

# 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

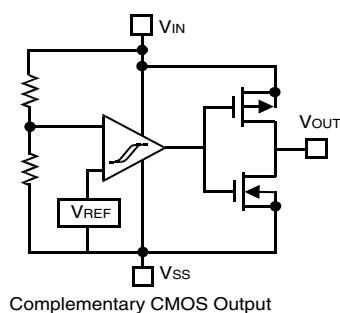
### Description

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

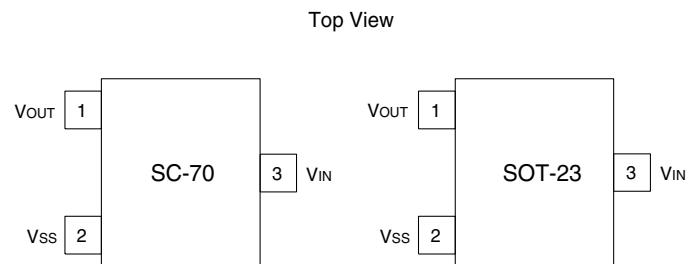
The ILC5062 is available in a series of  $\pm 1\%$  (A-grade) or  $2\%$  (standard grade) accurate trip voltages to fit most microprocessor applications. Even though its output can sink over 2mA, the device draws only  $1\mu\text{A}$  in normal operation.

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 <sub>IN</sub>	12	V
Output Current	I <sub>OUT</sub>	50	mA
Output Voltage	V <sub>OUT</sub>	V <sub>SS</sub> -0.3~V <sub>IN</sub> =+0.3	V
Continuous Total Power Dissipation (SOT-23)	P <sub>D</sub>	150	mW
Operating Ambient Temperature	T <sub>opr</sub>	-30~+80	°C
Storage Temperature	T <sub>stg</sub>	-40~+125	°C

## Electrical Characteristics ILC5062 (T<sub>A</sub>=25°C)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Detect Fail Voltage	V <sub>DF</sub>	A grade	V <sub>DF</sub> X 0.99	V <sub>DF</sub>	V <sub>DF</sub> X 1.01	V
Detect Fail Voltage	V <sub>DF</sub>	Standard grade	V <sub>DF</sub> X 0.98	V <sub>DF</sub>	V <sub>DF</sub> X 1.02	V
Hysteresis Range	V <sub>HYS</sub>		V <sub>DF</sub> X 0.02	V <sub>DF</sub> X 0.05	V <sub>DF</sub> X 0.08	V
Supply Current	I <sub>SS</sub>	V <sub>IN</sub> = 1.5V V <sub>IN</sub> = 2.0V V <sub>IN</sub> = 3.0V V <sub>IN</sub> = 4.0V V <sub>IN</sub> = 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 <sub>IN</sub>	V <sub>DF</sub> = 2.1 ~ 6.0V	1.5		10.0	V
Output Current	I <sub>OUT</sub>	N-ch V <sub>DS</sub> = 0.5V V <sub>IN</sub> = 1.0V V <sub>IN</sub> = 2.0V V <sub>IN</sub> = 3.0V V <sub>IN</sub> = 4.0V V <sub>IN</sub> = 5.0V  P-Ch V <sub>DS</sub> = 2.1V V <sub>IN</sub> = 8V		2.2 7.7 10.1 11.5 13.0  -10		mA
Temperature Characteristics	ΔV <sub>DF</sub> /(ΔT <sub>opr</sub> •V <sub>DF</sub> )	-30°C ≤ T <sub>opr</sub> ≤ 80°C	-200	±100	+200	ppm/°C
Delay Time (Release Voltage → Output Inversion)	t <sub>DLY</sub> (V <sub>DR</sub> to V <sub>OUT</sub> Inversion)				0.1	ms

Note1: An additional resistor between the V<sub>IN</sub> pin and supply voltage may cause deterioration of the characteristics due to increasing of V<sub>DR</sub>.

