

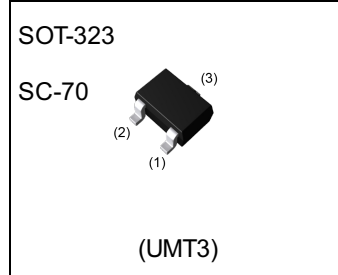


**THE DATASHEET OF  
DTC123JU3HZGT106**



| Parameter     | Value         |
|---------------|---------------|
| $V_{CC}$      | 50V           |
| $I_{C(MAX.)}$ | 100mA         |
| $R_1$         | 2.2k $\Omega$ |
| $R_2$         | 47k $\Omega$  |

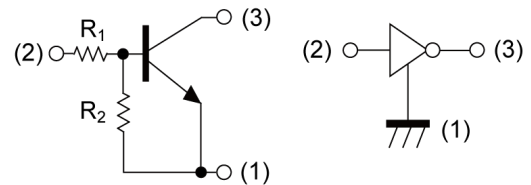
● **Outline**



● **Features**

- 1) Built-In Biasing Resistors
- 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: DTA123JU3 HZG

● **Inner circuit**



- (1) GND (EMITTER)
- (2) IN (BASE)
- (3) OUT (COLLECTOR)

● **Application**

INVERTER, INTERFACE, DRIVER

● **Packaging specifications**

| Part No.      | Package        | Package size | Taping code | Reel size (mm) | Tape width (mm) | Quantity (pcs) | Marking |
|---------------|----------------|--------------|-------------|----------------|-----------------|----------------|---------|
| DTC123JU3 HZG | SOT-323 (UMT3) | 2021         | T106        | 180            | 8               | 3000           | 142     |

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

| Parameter                    | Symbol            | Values      | Unit             |
|------------------------------|-------------------|-------------|------------------|
| Supply voltage               | $V_{CC}$          | 50          | V                |
| Input voltage                | $V_{IN}$          | -5 to 12    | V                |
| Output current               | $I_O$             | 100         | mA               |
| Collector current            | $I_{C(MAX)}^{*1}$ | 100         | mA               |
| Power dissipation            | $P_D^{*2}$        | 200         | 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. |            |
| Input voltage        | $V_{I(off)}$ | $V_{CC} = 5V, I_O = 100\mu\text{A}$                       | -      | -    | 0.5  | V          |
|                      | $V_{I(on)}$  | $V_O = 0.3V, I_O = 5\text{mA}$                            | 1.1    | -    | -    |            |
| Output voltage       | $V_{O(on)}$  | $I_O = 5\text{mA}, I_I = 0.25\text{mA}$                   | -      | 100  | 300  | mV         |
| Input current        | $I_I$        | $V_I = 5V$  | -      | -    | 3.6  | mA         |
| Output current       | $I_{O(off)}$ | $V_{CC} = 50V, V_I = 0V$                                  | -      | -    | 500  | nA         |
| DC current gain      | $G_I$        | $V_O = 5V, I_O = 10\text{mA}$                             | 80     | -    | -    | -          |
| Input resistance     | $R_1$        | -   | 1.54   | 2.2  | 2.86 | k $\Omega$ |
| Resistance ratio     | $R_2/R_1$    | -   | 17     | 21   | 26   | -          |
| Transition frequency | $f_T^{*1}$   | $V_{CE} = 10V, I_E = -5\text{mA},$<br>$f = 100\text{MHz}$ | -      | 250  | -    | MHz        |

\*1 Characteristics of built-in transistor.

\*2 Each terminal mounted on a reference land.

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

Fig.1 Input voltage vs. output current (ON characteristics)

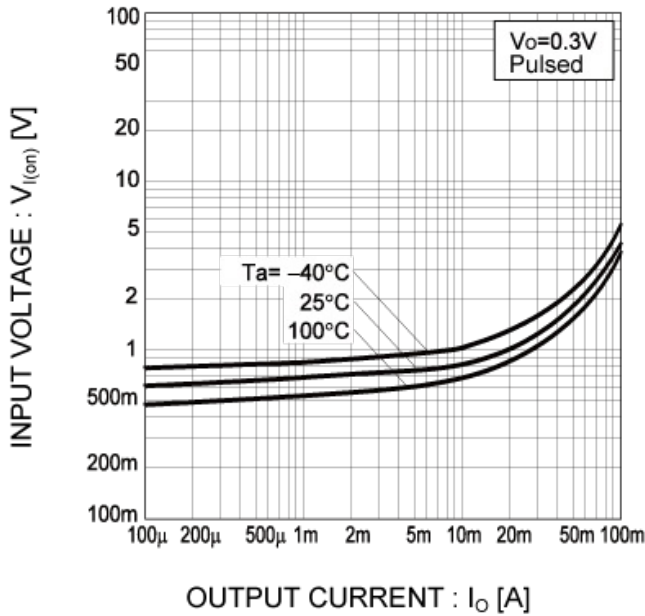


Fig.2 Output current vs. input voltage (OFF characteristics)

