

ILC5061

Power Supply reset Monitor with 1% Precision

Features

- All-CMOS design in SOT-23 or SC70 package
- $\pm 1\%$ precision in Reset Detection
- Only $1\mu\text{A}$ of I_q
- 2mA of sink current capability
- Built-in hysteresis of 5% of detection voltage
- Voltage options of 2.6, 2.9, 3.1, 4.4, and 4.6V fit most supervisory applications
- Open-Drain Reset Output

Applications

- Microprocessor reset circuits
- Memory battery back-up circuitry
- Power-on reset circuits
- Portable and battery powered electronics

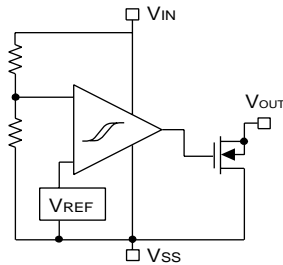
Description

All-CMOS Monitor circuits in either a 3-lead SOT-23 or SC70 package offer the best performance in power consumption and accuracy.

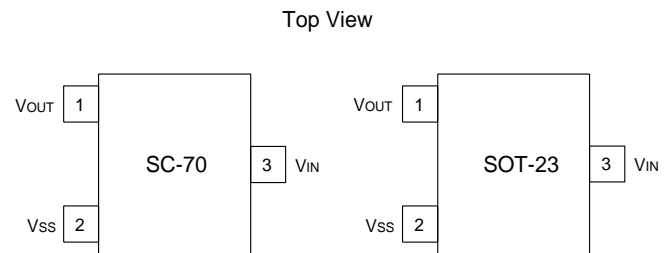
The ILC5061 comes in a series of $\pm 1\%$ accurate trip voltages to fit most microprocessor applications. Even though its output can sink 2mA, the device draws only $1\mu\text{A}$ in normal operation.

Additionally, a built-in hysteresis of 5% of detect voltage simplifies system design.

Block Diagram



Pin Package Configurations



Absolute Maximum Ratings

| Parameter | | Symbol | Ratings | Units |
|------------------------------------|--------|-----------|-----------------------------|-------|
| Input Voltages | | V_{IN} | 12 | V |
| Output Current | | I_{OUT} | 50 | mA |
| Output Voltages | | V_{OUT} | $V_{SS}-0.3\sim+V_{IN}+0.3$ | V |
| Continuous Total Power Dissipation | SOT 23 | P_d | 150 | mW |
| Operation Ambient temperature | | T_{opr} | -30~+80 | °C |
| Storage Temperature | | T_{stg} | -40~+125 | °C |

Electrical Characteristics $T_A = 25^\circ\text{C}$

| Parameter | Symbol | Conditions | Min | Type | Max | Units |
|--|---|---|----------------------|------------------------------------|---------------------------------|---------------|
| Detect Fail Voltage | V_{DF} | | $V_{DF} \times 0.99$ | V_{DF} | $V_{DF} \times 1.01$ | V |
| Hysteresis Range | V_{HYS} | | $V_{DF} \times 0.02$ | $V_{DF} \times 0.05$ | $V_{DF} \times 0.08$ | V |
| Supply Current | I_{SS} | $V_{IN} = 1.5\text{V}$ $V_{IN} = 2.0\text{V}$ $V_{IN} = 3.0\text{V}$ $V_{IN} = 4.0\text{V}$ $V_{IN} = 5.0\text{V}$ | | 0.9 1.0 1.3 1.6 2.0 | 2.6 3.0 3.4 3.8 4.2 | μA |
| Operating Voltage | V_{IN} | $V_{DF} = 2.1\sim 6.0\text{V}$ | 1.5 | | 10.0 | V |
| Output Current | I_{OUT} | N-ch $V_{DS} = 0.5\text{V}$ $V_{IN} = 1.0\text{V}$ $V_{IN} = 2.0\text{V}$ $V_{IN} = 3.0\text{V}$ $V_{IN} = 4.0\text{V}$ $V_{IN} = 5.0\text{V}$ | | 2.2 7.7 10.1 11.5 13.0 | | mA |
| Temperature Characteristics | $DV_{DF}/(DT_{opr} * V_{DF})$ | $-30^\circ\text{C} \leq T_{opr} \leq 80^\circ\text{C}$ | -200 | ± 100 | +200 | Ppm/°C |
| Delay Time Release Voltage Output Inversion) | T_{DLY} (V_{DR} to V_{OUT} inversion) | | | | 0.1 | ms |

