

# 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

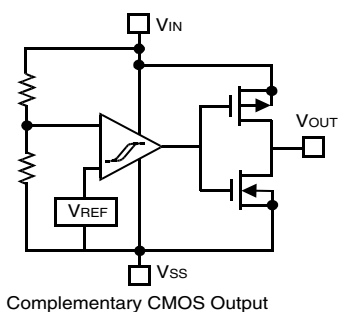
### Description

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

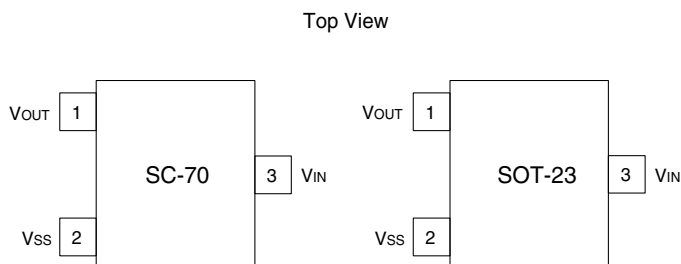
The ILC5062 is available in a series of  $\pm 1\%$  (A-grade) or 2% (standard grade) accurate trip voltages to fit most microprocessor applications. Even though its output can sink over 2mA, the device draws only  $1\mu\text{A}$  in normal operation.

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 Characterisitcs 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	$I_{SS}$	$V_{IN} = 1.5\text{V}$ $V_{IN} = 2.0\text{V}$ $V_{IN} = 3.0\text{V}$ $V_{IN} = 4.0\text{V}$ $V_{IN} = 5.0\text{V}$		0.9 1.0 1.3 1.6 2.0	2.6 3.0 3.4 3.8 4.2	$\mu\text{A}$
Operating Voltage	$V_{IN}$	$V_{DF} = 2.1 \sim 6.0\text{V}$	1.5		10.0	V
Output Current	$I_{OUT}$	N-ch $V_{DS} = 0.5\text{V}$ $V_{IN} = 1.0\text{V}$ $V_{IN} = 2.0\text{V}$ $V_{IN} = 3.0\text{V}$ $V_{IN} = 4.0\text{V}$ $V_{IN} = 5.0\text{V}$  P-Ch $V_{DS} = 2.1\text{V}$ $V_{IN} = 8\text{V}$		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	$\pm 100$	+200	ppm/°C
Delay Time (Release Voltage → 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  $V_{DR}$ .

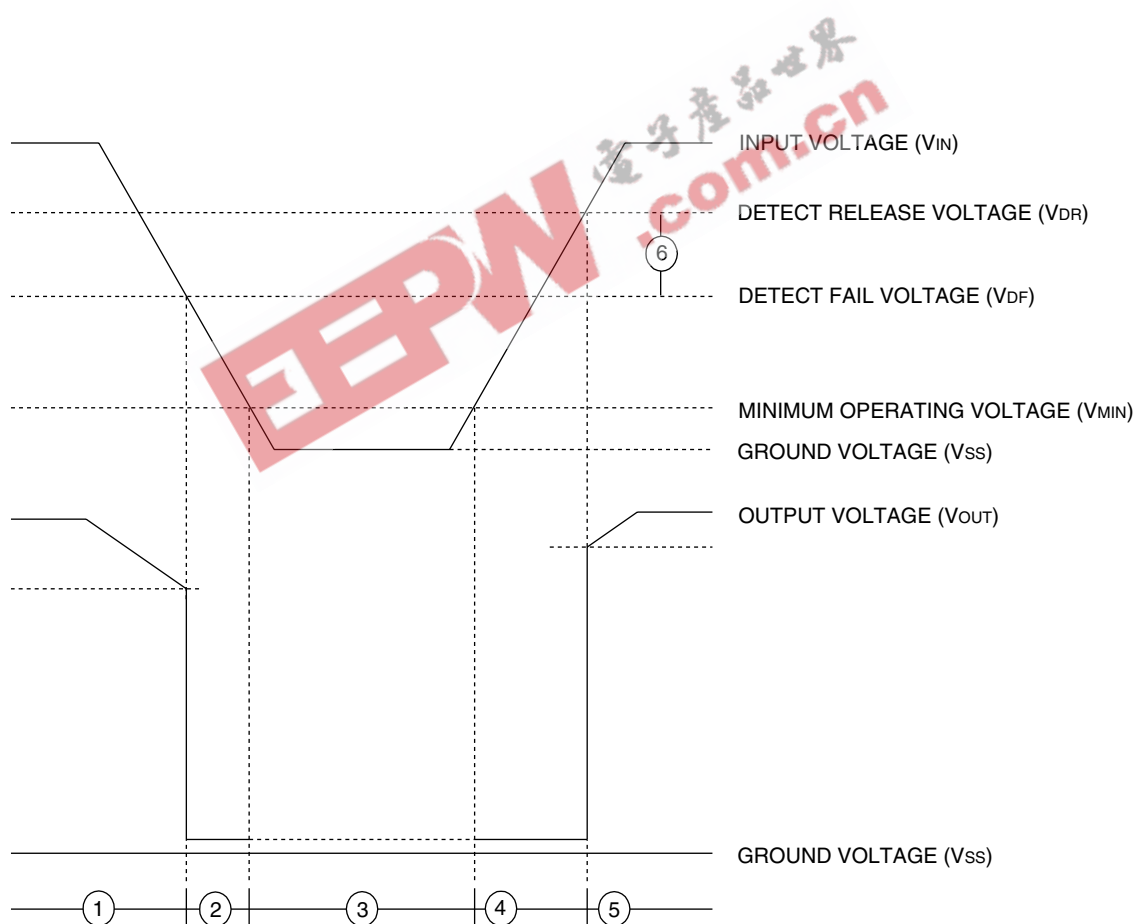
Note2:  $V_{out} = \text{Gnd}$  when  $1\text{V} < V_{IN} < 1.5\text{V}$