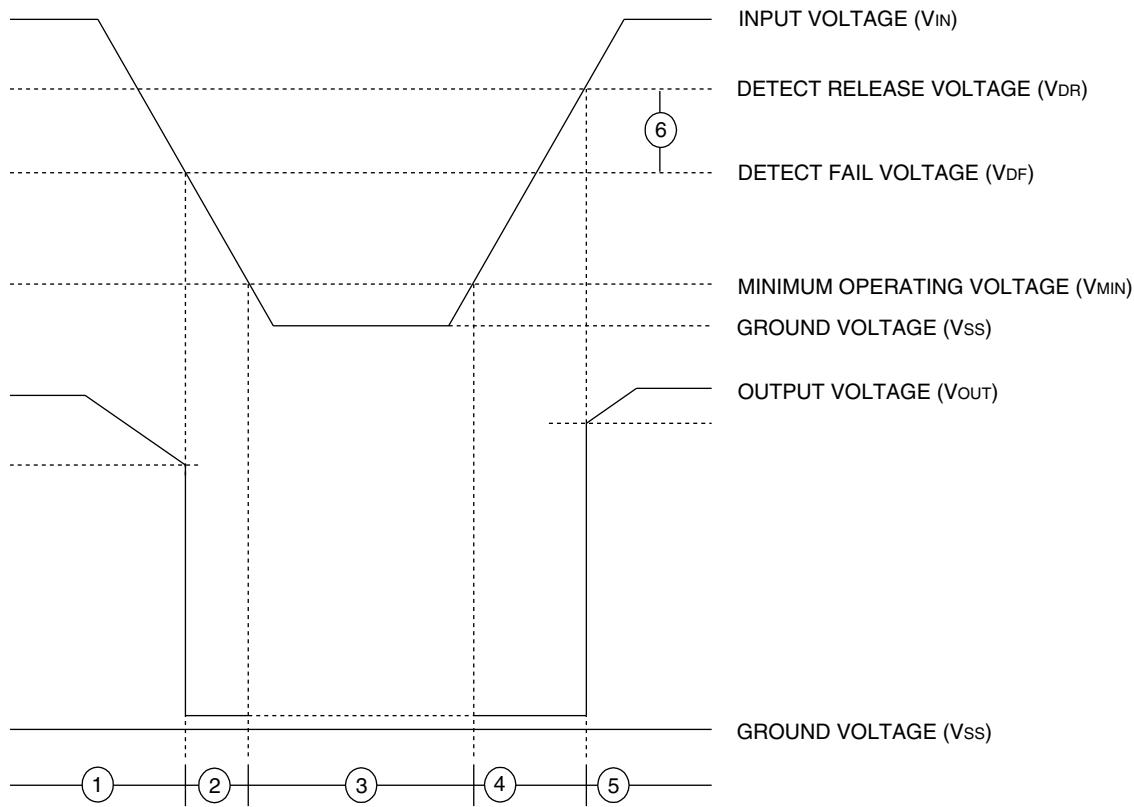
Note2: Vout=Gnd when 1V < V<sub>IN</sub> < 1.5V

