

UNR111x Series (UN111x Series)

Silicon PNP epitaxial planar transistor

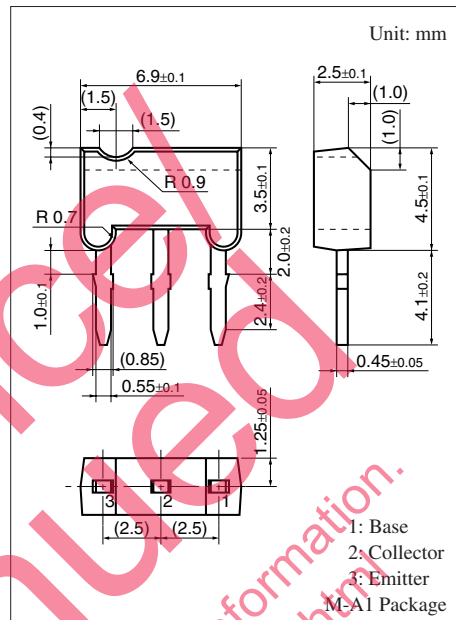
For digital circuits

■ Features

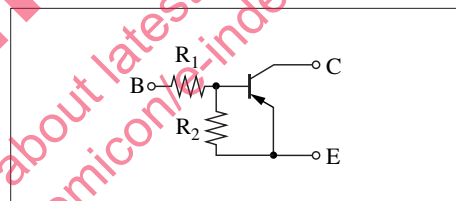
- Costs can be reduced through downsizing of the equipment and reduction of the number of parts
- M type package allowing easy automatic and manual insertion as well as stand-alone fixing to the printed circuit board.

■ Resistance by Part Number

| | (R ₁) | (R ₂) |
|--------------------|-------------------|-------------------|
| • UNR1110 (UN1110) | 47 kΩ | — |
| • UNR1111 (UN1111) | 10 kΩ | 10 kΩ |
| • UNR1112 (UN1112) | 22 kΩ | 22 kΩ |
| • UNR1113 (UN1113) | 47 kΩ | 47 kΩ |
| • UNR1114 (UN1114) | 10 kΩ | 47 kΩ |
| • UNR1115 (UN1115) | 10 kΩ | — |
| • UNR1116 (UN1116) | 4.7 kΩ | — |
| • UNR1117 (UN1117) | 22 kΩ | — |
| • UNR1118 (UN1118) | 0.51 kΩ | 5.1 kΩ |
| • UNR1119 (UN1119) | 1 kΩ | 10 kΩ |
| • UNR111D (UN111D) | 47 kΩ | 10 kΩ |
| • UNR111E (UN111E) | 47 kΩ | 22 kΩ |
| • UNR111F (UN111F) | 4.7 kΩ | 10 kΩ |
| • UNR111H (UN111H) | 2.2 kΩ | 10 kΩ |
| • UNR111L (UN111L) | 4.7 kΩ | 4.7 kΩ |



Internal Connection



■ Absolute Maximum Ratings T_a = 25°C

| Parameter | Symbol | Rating | Unit |
|---------------------------------------|------------------|-------------|------|
| Collector-base voltage (Emitter open) | V _{CBO} | -50 | V |
| Collector-emitter voltage (Base open) | 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 |

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

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

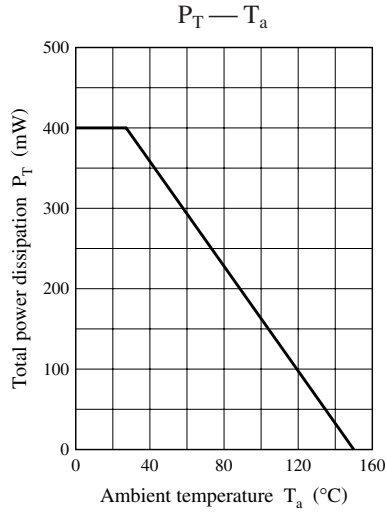
| Parameter | | Symbol | Conditions | Min | Typ | Max | Unit | |
|---|----------------------------|---------------|--|---------|--|-----------|---------------|--|
| Collector-base voltage (Emitter open) | | V_{CBO} | $I_C = -10 \mu\text{A}, I_E = 0$ | -50 | | | V | |
| Collector-emitter voltage (Base open) | | V_{CEO} | $I_C = -2 \text{ mA}, I_B = 0$ | -50 | | | V | |
| Collector-base cutoff current (Emitter open) | | I_{CBO} | $V_{CB} = -50 \text{ V}, I_E = 0$ | | | -0.1 | μA | |
| Collector-emitter cutoff current (Base open) | | I_{CEO} | $V_{CE} = -50 \text{ V}, I_B = 0$ | | | -0.5 | μA | |
| Emitter-base cutoff current (Collector open) | UNR1111 | I_{EBO} | $V_{EB} = -6 \text{ V}, I_C = 0$ | | | -0.5 | mA | |
| | UNR1112/1114/111D/111E | | | | | -0.2 | | |
| | UNR1113 | | | | | -0.1 | | |
| | UNR1110/1115/1116/1117 | | | | | -0.01 | | |
| | UNR111F/111H | | | | | -1.0 | | |
| | UNR1119 | | | | | -1.5 | | |
| | UNR1118/111L | | | | | -2.0 | | |
| Forward current transfer ratio | UNR1111 | h_{FE} | $V_{CE} = -10 \text{ V}, I_C = -5 \text{ mA}$ | 35 | | | — | |
| | UNR1112/111E | | | 60 | | | | |
| | UNR1113/1114 | | | 80 | | | | |
| | UNR1110*/1115*/1116*/1117* | | | 160 | 460 | | | |
| | UNR1118/111L | | | 20 | | | | |
| | UNR1119/111D/111F/111H | | | 30 | | | | |
| Collector-emitter saturation voltage | | $V_{CE(sat)}$ | $I_C = -10 \text{ mA}, I_B = -0.3 \text{ mA}$ | | | -0.25 | V | |
| Output voltage high-level | | V_{OH} | $V_{CC} = -5 \text{ V}, V_B = -0.5 \text{ V}, R_L = 1 \text{ k}\Omega$ | -4.9 | | | V | |
| Output voltage low-level | | V_{OL} | $V_{CC} = -5 \text{ V}, V_B = -2.5 \text{ V}, R_L = 1 \text{ k}\Omega$ | | | -0.2 | V | |
| | | | | UNR1113 | $V_{CC} = -5 \text{ V}, V_B = -3.5 \text{ V}, R_L = 1 \text{ k}\Omega$ | | | |
| | | | | UNR111D | $V_{CC} = -5 \text{ V}, V_B = -10 \text{ V}, R_L = 1 \text{ k}\Omega$ | | | |
| | | | | UNR111E | $V_{CC} = -5 \text{ V}, V_B = -6 \text{ V}, R_L = 1 \text{ k}\Omega$ | | | |
| Transition frequency | | f_T | $V_{CB} = -10 \text{ V}, I_E = 2 \text{ mA}, f = 200 \text{ MHz}$ | | 80 | | MHz | |
| Input resistance | UNR1111/1114/1115 | R_1 | | -30% | 10 | +30% | k Ω | |
| | UNR1112/1117 | | | | 22 | | | |
| | UNR1110/1113/111D/111E | | | | 47 | | | |
| | UNR1116/111F/111L | | | | 4.7 | | | |
| | UNR1118 | | | | 0.51 | | | |
| | UNR1119 | | | | 1 | | | |
| | UNR111H | | | | 2.2 | | | |
| | Resistance ratio | | | | UNR1111/1112/1113/111L | R_1/R_2 | | |
| UNR1114 | | 0.17 | 0.21 | 0.25 | | | | |
| UNR1118/1119 | | 0.08 | 0.1 | 0.12 | | | | |
| UNR111D | | | 4.7 | | | | | |
| UNR111E | | | 2.14 | | | | | |
| UNR111F | | | 0.47 | | | | | |
| UNR111H | | 0.17 | 0.22 | 0.27 | | | | |

Note) 1. Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.

