

# UNR212x Series (UN212x Series)

Silicon PNP epitaxial planar type

For digital circuits

## ■ Features

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

## ■ Resistance by Part Number

|                    | Marking Symbol (R <sub>1</sub> ) | (R <sub>2</sub> ) |
|--------------------|----------------------------------|-------------------|
| • UNR2121 (UN2121) | 7A                               | 2.2 kΩ 2.2 kΩ     |
| • UNR2122 (UN2122) | 7B                               | 4.7 kΩ 4.7 kΩ     |
| • UNR2123 (UN2123) | 7C                               | 10 kΩ 10 kΩ       |
| • UNR2124 (UN2124) | 7D                               | 2.2 kΩ 10 kΩ      |
| • UNR212X (UN212X) | 7I                               | 0.27 kΩ 5 kΩ      |
| • UNR212Y (UN212Y) | 7Y                               | 3.1 kΩ 4.6 kΩ     |

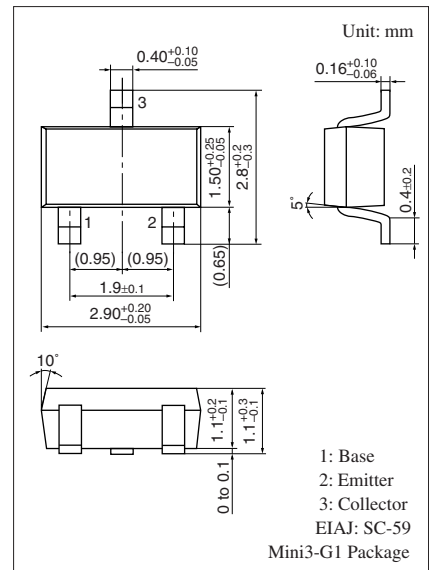
## ■ Absolute Maximum Ratings T<sub>a</sub> = 25°C

| Parameter                             | Symbol           | Rating      | Unit |
|---------------------------------------|------------------|-------------|------|
| Collector-base voltage (Emitter open) | V <sub>CB0</sub> | -50         | V    |
| Collector-emitter voltage (Base open) | V <sub>CE0</sub> | -50         | V    |
| Collector current                     | I <sub>C</sub>   | -500        | mA   |
| Total power dissipation               | P <sub>T</sub>   | 200         | mW   |
| Junction temperature                  | T <sub>j</sub>   | 150         | °C   |
| Storage temperature                   | T <sub>stg</sub> | -55 to +150 | °C   |

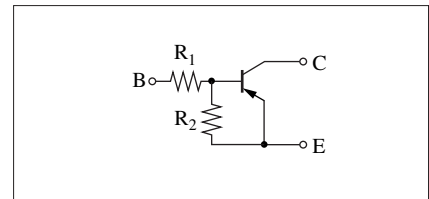
## ■ Electrical Characteristics T<sub>a</sub> = 25°C ± 3°C

| Parameter                                    | Symbol            | Conditions                                      | Min | Typ | Max  | Unit |
|--|-------------------|---|-----|-----|------|------|
| Collector-base voltage (Emitter open)        | V <sub>CB0</sub>  | I <sub>C</sub> = -10 μA, I <sub>E</sub> = 0     | -50 |     |      | V    |
| Collector-emitter voltage (Base open)        | V <sub>CE0</sub>  | I <sub>C</sub> = -2 mA, I <sub>B</sub> = 0      | -50 |     |      | V    |
| Collector-base cutoff current (Emitter open) | I <sub>CB0</sub>  | V <sub>CB</sub> = -50 V, I <sub>E</sub> = 0     |     |     | -1.0 | μA   |
|  | UNR212X           |   |     |     | -0.1 |      |
| Collector-emitter cutoff current (Base open) | I <sub>CE0</sub>  | V <sub>CE</sub> = -50 V, I <sub>B</sub> = 0     |     |     | -1.0 | μA   |
|  | UNR212X           |   |     |     | -0.5 |      |
| Emitter-base cutoff current (Collector open) | I <sub>EBO</sub>  | V <sub>EB</sub> = -6 V, I <sub>C</sub> = 0      |     |     | -5   | mA   |
|  | UNR2121           |   |     |     | -2   |      |
|  | UNR2122/212X/212Y |   |     |     | -1   |      |
|  | UNR2123/2124      |   |     |     |      |      |
| Forward current transfer ratio               | h <sub>FE</sub>   | V <sub>CE</sub> = -10 V, I <sub>C</sub> = -5 mA | 40  |     |      | —    |
|  | UNR2121           |   | 50  |     |      |      |
|  | UNR2122/212Y      |   | 60  |     |      |      |
|  | UNR2123/2124      |   | 20  |     |      |      |
|  | UNR212X           |   |     |     |      |      |

