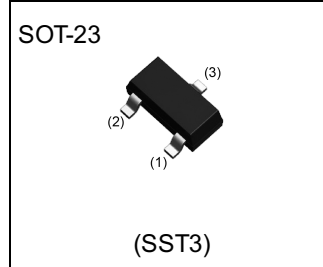


| Parameter | Value |
|-----------|---------------|
| V_{CEO} | 50V |
| I_C | 100mA |
| R_1 | 4.7k Ω |

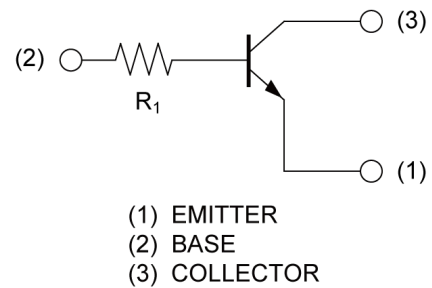
●Outline



●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) Only the on/off conditions need to be set for operation, making the circuit design easy.
- 4) Complementary PNP Types: DTA143TCA

●Inner circuit



●Application

INVERTER, INTERFACE, DRIVER

●Packaging specifications

| Part No. | Package | Package size | Taping code | Reel size (mm) | Tape width (mm) | Basic ordering unit.(pcs) | Marking |
|-----------|---------------|--------------|-------------|----------------|-----------------|---------------------------|---------|
| DTC143TCA | SOT-23 (SST3) | 2924 | T116 | 180 | 8 | 3000 | 03 |

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

| 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 | P_{D}^{*1} | 200 | mW |
| | P_{D}^{*2} | 350 | mW |
| Junction temperature | T_{j} | 150 | $^\circ\text{C}$ |
| Range of storage temperature | T_{stg} | -55 to +150 | $^\circ\text{C}$ |

● **Electrical characteristics** ($T_a = 25^\circ\text{C}$)

| Parameter | Symbol | Conditions | Values | | | Unit |
|--------------------------------------|----------------------|---|--------|------|------|------------|
| | | | Min. | Typ. | Max. | |
| Collector-base breakdown voltage | BV_{CBO} | $I_{\text{C}} = 50\mu\text{A}$ | 50 | - | - | V |
| Collector-emitter breakdown voltage | BV_{CEO} | $I_{\text{C}} = 1\text{mA}$ | 50 | - | - | V |
| Emitter-base breakdown voltage | BV_{EBO} | $I_{\text{E}} = 50\mu\text{A}$ | 5 | - | - | V |
| Collector cut-off current | I_{CBO} | $V_{\text{CB}} = 50\text{V}$ | - | - | 500 | nA |
| Emitter cut-off current | I_{EBO} | $V_{\text{EB}} = 4\text{V}$ | - | - | 500 | nA |
| Collector-emitter saturation voltage | $V_{\text{CE(sat)}}$ | $I_{\text{C}} = 5\text{mA}, I_{\text{B}} = 0.25\text{mA}$ | - | - | 300 | mV |
| DC current gain | h_{FE} | $V_{\text{CE}} = 5\text{V}, I_{\text{C}} = 1\text{mA}$ | 100 | 250 | 600 | - |
| Input resistance | R_{1} | - | 3.29 | 4.7 | 6.11 | k Ω |
| Transition frequency | f_{T}^{*3} | $V_{\text{CE}} = 10\text{V}, I_{\text{E}} = -5\text{mA}, f = 100\text{MHz}$ | - | 250 | - | MHz |

*1 Each terminal mounted on a reference land.

*2 Mounted on a ceramic board(7.0×5.0×0.6mm).

