

ILC5062

SOT-23 Power Supply reset Monitor with 1% precision

Features

- All-CMOS design in SOT-23 or SC70 package
- A grade $\pm 1\%$ precision in Reset Detection
- Standard grade : $\pm 2\%$ precision in Reset Detection
- Only $1\mu\text{A}$ of I_q
- 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
- Active low push-pull output

Applications

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

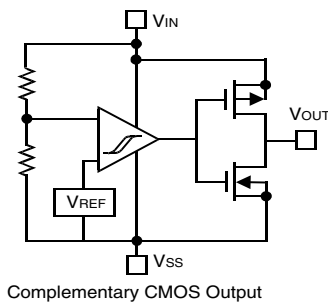
Description

All-CMOS voltage monitoring circuit in either a 3-lead SOT-23 or SC70 package offers the best performance in power consumption and accuracy.

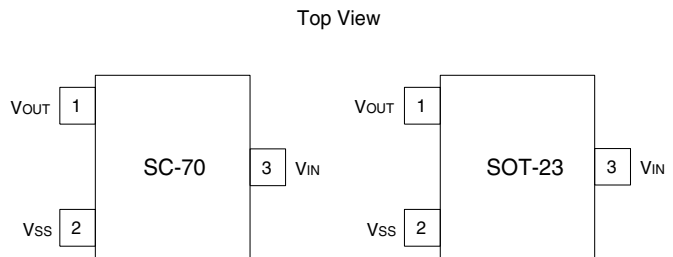
The ILC5062 is available in a series of $\pm 1\%$ (A-grade) or 2% (standard grade) accurate trip voltages to fit most microprocessor applications. Even though its output can sink over 2mA , the device draws only $1\mu\text{A}$ in normal operation.

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 Voltage | V_{IN} | 12 | V |
| Output Current | I_{OUT} | 50 | mA |
| Output Voltage | V_{OUT} | $V_{SS}-0.3\sim V_{IN}+0.3$ | 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 Characteristics ILC5062 ($T_A=25^\circ\text{C}$)

| Parameter | Symbol | Conditions | Min. | Typ. | Max. | Units |
|---|---|--|----------------------|---|---------------------------------|---------------|
| Detect Fail Voltage | V_{DF} | A grade | $V_{DF} \times 0.99$ | V_{DF} | $V_{DF} \times 1.01$ | V |
| Detect Fail Voltage | V_{DF} | Standard grade | $V_{DF} \times 0.98$ | V_{DF} | $V_{DF} \times 1.02$ | 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} | $V_{IN} = 1.5V$ $V_{IN} = 2.0V$ $V_{IN} = 3.0V$ $V_{IN} = 4.0V$ $V_{IN} = 5.0V$ | | 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} | $V_{DF} = 2.1 \sim 6.0V$ | 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 | $\Delta V_{DF}/(\Delta T_{opr} \cdot V_{DF})$ | $-30^\circ\text{C} \leq T_{opr} \leq 80^\circ\text{C}$ | -200 | ± 100 | +200 | ppm/°C |
| Delay Time (Release Voltage \rightarrow Output Inversion) | t_{DLY} (V_{DR} to V_{OUT} Inversion) | | | | 0.1 | ms |

Note1: An additional resistor between the V_{IN} pin and supply voltage may cause deterioration of the characteristics due to increasing of V_{DR} .