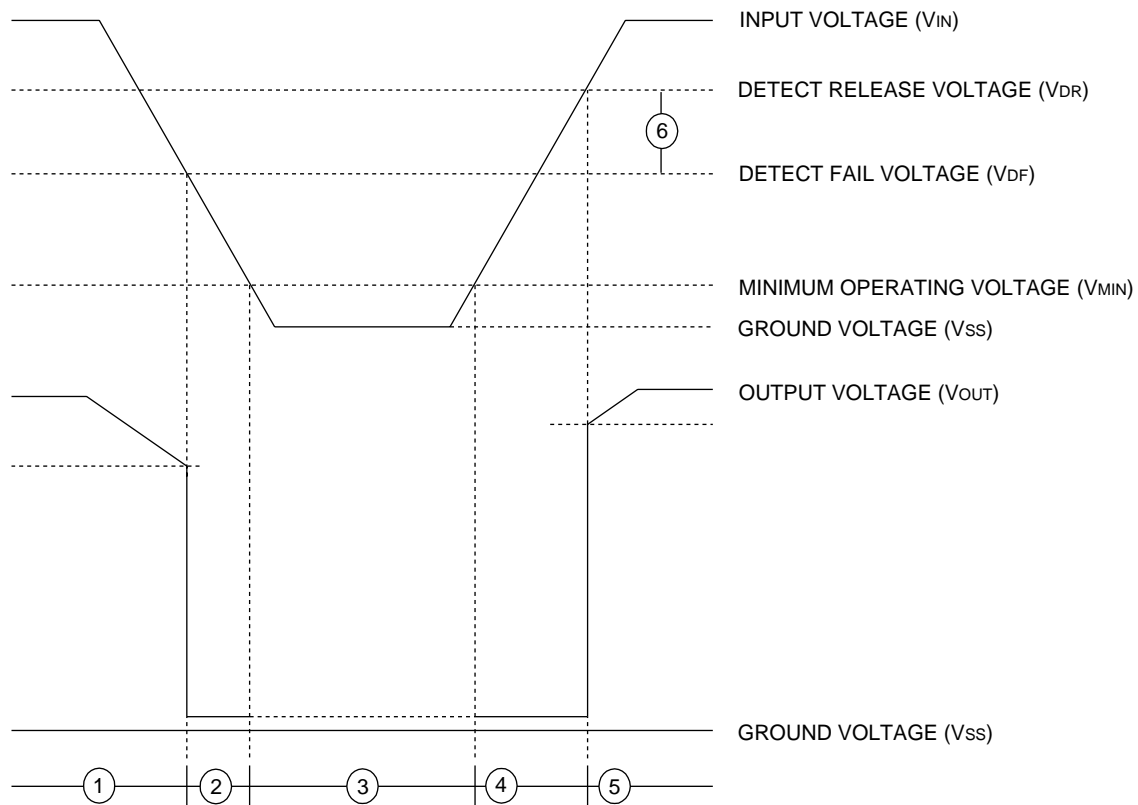
Note:

1. An additional resistor between the V_{IN} pin and supply voltage may cause deterioration of the characteristics due to increasing V_{DR} .