*3 Characteristics of built-in transistor

●Electrical characteristic curves ($T_a = 25^\circ\text{C}$)

Fig.1 Grounded emitter propagation characteristics



Fig.2 Grounded emitter output characteristics

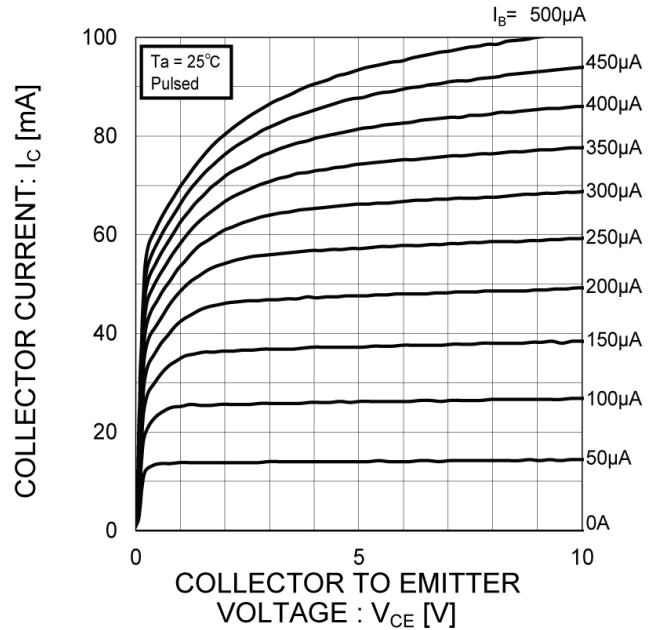


Fig.3 DC Current gain vs. Collector Current

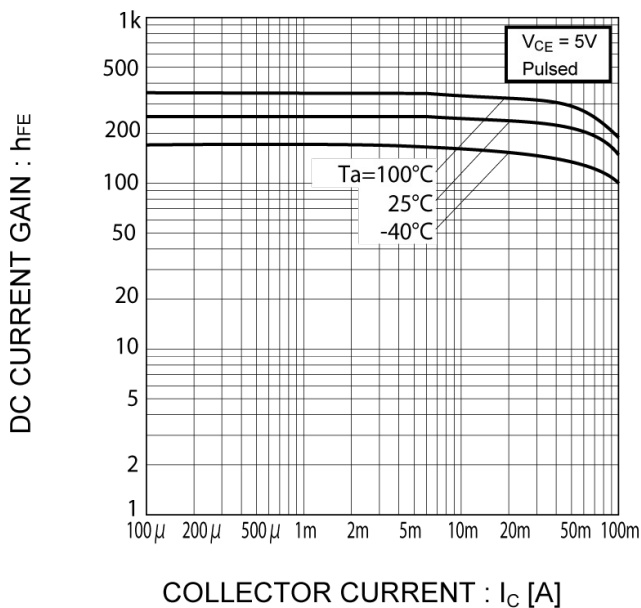
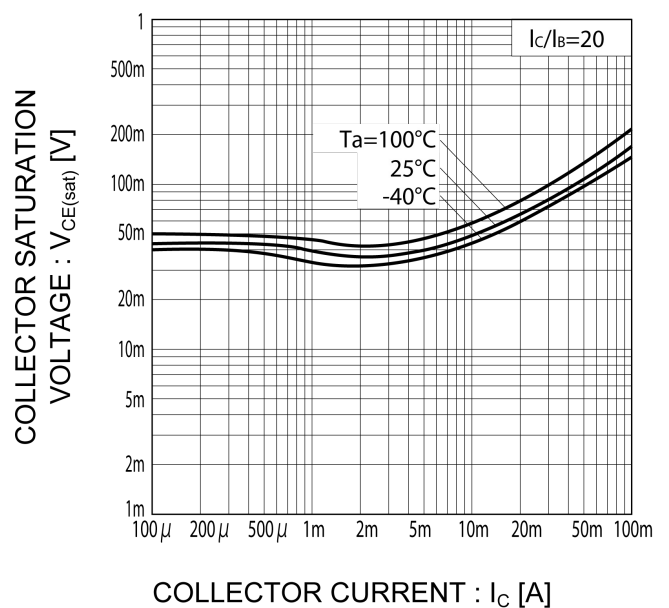
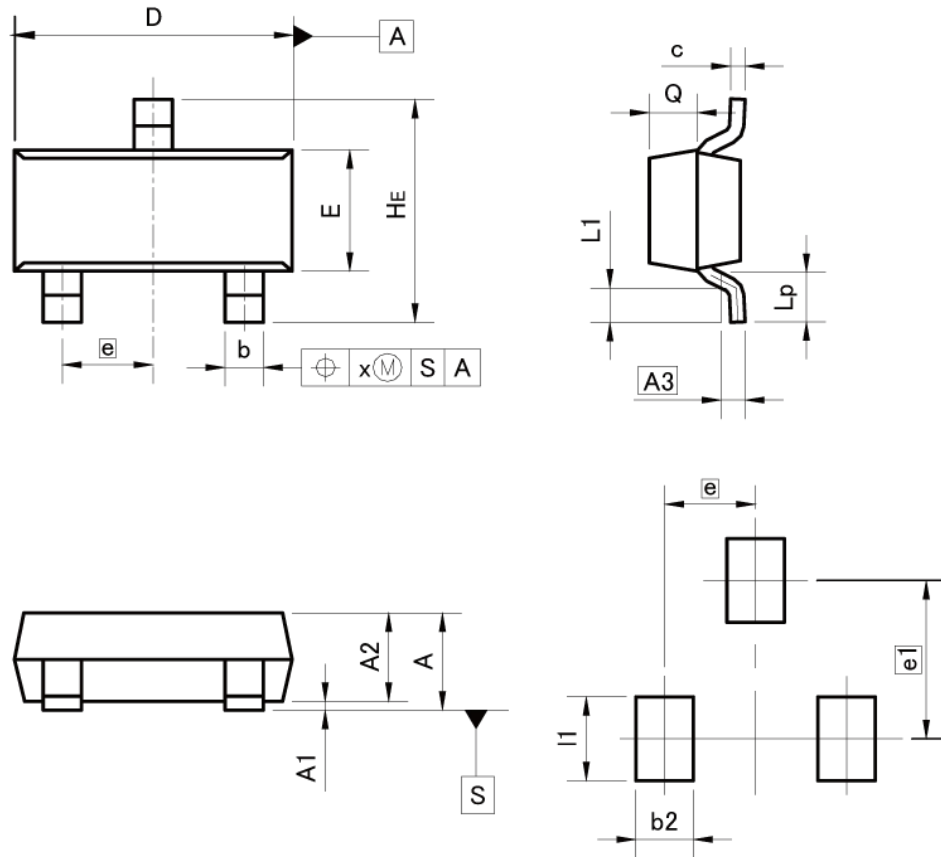


