

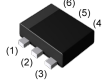
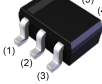
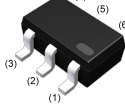
<For DTr1(NPN)>

| Parameter | Value |
|-----------|---------------|
| V_{CEO} | 50V |
| I_C | 100mA |
| R_1 | 4.7k Ω |

<For DTr2(PNP)>

| Parameter | Value |
|-----------|---------------|
| V_{CEO} | -50V |
| I_C | -100mA |
| R_1 | 4.7k Ω |

●Outline

| | |
|---|--|
| <p>SOT-563</p>  <p>EMD6 (EMT6)</p> | <p>SOT-363</p>  <p>UMD6N (UMT6)</p> |
| <p>SOT-457</p>  <p>IMD6A (SMT6)</p> | |

●Features

- 1)Both the DTA143T chip and DTC143T chip in an EMT or UMT or SMT package.
- 2)Mounting possible with EMT3 or UMT3 or SMT3 automatic mounting machines.
- 3)Transistor elements are independent, eliminating interference.
- 4)Mounting cost and area can be cut in half.

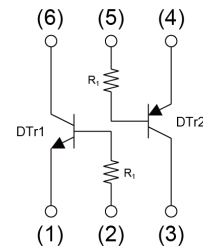
●Application

INVERTER, INTERFACE, DRIVER

●Inner circuit

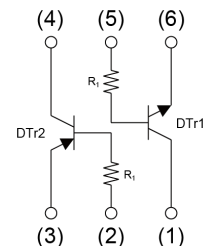
EMD6 / UMD6N

- (1) DTr1 Emitter
- (2) DTr1 Base
- (3) DTr2 Collector
- (4) DTr2 Emitter
- (5) DTr2 Base
- (6) DTr1 Collector



IMD6A

- (1) DTr1 Collector
- (2) DTr2 Base
- (3) DTr2 Emitter
- (4) DTr2 Collector
- (5) DTr1 Base
- (6) DTr1 Emitter



●Packaging specifications

| Part No. | Package | Package size | Taping code | Reel size (mm) | Tape width (mm) | Basic ordering unit.(pcs) | Marking |
|----------|-------------------|--------------|-------------|----------------|-----------------|---------------------------|---------|
| EMD6 | SOT-563 (EMT6) | 1616 | T2R | 180 | 8 | 8000 | D6 |
| UMD6N | SOT-363 (UMT6) | 2021 | TR | 180 | 8 | 3000 | D6 |
| IMD6A | SOT-457 (SMT6) | 2928 | T108 | 180 | 8 | 3000 | D6 |

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

| Parameter | | Symbol | DTr1(NPN) | DTr2(PNP) | Unit |
|------------------------------|-------------|--------------|-------------|-----------|------------------|
| Collector-base voltage | | V_{CBO} | 50 | -50 | V |
| Collector-emitter voltage | | V_{CEO} | 50 | -50 | V |
| Emitter-base voltage | | V_{EBO} | 5 | -5 | V |
| Collector current | | I_C | 100 | -100 | mA |
| Power dissipation | EMD6/ UMD6N | P_D^{*1*2} | 150 | | mW/Total |
| | IMD6A | P_D^{*1*3} | 300 | | |
| Junction temperature | | T_j | 150 | | $^\circ\text{C}$ |
| Range of storage temperature | | T_{stg} | -55 to +150 | | $^\circ\text{C}$ |

● Electrical characteristics ($T_a = 25^\circ\text{C}$) <For DTr1(NPN)>

| 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} | $I_E = 50\mu\text{A}$ | 5 | - | - | V |
| Collector cut-off current | I_{CBO} | $V_{CB} = 50\text{V}$ | - | - | 500 | nA |
| Emitter cut-off current | I_{EBO} | $V_{EB} = 4\text{V}$ | - | - | 500 | nA |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_C = 5\text{mA}, I_B = 0.25\text{mA}$ | - | - | 300 | mV |
| DC current gain | h_{FE} | $V_{CE} = 5\text{V}, I_C = 1\text{mA}$ | 100 | 250 | 600 | - |
| Input resistance | R_1 | - | 3.29 | 4.7 | 6.11 | k Ω |
| Transition frequency | f_T^{*4} | $V_{CE} = 10\text{V}, I_E = -5\text{mA}, f = 100\text{MHz}$ | - | 250 | - | MHz |