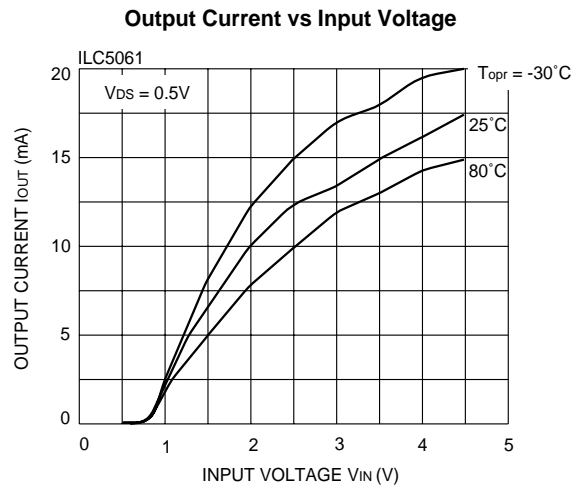
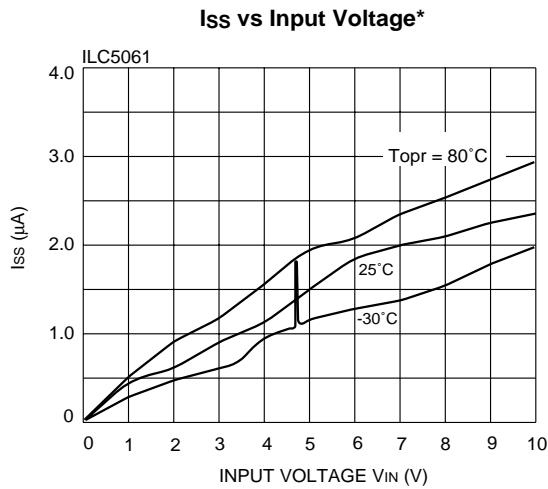
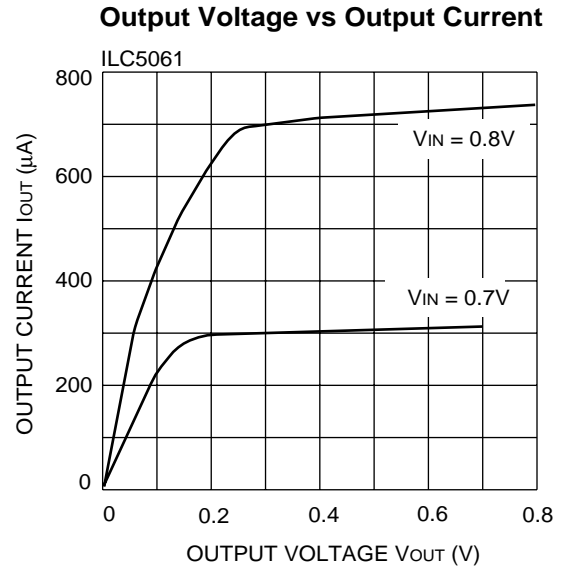
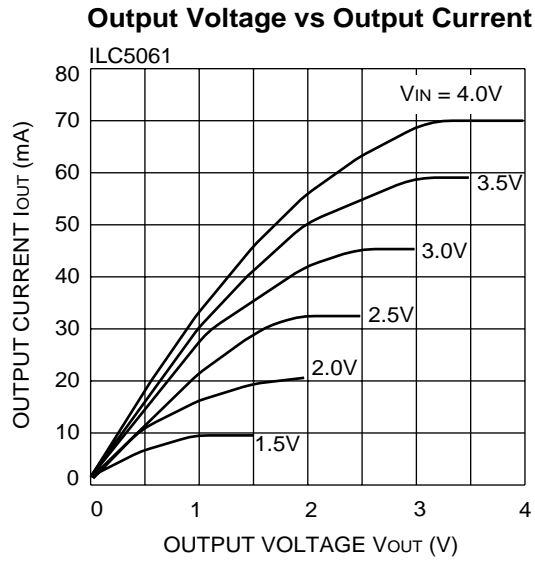
Functional Description

The following designators 1~6 refer to the timing diagram below.

1. While the input voltage (V_{IN}) is higher than the detect voltage (V_{DF}), the V_{OUT} output pin is at high impedance state.
2. When the input V_{IN} voltage falls lower than V_{DF} , V_{OUT} drops near to ground voltage
3. If the input voltage further decreases below the minimum operating voltage (V_{MIN}), the V_{OUT} output becomes unstable. In this condition, if the V_{OUT} pin is pulled up, V_{OUT} indicates the V_{IN} voltage.
4. During an increase of the input voltage from the V_{SS} voltage, V_{OUT} is not stable in the voltage below the V_{MIN} . Exceeding that level, the output stays at the ground level (V_{SS}) between the minimum operating voltage (V_{MIN}) and the detect release voltage (V_{DR}).
5. If the input voltage increases more than V_{DR} , then the V_{OUT} output pin is at high impedance state.
6. The difference between V_{DR} and V_{DF} is the hysteresis in the system.

