

# UNRF2A3

## Silicon NPN epitaxial planar transistor

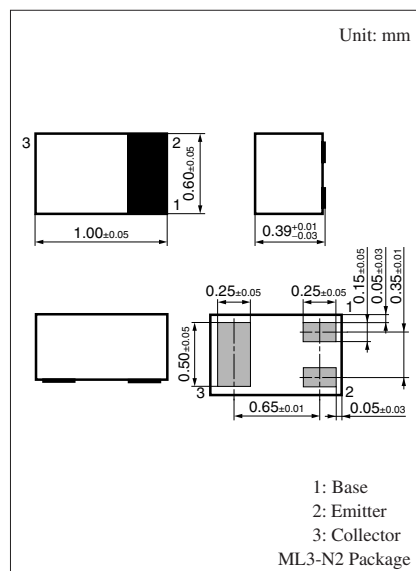
For digital circuits

### ■ Features

- Reduction of assembly cost and package size with 1006 type mold leadless package is possible
- Maximum package height (0.4 mm) contributes to develop thinner equipments

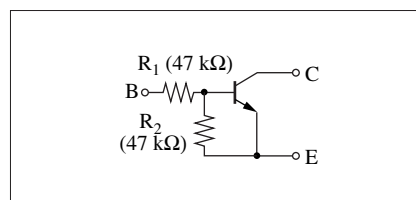
### ■ Absolute Maximum Ratings $T_a = 25^\circ\text{C}$

| 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: 1W

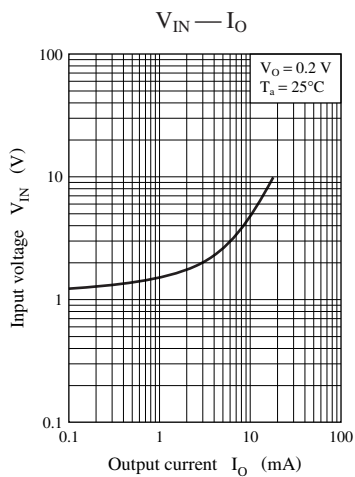
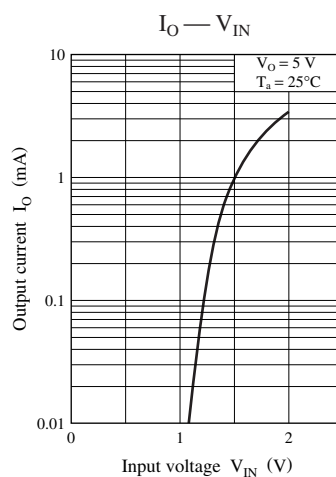
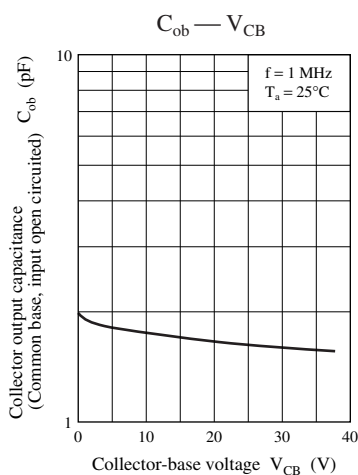
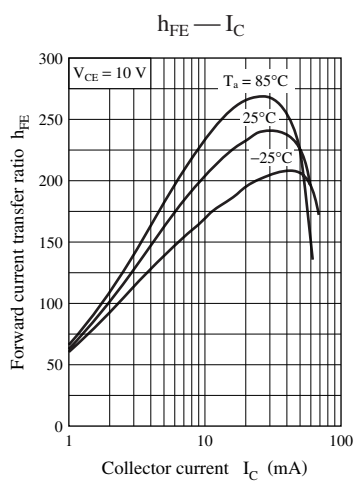
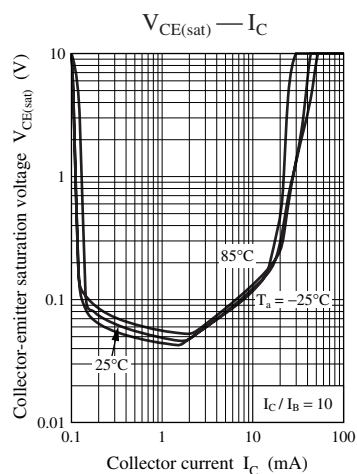
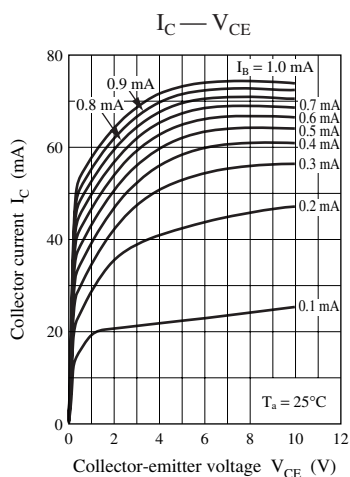
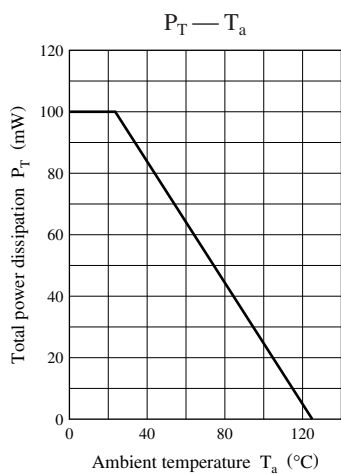
Internal Connection



### ■ 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) | $I_{EBO}$     | $V_{EB} = 6 \text{ V}$ , $I_C = 0$                                         |      |     | 0.1  | mA               |
| Forward current transfer ratio               | $h_{FE}$      | $V_{CE} = 10 \text{ V}$ , $I_C = 5 \text{ mA}$                             | 80   |     |      | —                |
| 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                     | $V_{OL}$      | $V_{CC} = 5 \text{ V}$ , $V_B = 3.5 \text{ V}$ , $R_L = 1 \text{ k}\Omega$ |      |     | 0.2  | V                |
| Input resistance                             | $R_1$         |                                                                            | -30% | 47  | +30% | $\text{k}\Omega$ |
| Resistance ratio                             | $R_1 / R_2$   |                                                                            | 0.8  | 1.0 | 1.2  | —                |
| Transition frequency                         | $f_T$         | $V_{CB} = 10 \text{ V}$ , $I_E = -2 \text{ mA}$ , $f = 200 \text{ MHz}$    |      | 150 |      | MHz              |

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



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