

UN1211/1212/1213/1214/1215/1216/1217/1218/1219/1210/ 121D/121E/121F/121K/121L

Silicon NPN epitaxial planer transistor

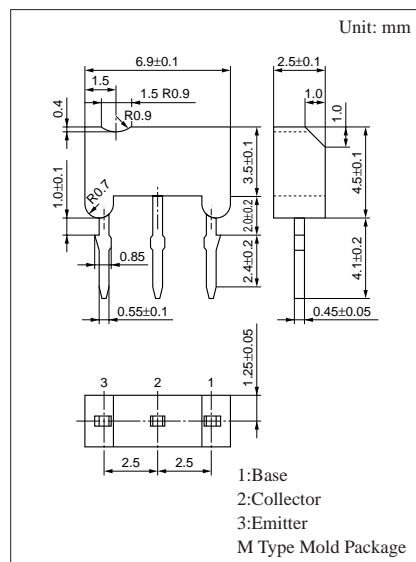
For digital circuits

Features

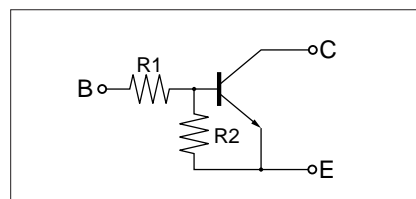
- Costs can be reduced through downsizing of the equipment and reduction of the number of parts.
- M type package allowing easy automatic and manual insertion as well as stand-alone fixing to the printed circuit board.

Resistance by Part Number

| | (R ₁) | (R ₂) |
|----------|-------------------|-------------------|
| • UN1211 | 10kΩ | 10kΩ |
| • UN1212 | 22kΩ | 22kΩ |
| • UN1213 | 47kΩ | 47kΩ |
| • UN1214 | 10kΩ | 47kΩ |
| • UN1215 | 10kΩ | — |
| • UN1216 | 4.7kΩ | — |
| • UN1217 | 22kΩ | — |
| • UN1218 | 0.51kΩ | 5.1kΩ |
| • UN1219 | 1kΩ | 10kΩ |
| • UN1210 | 47kΩ | — |
| • UN121D | 47kΩ | 10kΩ |
| • UN121E | 47kΩ | 22kΩ |
| • UN121F | 4.7kΩ | 10kΩ |
| • UN121K | 10kΩ | 4.7kΩ |
| • UN121L | 4.7kΩ | 4.7kΩ |



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 | 400 | mW |
| Junction temperature | T _j | 150 | °C |
| Storage temperature | T _{stg} | -55 to +150 | °C |

**UN1211/1212/1213/1214/1215/1216/1217/1218/
Transistors with built-in Resistor 1219/1210/121D/121E/121F/121K/121L**

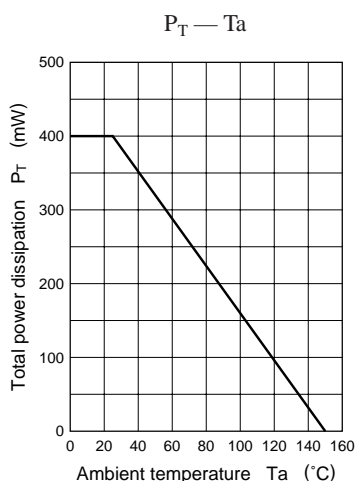
■ Electrical Characteristics (Ta=25°C)

| Parameter | | Symbol | Conditions | min | typ | max | Unit |
|---|---------------------------|--------------------------------|---|--------|------|--------|------|
| Collector cutoff current | | I _{CBO} | V _{CB} = 50V, I _E = 0 | | | 0.1 | μA |
| | | I _{CEO} | V _{CE} = 50V, I _B = 0 | | | 0.5 | μA |
| Emitter cutoff current | UN1211 | I _{EBO} | V _{EB} = 6V, I _C = 0 | | | 0.5 | mA |
| | UN1212/1214/121E/121D | | | | | 0.2 | |
| | UN1213 | | | | | 0.1 | |
| | UN1215/1216/1217/1210 | | | | | 0.01 | |
| | UN121F/121K | | | | | 1.0 | |
| | UN1219 | | | | | 1.5 | |
| | UN1218/121L | | | | | 2.0 | |
| Collector to base voltage | | V _{CBO} | I _C = 10μA, I _E = 0 | 50 | | | V |
| Collector to emitter voltage | | V _{CEO} | I _C = 2mA, I _B = 0 | 50 | | | V |
| Forward current transfer ratio | UN1211 | h _{FE} | V _{CE} = 10V, I _C = 5mA | 35 | | | |
| | UN1212/121E | | | 60 | | | |
| | UN1213/1214 | | | 80 | | | |
| | UN1215*/1216*/1217*/1210* | | | 160 | | 460 | |
| | UN121F/121D/1219 | | | 30 | | | |
| | UN1218/121K/121L | | | 20 | | | |
| Collector to emitter saturation voltage | | V _{CE(sat)} | I _C = 10mA, I _B = 0.3mA | | | 0.25 | V |
| Output voltage high level | | V _{OH} | V _{CC} = 5V, V _B = 0.5V, R _L = 1kΩ | 4.9 | | | V |
| Output voltage low level | | V _{OL} | V _{CC} = 5V, V _B = 2.5V, R _L = 1kΩ | | | 0.2 | V |
| | | | V _{CC} = 5V, V _B = 3.5V, R _L = 1kΩ | | | 0.2 | |
| | | | V _{CC} = 5V, V _B = 10V, R _L = 1kΩ | | | 0.2 | |
| | | | V _{CC} = 5V, V _B = 6V, R _L = 1kΩ | | | 0.2 | |
| Transition frequency | | f _T | V _{CB} = 10V, I _E = −2mA, f = 200MHz | | 80 | | MHz |
| Input resistance | UN1211/1214/1215/121K | R _i | | (−30%) | 10 | (±30%) | kΩ |
| | UN1212/1217 | | | | 22 | | |
| | UN1213/121D/121E/1210 | | | | 47 | | |
| | UN1216/121F/121L | | | | 4.7 | | |
| | UN1218 | | | | 0.51 | | |
| | UN1219 | | | | 1 | | |
| Resistance ratio | UN1211/1212/1213/121L | R ₁ /R ₂ | | 0.8 | 1.0 | 1.2 | |
| | UN1214 | | | 0.17 | 0.21 | 0.25 | |
| | UN1218/1219 | | | 0.08 | 0.1 | 0.12 | |
| | UN121D | | | | 4.7 | | |
| | UN121E | | | | 2.14 | | |
| | UN121F | | | | 0.47 | | |
| | UN121K | | | | 2.13 | | |

