

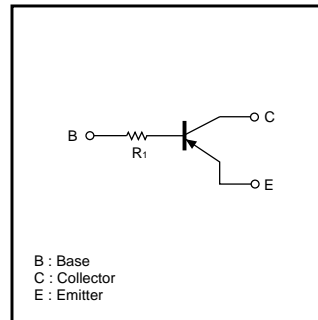
# Digital transistors (built-in resistor)

## DTA114TM / DTA114TE / DTA114TUA DTA114TKA / DTA114TSA

### ●Features

- 1) Built-in bias resistors enable 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



### ●Structure

PNP digital transistor

(With single built in resistor)

### ●External dimensions (Units : mm)

|   |   |
|---|---|
| <p>DTA114TM</p> <p>ROHM : VMT3<br/>Abbreviated symbol : 94</p> <p>(1) Base<br/>(2) Emitter<br/>(3) Collector</p>  | <p>DTA114TE</p> <p>ROHM : EMT3<br/>Abbreviated symbol : 94</p> <p>(1) Emitter<br/>(2) Base<br/>(3) Collector</p>  |
| <p>DTA114TUA</p> <p>ROHM : UMT3<br/>EIAJ : SC-70<br/>All terminals have same dimensions<br/>Abbreviated symbol : 94</p> <p>(1) Emitter<br/>(2) Base<br/>(3) Collector</p> | <p>DTA114TKA</p> <p>ROHM : SMT3<br/>EIAJ : SC-59<br/>All terminals have same dimensions<br/>Abbreviated symbol : 94</p> <p>(1) Emitter<br/>(2) Base<br/>(3) Collector</p> |
| <p>DTA114TSA</p> <p>ROHM : SPT<br/>EIAJ : SC-72</p> <p>(1) Emitter<br/>(2) Collector<br/>(3) Base</p>   |   |

# DTA114TM / DTA114TE / DTA114TUA DTA114TKA / DTA114TSA

## Transistors

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

| Parameter                   | Symbol           | Limits(DTA114T□) |   |     |    |     | Unit |
|-----------------------------|------------------|------------------|---|-----|----|-----|------|
|                             |                  | M                | E | UA  | KA | SA  |      |
| Collector-base voltage      | V <sub>CB0</sub> | -50              |   |     |    |     | V    |
| Collector-emitter voltage   | V <sub>CE0</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> =-50μA                                  |
| Collector-emitter breakdown voltage  | BV <sub>CE0</sub>    | -50  | -    | -    | V    | I <sub>c</sub> =-1mA                                   |
| Emitter-base breakdown voltage       | BV <sub>EB0</sub>    | -5   | -    | -    | V    | I <sub>E</sub> =-50μA                                  |
| 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> =-10mA/-1mA             |
| 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>       | 7    | 10   | 13   | kΩ   | -  |
| Transition frequency                 | f <sub>T</sub>       | -    | 250  | -    | MHz  | V <sub>CE</sub> =-10V, I <sub>E</sub> =5mA, f=100MHz * |

\* Transition frequency of the device

### ●Packaging specifications

| Type      | Package                      | VMT3   | EMT3   | UMT3   | SMT3   | SPT    |
|-----------|------------------------------|--------|--------|--------|--------|--------|
|           | Package type                 | Taping | Taping | Taping | Taping | Taping |
|           | Code                         | T2L    | TL     | T106   | T146   | TP     |
|           | Basic ordering unit (pieces) | 8000   | 3000   | 3000   | 3000   | 5000   |
| DTA114TM  |                              | ○      | -      | -      | -      | -      |
| DTA114TE  |                              | -      | ○      | -      | -      | -      |
| DTA114TUA |                              | -      | -      | ○      | -      | -      |
| DTA114TKA |                              | -      | -      | -      | ○      | -      |
| DTA114TSA |                              | -      | -      | -      | -      | ○      |

Transistors

●Electrical characteristic curves

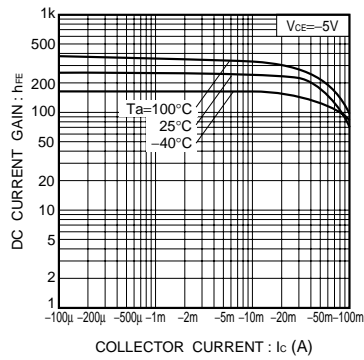


Fig.1 DC current gain vs. collector current

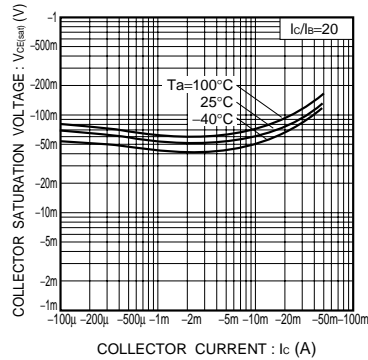


Fig.2 Collector-emitter saturation voltage vs. collector current

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