

UNRL110/111/113/114/115

Silicon PNP epitaxial planer type

For digital circuit

■ Features

- Mold leadless type package, allowing downsizing and thinning of the equipment and automatic insertion through the tape packing.
- The PCB mounting area is 1/10 of that of lead type package (3-pin MINI-type package).

■ Resistance by Part Number

| | Marking Symbol | (R ₁) | (R ₂) |
|-----------|----------------|-------------------|-------------------|
| • UNRL110 | P | 47 kΩ | — |
| • UNRL111 | A | 10 kΩ | 10 kΩ |
| • UNRL113 | B | 47 kΩ | 47 kΩ |
| • UNRL114 | R | 10 kΩ | 47 kΩ |
| • UNRL115 | M | 10 kΩ | — |

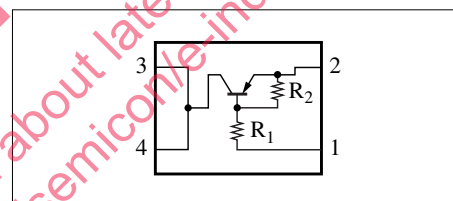


■ Absolute Maximum Ratings T_a = 25°C

| Parameter | Symbol | Rating | 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 | 125 | °C |
| Storage temperature | T _{stg} | -55 to +125 | °C |

Note) *: Printed circuit board copper foil for collector portion area: 20.0 mm² or more, thickness: 1.6 mm

Internal Connection



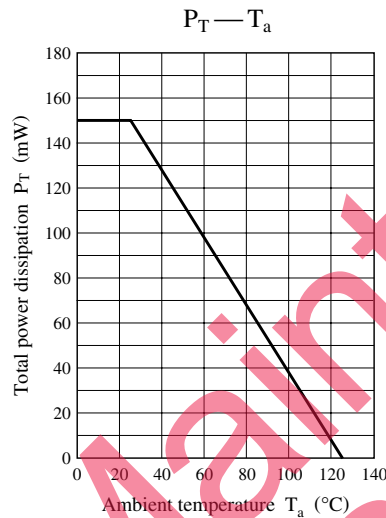
■ Electrical Characteristics T_a = 25°C ± 3°C

| Parameter | Symbol | Conditions | Min | Typ | Max | Unit |
|---|--|---|-----|-----|-------|------|
| Collector cutoff current | I _{CBO} | V _{CB} = -50 V, I _E = 0 | | | -0.1 | μA |
| | I _{CEO} | V _{CE} = -50 V, I _B = 0 | | | -0.5 | |
| Emitter cutoff current | UNRL111 UNRL114 UNRL113 UNRL110/115 | I _{EBO} V _{EB} = -6 V, I _C = 0 | | | -0.5 | mA |
| | | | | | -0.2 | |
| | | | | | -0.1 | |
| | | | | | -0.01 | |
| Collector to base voltage | V _{CBO} | I _C = -10 μA, I _E = 0 | -50 | | | V |
| Collector to emitter voltage | V _{CEO} | I _C = -2 mA, I _B = 0 | -50 | | | V |
| Forward current transfer ratio | UNRL111 | h _{FE} V _{CE} = -10 V, I _C = -5 mA | 35 | | | |
| | UNRL113/114 | | 80 | | | |
| | UNRL110/115 | | 160 | 460 | | |
| Collector to emitter saturation voltage | V _{CE(sat)} | I _C = -10 mA, I _B = -0.3 mA | | | -0.25 | V |

