/621L          |                                |   |        |     | 4.7  |        |      |
|   | UN6218                    |                                |   |        |     | 0.51 |        |      |
|   | UN6219                    |                                |   |        |     | 1    |        |      |
| Resistance ratio                        | UN6211/6212/6213/621L     | R <sub>1</sub> /R <sub>2</sub> |   |        |     | 0.8  | 1.0    | 1.2  |
|   | UN6214                    |                                |   |        |     | 0.17 | 0.21   | 0.25 |
|   | UN6218/6219               |                                |   |        |     | 0.08 | 0.1    | 0.12 |
|   | UN621D                    |                                |   |        |     | 3.7  | 4.7    | 5.7  |
|   | UN621E                    |                                |   |        |     | 1.7  | 2.14   | 2.6  |
|   | UN621F                    |                                |   |        |     | 0.37 | 0.47   | 0.57 |
|   | UN621K                    |                                |   |        |     | 1.7  | 2.13   | 2.6  |

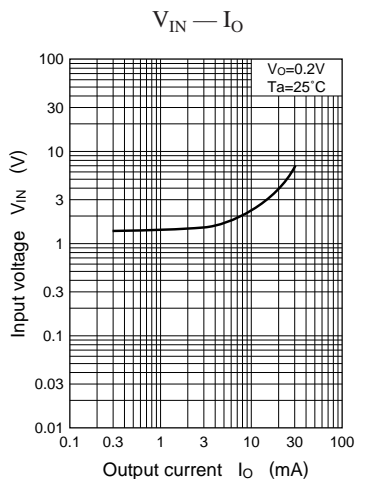
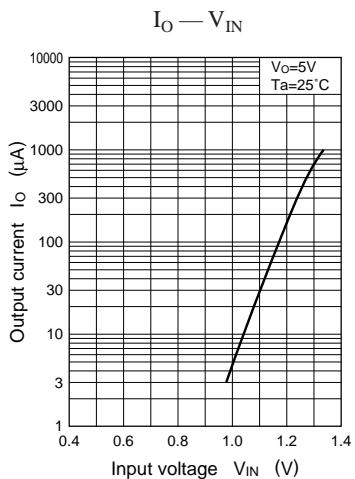
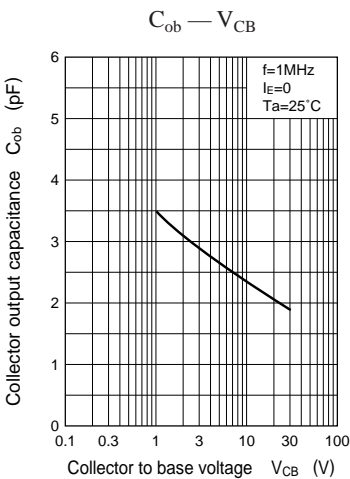
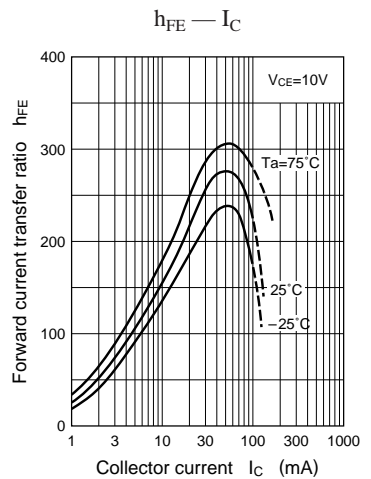
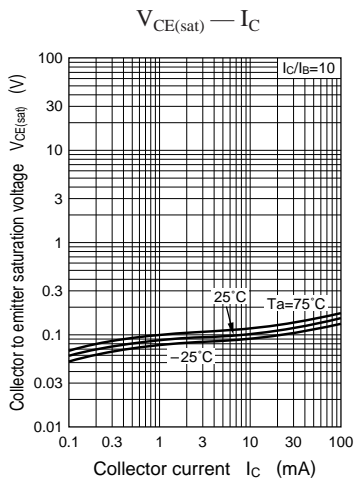
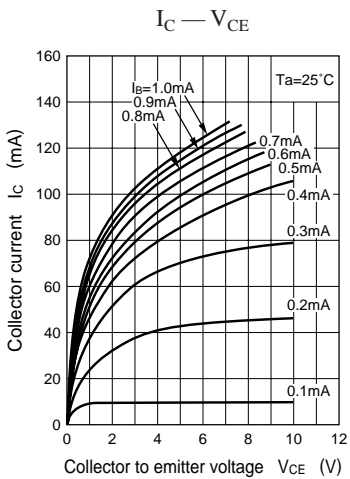
\* h<sub>FE</sub> rank classification (UN6215/6216/6217/6210)