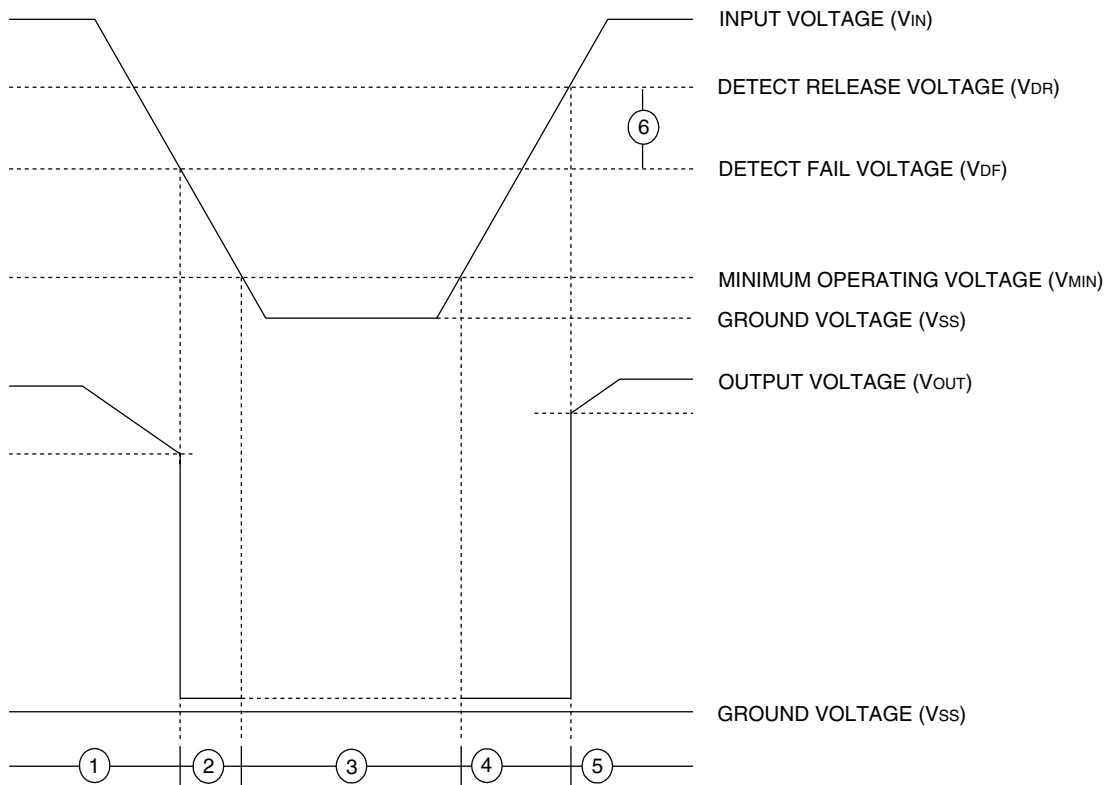
Note2: $V_{out} = \text{Gnd}$ when $1V < V_{IN} < 1.5V$

Note3: $I_{out} < 10\mu\text{A}$ when $V_{IN} < 1V$

Functional Description

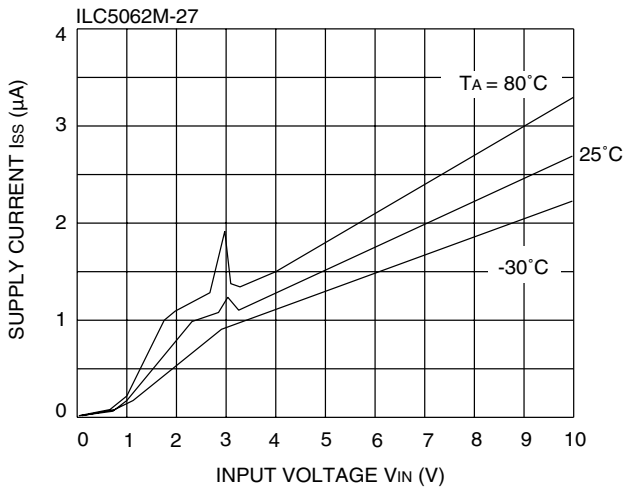
The following designators 1~6 refer to the timing diagram below.

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 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} , 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.

