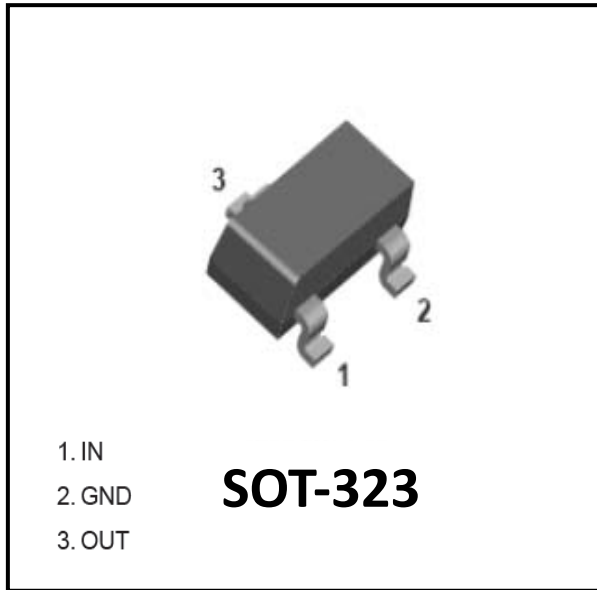


## NPN Digital Transistors (Built-in Resistors)



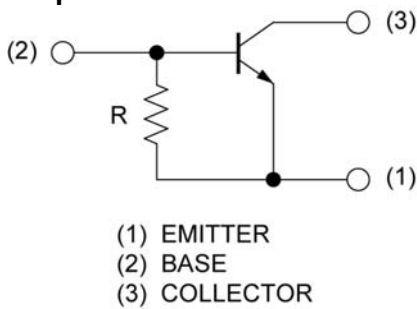
### Features

- 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
- Surface mount package ideally Suited for Automatic Insertion

### Mechanical Data

- **Package:** SOT-323
- **Terminals:** Tin plated leads, solderable per J-STD-002 and JESD22-B102
- **Marking:** K24

### ■Equivalent circuit



### ■Maximum Ratings (Ta=25°C Unless otherwise specified)

| ITEM                      | SYMBOL    | UNIT | CONDITIONS | VALUE       |
|---------------------------|-----------|------|------------|-------------|
| Collector-Base Voltage    | $V_{CBO}$ | V    |            | 50          |
| Collector-Emitter Voltage | $V_{CEO}$ | V    |            | 50          |
| Emitter-Base Voltage      | $V_{EBO}$ | V    |            | 5           |
| Collector Current         | $I_C$     | mA   |            | 100         |
| Power Dissipation         | $P_D$     | mW   |            | 200         |
| Junction Temperature      | $T_J$     | °C   |            | 150         |
| Storage Temperature       | $T_{STG}$ | °C   |            | -55 to +150 |