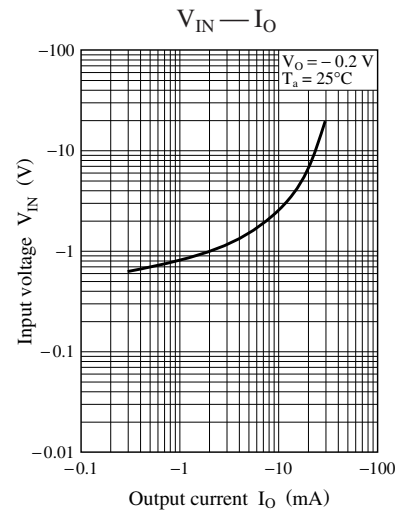
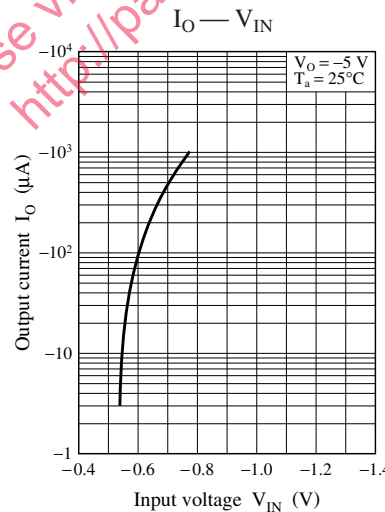
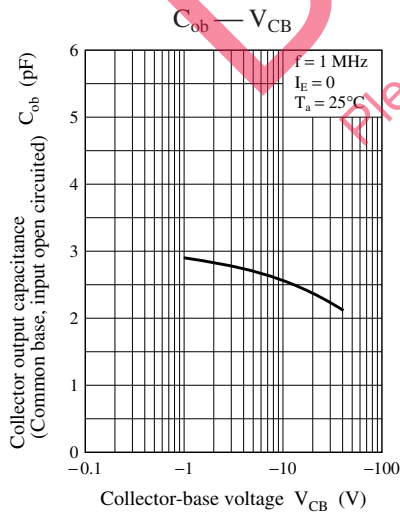
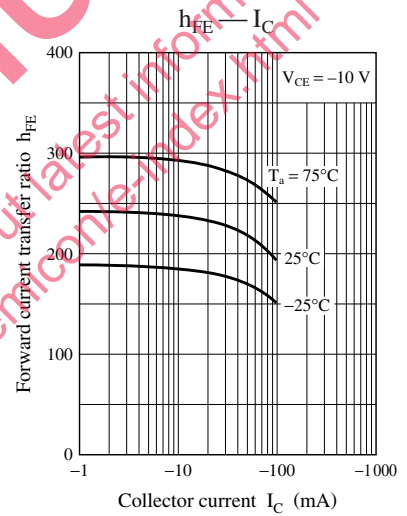
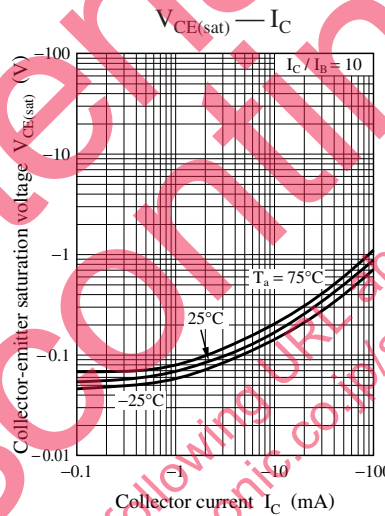
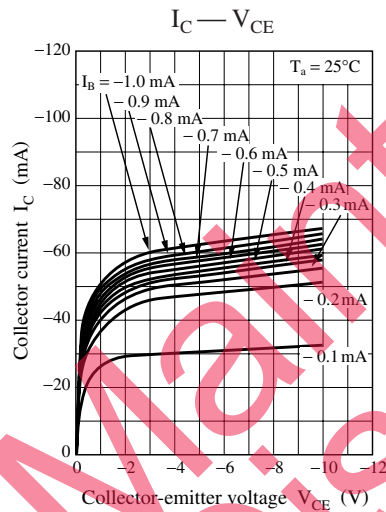
2. *: Rank classification (UNR1110/1115/1116/1117)