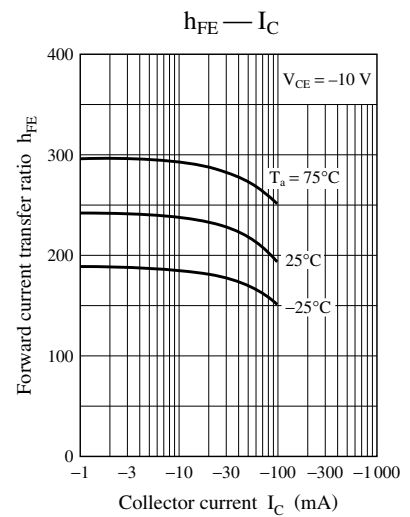
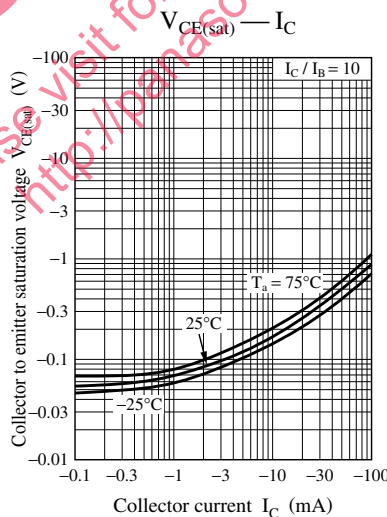
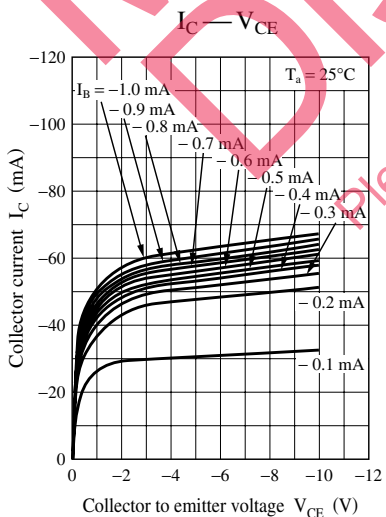
■ Electrical Characteristics(continued) $T_a = 25^\circ\text{C} \pm 3^\circ\text{C}$

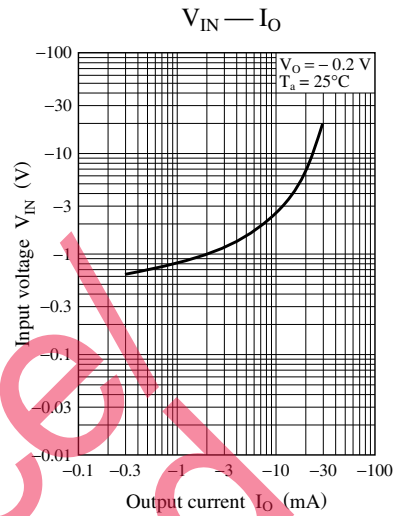
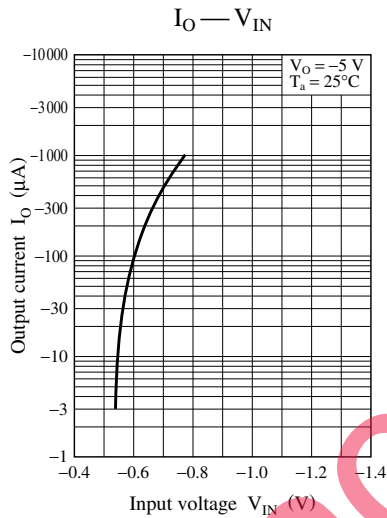
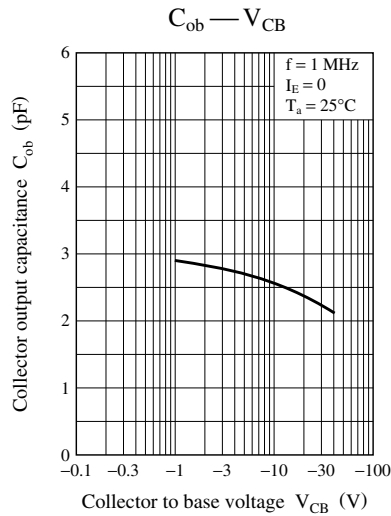
| Parameter | Symbol | Conditions | Min | Typ | Max | Unit | |
|---------------------------|-----------------|---|------|------|------|------|------------|
| High-level output voltage | V_{OH} | $V_{CC} = -5\text{ V}, V_B = -0.5\text{ V}, R_L = 1\text{ k}\Omega$ | -4.9 | | | V | |
| Low-level output voltage | V_{OL} | $V_{CC} = -5\text{ V}, V_B = -2.5\text{ V}, R_L = 1\text{ k}\Omega$ | | | -0.2 | V | |
| | | $V_{CC} = -5\text{ V}, V_B = -3.5\text{ V}, R_L = 1\text{ k}\Omega$ | | | | | |
| Transition frequency | f_T | $V_{CB} = -10\text{ V}, I_E = 1\text{ mA}, f = 200\text{ MHz}$ | | 80 | | MHz | |
| Input resistance | UNRL111/114/115 | R_1 | | -30% | 10 | +30% | k Ω |
| | UNRL110/113 | | | 47 | | | |
| Resistance ratio | UNRL111/113 | R_1/R_2 | | 0.8 | 1.0 | 1.2 | |
| | UNRL114 | | | 0.17 | 0.21 | 0.25 | |