Note) The part numbers in the parenthesis show conventional part number.



## Internal Connection

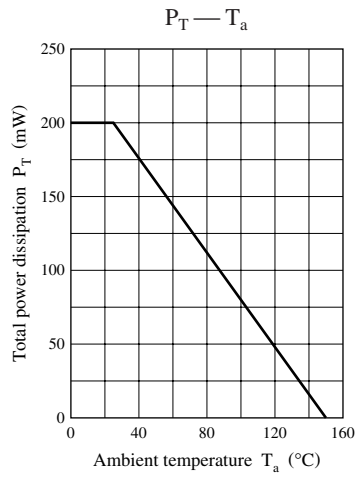


■ Electrical Characteristics (continued)  $T_a = 25^\circ\text{C} \pm 3^\circ\text{C}$

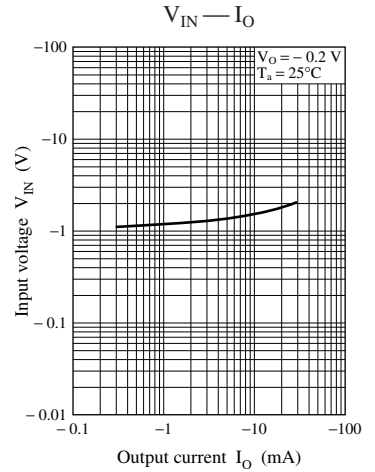
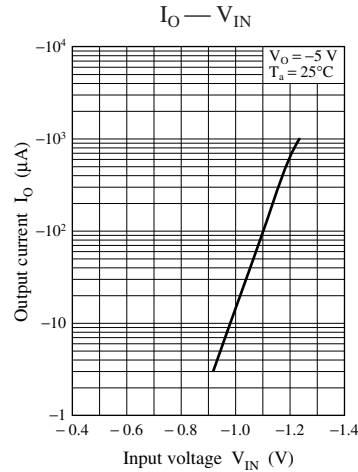
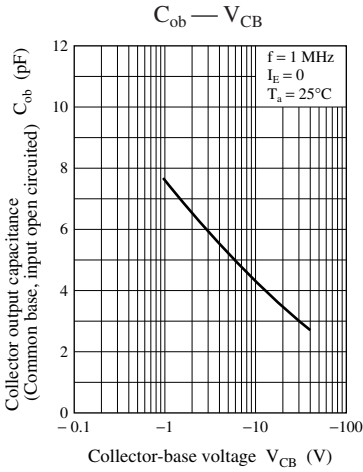
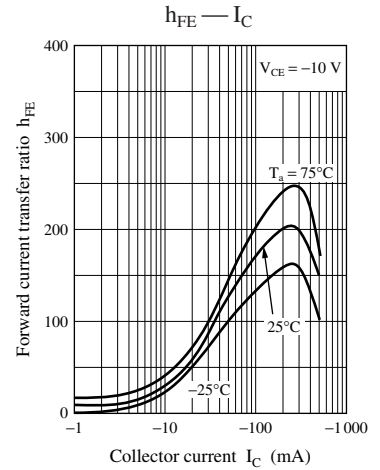
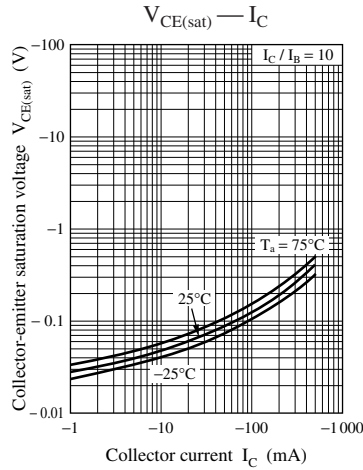
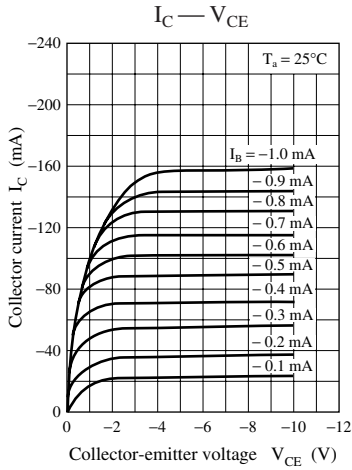
| Parameter                            | Symbol        | Conditions  | Min  | Typ          | Max   | Unit |            |       |       |       |
|--------------------------------------|---------------|---|------|--------------|-------|------|------------|-------|-------|-------|
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_C = -100\text{ mA}, I_B = -5\text{ mA}$                      |      |              | -0.25 | V    |            |       |       |       |
|                                      |               | $I_C = -10\text{ mA}, I_B = -0.3\text{ mA}$                     |      |              |       |      |            |       |       |       |
| Output voltage high-level            | $V_{OH}$      | $V_{CC} = -5\text{ V}, V_B = -0.5\text{ V}, R_L = 500\ \Omega$  | -4.9 |              |       | V    |            |       |       |       |
| Output voltage low-level             | $V_{OL}$      | $V_{CC} = -5\text{ V}, V_B = -3.5\text{ V}, R_L = 500\ \Omega$  |      |              | -0.2  | V    |            |       |       |       |
| Transition frequency                 | $f_T$         | $V_{CB} = -10\text{ V}, I_E = 50\text{ mA}, f = 200\text{ MHz}$ |      | 200          |       | MHz  |            |       |       |       |
| Input resistance                     | $R_1$         |   | -30% | UNR2121/2124 | 2.2   | +30% | k $\Omega$ |       |       |       |
|                                      |               |   |      | UNR2122      | 4.7   |      |            |       |       |       |
|                                      |               |   |      | UNR2123      | 10    |      |            |       |       |       |
|                                      |               |   |      | UNR212X      | 0.27  |      |            |       |       |       |
|                                      |               |   |      | UNR212Y      | 3.1   |      |            |       |       |       |
| Resistance ratio                     | $R_1/R_2$     |   | 0.8  | 1.0          | 1.2   |      |            |       |       |       |
|                                      |               |   |      |              |       |      | UNR2124    | 0.17  | 0.22  | 0.27  |
|                                      |               |   |      |              |       |      | UNR212X    | 0.043 | 0.054 | 0.065 |
|                                      |               |   |      |              |       |      | UNR212Y    | 0.53  | 0.67  | 0.81  |

Note) Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.