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

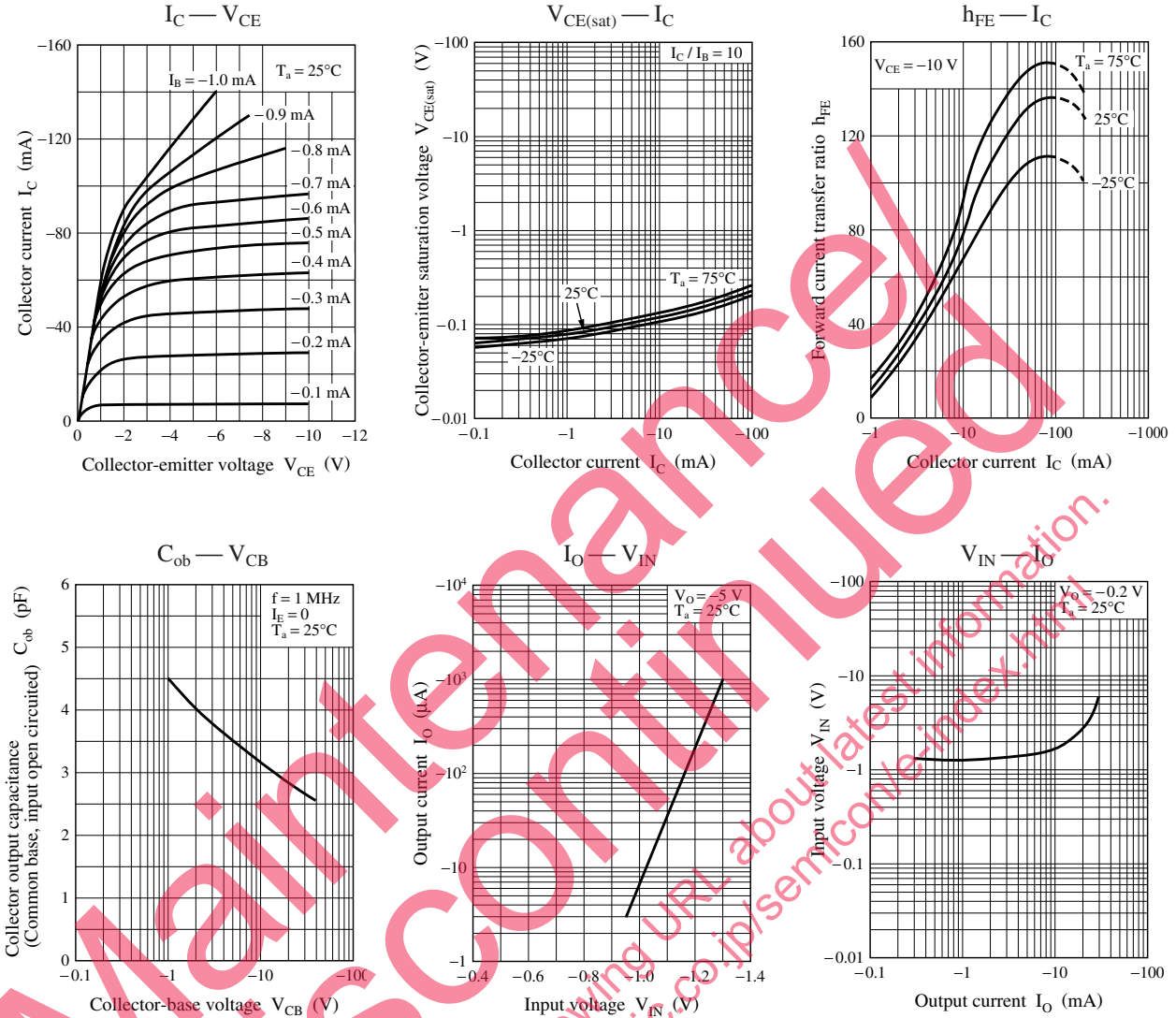
Common characteristics chart



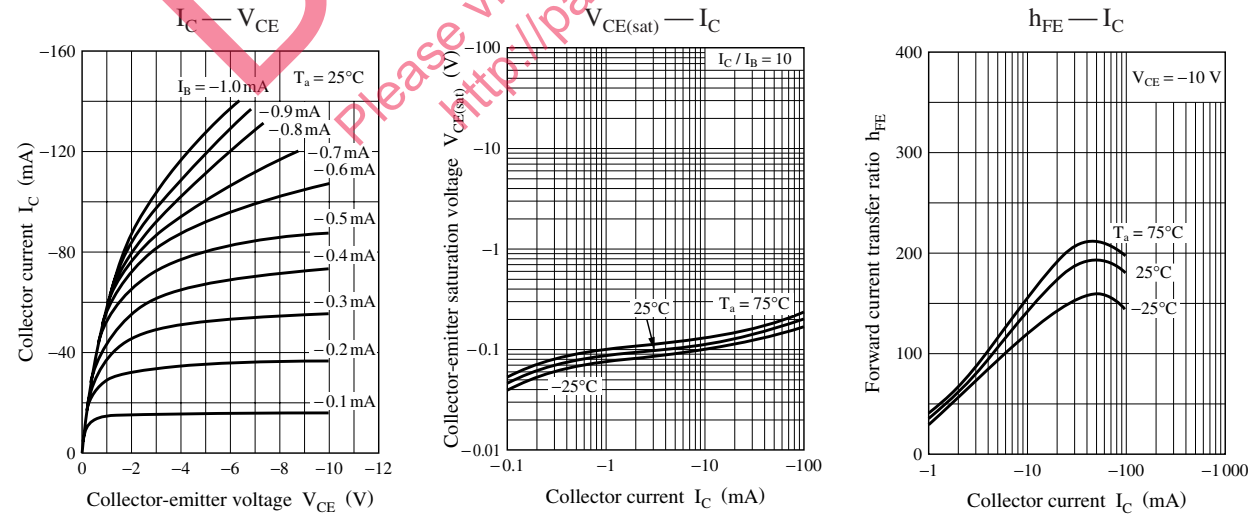
Characteristics charts of UNR1110

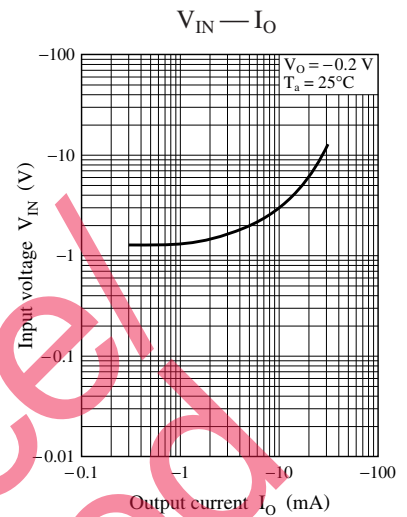
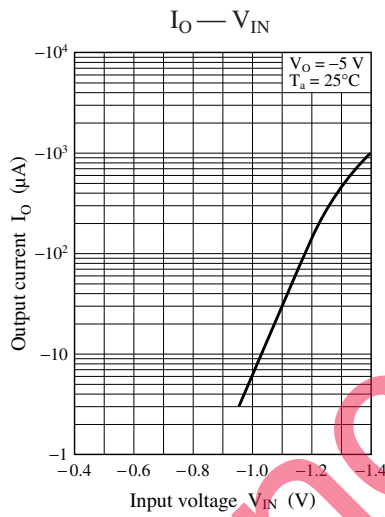
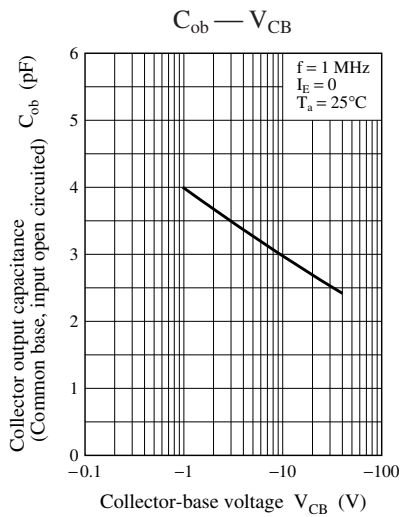


Characteristics charts of UNR1111

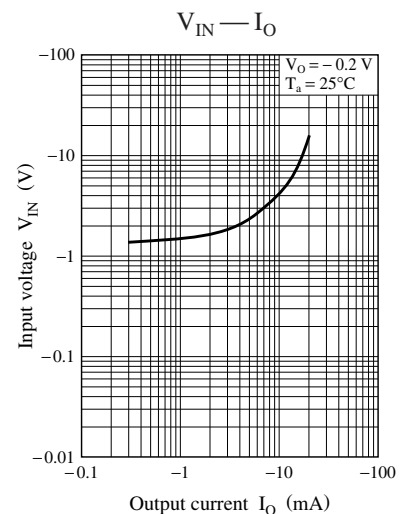
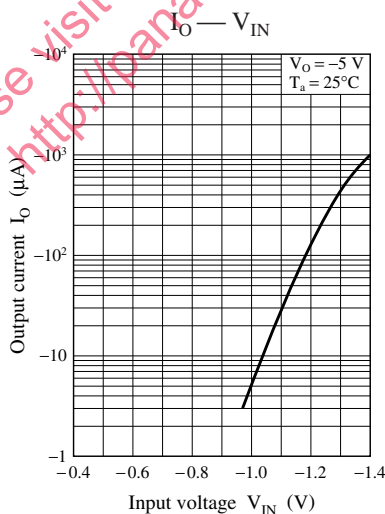
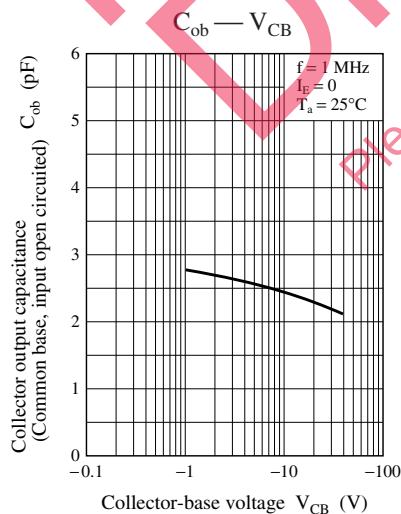
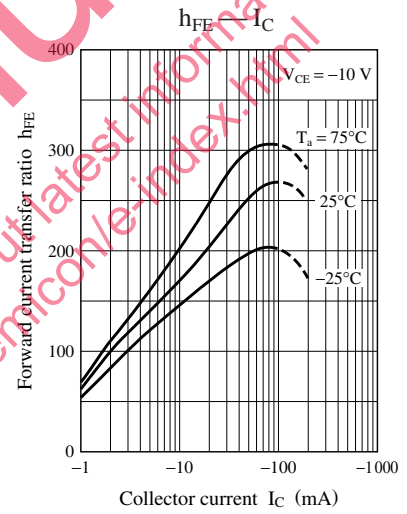
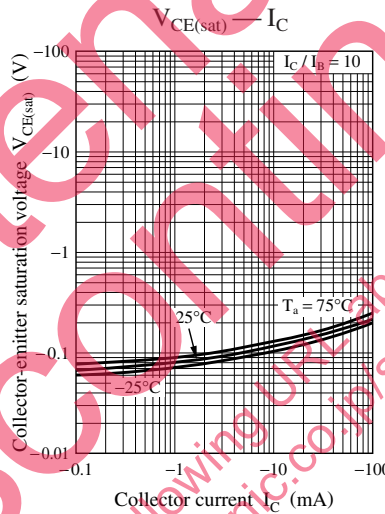
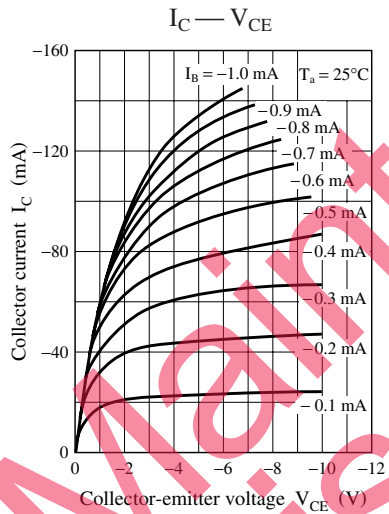


