

## SOT-323 DIGITAL TRANSISTOR TRANSISTORS(NPN)

### FEATURES

- \* Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors.(see equivalent circuit).
- \* 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.



**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         | $T_{stg}$     | -55~150 | °C    |

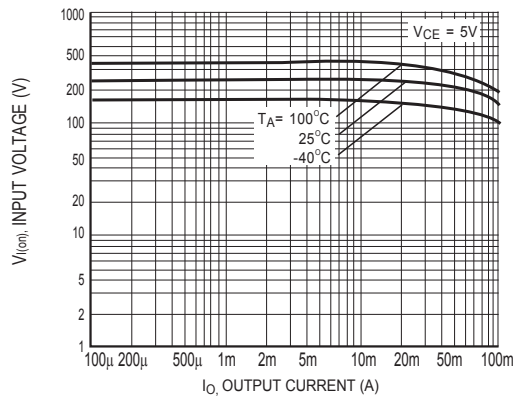
**ELECTRICAL CHARACTERISTICS** ( @ TA = 25°C unless otherwise noted )

| CHARACTERISTICS                                                    | SYMBOL        | MIN. | TYP. | MAX. | UNITS      |
|--------------------------------------------------------------------|---------------|------|------|------|------------|
| Collector-base breakdown voltage ( $I_C = 50\mu A$ )               | $V_{(BR)CBO}$ | 50   | -    | -    | V          |
| Collector-emitter breakdown voltage ( $I_C = 1mA$ )                | $V_{(BR)CEO}$ | 50   | -    | -    | V          |
| Emitter-base breakdown voltage ( $I_E = 50\mu A$ )                 | $V_{(BR)EBO}$ | 5    | -    | -    | V          |
| Collector cut-off current ( $V_{CB} = 50V$ )                       | $I_{CBO}$     | -    | -    | 0.5  | $\mu A$    |
| Emitter cut-off current ( $V_{EB} = 4V$ )                          | $I_{EBO}$     | -    | -    | 0.5  | $\mu A$    |
| Collector-emitter saturation voltage ( $I_C = 5mA, I_B = 0.25mA$ ) | $h_{FE}$      | -    | -    | 0.3  | V          |
| DC current gain ( $V_{CE} = 5V, I_C = 1mA$ )                       | $V_{CE(sat)}$ | 100  | -    | 600  | -          |
| Input resistor                                                     | $R_1$         | 3.29 | 4.7  | 6.11 | K $\Omega$ |
| Transition frequency ( $V_O = 10V, I_O = 5mA, f = 100MHz$ )        | $f_T$         | -    | 250  | -    | MHz        |

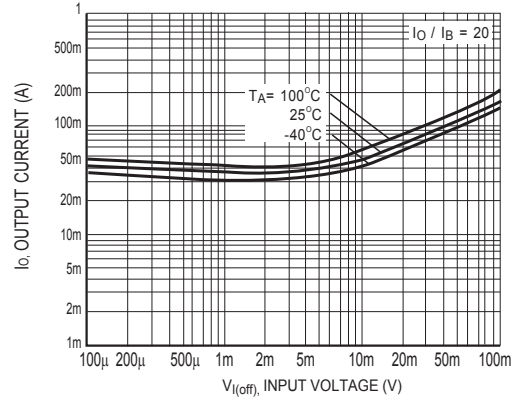
NOTE: "Fully ROHS compliant", "100% Sn plating (Pb-free)".

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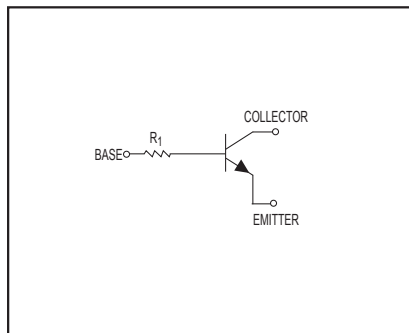
## RATING AND CHARACTERISTICS CURVES (DTC143TUA)



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



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



**Figure3 Equivalent circuit**

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