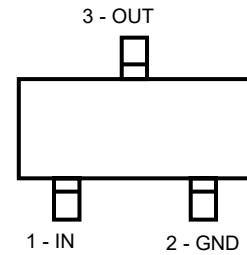
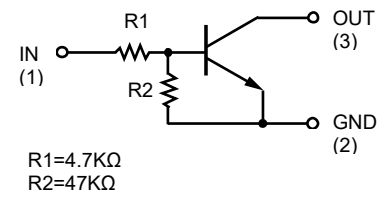


Feature

- 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.



Top View

Applications

- Inverter
- Interface
- Driver

Mechanical Characteristics

- Lead finish:100% matte Sn(Tin)
- Mounting position: Any
- Qualified max reflow temperature:260°C
- 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°C (unless otherwise specified)

| Parameter | Symbol | Conditions | Min. | Typ. | Max. | Units |
|----------------------|--------------|----------------------------------|------|------|------|-------|
| Input voltage | $V_{I(off)}$ | $V_{CC}=5V, I_o=100\mu A$ | 0.5 | - | 1.0 | V |
| | $V_{I(on)}$ | $V_o=0.3V, I_o=5mA$ | - | 1 | - | V |
| Output voltage | $V_{O(off)}$ | $I_o/I_i=5mA/0.25mA$ | - | 0.1 | 0.3 | V |
| Input current | I_i | $V_i=5V$ | - | - | 1.8 | mA |
| Output current | $I_{O(off)}$ | $V_{CC}=50V, V_i=0V$ | - | - | 0.5 | μA |
| DC current gain | G_1 | $V_o=5V, I_o=10mA$ | 80 | - | - | - |
| Input resistance | R_1 | - | 3.29 | 4.7 | 6.11 | KΩ |
| Resistance ration | R_2/R_1 | - | 8 | 10 | 12 | - |
| 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} | -5 to +30 | V |
| Output current | I _O | 100 | 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

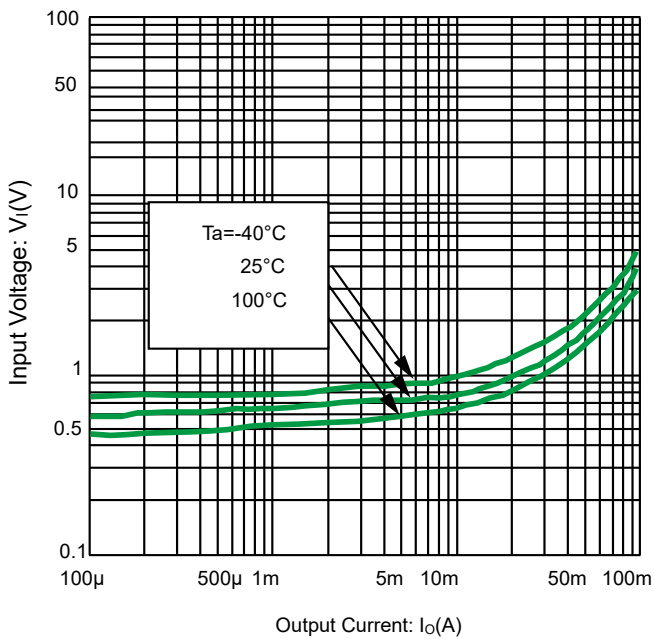


Fig 1. Input Voltage vs. output current
@V_O=0.3V (ON characteristics)

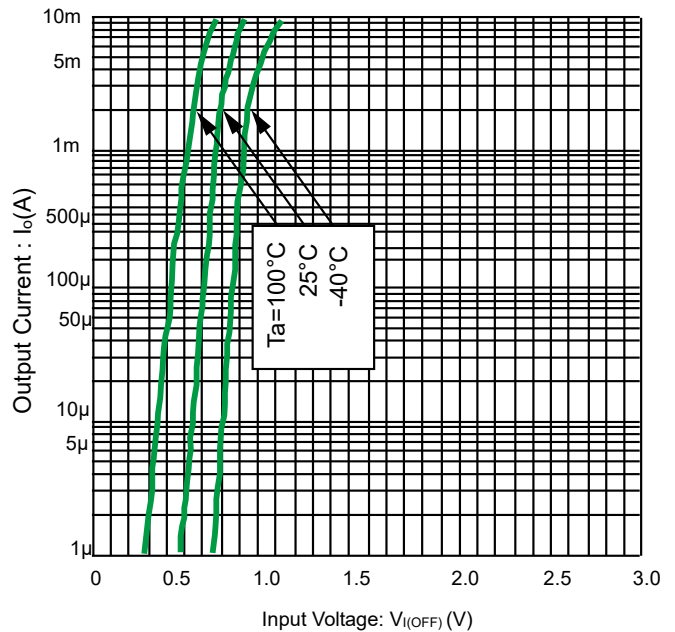


Fig 2. Output current vs. input voltage
@V_{CC}=5V(OFF characteristics)

