

| Parameter | Tr1 and Tr2 |
|---------------|--------------|
| V_{CEO} | 50V |
| $I_{C(MAX.)}$ | 100mA |
| R_1 | 10k Ω |

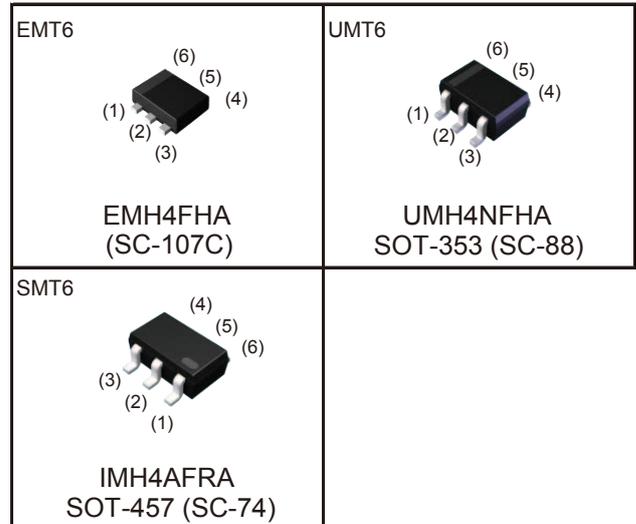
●Features

- 1) Built-In Biasing Resistors.
- 2) Two DTC114T chips in one package.
- 3) Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors (see inner circuit).
- 4) 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.
- 5) Only the on/off conditions need to be set for operation, making the circuit design easy.
- 6) Lead Free/RoHS Compliant.

●Application

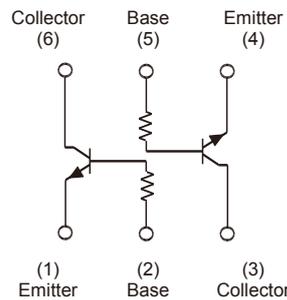
Inverter circuit, Interface circuit, Driver circuit

●Outline

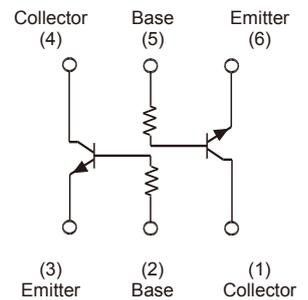


●Inner circuit

EMH4FHA / UMH4NFHA



IMH4AFRA



●Packaging specifications

| Part No. | Package | Package size (mm) | Taping code | Reel size (mm) | Tape width (mm) | Basic ordering unit (pcs) | Marking |
|----------|---------|-------------------|-------------|----------------|-----------------|---------------------------|---------|
| EMH4FHA | EMT6 | 1616 | T2R | 180 | 8 | 8,000 | H4 |
| UMH4NFHA | UMT6 | 2021 | TR | 180 | 8 | 3,000 | H4 |
| IMH4AFRA | SMT6 | 2928 | T108 | 180 | 8 | 3,000 | H4 |

● **Absolute maximum ratings** (Ta = 25°C)

<For Tr1 and Tr2 in common>

| 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 | $I_{C(MAX.)}^{*1}$ | 100 | mA | |
| Collector Power dissipation | EMH4FHA / UMH4NFHA | P_D^{*2} | 150 (Total) ^{*3} | mW |
| | IMH4AFRA | | 300 (Total) ^{*4} | mW |
| Junction temperature | T_j | 150 | °C | |
| Range of storage temperature | T_{stg} | -55 to +150 | °C | |

● **Electrical characteristics**(Ta = 25°C)

