RECTRON SEMICONDUCTOR
TECHNICAL SPECIFICATION

# DTC123JUA

## *SOT-323 DIGITAL TRANSISTOR TRANSISTORS(NPN)*

### FEATURES

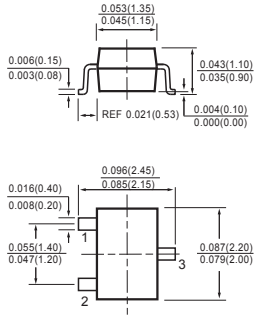
* Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors.
* The bias resistors consist of thin-film resistors with complete isolation to allow negative biasing of the input. They also have the advantage of almost completely eliminating parasitic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

### MECHANICAL DATA

* Case: Molded plastic
* Epoxy: UL 94V-O rate flame retardant
* Lead: MIL-STD-202E method 208C guaranteed
* Mounting position: Any
* Weight: 0.006 gram



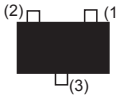
**SOT-323**




Dimensions in inches and (millimeters)

### MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature unless otherwise specified.




(1) IN
(2) GND
(3) OUT

**MAXIMUM RATINGES** ( @ TA = 25°C unless otherwise noted )

| RATINGS | SYMBOL | LIMITS | UNITS |
|---|---|---|---|
| Supply voltage | $V_{CC}$ | 50 | V |
| Input voltage | $V_{IN}$ | -5~12 | V |
| Output current | $I_O$ | 100 | mA |
| | $I_{C(MAX)}$ | 100 | |
| Power dissipation | Pd | 200 | mW |
| Junction temperature | Tj | 150 | °C |
| Storage temperature | Tstg | -55 ~150 | °C |

**ELECTRICAL CHARACTERISTICS** ( @ TA = 25°C unless otherwise noted )

| CHARACTERISTICS | SYMBOL | MIN | TYP | MAX | UNITS |
|---|---|---|---|---|---|
| Input voltage ($V_{CC}$= 5V, $I_O$= 100μA) | $V_{I(off)}$ | - | - | 0.5 | V |
| Input voltage ($V_O$= 0.3V, $I_O$= 5mA) | $V_{I(on)}$ | 1.1 | - | - | |
| Output voltage ($I_O$ / $I_I$= 5mA / -0.25mA) | $V_{o(on)}$ | - | 0.1 | 0.3 | V |
| Input current ($V_I$= 5V) | $I_I$ | - | - | 3.6 | mA |
| Output current ($V_{CC}$= 50V,$V_I$= 0) | $I_{o(off)}$ | - | - | 0.5 | μA |
| DC current gain ($V_O$= 5V,$I_O$= 10mA) | $G_I$ | 80 | - | - | - |
| Input resistance | $R_1$ | 1.54 | 2.2 | 2.86 | KΩ |
| Resistance ratio | $R_2$ / $R_1$ | 17 | 21 | 26 | - |
| Transition frequency ($V_O$= 10V,$I_O$= -5mA, f= 100MHz) | $f_T$ | - | 250 | - | MHz |

NOTE: "Fully ROHS compliant", "100% Sn plating (Pb-free)".

# RATING AND CHARACTERISTICS CURVES (DTC123JUA)

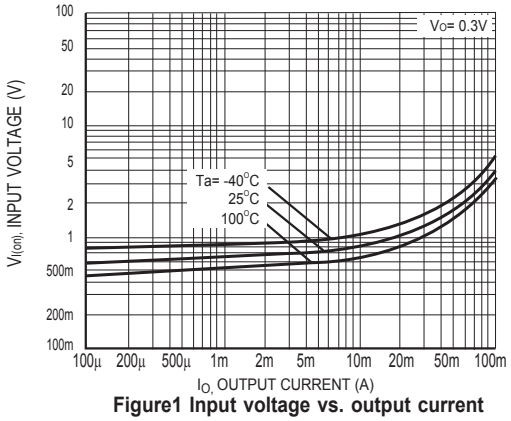



**Figure1 Input voltage vs. output current (ON Characteristics)**

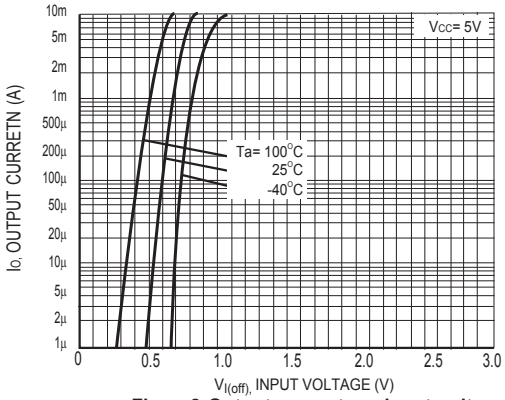



**Figure2 Output current vs. input voltage (OFF Characteristics)**

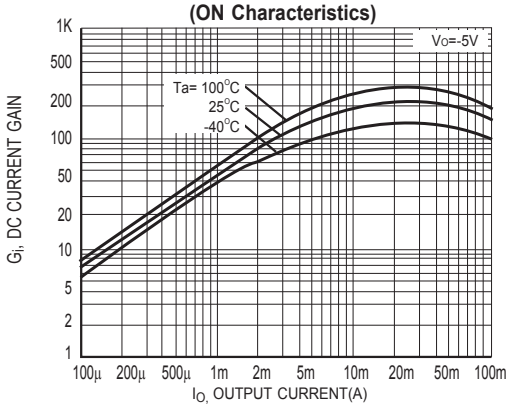



**Figure3 DC current gain vs. output current**

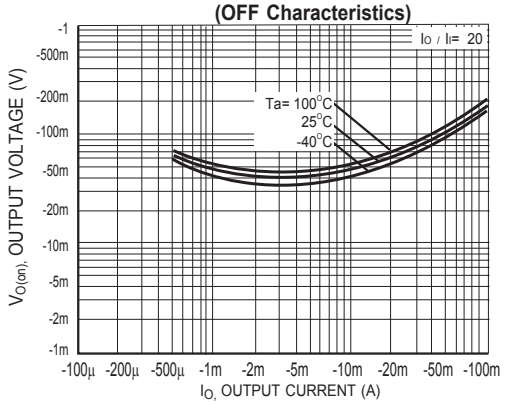



**Figure4 Output voltage vs. output current**

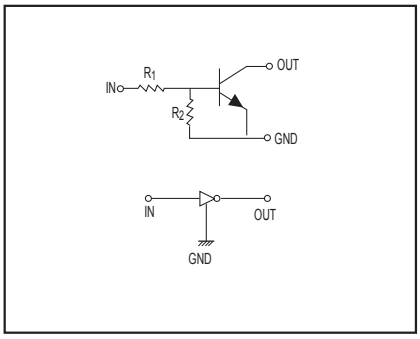



**Figure5 Equivalent circuit**

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