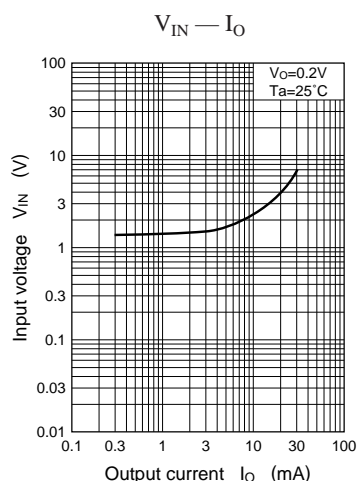
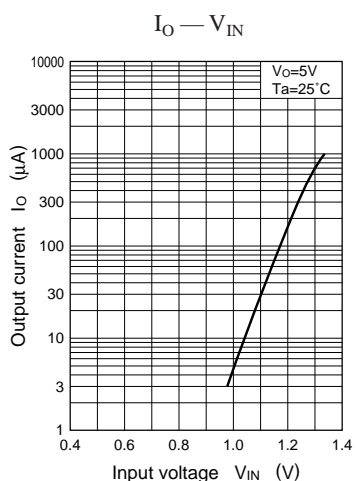
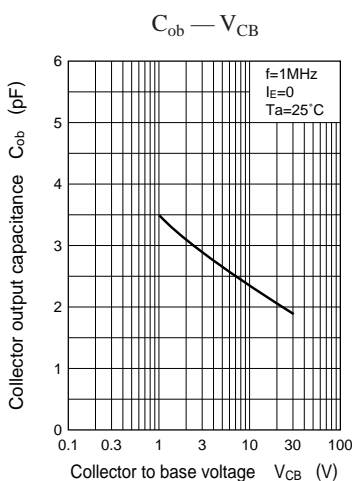
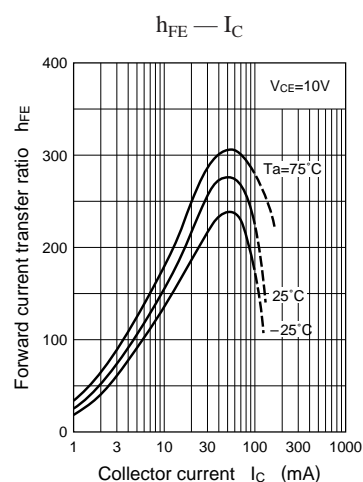
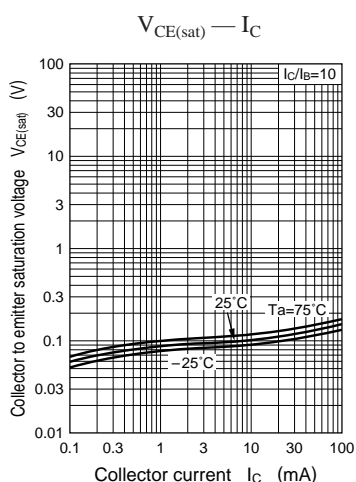
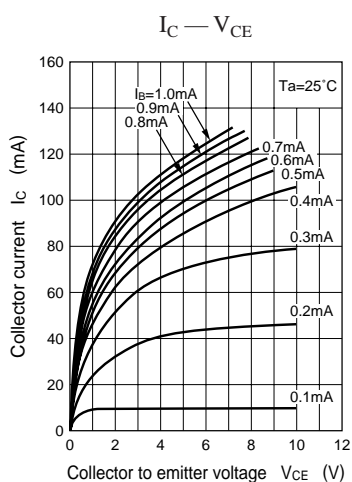
* h_{FE} rank classification (UN1215/1216/1217/1210)

| Rank | Q | R | S |
|-----------------|------------|------------|------------|
| h _{FE} | 160 to 260 | 210 to 340 | 290 to 460 |

