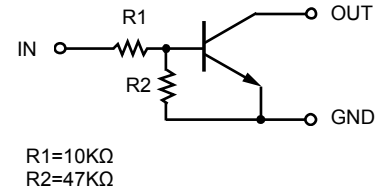


Feature

- 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 negative 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 the device design easy.


Applications

- Inverter
- Interface
- Driver

Mechanical Characteristics

- Lead finish:100% matte Sn(Tin)
- Mounting position: Any
- Qualified max reflow temperature:260℃
- Device meets MSL 1 requirements
- Pure tin plating: 7 ~ 17 um
- Pin flatness : ≤3mil

Structure

NPN epitaxial planar silicon transistor (Resistor built-in type)

Electrical characteristics per line@25℃ (unless otherwise specified)

| Parameter | Symbol | Conditions | Min. | Typ. | Max. | Units |
|----------------------|--------------|----------------------------------|------|------|------|-------|
| Input voltage | $V_{I(off)}$ | $V_{CC}=5V, I_o=100\mu A$ | - | - | 0.3 | V |
| | $V_{I(on)}$ | $V_o=0.3V, I_o=1mA$ | 1.4 | - | - | V |
| Output voltage | $V_{O(off)}$ | $I_o/I_i=5mA/0.25mA$ | - | 0.1 | 0.3 | V |
| Input current | I_i | $V_i=5V$ | - | - | 0.88 | mA |
| Output current | $I_{O(off)}$ | $V_{CC}=50V, V_i=0V$ | - | - | 0.5 | μA |
| DC current gain | G_1 | $V_o=5V, I_o=5mA$ | 68 | - | - | - |
| Input resistance | R_1 | - | 7 | 10 | 13 | KΩ |
| Resistance ration | R_2/R_1 | - | 3.7 | 4.7 | 5.7 | - |
| Transition frequency | f_T | $V_{CE}=10V, I_E=-5mA, f=100MHz$ | - | 250 | - | MHz |

Absolute maximum rating@25°C

| Rating | Symbol | Value | Units |
|----------------------|---------------|-------------|-------|
| Supply voltage | V_{CC} | 50 | V |
| Input voltage | V_{IN} | -6 to +40 | V |
| Output current | I_o | 70 | mA |
| | $I_{C(MAX.)}$ | 100 | mA |
| Power dissipation | P_d | 150 | mW |
| Junction temperature | T_j | 150 | °C |
| Storage temperature | T_{stg} | -55 to +150 | °C |

Typical Characteristics

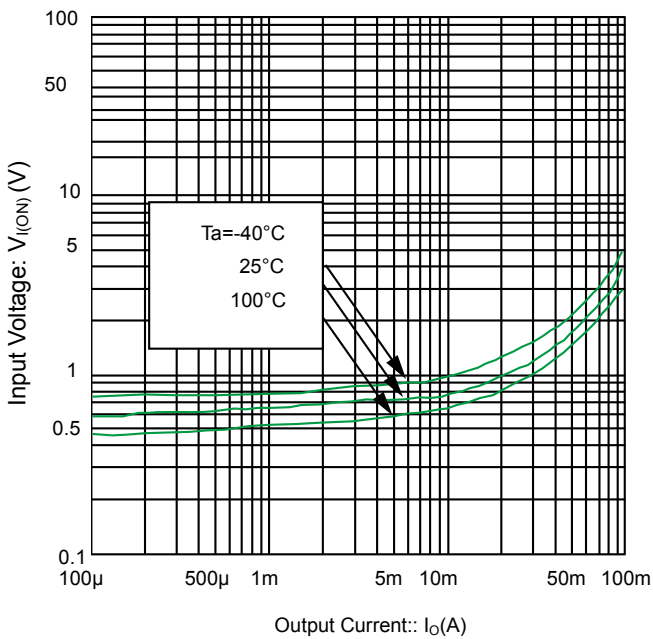


Fig 1. Input Voltage vs. output current
@ $V_C=0.3V$ (ON characteristics)