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

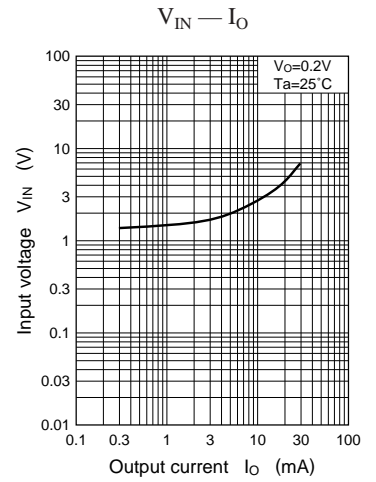
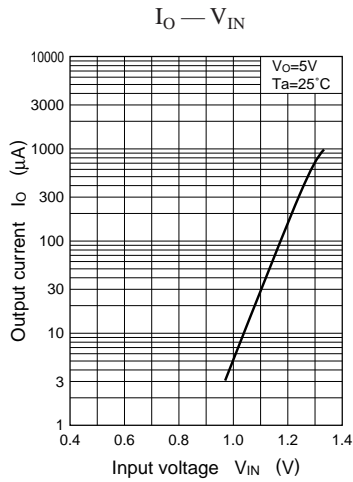
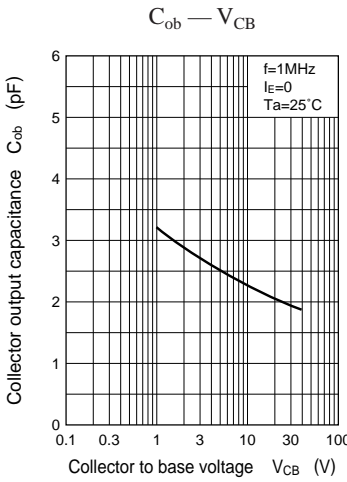
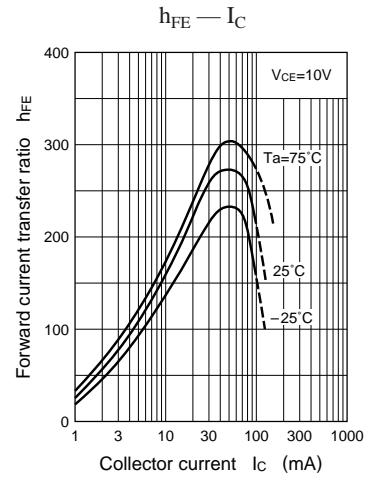
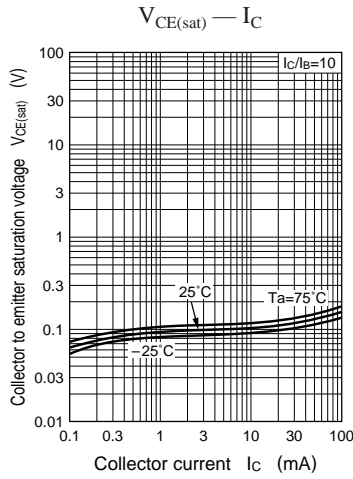
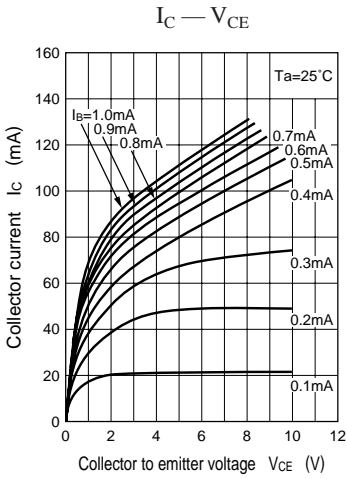
Common characteristics chart



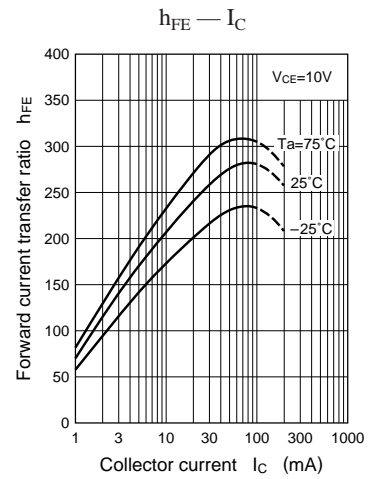
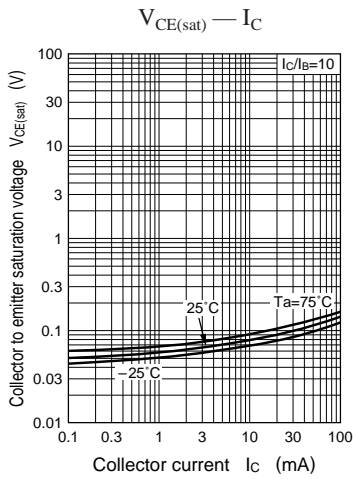
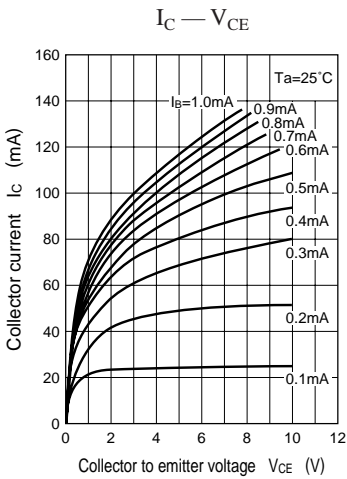
Characteristics charts of UN6211

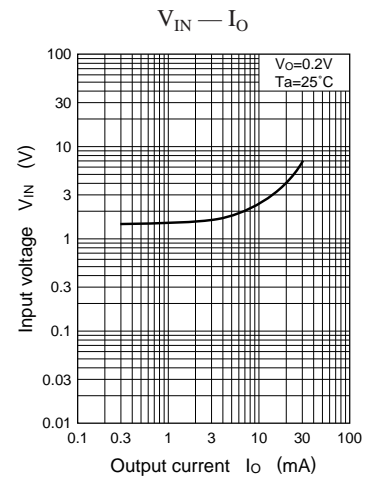
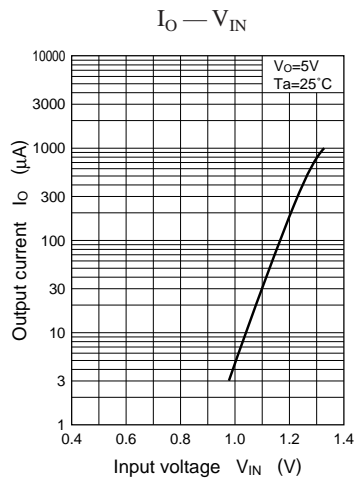
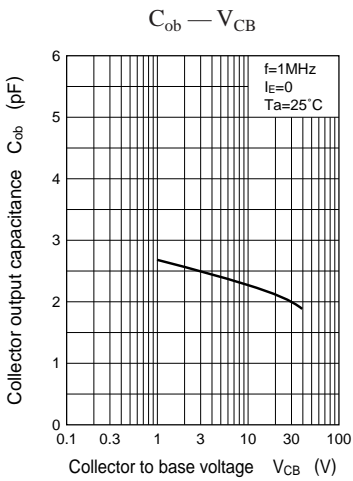