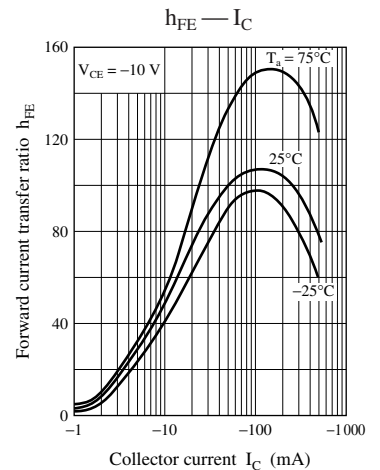
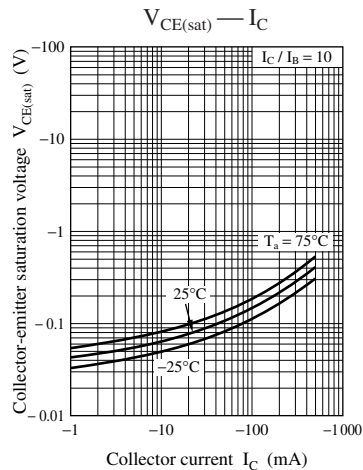
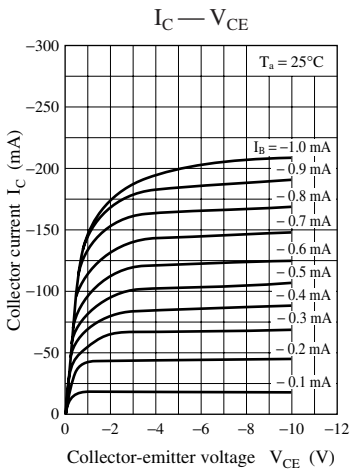
Common characteristics chart

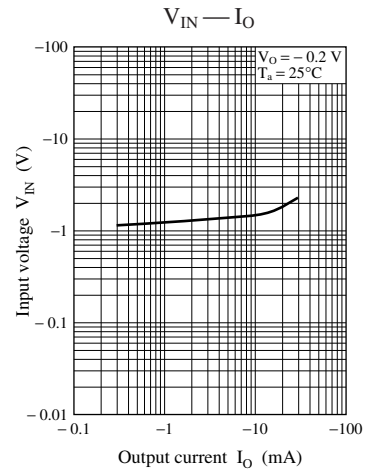
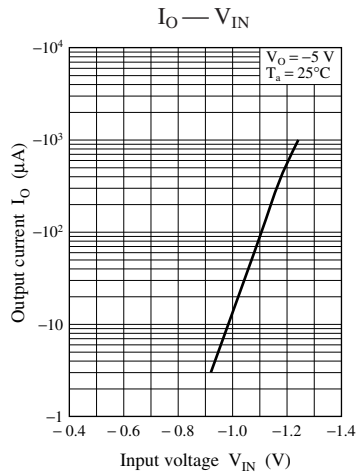
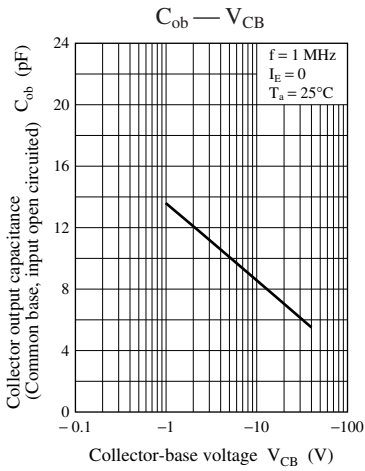