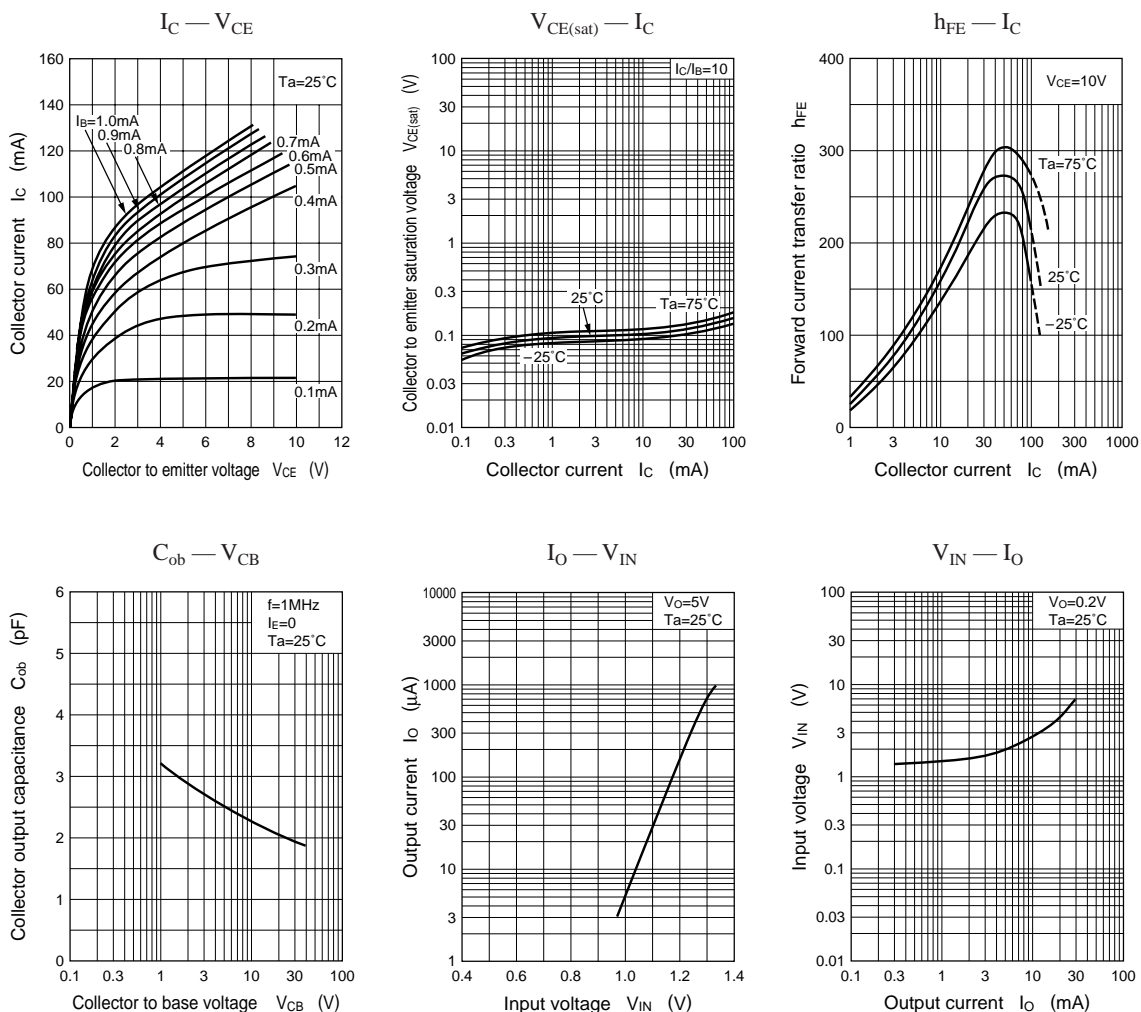
Common characteristics chart



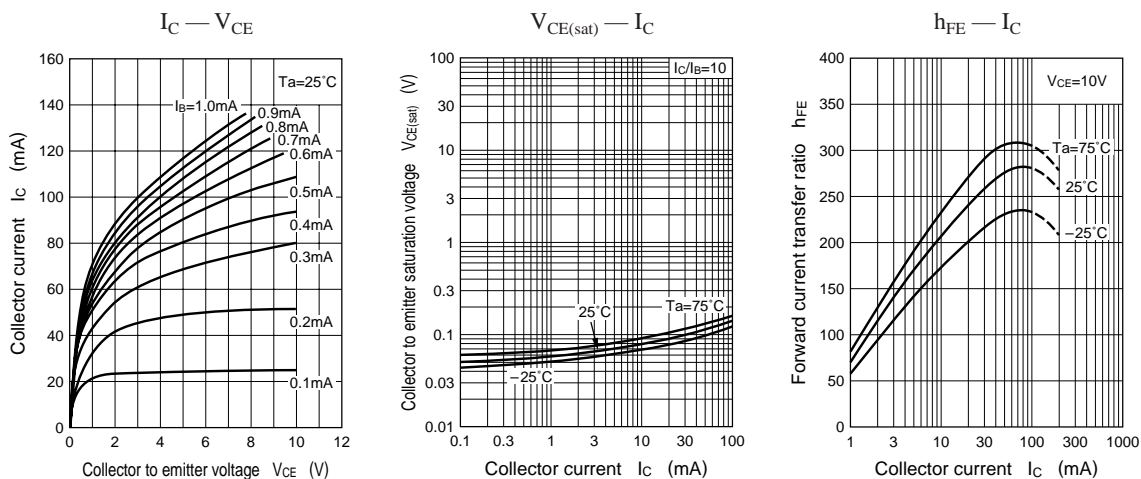
Characteristics charts of UN1211

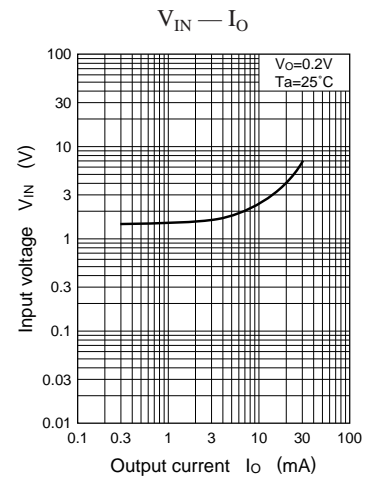
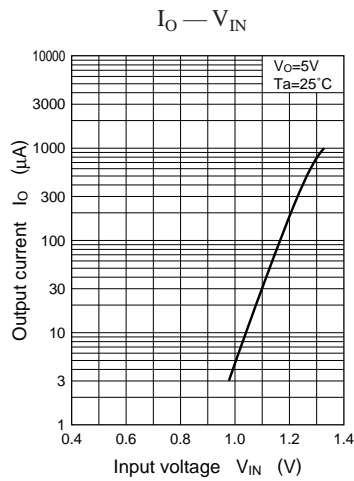
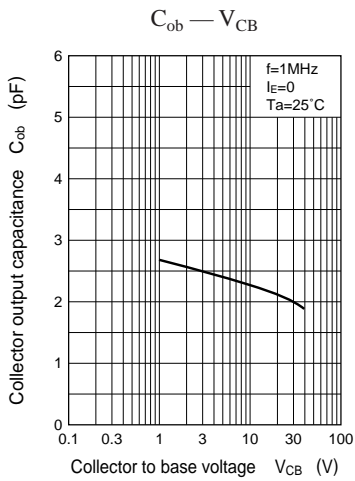


Characteristics charts of UN1212

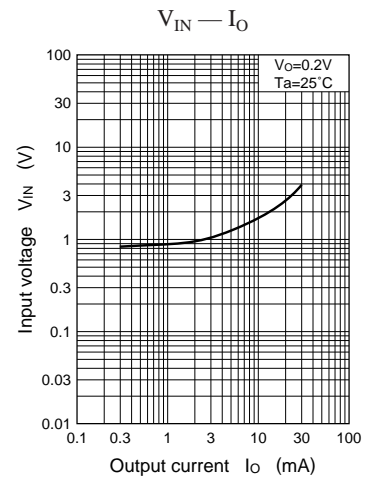
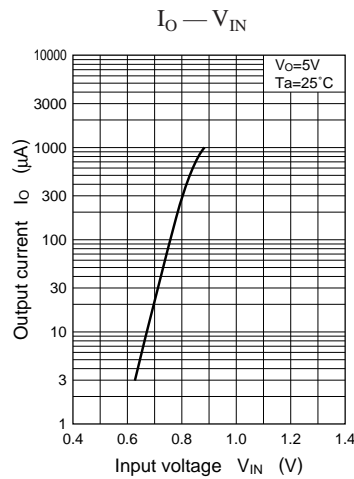
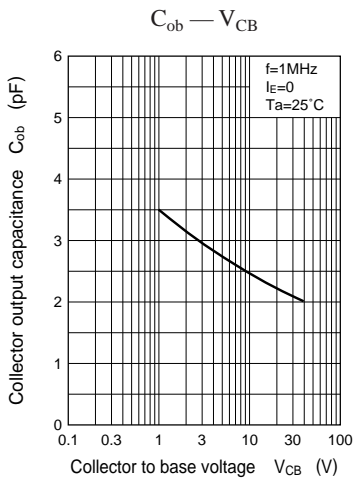
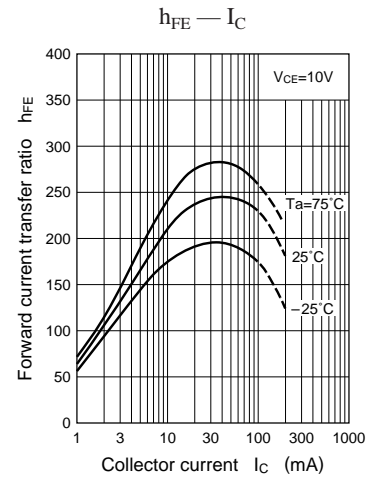
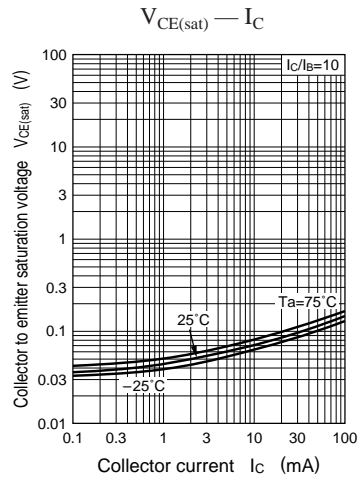
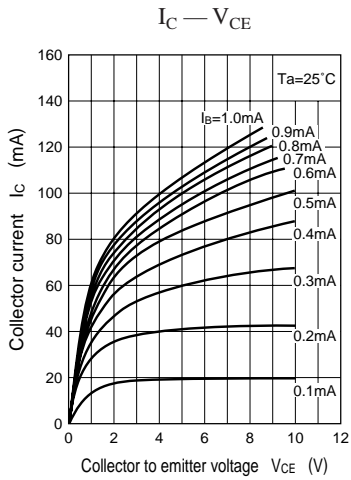


