

System reset IC

BH6150F

The BH6150F has two reset circuits, one detects the power supply voltage, and the other detects the input voltage. With this one IC it is possible to apply a reset to the logic systems of CPUs, and mechanical systems.

●Applications

Personal computers, CPUs, MPUs, logic circuits, reset circuits for mechanical systems, level detector circuits, battery voltage detector circuits, and backup power supply switching circuits

●Features

Two types of reset circuit provided.

1) Reset circuit 1 (input voltage detector)

Detection voltage: 1.25V (Typ.)

Transmission delay time: 200 μ s (Typ.)

Open collector output, and 10k Ω pull-up resistor on chip.

2) Reset circuit 2 (supply voltage detector)

Detection voltage: 4.2V (Typ.)

Transmission delay time: 25, 50, 100 and 200 ms (select using the Ct0 and Ct1 pins)

Manual reset function provided

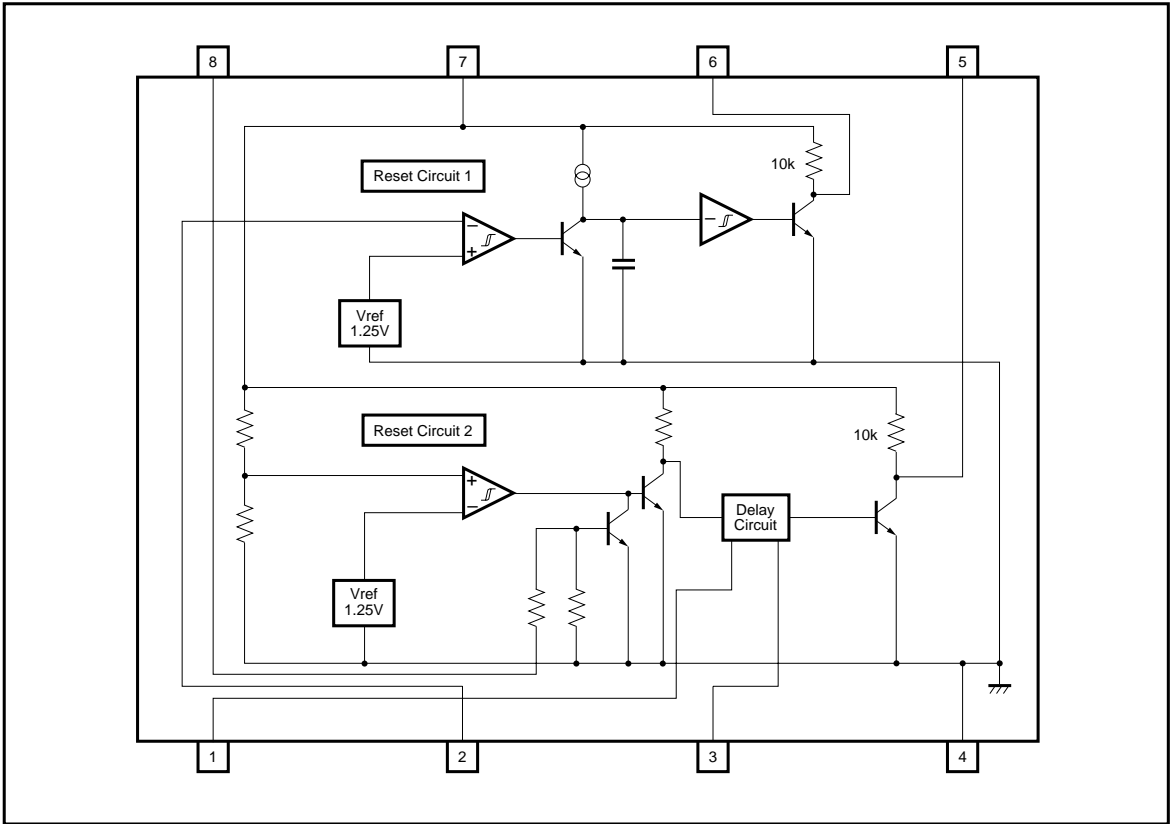
Open collector output, and 10k Ω pull-up resistor on chip.