Characteristics charts of UNR2121

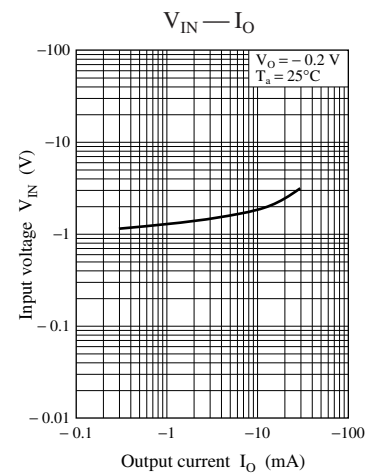
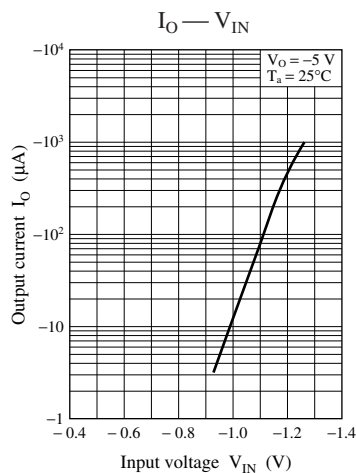
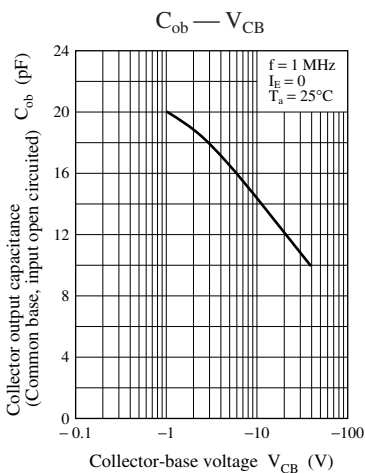
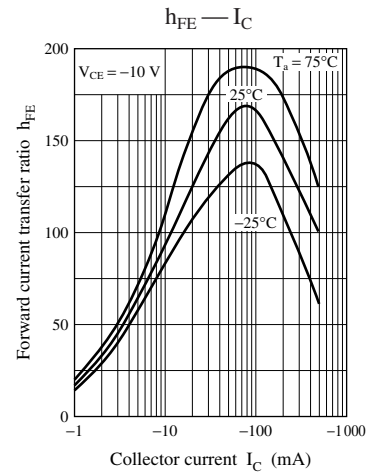
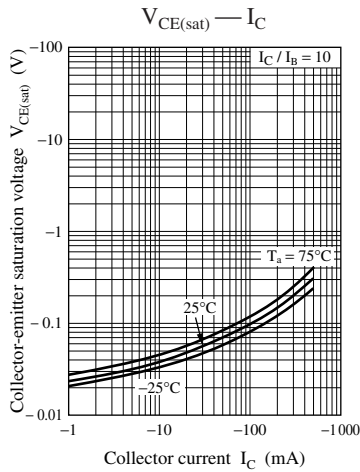
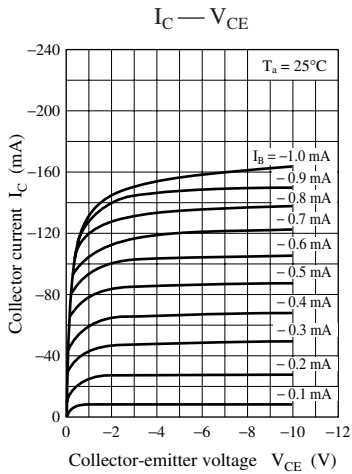