<For Tr1 and Tr2 in common>

| Parameter | Symbol | Conditions | Min. | Typ. | Max. | Unit |
|--------------------------------------|---------------|---|------|------|------|------------|
| Collector-base breakdown voltage | BV_{CBO} | $I_C = 50\mu A$ | 50 | - | - | V |
| Collector-emitter breakdown voltage | BV_{CEO} | $I_C = 1mA$ | 50 | - | - | V |
| Emitter-base breakdown voltage | BV_{EBO} | $I_E = 50\mu A$ | 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 | $V_{CE(sat)}$ | $I_C / I_B = 10mA / 1mA$ | - | - | 0.3 | V |
| DC current gain | h_{FE} | $V_{CE} = 5V, I_C = 1mA$ | 100 | 250 | 600 | - |
| Input resistance | R_1 | - | 7 | 10 | 13 | k Ω |
| Transition frequency | f_T^{*1} | $V_{CE} = 10V, I_E = -5mA,$ $f = 100MHz$ | - | 250 | - | MHz |

*1 Characteristics of built-in transistor

*2 Each terminal mounted on a reference footprint

*3 120mW per element must not be exceeded.

*4 200mW per element must not be exceeded.

●Electrical characteristic curves(Ta = 25°C)

Fig.1 Grounded emitter propagation characteristics

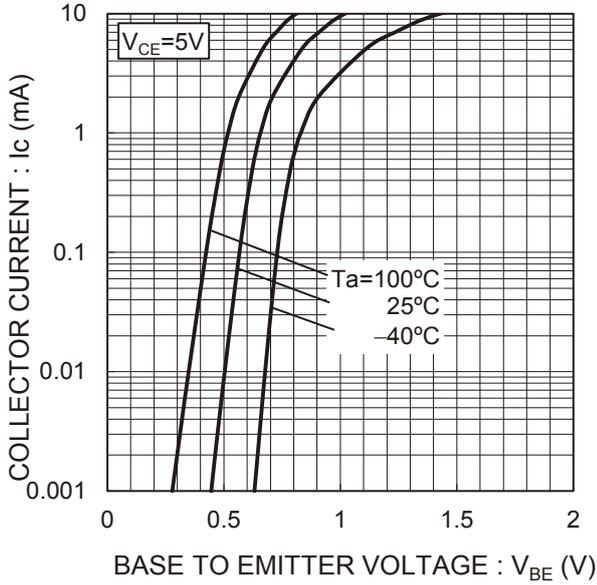


Fig.2 Grounded emitter output characteristics

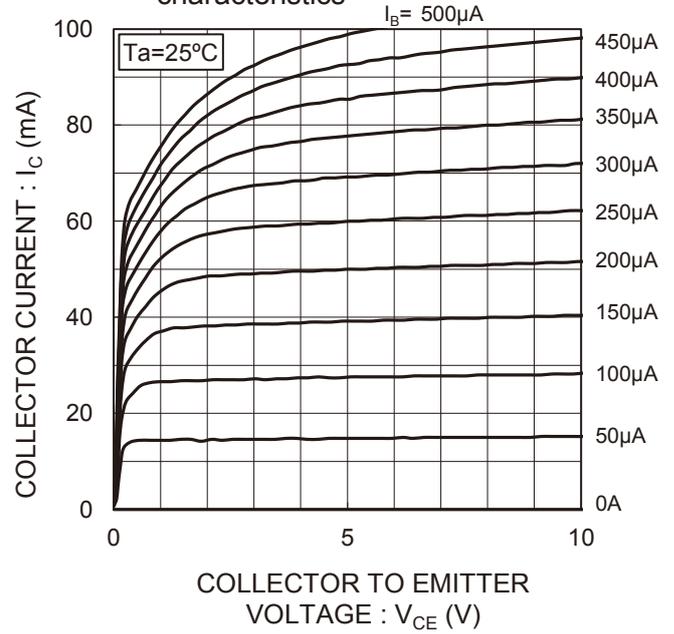


Fig.3 DC Current gain vs. Collector Current

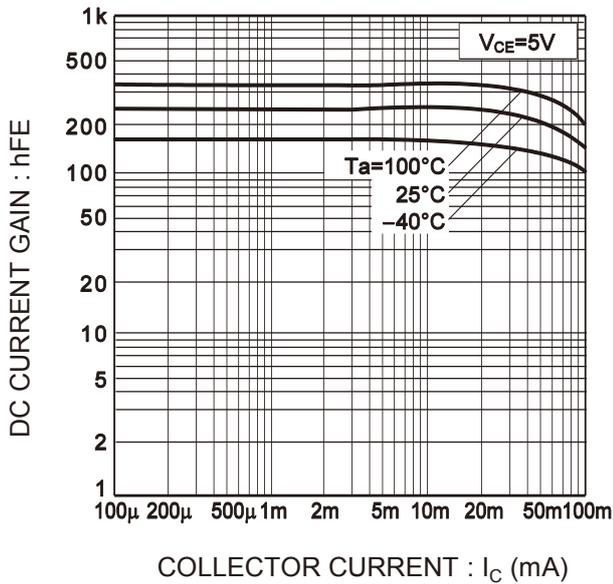
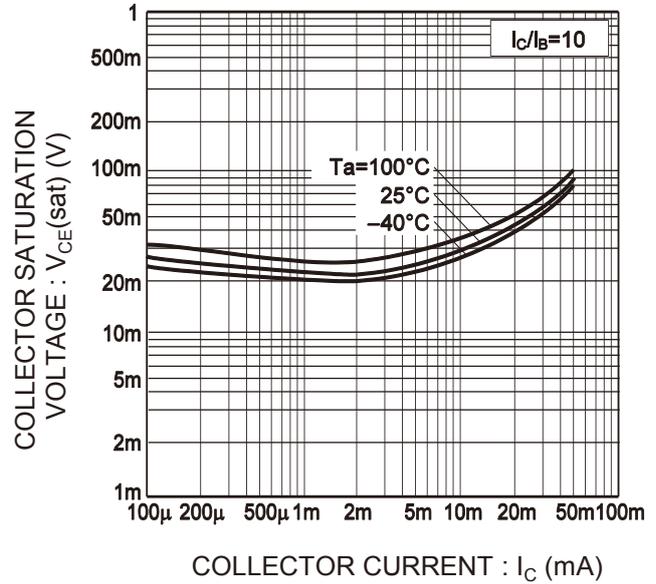
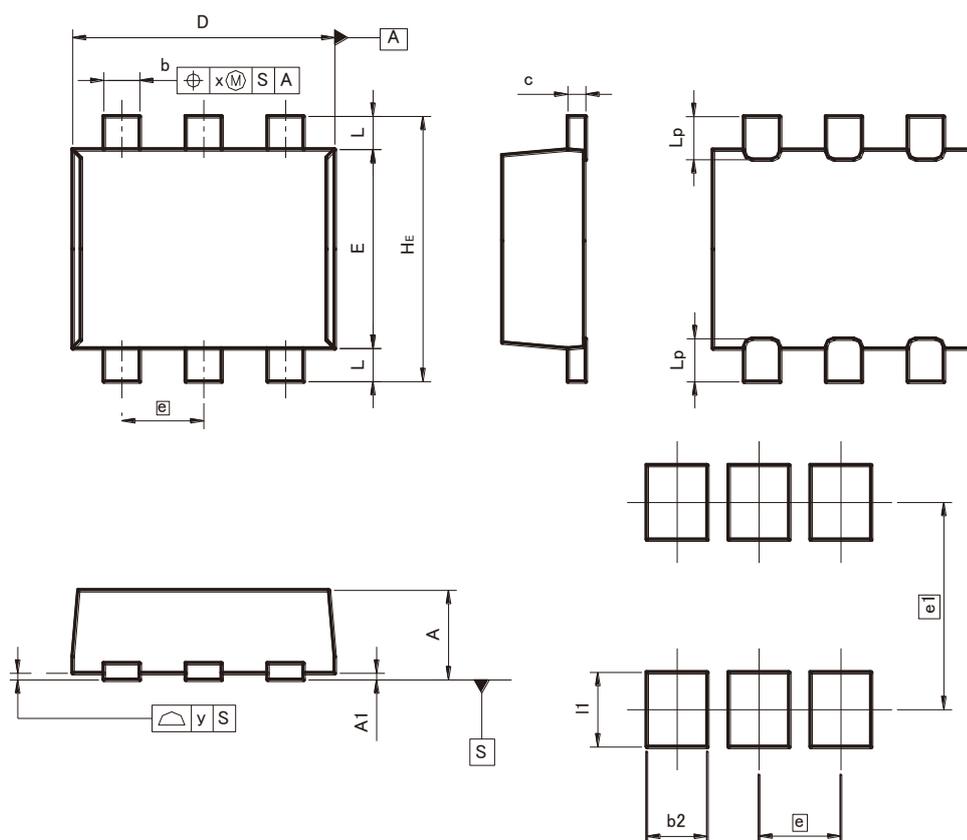


