General Description

All-CMOS Monitor circuits in either a 3-lead SOT-23 or SC-70 package offer the best performance in power consumption and accuracy.

The ILC5061 comes in a series of ±1% accurate trip voltages to fit most microprocessor applications. Even though its output can sink 2mA, the device draws only 1µA in normal operation.

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

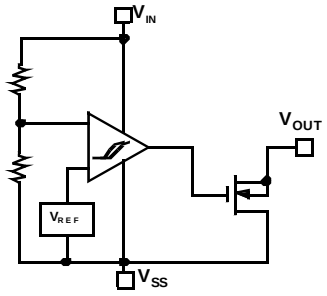
Features

- All-CMOS design in SOT-23 or SC-70 package
- ±1% precision in Reset Detection
- Only 1µA of Iq
- 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

Applications

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

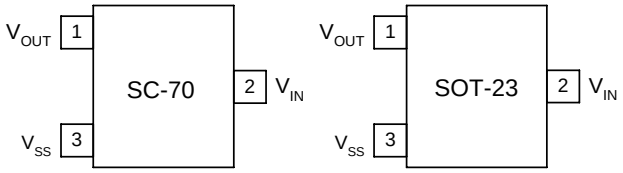
Block Diagram



N-Channel Open Drain Output

Pin Package Configurations

Top View



Ordering Information*	
ILC5061AM-23	2.3V±1% Monitor in SOT-23
ILC5061AM-25	2.5V±1% Monitor in SOT-23
ILC5061AM-26	2.6V±1% Monitor in SOT-23
ILC5061AM-27	2.7V±1% Monitor in SOT-23
ILC5061AM-28	2.8V±1% Monitor in SOT-23
ILC5061AM-29	2.9V±1% Monitor in SOT-23
ILC5061AM-31	3.1V±1% Monitor in SOT-23
ILC5061AM-37	3.7V±1% Monitor in SOT-23
ILC5061AM-44	4.4V±1% Monitor in SOT-23
ILC5061AM-46	4.6V±1% Monitor in SOT-23
ILC5061M-23	2.3V±1% Monitor in SOT-23
ILC5061M-25	2.5V±1% Monitor in SOT-23
ILC5061M-26	2.6V±2% Monitor in SOT-23
ILC5061M-27	2.7V±2% Monitor in SOT-23
ILC5061M-28	2.8V±2% Monitor in SOT-23
ILC5061M-29	2.9V±2% Monitor in SOT-23
ILC5061M-31	3.1V±2% Monitor in SOT-23
ILC5061M-37	3.7V±1% Monitor in SOT-23
ILC5061M-44	4.4V±2% Monitor in SOT-23
ILC5061M-46	4.6V±2% Monitor in SOT-23

Ordering Information*	
ILC5061AIC-23	2.3V±1% Monitor in SC-70
ILC5061AIC-25	2.5V±1% Monitor in SC-70
ILC5061AIC-26	2.6V±1% Monitor in SC-70
ILC5061AIC-27	2.7V±1% Monitor in SC-70
ILC5061AIC-28	2.8V±1% Monitor in SC-70
ILC5061AIC-29	2.9V±1% Monitor in SC-70
ILC5061AIC-31	3.1V±1% Monitor in SC-70
ILC5061AIC-37	3.7V±1% Monitor in SC-70
ILC5061AIC-44	4.4V±1% Monitor in SC-70
ILC5061AIC-46	4.6V±1% Monitor in SC-70
ILC5061AC-23	2.3V±2% Monitor in SC-70
ILC5061AC-25	2.5V±2% Monitor in SC-70
ILC5061AC-26	2.6V±2% Monitor in SC-70
ILC5061AC-27	2.7V±2% Monitor in SC-70
ILC5061AC-28	2.8V±2% Monitor in SC-70
ILC5061AC-29	2.9V±2% Monitor in SC-70
ILC5061AC-31	3.1V±2% Monitor in SC-70
ILC5061AC-37	3.7V±2% Monitor in SC-70
ILC5061AC-44	4.4V±2% Monitor in SC-70
ILC5061AC-46	4.6V±2% Monitor in SC-70

* Standard product offering comes in tape and reel, quantity 3000 per reel orientation right

Absolute Maximum Ratings (T_A=25°C)

