

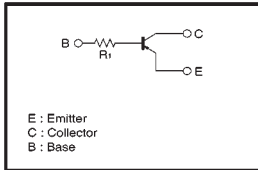
Digital transistors (built-in resistor)

DTA115TE / DTA115TUA / DTA115TKA / DTA115TSA

●Features

- 1) Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors.
- 2) The bias resistors consist of thin-film resistors with complete isolation to allow positive biasing of the input, and parasitic effects are almost completely eliminated.
- 3) Only the on / off conditions need to be set for operation, making device design easy.
- 4) Higher mounting densities can be achieved.

●Circuit schematic



●Electrical characteristics (Ta=25°C)

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions |
|--------------------------------------|---------------|------|------|------|------------|--|
| Collector-base breakdown voltage | BV_{CBO} | -50 | — | — | V | $I_C = -50 \mu A$ |
| Collector-emitter breakdown voltage | BV_{CEO} | -50 | — | — | V | $I_C = -1 mA$ |
| Emitter-base breakdown voltage | BV_{EBO} | -5 | — | — | V | $I_E = -50 \mu A$ |
| Collector cutoff current | I_{CBO} | — | — | -0.5 | μA | $V_{CB} = -50V$ |
| Emitter cutoff current | I_{EBO} | — | — | -0.5 | μA | $V_{EB} = -4V$ |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | — | — | -0.3 | V | $I_C/I_E = -1 mA / -0.1 mA$ |
| DC current transfer ratio | h_{FE} | 100 | 250 | 600 | — | $I_C = -1 mA, V_{CE} = -5V$ |
| Input resistance | R_i | 70 | 100 | 130 | k Ω | — |
| Transition frequency | f_T | — | 250 | — | MHz | $V_{CE} = -10V, I_E = 5mA, f = 100MHz$ * |

* Transition frequency of the device.

(96-259-A115T)

●Absolute maximum ratings (Ta=25°C)

| Parameter | Symbol | Limits | Unit |
|-----------------------------|-----------------------|----------|------|
| Collector-base voltage | V_{CBO} | -50 | V |
| Collector-emitter voltage | V_{CEO} | -50 | V |
| Emitter-base voltage | V_{EBO} | -5 | V |
| Collector current | I_C | -100 | mA |
| Collector power dissipation | DTA115TE | 150 | mW |
| | DTA115TUA / DTA115TKA | 200 | |
| | DTA115TSA | 300 | |
| Junction temperature | T_J | 150 | °C |
| Storage temperature | T_{stg} | -55~+150 | °C |

●Package, marking, and packaging specifications

| Part No. | DTA115TE | DTA115TUA | DTA115TKA | DTA115TSA |
|------------------------------|----------|-----------|-----------|-----------|
| Package | EMT3 | UMT3 | SMT3 | SPT |
| Marking | 99 | 99 | 99 | — |
| Packaging code | TL | T106 | T146 | TP |
| Basic ordering unit (pieces) | 3000 | 3000 | 3000 | 5000 |

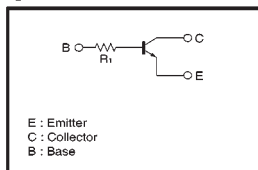
Digital transistors (built-in resistor)

DTC115TUA / DTC115TKA / DTC115TSA

●Features

- 1) Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors.
- 2) The bias resistors consist of thin-film resistors with complete isolation to allow negative biasing of the input, and parasitic effects are almost completely eliminated.
- 3) Only the on / off conditions need to be set for operation, making device design easy.
- 4) Higher mounting densities can be achieved.

●Circuit schematic



●Electrical characteristics (Ta=25°C)

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions |
|--------------------------------------|---------------|------|------|------|------------|--|
| Collector-base breakdown voltage | BV_{CBO} | 50 | — | — | V | $I_C = 50 \mu A$ |
| Collector-emitter breakdown voltage | BV_{CEO} | 50 | — | — | V | $I_C = 1 mA$ |
| Emitter-base breakdown voltage | BV_{EBO} | 5 | — | — | V | $I_E = 50 \mu A$ |
| Collector cutoff current | I_{CBO} | — | — | 0.5 | μA | $V_{CE} = 50V$ |
| Emitter cutoff current | I_{EBO} | — | — | 0.5 | μA | $V_{EB} = 4V$ |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | — | — | 0.3 | V | $I_C/I_E = 1 mA / 0.1 mA$ |
| DC current transfer ratio | h_{FE} | 100 | 250 | 600 | — | $I_C = 1 mA, V_{CE} = 5V$ |
| Input resistance | R_i | 70 | 100 | 130 | k Ω | — |
| Transition frequency | f_T | — | 250 | — | MHz | $V_{CE} = 10V, I_E = -5mA, f = 100MHz$ * |

* Transition frequency of the device.

●Absolute maximum ratings (Ta=25°C)

| Parameter | Symbol | Limits | Unit |
|-----------------------------|-----------------------|----------|------|
| Collector-base voltage | V_{CBO} | 50 | V |
| Collector-emitter voltage | V_{CEO} | 50 | V |
| Emitter-base voltage | V_{EBO} | 5 | V |
| Collector current | I_C | 100 | mA |
| Collector power dissipation | DTC115TUA / DTC115TKA | 200 | mW |
| | DTC115TSA | 300 | |
| Junction temperature | T_J | 150 | °C |
| Storage temperature | T_{stg} | -55~+150 | °C |

●Package, marking, and packaging specifications

| Part No. | DTC115TUA | DTC115TKA | DTC115TSA |
|------------------------------|-----------|-----------|-----------|
| Package | UMT3 | SMT3 | SPT |
| Marking | 09 | 09 | — |
| Packaging code | T106 | T146 | TP |
| Basic ordering unit (pieces) | 3000 | 3000 | 5000 |

(96-317-C115T)