Fig.4 Collector-emitter saturation voltage vs. Collector Current



●Dimensions (Unit : mm)

EMT6



Pattern of terminal position areas

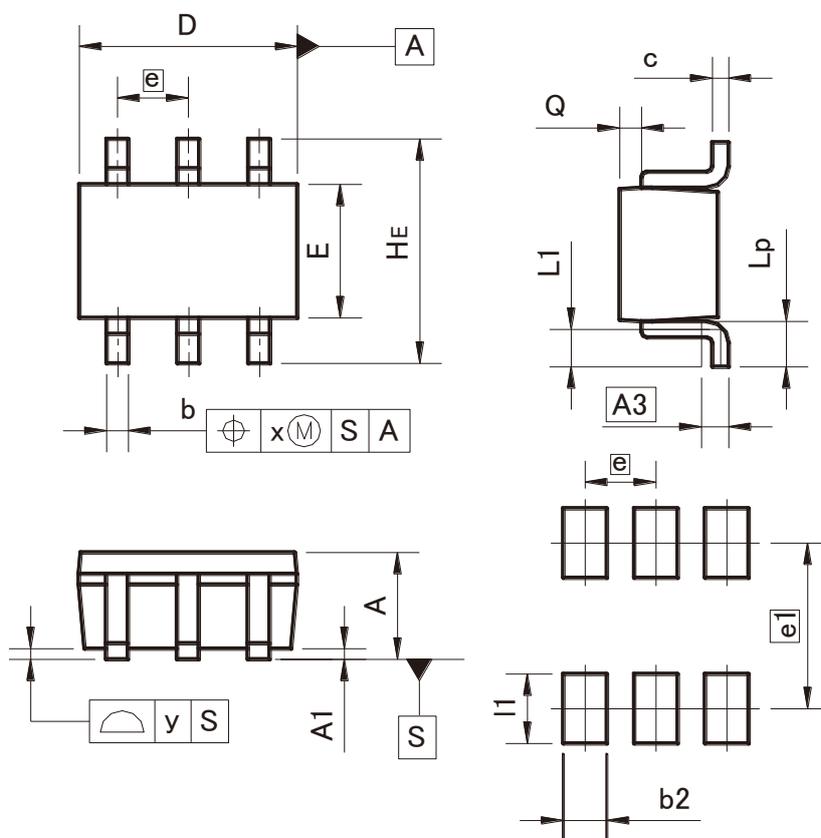
| DIM | MILIMETERS | | INCHES | |
|-----|------------|------|--------|-------|
| | MIN | MAX | MIN | MAX |
| A1 | 0.00 | 0.10 | 0 | 0.004 |
| A | 0.45 | 0.55 | 0.018 | 0.022 |
| b | 0.17 | 0.27 | 0.007 | 0.011 |
| c | 0.08 | 0.18 | 0.003 | 0.007 |
| D | 1.50 | 1.70 | 0.059 | 0.067 |
| E | 1.10 | 1.30 | 0.043 | 0.051 |
| e | 0.50 | | 0.02 | |
| HE | 1.50 | 1.70 | 0.059 | 0.067 |
| L | 0.10 | 0.30 | 0.004 | 0.012 |
| Lp | - | 0.35 | - | 0.014 |
| x | - | 0.10 | - | 0.004 |
| y | - | 0.10 | - | 0.004 |

