Impala Linear Corporation

ILC5062

SOT-23 Power Supply reset Monitor
With Complementary CMOS Output

POWER ON THE GO — POWERED BY IMPALA

General Description

All-CMOS voltage monitoring circuit in a 3-lead SOT-23 package offers the best performance in power consumption and accuracy.

The ILC5062 is available in a series of ±1% (A-grade) or 2% (standard grade) accurate trip voltages to fit most micro-processor applications. Even though its output can sink over 2mA, the device draws only 1µA in normal operation.

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

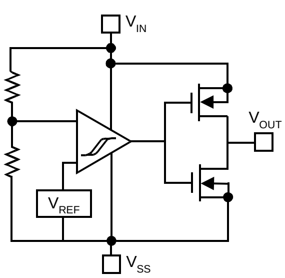
Features

- All-CMOS design in SOT-23 package
- A grade ±1% precision in Reset Detection
- Standard grade : ±2% precision in Reset Detection
- Only 1µA of Iq
- Over 2mA of sink current capability
- Built-in hysteresis of 5% of detection voltage
- Voltage options of 2.6, 2.7, 2.8, 2.9, 3.1, 4.4, and 4.6V fit most supervisory applications

Applications

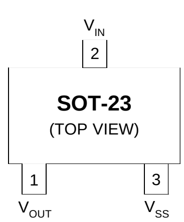
- Microprocessor reset circuits
- Memory battery back-up circuitry
- Power-on reset circuits
- Portable and battery powered electronics

Block Diagram



Complementary CMOS Output

Pin-Package Configurations



Ordering Information	
ILC5062AM-26	2.6V±1% Monitor in SOT-23
ILC5062AM-27	2.7V±1% Monitor in SOT-23
ILC5062AM-28	2.8V±1% Monitor in SOT-23
ILC5062AM-29	2.9V±1% Monitor in SOT-23
ILC5062AM-31	3.1V±1% Monitor in SOT-23
ILC5062AM-44	4.4V±1% Monitor in SOT-23
ILC5062AM-46	4.6V±1% Monitor in SOT-23
ILC5062M-26	2.6V±2% Monitor in SOT-23
ILC5062M-27	2.7V±2% Monitor in SOT-23
ILC5062M-28	2.8V±2% Monitor in SOT-23
ILC5062M-29	2.9V±2% Monitor in SOT-23
ILC5062M-31	3.1V±2% Monitor in SOT-23
ILC5062M-44	4.4V±2% Monitor in SOT-23
ILC5062M-46	4.6V±2% Monitor in SOT-23

* Standard product offering comes in tape & reel, quantity 3000 per reel, orentation right

Absolute Maximum Ratings (T_A=25°C)

Parameter	Symbol	Ratings	Units
Input Voltage	V_{IN}	12	V
Output Current	I_{OUT}	50	mA
Output Voltage	V_{OUT}	V_{SS}-0.3~V_{IN}=+0.3	V
Continuous Total Power Dissipation (SOT-23)	P_d	150	mW
Operating Ambient Temperature	T_{opr}	-30~+80	°C
Storage Temperature	T_{stg}	-40~+125	°C

Electrical Characterisitcs ILC5062 (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 0.98	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: An additional resistor between the V_{IN} pin and supply voltage may cause deterioration of the characteristics due to increasing of 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 output voltage at V_{OUT} pin equals the input voltage at V_{IN} pin.