Characteristics charts of UNR1112

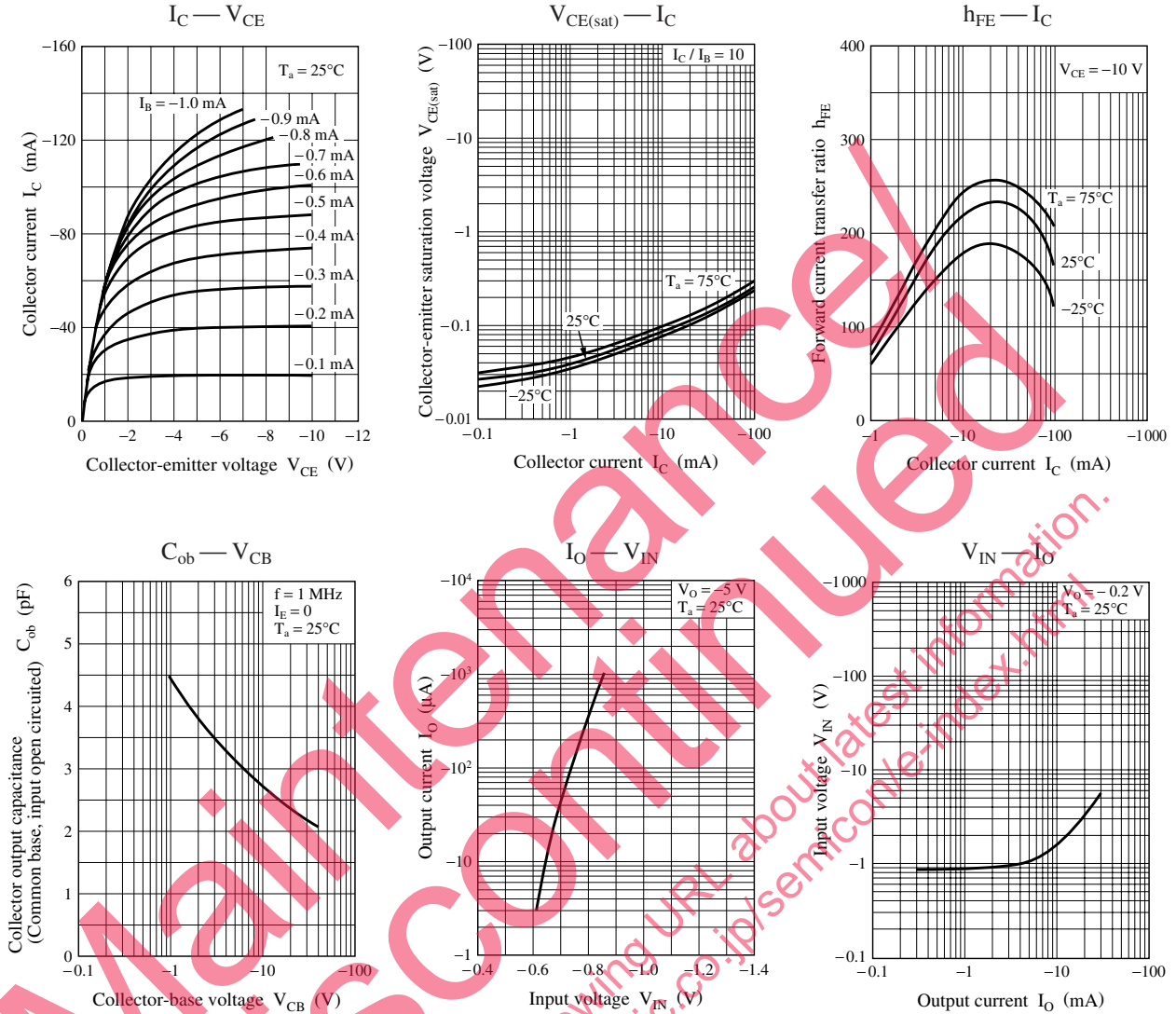




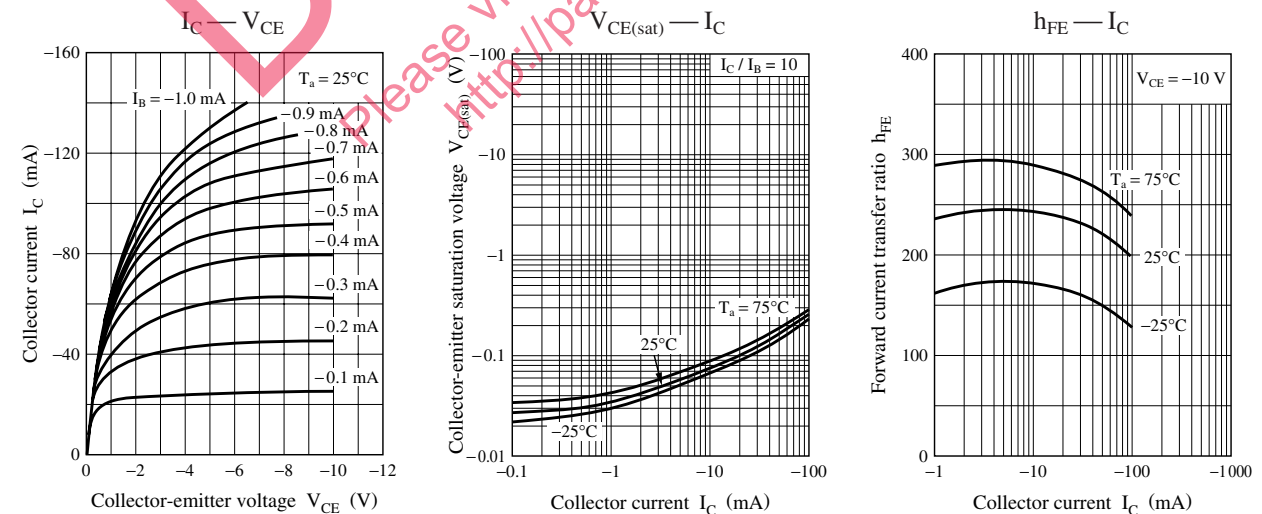
Characteristics charts of UNR1113

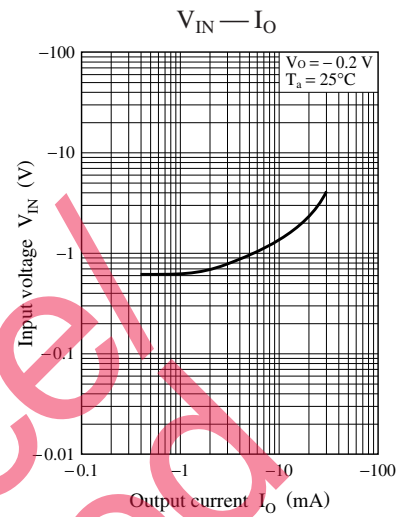
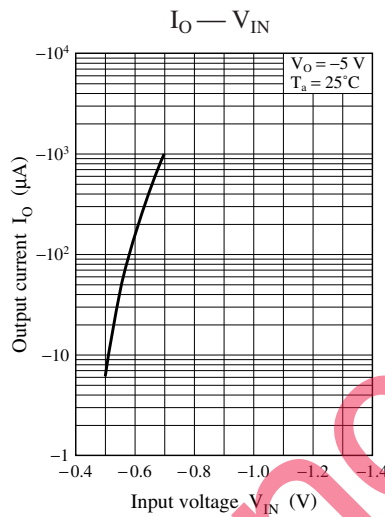
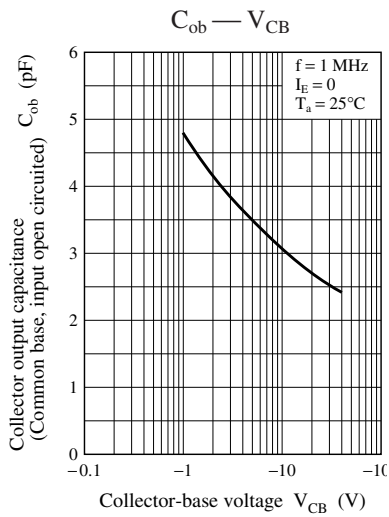


