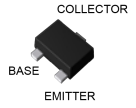
# DTA015T series

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

| Parameter | Value |
|---|---|
| $V_{CEO}$ | -50V |
| $I_C$ | -100mA |
| $R_1$ | 100kΩ |

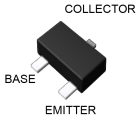
## ●Outline

VMT3



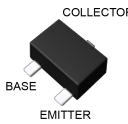

DTA015TM
(SC-105AA)

EMT3F




DTA015TEB
(SC-89)

UMT3F

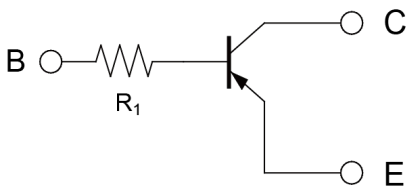



DTA015TUB
(SC-85)

## ●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) Only the on/off conditions need to be set for operation, making the circuit design easy.
5) Complementary NPN Types: DTC015T series
6) Lead Free/RoHS Compliant.

## ●Inner circuit




## ●Application

Switching circuit, Inverter circuit, Interface circuit, Driver circuit

B: BASE
C: COLLECTOR
E: EMITTER

## ●Packaging specifications

| Part No. | Package | Package size | Taping code | Reel size (mm) | Tape width (mm) | Basic ordering unit.(pcs) | Marking |
|---|---|---|---|---|---|---|---|
| DTA015TM | VMT3 | 1212 | T2L | 180 | 8 | 8000 | 51 |
| DTA015TEB | EMT3F | 1616 | TL | 180 | 8 | 3000 | 51 |
| DTA015TUB | UMT3F | 2021 | TL | 180 | 8 | 3000 | 51 |


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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 | DTA015TM | $P_D$*1 | 150 | mW |
| | DTA015TEB | | 150 | |
| | DTA015TUB | | 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 | $BV_{EBO}$ | $I_E$ = -50μA | -5 | - | - | V |
| Collector cut-off current | $I_{CBO}$ | $V_{CB}$ = -50V | - | - | -0.5 | μA |
| Emitter cut-off current | $I_{EBO}$ | $V_{EB}$ = -4V | - | - | -0.5 | μA |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_C$ / $I_B$ = -5mA / -0.25mA | - | -0.05 | -0.25 | V |
| DC current gain | $h_{FE}$ | $V_{CE}$ = -10V, $I_C$ = -5mA | 100 | - | 600 | - |
| Input resistance | $R_1$ | - | 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