Characteristics charts of UNR2122

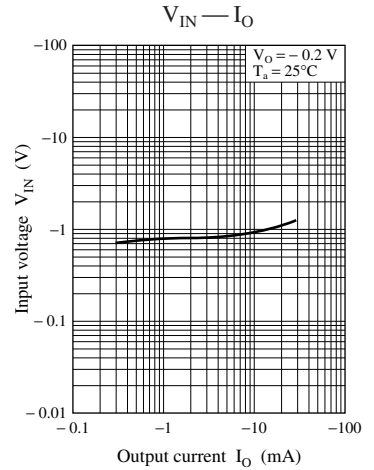
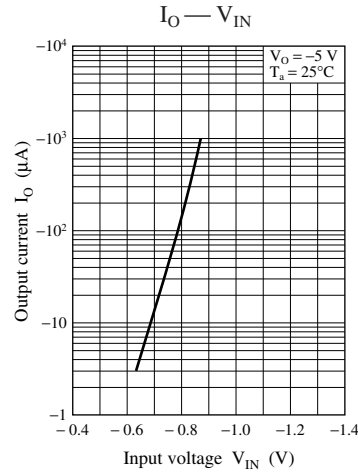
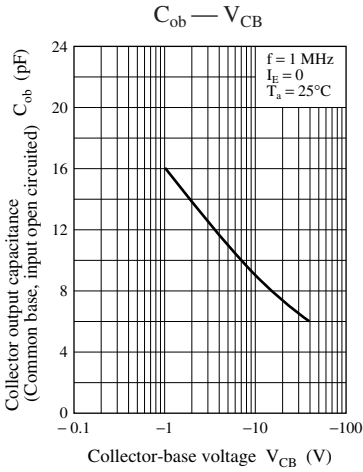
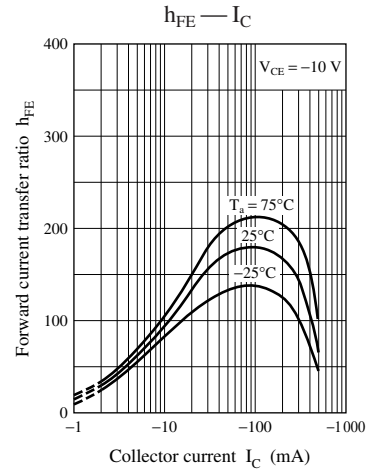
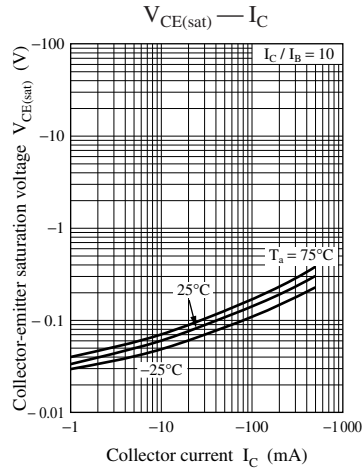
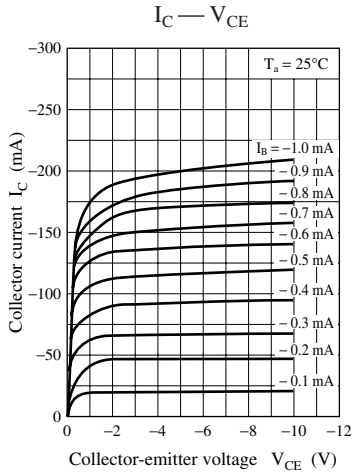




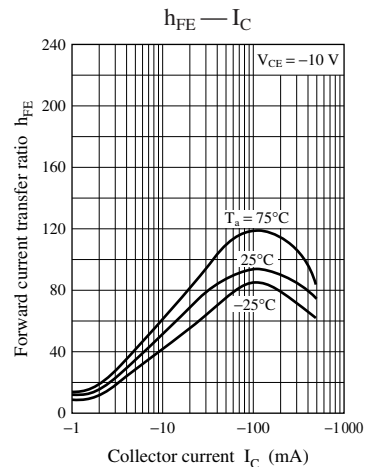
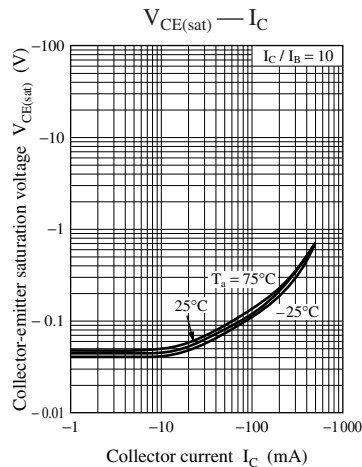
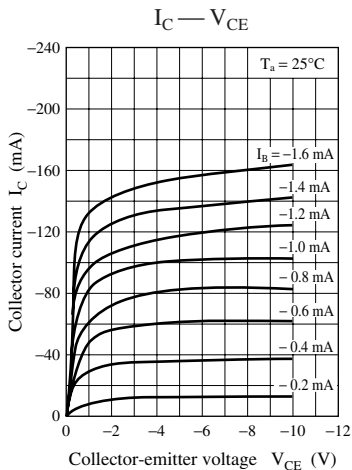
Characteristics charts of UNR2123