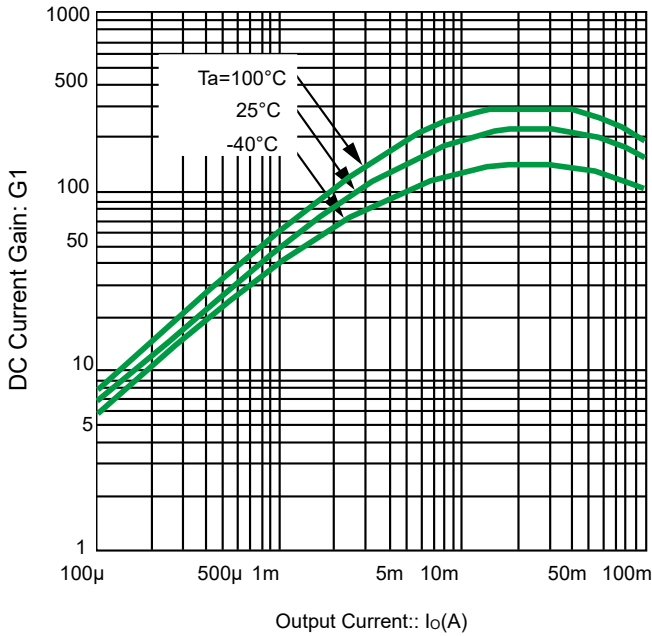


Fig 3.DC current gain vs. output current
 @ $V_o=5V$

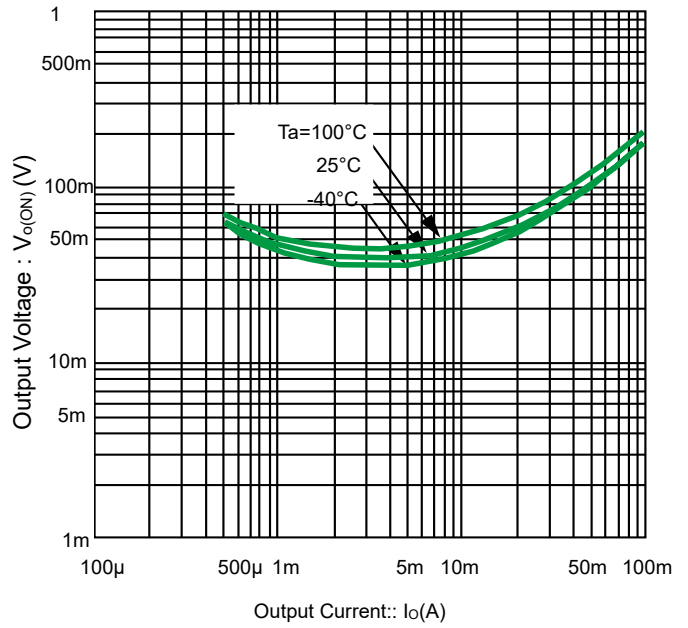
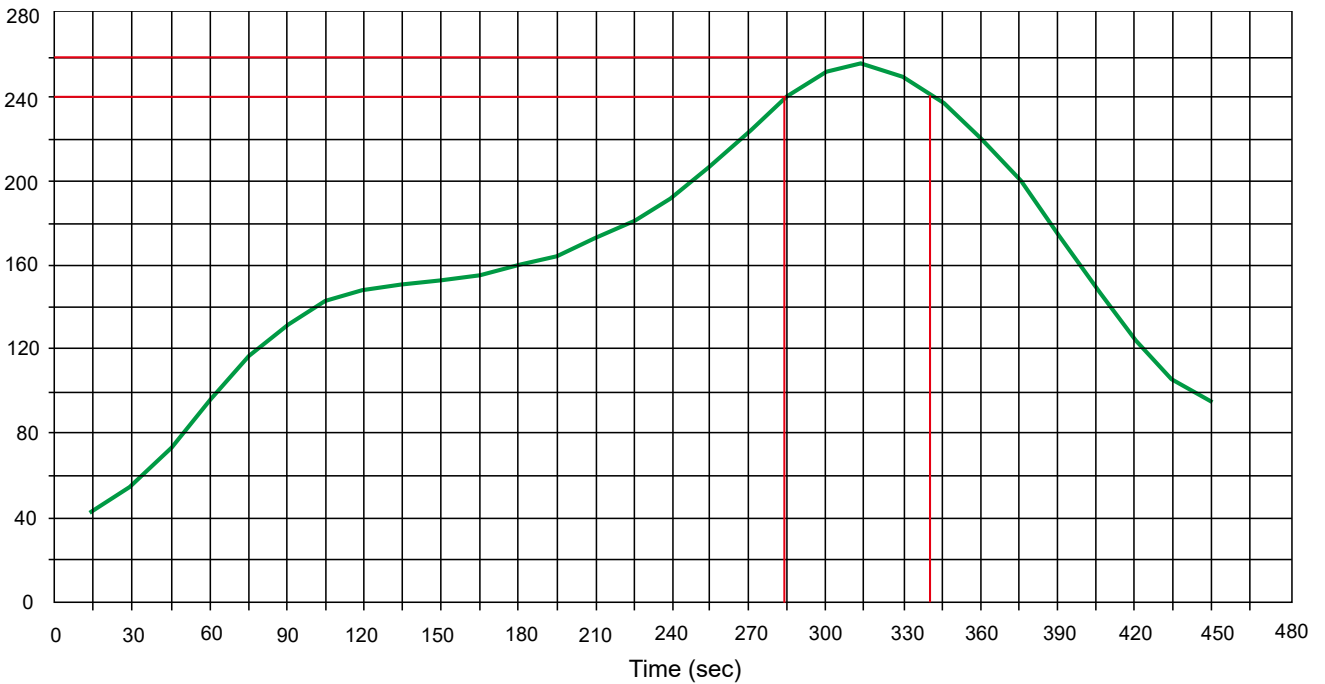


