

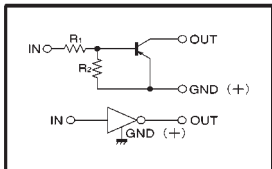
# Digital transistors (built-in resistors)

DTA115EE / DTA115EUA / DTA115EKA / DTA115ESA

## ●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                                     |
|----------------------|--------------|------|------|-------|------------|------------------------------------------------|
| Input voltage        | $V_{I(off)}$ | —    | —    | -0.5  | V          | $V_{CC} = -5V$ , $I_o = -100 \mu A$            |
|                      | $V_{I(on)}$  | -3   | —    | —     |            | $V_o = -0.3V$ , $I_o = -1mA$                   |
| Output voltage       | $V_{O(on)}$  | —    | -0.1 | -0.3  | V          | $I_o = -5mA$ , $I_i = -0.25mA$                 |
| Input current        | $I_i$        | —    | —    | -0.15 | mA         | $V_i = -5V$                                    |
| Output current       | $I_{O(off)}$ | —    | —    | -0.5  | $\mu A$    | $V_{CC} = -50V$ , $V_i = 0V$                   |
| DC current gain      | $G_i$        | 82   | —    | —     | —          | $I_o = -5mA$ , $V_o = -5V$                     |
| Input resistance     | $R_1$        | 70   | 100  | 130   | k $\Omega$ | —                                              |
| Resistance ratio     | $R_2/R_1$    | 0.8  | 1    | 1.2   | —          | —                                              |
| Transition frequency | $f_T$        | —    | 250  | —     | MHz        | $V_{CE} = 10V$ , $I_E = -5mA$ , $f = 100MHz$ * |

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

| Parameter            |                       | Symbol       | Limits     | Unit |
|----------------------|-----------------------|--------------|------------|------|
| Supply voltage       |                       | $V_{CC}$     | -50        | V    |
| Input voltage        |                       | $V_i$        | -40 ~ +10  | V    |
| Output current       |                       | $I_o$        | -20        | mA   |
|                      |                       | $I_{C(Max)}$ | -100       |      |
| Power dissipation    | DTA115EE              | $P_d$        | 150        | mW   |
|                      | DTA115EUA / DTA115EKA |              | 200        |      |
|                      | DTA115ESA             |              | 300        |      |
| Junction temperature |                       | $T_j$        | 150        | °C   |
| Storage temperature  |                       | $T_{stg}$    | -55 ~ +150 | °C   |

## ●Package, marking, and packaging specifications

| Part No.                     | DTA115EE | DTA115EUA | DTA115EKA | DTA115ESA |
|------------------------------|----------|-----------|-----------|-----------|
| Package                      | EMT3     | UMT3      | SMT3      | SPT       |
| Marking                      | 19       | 19        | 19        | —         |
| Packaging code               | TL       | T106      | T146      | TP        |
| Basic ordering unit (pieces) | 3000     | 3000      | 3000      | 5000      |