

| Parameter | Value |
|---------------|---------------|
| V_{CC} | 50V |
| $I_{C(MAX.)}$ | 100mA |
| R_1 | 4.7k Ω |
| R_2 | 10k Ω |

●Outline



●Features

- 1) Built-In Biasing Resistors,
 $R_1 = 4.7k\Omega$, $R_2 = 10k\Omega$
- 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: DTA143XCA

●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 |
|-----------|---------------|--------------|-------------|----------------|-----------------|---------------------------|---------|
| DTC143XCA | SOT-23 (SST3) | 2924 | T116 | 180 | 8 | 3000 | 43 |

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

| Parameter | Symbol | Values | Unit |
|------------------------------|-------------------|-------------|------------------|
| Supply voltage | V_{CC} | 50 | V |
| Input voltage | V_{IN} | -7 to 20 | V |
| Output current | I_O | 100 | mA |
| Collector current | $I_{C(MAX)}^{*1}$ | 100 | mA |
| Power dissipation | P_D^{*2} | 200 | mW |
| | P_D^{*3} | 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. | |
| Input voltage | $V_{I(off)}$ | $V_{CC} = 5V, I_O = 100\mu\text{A}$ | - | - | 0.3 | V |
| | $V_{I(on)}$ | $V_O = 0.3V, I_O = 20\text{mA}$ | 2.5 | - | - | |
| Output voltage | $V_{O(on)}$ | $I_O = 10\text{mA}, I_I = 0.5\text{mA}$ | - | 100 | 300 | mV |
| Input current | I_I | $V_I = 5V$ | - | - | 1.8 | mA |
| Output current | $I_{O(off)}$ | $V_{CC} = 50V, V_I = 0V$ | - | - | 500 | nA |
| DC current gain | G_I | $V_O = 5V, I_O = 10\text{mA}$ | 30 | - | - | - |
| Input resistance | R_1 | - | 3.29 | 4.7 | 6.11 | k Ω |
| Resistance ratio | R_2/R_1 | - | 1.7 | 2.1 | 2.6 | - |
| Transition frequency | f_T^{*1} | $V_{CE} = 10V, I_E = -5\text{mA}, f = 100\text{MHz}$ | - | 250 | - | MHz |

*1 Characteristics of built-in transistor.

*2 Each terminal mounted on a reference land.

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

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

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

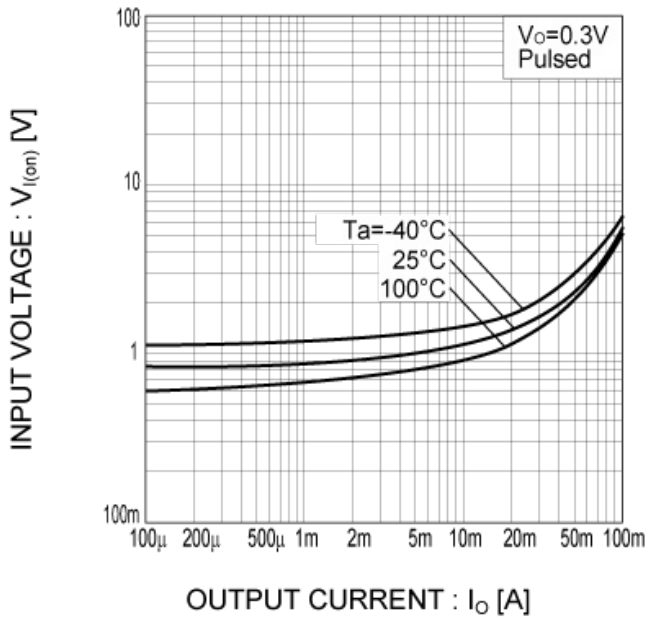


Fig.2 Output current vs. input voltage (OFF characteristics)