Characteristics charts of UN6212

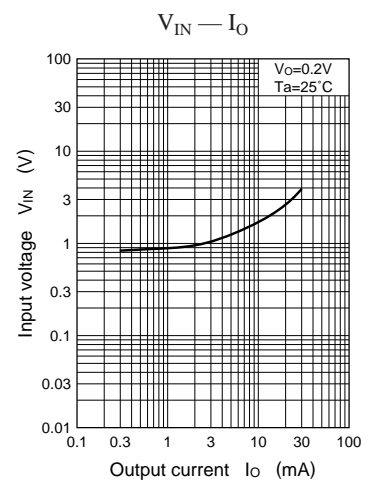
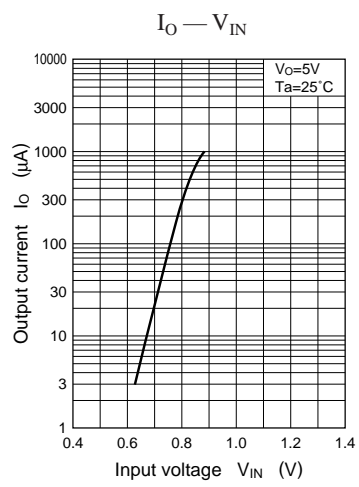
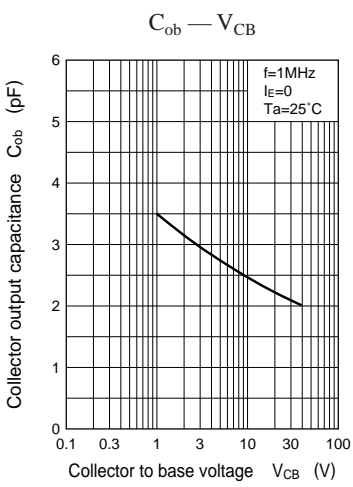
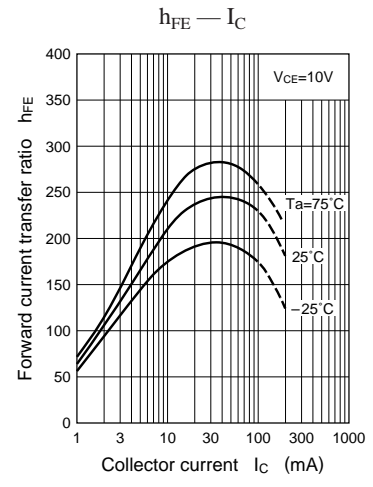
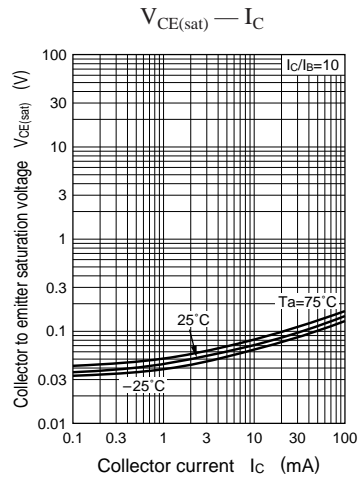
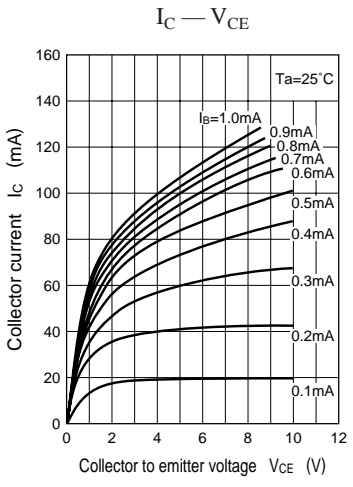


Characteristics charts of UN6213

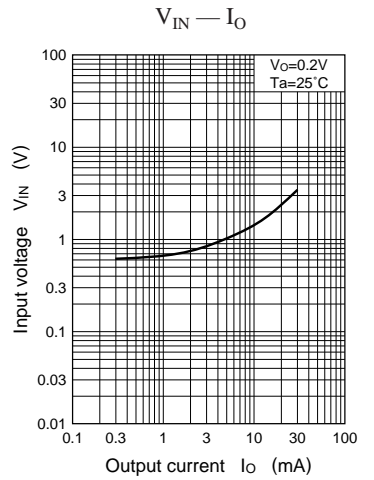
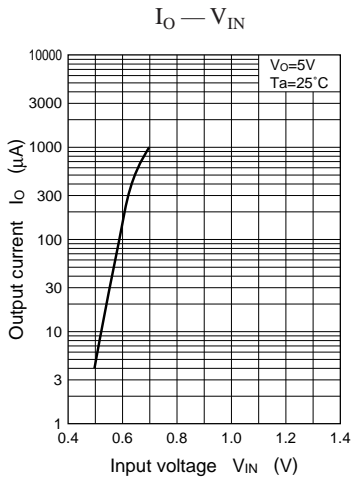
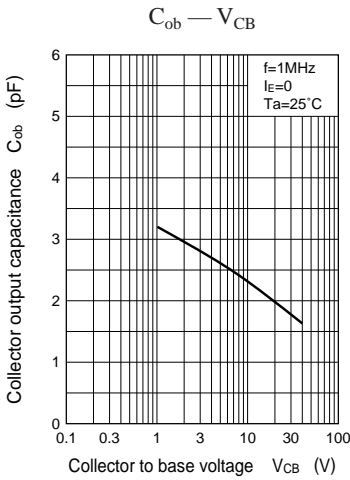
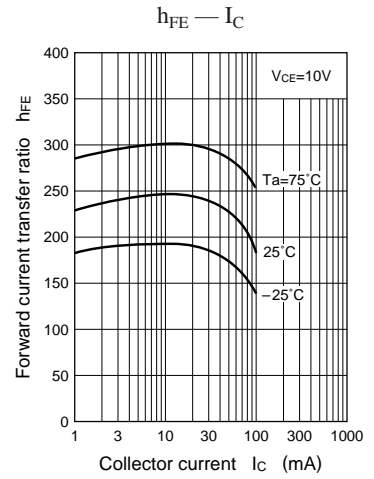
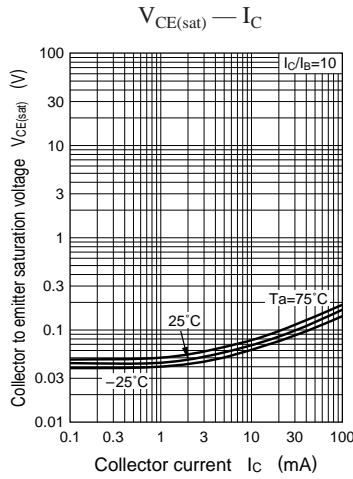
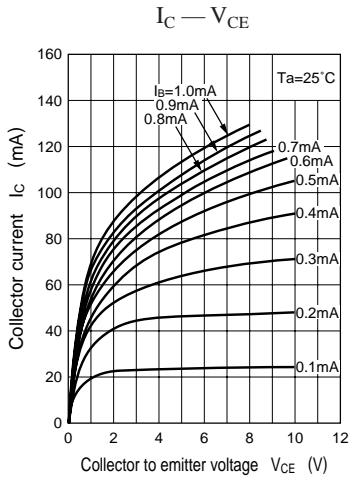




