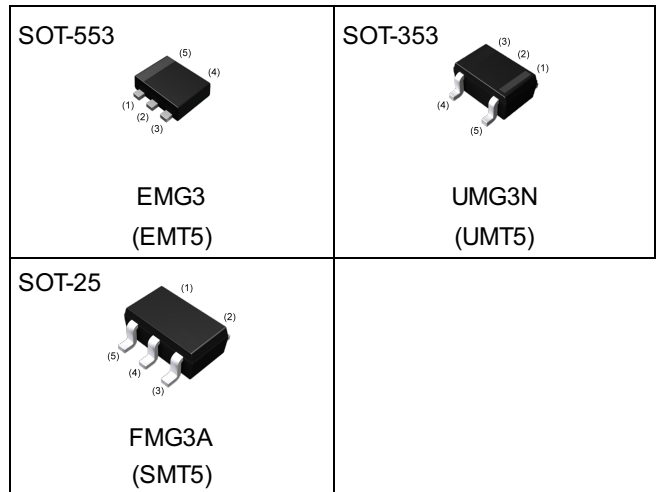


| Parameter | DTr1 and DTr2 |
|-----------|---------------|
| V_{CEO} | 50V |
| I_C | 100mA |
| R_1 | 4.7k Ω |

●Features

- 1)Two DTC143T chips in a EMT or UMT or SMT package.
- 2)Mounting cost and area can be cut in half.

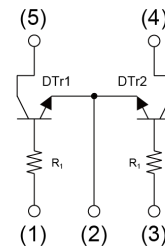
●Outline



●Inner circuit

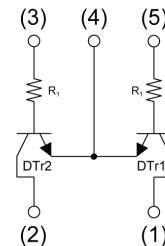
EMG3 / UMG3N

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



FMG3A

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



●Application

INVERTER, INTERFACE, DRIVER

●Packaging specifications

| Part No. | Package | Package size | Taping code | Reel size (mm) | Tape width (mm) | Basic ordering unit.(pcs) | Marking |
|----------|----------------|--------------|-------------|----------------|-----------------|---------------------------|---------|
| EMG3 | SOT-553 (EMT5) | 1616 | T2R | 180 | 8 | 8000 | G3 |
| UMG3N | SOT-353 (UMT5) | 2021 | TR | 180 | 8 | 3000 | G3 |
| FMG3A | SOT-25 (SMT5) | 2928 | T148 | 180 | 8 | 3000 | G3 |

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

<For DTr1 and DTr2 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 | 100 | mA |
| Power dissipation | EMG3 | P_D^{*1*2} | 150 | mW/Total |
| | UMG3N | P_D^{*1*2} | 150 | |
| | FMG3A | 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 and DTr2 in common>