Characteristics charts of UNR1114

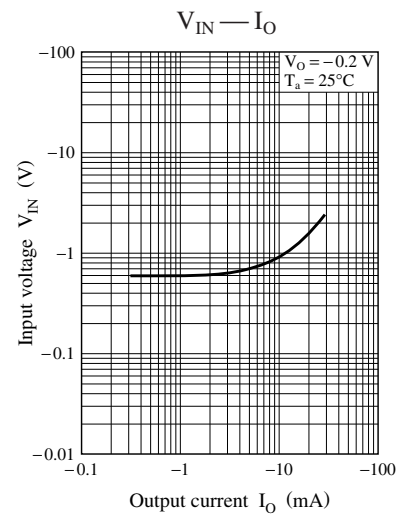
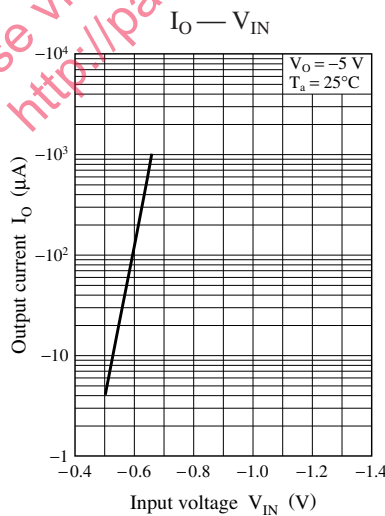
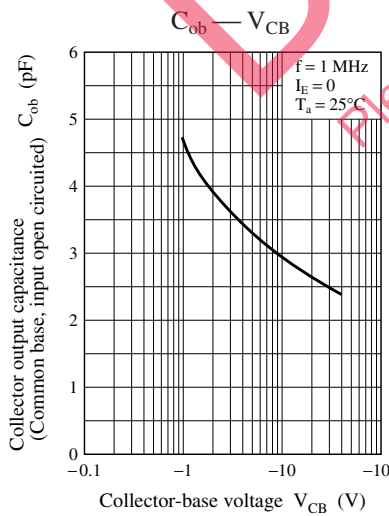
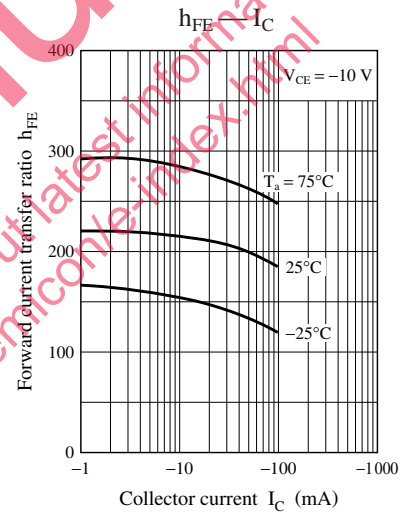
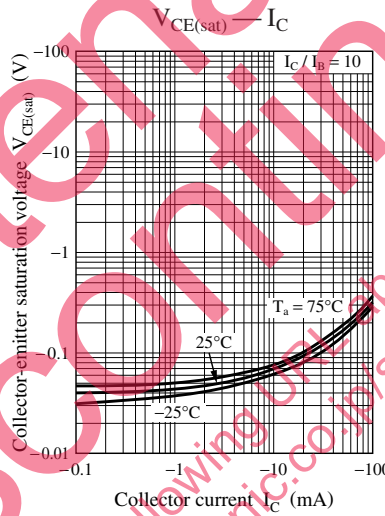
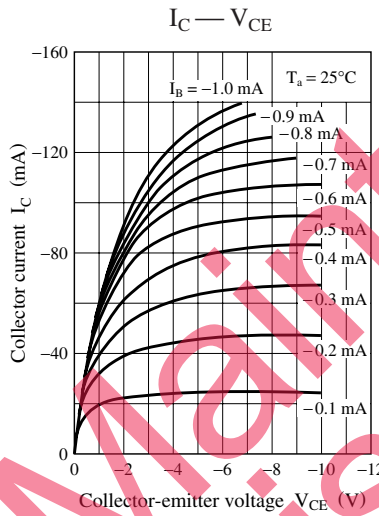


Characteristics charts of UNR1115

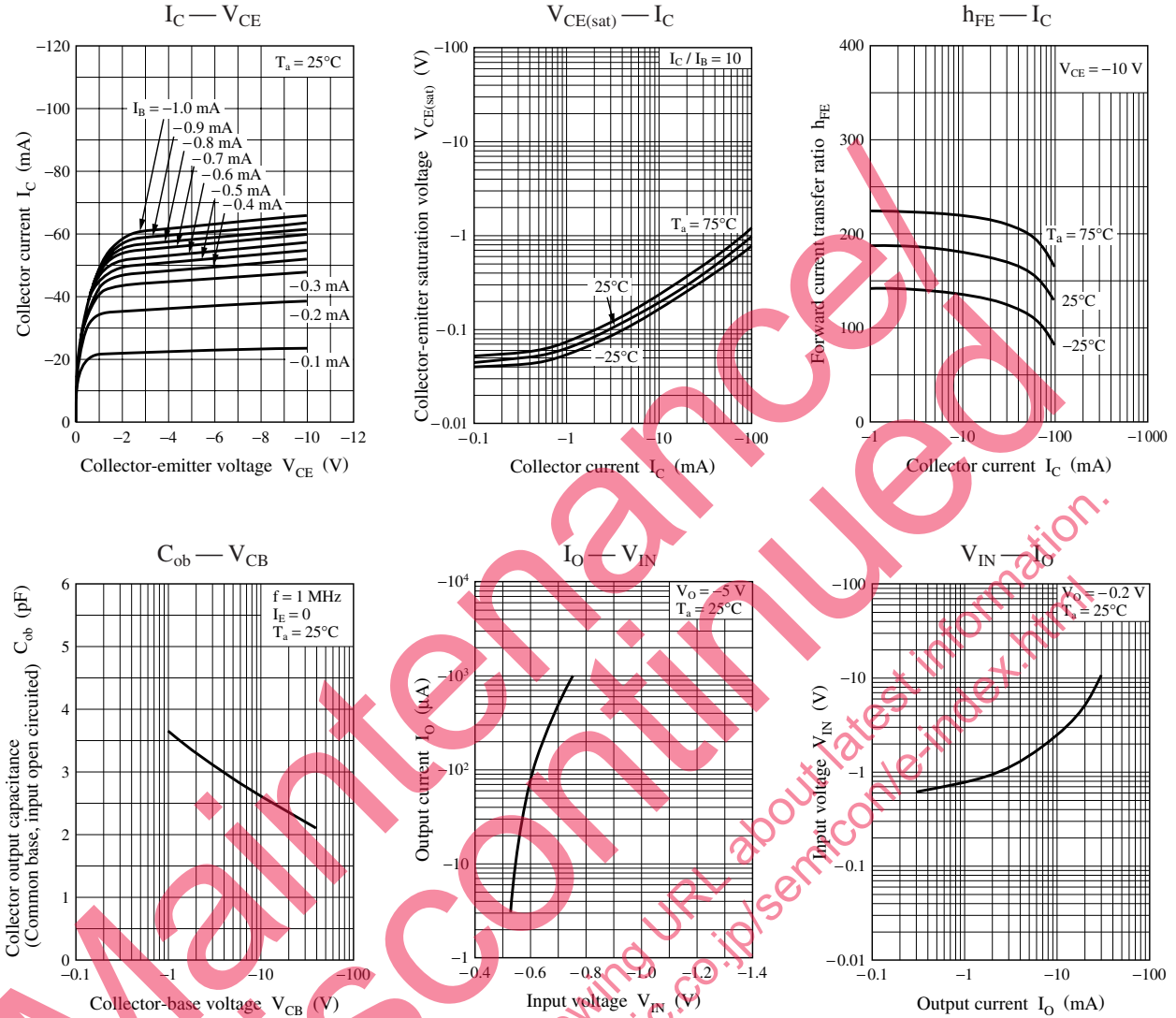




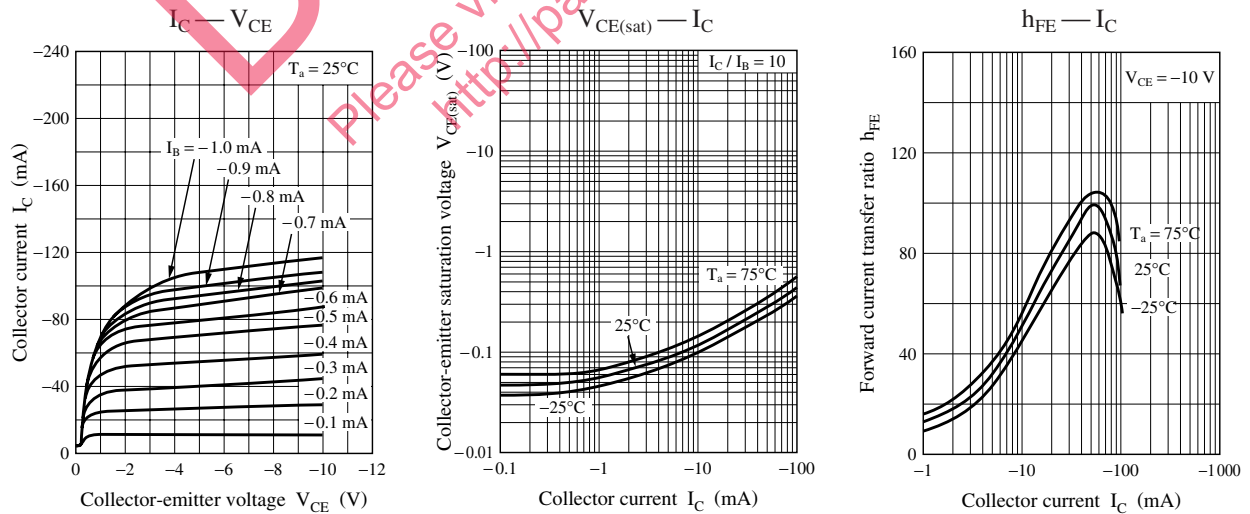
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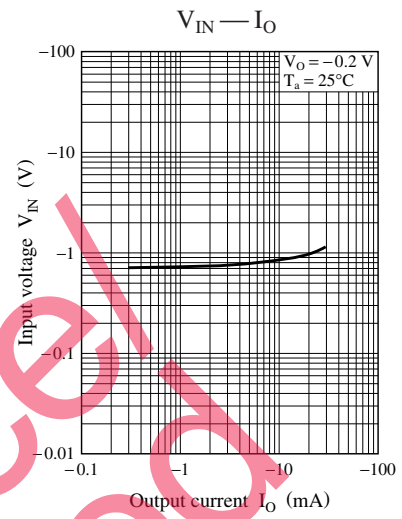
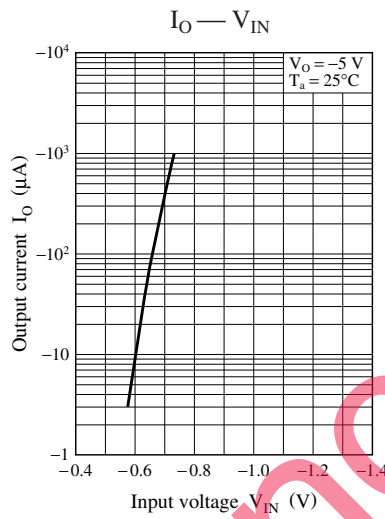
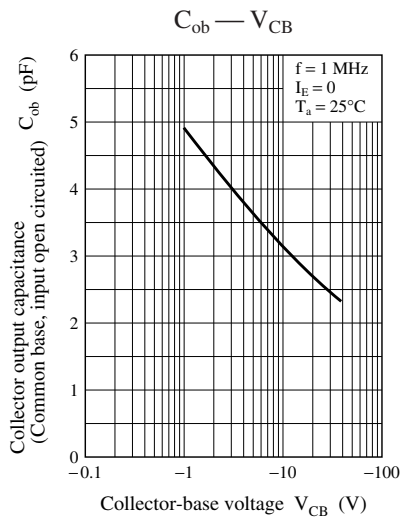