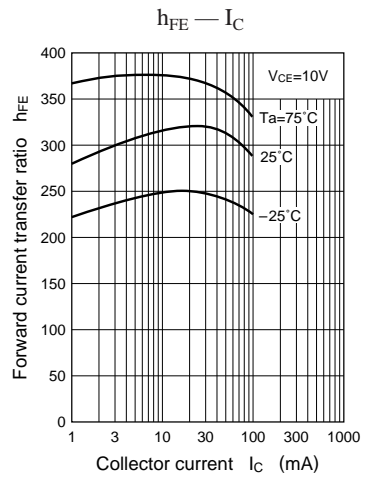
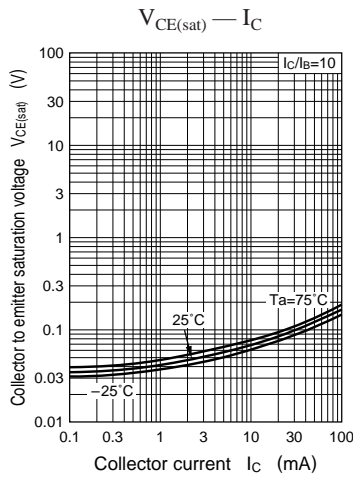
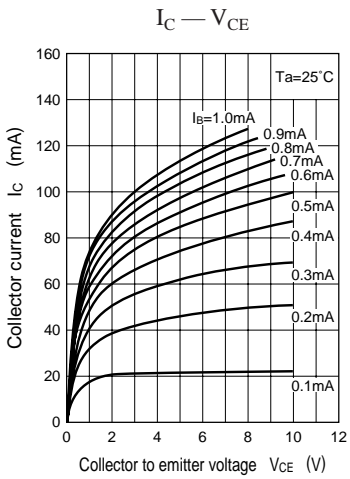
Characteristics charts of UN6214

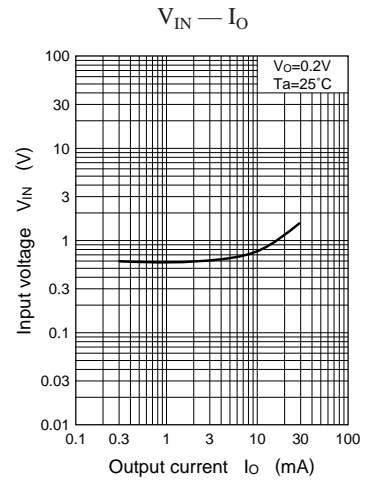
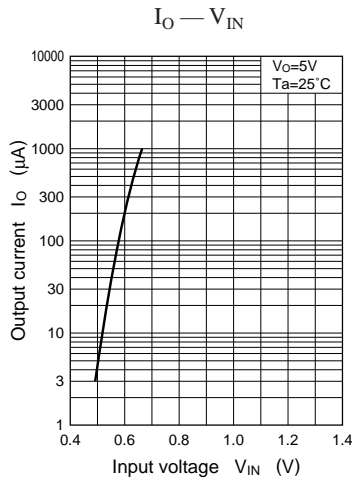
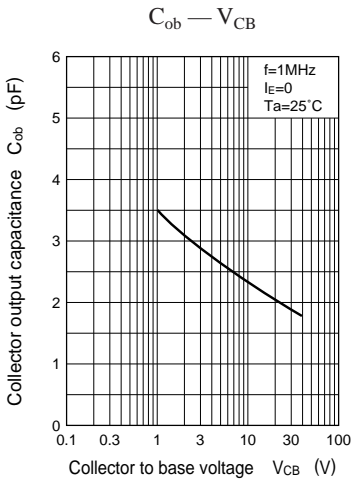


Characteristics charts of UN6215

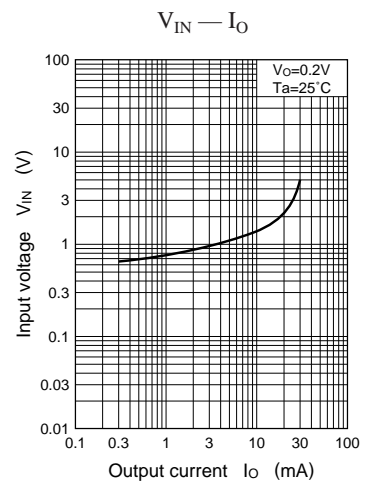
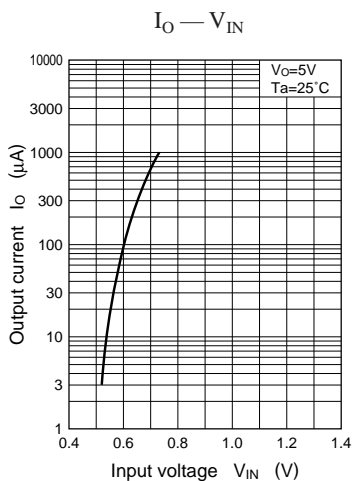
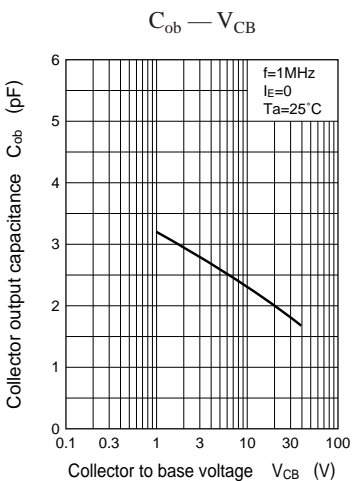
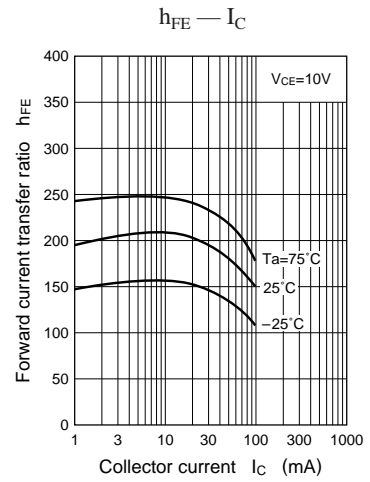
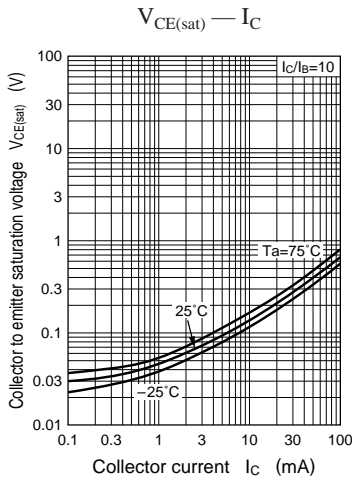
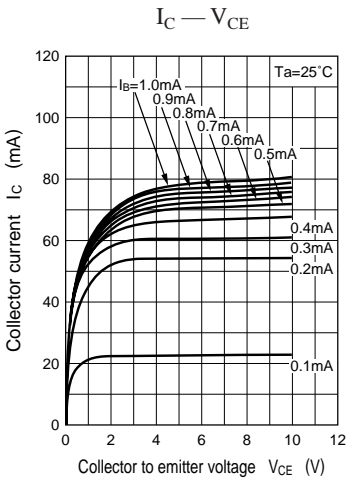