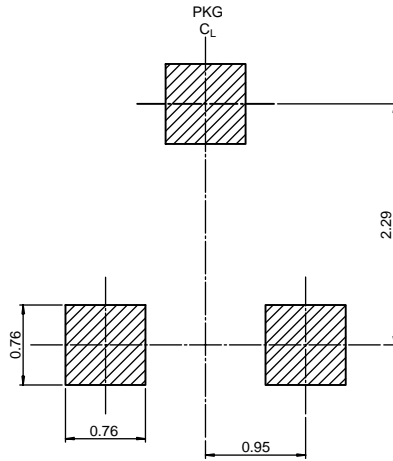
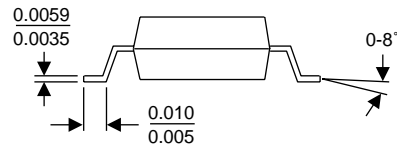
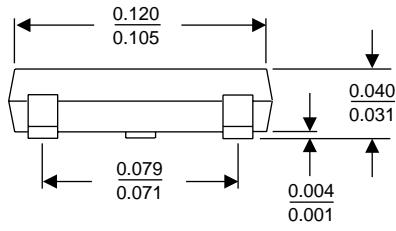
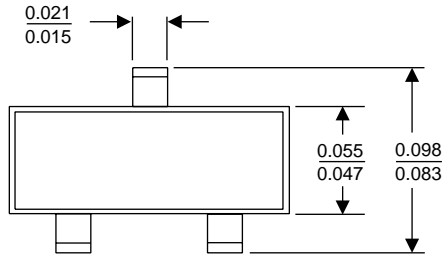


Typical Performance Characteristics (General conditions for all curves)



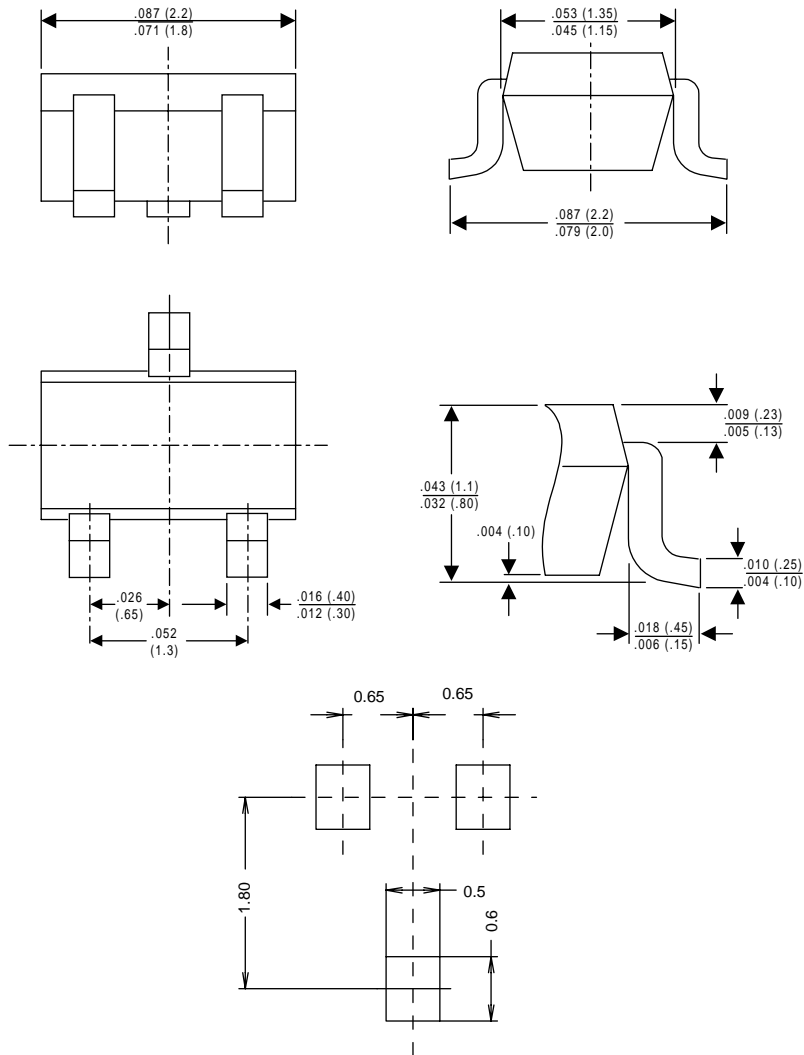
* A spike of 1/2 to 1 μ A may appear as V_{IN} crosses V_{DR} or V_{DF}

