

DTB123Y

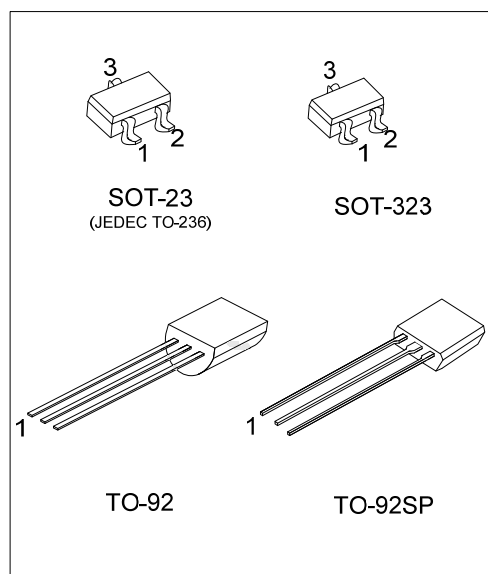
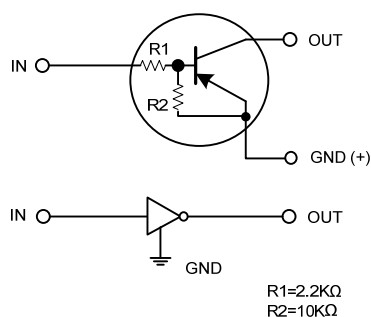
PNP SILICON TRANSISTOR

DIGITAL TRANSISTORS (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 positive input.

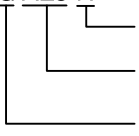
EQUIVALENT CIRCUIT



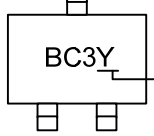
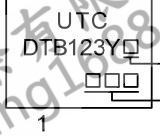
ORDERING INFORMATION

| Ordering Number | | Package | Pin Assignment | | | Packing |
|-----------------|----------------|---------|----------------|---|---|-----------|
| Lead Free | Halogen Free | | 1 | 2 | 3 | |
| DTB123YL-AE3-R | DTB123YG-AE3-R | SOT-23 | I | G | O | Tape Reel |
| DTB123YL-AL3-R | DTB123YG-AL3-R | SOT-323 | I | G | O | Tape Reel |
| DTB123YL-T92-K | DTB123YG-T92-K | TO-92 | G | O | I | Bluk |
| DTB123YL-T92-B | DTB123YG-T92-B | TO-92 | G | O | I | Tape Box |
| DTB123YL-T9S-K | DTB123YG-T9S-K | TO-92SP | G | O | I | Bulk |
| DTB123YL-T9S-B | DTB123YG-T9S-B | TO-92SP | G | O | I | Tape Box |

Note: Pin assignment: I: IN G: GND O: OUT

| | |
|--|--|
| <p>DTB123YG-AE3-R</p>  <p>(1) Packing Type (2) Package Type (3) Green Package</p> | <p>(1) B: Tape Box, K: Bluk, R: Tape Reel (2) AE3: SOT-23, AL3: SOT-323, T92: TO-92 T9S: TO-92SP (3) G: Halogen Free and Lead Free, L: Lead Free</p> |
|--|--|

MARKING

| SOT-23 / SOT-323 | TO-92 / TO-92SP |
|--|--|
|  <p>BC3Y Y: Lead Free Y: Halogen Free</p> |  <p>UTC DTB123Y L: Lead Free G: Halogen Free Date Code</p> |

■ ABSOLUTE MAXIMUM RATINGS ($T_A=25^{\circ}\text{C}$, unless others specified)

| PARAMETER | | SYMBOL | RATINGS | UNIT |
|----------------------|-----------------|-----------|------------|--------------------|
| Supply Voltage | | V_{CC} | -50 | V |
| Input Voltage | | V_{IN} | -12 ~ +5 | V |
| Output Current | | I_C | -500 | mA |
| Power Dissipation | SOT-23/ SOT-323 | P_D | 200 | mW |
| | TO-92 | | 625 | mW |
| | TO-92SP | | 550 | mW |
| Junction Temperature | | T_J | +150 | $^{\circ}\text{C}$ |
| Storage Temperature | | T_{STG} | -55 ~ +150 | $^{\circ}\text{C}$ |

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.

