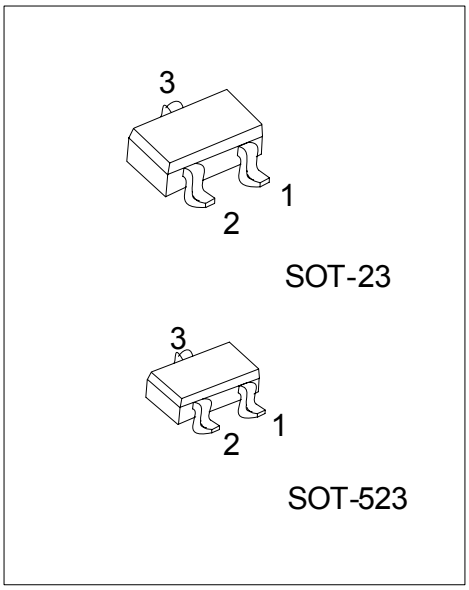
# DTC115E

*NPN EPITAXIAL SILICON TRANSISTOR*

# NPN DIGITAL TRANSISTOR (BUILT-IN RESISTORS)




*Pb-free plating product number: DTC115EL

## ■ FEATURES

* Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors.
* 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.

## ■ ORDERING INFORMATION

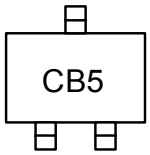
| Order Number | | Package | Pin Assignment | | | Packing |
|---|---|---|---|---|---|---|
| Normal | Lead Free Plating | | 1 | 2 | 3 | |
| DTC115E-AE3-6-R | DTC115EL-AE3-6-R | SOT-23 | G | I | O | Tape Reel |
| DTC115E-AN3-6-R | DTC115EL-AN3-6-R | SOT-523 | G | I | O | Tape Reel |

DTC115EL-AE3-6-R

(1)Packing Type
(2)Pin Assignment
(3)Package Type
(4)Lead Plating

(1) R: Tape Reel
(2) refer to Pin Assignment
(3) AE3: SOT-23, AN3: SOT-523
(4) L: Lead Free Plating, Blank: Pb/Sn

## ■ MARKING INFORMATION



## ■ ABSOLUTE MAXIMUM RATING ( Ta=25℃ )

| PARAMETER | | SYMBOL | RATINGS | UNIT |
|---|---|---|---|---|
| Supply Voltage | | $V_{CC}$ | 50 | V |
| Input Voltage | | $V_{IN}$ | -10 ~ +40 | V |
| Output Current | | $I_{OUT}$ | 20 | mA |
| | | $I_{C(MAX)}$ | 100 | |
| Power Dissipation | SOT-23 | $P_D$ | 200 | mW |
| | SOT-523 | | 150 | mW |
| Junction Temperature | | $T_J$ | +150 | ℃ |
| Storage Temperature | | $T_{STG}$ | -40 ~ +150 | ℃ |

Note Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

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

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|
| Input Voltage | $V_{I(OFF)}$ | $V_{CC}$=5V, $I_{OUT}$=100μA | | | 0.5 | V |
| | $V_{I(ON)}$ | $V_{OUT}$=0.3V, $I_{OUT}$=1mA | 3 | | | |
| Output Voltage | $V_{OUT(ON)}$ | $I_{OUT}$=5 mA, $I_{IN}$=0.25mA | | 0.1 | 0.3 | V |
| Input Current | $I_{IN}$ | $V_{IN}$= 5V | | | 0.15 | mA |
| Output Current | $I_{O(OFF)}$ | $V_{CC}$=50V, $V_{IN}$=0V | | | 0.5 | μA |
| DC Current Gain | $G_I$ | $V_{OUT}$= 5V, $I_{OUT}$= 5mA | 82 | | | |
| Input Resistance | R1 | | 70 | 100 | 130 | kΩ |
| Resistance Ratio | R2/R1 | | 0.8 | 1 | 1.2 | |
| Transition Frequency | $f_T$ | $V_{CE}$=10V, $I_E$=-5mA, f=100MHz * | | 250 | | MHz |

*Transition frequency of the device

## ■ EQUIVALENT CIRCUIT