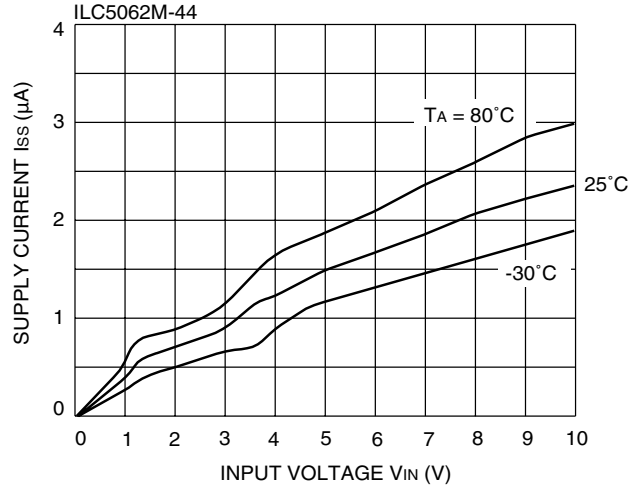


Typical Performance Characteristics - General conditions for all curves

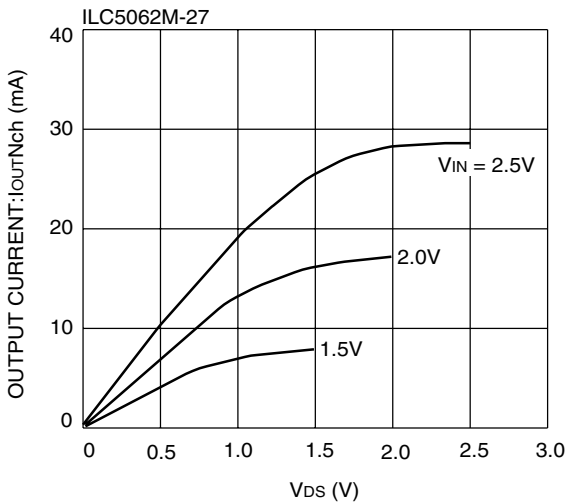
Supply Current vs Input Voltage



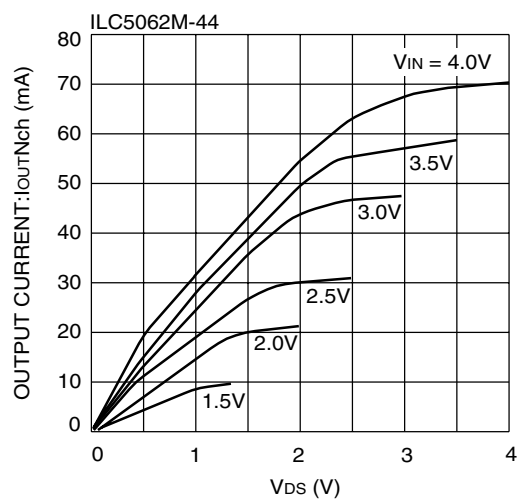
Supply Current vs Input Voltage



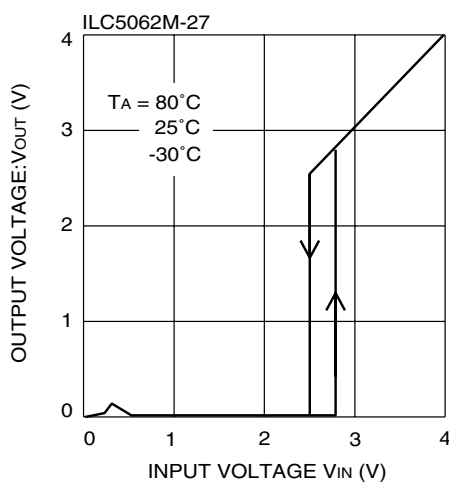
N-ch Driver Output Current vs Vds



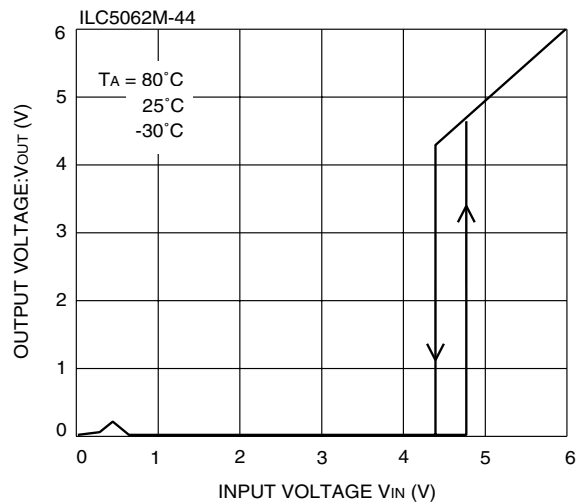