Characteristics charts of UNR1117

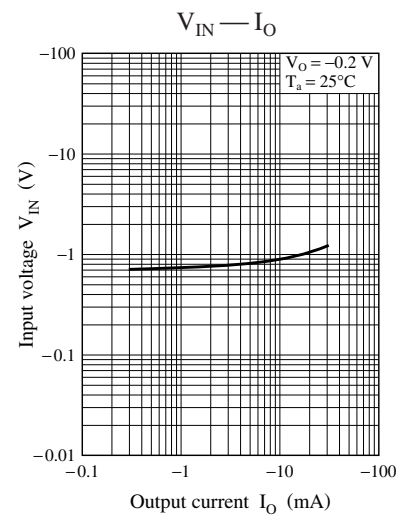
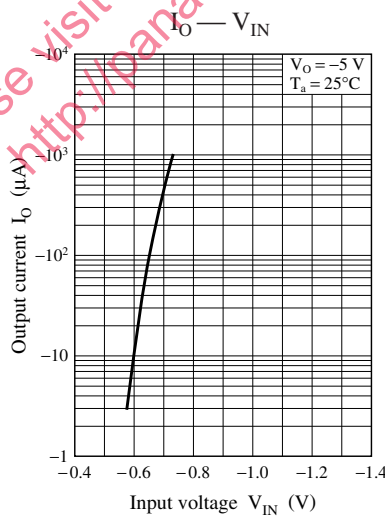
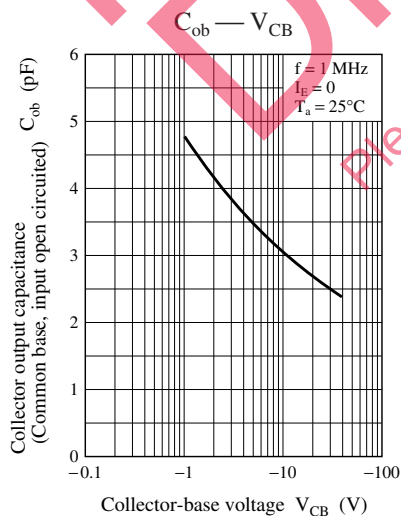
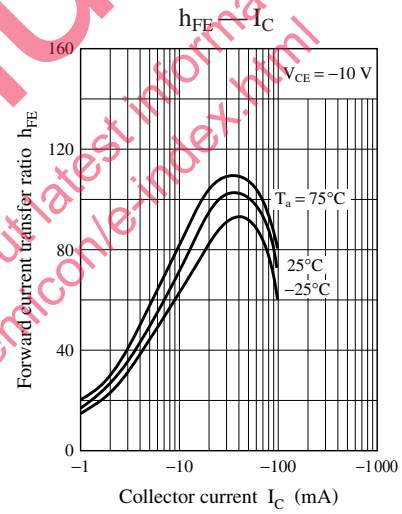
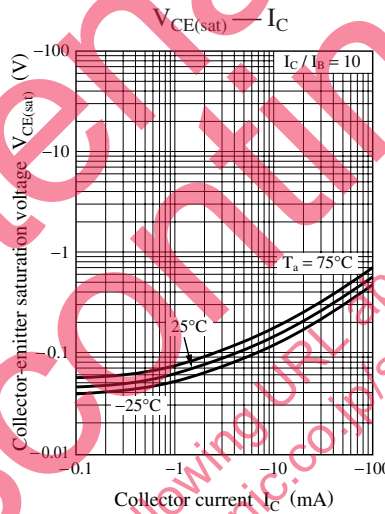
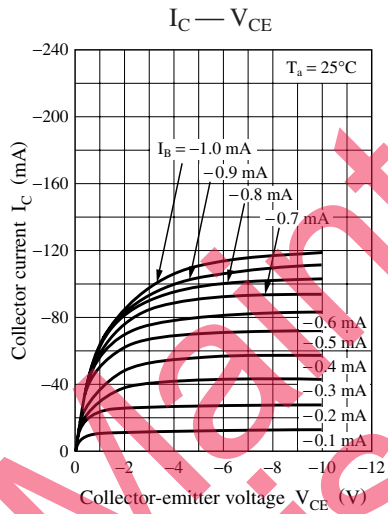