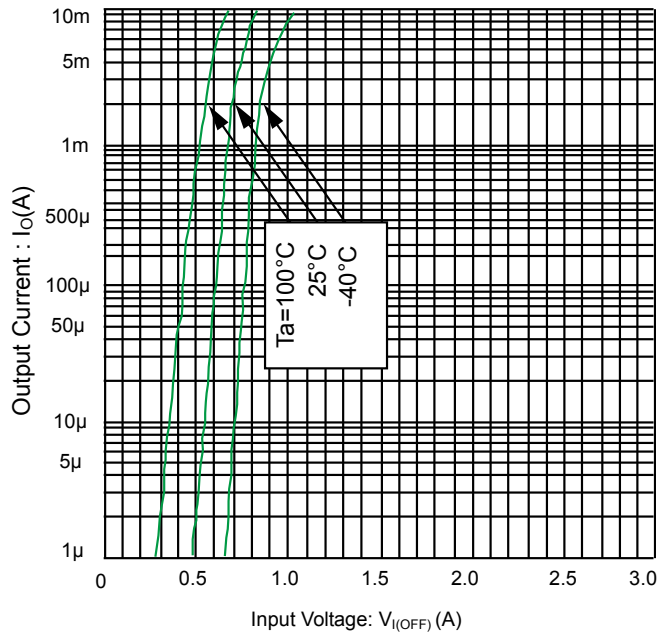
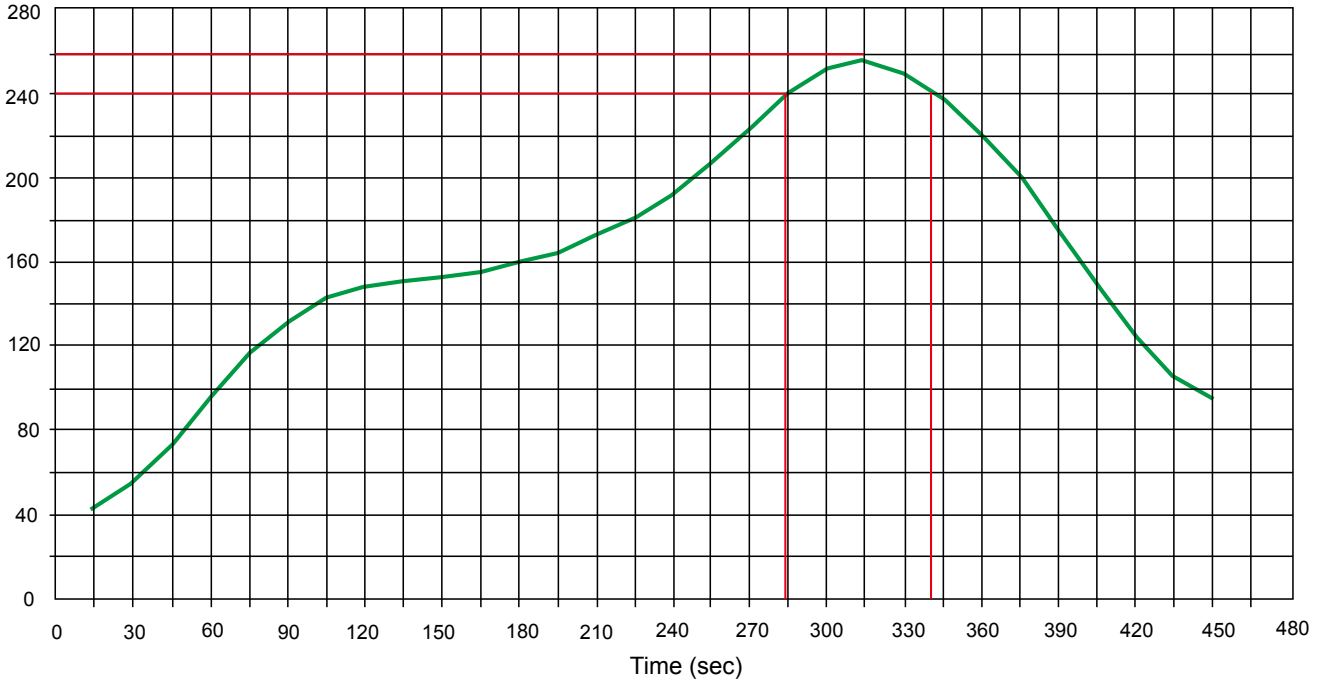