SOT-23 Package



LAND PATTERN RECOMMENDATION

SC70 Package



Land Pattern Recommendation

Ordering Information

| PART NUMBER | TOP MARKING | RESET THRESHOLD (V) | OUTPUT TYPE | PACKAGE | PACKING METHOD |
|--------------|-------------|---------------------|------------------------|--------------|-----------------|
| ILC5061AM23X | M3AY | 2.3 ± 1 % | Open-Drain, active low | 3-Pin, SOT23 | 3K units in T&R |
| ILC5061AM25X | M5AY | 2.5 ± 1 % | Open-Drain, active low | 3-Pin, SOT23 | 3K units in T&R |
| ILC5061AM26X | M6AY | 2.6 ± 1 % | Open-Drain, active low | 3-Pin, SOT23 | 3K units in T&R |
| ILC5061AM27X | M7AY | 2.7 ± 1 % | Open-Drain, active low | 3-Pin, SOT23 | 3K units in T&R |
| ILC5061AM28X | M8AY | 2.8 ± 1 % | Open-Drain, active low | 3-Pin, SOT23 | 3K units in T&R |
| ILC5061AM29X | M9AY | 2.9 ± 1 % | Open-Drain, active low | 3-Pin, SOT23 | 3K units in T&R |
| ILC5061AM31X | N1AY | 3.1 ± 1 % | Open-Drain, active low | 3-Pin, SOT23 | 3K units in T&R |
| ILC5061AM32X | N2AY | 3.2 ± 1 % | Open-Drain, active low | 3-Pin, SOT23 | 3K units in T&R |
| ILC5061AM34X | N4AY | 3.4 ± 1 % | Open-Drain, active low | 3-Pin, SOT23 | 3K units in T&R |
| ILC5061AM37X | N7AY | 3.7 ± 1 % | Open-Drain, active low | 3-Pin, SOT23 | 3K units in T&R |
| ILC5061AM44X | P4AY | 4.4 ± 1 % | Open-Drain, active low | 3-Pin, SOT23 | 3K units in T&R |
| ILC5061AM46X | P6AY | 4.6 ± 1 % | Open-Drain, active low | 3-Pin, SOT23 | 3K units in T&R |
| ILC5061M23X | M3Y | 2.3 ± 2 % | Open-Drain, active low | 3-Pin, SOT23 | 3K units in T&R |
| ILC5061M25X | M5Y | 2.5 ± 2 % | Open-Drain, active low | 3-Pin, SOT23 | 3K units in T&R |
| ILC5061M26X | M6Y | 2.6 ± 2 % | Open-Drain, active low | 3-Pin, SOT23 | 3K units in T&R |
| ILC5061M27X | M7Y | 2.7 ± 2 % | Open-Drain, active low | 3-Pin, SOT23 | 3K units in T&R |
| ILC5061M28X | M8Y | 2.8 ± 2 % | Open-Drain, active low | 3-Pin, SOT23 | 3K units in T&R |
| ILC5061M29X | M9Y | 2.9 ± 2 % | Open-Drain, active low | 3-Pin, SOT23 | 3K units in T&R |
| ILC5061M31X | N1Y | 3.1 ± 2 % | Open-Drain, active low | 3-Pin, SOT23 | 3K units in T&R |
| ILC5061M32X | N2Y | 3.2 ± 2 % | Open-Drain, active low | 3-Pin, SOT23 | 3K units in T&R |
| ILC5061M34X | N4Y | 3.4 ± 2 % | Open-Drain, active low | 3-Pin, SOT23 | 3K units in T&R |
| ILC5061M37X | N7Y | 3.7 ± 2 % | Open-Drain, active low | 3-Pin, SOT23 | 3K units in T&R |
| ILC5061M44X | P4Y | 4.4 ± 2 % | Open-Drain, active low | 3-Pin, SOT23 | 3K units in T&R |
| ILC5061M46X | P6Y | 4.6 ± 2 % | Open-Drain, active low | 3-Pin, SOT23 | 3K units in T&R |