●Absolute maximum ratings (Ta = 25°C)

| Parameter | Symbol | Limits | Unit |
|-----------------------|------------------|---------------|------|
| Power supply voltage | V _{cc} | - 0.3 ~ + 7.0 | V |
| Power dissipation | P _d | 450* | mW |
| Operating temperature | T _{opr} | - 20 ~ + 75 | °C |
| Storage temperature | T _{stg} | - 40 ~ + 125 | °C |

* Reduced by 4.5mW for each increase in Ta of 1°C over 25°C.

●Block diagram



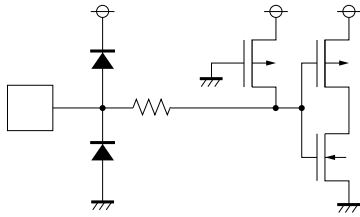
●Pin descriptions

| Pin No. | Pin name | Function |
|---------|--------------|------------------------|
| 1 | Ct0 | Delay time control* |
| 2 | Input | Reset circuit 1 input |
| 3 | Ct1 | Delay time control* |
| 4 | GND | GND |
| 5 | Output 2 | Reset circuit 2 output |
| 6 | Output 1 | Reset circuit 1 output |
| 7 | Vcc | Power supply |
| 8 | Manual reset | Manual reset input |

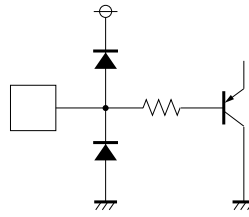
* When neither Ct0 or Ct1 are connected, the delay time is 100ms (Typ.).

● Input / output circuits

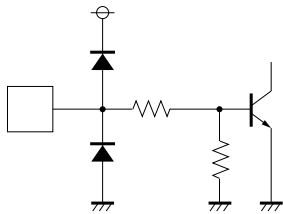
Ct0, Ct1



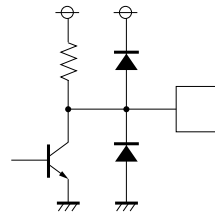
Input



Manual reset



Output 1, Output 2



●Electrical characteristics (unless otherwise specified $V_{CC} = 4.5V$ to $5.5V$ and $T_a = 25^{\circ}C$)

Reset circuit 1

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions |
|------------------------------------|-----------------|------|------|----------|---------|-------------------------------|
| Detection voltage | V_{S1} | 1.20 | 1.25 | 1.30 | V | — |
| Hysteresis voltage | ΔV_{S1} | 9 | 15 | 23 | mV | — |
| High level transmission delay time | T_{PLH1} | 80 | 200 | 500 | μs | $CL = 100pF$ |
| Low level transmission delay time | T_{PHL1} | — | 10 | — | μs | $CL = 100pF$ |
| Output low level voltage | V_{OL1} | — | 0.1 | 0.4 | V | $V_{IN} < 1.2V, I_{OL} = 5mA$ |
| Input voltage range | V_{IN} | -0.3 | — | V_{CC} | V | — |
| Input current | I_{IN} | — | 200 | 500 | nA | $V_{IN} = 1.25V$ |