● Electrical characteristics ($T_a = 25^\circ\text{C}$) <For DTr2(PNP)>

| 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} | $I_E = -50\mu\text{A}$ | -5 | - | - | V |
| Collector cut-off current | I_{CBO} | $V_{CB} = -50\text{V}$ | - | - | -500 | nA |
| Emitter cut-off current | I_{EBO} | $V_{EB} = -4\text{V}$ | - | - | -500 | nA |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_C = -5\text{mA}, I_B = -0.25\text{mA}$ | - | - | -300 | mV |
| DC current gain | h_{FE} | $V_{CE} = -5\text{V}, I_C = -1\text{mA}$ | 100 | 250 | 600 | - |
| Input resistance | R_1 | - | 3.29 | 4.7 | 6.11 | k Ω |
| Transition frequency | f_T^{*4} | $V_{CE} = -10\text{V}, I_E = 5\text{mA}, f = 100\text{MHz}$ | - | 250 | - | MHz |

*1 Each terminal mounted on a reference land.

*2 120mW per element must not be exceeded.

*3 200mW per element must not be exceeded.

*4 Characteristics of built-in transistor.

● Electrical characteristic curves ($T_a = 25^\circ\text{C}$) <For DTR1(NPN)>

Fig.1 Grounded emitter propagation characteristics

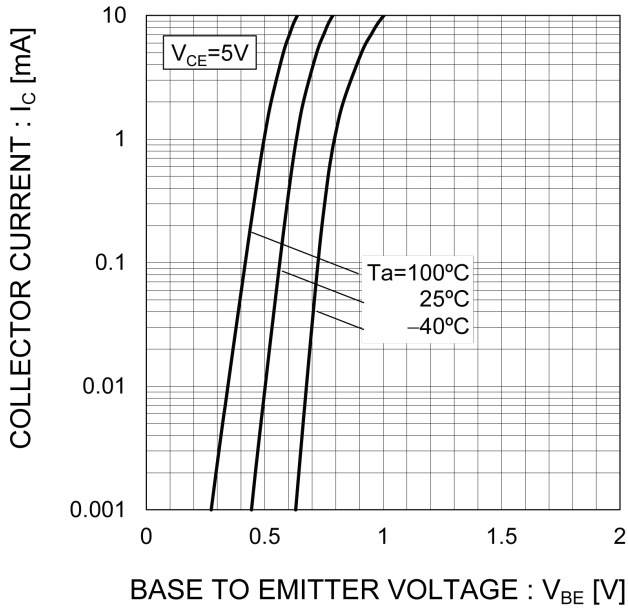


Fig.2 Grounded emitter output characteristics

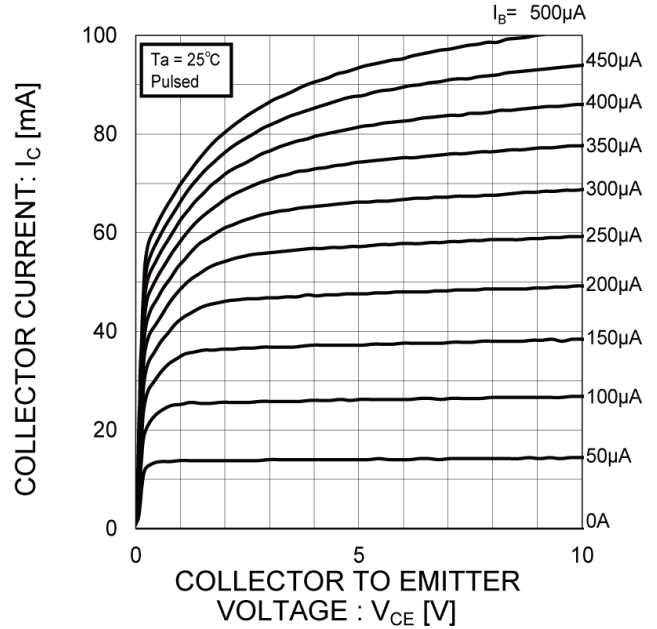


Fig.3 DC current gain vs. collector current

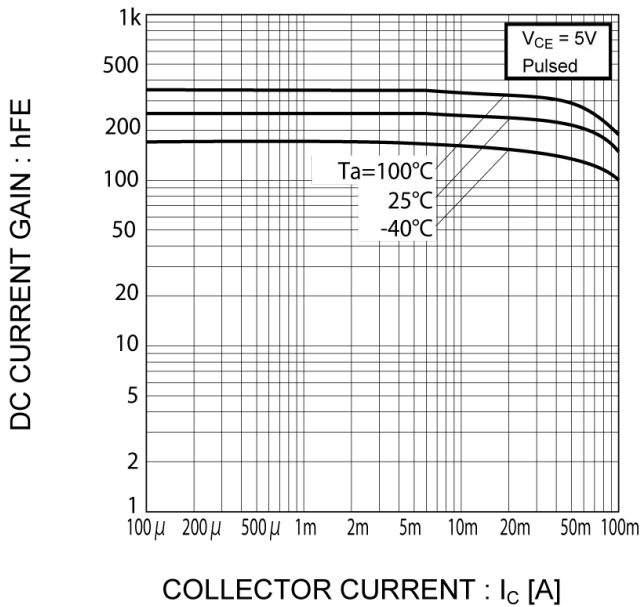
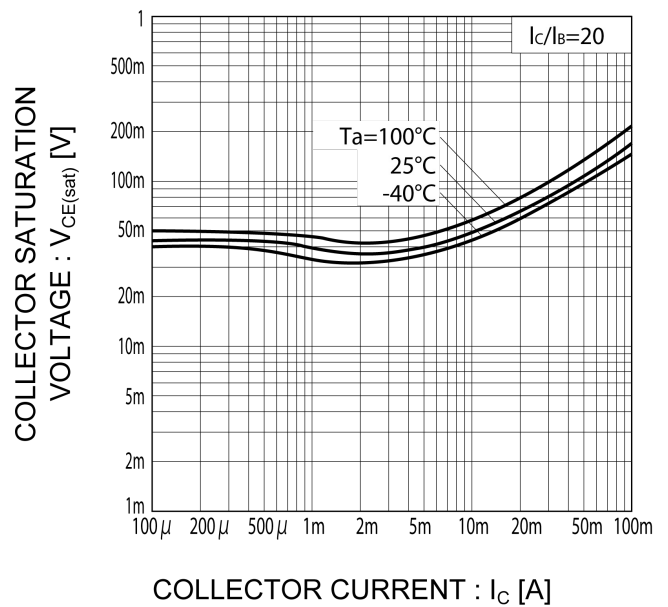