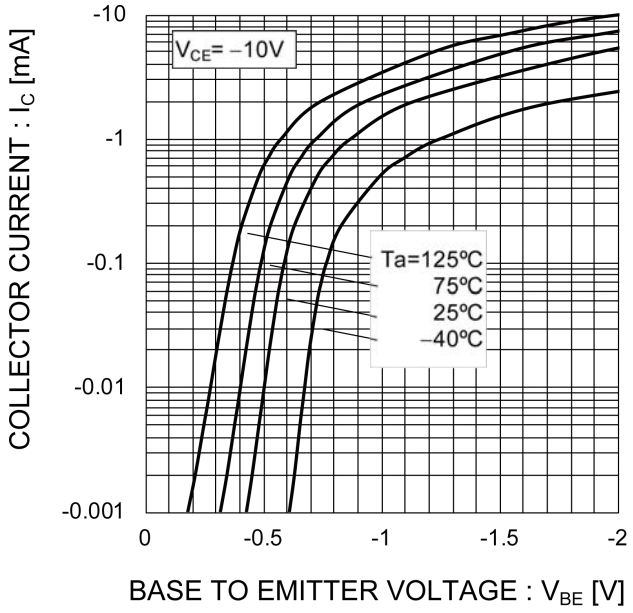



Fig.2 Grounded emitter output characteristics

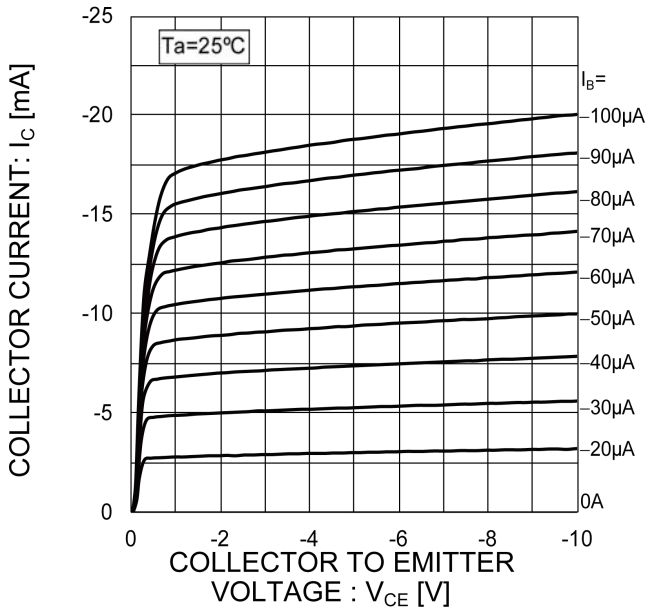



Fig.3 DC Current gain vs. Collector Current

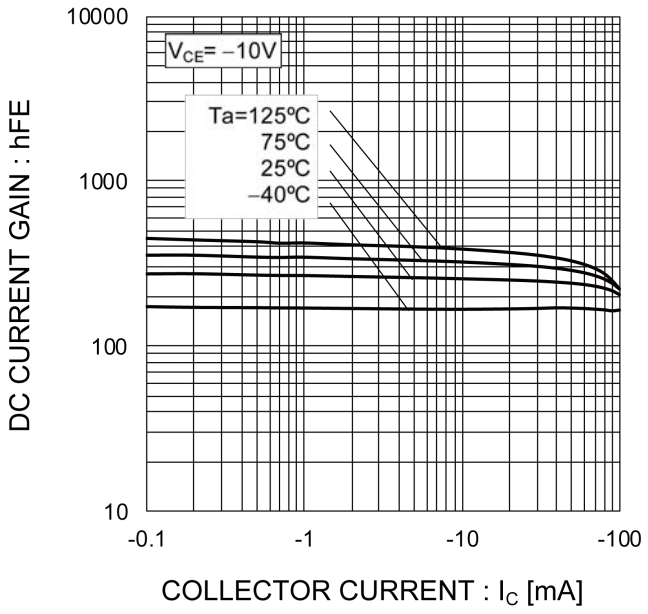
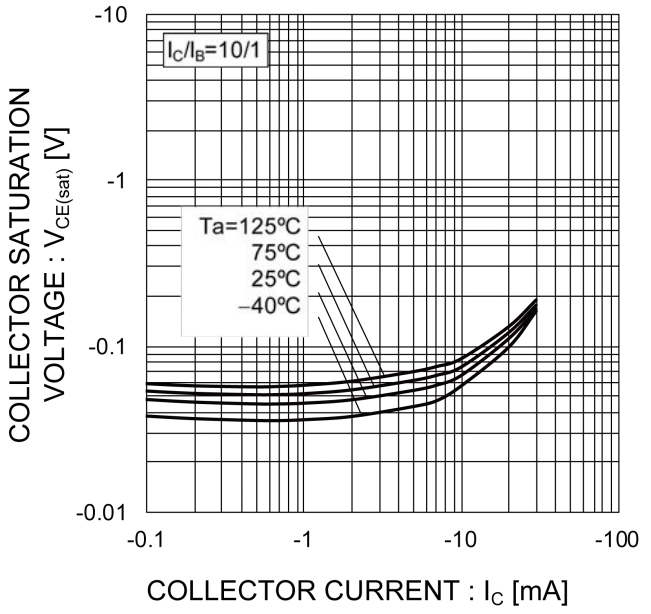



