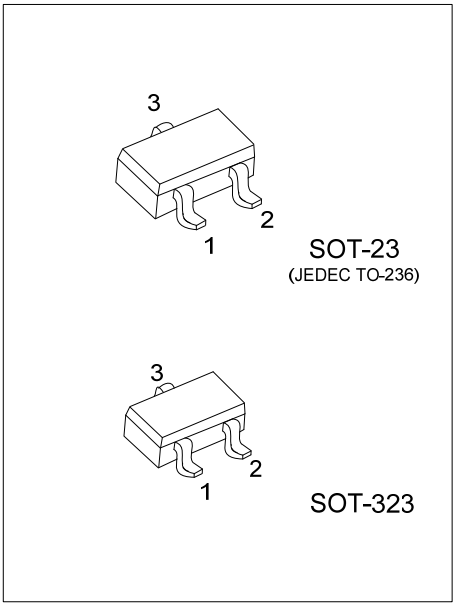
DTC144V **Advance** ***NPN SILICON TRANSISTOR***

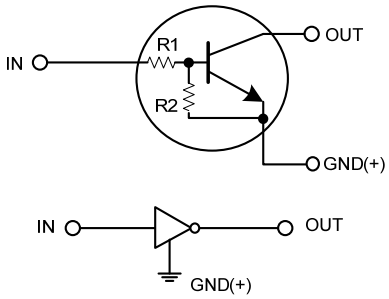
# NPN DIGITAL TRANSISTOR (BUILT- IN BIAS RESISTORS)




## ■ FEATURES

* Built-in bias resistors that implies easy ON/OFF applications.
* The bias resistors are thin-film resistors with complete isolation to allow negative input.

## ■ EQUIVALENT CIRCUIT



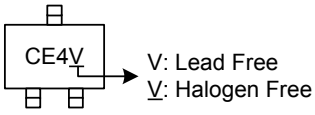

## ■ ORDERING INFORMATION

| Ordering Number | | Package | Pin Assignment | | | Packing |
|---|---|---|---|---|---|---|
| Lead Free | Halogen Free | | 1 | 2 | 3 | |
| DTC144VL-AE3-R | DTC144VG-AE3-R | SOT-23 | B | E | C | Tape Reel |
| DTC144VL-AL3-R | DTC144VG-AL3-R | SOT-323 | B | E | C | Tape Reel |

Note: Pin Assignment: B: Base E: Emitter C: Collector

| | |
|---|---|
| DTC144VG-AE3-R<br>(1)Packing Type<br>(2)Package Type<br>(3)Green Package | (1) R: Tape Reel<br>(2) AE3: SOT-23, AL3: SOT-323<br>(3) G: Halogen Free and Lead Free, L: Lead Free |

## ■ MARKING





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## ■ ABSOLUTE MAXIMUM RATINGS ($T_A$= 25°C, unless otherwise specified)

| PARAMETER | SYMBOL | RATINGS | UNIT |
|---|---|---|---|
| Supply Voltage | $V_{CC}$ | 50 | V |
| Input Voltage | $V_{IN}$ | -10 ~ +40 | V |
| Output Current | $I_{OUT}$ | 100 | mA |
| | $I_{OUT(MAX)}$ | 100 | mA |
| Power Dissipation | $P_D$ | 200 | mW |
| Junction Temperature | $T_J$ | +150 | °C |
| Storage Temperature | $T_{STG}$ | -55 ~ +150 | °C |

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 ($T_A$= 25°C, unless otherwise specified)

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|
| Input Voltage | $V_{IN(OFF)}$ | $V_{CC}$= 5V, $I_{OUT}$=100μA | | | 0.5 | V |
| | $V_{IN(ON)}$ | $V_{OUT}$= 0.3V, $I_{OUT}$= 20mA | 3 | | | |
| Output Voltage | $V_{OUT(ON)}$ | $I_{OUT}/I_{IN}$= 10mA / 0.5mA | | 0.1 | 0.3 | V |
| Input Current | $I_{IN}$ | $V_{IN}$= 5V | | | 0.18 | mA |
| Output Current | $I_{OUT(OFF)}$ | $V_{CC}$= 50V , $V_{IN}$=0V | | | 0.5 | μA |
| DC Current Gain | $h_{FE}$ | $V_{OUT}$= 5V, $I_{OUT}$= 5mA | 33 | | | |
| Input Resistance | R1 | | 32.9 | 47 | 61.1 | kΩ |
| Resistance Ratio | R2 | | | 10 | | kΩ |
| Transition Frequency | $f_T$ | $V_{CE}$= 10V, $I_E$= -5mA, f=100MHz | | 250 | | MHz |

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