| DIM | MILIMETERS | | INCHES | |
|-----|------------|------|--------|-------|
| | MIN | MAX | MIN | MAX |
| e1 | 1.25 | | 0.049 | |
| b2 | - | 0.37 | - | 0.015 |
| l1 | - | 0.45 | - | 0.018 |

Dimension in mm/inches

●Dimensions (Unit : mm)

UMT6



Pattern of terminal position areas

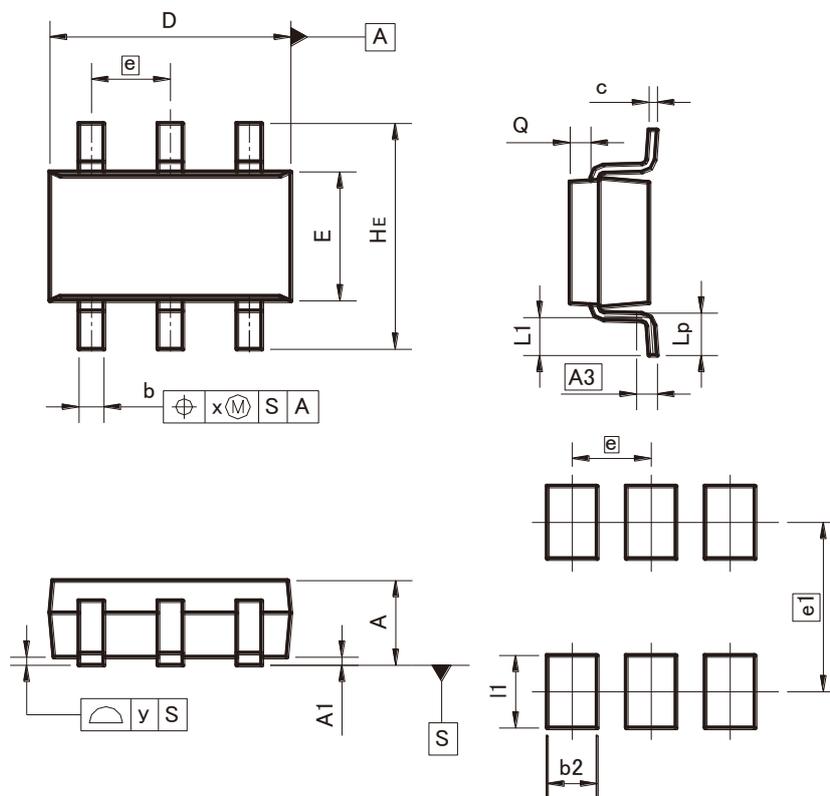
| DIM | MILIMETERS | | INCHES | |
|-----|------------|------|--------|-------|
| | MIN | MAX | MIN | MAX |
| A | 0.80 | 1.00 | - | 0.039 |
| A1 | 0.00 | 0.10 | 0 | 0.004 |
| A3 | 0.25 | | 0.01 | |
| b | 0.15 | 0.30 | 0.006 | 0.012 |
| c | 0.10 | 0.20 | 0.004 | 0.008 |
| D | 1.90 | 2.10 | 0.075 | 0.083 |
| E | 1.15 | 1.35 | 0.045 | 0.053 |
| e | 0.65 | | 0.03 | |
| HE | 2.00 | 2.20 | 0.079 | 0.087 |
| L1 | 0.20 | 0.50 | 0.008 | 0.02 |
| Lp | 0.25 | 0.55 | 0.01 | 0.022 |
| Q | 0.10 | 0.30 | 0.004 | 0.012 |
| x | - | 0.10 | - | 0.004 |
| y | - | 0.10 | - | 0.004 |

| DIM | MILIMETERS | | INCHES | |
|-----|------------|------|--------|-------|
| | MIN | MAX | MIN | MAX |
| e1 | 1.55 | | 0.06 | |
| b2 | - | 0.40 | - | 0.016 |
| l1 | - | 0.65 | - | 0.026 |