Note3: Iout < 10uA when V<sub>IN</sub> < 1V

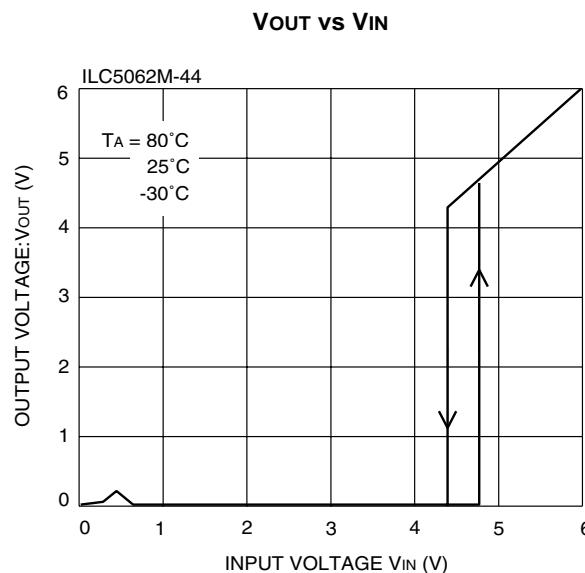
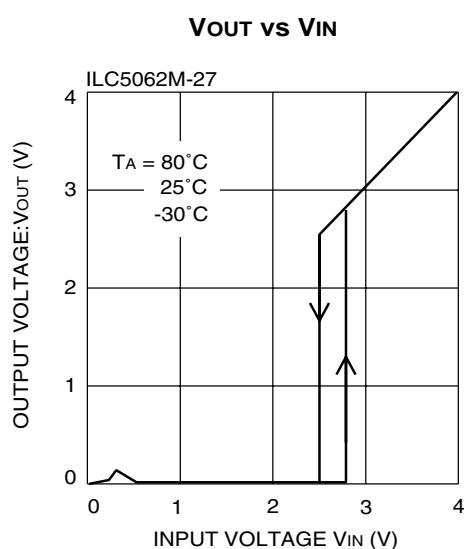
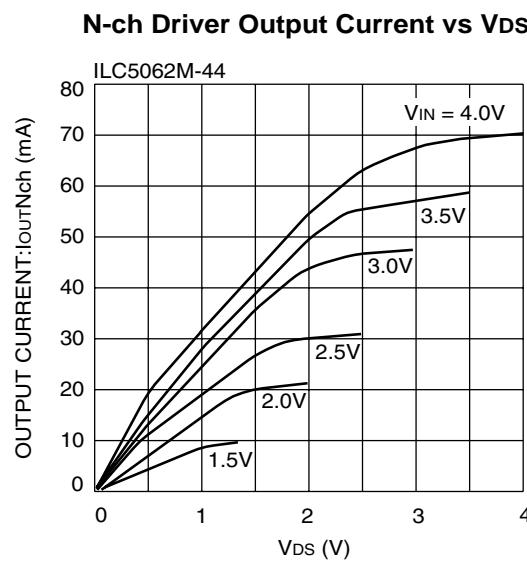
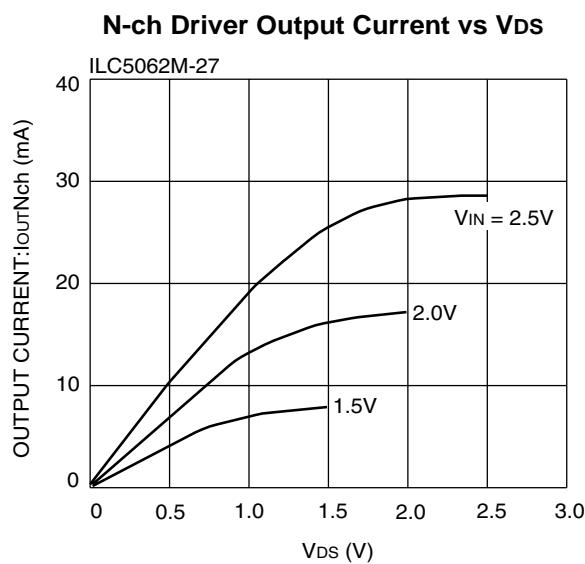
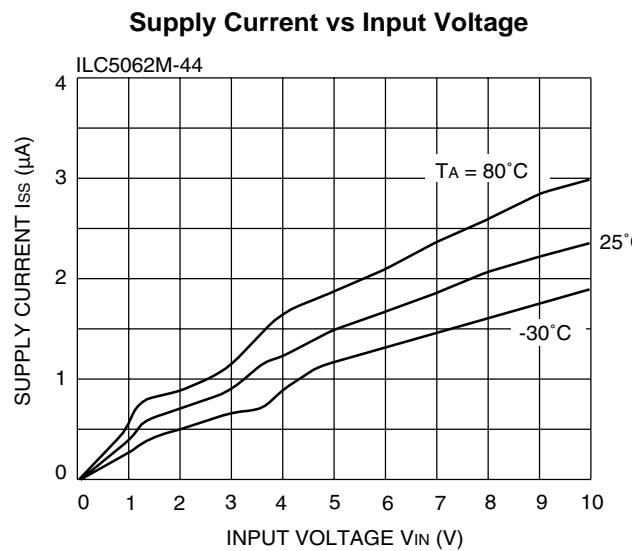
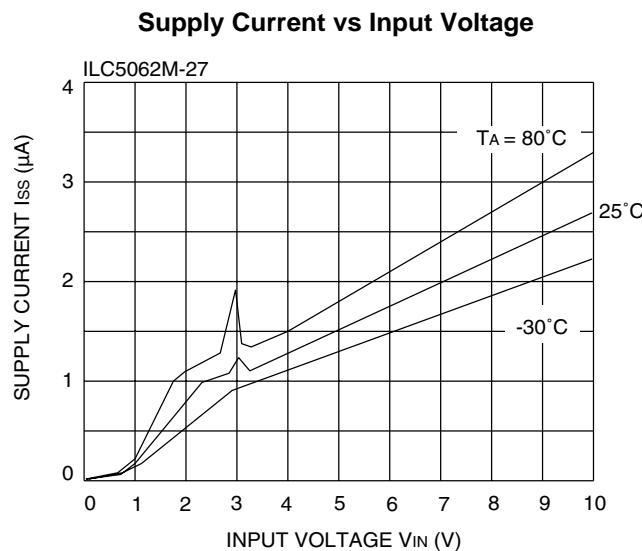
## Functional Description