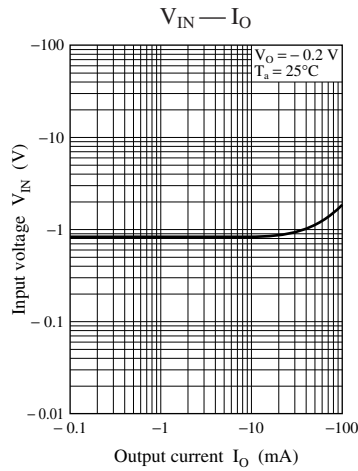
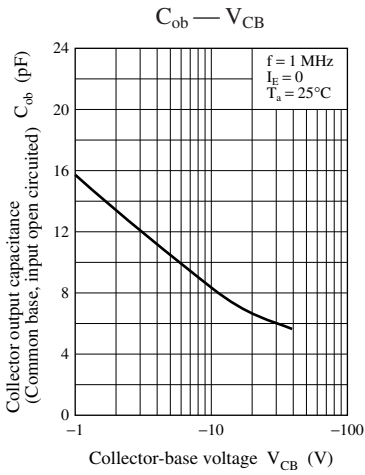


Characteristics charts of UNR2124

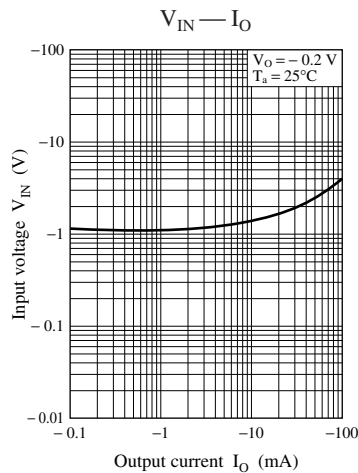
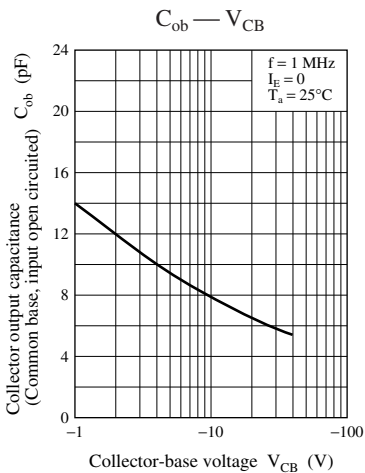
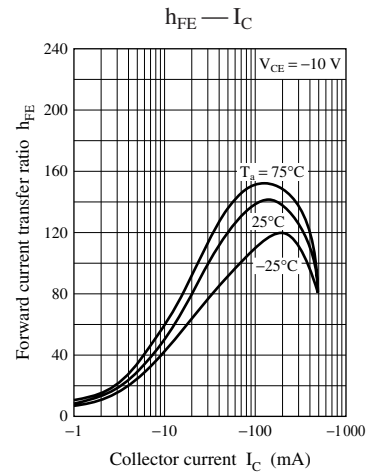
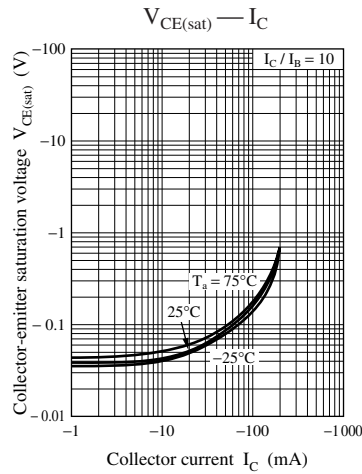
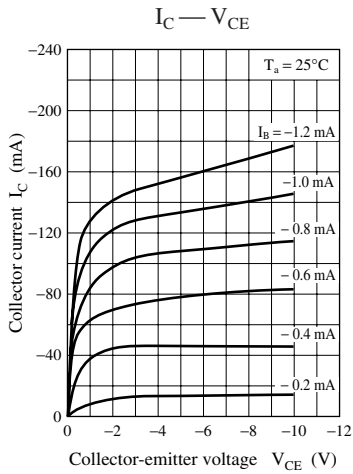


Characteristics charts of UNR212X





Characteristics charts of UNR212Y



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