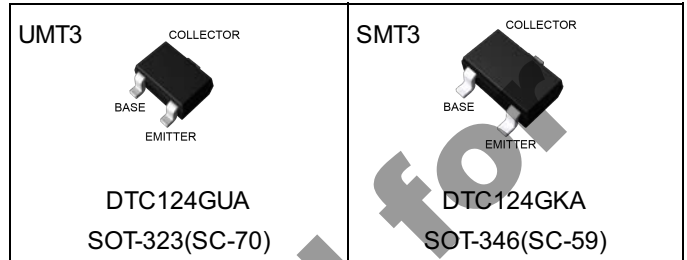


| Parameter | Value        |
|-----------|--------------|
| $V_{CEO}$ | 50V          |
| $I_C$     | 100mA        |
| R         | 22k $\Omega$ |

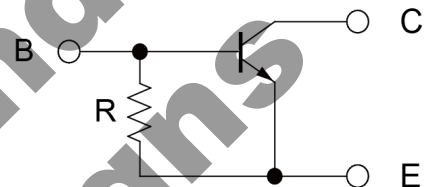
### ●Outline



### ●Features

- 1) Built-In Biasing Resistor
- 2) Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors (see inner circuit).
- 3) The bias resistors consist of thin-film resistors with complete isolation to allow negative biasing of the input. They also have the advantage of completely eliminating parasitic effects.
- 4) Complementary PNP Types: DTA124G series
- 5) Lead Free/RoHS Compliant.

### ●Inner circuit



B: BASE  
C: COLLECTOR  
E: EMITTER

### ●Application

Switching circuit, Inverter circuit, Interface circuit, Driver circuit

### ●Packaging specifications

| Part No.  | Package | Package size | Taping code | Reel size (mm) | Tape width (mm) | Basic ordering unit.(pcs) | Marking |
|-----------|---------|--------------|-------------|----------------|-----------------|---------------------------|---------|
| DTC124GUA | UMT3    | 2021         | T106        | 180            | 8               | 3000                      | K25     |
| DTC124GKA | SMT3    | 2928         | T146        | 180            | 8               | 3000                      | K25     |

● **Absolute maximum ratings** ( $T_a = 25^\circ\text{C}$ )

| Parameter                    |           | Symbol     | Values      | Unit             |
|------------------------------|-----------|------------|-------------|------------------|
| Collector-base voltage       |           | $V_{CBO}$  | 50          | V                |
| Collector-emitter voltage    |           | $V_{CEO}$  | 50          | V                |
| Emitter-base voltage         |           | $V_{EBO}$  | 5           | V                |
| Collector current            |           | $I_C$      | 100         | mA               |
| Power dissipation            | DTC124GUA | $P_D^{*1}$ | 200         | mW               |
|                              | DTC124GKA |            | 200         |                  |
| Junction temperature         |           | $T_j$      | 150         | $^\circ\text{C}$ |
| Range of storage temperature |           | $T_{stg}$  | -55 to +150 | $^\circ\text{C}$ |

● **Electrical characteristics** ( $T_a = 25^\circ\text{C}$ )

| Parameter                            | Symbol        | Conditions  | Values |      |      | Unit          |
|--------------------------------------|---------------|---|--------|------|------|---------------|
|                                      |               |   | Min.   | Typ. | Max. |               |
| Collector-base breakdown voltage     | $BV_{CBO}$    | $I_C = 50\mu\text{A}$                                       | 50     | -    | -    | V             |
| Collector-emitter breakdown voltage  | $BV_{CEO}$    | $I_C = 1\text{mA}$  | 50     | -    | -    | V             |
| Emitter-base breakdown voltage       | $BV_{EBO}$    | $I_E = 330\mu\text{A}$                                      | 5      | -    | -    | V             |
| Collector cut-off current            | $I_{CBO}$     | $V_{CB} = 50\text{V}$                                       | -      | -    | 0.5  | $\mu\text{A}$ |
| Emitter cut-off current              | $I_{EBO}$     | $V_{EB} = 4\text{V}$  | 140    | -    | 260  | $\mu\text{A}$ |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_C / I_B = 10\text{mA} / 0.5\text{mA}$                    | -      | -    | 0.3  | V             |
| DC current gain                      | $h_{FE}$      | $V_{CE} = 5\text{V}, I_C = 5\text{mA}$                      | 56     | -    | -    | -             |
| Emitter-base resistance              | R             | -   | 15.4   | 22   | 28.6 | k $\Omega$    |
| Transition frequency                 | $f_T^{*2}$    | $V_{CE} = 10\text{V}, I_E = -5\text{mA}, f = 100\text{MHz}$ | -      | 250  | -    | MHz           |

