

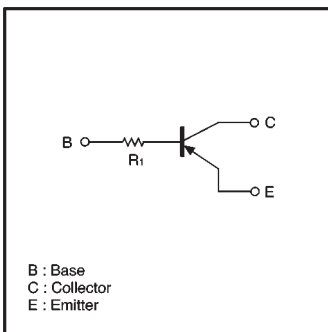
# Digital transistors (built in resistor)

## DTA124TE / DTA124TUA / DTA124TKA / DTA124TSA

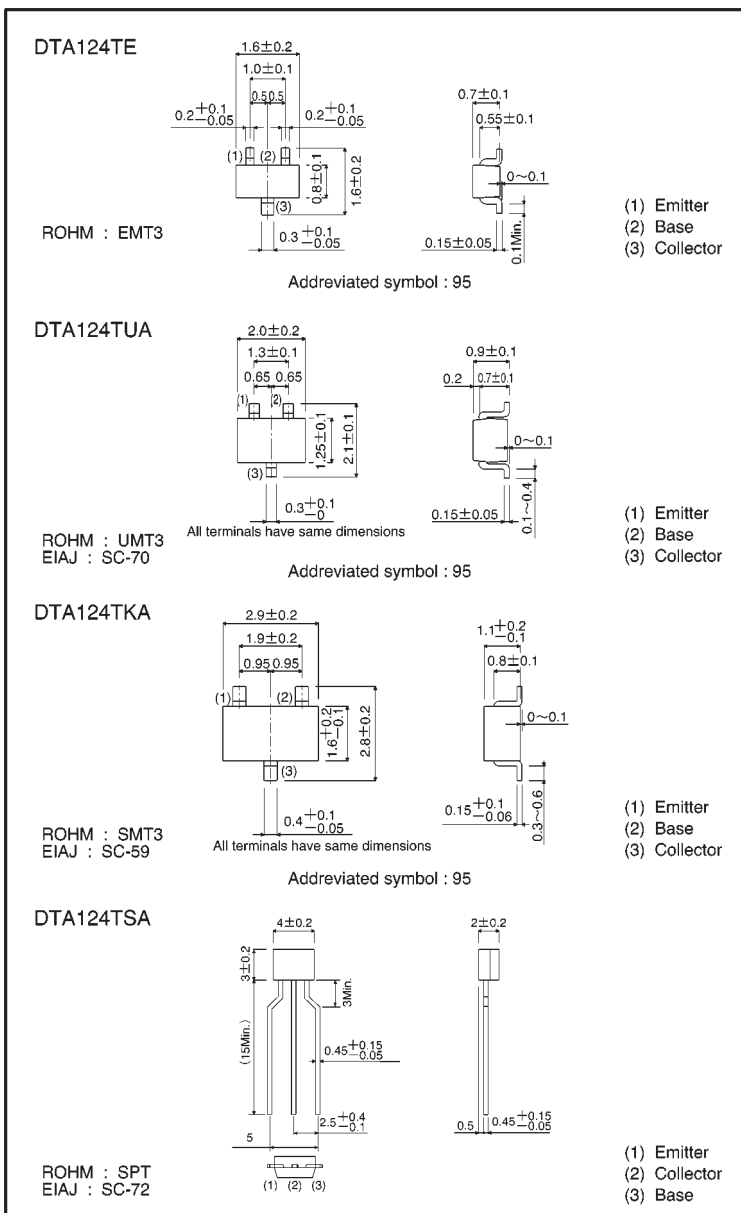
●Features

- 1) Built-in circuit enables the configuration of an inverter circuit without connecting external input resistors (see equivalent circuit).
- 2) The bias resistors consist of thin-film resistors with complete isolation to allow positive biasing of the input. They also have the advantage of almost completely eliminating parasitic effects.
- 3) Only the on/off conditions need to be set for operation, making device design easy.