Fig.4 Collector-emitter saturation voltage vs. Collector Current



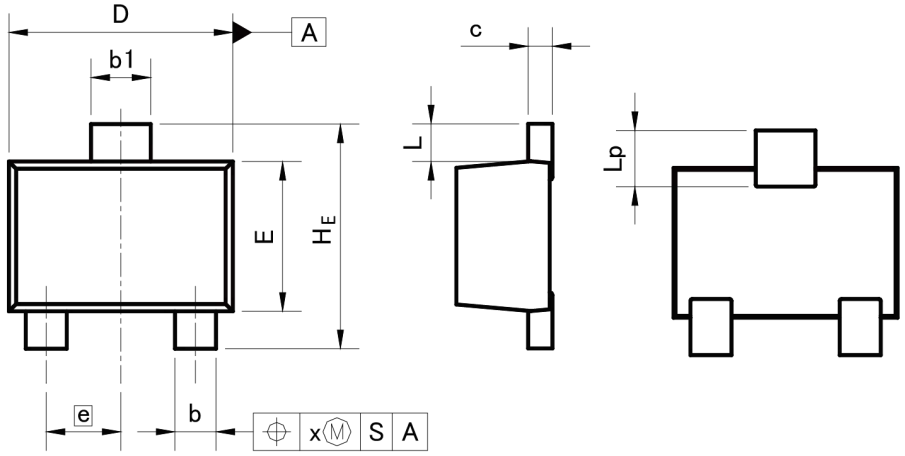


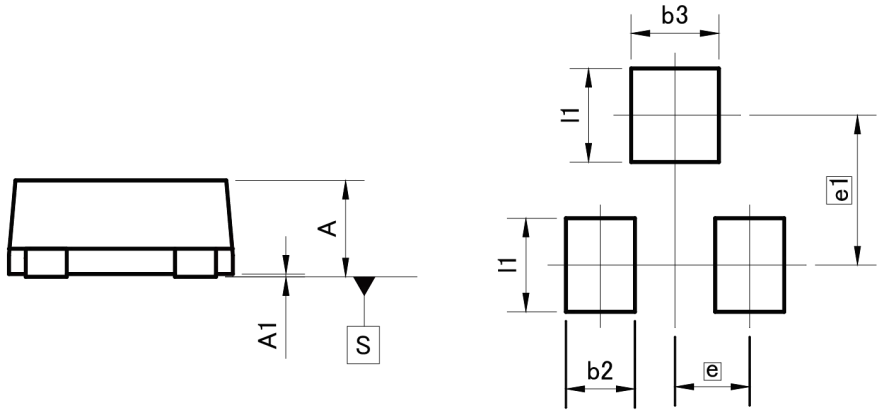
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## ●Dimensions

VMT3




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

| DIM | MILIMETERS | | INCHES | |
|---|---|---|---|---|
| | MIN | MAX | MIN | MAX |
| A | 0.45 | 0.55 | 0.018 | 0.022 |
| A1 | 0.00 | 0.10 | 0.000 | 0.004 |
| b | 0.17 | 0.27 | 0.007 | 0.011 |
| b1 | 0.27 | 0.37 | 0.011 | 0.015 |
| c | 0.08 | 0.18 | 0.003 | 0.007 |
| D | 1.10 | 1.30 | 0.043 | 0.051 |
| E | 0.70 | 0.90 | 0.028 | 0.035 |
| e | 0.40 | | 0.02 | |
| HE | 1.10 | 1.30 | 0.043 | 0.051 |
| L | 0.10 | 0.30 | 0.004 | 0.012 |
| Lp | 0.20 | 0.40 | 0.008 | 0.016 |
| x | − | 0.10 | − | 0.004 |

| DIM | MILIMETERS | | INCHES | |
|---|---|---|---|---|
| | MIN | MAX | MIN | MAX |
| b2 | − | 0.37 | − | 0.015 |
| b3 | − | 0.47 | − | 0.019 |
| e1 | 0.80 | | 0.031 | |
| l1 | − | 0.50 | − | 0.020 |

