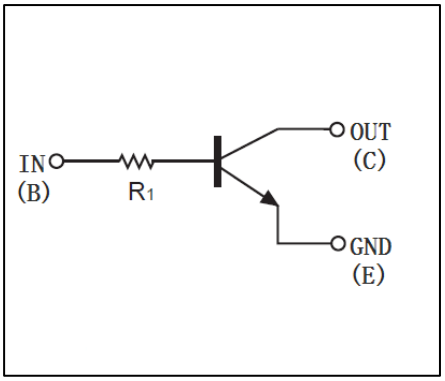
# DTC144TE/DTC144TUA
# DTC144TKA /DTC144TCK

DIGITAL TRANSISTOR (NPN)

• **Equivalent Circuit**

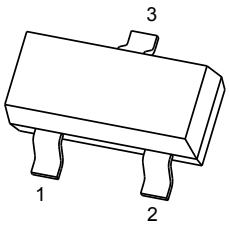
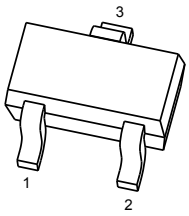
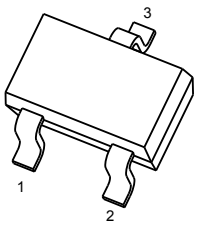
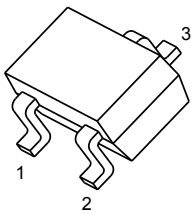



**FEATURES**

- Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors(see equivalent circuit)
- 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
- Only the on/off conditions need to be set for operation, making device design easy

**MARKING:06**

**PIN CONNENCTIONS and MARKING**

| | | | | | |
|---|---|---|---|---|---|
| **DTC144TCK** |  | **SOT-23**<br>1. IN<br>2. GND<br>3. OUT | **DTC144TE** |  | **SOT-523**<br>1. IN<br>2. GND<br>3. OUT |
| **DTC144TUA** |  | **SOT-323**<br>1. IN<br>2. GND<br>3. OUT | **DTC144TKA** |  | **SOT-23-3L**<br>1. IN<br>2. GND<br>3. OUT |

## MAXIMUM RATINGS(Ta=25℃ unless otherwise noted)

| Symbol | Parameter | Limits(DTC144T□) | | | | Unit |
|---|---|---|---|---|---|---|
| | | E | UA | KA | CA | |
| $V_{CBO}$ | Collector-Base Voltage | 50 | | | | V |
| $V_{CEO}$ | Collector-Emitter Voltage | 50 | | | | V |
| $V_{EBO}$ | Emitter-Base Voltage | 5 | | | | V |
| $I_C$ | Collector Current -Continuous | 100 | | | | mA |
| $P_D$ | Power Dissipation | 150 | 200 | 200 | 200 | mW |
| $T_J$,$T_{stg}$ | Operation Junction and Storage Temperature Range | -55～+150 | | | | ℃ |

## ELECTRICAL CHARACTERISTICS (Ta=25℃ unless otherwise specified)

| Parameter | Symbol | Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| **Collector-base breakdown voltage** | $V_{(BR)CBO}$ | Ic=50μA,$I_E$=0 | 50 | | | V |
| **Collector-emitter breakdown voltage** | $V_{(BR)CEO}$ | Ic=1mA,$I_B$=0 | 50 | | | V |
| **Emitter-base breakdown voltage** | $V_{(BR)EBO}$ | $I_E$=50μA,$I_C$=0 | 5 | | | V |
| **Collector cut-off current** | $I_{CBO}$ | $V_{CB}$=50V,$I_E$=0 | | | 0.5 | μA |
| **Emitter cut-off current** | $I_{EBO}$ | $V_{EB}$=4V,$I_C$=0 | | | 0.5 | μA |
| **Collector-emitter saturation voltage** | $V_{CE(sat)}$ | $I_C$=5mA,$I_B$=0.5mA | | | 0.3 | V |
| **DC current gain** | $h_{FE}$ | $V_{CE}$=5V,$I_C$=1mA | 100 | | | |
| **Input resistor** | $R_1$ | | 32.9 | 47 | 61.1 | kΩ |
| **Transition frequency** | $f_T$ | $V_{CE}$=10V,$I_E$=-5mA, f=100MHz | | 250 | | MHz |

## Typical Characteristics