Common characteristics chart

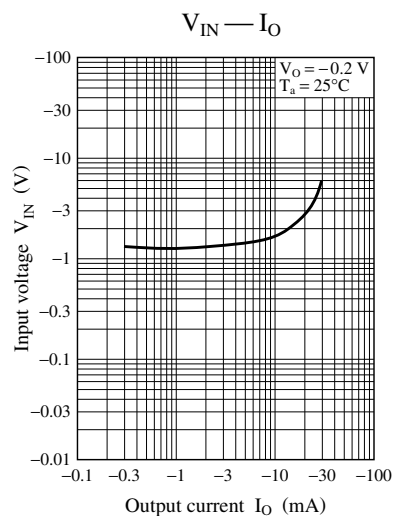
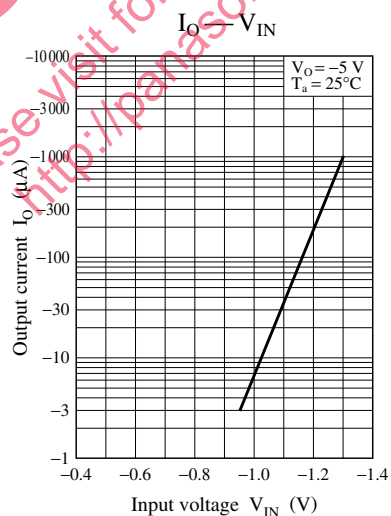
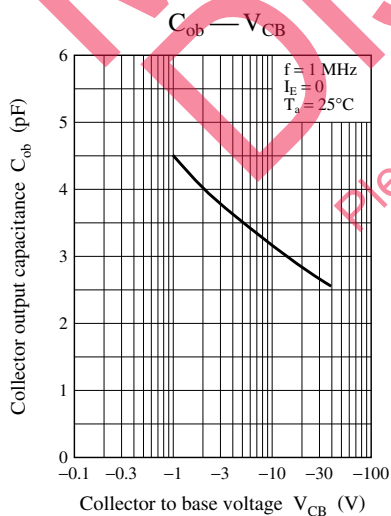
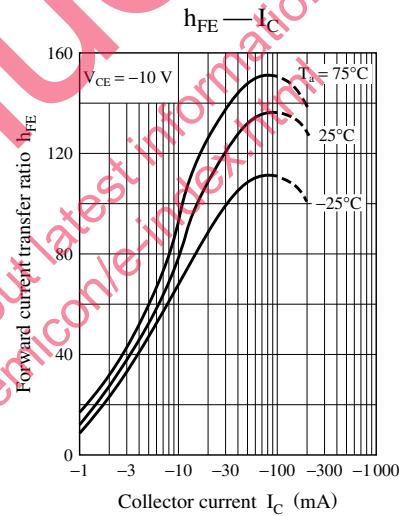
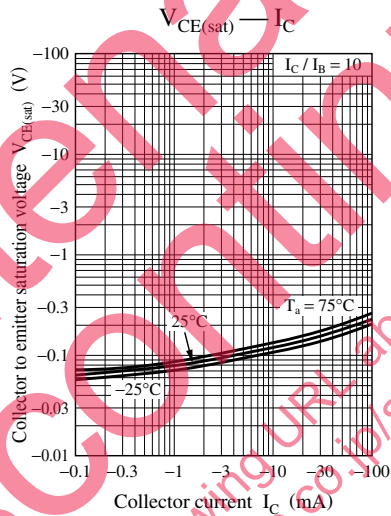
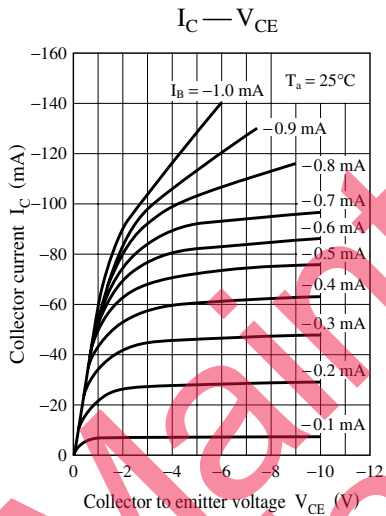


