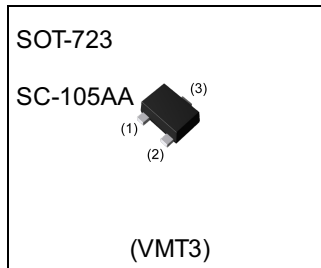


| Parameter | Value         |
|-----------|---------------|
| $V_{CEO}$ | 50V           |
| $I_C$     | 100mA         |
| $R_1$     | 4.7k $\Omega$ |

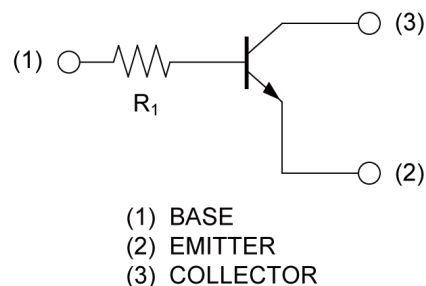
●Outline



●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: DTA143TM FHA

●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 |
|--------------|----------------|--------------|-------------|----------------|-----------------|---------------------------|---------|
| DTC143TM FHA | SOT-723 (VMT3) | 1212         | T2L         | 180            | 8               | 8000                      | 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            | $P_D^{*1}$ | 150         | 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     | $BV_{CBO}$    | $I_C = 50\mu\text{A}$                                       | 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 | $V_{CE(sat)}$ | $I_C = 5\text{mA}, I_B = 0.25\text{mA}$                     | -      | -    | 150  | mV         |
| DC current gain                      | $h_{FE}$      | $V_{CE} = 5\text{V}, I_C = 1\text{mA}$                      | 100    | 250  | 600  | -          |
| Input resistance                     | $R_1$         | -                                                           | 3.5    | 4.7  | 5.9  | k $\Omega$ |
| Transition frequency                 | $f_T^{*2}$    | $V_{CE} = 10\text{V}, I_E = -5\text{mA}, f = 100\text{MHz}$ | -      | 250  | -    | MHz        |

\*1 Each terminal mounted on a reference land.

\*2 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-723  
SC-105AA  
(VMT3)



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 |
| 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  |       |
| I1  | -          | 0.50 | -      | 0.020 |

Dimension in mm/inches

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(Note1) Medical Equipment Classification of the Specific Applications

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

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  - [b] Use of our Products outdoors or in places where the Products are exposed to direct sunlight or dust
  - [c] Use of our Products in places where the Products are exposed to sea wind or corrosive gases, including Cl<sub>2</sub>, H<sub>2</sub>S, NH<sub>3</sub>, SO<sub>2</sub>, and NO<sub>2</sub>
  - [d] Use of our Products in places where the Products are exposed to static electricity or electromagnetic waves
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8. Confirm that operation temperature is within the specified range described in the product specification.
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1. Product performance and soldered connections may deteriorate if the Products are stored in the places where:
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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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