Characteristics charts of UNR1118

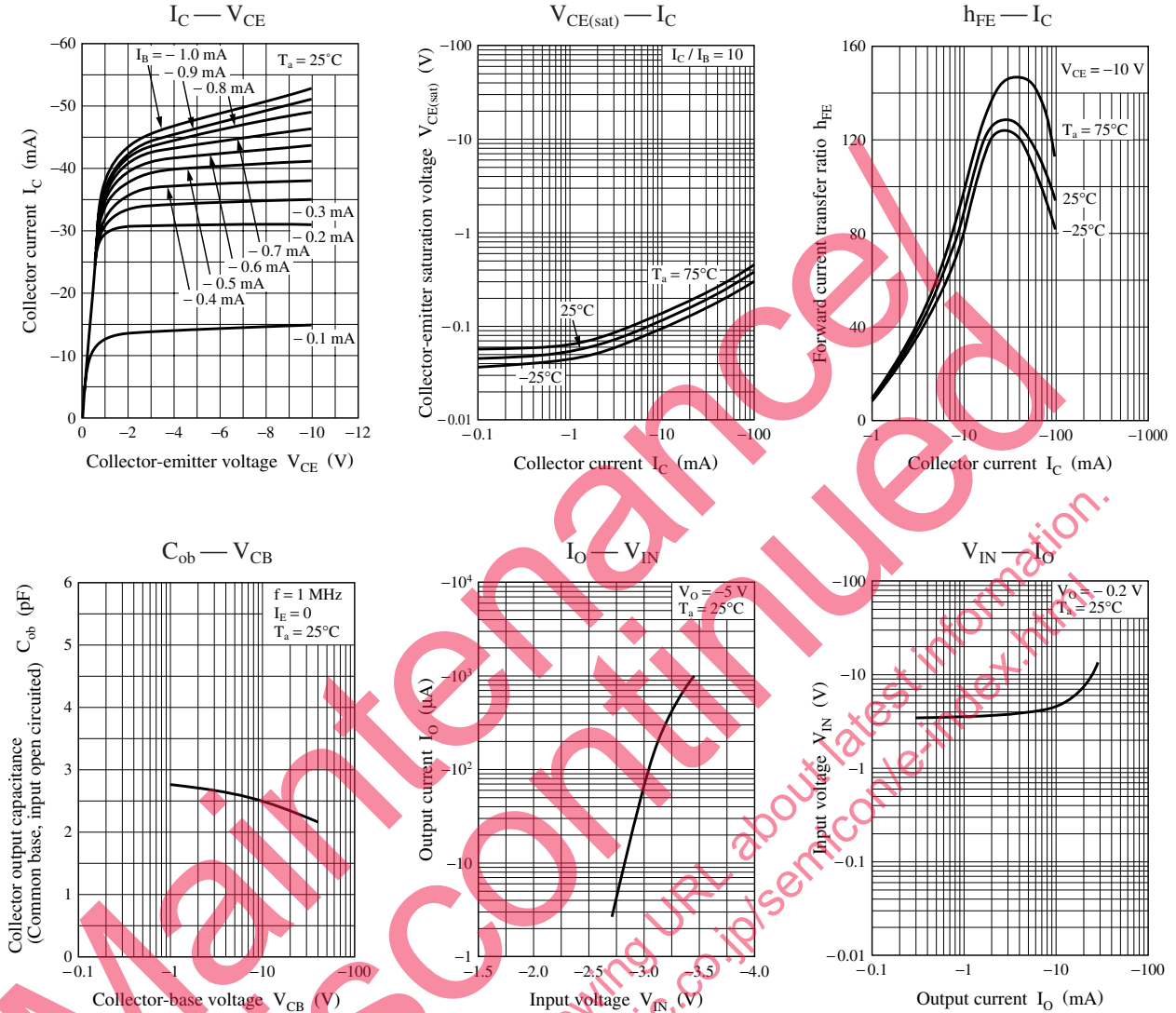




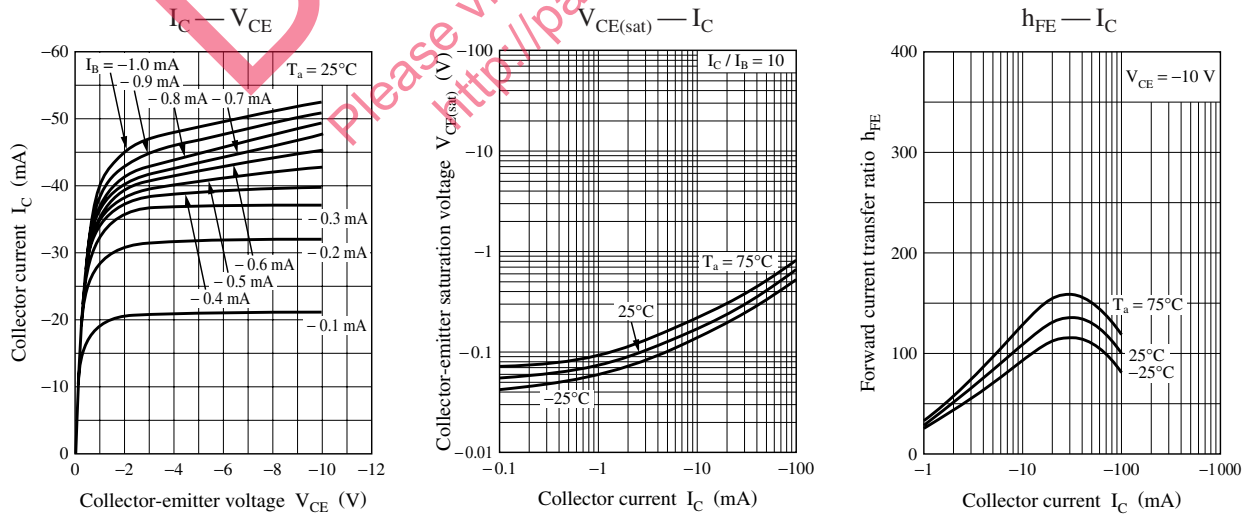
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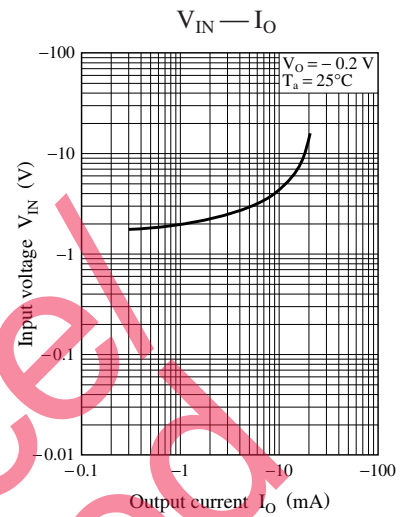
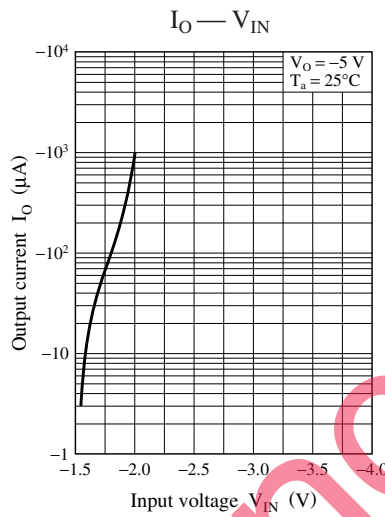
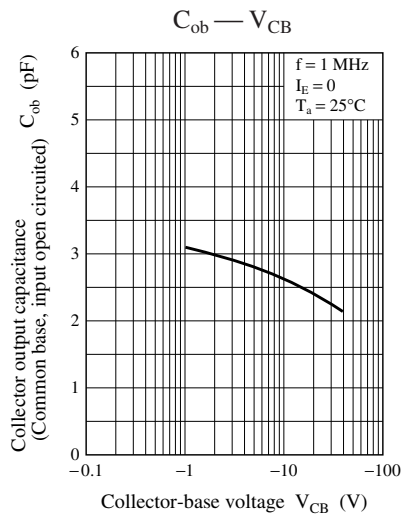


Characteristics charts of UNR111D

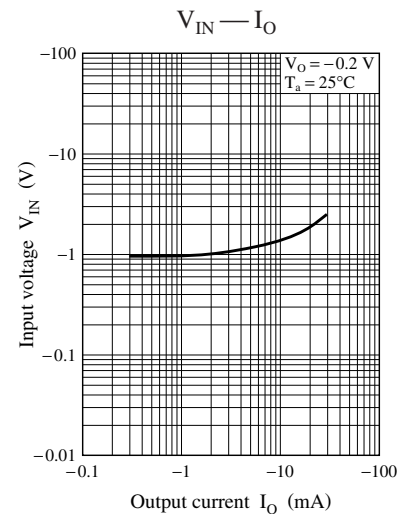
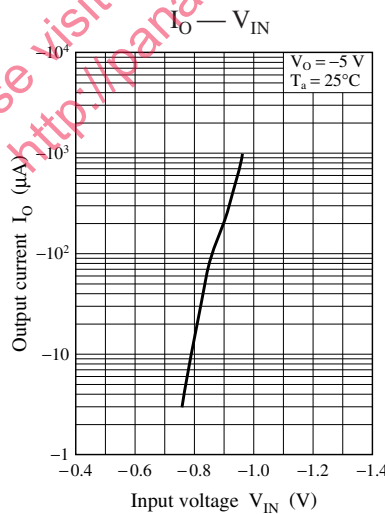
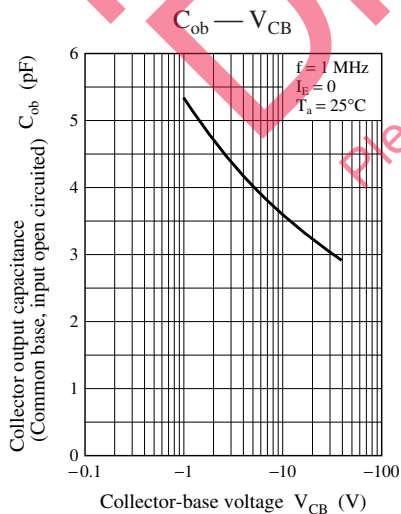
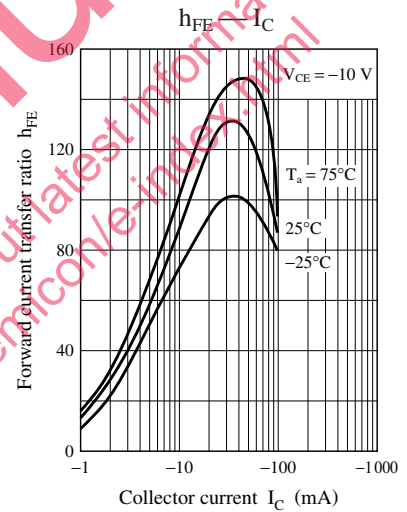
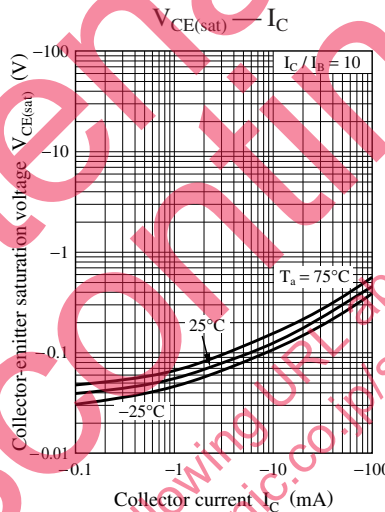
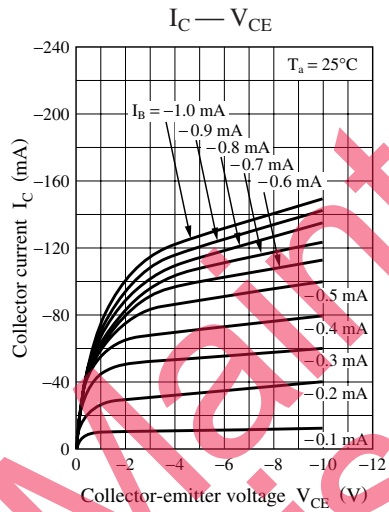


