

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

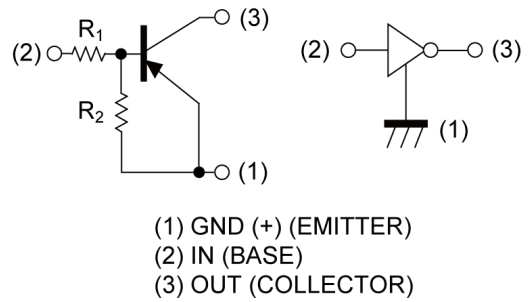
●Outline



●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 NPN Types: DTC143XCA

●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 |
|-----------|---------------|--------------|-------------|----------------|-----------------|---------------------------|---------|
| DTA143XCA | SOT-23 (SST3) | 2924         | T116        | 180            | 8               | 3000                      | 33      |

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

| Parameter                    | Symbol            | Values      | Unit             |
|------------------------------|-------------------|-------------|------------------|
| Supply voltage               | $V_{CC}$          | -50         | V                |
| Input voltage                | $V_{IN}$          | -20 to 7    | 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 $\Omega$ |
| 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)

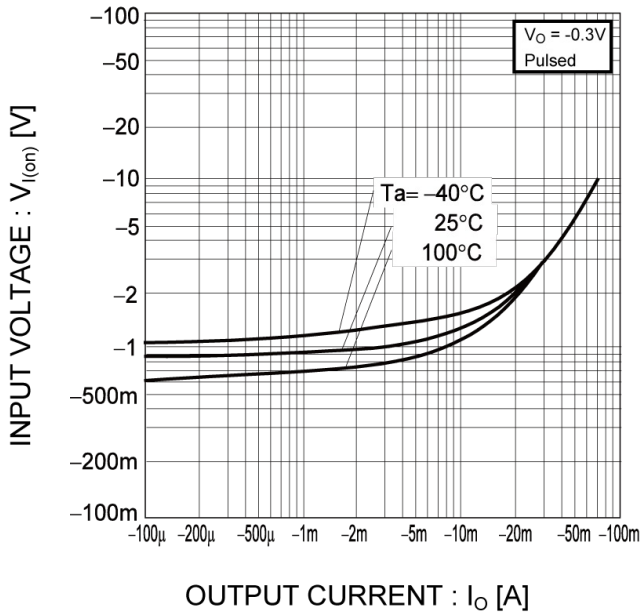


Fig.2 Output current vs. input voltage (OFF characteristics)

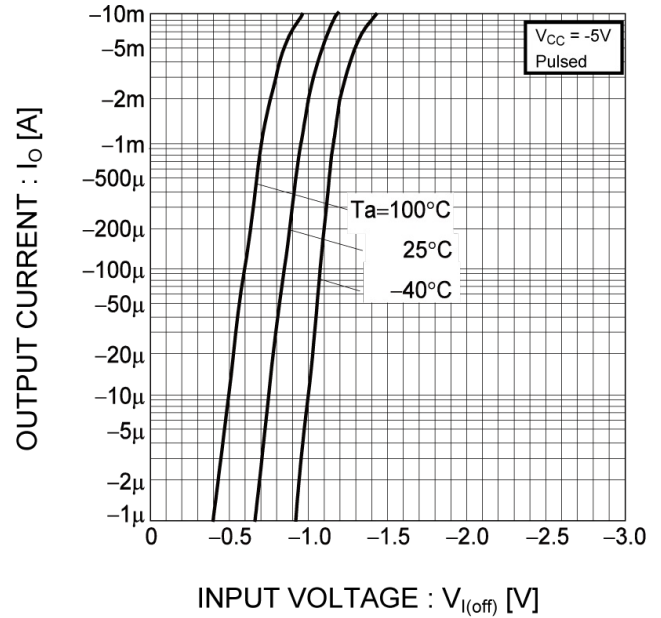


Fig.3 Output current vs. output voltage



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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|-----------|-----------|------------|-----------|
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| CLASS IV  |           | CLASS III  |           |

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