Parameter		Symbol	Ratings	Units
Input Voltages		V_{IN}	12	V
Output Current		I_{OUT}	50	mA
Output Voltages		V_{OUT}	V_{SS}-0.3~+V_{IN}+03	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°C)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Detect Fail Voltage	V_{DF}	A grade	V_{DF} X 0.99	V_{DF}	V_{DF} X 1.01	V
Detect Fail Voltage	V_{DF}	Standard grade	V_{DF} X 0.99	V_{DF}	V_{DF} X 1.02	V
Hysteresis Range	V_{HYS}		V_{DF} X 0.02	V_{DF} X 0.05	V_{DF} X 0.08	V
Supply Current	I_{SS}	V_{IN} = 1.5V V_{IN} = 2.0V V_{IN} = 3.0V V_{IN} = 4.0V V_{IN} = 5.0V		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~ 6.0V	1.5		10.0	V
Output Current	I_{OUT}	N-ch V_{DS} = 0.5V V_{IN} = 1.0V V_{IN} = 2.0V V_{IN} = 3.0V V_{IN} = 4.0V V_{IN} = 5.0V P-ch V_{DS} = 2.1V V_{IN} = 8V		 2.2 7.7 10.1 11.5 13.0 -10		mA
Temperature Characteristics	$\Delta V_{DF}/(\Delta T_{opr} \bullet V_{DF})$	30°C ≤T_{opr} ≤80°C		±100		Ppm/°C
Delay Time Release Voltage → Output Inversion)	T_{DLY} (V_{DR} → V_{OUT} inversion)				0.2	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 VIN voltage falls lower than V_{DF}, V_{OUT} drops near to ground voltage

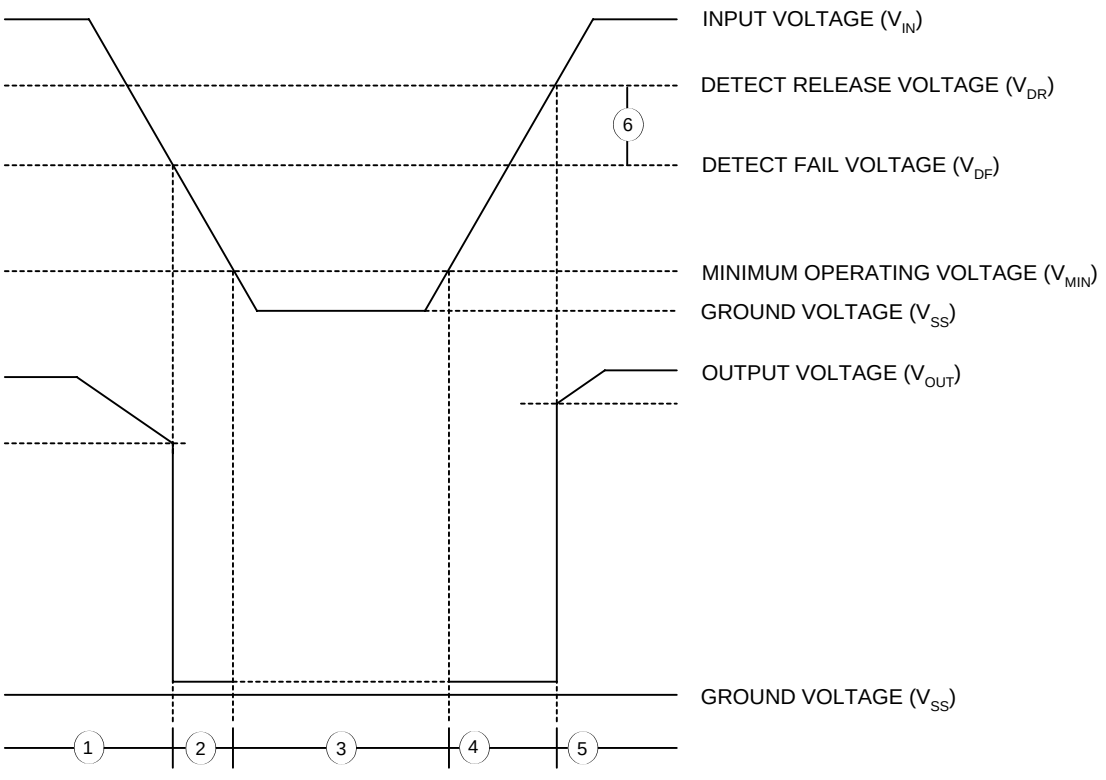
3. If the input voltage further decreases below the minimum operating voltage (V_{MIN}), the V_{OUT} output becomes unstable. In this condition, if the V_{OUT} pin is pulled up, V_{OUT} indicates the V_{IN} voltage.

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.

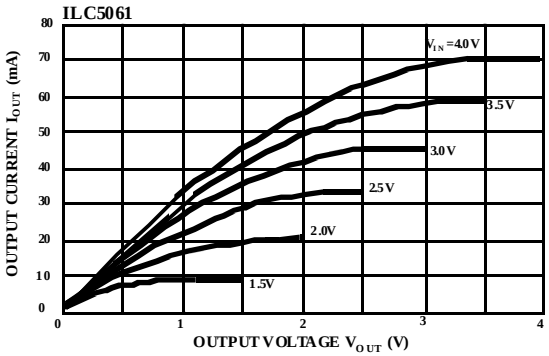
6. The difference between VDR and VDF is the hysteresis in the system.