2. When the input V_{IN} voltage falls lower than V_{DF}, V_{OUT} drops near ground voltage.

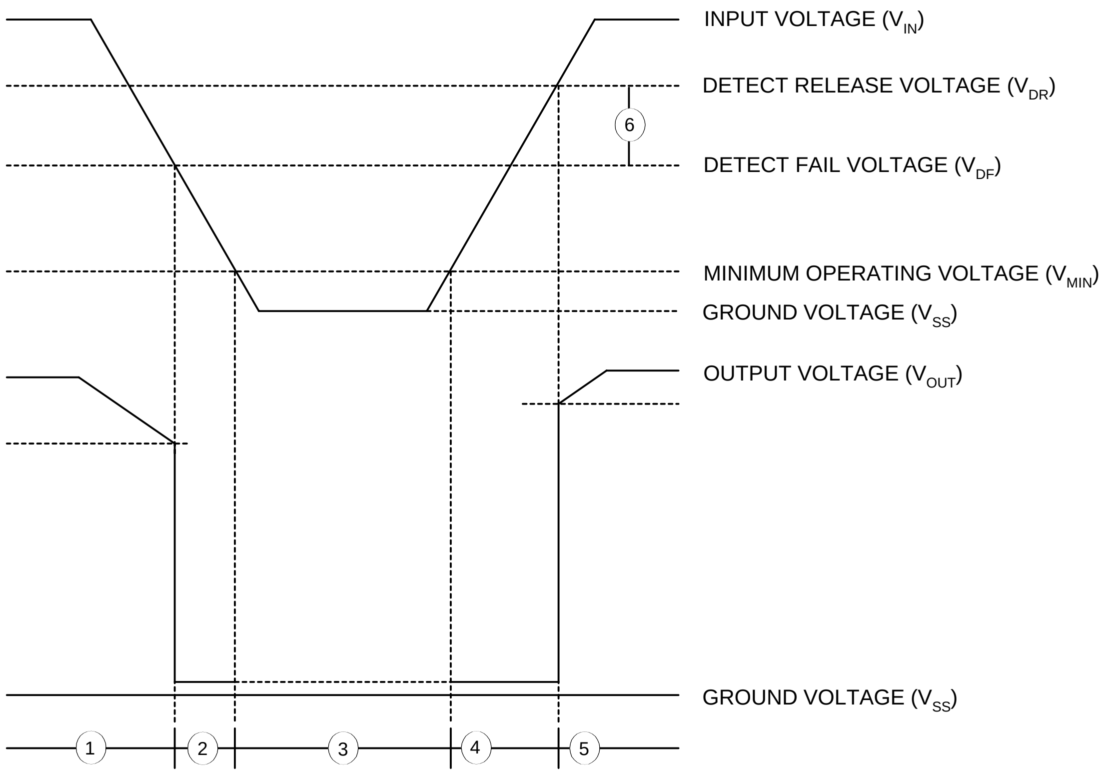
3. If the input voltage decreases below the minimum operating voltage (V_{MIN}), the V_{OUT} output voltage will be undefined.

4. During an increase of the input voltage from the V_{SS} voltage, V_{OUT} is undefined at the voltage below V_{MIN}. Exceeding the V_{MIN} level, the ouput 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}, the output voltage at V_{OUT} pin equals the input voltage at V_{IN} pin.

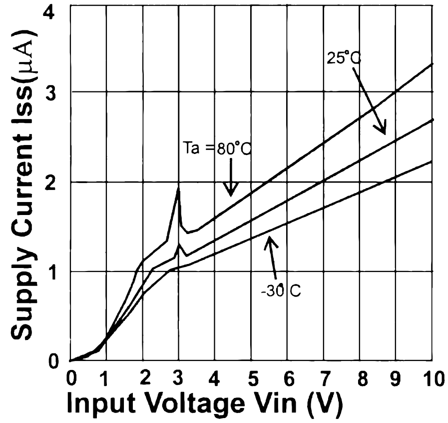
6. The difference between V_{DR} and V_{DF} is the hysteresis in the system.

Timing Diagram

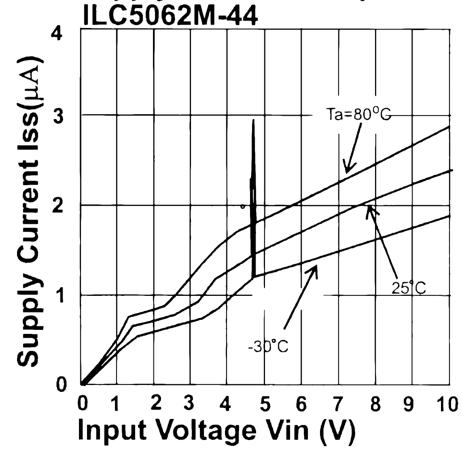


Typical Performance Characteristics - general conditions for all curves.