Characteristics charts of UN1213

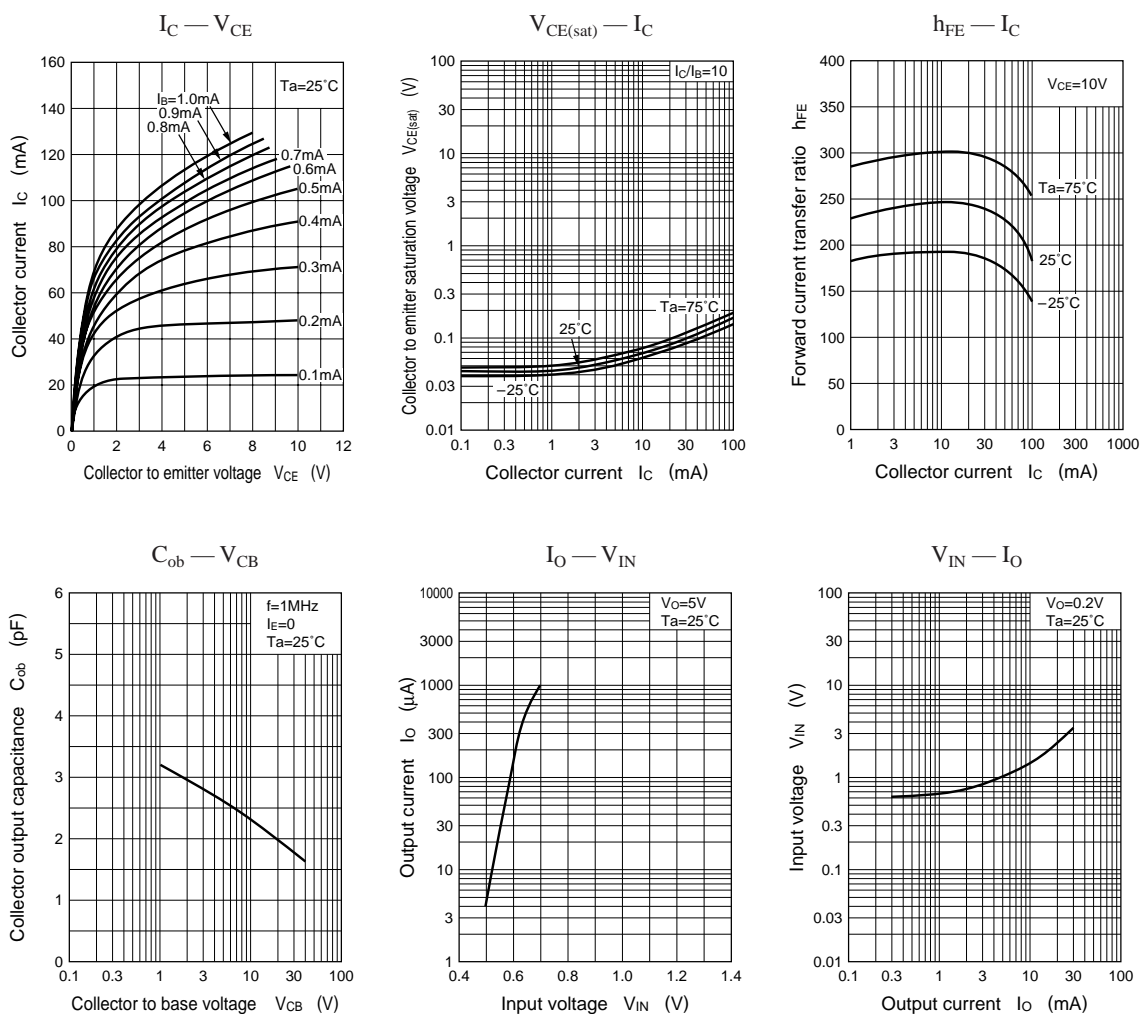




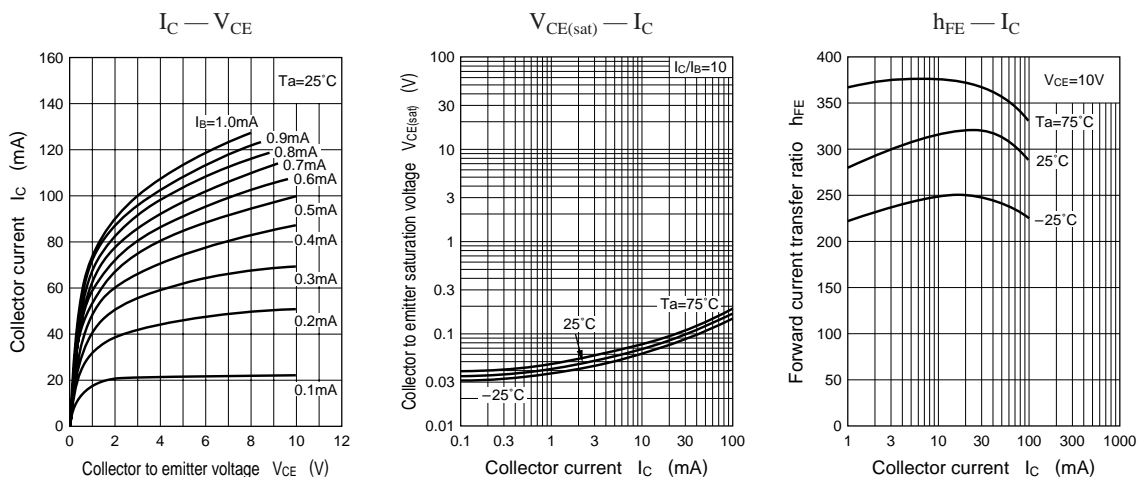
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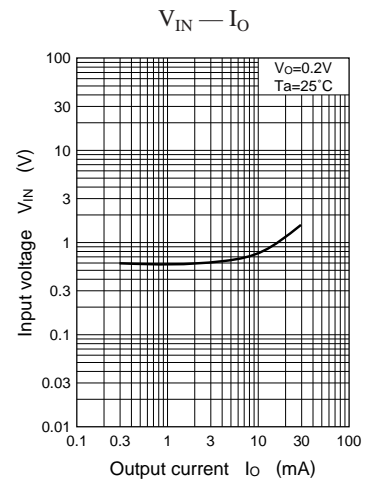
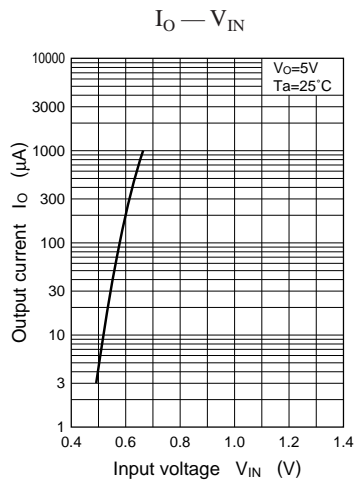
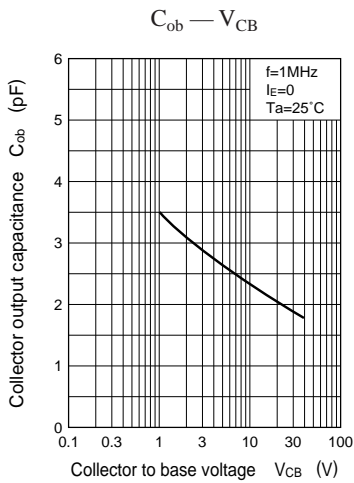