Characteristics charts of UNRL110

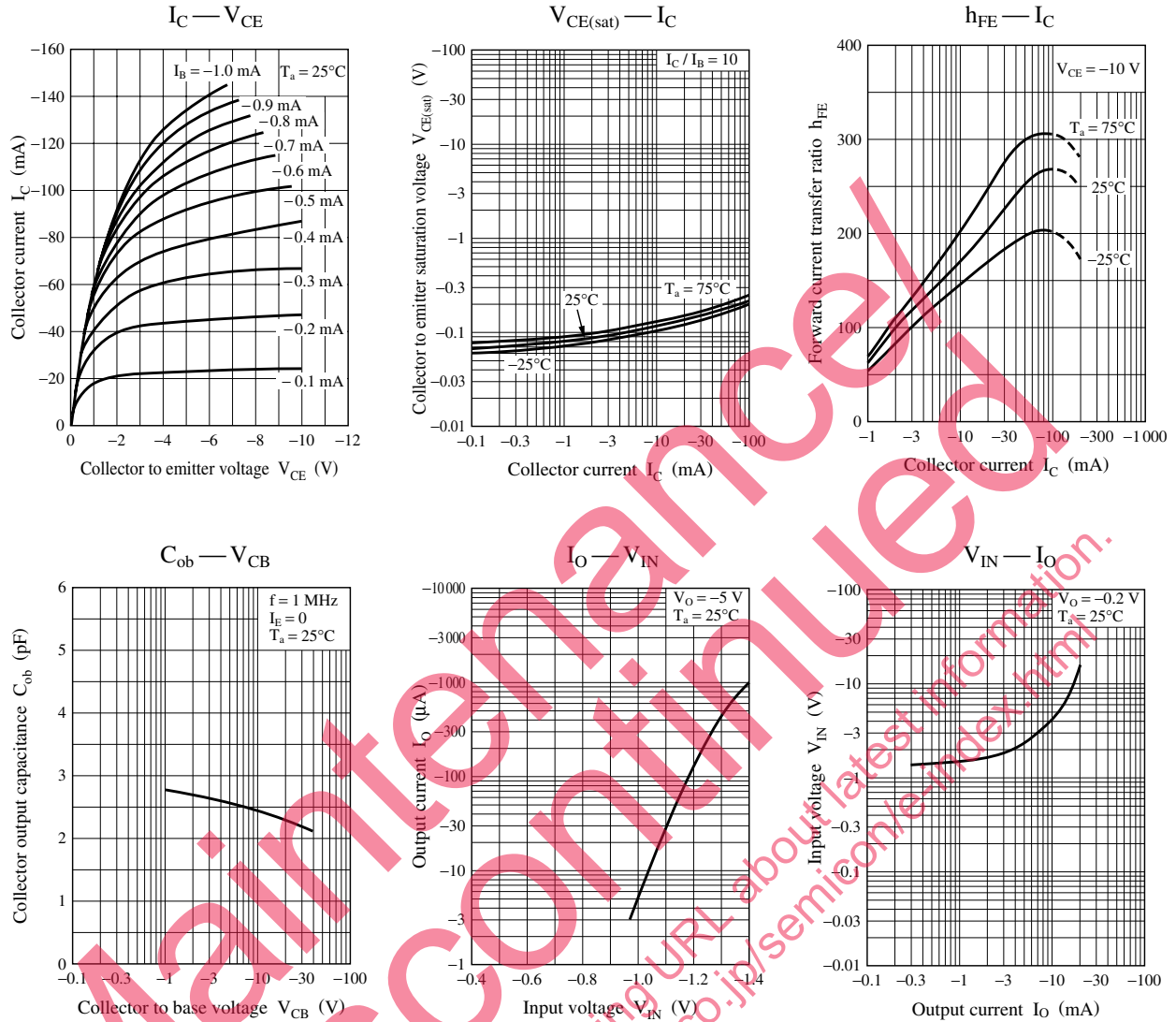




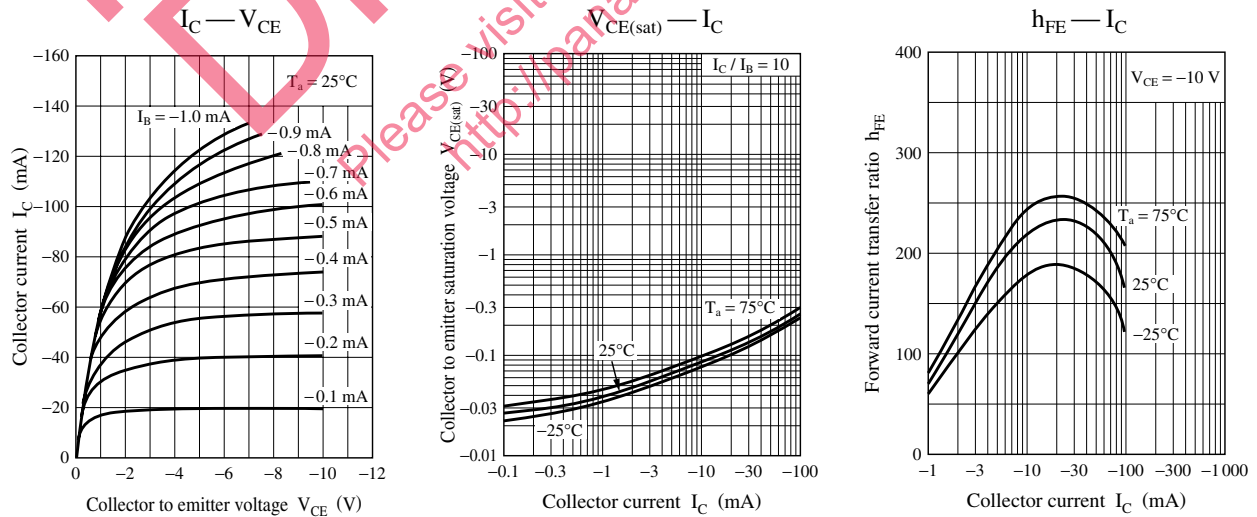
Characteristics charts of UNRL111