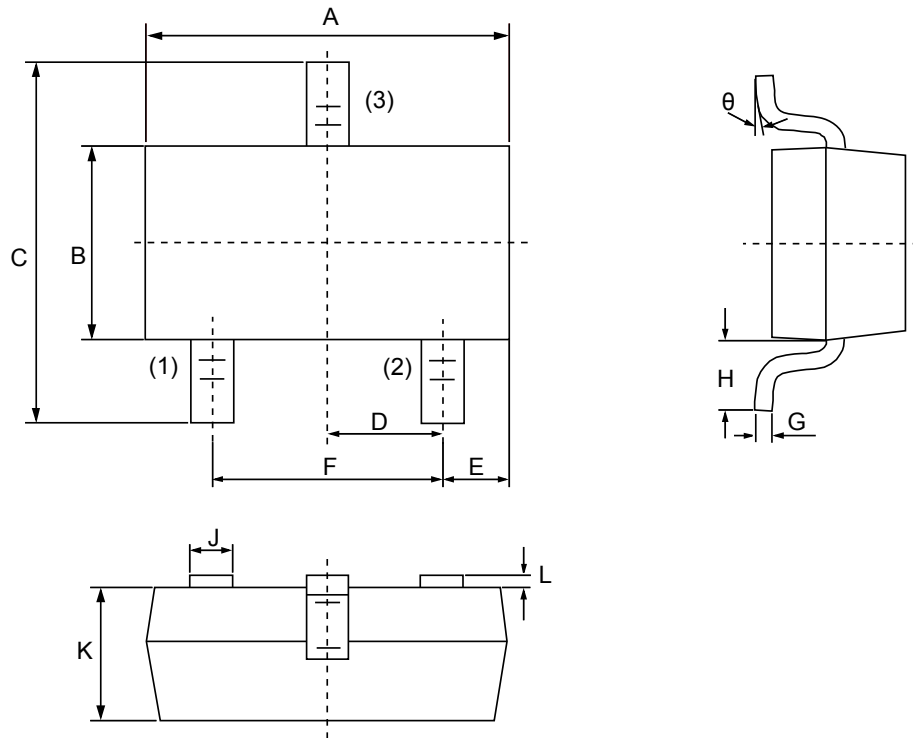
Fig 2. Output current vs. input voltage
@ $V_{CC}=5V$ (OFF characteristics)

Solder Reflow Recommendation

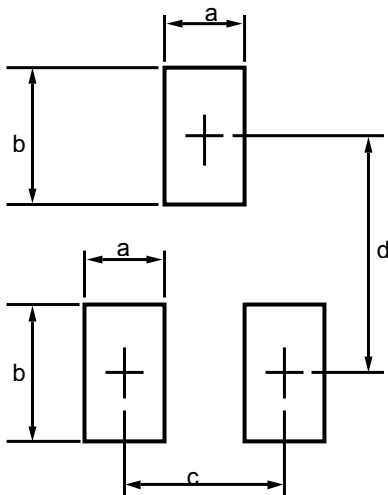
Peak Temp=257°C, Ramp Rate=0.802deg. °C/sec



Product dimension (SOT-523)



| Dim | Millimeters | | Inches | |
|----------|-------------|-------|----------|-------|
| | MIN | MAX | MIN | MAX |
| A | 1.50 | 1.70 | 0.059 | 0.067 |
| B | 0.75 | 0.85 | 0.030 | 0.033 |
| C | 1.450 | 1.750 | 0.057 | 0.069 |
| D | 0.50BSC | | 0.020BSC | |
| E | 0.30 | 0.33 | 0.012 | 0.015 |
| F | 0.900 | 1.100 | 0.035 | 0.043 |
| G | 0.100 | 0.200 | 0.004 | 0.008 |
| H | 0.550 | | 0.022 | |
| J | 0.150 | 0.250 | 0.006 | 0.010 |
| K | 0.700 | 0.900 | 0.028 | 0.038 |
| L | 0.024 | 0.027 | 0.600 | 0.700 |
| θ | 0° | 4° | 0° | 4° |




| Dim | Millimeters | |
|-----|-------------|------|
| | MIN | MAX |
| a | -- | 0.4 |
| b | -- | 0.6 |
| c | -- | 1.0 |
| d | -- | 1.24 |

Ordering information

| Device | Package | Shipping |
|-----------|-------------------|--------------------|
| PDTC114YE | SOT-523 (Pb-Free) | 3000 / Tape & Reel |


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