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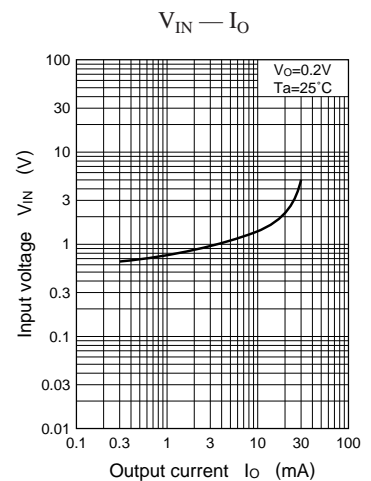
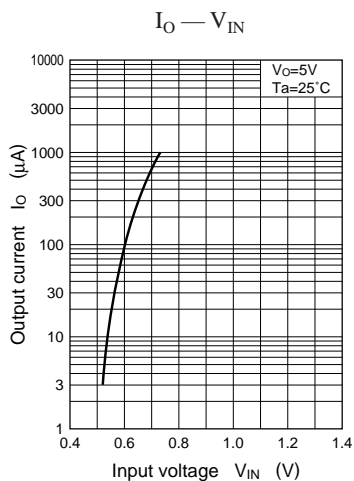
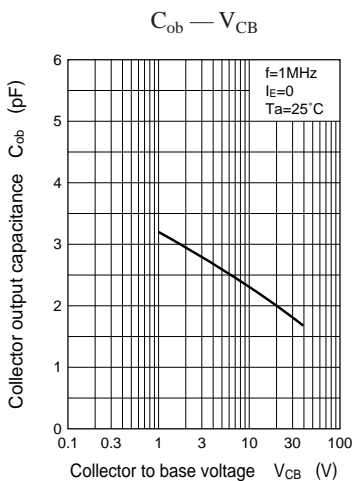
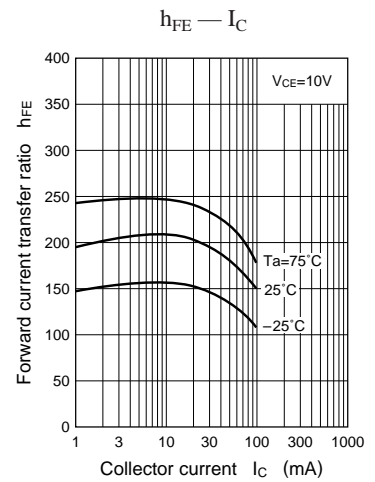
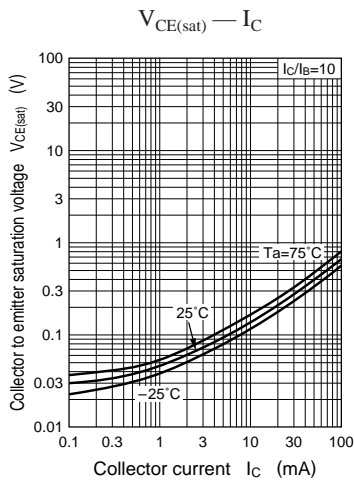
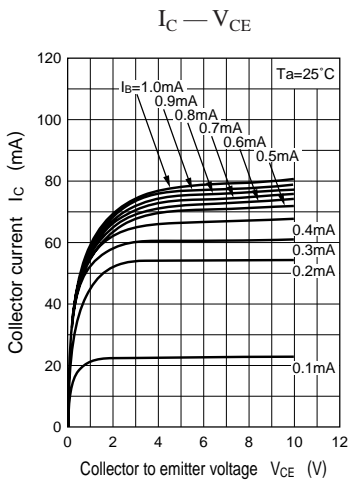


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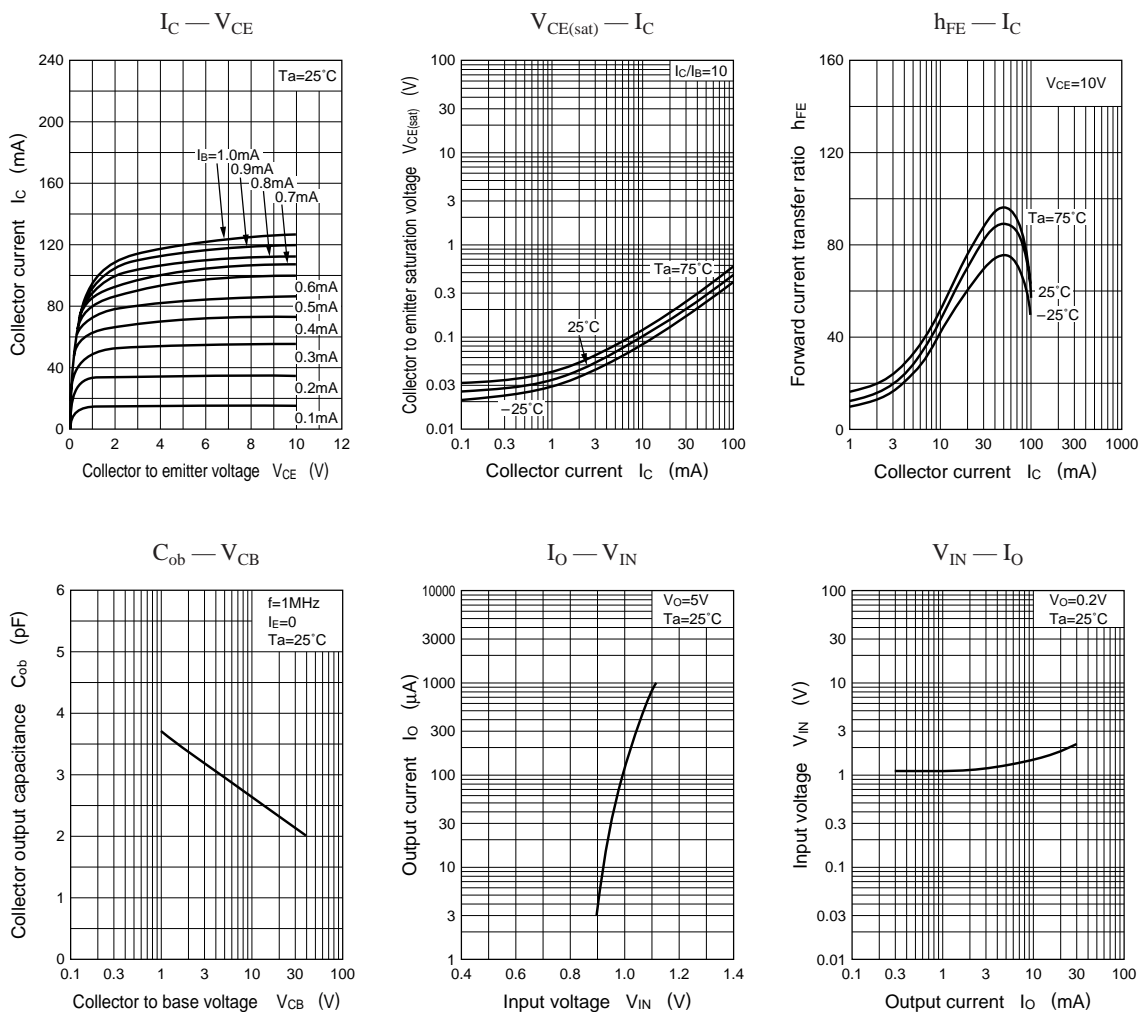