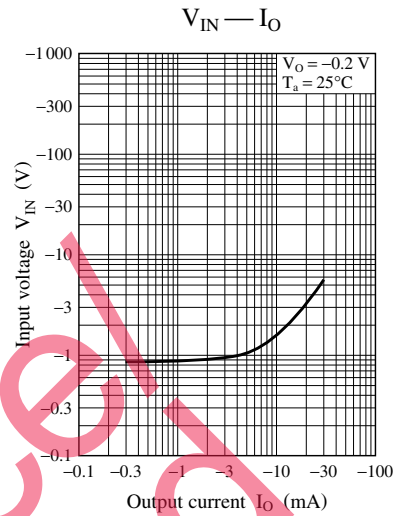
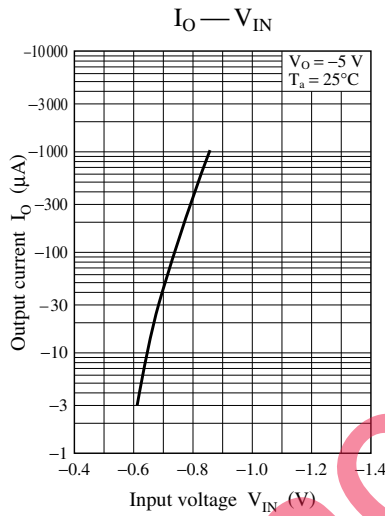
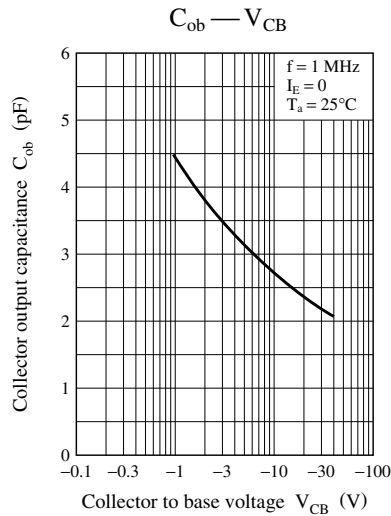