Fig.4 Collector-emitter saturation voltage vs. Collector Current



●Dimensions

SOT-23
(SST3)



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

| DIM | MILIMETERS | | INCHES | |
|-----|------------|------|--------|-------|
| | MIN | MAX | MIN | MAX |
| A | 0.90 | 1.20 | 0.035 | 0.047 |
| A1 | 0.00 | 0.10 | 0.000 | 0.004 |
| A2 | 0.85 | 1.15 | 0.033 | 0.045 |
| A3 | 0.25 | | 0.010 | |
| b | 0.35 | 0.50 | 0.014 | 0.020 |
| c | 0.09 | 0.25 | 0.004 | 0.010 |
| D | 2.70 | 3.10 | 0.106 | 0.122 |
| E | 1.20 | 1.50 | 0.047 | 0.059 |
| e | 0.95 | | 0.037 | |
| HE | 2.20 | 2.60 | 0.087 | 0.102 |
| L1 | 0.20 | - | 0.008 | - |
| Lp | 0.30 | - | 0.012 | - |
| Q | 0.40 | 0.60 | 0.016 | 0.024 |
| x | - | 0.10 | - | 0.004 |

| DIM | MILIMETERS | | INCHES | |
|-----|------------|------|--------|-------|
| | MIN | MAX | MIN | MAX |
| b2 | - | 0.60 | - | 0.024 |
| e1 | 1.70 | | 0.067 | |
| l1 | - | 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 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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- Confirm that operation temperature is within the specified range described in the product specification.
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 - [c] the Products are exposed to direct sunshine or condensation
 - [d] the Products are exposed to high Electrostatic
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