\*1 Each terminal mounted on a reference footprint

\*2 Characteristics of built-in transistor

● Electrical characteristic curves ( $T_a = 25^\circ\text{C}$ )

Fig.1 Grounded emitter propagation characteristics

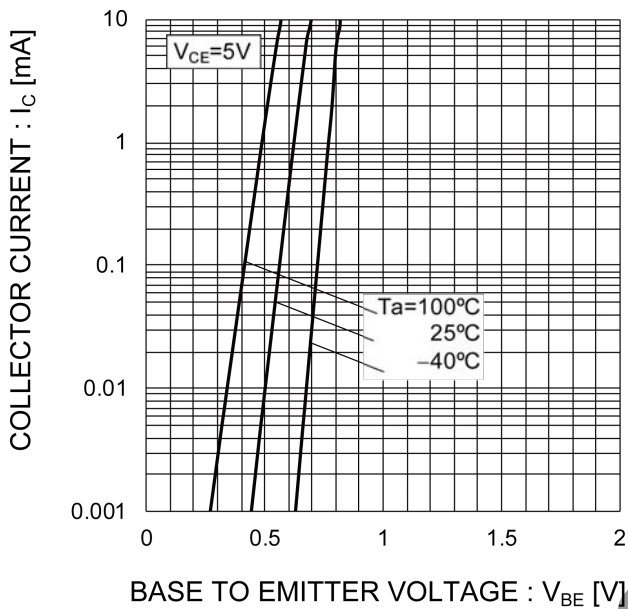


Fig.2 Grounded emitter output characteristics

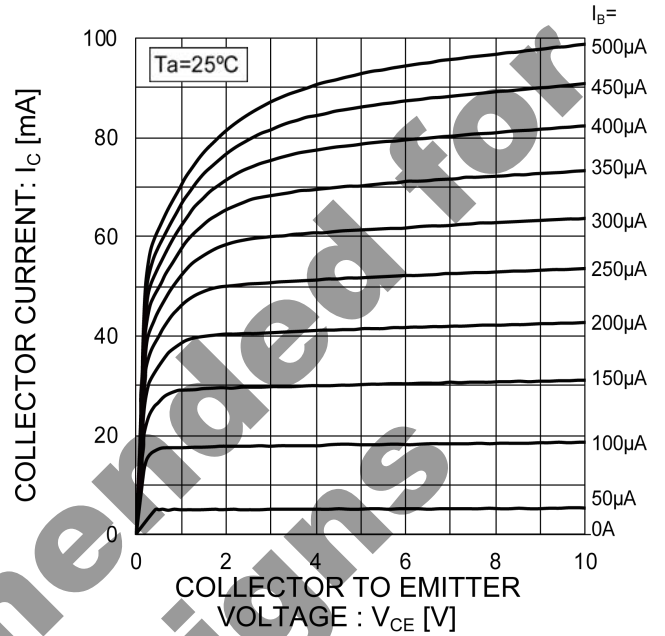


