

# UNRF1AN

## Silicon PNP epitaxial planar transistor

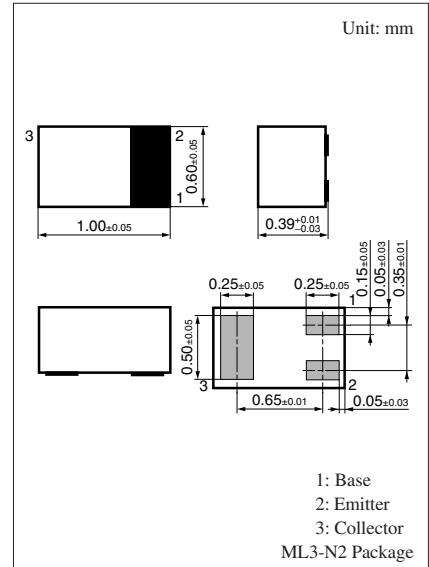
For digital circuits

### ■ Features

- Suitable for high-density mounting and downsizing of the equipment for Ultraminiature leadless package  
0.6 mm × 1.0 mm (height 0.39 mm)

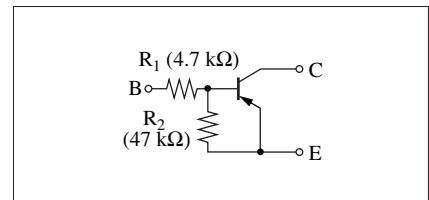
### ■ Absolute Maximum Ratings $T_a = 25^\circ\text{C}$

| Parameter                             | Symbol    | Rating      | Unit             |
|---------------------------------------|-----------|-------------|------------------|
| Collector-base voltage (Emitter open) | $V_{CBO}$ | -50         | V                |
| Collector-emitter voltage (Base open) | $V_{CEO}$ | -50         | V                |
| Collector current                     | $I_C$     | -80         | mA               |
| Total power dissipation               | $P_T$     | 100         | mW               |
| Junction temperature                  | $T_j$     | 125         | $^\circ\text{C}$ |
| Storage temperature                   | $T_{stg}$ | -55 to +125 | $^\circ\text{C}$ |



Marking Symbol: 3K

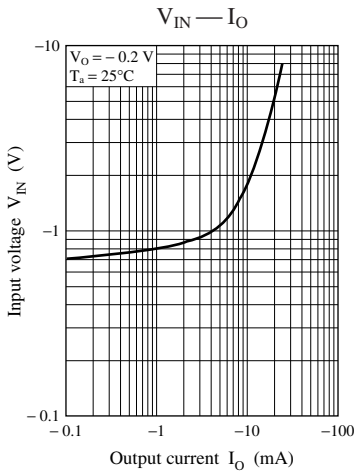
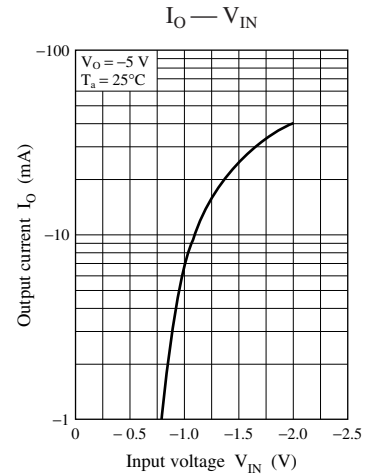
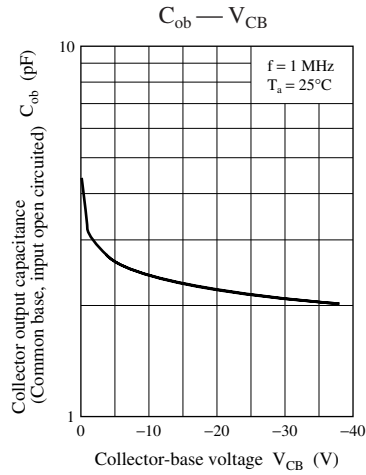
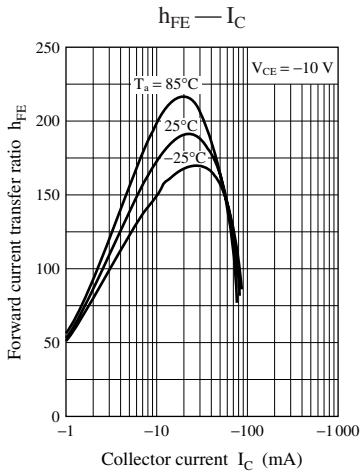
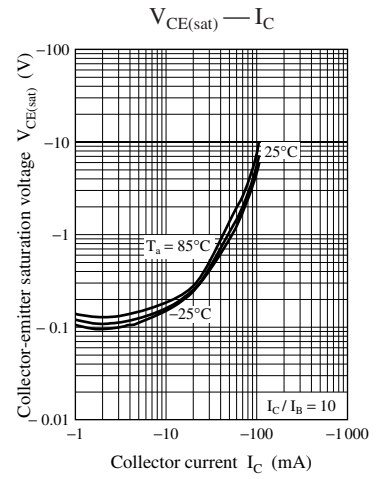
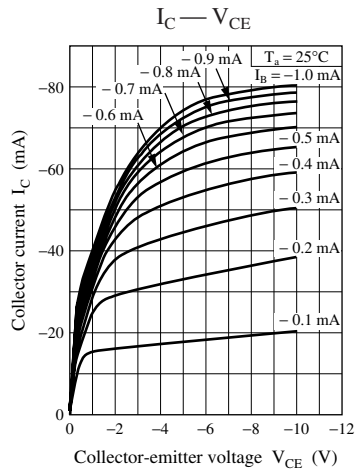
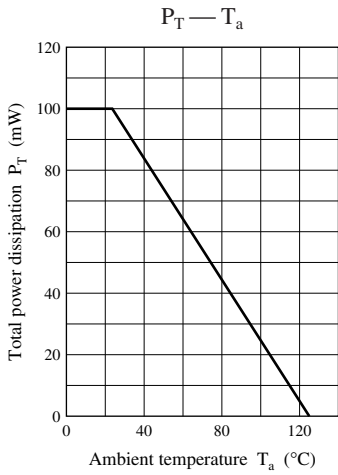
Internal Connection



### ■ 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  | $\mu\text{A}$    |
| Collector-emitter cutoff current (Base open) | $I_{CEO}$     | $V_{CE} = -50 \text{ V}, I_B = 0$                                      |      |     | -0.5  | $\mu\text{A}$    |
| Emitter-base cutoff current (Collector open) | $I_{EBO}$     | $V_{EB} = -6 \text{ V}, I_C = 0$                                       |      |     | -0.2  | mA               |
| Forward current transfer ratio               | $h_{FE}$      | $V_{CE} = -10 \text{ V}, I_C = -5 \text{ mA}$                          | 80   |     | 400   | —                |
| 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                |
| Input resistance                             | $R_1$         |  | -30% | 4.7 | +30%  | $\text{k}\Omega$ |
| Resistance ratio                             | $R_1 / R_2$   |  |      | 0.1 |       | —                |
| Transition frequency                         | $f_T$         | $V_{CB} = -10 \text{ V}, I_E = 1 \text{ mA}, f = 200 \text{ MHz}$      |      | 80  |       | MHz              |

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



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