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 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.

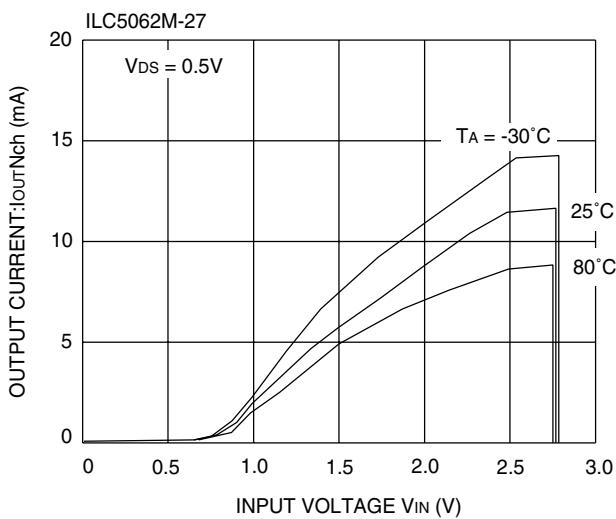


## Typical Performance Characteristics - General conditions for all curves

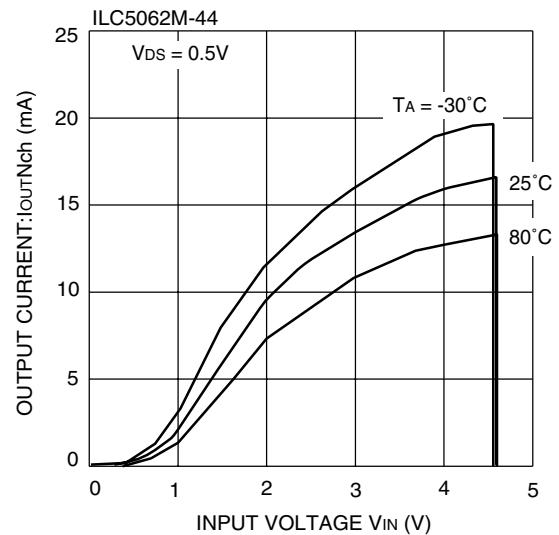


## Typical Performance Characteristics - General conditions for all curves

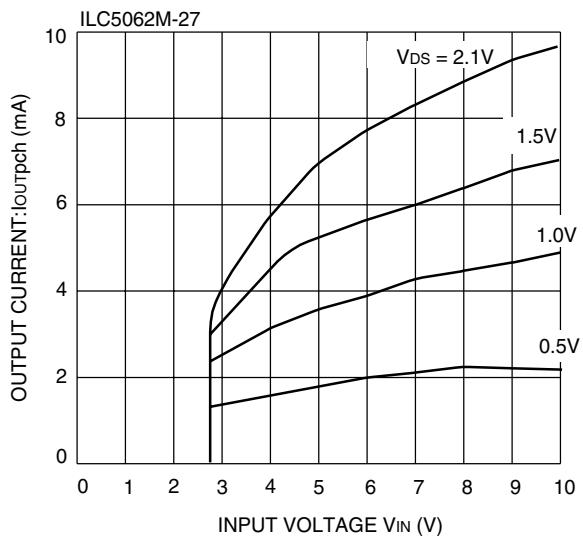
**N-ch Driver Output Current vs Input Voltage**