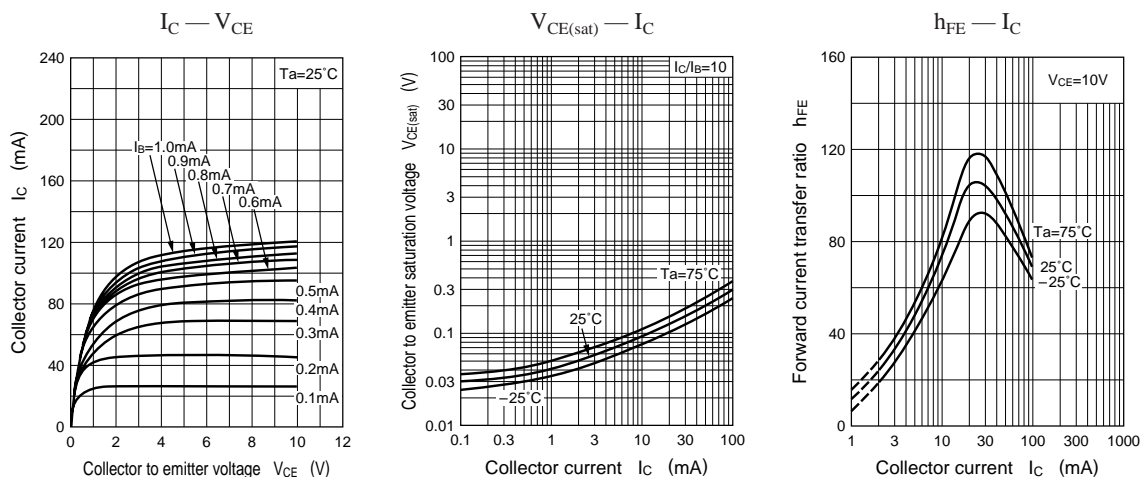
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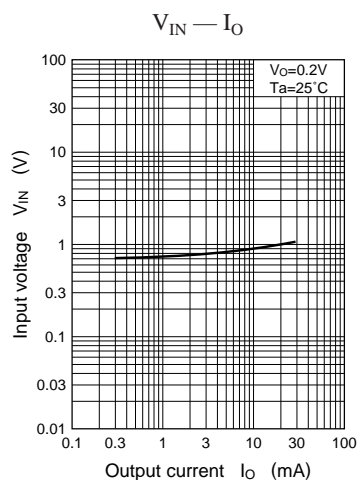
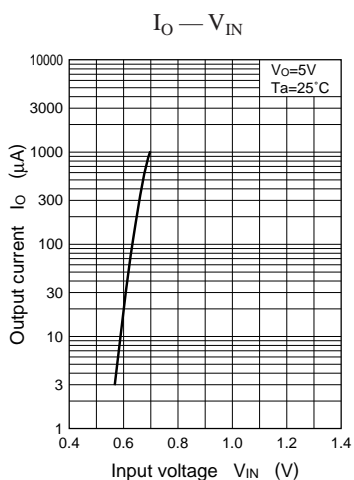
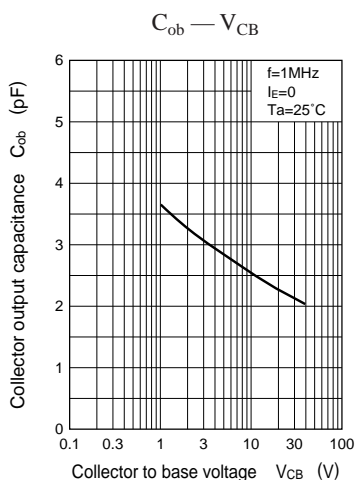


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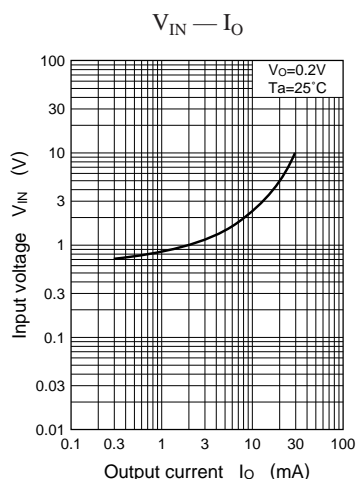
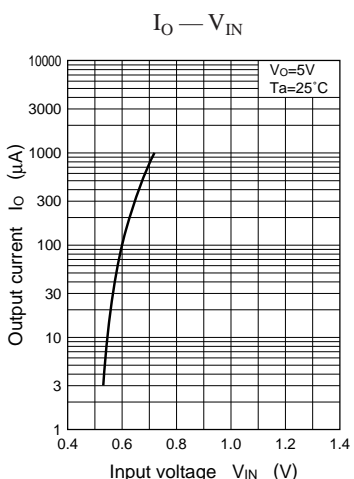
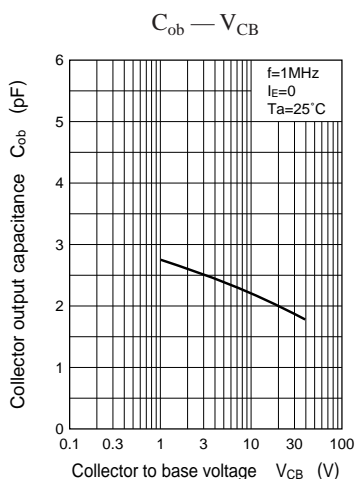
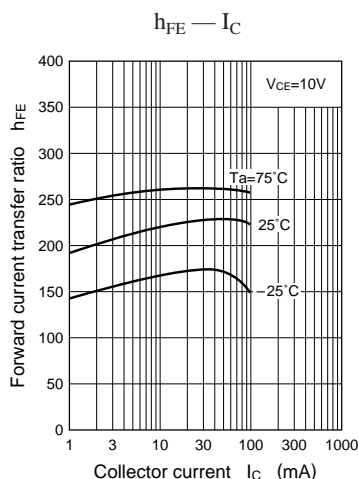
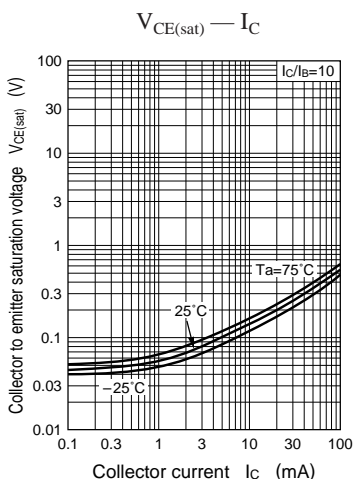
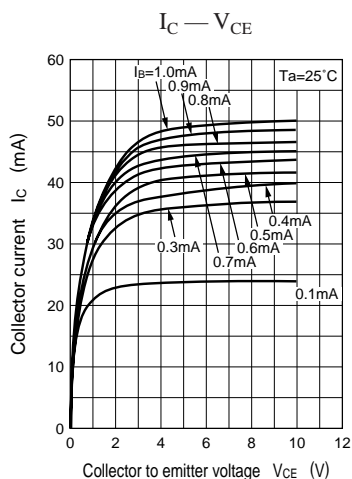