Characteristics charts of UN6216

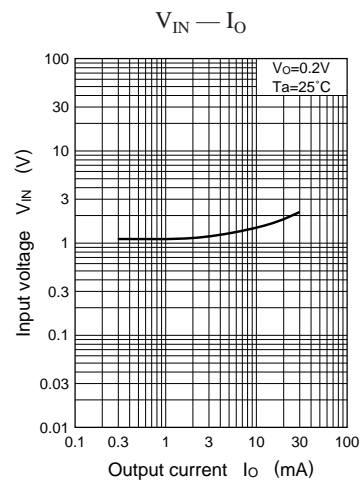
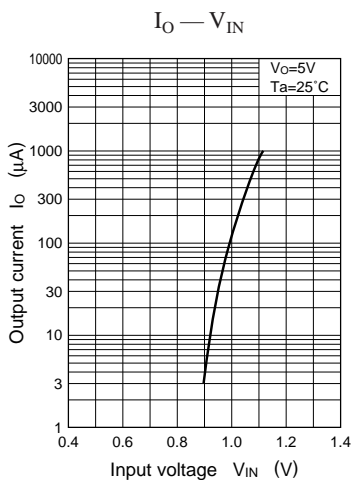
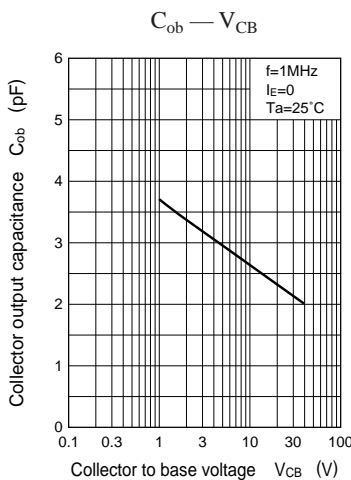
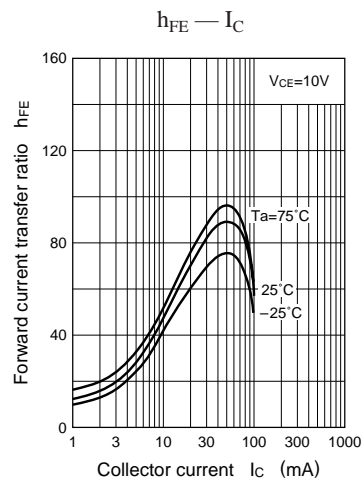
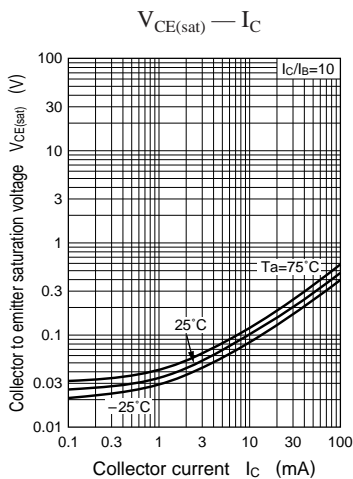
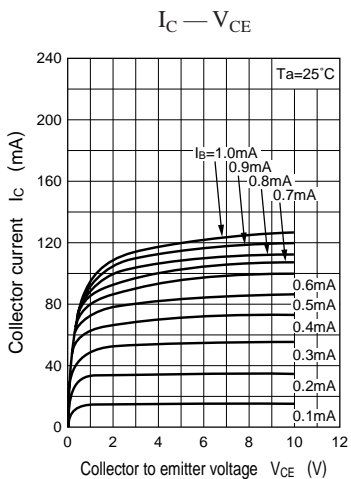




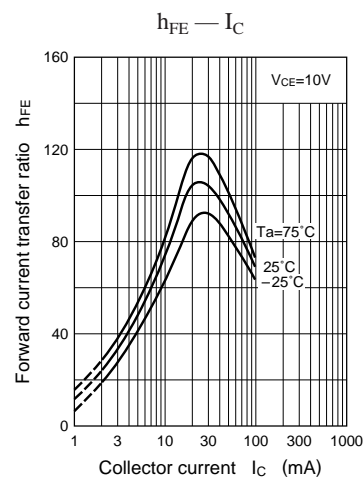
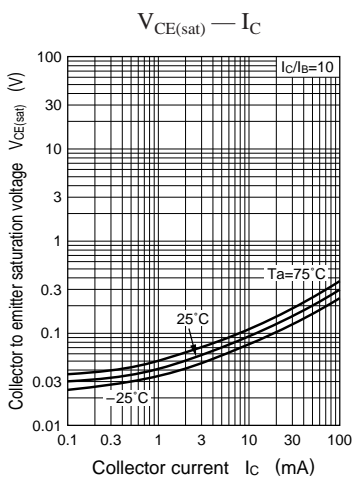
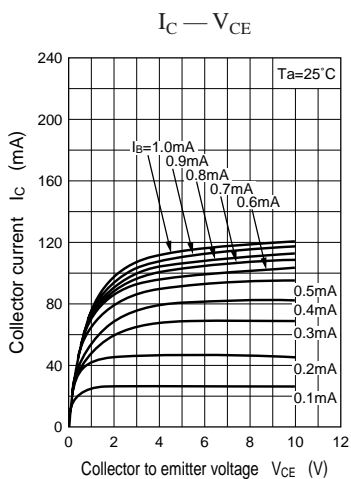
Characteristics charts of UN6217



