Elektronische Bauelemente

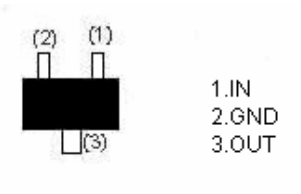
# DTC143XE / DTC143XUA
# DTC143XCA / DTC143XSA / DTC143XM
## NPN Digital Transistors (Built-in Resistors)

RoHS Compliant Product
A suffix of "-C" specifies halogen & lead-free

## FEATURES

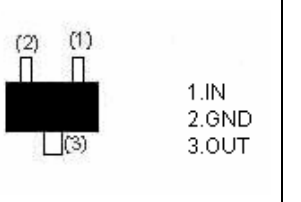
- Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors (see equivalent circuit).
- The bias resistors consist of thin-film resistors with complete isolation to allow positive biasing of the input. They also have the advantage of almost completely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

**DTC143XE (SOT-523)**



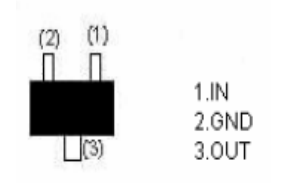

Addreviated symbol：43

**DTC143XUA (SOT-323)**



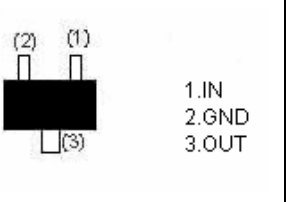

Addreviated symbol：43

**DTC143XM (SOT-723)**



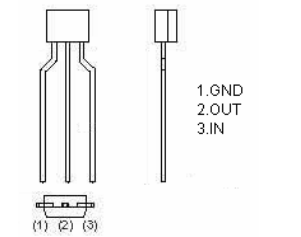

Addreviated symbol：43

**DTC143XCA (SOT-23)**

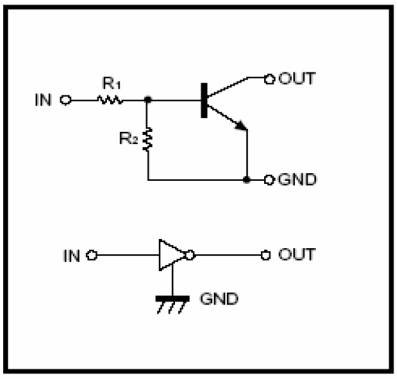



Addreviated symbol：43

**DTA143XSA (TO-92S)**




## EQUIVALENT CIRCUIT




## ABSOLUTE MAXIMUM RATINGS ($T_A$=25°C unless otherwise noted)

| Parameter | Symbol | Limits (DTC143X□) | | | | | Unit |
|---|---|---|---|---|---|---|---|
| | | M | E | UA | CA | SA | |
| Collector-Base Voltage | $V_{CC}$ | 50 | | | | | V |
| Input voltage | $V_{IN}$ | -7~20 | | | | | V |
| Output current | $I_O$ | 100 | | | | | mA |
| | $I_{C(MAX)}$ | 100 | | | | | |
| Power dissipation | $P_D$ | 100 | 150 | 200 | | 300 | mW |
| Junction & Storage temperature | $T_J$, $T_{STG}$ | 150, -55~150 | | | | | ℃ |

## ELECTRICAL CHARACTERISTICS ($T_A$=25°C unless otherwise noted)

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Test Conditions |
|---|---|---|---|---|---|---|
| Input voltage | $V_{I(off)}$ | 0.3 | - | - | V | $V_{CC}$=5V, $I_O$=100μA |
| | $V_{I(on)}$ | - | - | 2.5 | | $V_O$=0.3V, $I_O$=20mA |
| Output voltage | $V_{O(on)}$ | - | 0.1 | 0.3 | V | $I_O/I_I$=10mA/0.5mA |
| Input current | $I_I$ | - | - | 1.8 | mA | $V_I$=5V |
| Output current | $I_{O(off)}$ | - | - | 0.5 | μA | $V_{CC}$=50V, $V_I$=0 |
| DC current gain | $G_I$ | 30 | - | - | | $V_O$=5V, $I_O$=10mA |
| Input resistance | $R_1$ | 3.29 | 4.7 | 6.11 | KΩ | |
| Resistance ratio | $R_2/R_1$ | 1.7 | 2.1 | 2.6 | | |
| Transition frequency | $f_T$ | - | 250 | - | MHz | $V_O$=10V, $I_O$=5mA, f=100MHz |

## CHARACTERISTIC CURVES

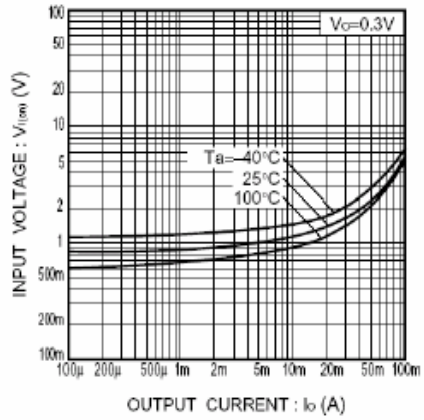



Fig.1 Input voltage vs. output current (ON characteristics)

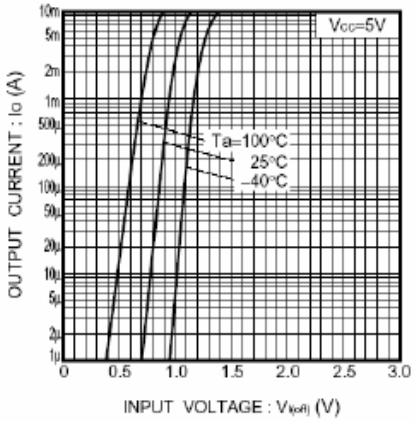



Fig.2 Output current vs. input voltage (OFF characteristics)

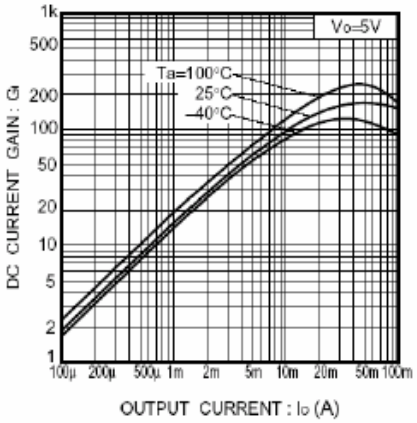



Fig.3 DC current gain vs. output current

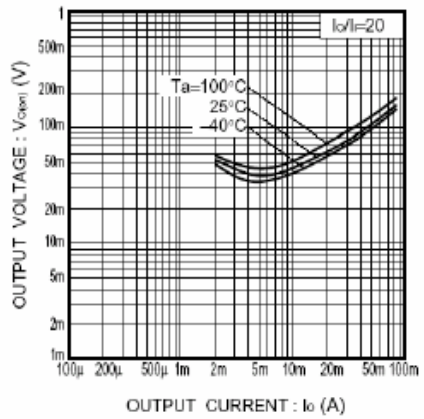



Fig.4 Output voltage vs. output current