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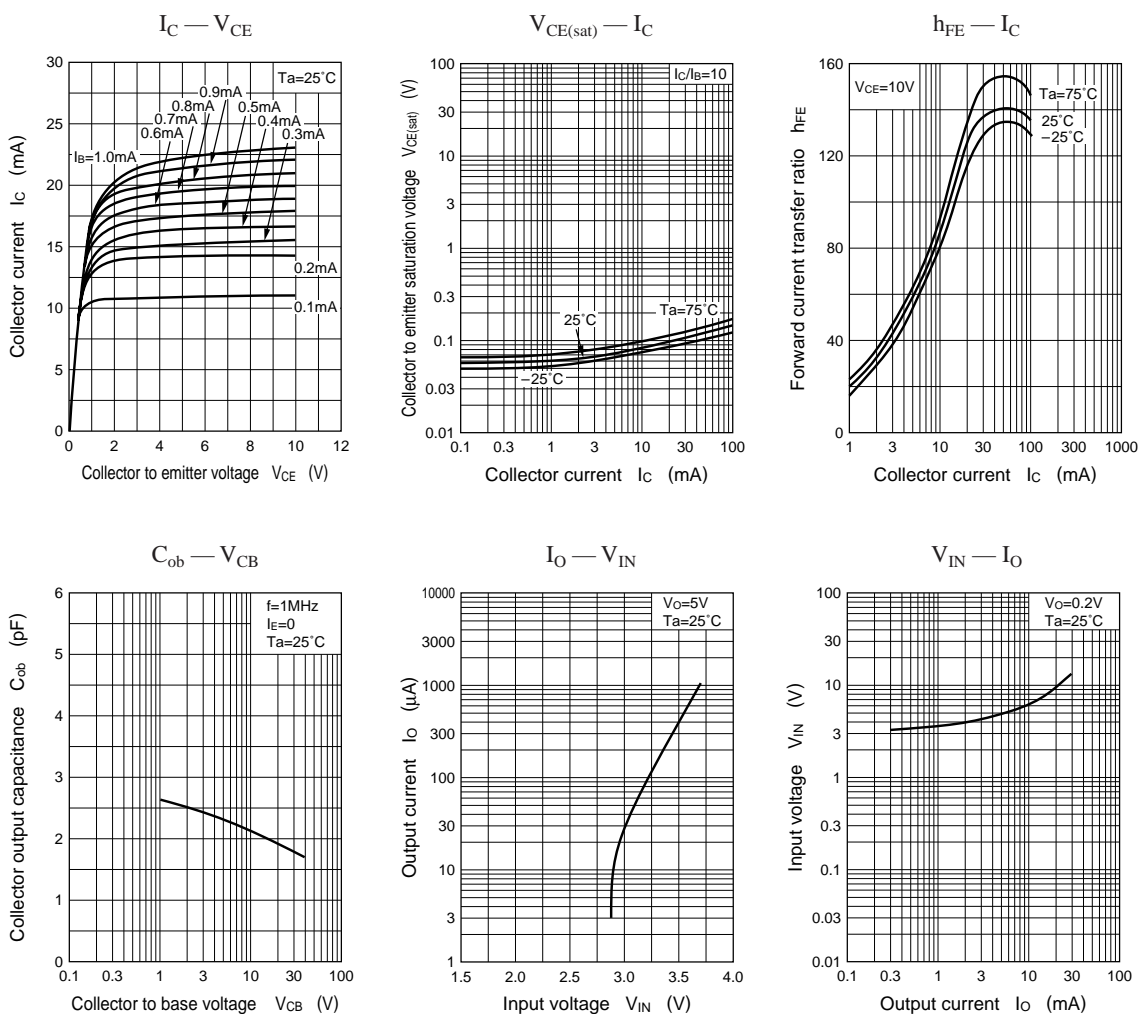




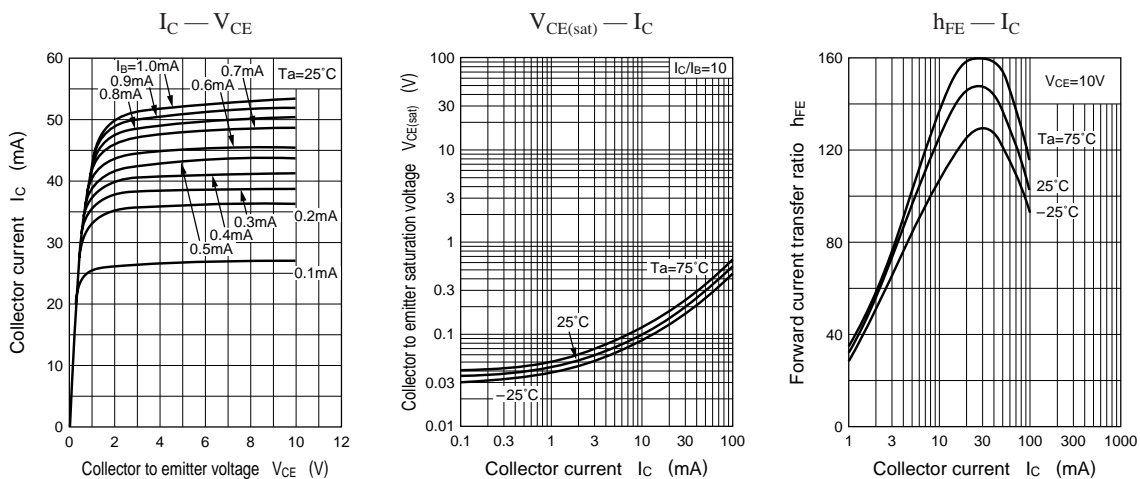
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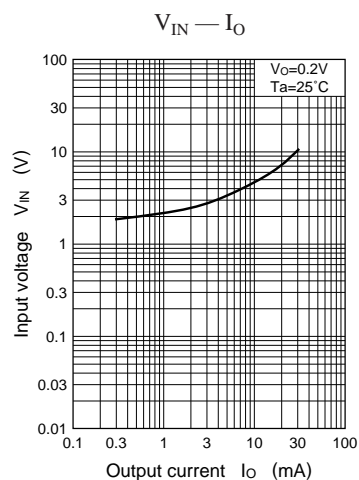
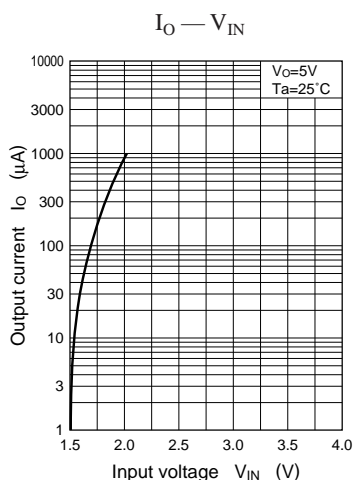
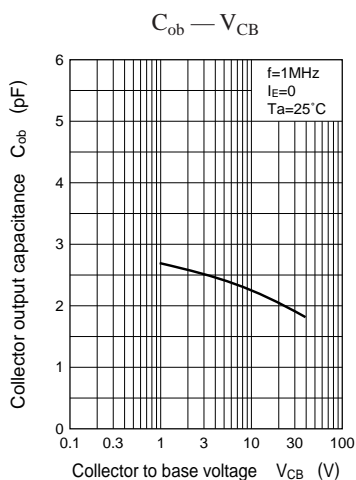