N-ch Driver Output Current vs Vds



VOUT vs VIN

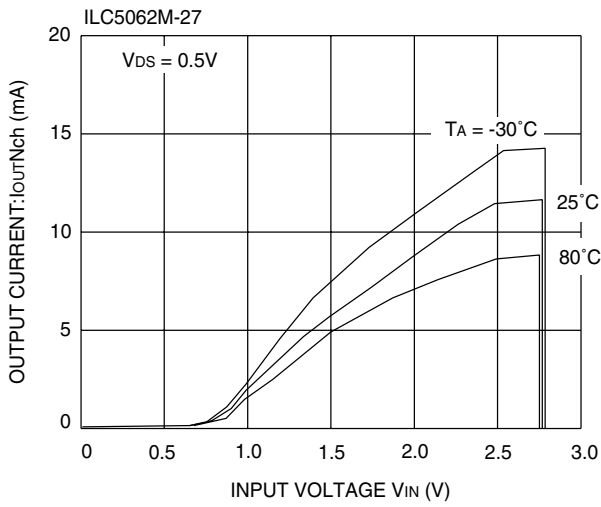


VOUT vs VIN

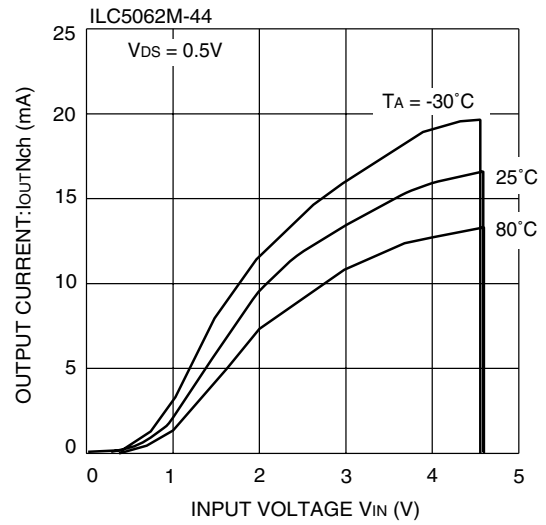


Typical Performance Characteristics - General conditions for all curves

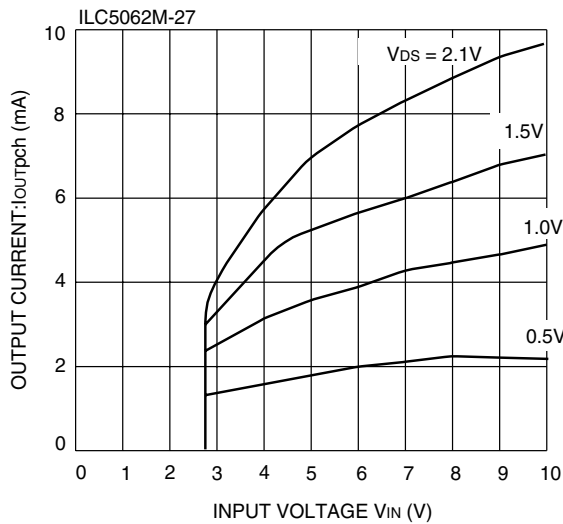
N-ch Driver Output Current vs Input Voltage



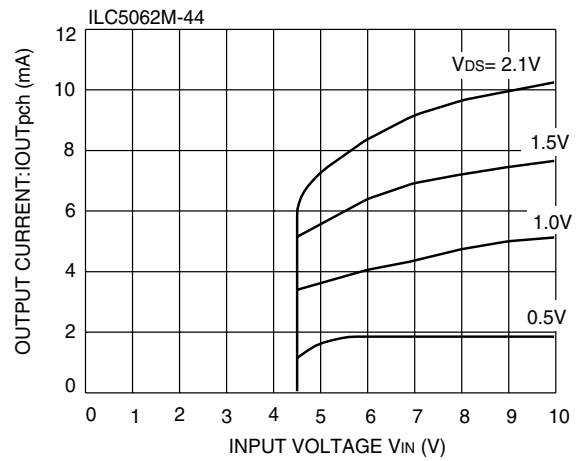
N-ch Driver Output Current vs Input Voltage