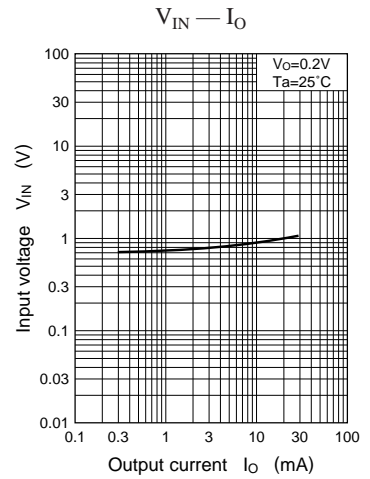
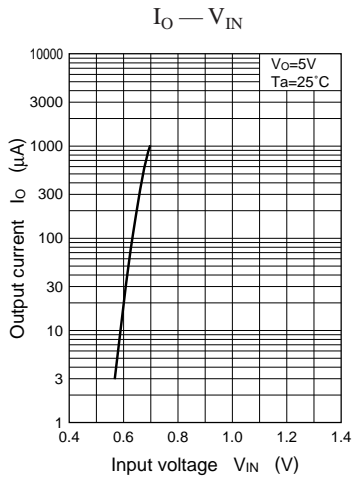
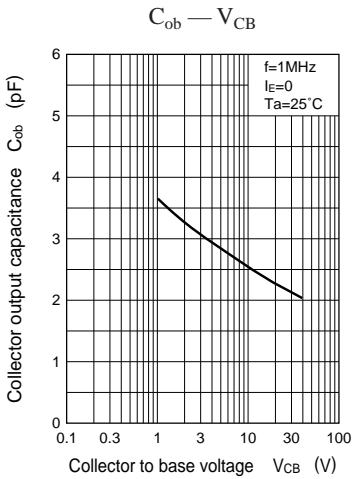
Characteristics charts of UN6218



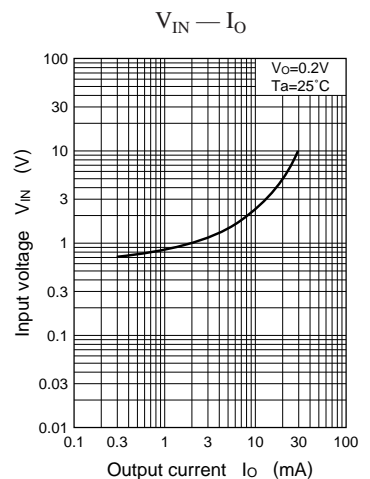
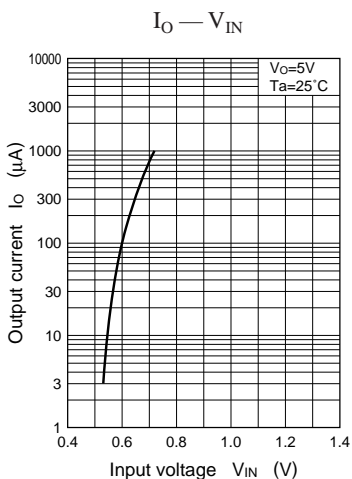
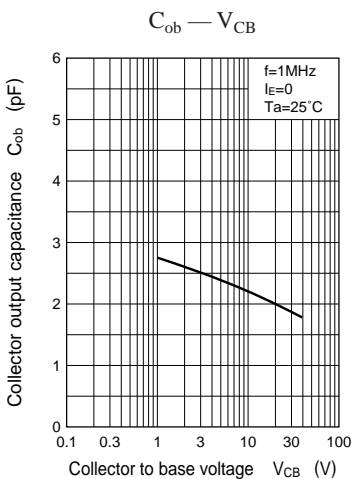
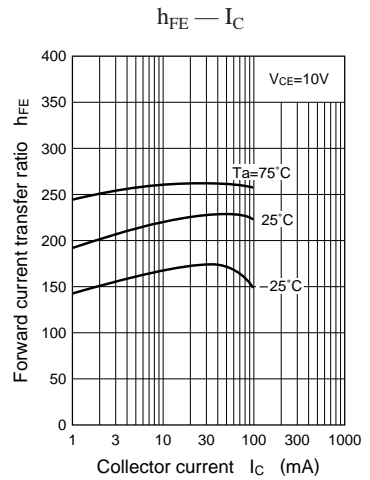
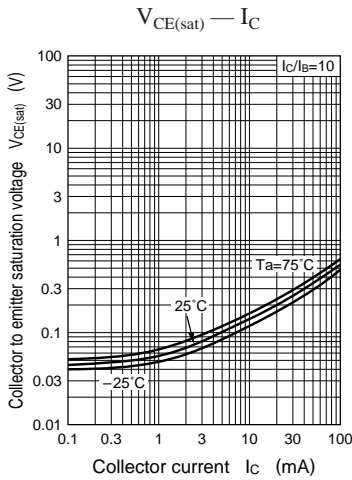
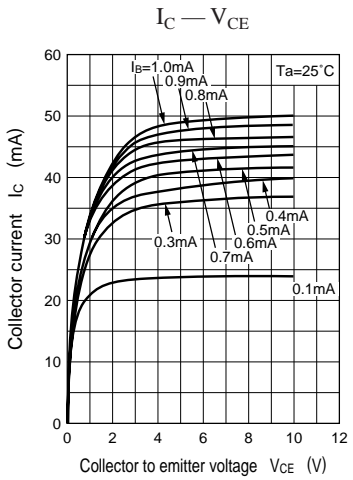
Characteristics charts of UN6219