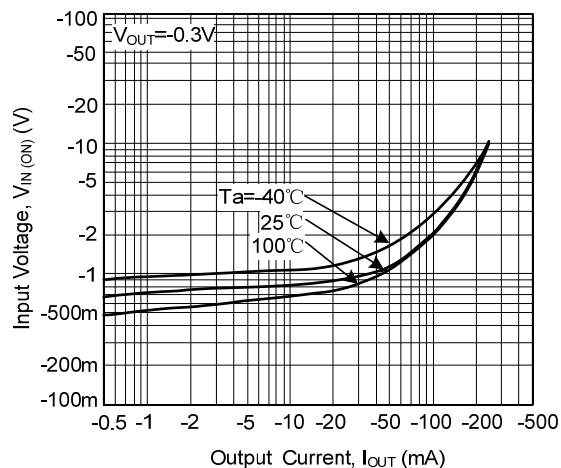
■ ELECTRICAL SPECIFICATIONS ($T_A=25^{\circ}\text{C}$, unless others specified)

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|-------------------------------------|----------------|--|------|------|------|---------------|
| OFF CHARACTERISTICS | | | | | | |
| Input Voltage | $V_{IN(OFF)}$ | $V_{CC} = -5\text{V}$, $I_{OUT} = -100\mu\text{A}$ | | | -0.3 | V |
| | $V_{IN(ON)}$ | $V_{OUT} = -0.3\text{V}$, $I_{OUT} = -20\text{mA}$ | -2 | | | |
| Output Voltage | $V_{OUT(ON)}$ | $I_{OUT}/I_{IN} = -50\text{mA}/-2.5\text{mA}$ | | -0.1 | -0.3 | V |
| Input Current | I_{IN} | $V_{IN} = -5\text{V}$ | | | -3.0 | mA |
| Output Current | $I_{OUT(OFF)}$ | $V_{CC} = -50\text{V}$, $V_{IN} = 0\text{V}$ | | | -0.5 | μA |
| ON CHARACTERISTICS | | | | | | |
| DC Current Gain | h_{FE} | $V_{OUT} = -5\text{V}$, $I_{OUT} = -50\text{mA}$ | 56 | | | |
| SMALL SIGNAL CHARACTERISTICS | | | | | | |
| Input Resistance | R_1 | | 1.54 | 2.2 | 2.86 | K Ω |
| Resistor Ratio | R_2/R_1 | | 3.6 | 4.5 | 5.5 | |
| Transition Frequency (Note) | f_T | $V_{CE} = -10\text{V}$, $I_E = 50\text{mA}$, $f = 100\text{MHz}$ | | 200 | | MHz |

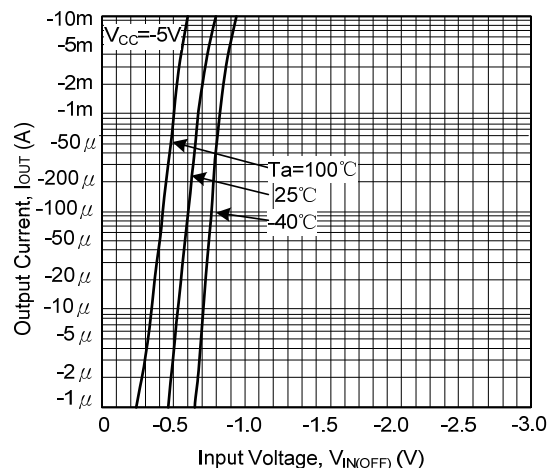
Note: Transition frequency of the device.

■ TYPICAL CHARACTERISTICS

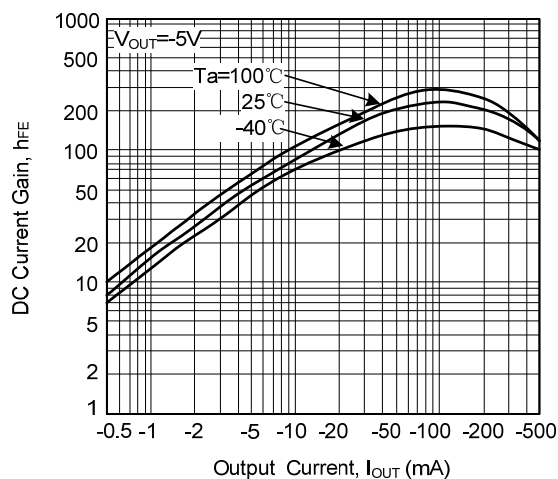
Input Voltage vs. Output Current
(ON Characteristics)



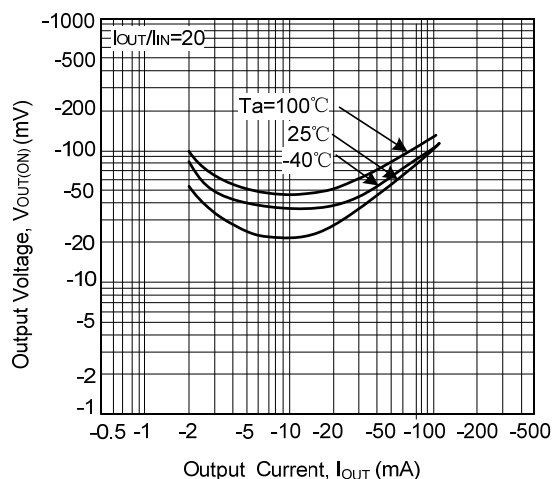
Output Current vs. Input Voltage
(OFF Characteristics)



DC Current Gain vs. Output Current



Output Voltage vs. Output Current



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