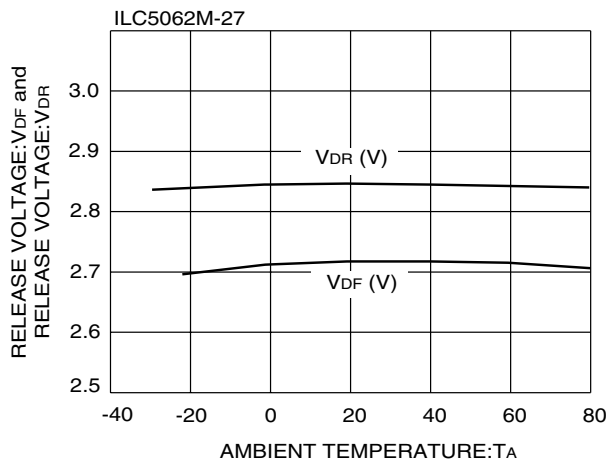
P_ch Driver Output Current vs Input Voltage



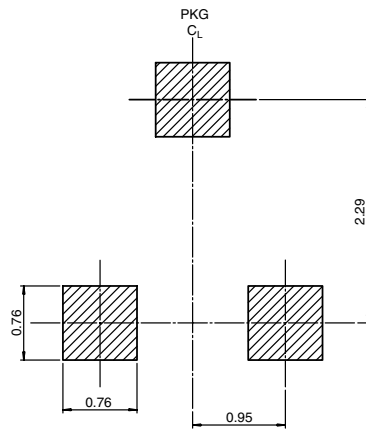
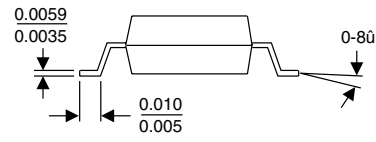
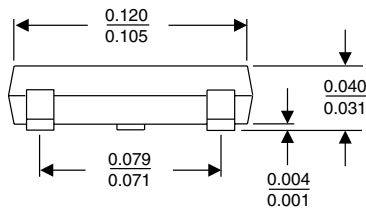
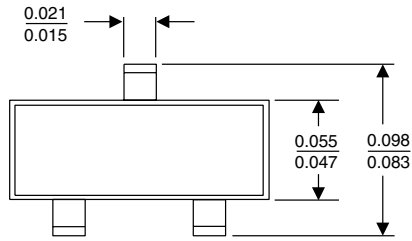
P_ch Driver Output Current vs Input Voltage