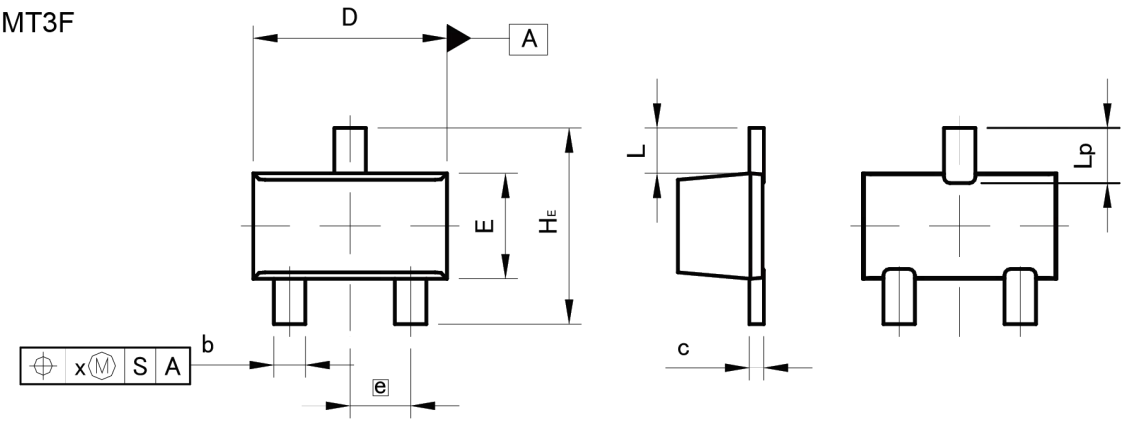
Dimension in mm/inches

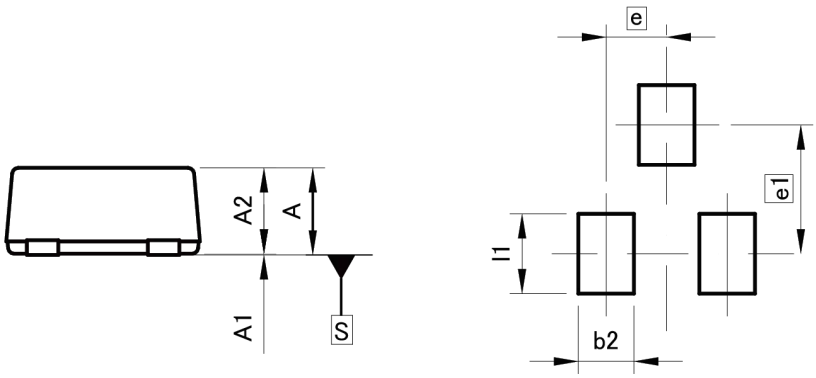

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## ●Dimensions

EMT3F




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

| DIM | MILIMETERS | | INCHES | |
|---|---|---|---|---|
| | MIN | MAX | MIN | MAX |
| A | 0.65 | 0.85 | 0.026 | 0.033 |
| A1 | 0.00 | 0.10 | 0.000 | 0.004 |
| A2 | 0.60 | 0.80 | 0.024 | 0.031 |
| b | 0.21 | 0.36 | 0.008 | 0.014 |
| c | 0.08 | 0.18 | 0.003 | 0.007 |
| D | 1.50 | 1.70 | 0.059 | 0.067 |
| E | 0.76 | 0.96 | 0.030 | 0.038 |
| e | 0.50 | | 0.020 | |
| HE | 1.50 | 1.70 | 0.059 | 0.067 |
| L | 0.37 | | 0.015 | |
| Lp | 0.35 | 0.55 | 0.014 | 0.022 |
| x | − | 0.10 | − | 0.004 |

| DIM | MILIMETERS | | INCHES | |
|---|---|---|---|---|
| | MIN | MAX | MIN | MAX |
| b2 | − | 0.46 | − | 0.018 |
| e1 | − | 1.05 | − | 0.041 |
| l1 | − | 0.65 | − | 0.026 |