## DTC114GUA

### ■ Electrical Characteristics (Ta=25°C unless otherwise specified)

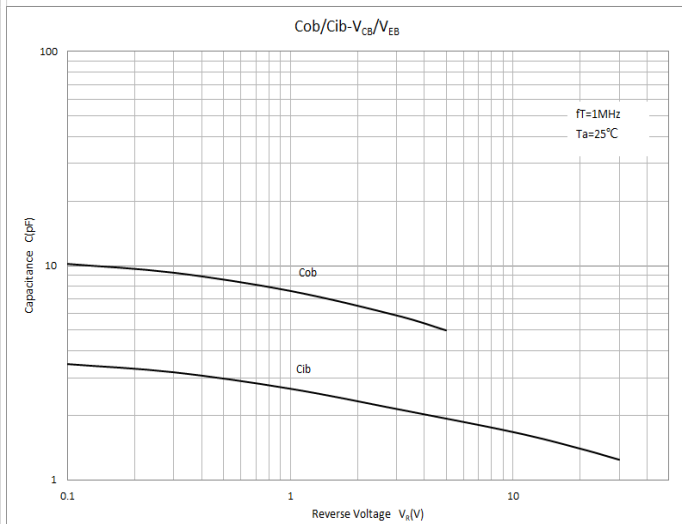
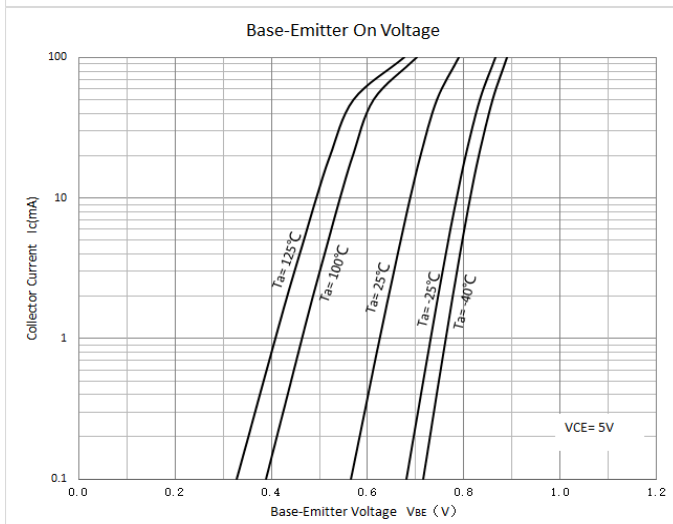
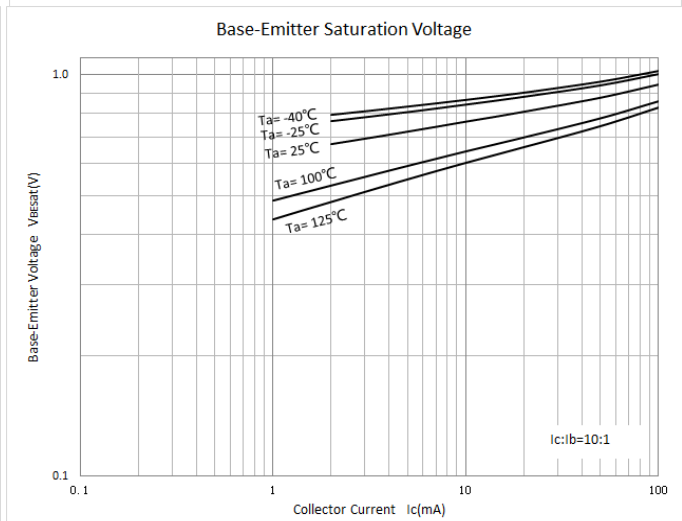
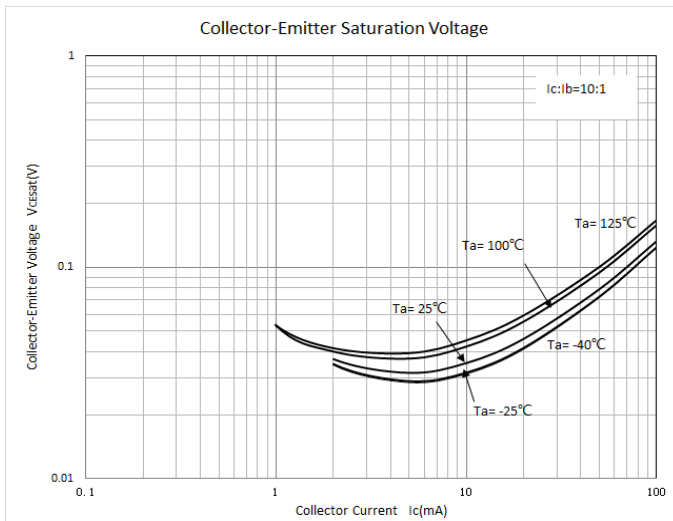
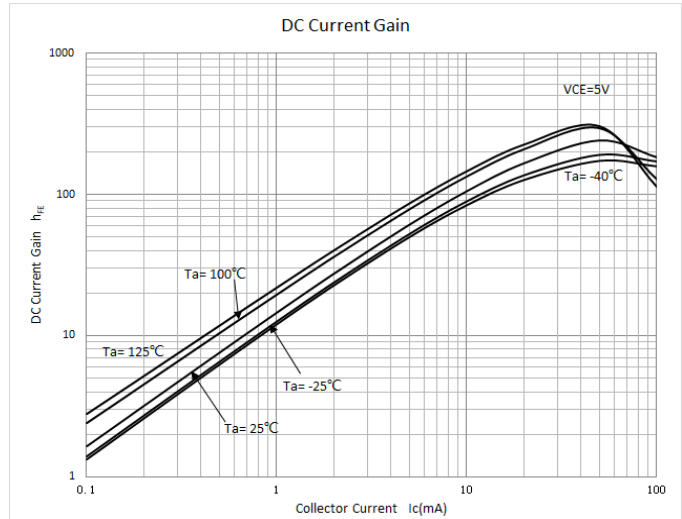
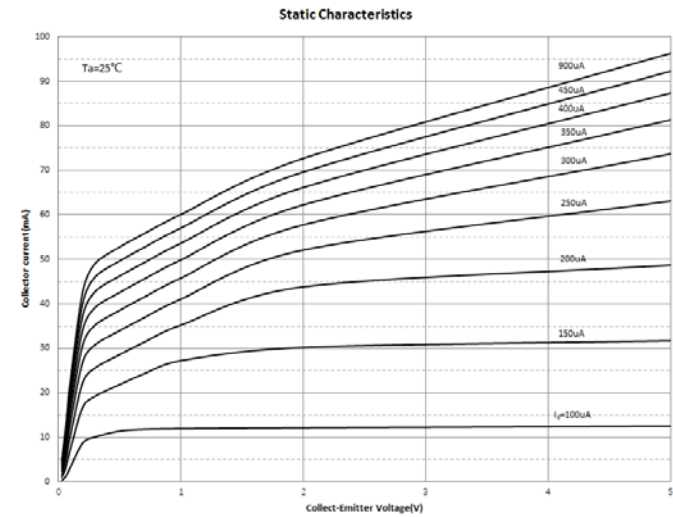
| ITEM                                 | SYMBOL        | UNIT       | CONDITIONS                       | MIN | TYP | MAX |
|--------------------------------------|---------------|------------|----------------------------------|-----|-----|-----|
| Collector-Base Breakdown Voltage     | $V_{CBO}$     | V          | $I_C=50\mu A$                    | 50  |     |     |
| Collector-Emitter Breakdown Voltage  | $V_{CEO}$     | V          | $I_C=1mA$                        | 50  |     |     |
| Emitter-Base Breakdown Voltage       | $V_{EBO}$     | V          | $I_E=720\mu A$                   | 5   |     |     |
| Collector Cut-off Current            | $I_{CBO}$     | $\mu A$    | $V_{CB}=50V$                     |     |     | 0.5 |
| Emitter Cut-off Current              | $I_{EBO}$     | $\mu A$    | $V_{EB}=4V$                      |     |     | 0.5 |
| DC current gain                      | $h_{FE}$      |            | $V_{CE}=5V, I_C=5mA$             | 30  |     |     |
| Input resistance                     | R             | k $\Omega$ |                                  | 7   | 10  | 13  |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ | V          | $I_C=10mA, I_B=0.5mA$            |     |     | 0.3 |
| Transition frequency                 | $f_T$         | MHz        | $V_{CE}=10V, I_E=-5mA, f=100MHz$ |     | 250 |     |