Characteristics charts of UNR111E

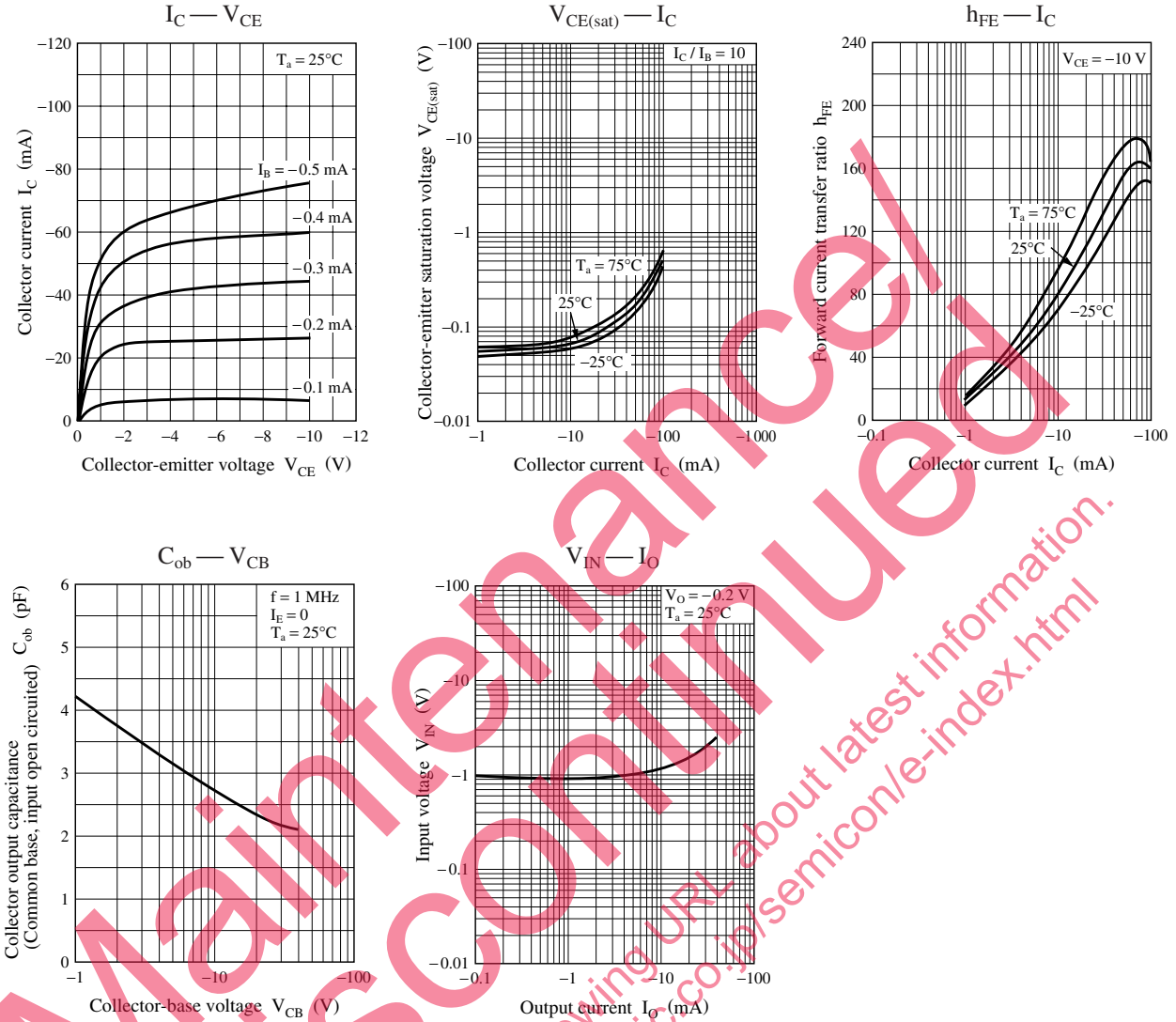




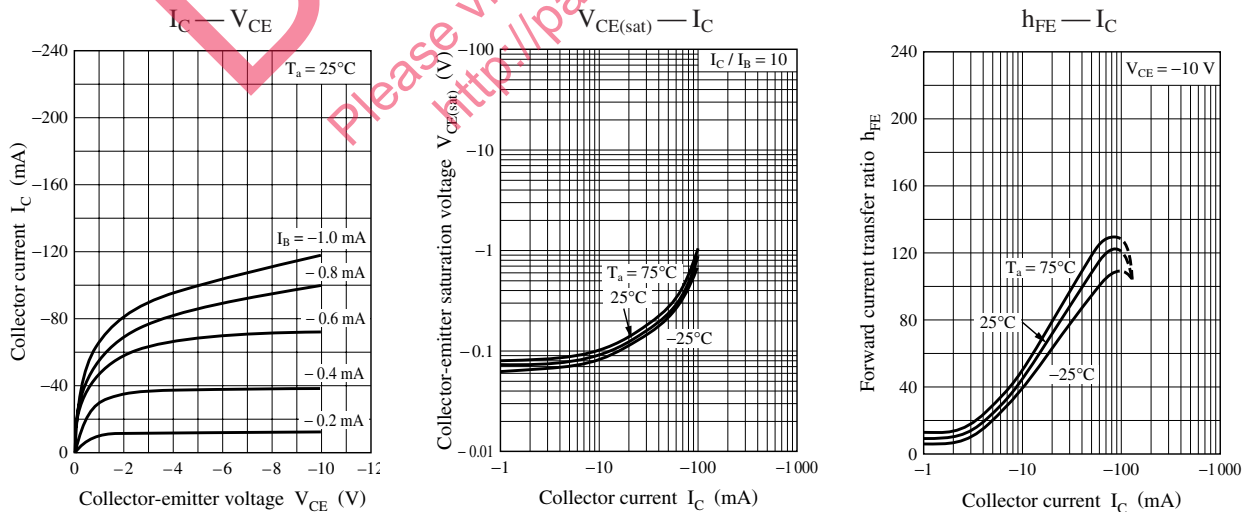
Characteristics charts of UNR111F

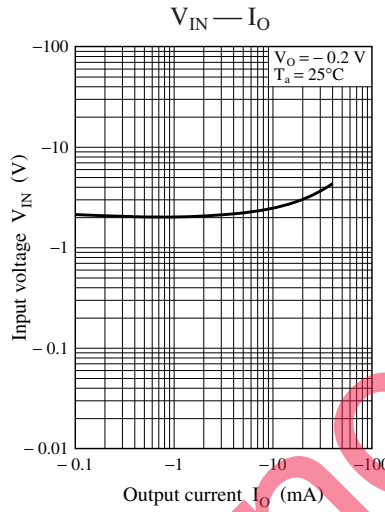
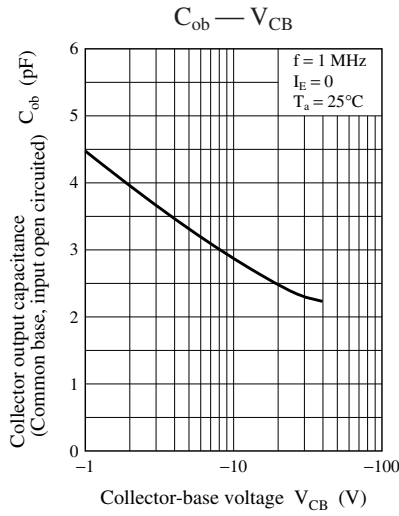


Characteristics charts of UNR111H



Characteristics charts of UNR111L





Maintenance Discontinued
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