Dimension in mm/inches

●Dimensions (Unit : mm)

SMT6



Pattern of terminal position areas

| DIM | MILIMETERS | | INCHES | |
|-----|------------|------|--------|-------|
| | MIN | MAX | MIN | MAX |
| A | 1.00 | 1.30 | 0.039 | 0.051 |
| A1 | 0.00 | 0.10 | 0 | 0.004 |
| A3 | 0.25 | | 0.01 | |
| b | 0.25 | 0.40 | 0.01 | 0.016 |
| c | 0.09 | 0.25 | 0.004 | 0.01 |
| D | 2.80 | 3.00 | 0.11 | 0.118 |
| E | 1.50 | 1.80 | 0.059 | 0.071 |
| e | 0.95 | | 0.04 | |
| 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 | - | 0.20 | - | 0.008 |
| y | - | 0.10 | - | 0.004 |

| DIM | MILIMETERS | | INCHES | |
|-----|------------|------|--------|-------|
| | MIN | MAX | MIN | MAX |
| e1 | 2.10 | | 0.08 | |
| b2 | - | 0.60 | - | 0.024 |
| l1 | - | 0.90 | - | 0.035 |

Dimension in mm/inches

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1. If you intend to use our Products in devices requiring extremely high reliability (such as medical equipment ^(Note 1), aircraft/spacecraft, nuclear power controllers, etc.) and whose malfunction or failure may cause loss of human life, bodily injury or serious damage to property ("Specific Applications"), please consult with the ROHM sales representative in advance. Unless otherwise agreed in writing by ROHM in advance, ROHM shall not be in any way responsible or liable for any damages, expenses or losses incurred by you or third parties arising from the use of any ROHM's Products for Specific Applications.

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| JAPAN | USA | EU | CHINA |
|-----------|-----------|------------|-----------|
| CLASS III | CLASS III | CLASS II b | CLASS III |
| CLASS IV | | CLASS III | |

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 - [h] Use of the Products in places subject to dew condensation
4. The Products are not subject to radiation-proof design.
5. Please verify and confirm characteristics of the final or mounted products in using the Products.
6. In particular, if a transient load (a large amount of load applied in a short period of time, such as pulse. is applied, confirmation of performance characteristics after on-board mounting is strongly recommended. Avoid applying power exceeding normal rated power; exceeding the power rating under steady-state loading condition may negatively affect product performance and reliability.
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This Product is electrostatic sensitive product, which may be damaged due to electrostatic discharge. Please take proper caution in your manufacturing process and storage so that voltage exceeding the Products maximum rating will not be applied to Products. Please take special care under dry condition (e.g. Grounding of human body / equipment / solder iron, isolation from charged objects, setting of Ionizer, friction prevention and temperature / humidity control).

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 - [b] the temperature or humidity exceeds those recommended by ROHM
 - [c] the Products are exposed to direct sunshine or condensation
 - [d] the Products are exposed to high Electrostatic
2. Even under ROHM recommended storage condition, solderability of products out of recommended storage time period may be degraded. It is strongly recommended to confirm solderability before using Products of which storage time is exceeding the recommended storage time period.
3. Store / transport cartons in the correct direction, which is indicated on a carton with a symbol. Otherwise bent leads may occur due to excessive stress applied when dropping of a carton.
4. Use Products within the specified time after opening a humidity barrier bag. Baking is required before using Products of which storage time is exceeding the recommended storage time period.

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