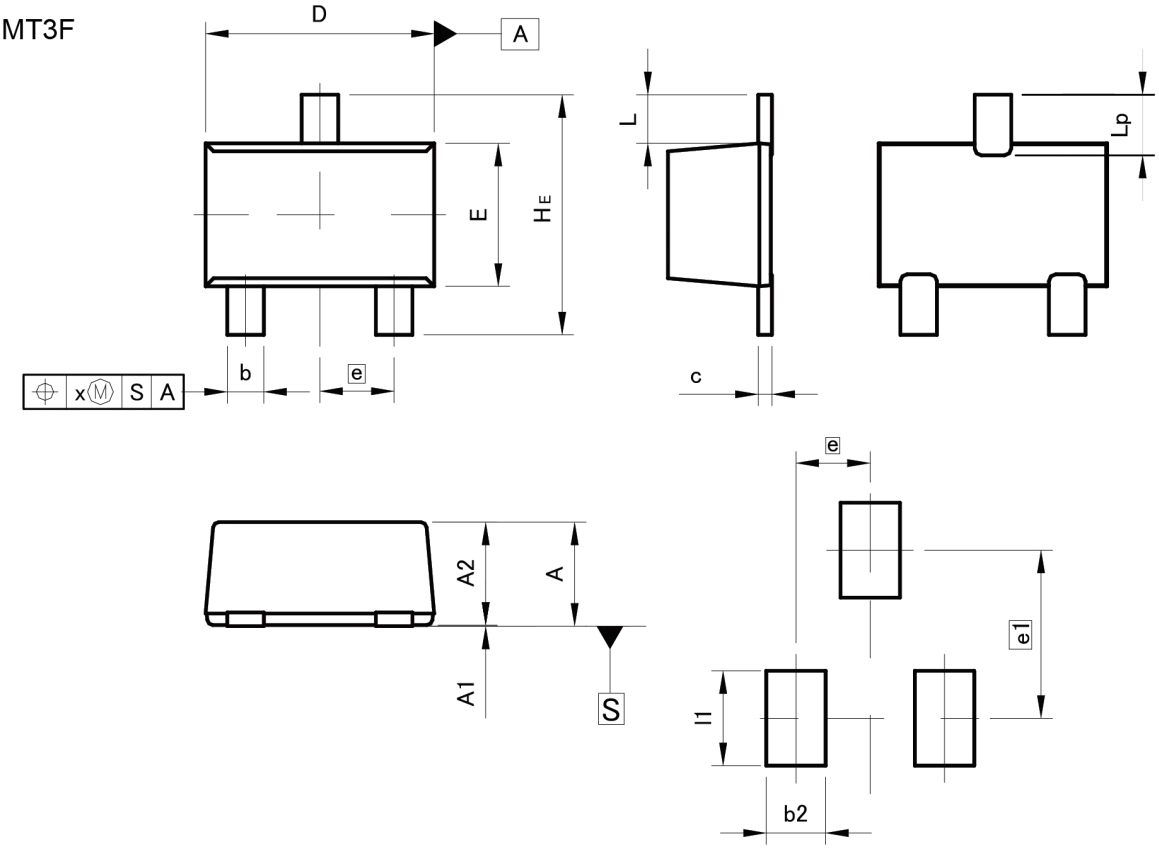
Dimension in mm/inches


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## ●Dimensions

UMT3F




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

| DIM | MILIMETERS | | INCHES | |
|---|---|---|---|---|
| | MIN | MAX | MIN | MAX |
| A | 0.85 | 1.05 | 0.033 | 0.041 |
| A1 | 0.00 | 0.10 | 0.000 | 0.004 |
| A2 | 0.80 | 1.00 | 0.031 | 0.039 |
| b | 0.27 | 0.42 | 0.011 | 0.017 |
| c | 0.08 | 0.18 | 0.003 | 0.007 |
| 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 |
| L | 0.43 | | 0.017 | |
| Lp | 0.43 | 0.63 | 0.017 | 0.025 |
| x | – | 0.10 | – | 0.004 |

| DIM | MILIMETERS | | INCHES | |
|---|---|---|---|---|
| | MIN | MAX | MIN | MAX |
| b2 | – | 0.52 | – | 0.020 |
| e1 | 1.47 | | 0.058 | |
| l1 | – | 0.83 | – | 0.033 |

Dimension in mm/inches


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| Minimum Package Quantity | 8000 |
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| Constitution Materials List | inquiry |
| RoHS | Yes |

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