

SOT-523 Plastic-Encapsulate Transistors

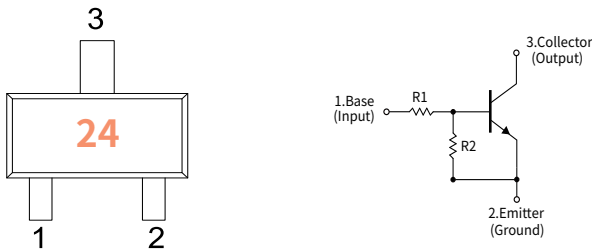
Features

- Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors(see equivalent circuit)
- The bias resistors consist of thin-film resistors with complete isolation to allow positive biasing of the input.They also have the advantage of almost completely eliminating parasitic effects
- Only the on/off conditions need to be set for operation, making device design easy

Mechanical Data

- Case: SOT-523
- Molding compound meets UL 94V-0 flammability rating, RoHS-compliant, halogen-free
- Terminals: Solder plated, solderable per MIL-STD-750,Method 2026

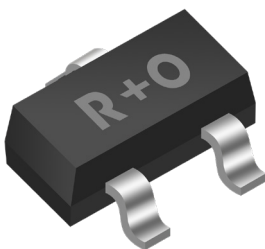
Function Diagram



Supply Voltage  
VCC 50V

Collector Current  
0.05 Ampere

SOT-523



Ordering Information

| PACKAGE | PACKAGE CODE | UNIT WEIGHT(g) | REEL(pcs) | BOX(pcs) | CARTON(pcs) | DELIVERY MODE |
|---------|--------------|----------------|-----------|----------|-------------|---------------|
| SOT-523 | R1           | 0.0025         | 3000      | 15000    | 150000      | 7"            |

Maximum Ratings (Ta=25°C Unless otherwise specified)

| PARAMETER              | SYMBOL           | UNIT | VALUE     |
|------------------------|------------------|------|-----------|
| Supply Voltage         | V <sub>CC</sub>  | V    | 50        |
| Input Voltage          | V <sub>IN</sub>  | V    | -10~+40   |
| Output Current         | I <sub>O</sub>   | mA   | 50        |
| Peak Collector Current | I <sub>CM</sub>  | mA   | 100       |
| Power Dissipation      | P <sub>D</sub>   | mW   | 150       |
| Storage temperature    | T <sub>stg</sub> | °C   | -55 ~+150 |
| Junction temperature   | T <sub>j</sub>   | °C   | -55 ~+150 |

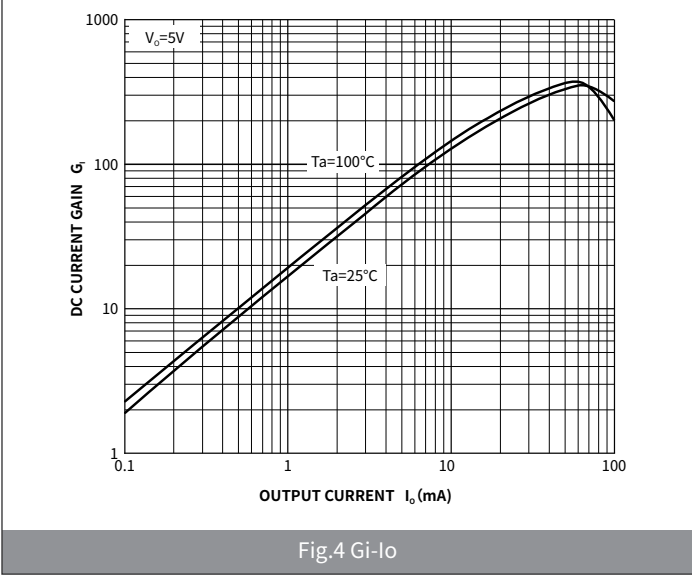
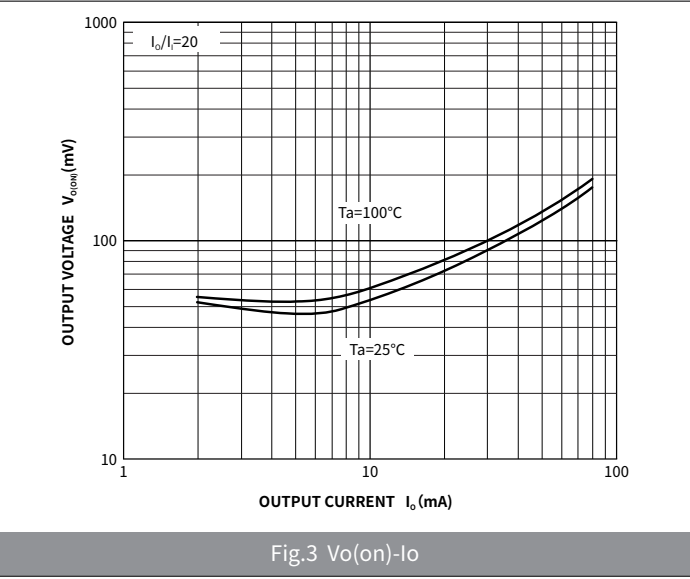
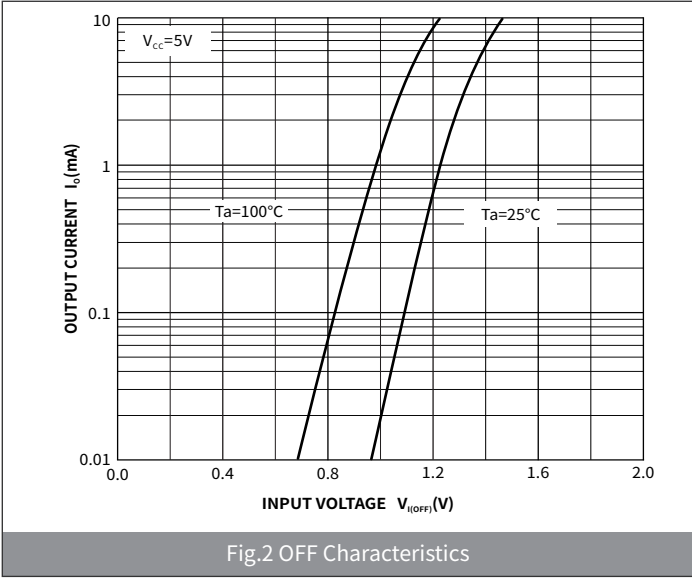
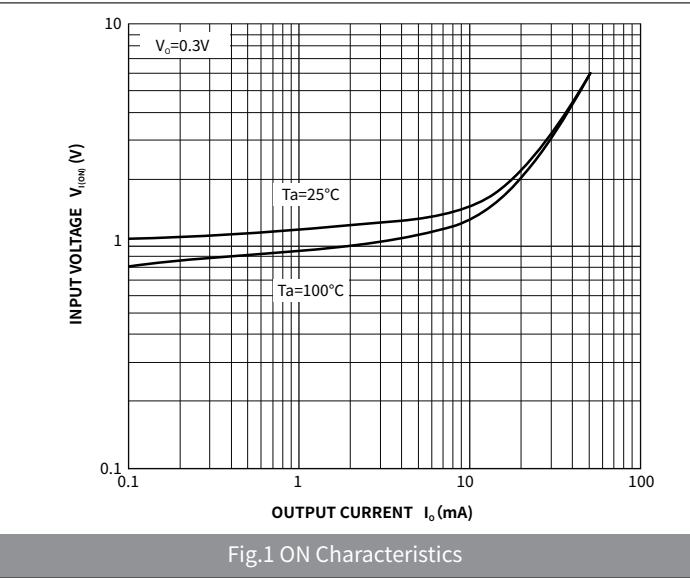
Small-signal Characteristics