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

## Functional Description

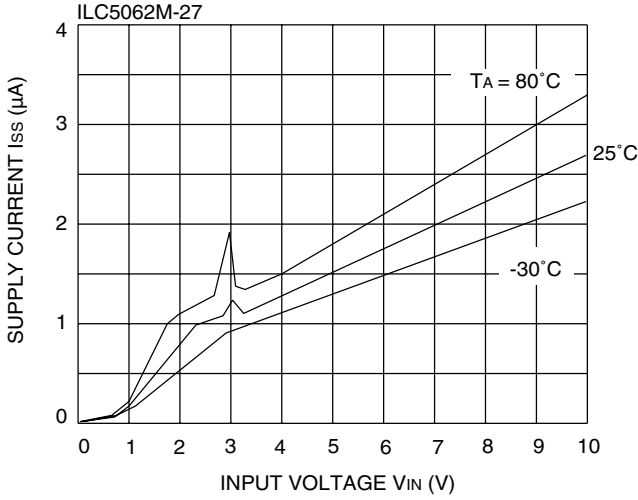
The following designators 1~6 refer to the timing diagram below.

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.

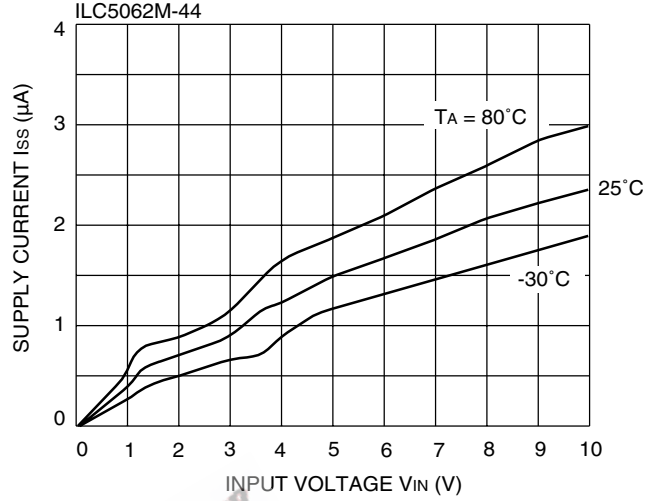


Typical Performance Characteristics - General conditions for all curves

