

Digital transistors (built in resistor)

DTA144TE / DTA144TUA / DTA144TKA / DTA144TCA / DTA144TSA

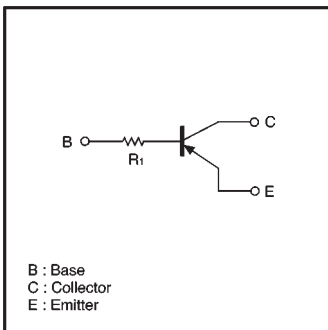
●Features

- 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.

●Structure

PNP digital transistor
(Built-in resistor type)

●Equivalent circuit



●External dimensions (Units: mm)

| | | |
|-----------------------------|---------------------------------------------------------------|------------------------------------------|
| DTA144TE | | (1) Emitter (2) Base (3) Collector |
| ROHM : EMT3 | Abbreviated symbol : 96 | |
| DTA144TUA | | (1) Emitter (2) Base (3) Collector |
| ROHM : UMT3 EIAJ : SC-70 | All terminals have same dimensions Abbreviated symbol : 96 | |
| DTA144TKA | | (1) Emitter (2) Base (3) Collector |
| ROHM : SMT3 EIAJ : SC-59 | All terminals have same dimensions Abbreviated symbol : 96 | |
| DTA144TCA | | (1) Emitter (2) Base (3) Collector |
| ROHM : SST3 | All terminals have same dimensions Abbreviated symbol : 96 | |
| DTA144TSA | | (1) Emitter (2) Collector (3) Base |
| ROHM : SPT EIAJ : SC-72 | | |

● Absolute maximum ratings (Ta = 25°C)

| Parameter | Symbol | Limits(DTA144T□) | | | | | Unit |
|-----------------------------|------------------|------------------|-----|-----|-----|----|------|
| | | E | UA | KA | CA | SA | |
| Collector-base voltage | V _{CB0} | -50 | | | | | V |
| Collector-emitter voltage | V _{CEO} | -50 | | | | | V |
| Emitter-base voltage | V _{EB0} | -5 | | | | | |
| Collector current | I _c | -100 | | | | | mA |
| Collector power dissipation | P _c | 150 | 200 | 300 | 300 | mW | |
| Junction temperature | T _j | 150 | | | | | °C |
| Storage temperature | T _{stg} | -55~+150 | | | | | °C |

● Electrical characteristics (Ta = 25°C)

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions |
|--------------------------------------|----------------------|------|------|------|------|------------------------------------------------------------|
| Collector-base breakdown voltage | BV _{CB0} | -50 | — | — | V | I _c = -50 μA |
| Collector-emitter breakdown voltage | BV _{CEO} | -50 | — | — | V | I _c = -1mA |
| Emitter-base breakdown voltage | BV _{EB0} | -5 | — | — | V | I _E = -50 μA |
| Collector cutoff current | I _{CB0} | — | — | -0.5 | μA | V _{CB} = -50V |
| Emitter cutoff current | I _{EB0} | — | — | -0.5 | μA | V _{EB} = -4V |
| Collector-emitter saturation voltage | V _{CE(sat)} | — | — | -0.3 | V | I _c /I _B = -5mA/-0.5mA |
| DC current transfer ratio | h _{FE} | 100 | 250 | 600 | — | V _{CE} = -5V, I _c = -1mA |
| Input resistance | R _i | 32.9 | 47 | 61.1 | kΩ | — |
| Transition frequency | f _t | — | 250 | — | MHz | V _{CE} = -10V, I _E = 5mA, f = 100MHz * |

* Transition frequency of the device

● Packaging specifications

| Part No. | Package | EMT3 | UMT3 | SMT3 | SST3 | SPT |
|-----------|------------------------------|--------|--------|--------|--------|--------|
| | Packaging type | Taping | Taping | Taping | Taping | Taping |
| | Code | TL | T106 | T146 | T116 | TP |
| | Basic ordering unit (pieces) | 3000 | 3000 | 3000 | 3000 | 5000 |
| DTA144TE | | ○ | — | — | — | — |
| DTA144TUA | | — | ○ | — | — | — |
| DTA144TKA | | — | — | ○ | — | — |
| DTA144TCA | | — | — | — | ○ | — |
| DTA144TSA | | — | — | — | — | ○ |

●Electrical characteristic curves

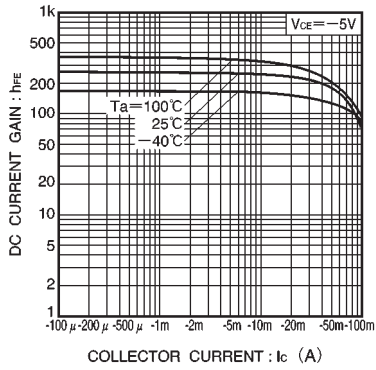


Fig.1 DC current gain vs.collector current

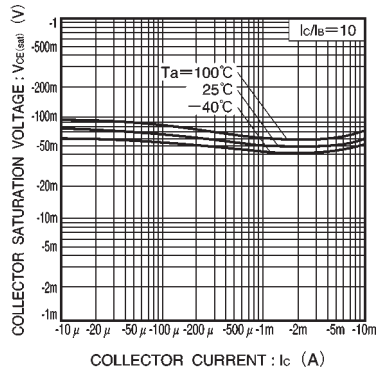


Fig.2 Collector-emitter saturation voltage vs.collector current