Fig.4 Collector-emitter saturation voltage vs. collector current



● Electrical characteristic curves ($T_a = 25^\circ\text{C}$) <For DTR2(PNP)>

Fig.1 Grounded emitter propagation characteristics

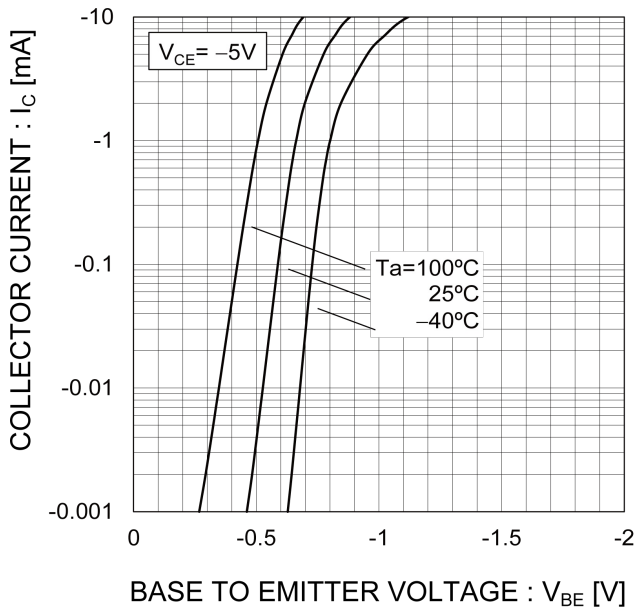


Fig.2 Grounded emitter output characteristics

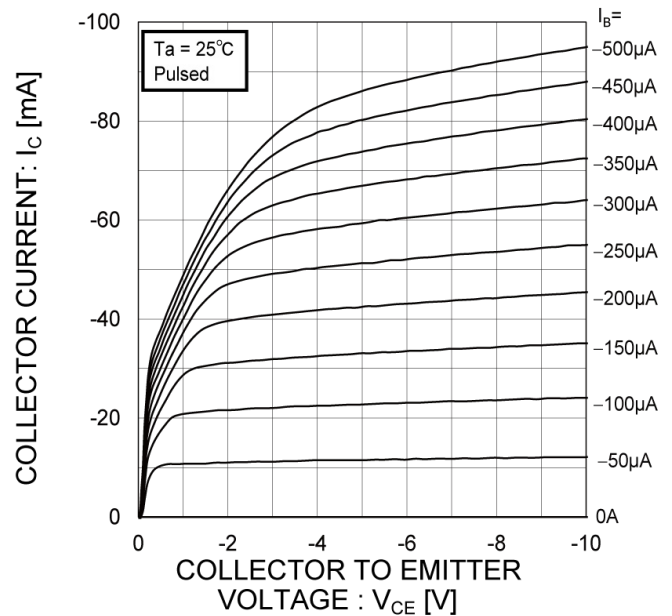


Fig.3 DC current gain vs. collector current

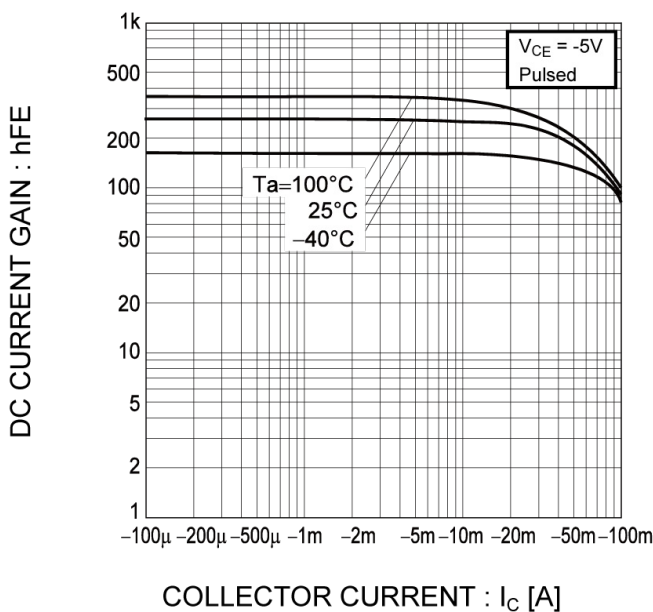
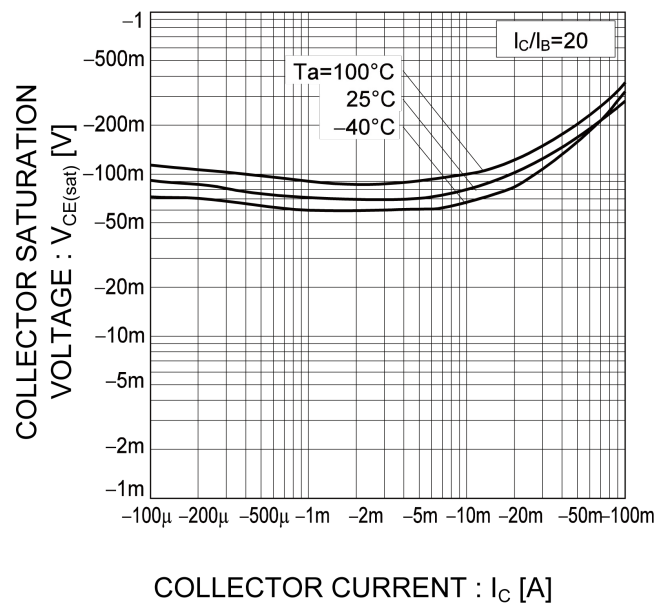


Fig.4 Collector-emitter saturation voltage vs. collector current



●Dimensions



Pattern of terminal position areas
[Not a 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 |
| 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 | | 0.020 | |
| 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 |
| b2 | - | 0.37 | - | 0.015 |
| e1 | 1.25 | | 0.049 | |
| I1 | - | 0.45 | - | 0.018 |

Dimension in mm/inches

●Dimensions



| 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 |
| y | - | 0.10 | - | 0.004 |

| DIM | MILIMETERS | | INCHES | |
|-----|------------|------|--------|-------|
| | MIN | MAX | MIN | MAX |
| b2 | - | 0.40 | - | 0.016 |
| e1 | 1.55 | | 0.061 | |
| l1 | - | 0.65 | - | 0.026 |

Dimension in mm/inches

●Dimensions

SOT-457
SC-74
(SMT6)



Pattern of terminal position areas
[Not a 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 | 0.25 | 0.40 | 0.010 | 0.016 |
| 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 | - | 0.20 | - | 0.008 |
| 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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|-----------|-----------|------------|-----------|
| CLASS III | CLASS III | CLASS II b | CLASS III |
| CLASS IV | | CLASS III | |

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 - Use of our Products in places where the Products are exposed to sea wind or corrosive gases, including Cl₂, H₂S, NH₃, SO₂, and NO₂
 - Use of our Products in places where the Products are exposed to static electricity or electromagnetic waves
 - Use of our Products in proximity to heat-producing components, plastic cords, or other flammable items
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 - Use of the Products in places subject to dew condensation
- The Products are not subject to radiation-proof design.
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- 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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 - [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.
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