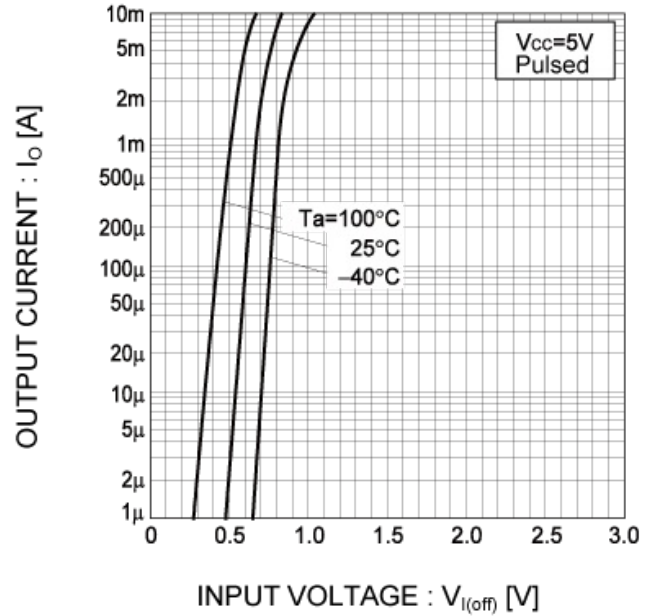


Fig.3 Output current vs. output voltage

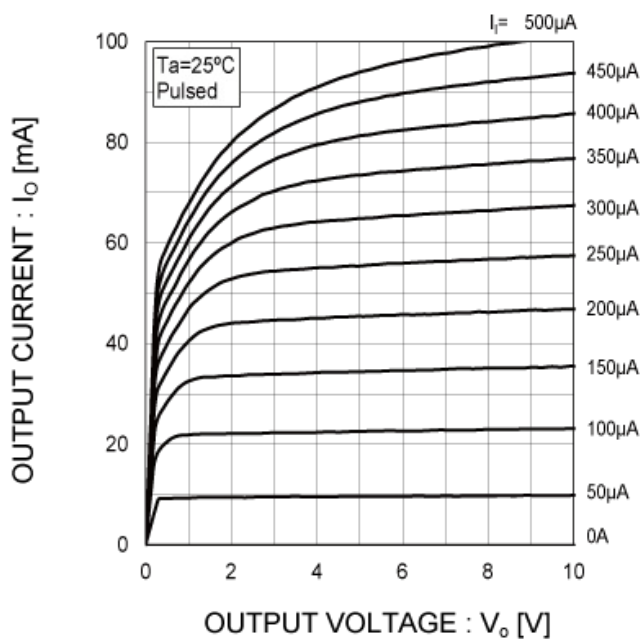
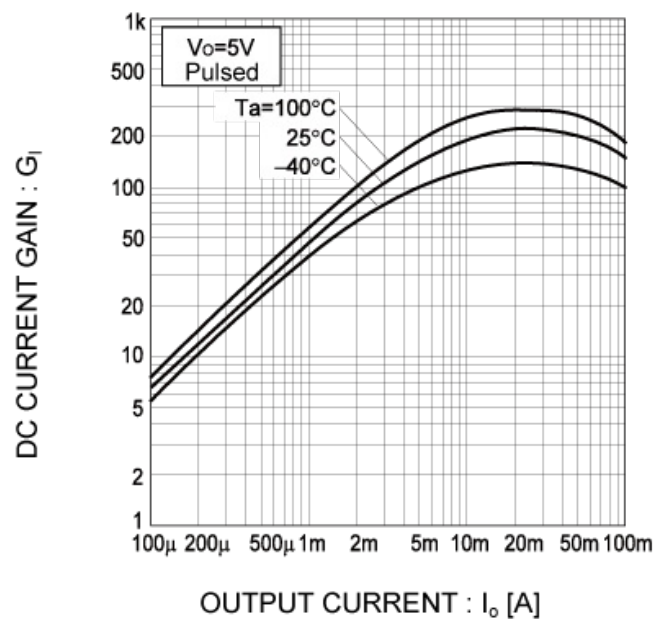
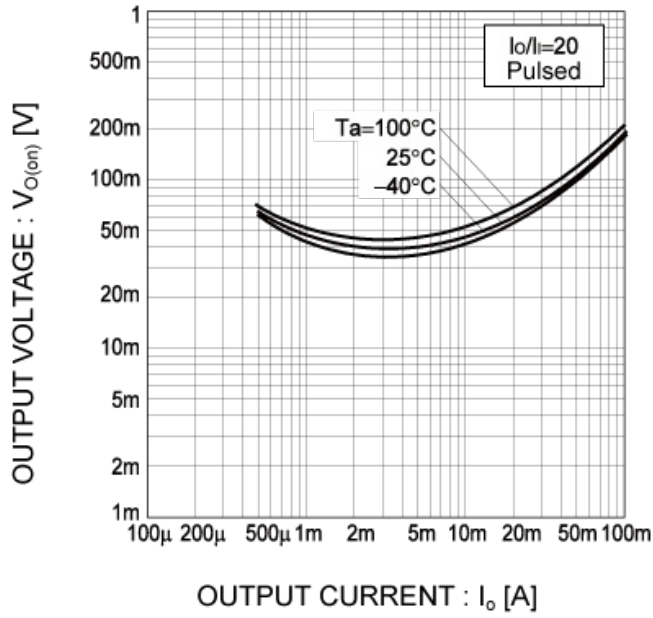