| 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 and DTr2 in common>

Fig.1 Grounded Emitter Propagation Characteristics

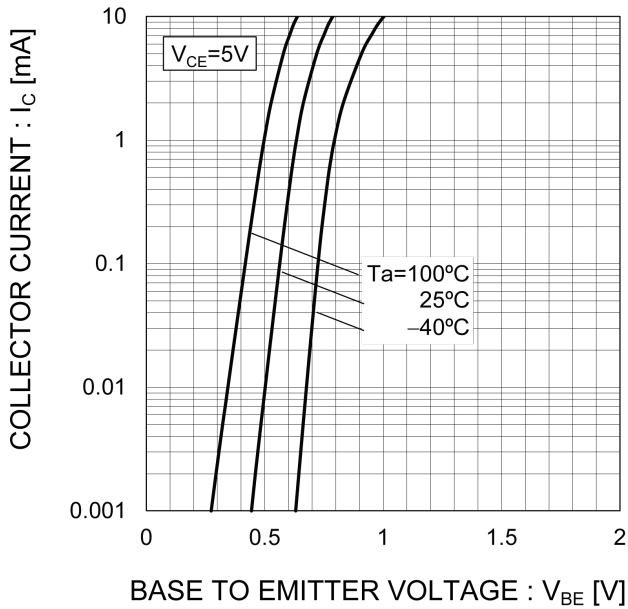


Fig.2 Grounded Emitter Output Characteristics

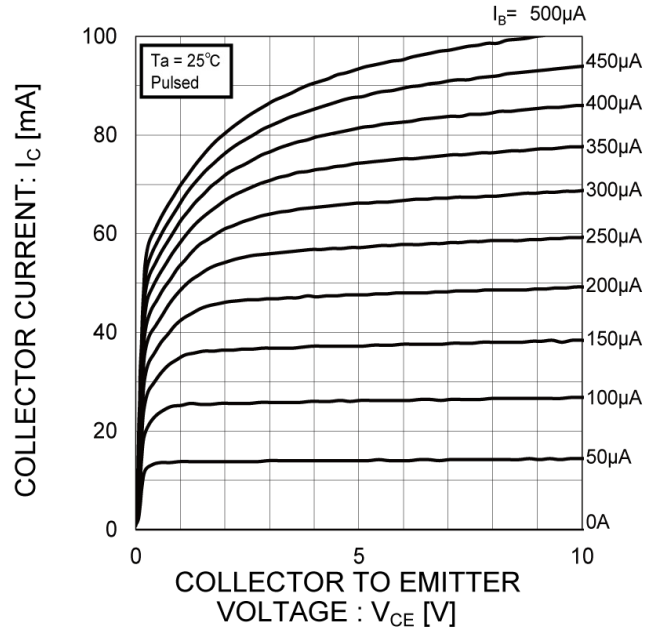


Fig.3 DC Current Gain vs. Collector Current

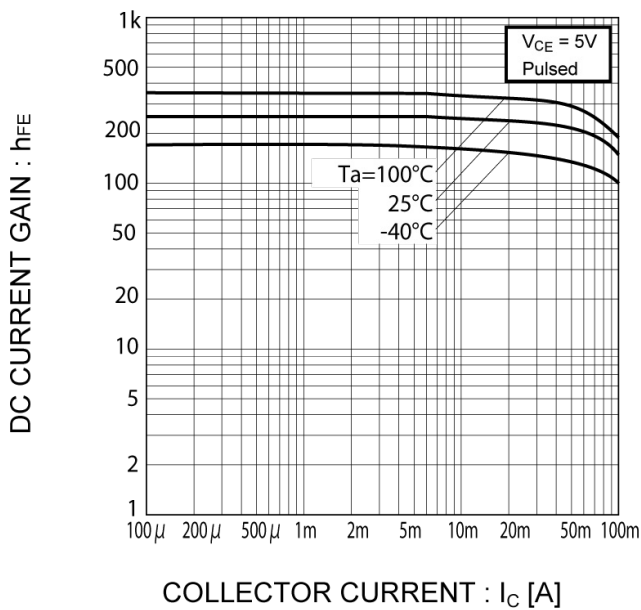
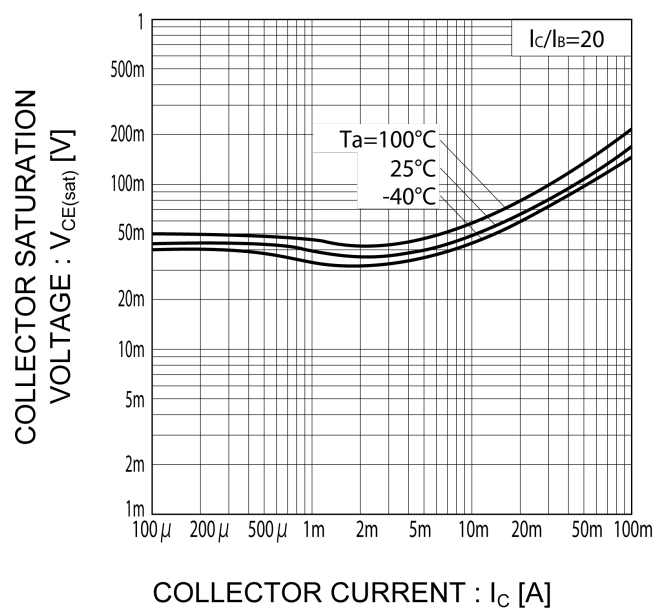
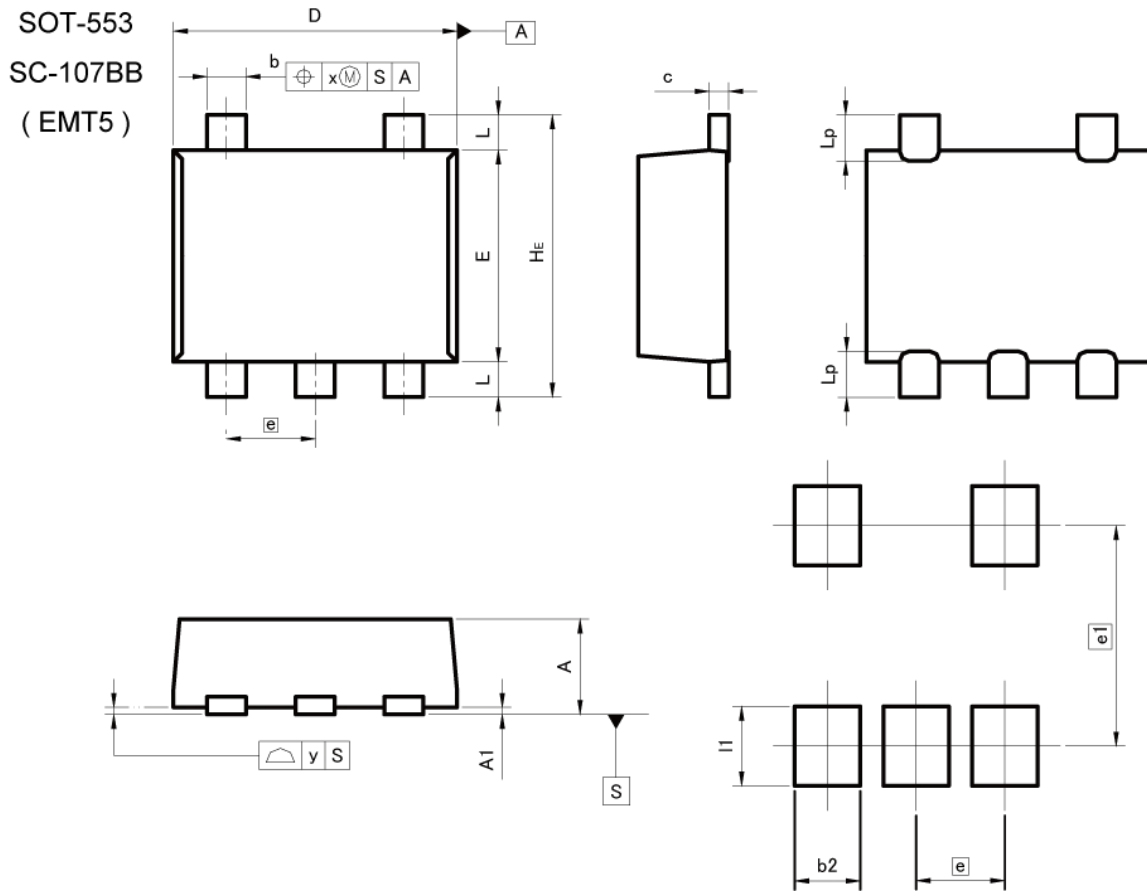