Characteristics charts of UNRL113

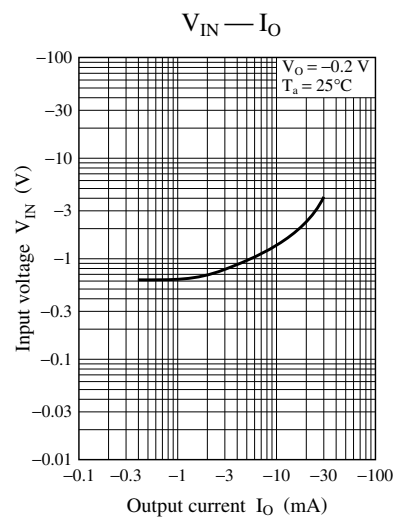
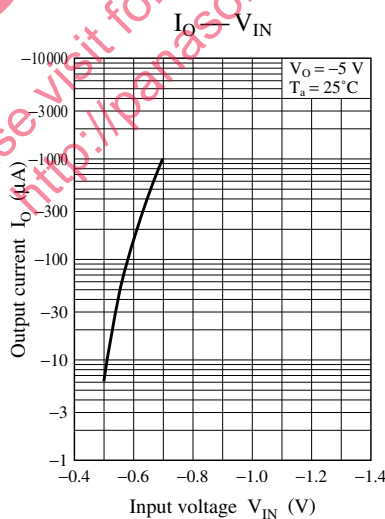
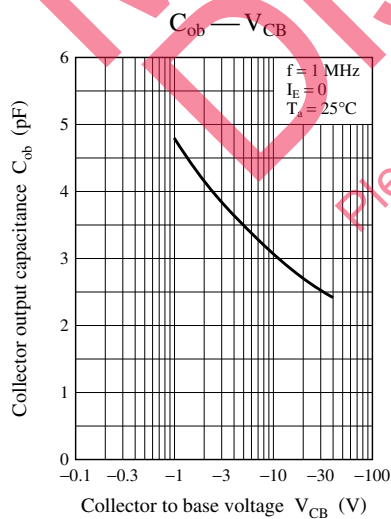
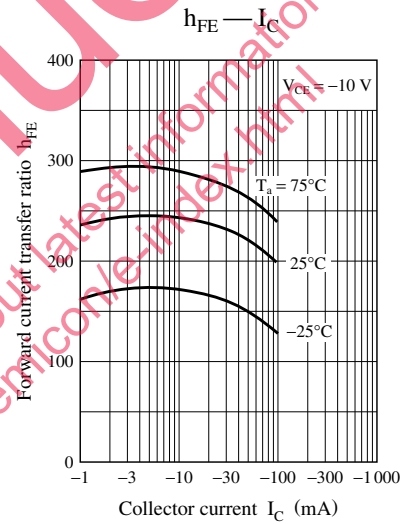
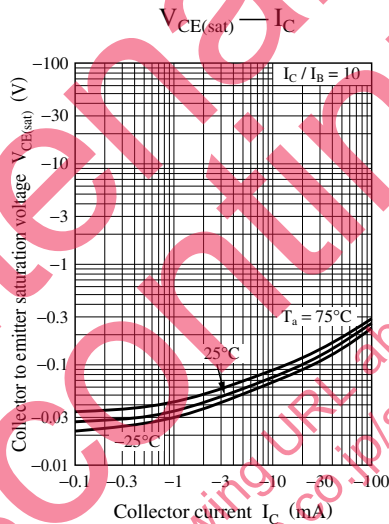
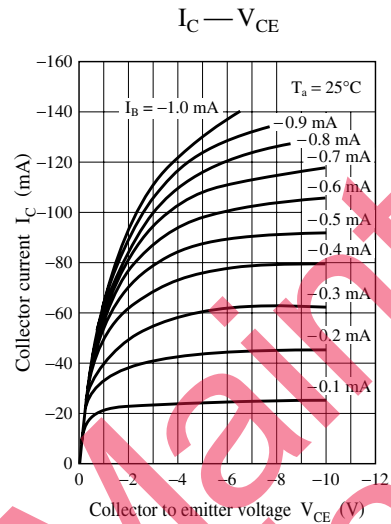


Characteristics charts of UNRL114





Characteristics charts of UNRL115



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