Timing Diagram

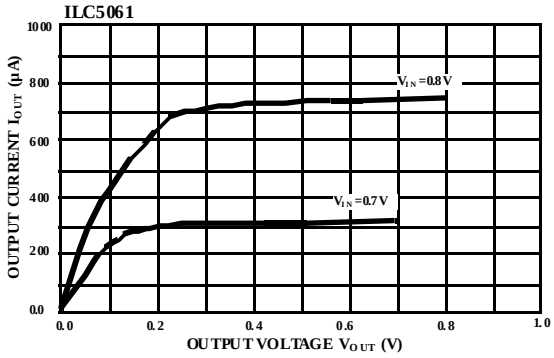


Typical Performance Characteristics - general conditions for all curves

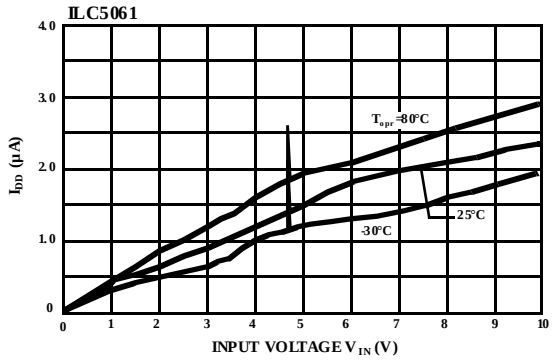
OUTPUT VOLTAGE vs OUTPUT CURRENT



OUTPUT VOLTAGE vs OUTPUT CURRENT

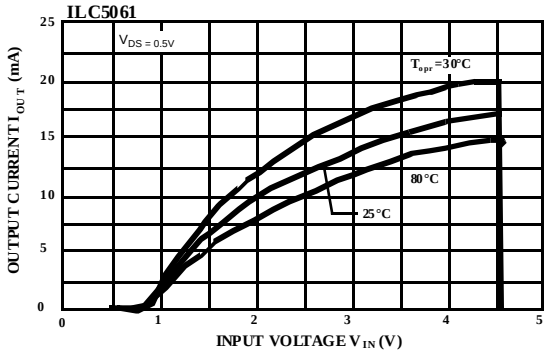


I_{DD} vs INPUT VOLTAGE *

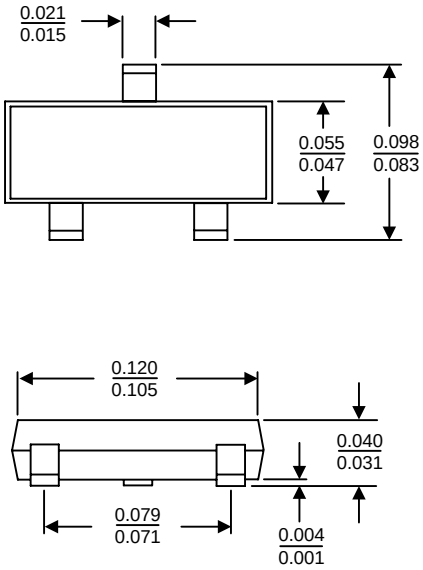


* A spike of ½ to 1 µA may appear as Vin crosses V_{DR} or V_{DF}

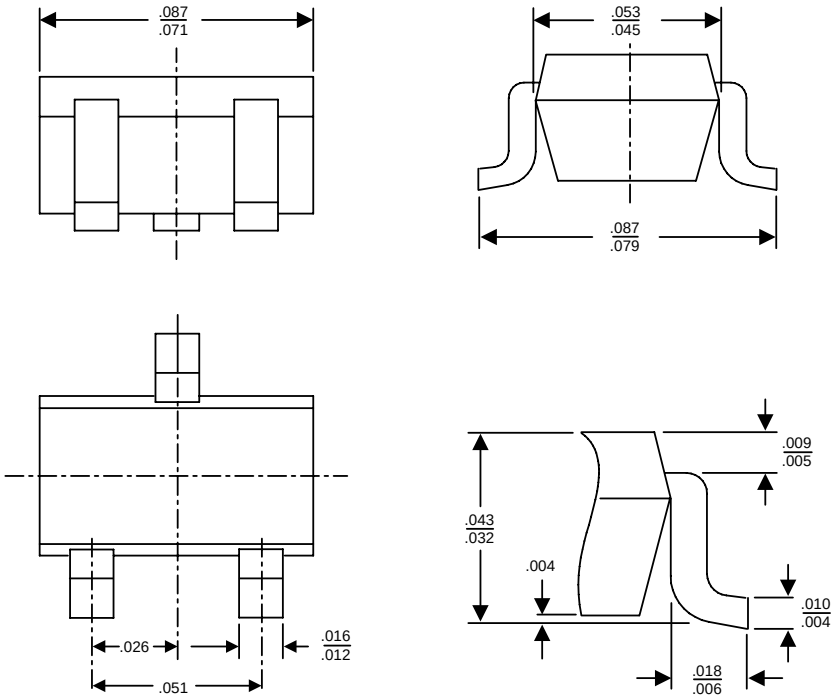
OUTPUT CURRENT vs INPUT VOLTAGE



SOT-23 Package



SC-70 Package



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