

**SOT-323 DIGITAL TRANSISTORS
TRANSISTOR (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

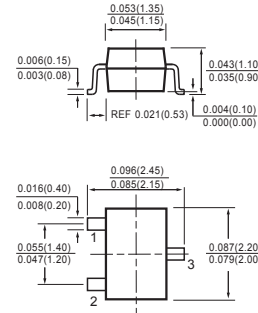
- * Case: Molded plastic
- * Epoxy: UL 94V-O rate flame retardant
- * Lead: MIL-STD-202E method 208C guaranteed
- * Mounting position: Any
- * Weight: 0.006 gram

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature unless otherwise specified.



SOT-323



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

| RATINGS | SYMBOL | VALUE | UNITS |
|-----------------------------|---------------|-------------|-------|
| Collector-base Voltage | $V_{(BR)CBO}$ | 50 | V |
| Collector-emitter Voltage | $V_{(BR)CEO}$ | 50 | V |
| Emitter-base Voltage | $V_{(BR)EBO}$ | 5 | V |
| Collector Current | I_C | 100 | mA |
| Collector Power dissipation | P_C | 200 | mW |
| Junction temperature | T_J | 150 | °C |
| Storage Temperature | T_{STG} | -55 to +150 | °C |

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

| CHARACTERISTICS | SYMBOL | MIN. | TYP. | MAX. | UNITS |
|-------------------------------------------------------|------------------------------|--------------|------|------|-------|
| Input voltage | $(V_{CC}= 5V, I_O=100\mu A)$ | $V_{I(off)}$ | - | 0.5 | V |
| | $(V_O= 0.3V, I_O=2mA)$ | $V_{I(on)}$ | 3 | - | V |
| Output voltage $(I_O/I_I=10mA/0.5mA)$ | $V_{O(on)}$ | - | - | 0.3 | V |
| Input current $(V_I= 5V)$ | I_I | - | - | 0.18 | mA |
| Output current $(V_{CC}= 50V, V_I=0)$ | $I_{O(off)}$ | - | - | 0.5 | uA |
| DC current gain $(V_O= 5V, I_O= 5mA)$ | G_I | 68 | - | - | |
| Resistance ratio | R_2/R_1 | 0.8 | 1 | 1.2 | |
| Transition frequency $(V_O= 10V, I_O= 5mA, f=100MHz)$ | f_T | - | 250 | - | MHz |
| Input resistance | R_1 | 32.9 | 47 | 61.1 | KΩ |

RATING AND CHARACTERISTICS CURVES (DTC144EUA)

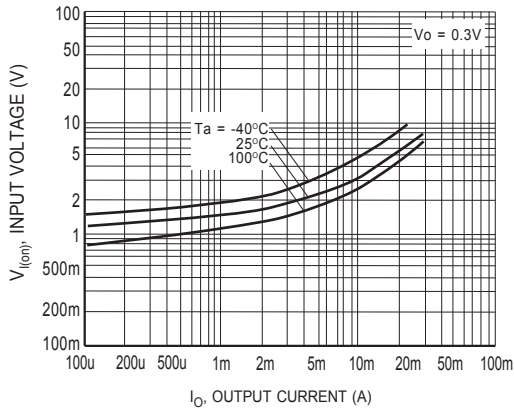


Figure1 Input voltage vs. output current (ON characteristics)

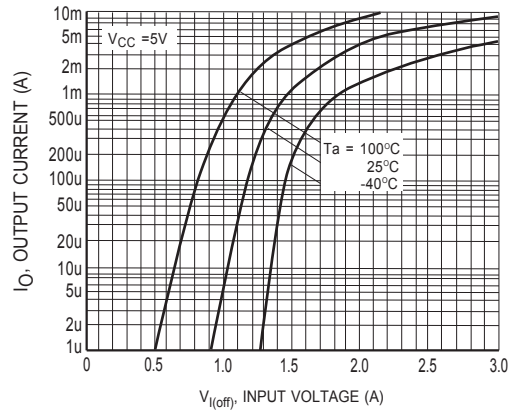


Figure2 Output current vs. input voltage (OFF characteristics)

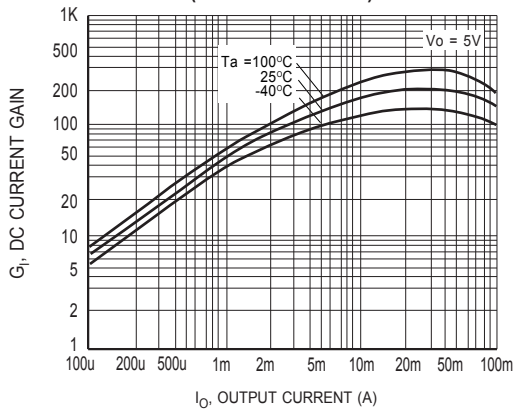


Figure3 DC current gain vs. output current

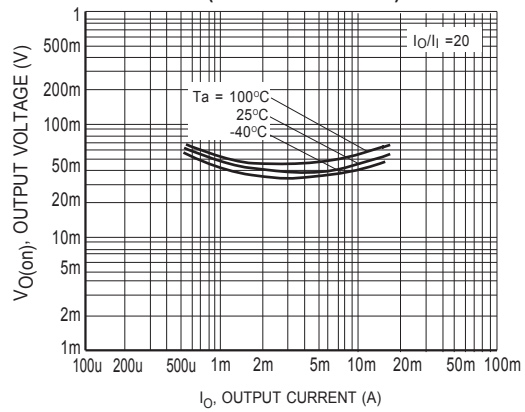


Figure4 Output voltage vs. output current

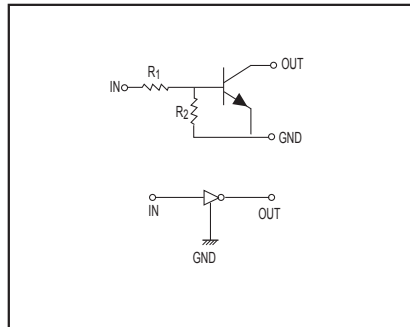


Figure5 Equivalent circuit

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