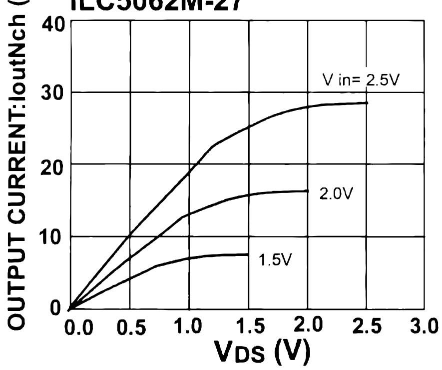
Supply Current vs Input Voltage
ILC5062M-27



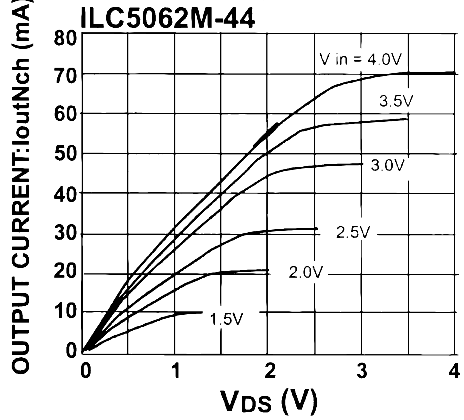
Supply Current vs Input Voltage
ILC5062M-44



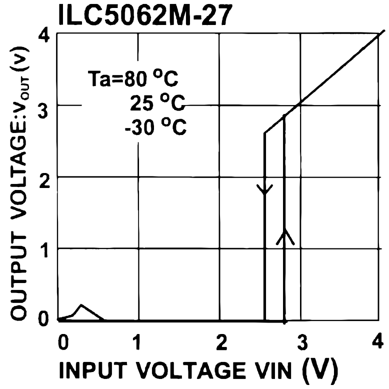
N-ch Driver Output Current vs V_{DS}
ILC5062M-27



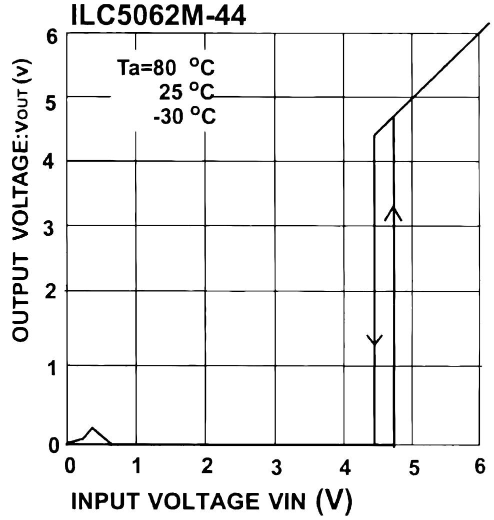
N-ch Driver Output Current vs V_{DS}
ILC5062M-44