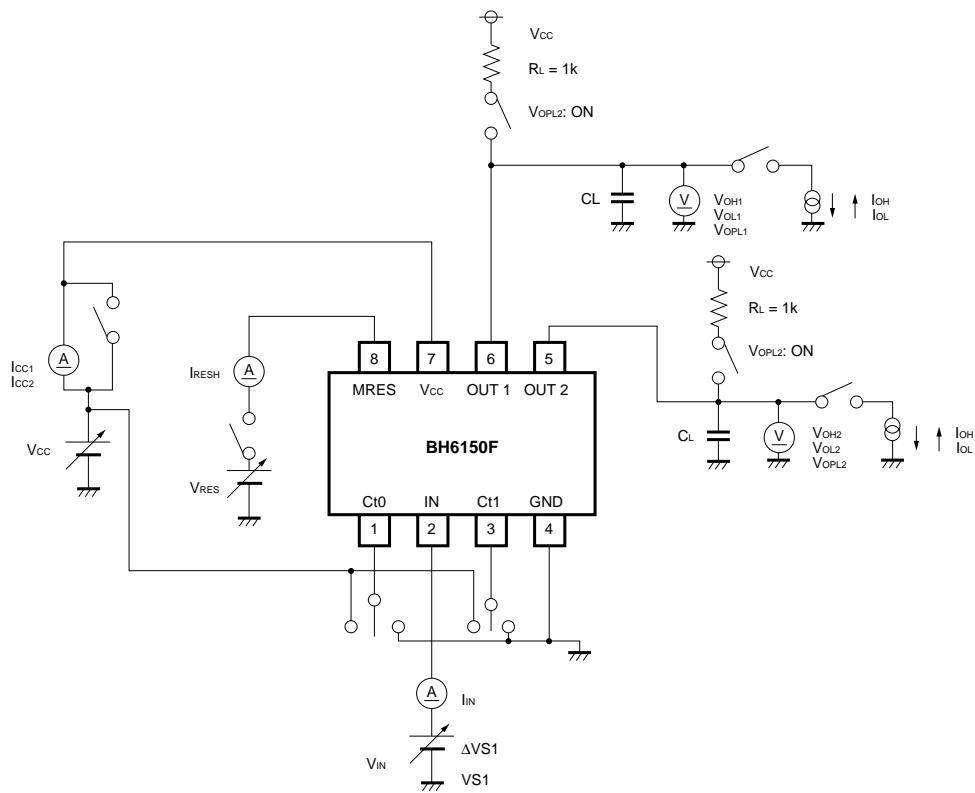
Reset circuit 2

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions | |
|------------------------------------|--------------------------|------------|------|------|----------|-----------------------------|----------------|
| Detection voltage | V_{S2} | 4.0 | 4.2 | 4.4 | V | — | |
| Hysteresis voltage | ΔV_{S2} | 30 | 50 | 100 | mV | — | |
| High level transmission delay time | T_{PLH2} | 15 | 25 | 35 | ms | $Ct0 = L, Ct1 = H$ | |
| | | 30 | 50 | 70 | ms | $Ct0 = H, Ct1 = L$ | |
| | | 60 | 100 | 140 | ms | $Ct0 = H, Ct1 = H$ | |
| | | 120 | 200 | 280 | ms | $Ct0 = L, Ct1 = L$ | |
| Low level transmission delay time | T_{PHL2} | — | 0.5 | — | μs | $CL = 100pF$ | |
| Output low level voltage | V_{OL2} | — | 0.1 | 0.4 | V | $V_{CC} < 4V, I_{OL} = 5mA$ | |
| Manual reset | Input high level voltage | V_{RESH} | 2 | — | V_{CC} | V | — |
| | Input high level current | I_{RESH} | — | 20 | 80 | μA | $V_{RES} = 2V$ |
| | Input low level voltage | V_{RESL} | -0.3 | — | 0.8 | V | — |

