



# DTC114TCA

## 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 (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, making device design easy
- Halogen free available upon request by adding suffix "-HF"

## Absolute Maximum Ratings

| Parameter                    | Symbol    | Value   | Unit |
|------------------------------|-----------|---------|------|
| Collector-Base Voltage       | $V_{CBO}$ | 50      | V    |
| Collector-Emitter Voltage    | $V_{CEO}$ | 50      | V    |
| Emitter-Base voltage         | $V_{EBO}$ | 5       | V    |
| Collector Current-Continuous | $I_C$     | 100     | mA   |
| Collector Dissipation        | $P_C$     | 200     | mW   |
| Junction Temperature         | $T_J$     | 150     | °C   |
| Storage Temperature Range    | $T_{STG}$ | -55~150 | °C   |

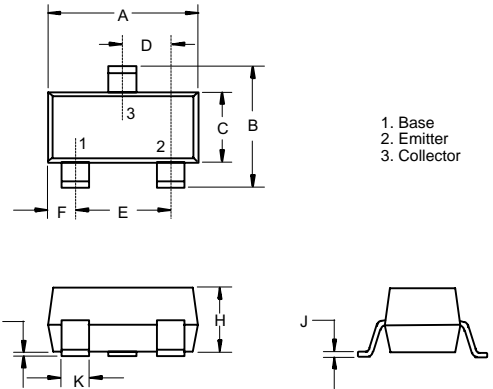
## Electrical Characteristics

| Sym           | Parameter   | Min | Typ | Max | Unit       |
|---------------|---|-----|-----|-----|------------|
| $V_{(BR)CBO}$ | Collector-Base Breakdown Voltage<br>( $I_C=50\mu A, I_E=0$ )    | 50  | --- | --- | V          |
| $V_{(BR)CEO}$ | Collector-Emitter Breakdown Voltage<br>( $I_C=1mA, I_B=0$ )     | 50  | --- | --- | V          |
| $V_{(BR)EBO}$ | Emitter-Base Breakdown Voltage<br>( $I_E=50\mu A, I_C=0$ )      | 5   | --- | --- | V          |
| $I_{CBO}$     | Collector Cut-off Current<br>( $V_{CB}=50V, I_E=0$ )            | --- | --- | 0.5 | $\mu A$    |
| $I_{EBO}$     | Emitter Cut-off Current<br>( $V_{EB}=4V, I_C=0$ )               | --- | --- | 0.5 | $\mu A$    |
| $h_{FE}$      | DC Current Gain<br>( $V_{CE}=5V, I_C=1mA$ )                     | 100 | 300 | 600 | ---        |
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage<br>( $I_C=10mA, I_B=1mA$ ) | --- | --- | 0.3 | V          |
| $R_1$         | Input Resistor  | 7   | 10  | 13  | K $\Omega$ |
| $f_T$         | Transition Frequency<br>( $V_{CE}=10V, I_C=-5mA, f=100MHz$ )    | --- | 250 | --- | MHz        |

\*Marking: 04

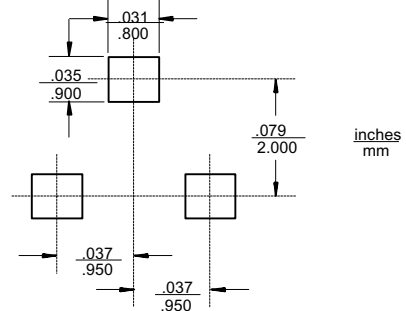
## NPN Digital Transistor

### SOT-23



| DIM | INCHES |       | MM   |      | NOTE |
|-----|--------|-------|------|------|------|
|     | MIN    | MAX   | MIN  | MAX  |      |
| A   | .110   | .120  | 2.80 | 3.04 |      |
| B   | .083   | .104  | 2.10 | 2.64 |      |
| C   | .047   | .055  | 1.20 | 1.40 |      |
| D   | .035   | .041  | .89  | 1.03 |      |
| E   | .070   | .081  | 1.78 | 2.05 |      |
| F   | .018   | .024  | .45  | .60  |      |
| G   | .0005  | .0039 | .013 | .100 |      |
| H   | .035   | .044  | .89  | 1.12 |      |
| J   | .003   | .007  | .085 | .180 |      |
| K   | .015   | .020  | .37  | .51  |      |

### Suggested Solder Pad Layout



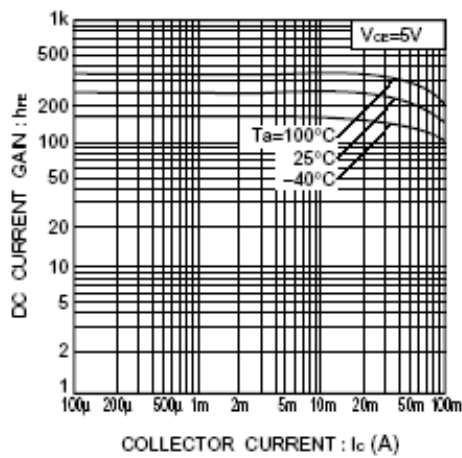


Fig.1 DC current gain vs. collector current

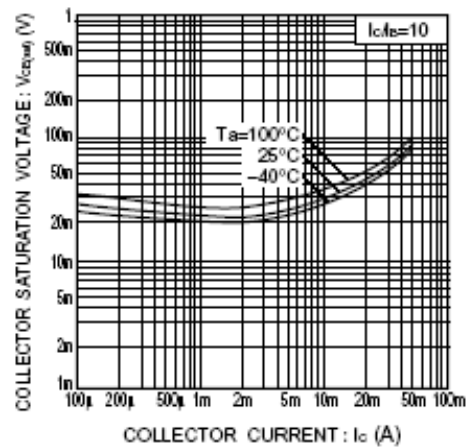
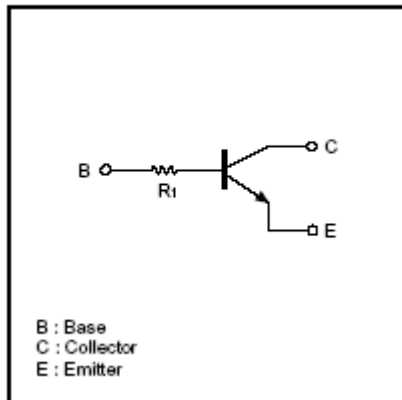


Fig.2 Collector-emitter saturation voltage vs. collector current

●Equivalent circuit





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### Ordering Information :

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

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

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