●Equivalent circuit



●External dimensions (Units: mm)



## ● Absolute maximum ratings (Ta = 25°C)

| Parameter                   | Symbol           | Limits(DTA124T□) |     |     |    | Unit |
|-----------------------------|------------------|------------------|-----|-----|----|------|
|                             |                  | E                | UA  | KA  | SA |      |
| Collector-base voltage      | V <sub>CB0</sub> | -50              |     |     |    | V    |
| Collector-emitter voltage   | V <sub>CEO</sub> | -50              |     |     |    | V    |
| Emitter-base voltage        | V <sub>EB0</sub> | -5               |     |     |    | V    |
| Collector current           | I <sub>c</sub>   | -100             |     |     |    | mA   |
| Collector power dissipation | P <sub>c</sub>   | 150              | 200 | 300 |    | mW   |
| Junction temperature        | T <sub>j</sub>   | 150              |     |     |    | °C   |
| Storage temperature         | T <sub>stg</sub> | -55~+150         |     |     |    | °C   |

## ● Electrical characteristics (Ta = 25°C)

| Parameter                            | Symbol               | Min. | Typ. | Max. | Unit | Conditions                                                 |
|--------------------------------------|----------------------|------|------|------|------|------------------------------------------------------------|
| Collector-base breakdown voltage     | BV <sub>CB0</sub>    | -50  | —    | —    | V    | I <sub>c</sub> = -50 μA                                    |
| Collector-emitter breakdown voltage  | BV <sub>CEO</sub>    | -50  | —    | —    | V    | I <sub>c</sub> = -1mA                                      |
| Emitter-base breakdown voltage       | BV <sub>EB0</sub>    | -5   | —    | —    | V    | I <sub>E</sub> = -50 μA                                    |
| Collector cutoff current             | I <sub>CB0</sub>     | —    | —    | -0.5 | μA   | V <sub>CB</sub> = -50V                                     |
| Emitter cutoff current               | I <sub>EB0</sub>     | —    | —    | -0.5 | μA   | V <sub>EB</sub> = -4V                                      |
| Collector-emitter saturation voltage | V <sub>CE(sat)</sub> | —    | —    | -0.3 | V    | I <sub>c</sub> /I <sub>b</sub> = -5mA/-0.5mA               |
| DC current transfer ratio            | h <sub>FE</sub>      | 100  | 250  | 600  | —    | V <sub>CE</sub> = -5V, I <sub>c</sub> = -1mA               |
| Input resistance                     | R <sub>i</sub>       | 15.4 | 22   | 28.6 | kΩ   | —                                                          |
| Transition frequency                 | f <sub>r</sub>       | —    | 250  | —    | MHz  | V <sub>CE</sub> = -10V, I <sub>E</sub> = 5mA, f = 100MHz * |

\* Transition frequency of the device

## ● Packaging specifications

| Part No.  | Package                      | EMT3   | UMT3   | SMT3   | SPT    |
|-----------|------------------------------|--------|--------|--------|--------|
|           | Package type                 | Taping | Taping | Taping | Taping |
|           | Code                         | TL     | T106   | T146   | TP     |
|           | Basic ordering unit (pieces) | 3000   | 3000   | 3000   | 5000   |
| DTA124TE  | ○                            | —      | —      | —      |        |
| DTA124TUA | —                            | ○      | —      | —      |        |
| DTA124TKA | —                            | —      | ○      | —      |        |
| DTA124TSA | —                            | —      | —      | ○      |        |

● Electrical characteristic curves

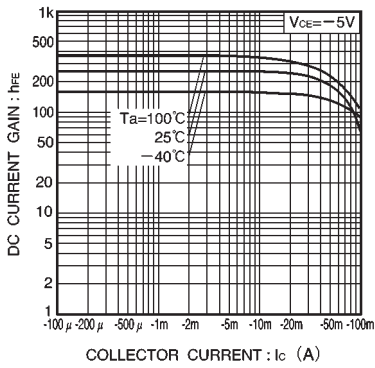


Fig.1 DC current gain vs. collector current

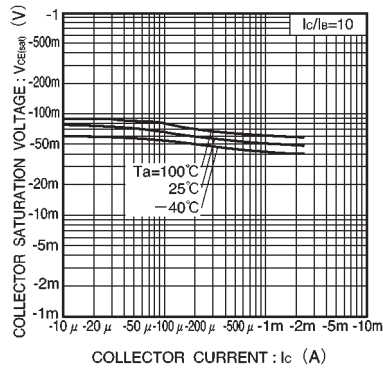


Fig.2 Collector-emitter saturation voltage vs. collector current