Fig.4 DC current gain vs. output current



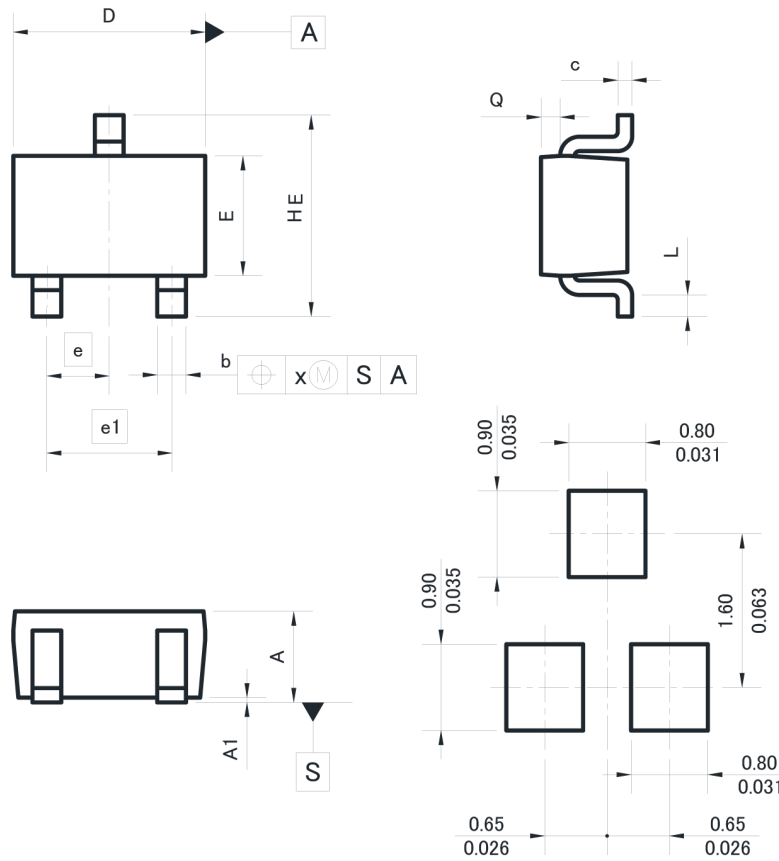
● Electrical characteristic curves ( $T_a = 25^\circ\text{C}$ )

Fig.5 Output voltage vs. output current



●Dimensions

SOT-323  
 SC-70  
 ( UMT3 )



Soldering footprint  
 Unit: (mm / inches)

| DIM | Millimeters |      | Inches |       |
|-----|-------------|------|--------|-------|
|     | Min.        | Max. | Min.   | Max.  |
| A   | 0.80        | 1.10 | 0.031  | 0.043 |
| A1  | 0.00        | 0.10 | 0.000  | 0.004 |
| b   | 0.25        | 0.40 | 0.010  | 0.016 |
| 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  |       |
| e1  | 1.30        |      | 0.051  |       |
| HE  | 2.00        | 2.20 | 0.079  | 0.087 |
| L   | 0.10        | -    | 0.004  | -     |
| Q   | 0.10        | 0.30 | 0.004  | 0.012 |
| x   | -           | 0.10 | -      | 0.004 |

Dimension in mm / inches

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

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  - [f] Sealing or coating our Products with resin or other coating materials
  - [g] Use of our Products without cleaning residue of flux (Exclude cases where no-clean type fluxes is used. However, recommend sufficiently about the residue.); or Washing our Products by using water or water-soluble cleaning agents for cleaning residue after soldering
  - [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.
7. De-rate Power Dissipation depending on ambient temperature. When used in sealed area, confirm that it is the use in the range that does not exceed the maximum junction temperature.
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For details, please refer to ROHM Mounting specification

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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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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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