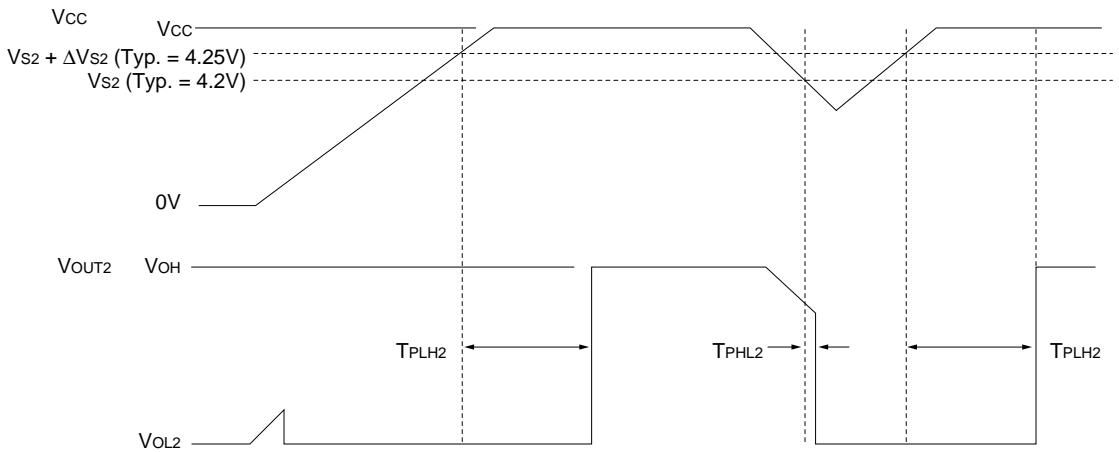
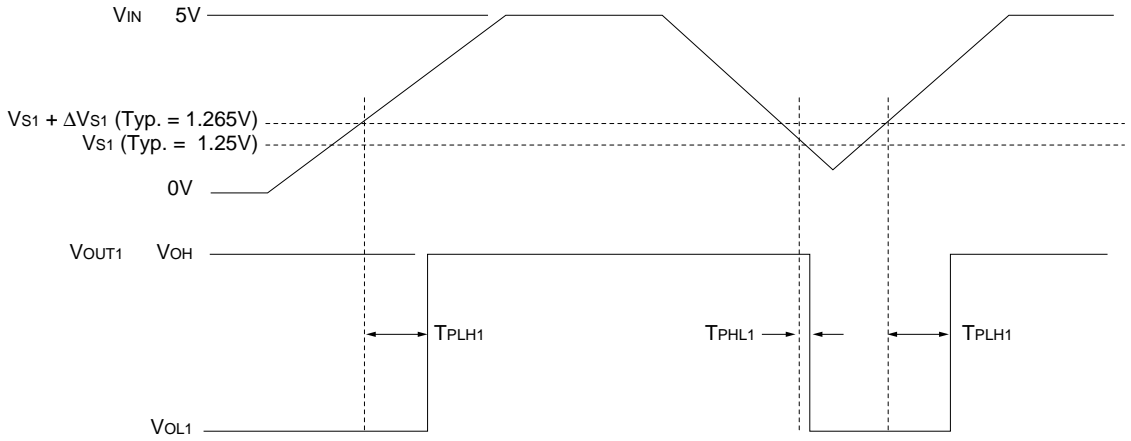
Common specifications

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions |
|---|------------------|----------------|----------------|------|-----------------|--------------------------------|
| Circuit current when off | I_{CC1} | — | 1000 | 1400 | μA | $V_{CC} = 5V, V_{IN} > V_{S1}$ |
| Circuit current when on | I_{CC2} | — | 2 | 3 | mA | $V_{CC} = 4V, V_{IN} < V_{S1}$ |
| Detection voltage temperature coefficient | $V_S / \Delta T$ | — | 0.01 | — | % / $^{\circ}C$ | — |
| Output high level voltage | $V_{OH1,2}$ | $V_{CC} - 0.7$ | $V_{CC} - 0.4$ | — | V | $I_{OH} = 40\mu A$ |
| Operation limit voltage | $V_{OPL1,2}$ | — | 0.71 | 0.85 | V | $V_{SAT} \leq 0.4V, R_L = 1K$ |

