

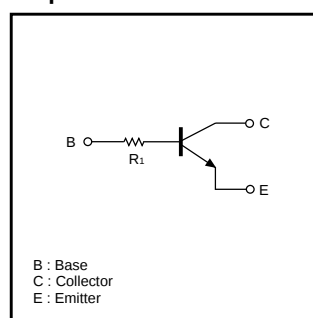
## Digital transistors (built-in resistor)

**DTC143TM / DTC143TE / DTC143TUA /  
DTC143TKA / DTC143TSA**

## ● 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 negative 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.

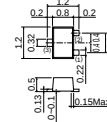
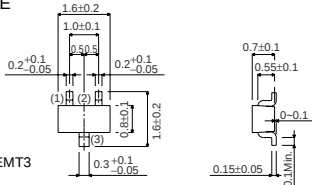
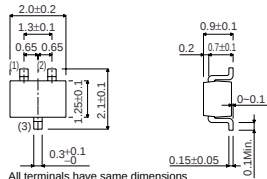
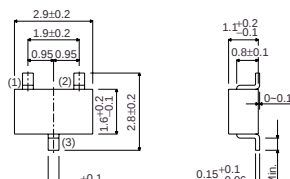
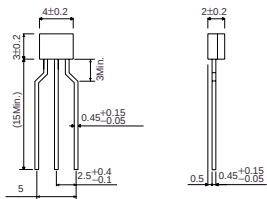
- **Equivalent circuit**



## ● Structure

PNP digital transistor  
(Built-in resistor type)

●External dimensions (Units : mm)

|                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                             |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>DTC143TM</b></p>  <p>ROHM : VMT3</p> <p>Abbreviated symbol : 03</p> <p>(1) Base<br/>(2) Emitter<br/>(3) Collector</p>                                                             | <p><b>DTC143TE</b></p>  <p>ROHM : EMT3</p> <p>Abbreviated symbol : 03</p> <p>(1) Emitter<br/>(2) Base<br/>(3) Collector</p>                                                             |
| <p><b>DTC143TUA</b></p>  <p>ROHM : UMT3<br/>EIAJ : SC-70</p> <p>All terminals have same dimensions</p> <p>Abbreviated symbol : 03</p> <p>(1) Emitter<br/>(2) Base<br/>(3) Collector</p> | <p><b>DTC143TKA</b></p>  <p>ROHM : SMT3<br/>EIAJ : SC-59</p> <p>All terminals have same dimensions</p> <p>Abbreviated symbol : 03</p> <p>(1) Emitter<br/>(2) Base<br/>(3) Collector</p> |
| <p><b>DTC143TSA</b></p>  <p>ROHM : SPT<br/>EIAJ : SC-72</p> <p>(1) (2) (3)</p> <p>(1) Emitter<br/>(2) Collector<br/>(3) Base</p>                                                        |                                                                                                                                                                                                                                                                             |

# DTC143TM / DTC143TE / DTC143TUA DTC143TKA / DTC143TSA

## Transistors

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

| Parameter                   | Symbol           | Limits(DTC143T□) |   |     |    |     | 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> =5mA/0.25mA             |
| DC current transfer ratio            | h <sub>FE</sub>      | 100  | 250  | 600  | —    | I <sub>C</sub> =1mA, V <sub>CE</sub> =5V               |
| Input resistance                     | R <sub>i</sub>       | 3.29 | 4.7  | 6.11 | 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    |
|-----------|------------------------------|--------|--------|--------|--------|--------|
|           | Packaging type               | Taping | Taping | Taping | Taping | Taping |
|           | Code                         | T2L    | TL     | T106   | T146   | TP     |
|           | Basic ordering unit (pieces) | 8000   | 3000   | 3000   | 3000   | 5000   |
| DTC143TM  |                              | ○      | —      | —      | —      | —      |
| DTC143TE  |                              | —      | ○      | —      | —      | —      |
| DTC143TUA |                              | —      | —      | ○      | —      | —      |
| DTC143TKA |                              | —      | —      | —      | ○      | —      |
| DTC143TSA |                              | —      | —      | —      | —      | ○      |

●Electrical characteristic curves

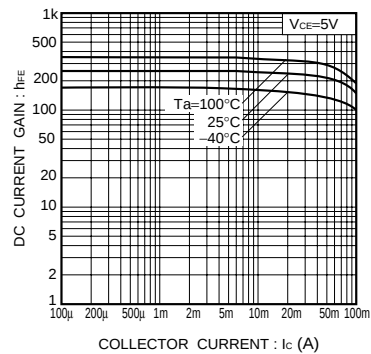


Fig.1 DC current gain vs.  
collector current

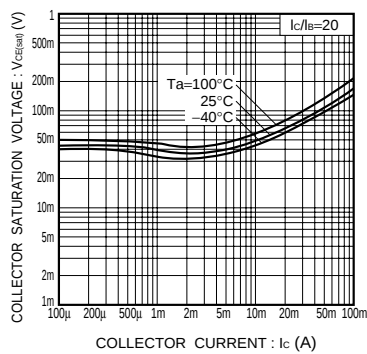


Fig.2 Collector-emitter saturation  
voltage vs. collector current