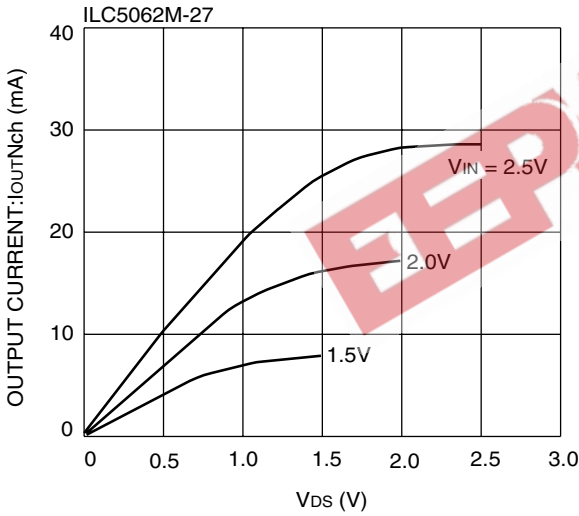
Supply Current vs Input Voltage



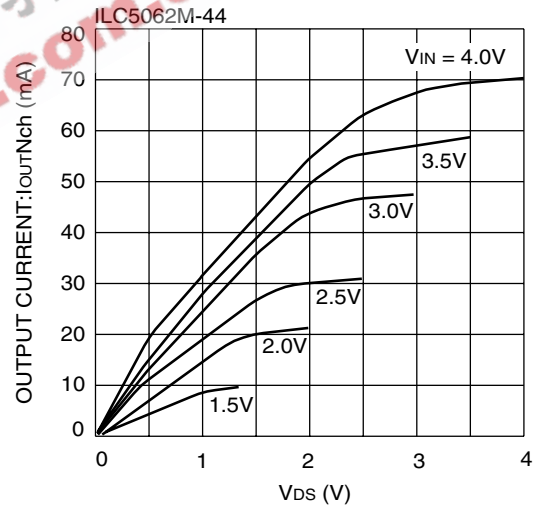
Supply Current vs Input Voltage



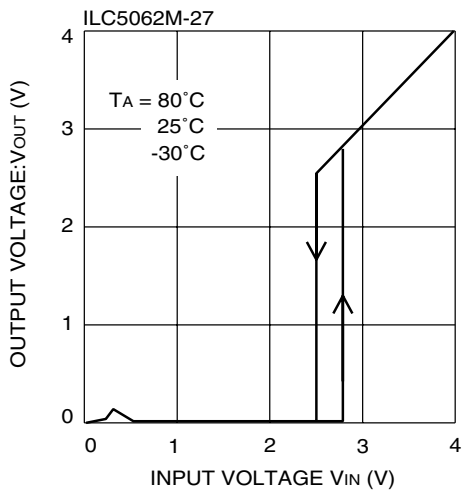
N-ch Driver Output Current vs V<sub>DS</sub>



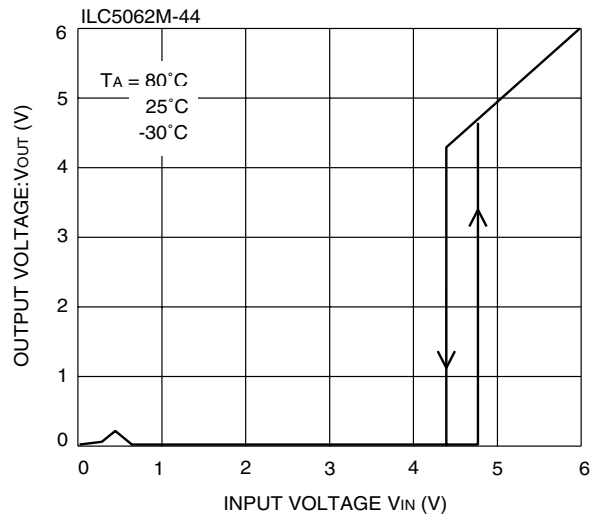
N-ch Driver Output Current vs V<sub>DS</sub>