VDR and VDF vs Temperature

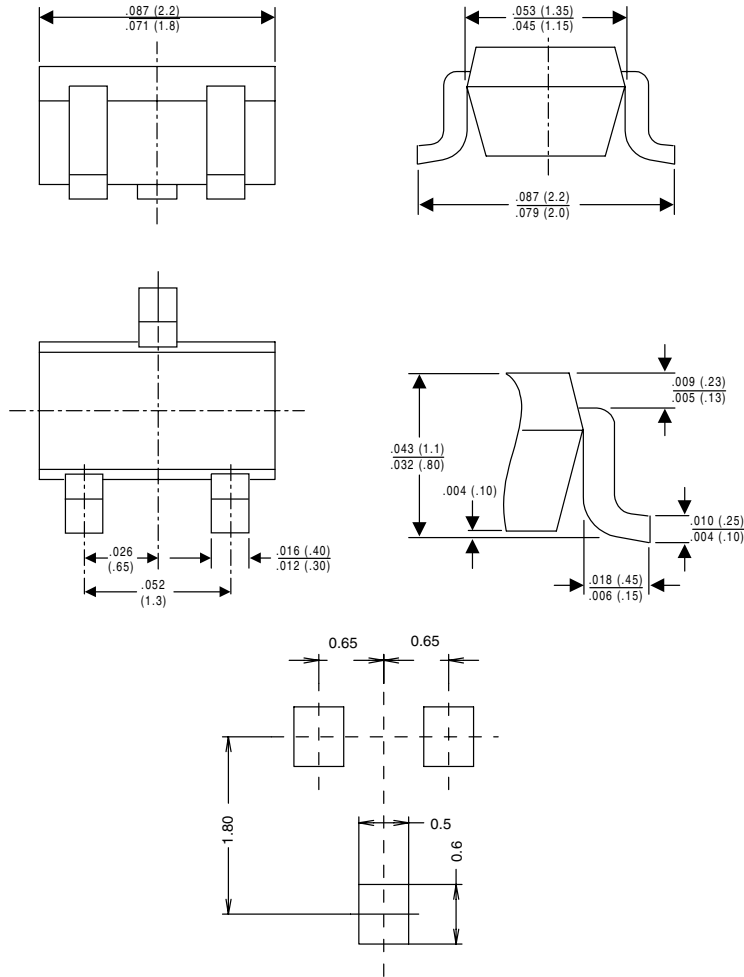


SOT-23



LAND PATTERN RECOMMENDATION

SC70



Land Pattern Recommendation

Ordering Information

| PART NUMBER | TOP MARKING | RESET THRESHOLD (V) | OUTPUT TYPE | PACKAGE | PACKING METHOD |
|--------------|-------------|---------------------|-----------------------|--------------|-----------------|
| ILC5062AM23X | C3AY | 2.3 ± 1 % | Push-Pull, active low | 3-Pin, SOT23 | 3K units in T&R |
| ILC5062AM24X | C4AY | 2.4 ± 1 % | Push-Pull, active low | 3-Pin, SOT23 | 3K units in T&R |
| ILC5062AM25X | C5AY | 2.5 ± 1 % | Push-Pull, active low | 3-Pin, SOT23 | 3K units in T&R |
| ILC5062AM26X | C6AY | 2.6 ± 1 % | Push-Pull, active low | 3-Pin, SOT23 | 3K units in T&R |
| ILC5062AM27X | C7AY | 2.7 ± 1 % | Push-Pull, active low | 3-Pin, SOT23 | 3K units in T&R |
| ILC5062AM28X | C8AY | 2.8 ± 1 % | Push-Pull, active low | 3-Pin, SOT23 | 3K units in T&R |
| ILC5062AM29X | C9AY | 2.9 ± 1 % | Push-Pull, active low | 3-Pin, SOT23 | 3K units in T&R |
| ILC5062AM30X | D0AY | 3.0 ± 1 % | Push-Pull, active low | 3-Pin, SOT23 | 3K units in T&R |
| ILC5062AM31X | D1AY | 3.1 ± 1 % | Push-Pull, active low | 3-Pin, SOT23 | 3K units in T&R |
| ILC5062AM37X | D7AY | 3.7 ± 1 % | Push-Pull, active low | 3-Pin, SOT23 | 3K units in T&R |
| ILC5062AM44X | E4AY | 4.4 ± 1 % | Push-Pull, active low | 3-Pin, SOT23 | 3K units in T&R |
| ILC5062AM46X | E6AY | 4.6 ± 1 % | Push-Pull, active low | 3-Pin, SOT23 | 3K units in T&R |
| ILC5062M23X | C3Y | 2.3 ± 2 % | Push-Pull, active low | 3-Pin, SOT23 | 3K units in T&R |
| ILC5062M24X | C4Y | 2.4 ± 2 % | Push-Pull, active low | 3-Pin, SOT23 | 3K units in T&R |
| ILC5062M25X | C5Y | 2.5 ± 2 % | Push-Pull, active low | 3-Pin, SOT23 | 3K units in T&R |
| ILC5062M26X | C6Y | 2.6 ± 2 % | Push-Pull, active low | 3-Pin, SOT23 | 3K units in T&R |
| ILC5062M27X | C7Y | 2.7 ± 2 % | Push-Pull, active low | 3-Pin, SOT23 | 3K units in T&R |
| ILC5062M28X | C8Y | 2.8 ± 2 % | Push-Pull, active low | 3-Pin, SOT23 | 3K units in T&R |
| ILC5062M29X | C9Y | 2.9 ± 2 % | Push-Pull, active low | 3-Pin, SOT23 | 3K units in T&R |
| ILC5062M30X | D0Y | 3.0 ± 2 % | Push-Pull, active low | 3-Pin, SOT23 | 3K units in T&R |
| ILC5062M31X | D1Y | 3.1 ± 2 % | Push-Pull, active low | 3-Pin, SOT23 | 3K units in T&R |