Fig.4 Collector-Emitter Saturation Voltage vs. Collector Current



●Dimensions



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

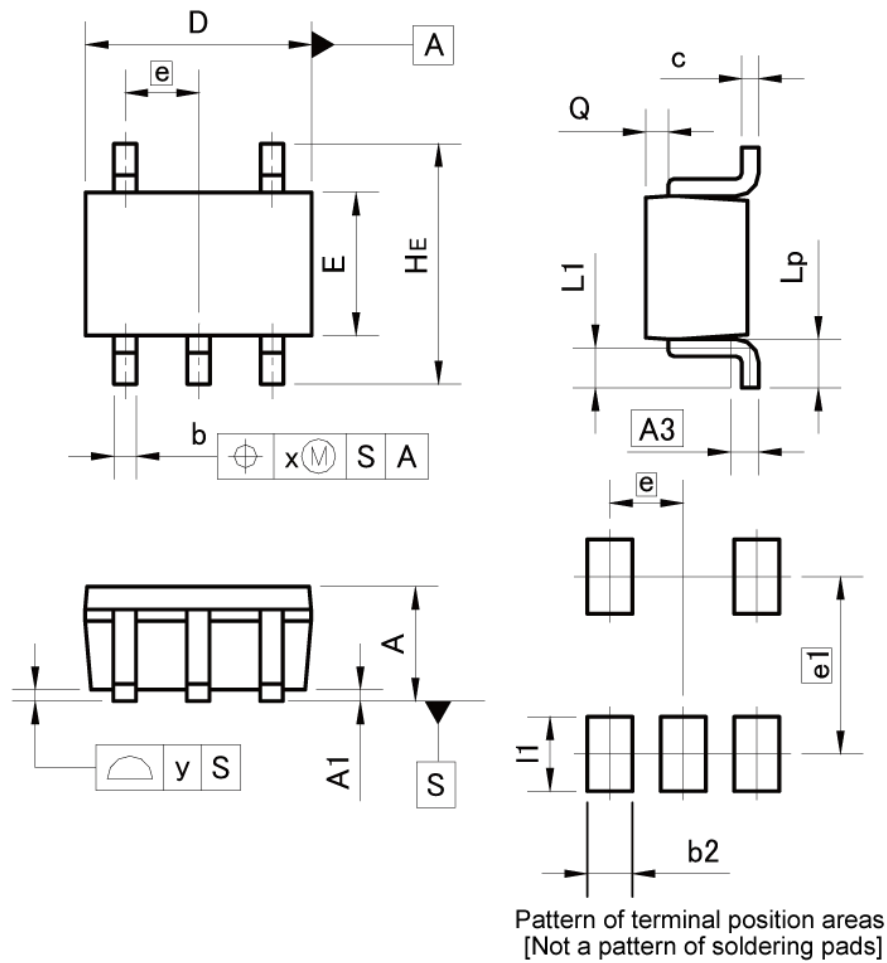
| DIM | MILIMETERS | | INCHES | |
|-----|------------|------|--------|-------|
| | MIN | MAX | MIN | MAX |
| A | 0.45 | 0.55 | 0.018 | 0.022 |
| A1 | 0.00 | 0.10 | 0.000 | 0.004 |
| b | 0.17 | 0.27 | 0.007 | 0.011 |
| c | 0.08 | 0.18 | 0.003 | 0.007 |
| D | 1.50 | 1.70 | 0.059 | 0.067 |
| E | 1.10 | 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 | |
| l1 | - | 0.45 | - | 0.018 |