V<sub>OUT</sub> vs V<sub>IN</sub>

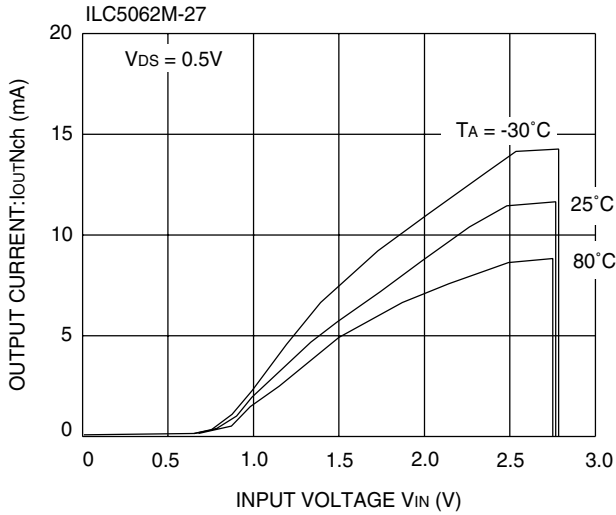


V<sub>OUT</sub> vs V<sub>IN</sub>

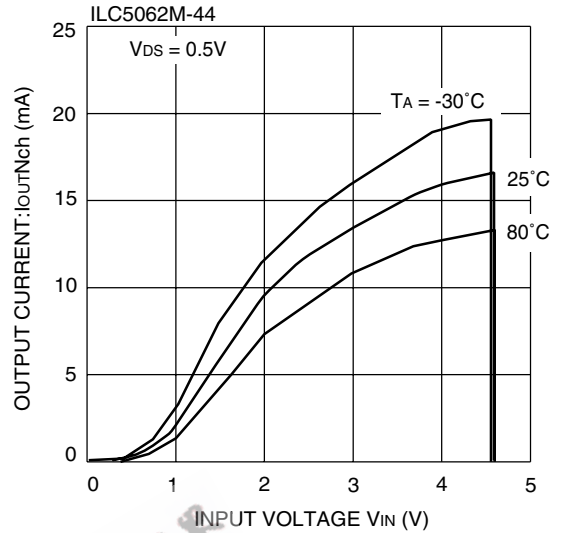


### Typical Performance Characteristics - General conditions for all curves

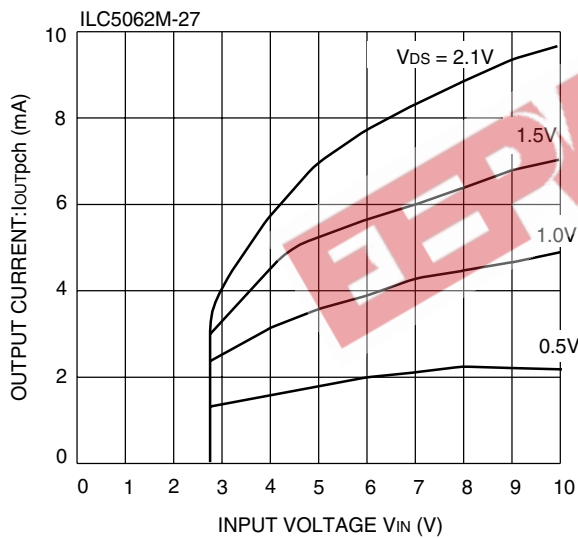
**N-ch Driver Output Current vs Input Voltage**



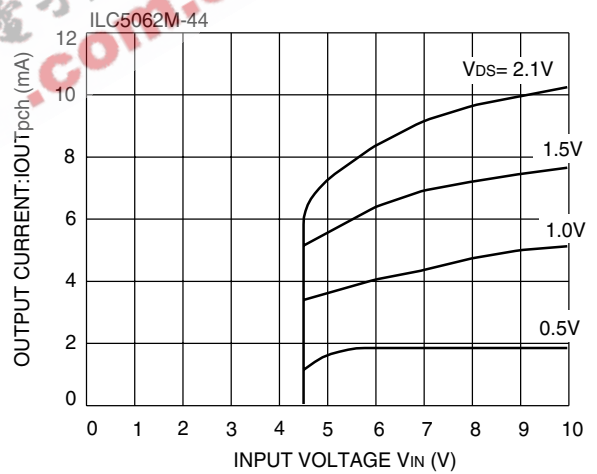
**N-ch Driver Output Current vs Input Voltage**



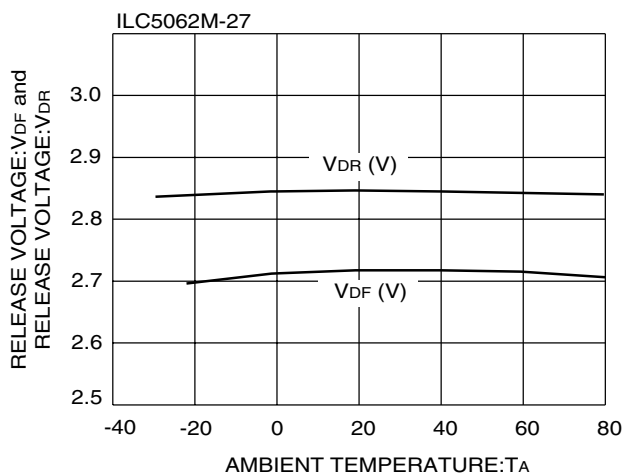
**P\_ch Driver Output Current vs Input Voltage**



