JIANGSU CHANGJIANG ELECTRONICS TECHNOLOGY CO., LTD

# Digital transistors (built-in resistors)

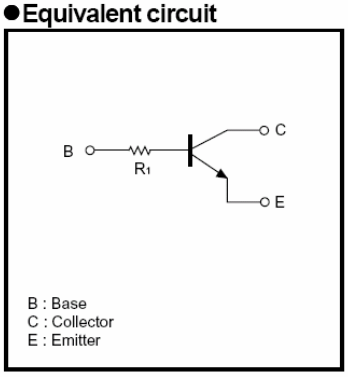
## DTC144TE/ DTC144TUA/ DTC144TCA/DTC144TKA/DTC144TSA

DIGITAL TRANSISTOR (NPN)

**Features**

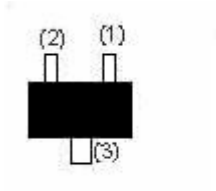
1) Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors (see equivalent circuit).
2) The bias resistors consist of thin-film resistors with complete isolation to allow negative biasing of the input. They also have the advantage of almost completely eliminating parasitic effects.
3) Only the on/off conditions need to be set for operation, making device design easy.

**●Equivalent circuit**




**PIN CONNENCTIONS AND MARKING**

DTC144TE

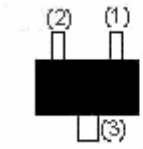



(1) Base
(2) Emitter
(3) Collector

SOT-523

Addreviated symbol: 06

DTC144TUA

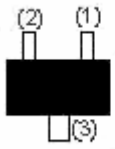



(1) Base
(2) Emitter
(3) Collector

SOT-323

Addreviated symbol: 06

DTC144TKA

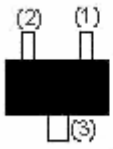



(1) Base
(2) Emitter
(3) Collector

SOT-23-3L

Addreviated symbol: 06

DTC144TCA

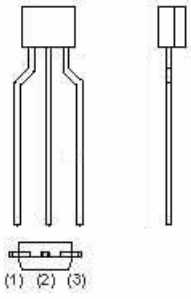



(1) Base
(2) Emitter
(3) Collector

SOT-23

Addreviated symbol: 06

DTC144TSA




(1) Emitter
(2) Collector
(3) Base

TO-92S

**MAXIMUM RATINGS*** $T_A$=25℃ unless otherwise noted

| Symbol | Parameter | LIMITS(DTC144T□) | | | | | Units |
|---|---|---|---|---|---|---|---|
| | | E | UA | KA | CA | SA | |
| $V_{CBO}$ | 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 |
| $P_C$ | Collector Dissipation | 150 | 200 | | | 300 | mW |
| Tj | Junction temperature | 150 | | | | | ℃ |
| $T_J$, $T_{stg}$ | Junction and Storage Temperature | -55~+150 | | | | | ℃ |

**ELECTRICAL CHARACTERISTICS (Tamb=25℃ unless otherwise specified)**

| Parameter | Symbol | Test 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 | uA |
| **Emitter cut-off current** | $I_{EBO}$ | $V_{EB}$=4V,$I_C$=0 | | | 0.5 | uA |
| **DC current gain** | $h_{FE}$ | $V_{CE}$=5V,$I_C$=1mA | 100 | 300 | 600 | |
| **Collector-emitter saturation voltage** | $V_{CE(sat)}$ | $I_C$=5mA,$I_B$=0.5mA | | | 0.3 | V |
| **Transition frequency** | $f_T$ | $V_{CE}$=10V,$I_E$=-5mA, f=100MHz | | 250 | | MHz |
| **Imput resistor** | R1 | | 32.9 | 47 | 61.1 | kΩ |

# Typical Characteristics

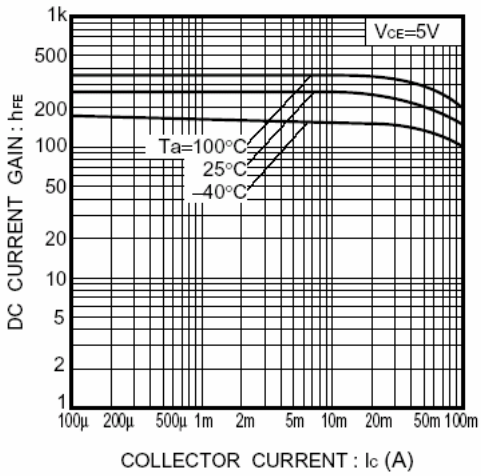



Fig.1 DC current gain vs. collector current

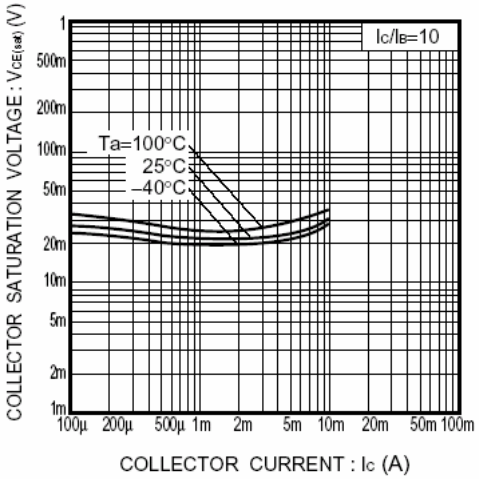



Fig.2 Collector-emitter saturation voltage vs. collector current