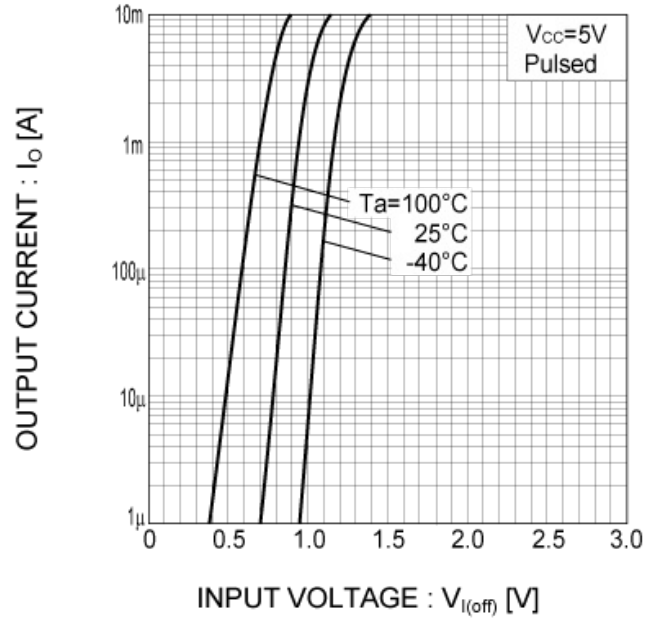


Fig.3 Output current vs. output voltage

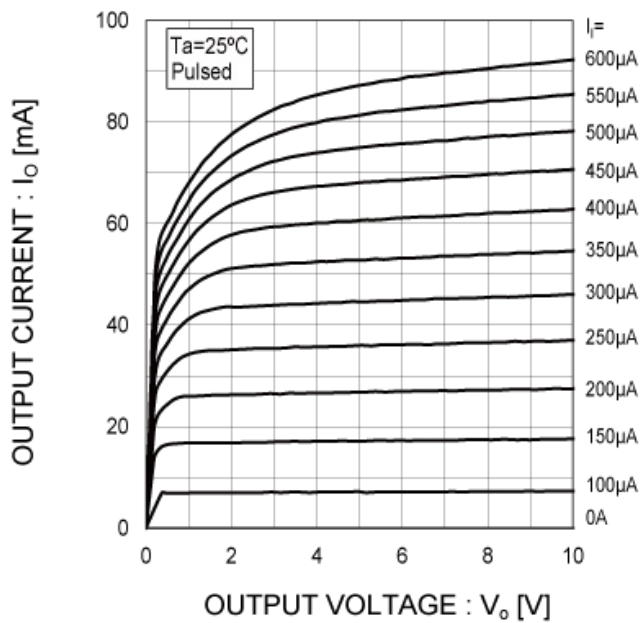
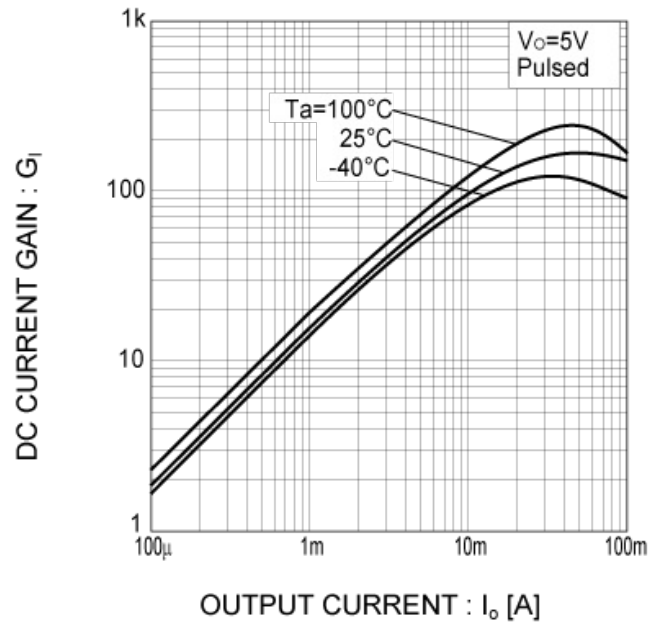
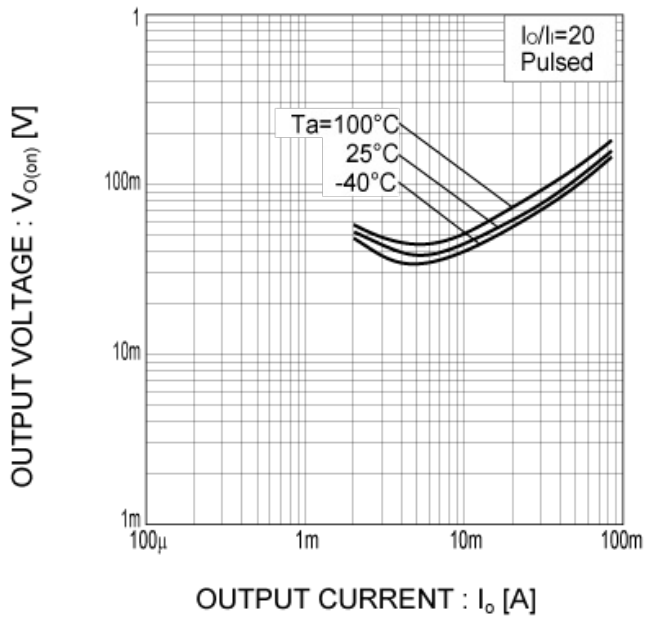


Fig.4 DC current gain vs. output current



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

Fig.5 Output voltage vs. output current



●Dimensions

SOT-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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(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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 - Use of the Products in places subject to dew condensation
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- Please verify and confirm characteristics of the final or mounted products in using the Products.
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- 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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