Fig.3 DC Current gain vs. Collector Current

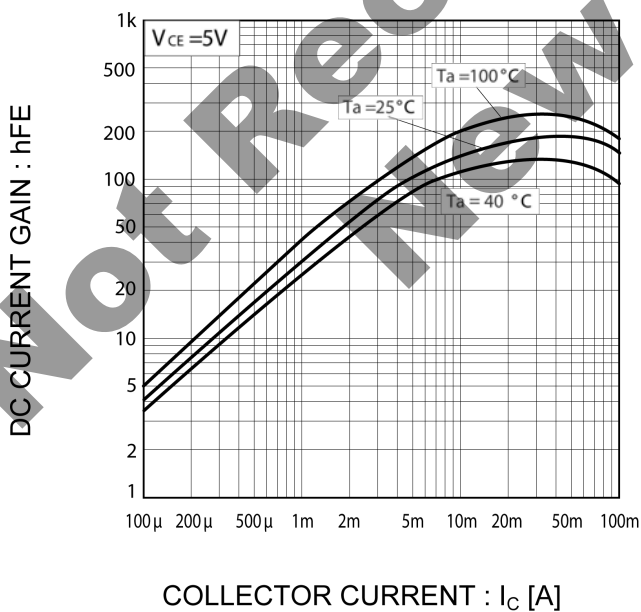
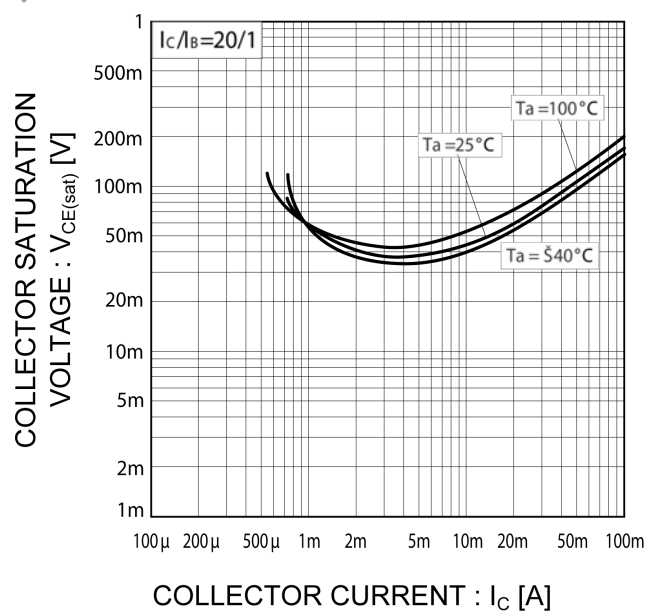
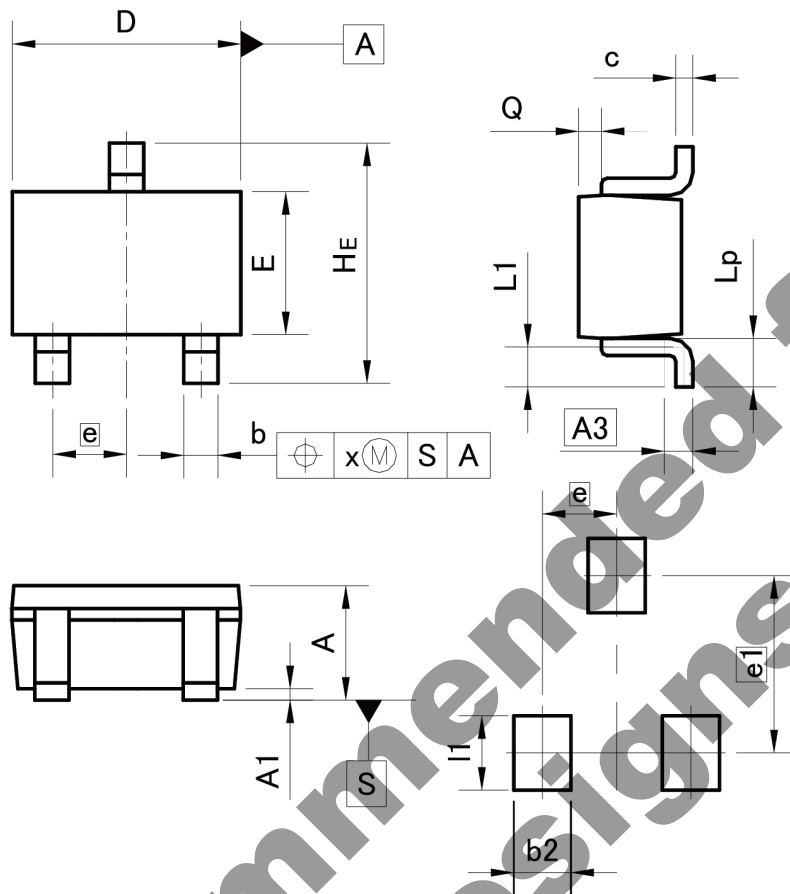


Fig.4 Collector-emitter saturation voltage vs. Collector Current



●Dimensions

UMT3



Pattern of terminal position areas  
[Not a recommended pattern of soldering pads]