Note 1:Last digit in the "Top Marking" information (represented by "Y" in the above table) represents internal assembly lot number

Note 2:Orientation of Tape & Reeled devices is Right.

Ordering Information

| PART NUMBER | TOP MARKING | RESET THRESHOLD (V) | OUTPUT TYPE | PACKAGE | PACKING METHOD |
|---------------|-------------|---------------------|------------------------|-------------|-----------------|
| ILC5061AIC23X | M3AY | 2.3 ± 1 % | Open-Drain, active low | 3-Pin, SC70 | 3K units in T&R |
| ILC5061AIC25X | M5AY | 2.5 ± 1 % | Open-Drain, active low | 3-Pin, SC70 | 3K units in T&R |
| ILC5061AIC26X | M6AY | 2.6 ± 1 % | Open-Drain, active low | 3-Pin, SC70 | 3K units in T&R |
| ILC5061AIC27X | M7AY | 2.7 ± 1 % | Open-Drain, active low | 3-Pin, SC70 | 3K units in T&R |
| ILC5061AIC28X | M8AY | 2.8 ± 1 % | Open-Drain, active low | 3-Pin, SC70 | 3K units in T&R |
| ILC5061AIC29X | M9AY | 2.9 ± 1 % | Open-Drain, active low | 3-Pin, SC70 | 3K units in T&R |
| ILC5061AIC31X | N1AY | 3.1 ± 1 % | Open-Drain, active low | 3-Pin, SC70 | 3K units in T&R |
| ILC5061AIC32X | N2AY | 3.2 ± 1 % | Open-Drain, active low | 3-Pin, SC70 | 3K units in T&R |
| ILC5061AIC34X | N4AY | 3.4 ± 1 % | Open-Drain, active low | 3-Pin, SC70 | 3K units in T&R |
| ILC5061AIC37X | N7AY | 3.7 ± 1 % | Open-Drain, active low | 3-Pin, SC70 | 3K units in T&R |
| ILC5061AIC44X | P4AY | 4.4 ± 1 % | Open-Drain, active low | 3-Pin, SC70 | 3K units in T&R |
| ILC5061AIC46X | P6AY | 4.6 ± 1 % | Open-Drain, active low | 3-Pin, SC70 | 3K units in T&R |
| ILC5061IC23X | M3Y | 2.3 ± 2 % | Open-Drain, active low | 3-Pin, SC70 | 3K units in T&R |
| ILC5061IC25X | M5Y | 2.5 ± 2 % | Open-Drain, active low | 3-Pin, SC70 | 3K units in T&R |
| ILC5061IC26X | M6Y | 2.6 ± 2 % | Open-Drain, active low | 3-Pin, SC70 | 3K units in T&R |
| ILC5061IC27X | M7Y | 2.7 ± 2 % | Open-Drain, active low | 3-Pin, SC70 | 3K units in T&R |
| ILC5061IC28X | M8Y | 2.8 ± 2 % | Open-Drain, active low | 3-Pin, SC70 | 3K units in T&R |
| ILC5061IC29X | M9Y | 2.9 ± 2 % | Open-Drain, active low | 3-Pin, SC70 | 3K units in T&R |
| ILC5061IC31X | N1Y | 3.1 ± 2 % | Open-Drain, active low | 3-Pin, SC70 | 3K units in T&R |
| ILC5061IC32X | N2Y | 3.2 ± 2 % | Open-Drain, active low | 3-Pin, SC70 | 3K units in T&R |
| ILC5061IC34X | N4Y | 3.4 ± 2 % | Open-Drain, active low | 3-Pin, SC70 | 3K units in T&R |
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Note 2: Orientation of Tape & Reeled devices is Right.

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