| ITEM                 | SYMBOL         | Condition                                  | UNIT | Min | Typ | Max |
|----------------------|----------------|--------------------------------------------|------|-----|-----|-----|
| Transition frequency | f <sub>T</sub> | I <sub>O</sub> = 5mA, V <sub>O</sub> = 10V | MHz  | -   | 250 | -   |

Electrical Characteristics (Ta=25°C Unless otherwise noted)

| PARAMETER        | SYMBOL       | UNIT       | Condition                 | Min | Typ | Max  |
|------------------|--------------|------------|---------------------------|-----|-----|------|
| Input voltage    | $V_{I(off)}$ | V          | $I_o=100\mu A, V_{cc}=5V$ | 0.5 | -   | -    |
|                  | $V_{I(on)}$  |            | $I_o=10mA, V_o=0.3V$      | -   | -   | 3    |
| Output voltage   | $V_{O(on)}$  |            | $I_o/I_i=10mA/0.5mA$      | -   | -   | 0.3  |
| Input current    | $I_i$        | mA         | $V_i=5V$                  | -   |     | 0.88 |
| Output current   | $I_{O(off)}$ | $\mu A$    | $V_{cc}=50V, V_i=0V$      | -   | -   | 0.5  |
| DC Current Gain  | $h_{FE}$     | -          | $V_o=5V, I_o=5mA$         | 30  | -   | -    |
| Input resistance | $R_i$        | k $\Omega$ | -                         | 7   | 10  | 13   |
| Resistance ratio | $R_2/R_1$    | -          | -                         | 0.8 | 1   | 1.2  |

Ratings And Characteristics Curves (Ta=25°C Unless otherwise specified)



● Package Outline Dimensions (SOT-523)

| Symbol | Dimensions  |      |        |       |
|--------|-------------|------|--------|-------|
|        | Millimeters |      | Inches |       |
|        | Min.        | Max. | Min.   | Max.  |
| A      | 0.65        | 0.85 | 0.026  | 0.033 |
| A1     | 0.40        | 0.60 | 0.016  | 0.024 |
| B      | 0.25        | 0.35 | 0.010  | 0.014 |
| b      | 0.15        | 0.25 | 0.006  | 0.010 |
| C      | 0.05        | 0.15 | 0.002  | 0.006 |
| D      | 0.70        | 0.90 | 0.028  | 0.035 |
| D1     | 1.50        | 1.70 | 0.059  | 0.067 |
| E      | 1.5         | 1.7  | 0.059  | 0.067 |
| e      | 0.95        | 1.05 | 0.037  | 0.041 |
| H      | -           | 0.10 | -      | 0.004 |
| L      | 0.17        | -    | 0.007  | -     |

● Suggested Pad Layout

| Symbol | Dimensions  |      |        |       |
|--------|-------------|------|--------|-------|
|        | Millimeters |      | Inches |       |
|        | Min.        | Max. | Min.   | Max.  |
| A      | 0.50        | 0.70 | 0.020  | 0.028 |
| B      | 0.60        | 0.80 | 0.024  | 0.031 |
| C      | 0.90        | 1.10 | 0.035  | 0.043 |
| D      | 1.20        | 1.40 | 0.047  | 0.055 |