| ILC5062M37X | D7Y | 3.7 ± 2 % | Push-Pull, active low | 3-Pin, SOT23 | 3K units in T&R |
| ILC5062M44X | E4Y | 4.4 ± 2 % | Push-Pull, active low | 3-Pin, SOT23 | 3K units in T&R |
| ILC5062M46X | E6Y | 4.6 ± 2 % | Push-Pull, 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 |
|---------------|-------------|---------------------|-----------------------|-------------|-----------------|
| ILC5062AIC23X | C3AY | 2.3 ± 1 % | Push-Pull, active low | 3-Pin, SC70 | 3K units in T&R |
| ILC5062AIC24X | C4AY | 2.4 ± 1 % | Push-Pull, active low | 3-Pin, SC70 | 3K units in T&R |
| ILC5062AIC25X | C5AY | 2.5 ± 1 % | Push-Pull, active low | 3-Pin, SC70 | 3K units in T&R |
| ILC5062AIC26X | C6AY | 2.6 ± 1 % | Push-Pull, active low | 3-Pin, SC70 | 3K units in T&R |
| ILC5062AIC27X | C7AY | 2.7 ± 1 % | Push-Pull, active low | 3-Pin, SC70 | 3K units in T&R |
| ILC5062AIC28X | C8AY | 2.8 ± 1 % | Push-Pull, active low | 3-Pin, SC70 | 3K units in T&R |
| ILC5062AIC29X | C9AY | 2.9 ± 1 % | Push-Pull, active low | 3-Pin, SC70 | 3K units in T&R |
| ILC5062AIC30X | D0AY | 3.0 ± 1 % | Push-Pull, active low | 3-Pin, SC70 | 3K units in T&R |
| ILC5062AIC31X | D1AY | 3.1 ± 1 % | Push-Pull, active low | 3-Pin, SC70 | 3K units in T&R |
| ILC5062AIC37X | D7AY | 3.7 ± 1 % | Push-Pull, active low | 3-Pin, SC70 | 3K units in T&R |
| ILC5062AIC44X | E4AY | 4.4 ± 1 % | Push-Pull, active low | 3-Pin, SC70 | 3K units in T&R |
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| ILC5062IC23X | C3Y | 2.3 ± 2 % | Push-Pull, active low | 3-Pin, SC70 | 3K units in T&R |
| ILC5062IC24X | C4Y | 2.4 ± 2 % | Push-Pull, active low | 3-Pin, SC70 | 3K units in T&R |
| ILC5062IC25X | C5Y | 2.5 ± 2 % | Push-Pull, active low | 3-Pin, SC70 | 3K units in T&R |
| ILC5062IC26X | C6Y | 2.6 ± 2 % | Push-Pull, active low | 3-Pin, SC70 | 3K units in T&R |
| ILC5062IC27X | C7Y | 2.7 ± 2 % | Push-Pull, active low | 3-Pin, SC70 | 3K units in T&R |
| ILC5062IC28X | C8Y | 2.8 ± 2 % | Push-Pull, active low | 3-Pin, SC70 | 3K units in T&R |
| ILC5062IC29X | C9Y | 2.9 ± 2 % | Push-Pull, active low | 3-Pin, SC70 | 3K units in T&R |
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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.

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