### ■ Ordering Information (Example)

| PREFERRED P/N | PACKING CODE | UNIT WEIGHT(g)    | MINIMUM PACKAGE(pcs) | INNER BOX QUANTITY(pcs) | OUTER CARTON QUANTITY(pcs) | DELIVERY MODE |
|---------------|--------------|-------------------|----------------------|-------------------------|----------------------------|---------------|
| DTC114GUA     | F2           | Approximate 0.005 | 3000                 | 30000                   | 120000                     | 7" reel       |



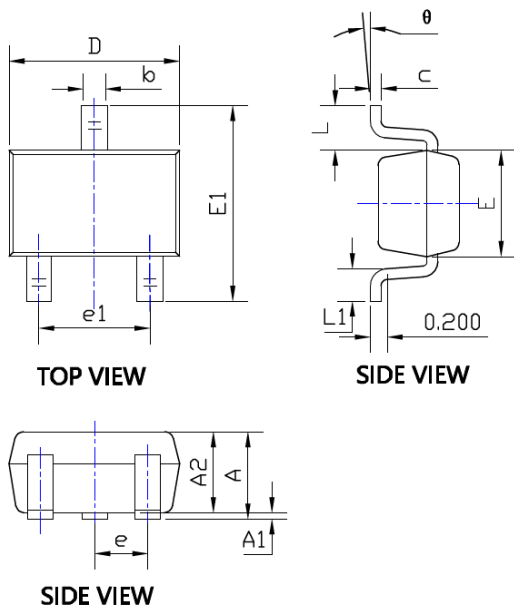
## ■ Characteristics (Typical)





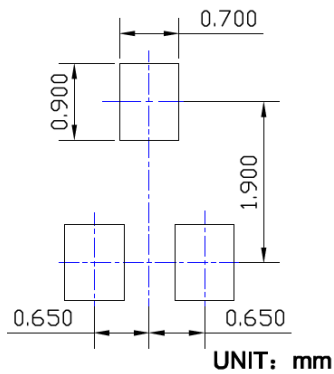
## DTC114GUA

### ■SOT-323 Package Outline Dimensions



| SYMBOL | DIMENSIONS |       |            |       |
|--------|------------|-------|------------|-------|
|        | INCHES     |       | Millimeter |       |
|        | MIN.       | MAX.  | MIN.       | MAX.  |
| A      | 0.035      | 0.043 | 0.900      | 1.100 |
| A1     | 0.000      | 0.004 | 0.000      | 0.100 |
| A2     | 0.035      | 0.039 | 0.900      | 1.000 |
| b      | 0.006      | 0.016 | 0.150      | 0.400 |
| c      | 0.004      | 0.010 | 0.100      | 0.250 |
| D      | 0.071      | 0.087 | 1.800      | 2.200 |
| E      | 0.045      | 0.053 | 1.150      | 1.350 |
| E1     | 0.085      | 0.096 | 2.150      | 2.450 |
| e      | 0.026 TYP  |       | 0.650 TYP  |       |
| e1     | 0.047      | 0.055 | 1.200      | 1.400 |
| L      | 0.021 REF  |       | 0.525 REF  |       |
| L1     | 0.010      | 0.018 | 0.260      | 0.460 |
| θ      | 0°         | 8°    | 0°         | 8°    |

### ■SOT-323 Soldering Footprint





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