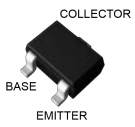
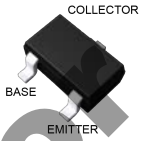
# DTA115G series

PNP -100mA -50V Digital Transistors (Bias Resistor Built-in Transistors) Datasheet

| Parameter | Value |
|---|---|
| $V_{CEO}$ | -50V |
| $I_C$ | -100mA |
| R | 100kΩ |

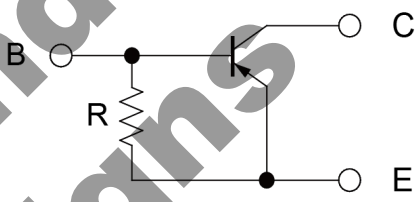
## ●Outline

| UMT3 | SMT3 |
|---|---|
|   |   |
| DTA115GUA | DTA115GKA |
| SOT-323(SC-70) | SOT-346(SC-59) |

## ●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 NPN Types: DTC115G 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 |
|---|---|---|---|---|---|---|---|
| DTA115GUA | UMT3 | 2021 | T106 | 180 | 8 | 3000 | K19 |
| DTA115GKA | SMT3 | 2928 | T146 | 180 | 8 | 3000 | K19 |

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## ●Absolute maximum ratings ($T_a$ = 25°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 | DTA115GUA | $P_D$*1 | 200 | mW |
| | DTA115GKA | | 200 | |
| Junction temperature | | $T_j$ | 150 | ℃ |
| Range of storage temperature | | $T_{stg}$ | -55 to +150 | ℃ |

## ●Electrical characteristics ($T_a$ = 25°C)

| Parameter | Symbol | Conditions | Values | | | Unit |
|---|---|---|---|---|---|---|
| | | | Min. | Typ. | Max. | |
| Collector-base breakdown voltage | $BV_{CBO}$ | $I_C$ = -50μA | -50 | - | - | V |
| Collector-emitter breakdown voltage | $BV_{CEO}$ | $I_C$ = -1mA | -50 | - | - | V |
| Emitter-base breakdown voltage | $BV_{EBO}$ | $I_E$ = -72μA | -5 | - | - | V |
| Collector cut-off current | $I_{CBO}$ | $V_{CB}$ = -50V | - | - | -0.5 | μA |
| Emitter cut-off current | $I_{EBO}$ | $V_{EB}$ = -4V | -30 | - | -58 | μA |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_C$ / $I_B$ = -5mA / -0.25mA | - | - | -0.3 | V |
| DC current gain | $h_{FE}$ | $V_{CE}$ = -5V, $I_C$=-5mA | 82 | - | - | - |
| Emitter-base resistance | R | - | 70 | 100 | 130 | kΩ |
| Transition frequency | $f_T$*2 | $V_{CE}$ = -10V, $I_E$ = 5mA, f = 100MHz | - | 250 | - | MHz |

*1 Each terminal mounted on a reference footprint

*2 Characteristics of built-in transistor

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## ●Electrical characteristic curves ($T_a$ =25°C)