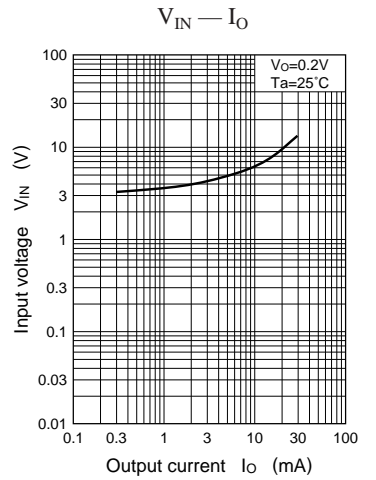
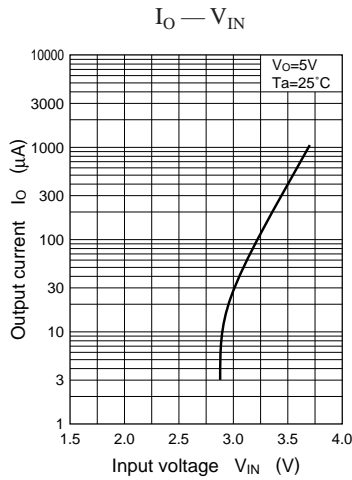
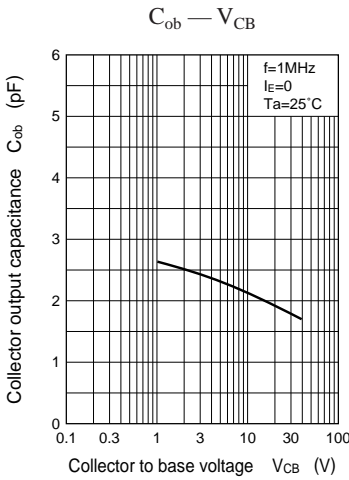
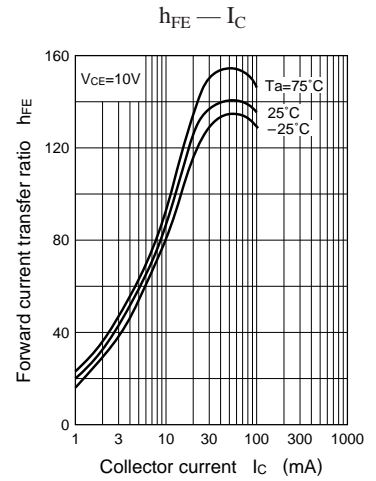
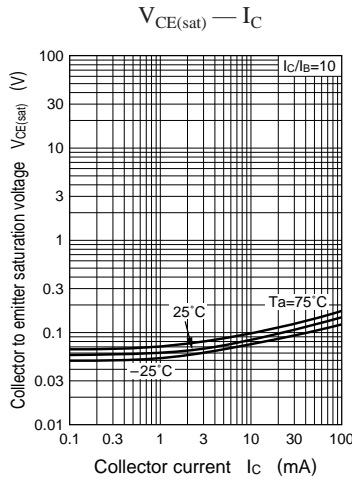
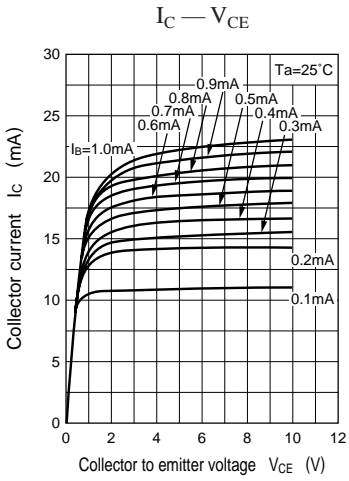




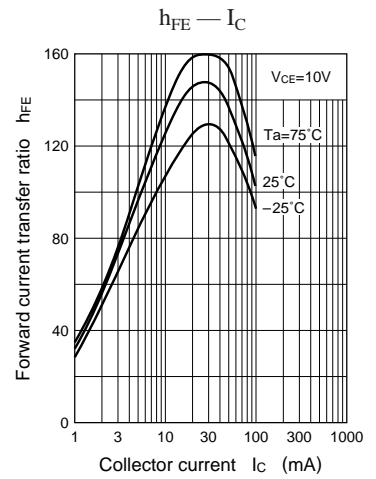
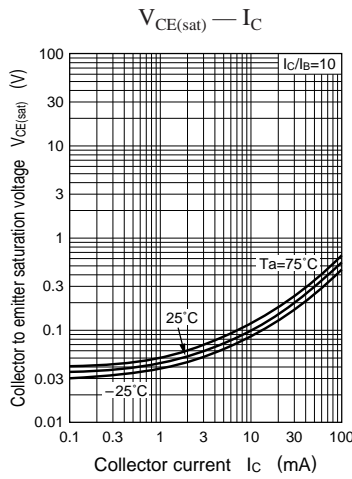
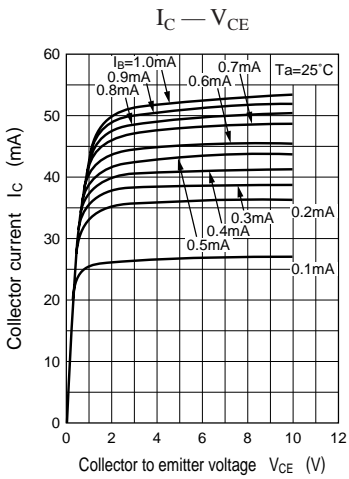
Characteristics charts of UN6210

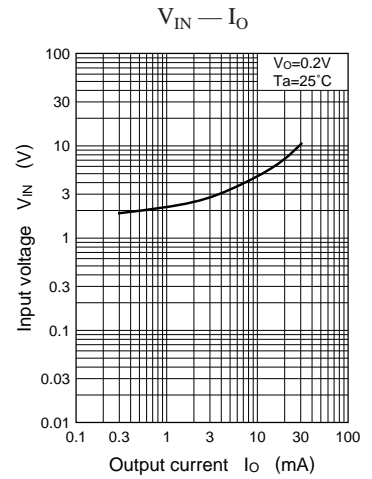
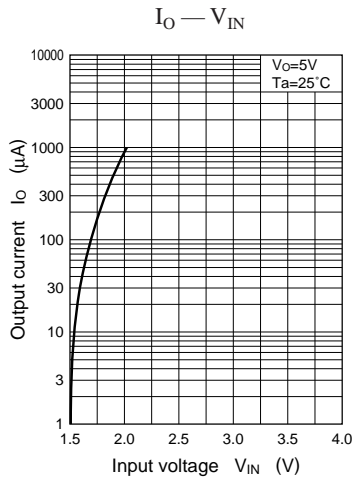
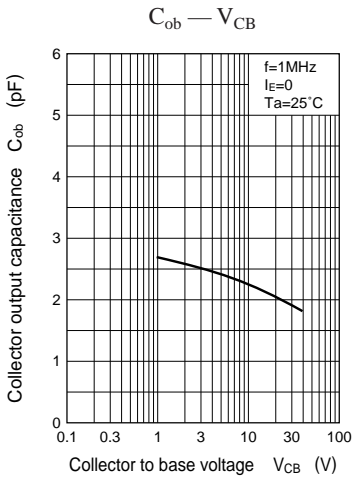