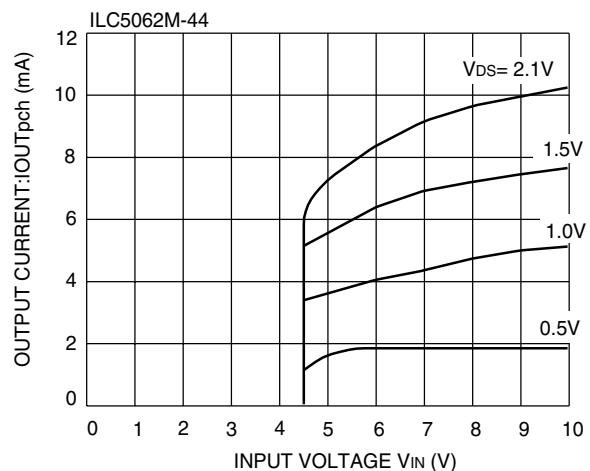
**N-ch Driver Output Current vs Input Voltage**



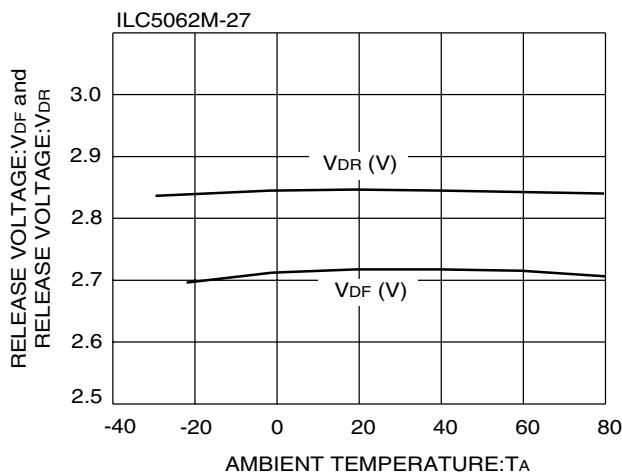
**P\_ch Driver Output Current vs Input Voltage**