Fig.1 Grounded emitter propagation characteristics

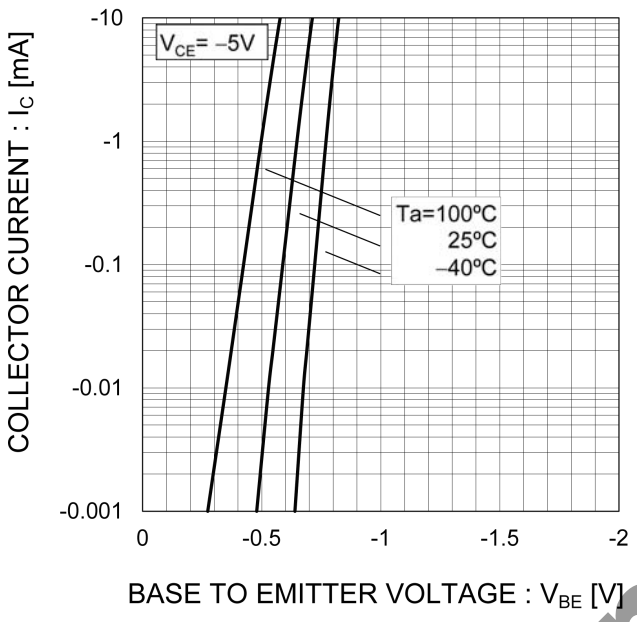



Fig.2 Grounded emitter output characteristics

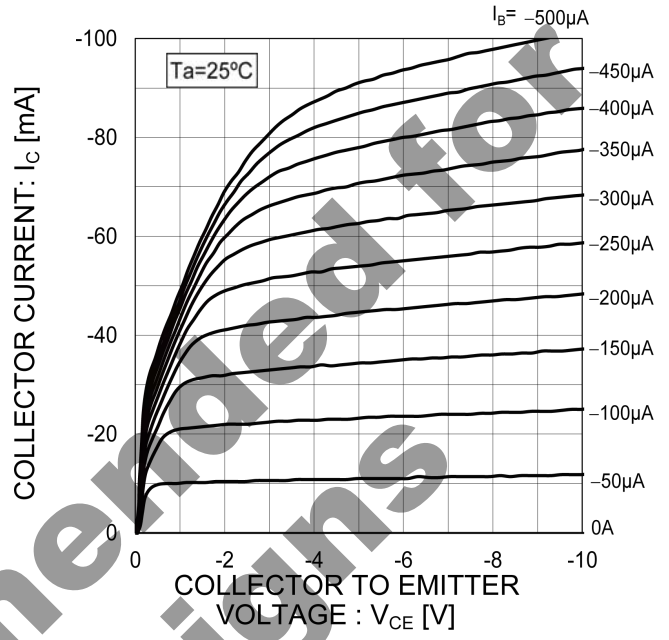



Fig.3 DC Current gain vs. Collector Current

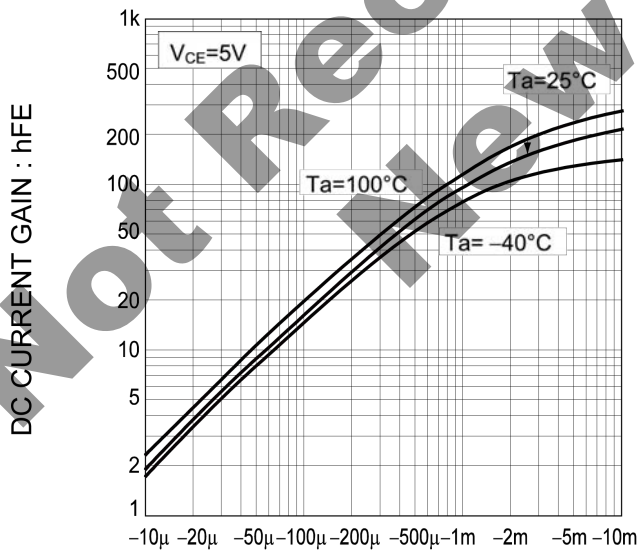
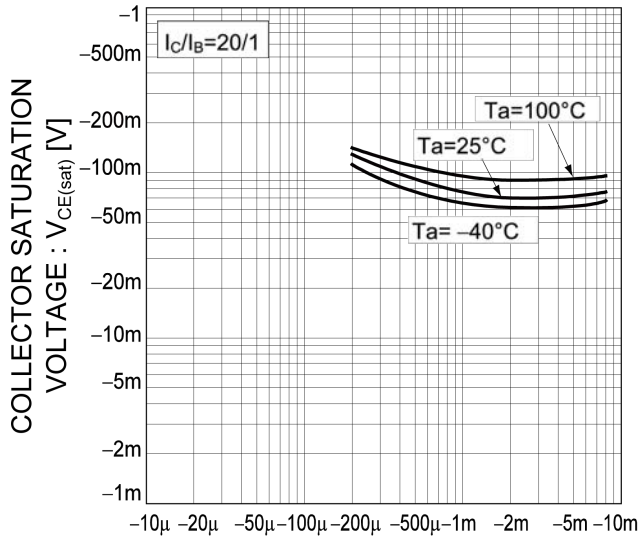