Vout vs Vin
ILC5062M-27

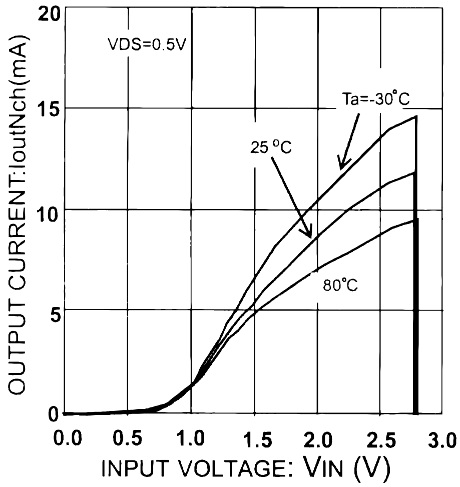


Vout vs Vin
ILC5062M-44

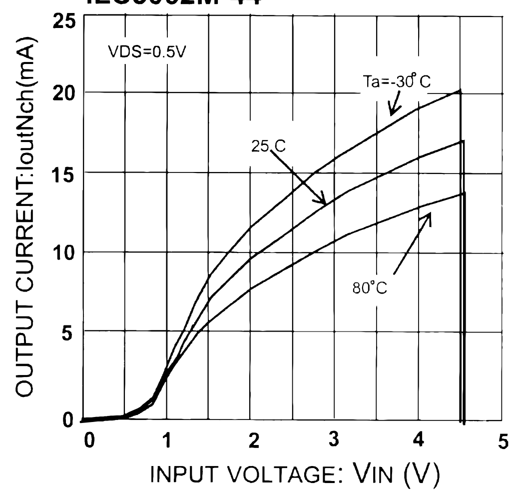


Typical Performance Characteristics - general conditions for all curves.

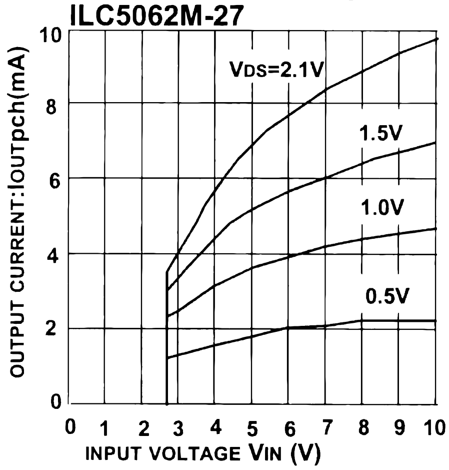
N-Ch Driver Output Current vs Input Voltage
ILC5062M-27



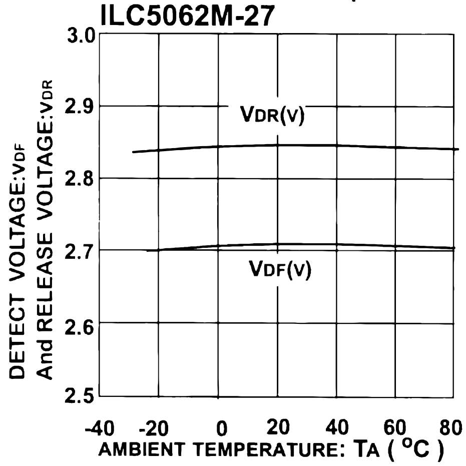
N-Ch Driver Output Current vs Input Voltage
ILC5062M-44



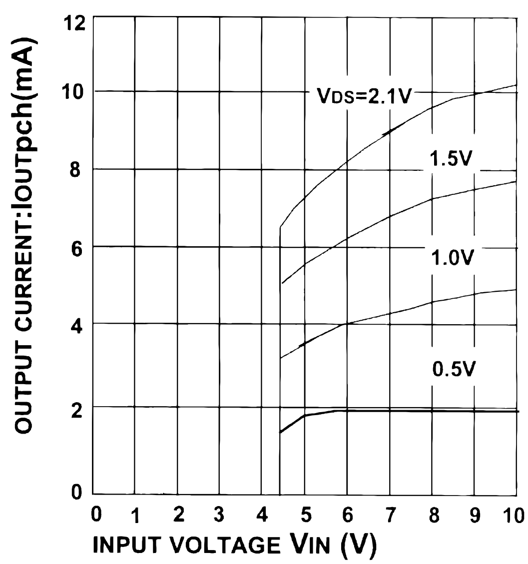
P_ch Driver
Output Current vs Input Voltage
ILC5062M-27



VDR and VDF vs Temp
ILC5062M-27



P_ch Driver
Output Current vs Input Voltage
ILC5062M-44



Life Support Policy

Impala Linear Corporation's products are not authorized for use as critical components in life support devices or systems.

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, and whose failure to perform, when properly used in accordance with instructions for use provided in the labelling, can be reasonably expected to result in a significant injury to the user.

2. A critical component is any component of a life support device or system whose failure to perform can be reasonbly expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.