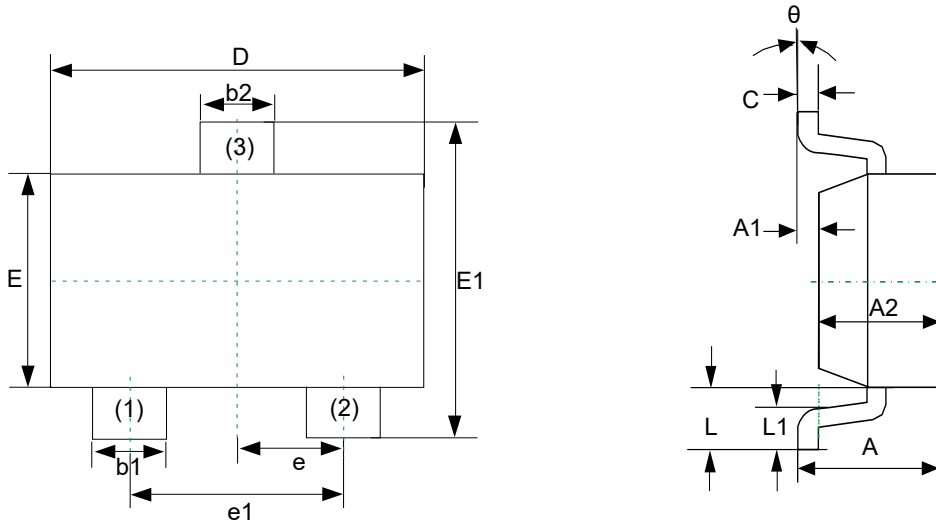
Fig 4.Output current vs. output voltage
 @ $I_o/I_1=20$

Solder Reflow Recommendation

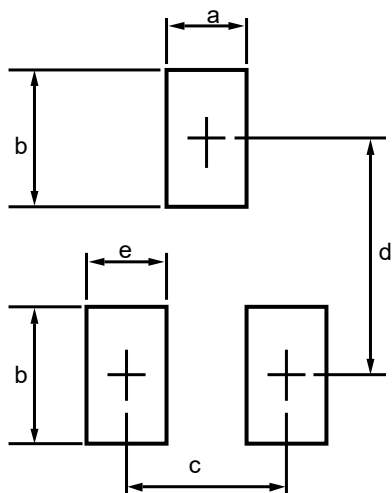
Peak Temp= $257^\circ C$, Ramp Rate= $0.802 deg. ^\circ C/sec$



Product dimension (SOT-523)



| Dim | Millimeters | | Inches | |
|-----|-------------|-------|----------|-------|
| | MIN | MAX | MIN | MAX |
| A | 0.700 | 0.900 | 0.028 | 0.035 |
| A1 | 0.000 | 0.100 | 0.000 | 0.004 |
| A2 | 0.700 | 0.800 | 0.028 | 0.031 |
| b1 | 0.150 | 0.250 | 0.006 | 0.010 |
| b2 | 0.250 | 0.350 | 0.010 | 0.014 |
| c | 0.100 | 0.200 | 0.004 | 0.008 |
| D | 1.500 | 1.700 | 0.059 | 0.067 |
| E | 0.700 | 0.900 | 0.028 | 0.035 |
| E1 | 1.450 | 1.750 | 0.057 | 0.069 |
| e | 0.500TYP | | 0.020TYP | |
| e1 | 0.900 | 1.100 | 0.035 | 0.043 |
| L | 0.400REF | | 0.016REF | |
| L1 | 0.100 | 0.300 | 0.004 | 0.012 |
| θ | 0° | 8° | 0° | 8° |




| Dim | Millimeters | |
|-----|-------------|------|
| | MIN | MAX |
| a | -- | 0.5 |
| b | -- | 0.6 |
| c | -- | 1.0 |
| d | -- | 1.24 |
| e | -- | 0.4 |

Ordering information

| Device | Package | Shipping |
|-----------|-------------------|--------------------|
| PDTC143ZE | SOT-523 (Pb-Free) | 3000 / Tape & Reel |


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