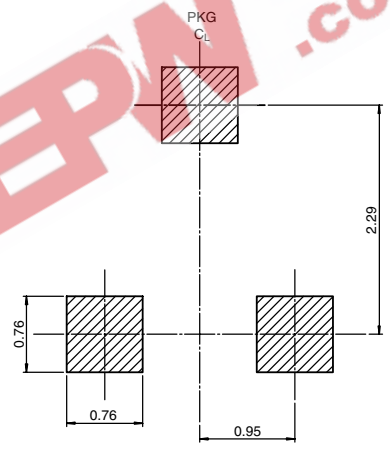
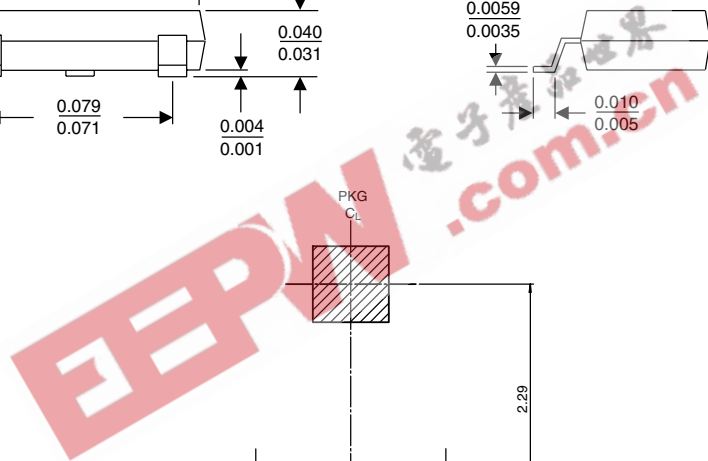
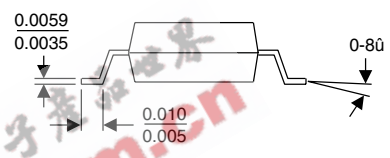
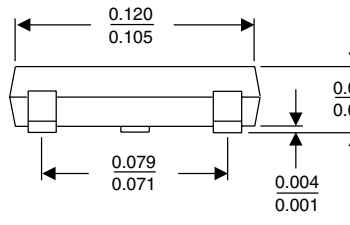
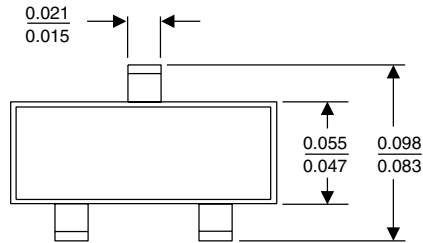
**P\_ch Driver Output Current vs Input Voltage**



**VDR and VDF vs Temperature**

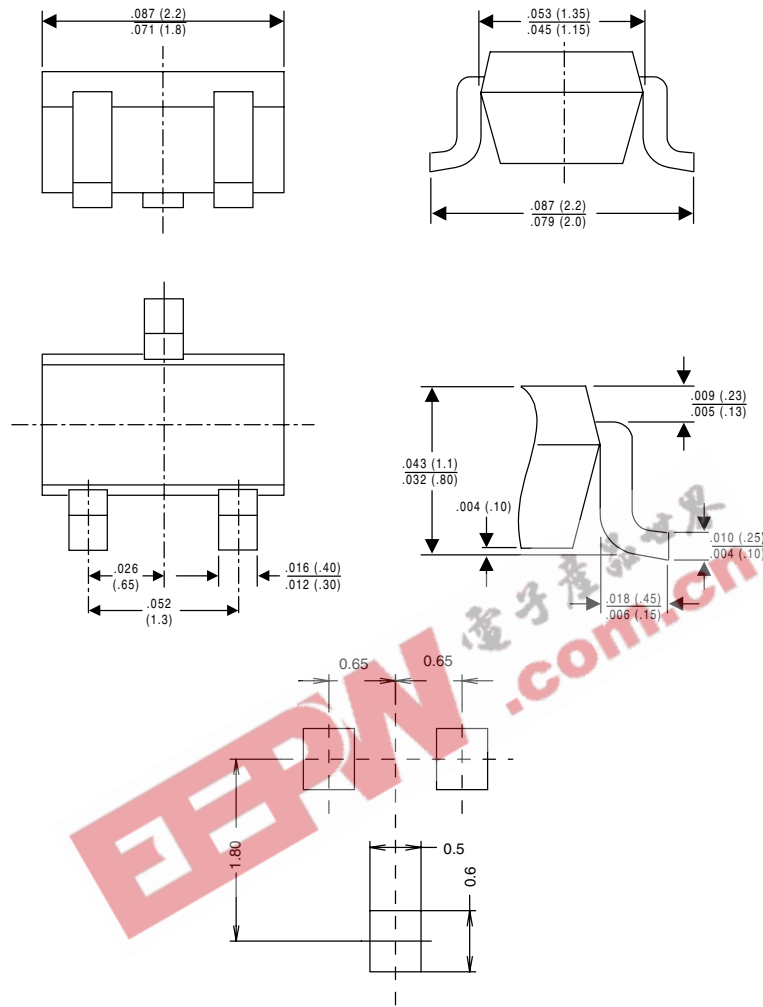


# SOT-23



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
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

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

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