Dimension in mm/inches

●Dimensions

SOT-353
SC-88A
(UMT5)



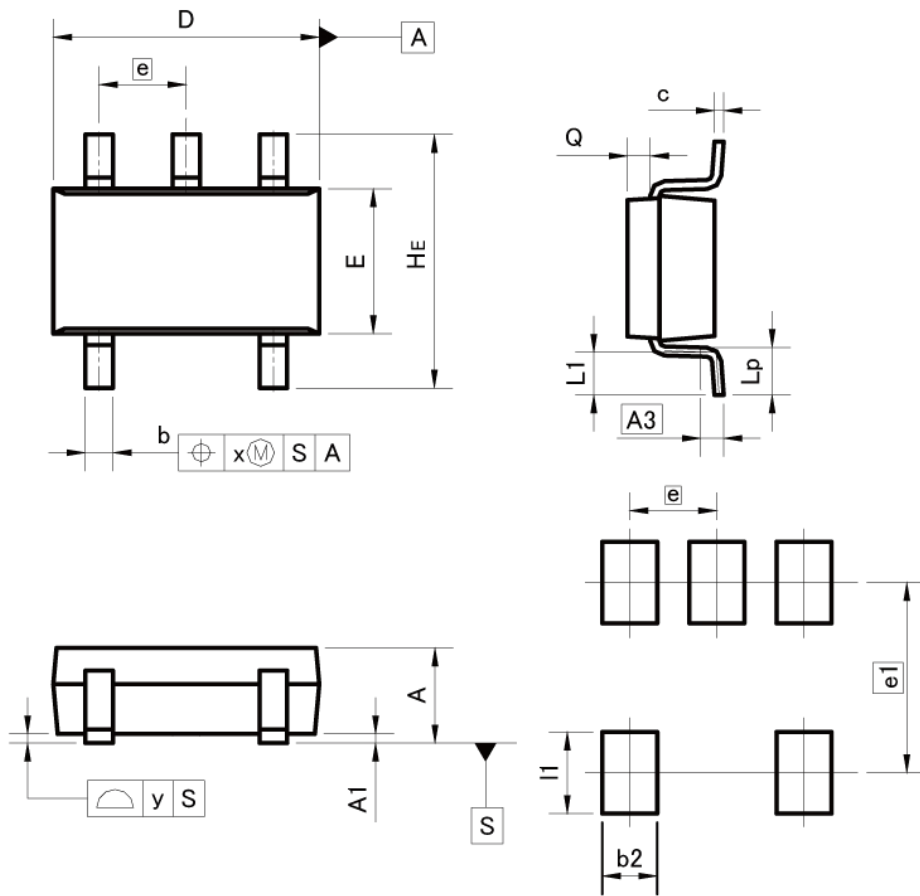
| DIM | MILIMETERS | | INCHES | |
|-----|------------|------|--------|-------|
| | MIN | MAX | MIN | MAX |
| A | 0.80 | 1.00 | 0.031 | 0.039 |
| A1 | 0.00 | 0.10 | 0.000 | 0.004 |
| A3 | 0.25 | | 0.010 | |
| b | 0.15 | 0.30 | 0.006 | 0.012 |
| c | 0.10 | 0.20 | 0.004 | 0.008 |
| D | 1.90 | 2.10 | 0.075 | 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-25
SC-74A
(SMT5)



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

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 - Use of the Products in places subject to dew condensation
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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.
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