● Measurement circuit



● Circuit operation



●Electrical characteristic curves

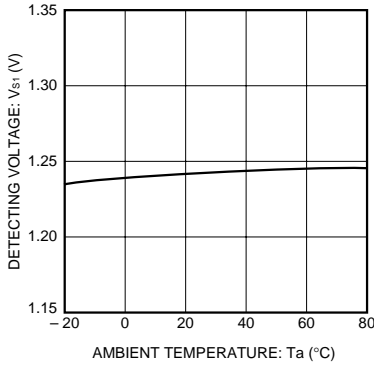


Fig. 1 Reset circuit 1 detector voltage vs. ambient temperature

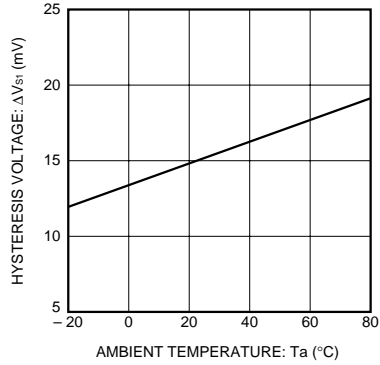


Fig. 2 Reset circuit 1 Hysteresis voltage vs. ambient temperature

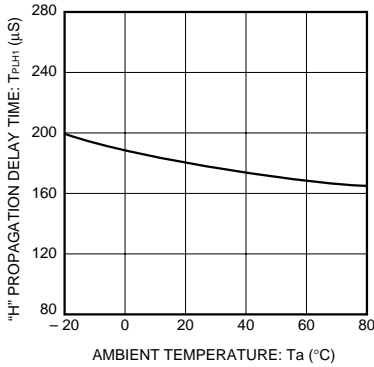


Fig. 3 Reset circuit 1 high level transmission delay time vs. ambient temperature

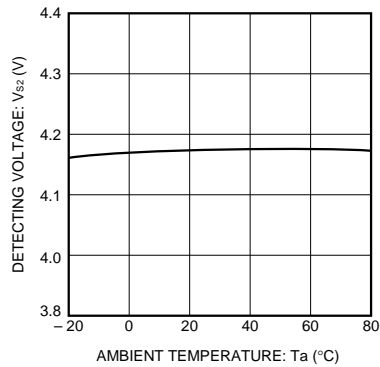


Fig. 4 Reset circuit 2 detector voltage vs. ambient temperature

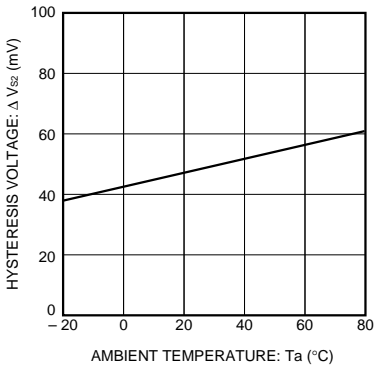


Fig. 5 Reset circuit 2 Hysteresis voltage vs. ambient temperature

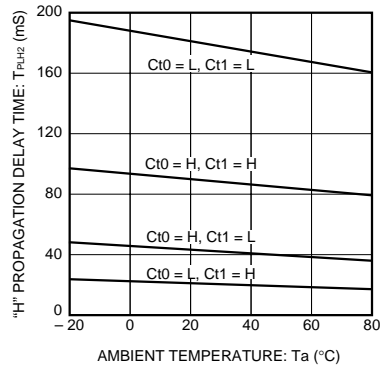


Fig. 6 Reset circuit 2 high level transmission delay time vs. ambient temperature

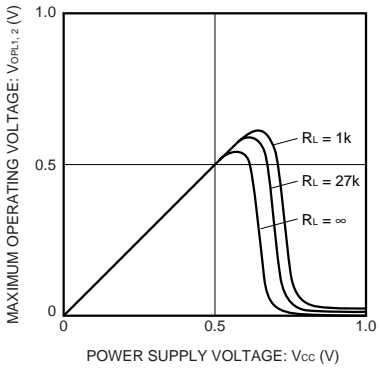


Fig. 7 Operation limit voltage vs. power supply voltage

●External dimensions (Units: mm)