Characteristics charts of UN621D

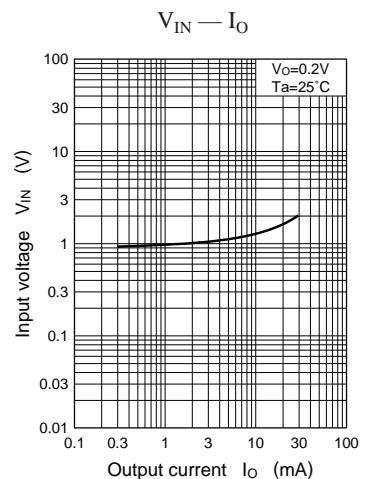
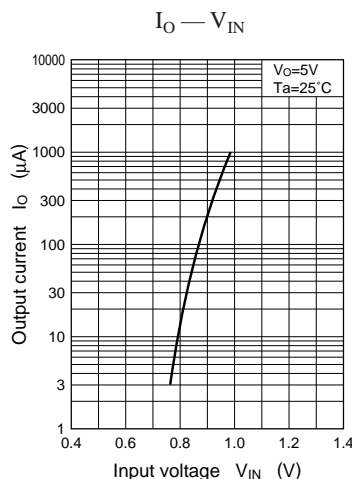
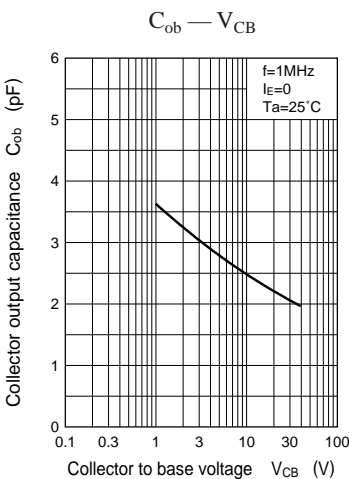
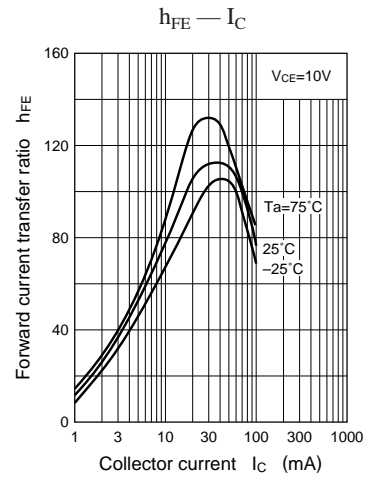
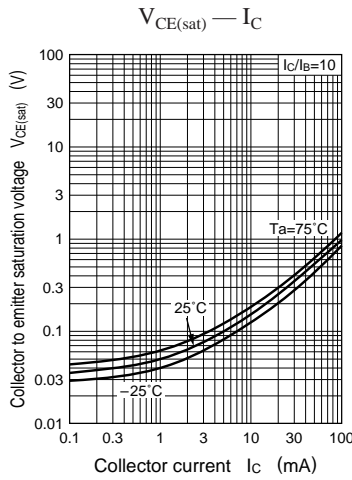
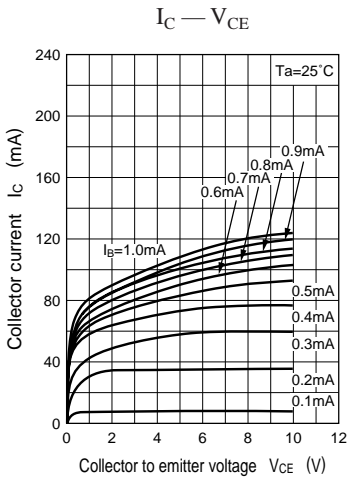


Characteristics charts of UN621E

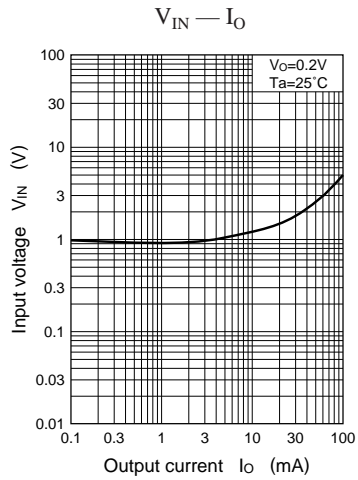
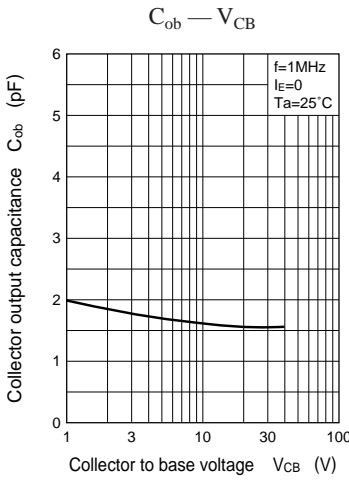
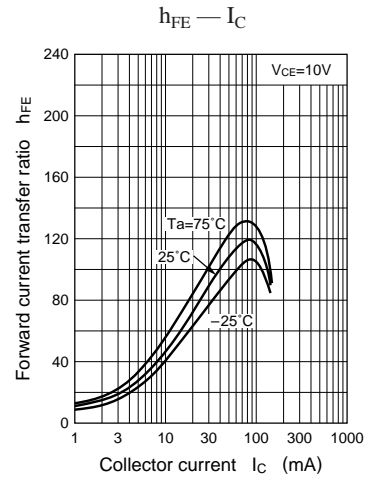
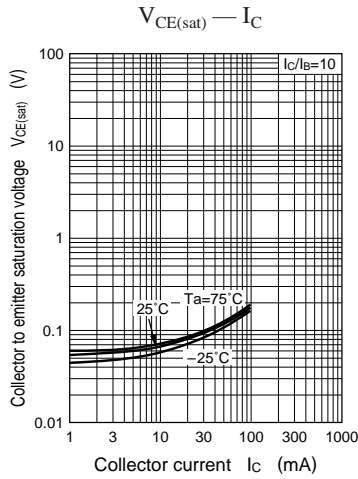
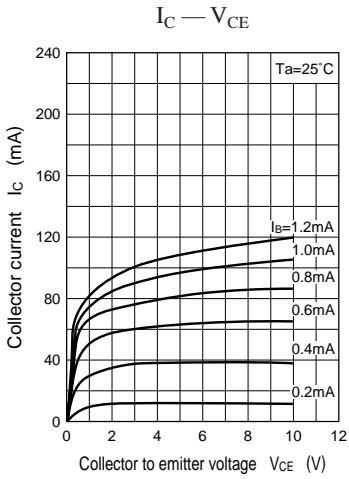




Characteristics charts of UN621F



Characteristics charts of UN621K



Characteristics charts of UN621L

