

## DTC144EUA

### Features

- Lead Free Finish/RoHS Compliant ("P" Suffix designates RoHS Compliant. See ordering information)
- Epoxy meets UL 94 V-0 flammability rating
- Moisture Sensitivity Level 1
- 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, making device design easy
- Halogen free available upon request by adding suffix "-HF"

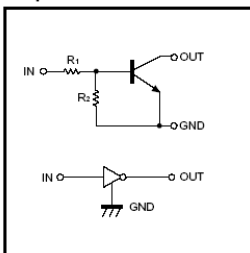
### Absolute maximum ratings @ 25°C

| Symbol    | Parameter            | Min | Typ | Max | Unit |
|-----------|----------------------|-----|-----|-----|------|
| $V_{CC}$  | Supply voltage       | --- | 50  | --- | V    |
| $V_{IN}$  | Input voltage        | -10 | --- | 40  | V    |
| $I_O$     | Output current       | --- | 100 | --- | mA   |
| $P_d$     | Power dissipation    | --- | 200 | --- | mW   |
| $T_j$     | Junction temperature | --- | 150 | --- | °C   |
| $T_{stg}$ | Storage temperature  | -55 | --- | 150 | °C   |

### Electrical Characteristics @ 25°C

| Symbol       | Parameter                                                      | Min  | Typ | Max  | Unit       |
|--------------|----------------------------------------------------------------|------|-----|------|------------|
| $V_{I(off)}$ | Input voltage ( $V_{CC}=5V$ , $I_O=100 \mu A$ )                | ---  | --- | 0.5  | V          |
| $V_{I(on)}$  | Input voltage ( $V_O=0.3V$ , $I_O=2mA$ )                       | 3.0  | --- | ---  | V          |
| $V_{O(on)}$  | Output voltage ( $I_O/I_I=10mA/0.5mA$ )                        | ---  | --- | 0.3  | V          |
| $I_I$        | Input current ( $V_I=5V$ )                                     | ---  | --- | 0.18 | mA         |
| $I_{O(off)}$ | Output current ( $V_{CC}=50V$ , $V_I=0$ )                      | ---  | --- | 0.5  | $\mu A$    |
| $G_I$        | DC current gain ( $V_O=5V$ , $I_O=5mA$ )                       | 68   | --- | ---  | ---        |
| $R_I$        | Input resistance                                               | 32.9 | 47  | 61.1 | K $\Omega$ |
| $R_2/R_1$    | Resistance ratio                                               | 0.8  | 1.0 | 1.2  | ---        |
| $f_T$        | Transition frequency ( $V_{CE}=10V$ , $I_E=5mA$ , $f=100MHz$ ) | ---  | 250 | ---  | MHz        |

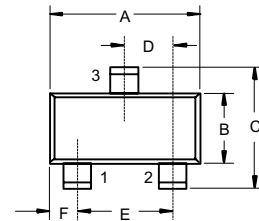
#### Equivalent circuit



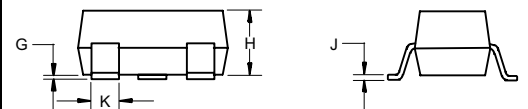
\*Marking: 26

## NPN Digital Transistors

### SOT-323

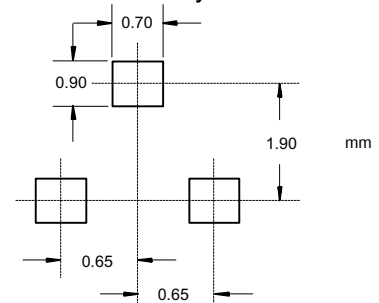


1: IN  
2: GND  
3: OUT



| DIM | INCHES       |      | MM           |      | NOTE |
|-----|--------------|------|--------------|------|------|
|     | MIN          | MAX  | MIN          | MAX  |      |
| A   | .071         | .087 | 1.80         | 2.20 |      |
| B   | .045         | .053 | 1.15         | 1.35 |      |
| C   | .079         | .087 | 2.00         | 2.20 |      |
| D   | .026 Nominal |      | 0.65 Nominal |      |      |
| E   | .047         | .055 | 1.20         | 1.40 |      |
| F   | .012         | .016 | .30          | .40  |      |
| G   | .000         | .004 | .000         | .100 |      |
| H   | .035         | .039 | .90          | 1.00 |      |
| J   | .004         | .010 | .100         | .250 |      |
| K   | .012         | .016 | .30          | .40  |      |

### Suggested Solder Pad Layout



# DTC144EUA



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## ●Electrical characteristic curves

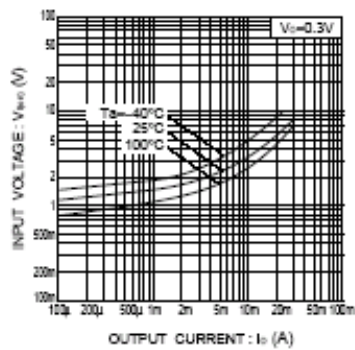


Fig.1 Input voltage vs. output current (ON characteristics)

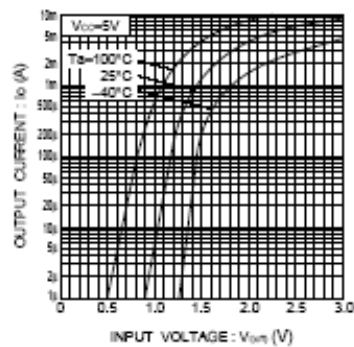


Fig.2 Output current vs. input voltage (OFF characteristics)

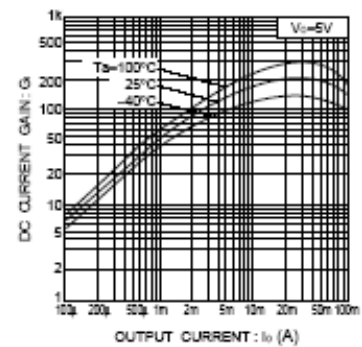


Fig.3 DC current gain vs. output current

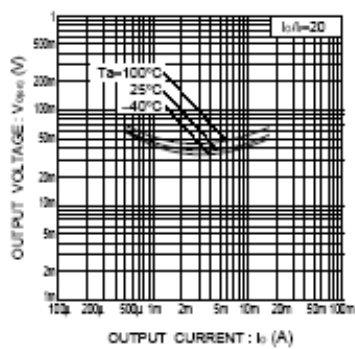


Fig.4 Output voltage vs. output current



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## Ordering Information :

| Device         | Packing               |
|----------------|-----------------------|
| Part Number-TP | Tape&Reel; 3Kpcs/Reel |

Note : Adding "-HF" suffix for halogen free, eg. Part Number-TP-HF

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