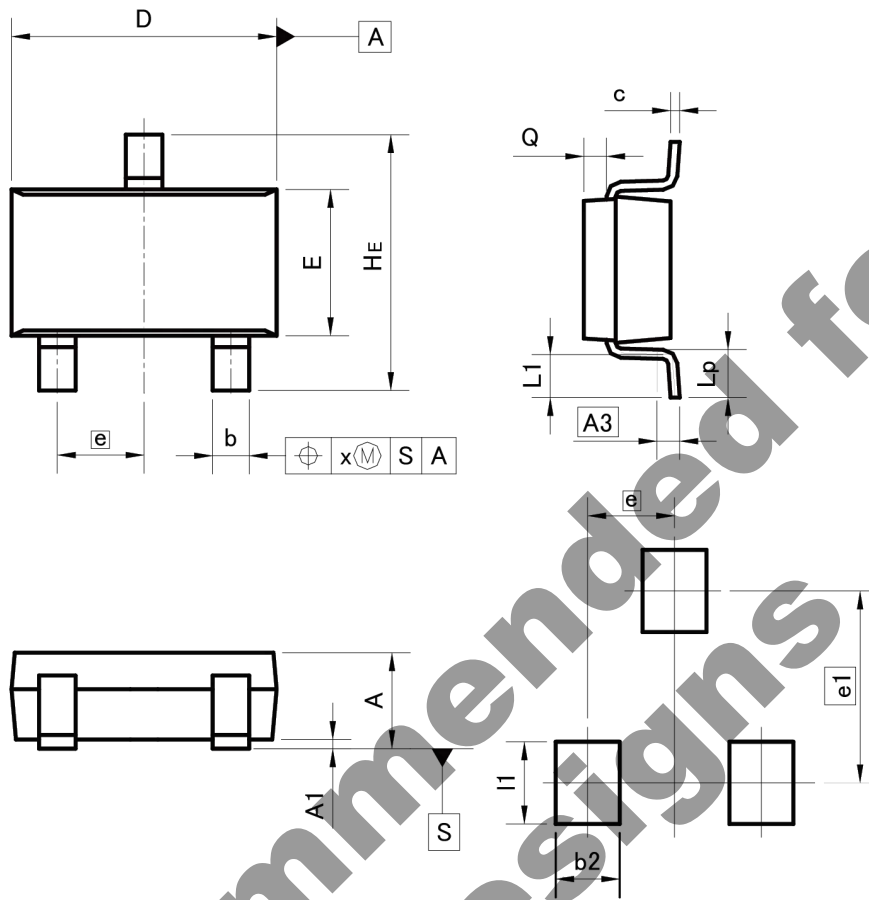
| DIM | MILIMETERS |      | INCHES |       |
|-----|------------|------|--------|-------|
|     | MIN        | MAX  | MIN    | MAX   |
| A   | 0.80       | 1.00 | 0.031  | 0.039 |
| A1  | 0.00       | 0.10 | 0.000  | 0.004 |
| A3  | 0.25       |      | 0.010  |       |
| b   | 0.15       | 0.30 | 0.006  | 0.012 |
| c   | 0.10       | 0.20 | 0.004  | 0.008 |
| D   | 1.90       | 2.10 | 0.075  | 0.083 |
| E   | 1.15       | 1.35 | 0.045  | 0.053 |
| e   | 0.65       |      | 0.026  |       |
| HE  | 2.00       | 2.20 | 0.079  | 0.087 |
| L1  | 0.20       | 0.50 | 0.008  | 0.020 |
| Lp  | 0.25       | 0.55 | 0.010  | 0.022 |
| Q   | 0.10       | 0.30 | 0.004  | 0.012 |
| x   | -          | 0.10 | -      | 0.004 |

| DIM | MILIMETERS |      | INCHES |       |
|-----|------------|------|--------|-------|
|     | MIN        | MAX  | MIN    | MAX   |
| b2  | -          | 0.50 | -      | 0.020 |
| e1  | 1.55       |      | 0.061  |       |
| l1  | -          | 0.65 | -      | 0.026 |

Dimension in mm/inches

●Dimensions

SMT3



Pattern of terminal position areas  
[Not a recommended pattern of soldering pads]

| DIM | MILIMETERS |      | INCHES |       |
|-----|------------|------|--------|-------|
|     | MIN        | MAX  | MIN    | MAX   |
| A   | 1.00       | 1.30 | 0.039  | 0.051 |
| A1  | 0.00       | 0.10 | 0.000  | 0.004 |
| A3  | 0.25       |      | 0.010  |       |
| b   | 0.35       | 0.50 | 0.014  | 0.020 |
| c   | 0.09       | 0.25 | 0.004  | 0.010 |
| D   | 2.80       | 3.00 | 0.110  | 0.118 |
| E   | 1.50       | 1.80 | 0.059  | 0.071 |
| e   | 0.95       |      | 0.037  |       |
| HE  | 2.60       | 3.00 | 0.102  | 0.118 |
| L1  | 0.30       | 0.60 | 0.012  | 0.024 |
| Lp  | 0.40       | 0.70 | 0.016  | 0.028 |
| Q   | 0.20       | 0.30 | 0.008  | 0.012 |
| x   | -          | 0.10 | -      | 0.004 |
| y   | -          | 0.10 | -      | 0.004 |

| DIM | MILIMETERS |      | INCHES |       |
|-----|------------|------|--------|-------|
|     | MIN        | MAX  | MIN    | MAX   |
| b2  | -          | 0.60 | -      | 0.024 |
| e1  | 2.10       |      | 0.083  |       |
| I1  | -          | 0.90 | -      | 0.035 |

Dimension in mm/inches

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