Characteristics charts of UN121D

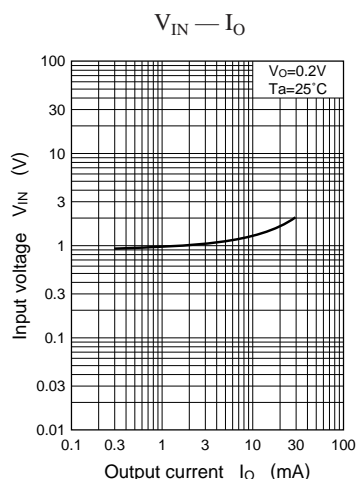
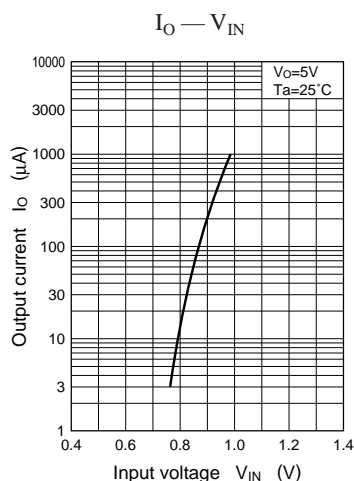
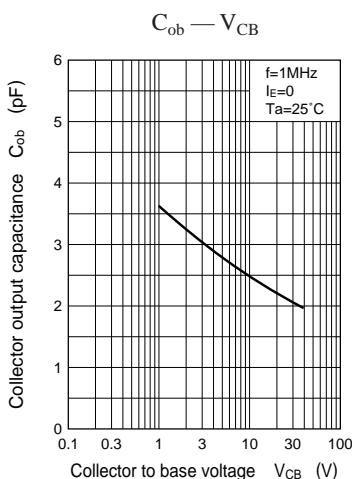
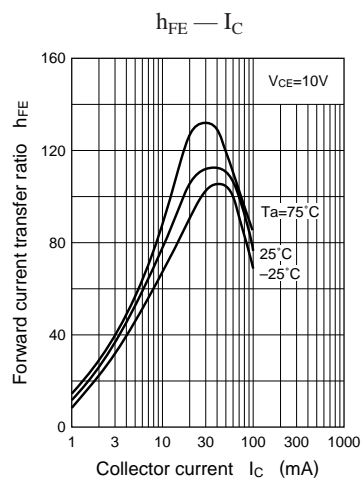
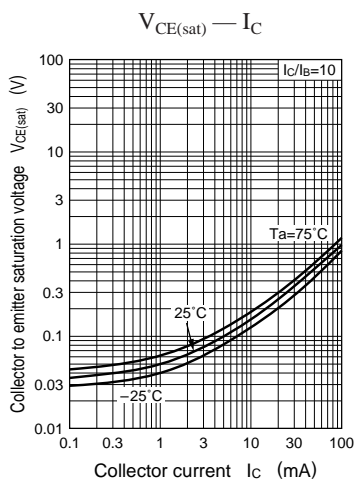
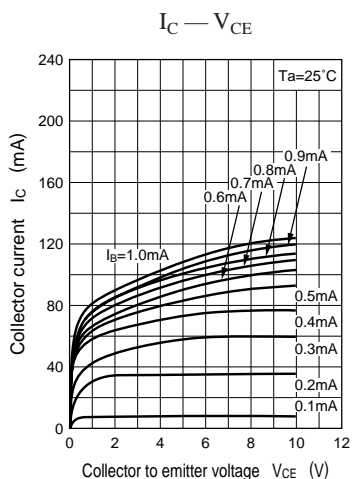


Characteristics charts of UN121E

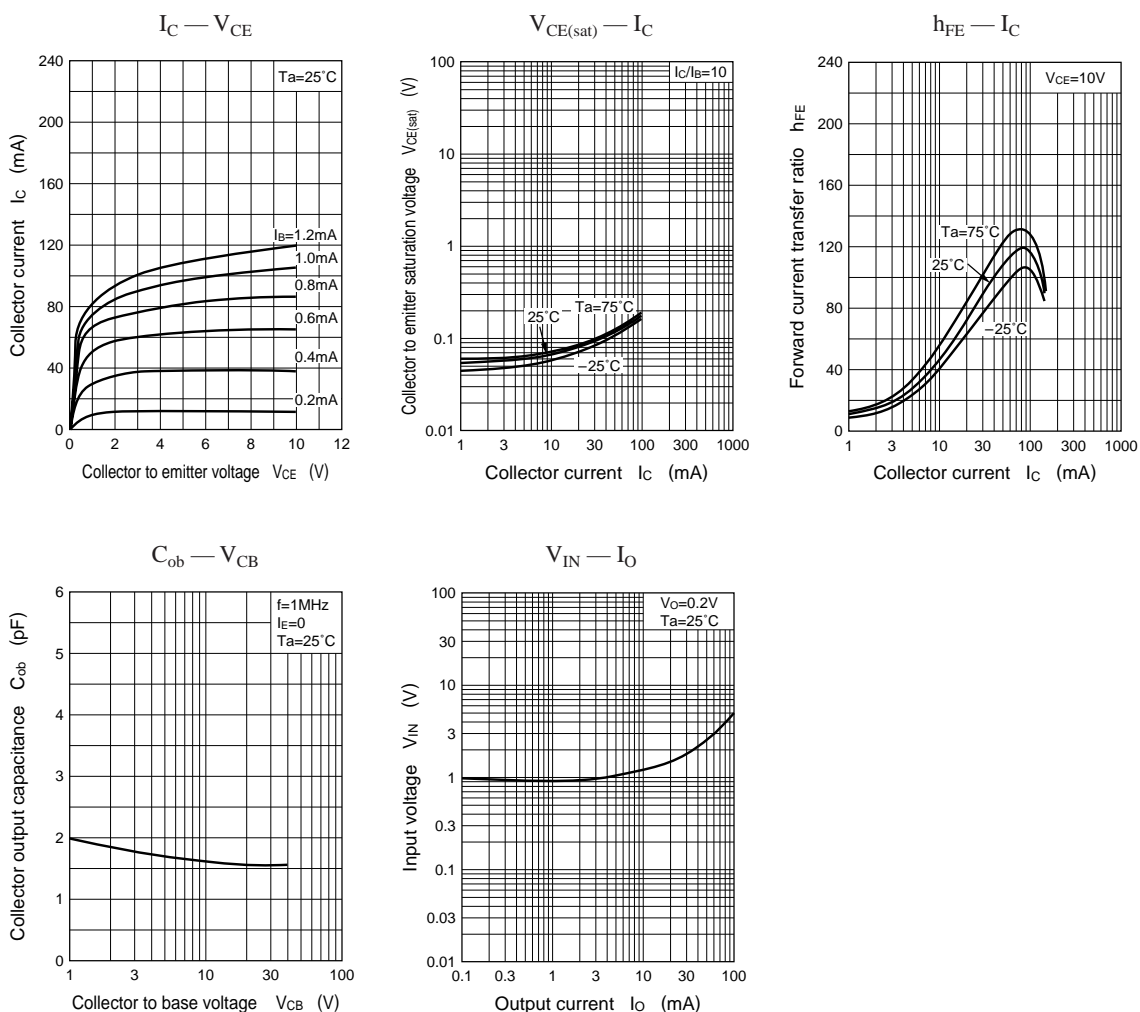




Characteristics charts of UN121F



Characteristics charts of UN121K



Characteristics charts of UN121L