Fig.4 Collector-emitter saturation voltage vs. Collector Current



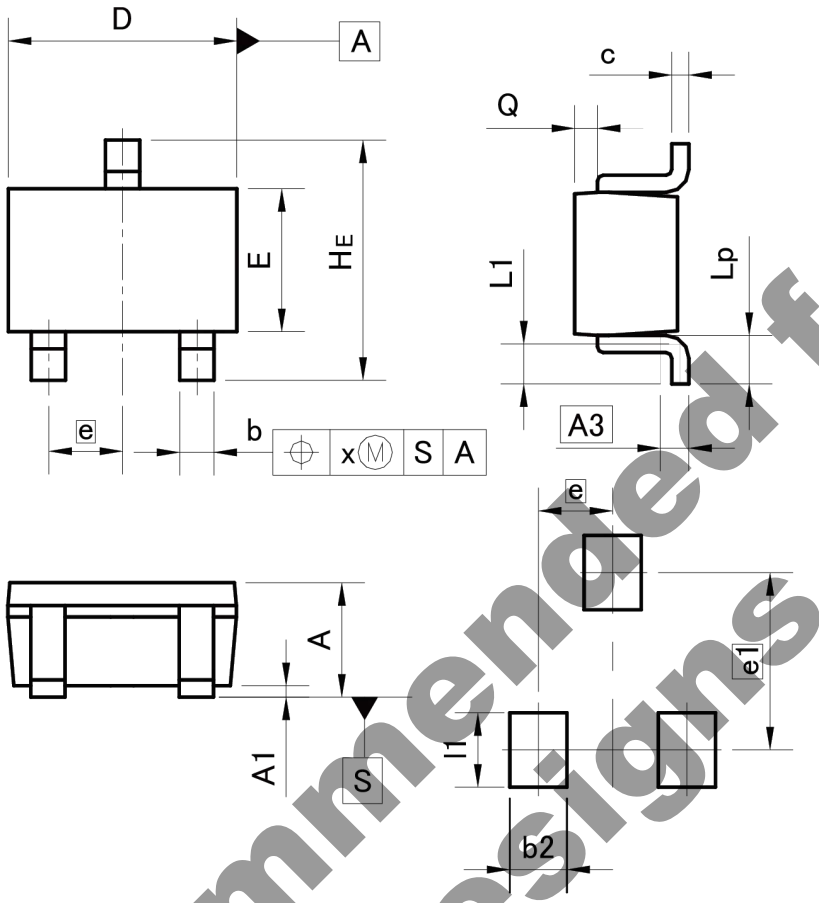

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## ●Dimensions

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

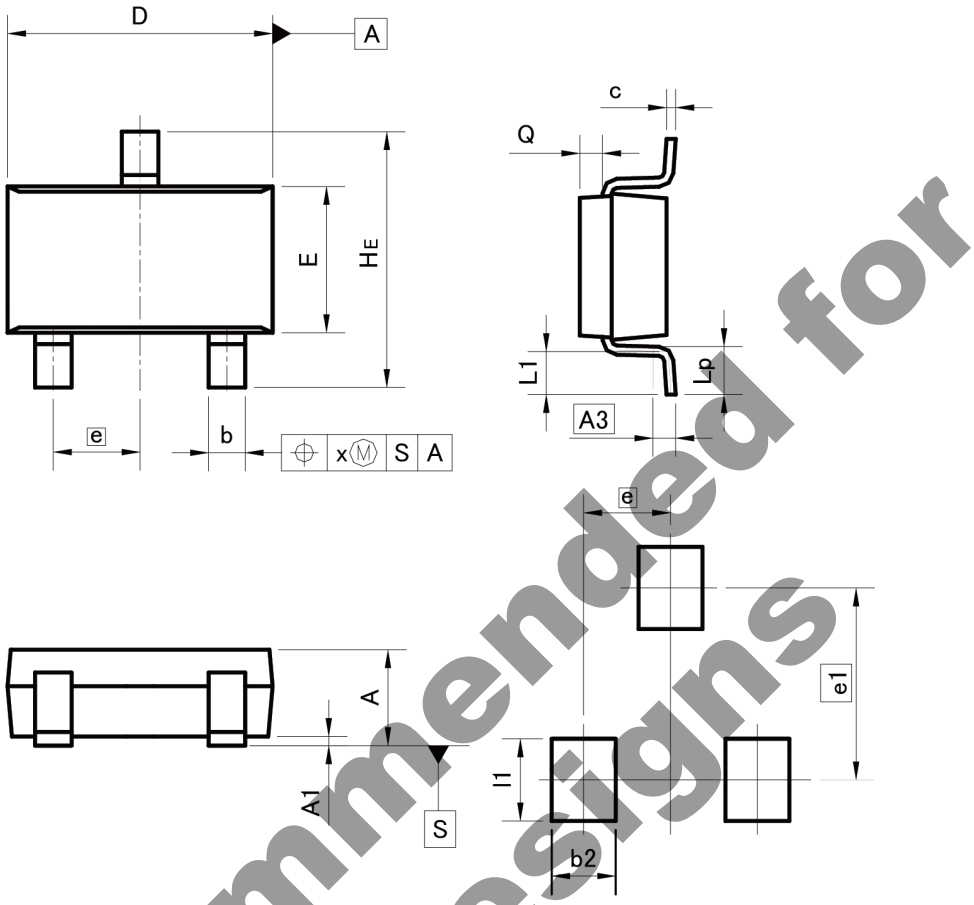
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## ●Dimensions

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 | |
| l1 | – | 0.90 | – | 0.035 |

Dimension in mm/inches

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