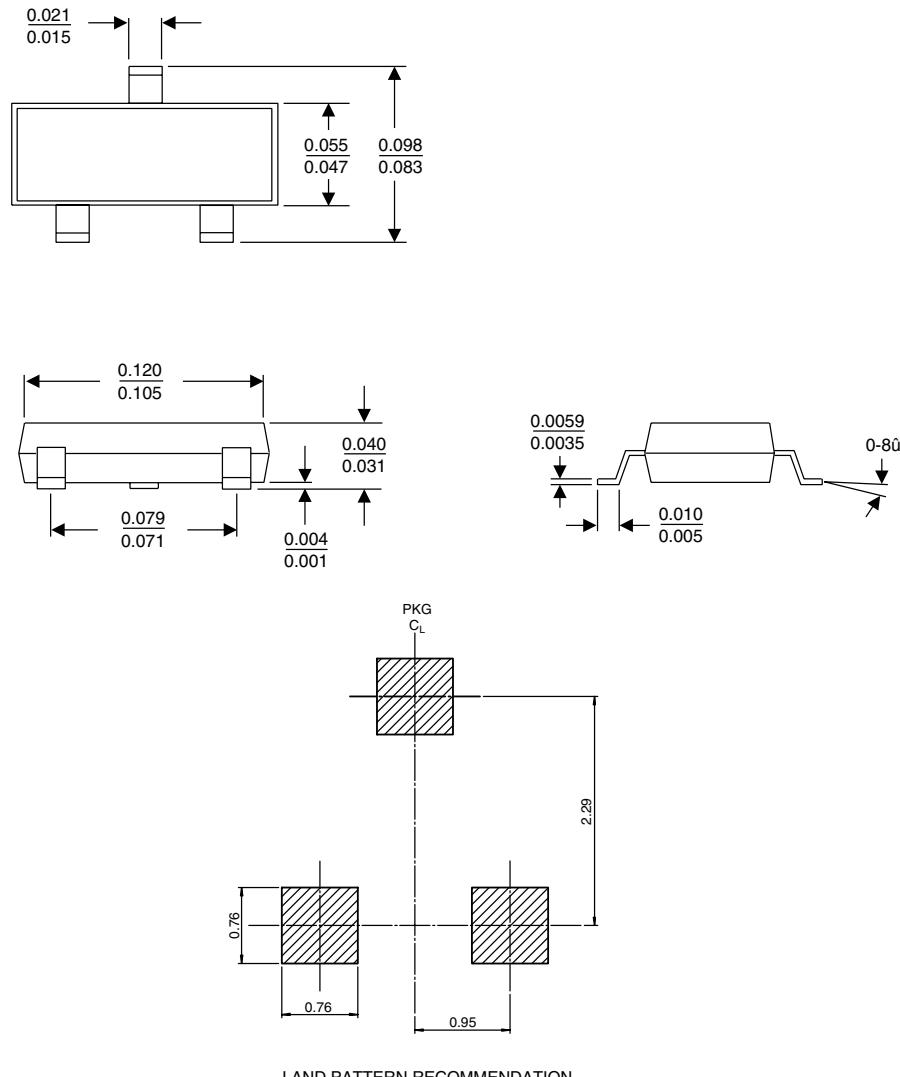


**P\_ch Driver Output Current vs Input Voltage**

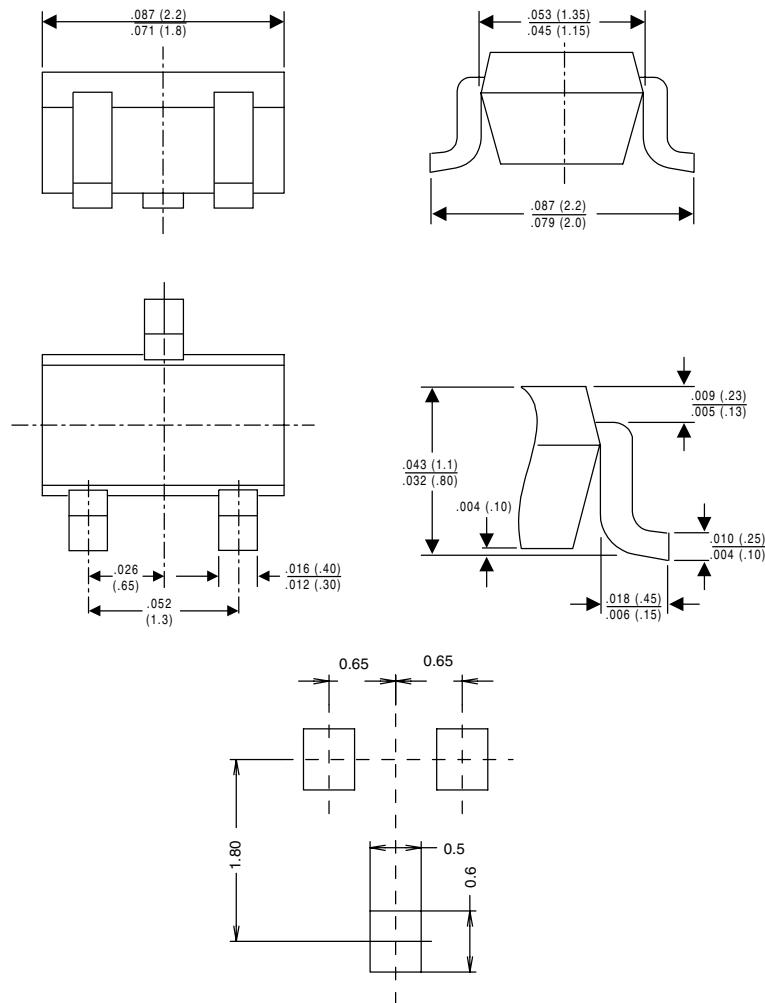


**V<sub>DR</sub> and V<sub>DF</sub> vs Temperature**



**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
ILC5062AIC46X	E6AY	4.6 ± 1 %	Push-Pull, active low	3-Pin, SC70	3K units in T&R
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
ILC5062IC30X	D0Y	3.0 ± 2 %	Push-Pull, active low	3-Pin, SC70	3K units in T&R
ILC5062IC31X	D1Y	3.1 ± 2 %	Push-Pull, active low	3-Pin, SC70	3K units in T&R
ILC5062IC37X	D7Y	3.7 ± 2 %	Push-Pull, active low	3-Pin, SC70	3K units in T&R
ILC5062IC44X	E4Y	4.4 ± 2 %	Push-Pull, active low	3-Pin, SC70	3K units in T&R
ILC5062IC46X	E6Y	4.6 ± 2 %	Push-Pull, active low	3-Pin, SC70	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

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