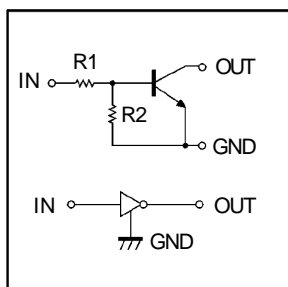


## Digital transistors (built-in resistors)

• Features

- 1) Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors.
- 2) The bias resistors consist of thinfilm 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.

**DTC115EKA**



EIAJ: SC—59

● Absolute maximum ratings ( $T_a=25\text{ }^\circ\text{C}$ )

| Parameter            | symbol        | Limits    | unit             |
|----------------------|---------------|-----------|------------------|
| Supply voltage       | $V_{cc}$      | 50        | V                |
| Input voltage        | $V_{IN}$      | -40 ~ +10 | V                |
| Output current       | $I_O$         | 20        | mA               |
|                      | $I_{C(Max.)}$ | 100       |                  |
| Power dissipation    | $P_d$         | 200       | mW               |
| Junction temperature | $T_j$         | 150       | $^\circ\text{C}$ |
| Storage temperature  | $T_{stg}$     | -55~+150  | $^\circ\text{C}$ |

● Electrical characteristics ( $T_a=25\text{ }^\circ\text{C}$ )

| 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          | $I_O/I_I=5mA/0.25mA$               |
| 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   | —    | —    | —          | $V_O=5V, I_O=5mA$                  |
| 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        | $V_{CE}=10V, I_E=-5mA, f=100MHz^*$ |

\*Transition frequency of the device