

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

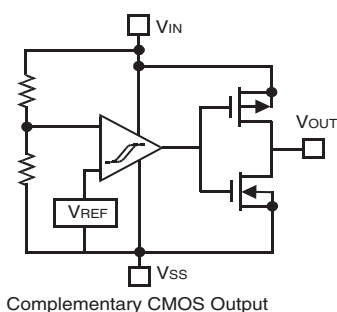
Description

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

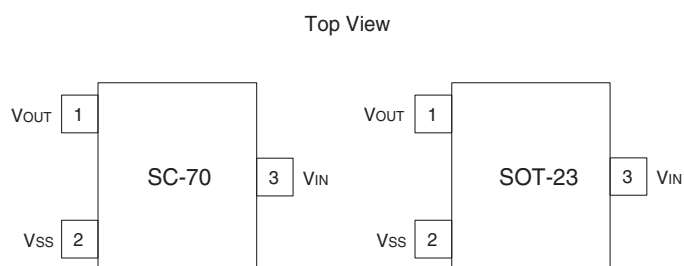
The ILC5062 is available in a series of $\pm 1\%$ (A-grade) or 2% (standard grade) accurate trip voltages to fit most microprocessor applications. Even though its output can sink over 2mA , the device draws only $1\mu\text{A}$ in normal operation.

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}	$V_{IN} = 1.5V$ $V_{IN} = 2.0V$ $V_{IN} = 3.0V$ $V_{IN} = 4.0V$ $V_{IN} = 5.0V$		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} .

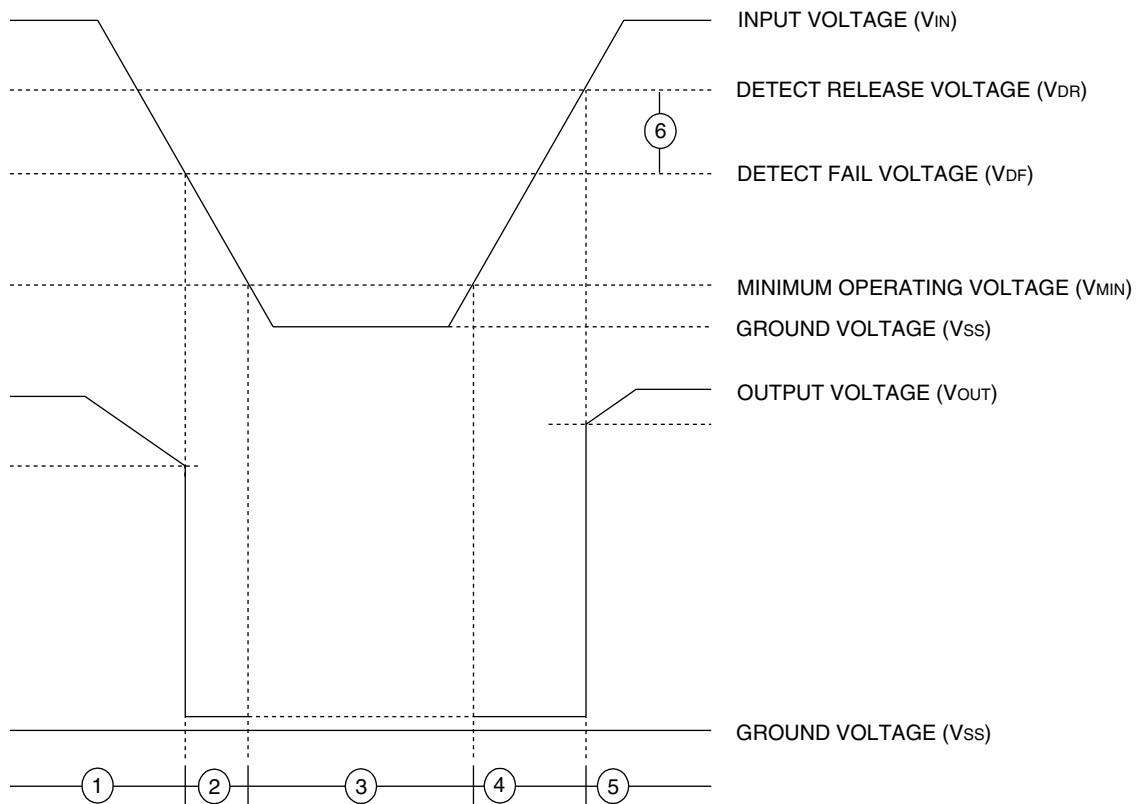
Note2: $V_{out} = \text{Gnd}$ when $1V < V_{IN} < 1.5V$

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

Functional Description

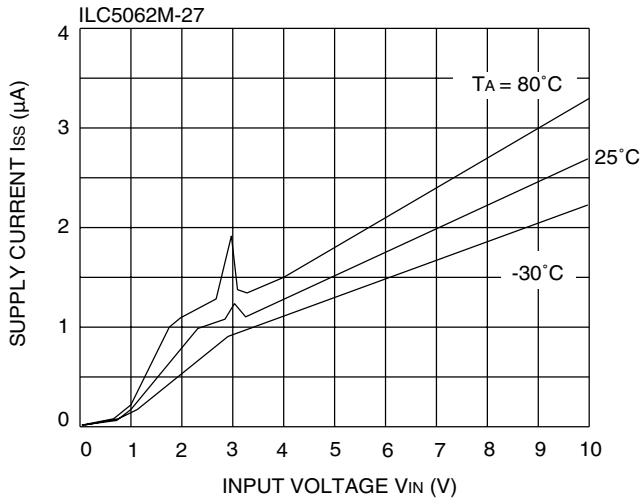
The following designators 1~6 refer to the timing diagram below.

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.

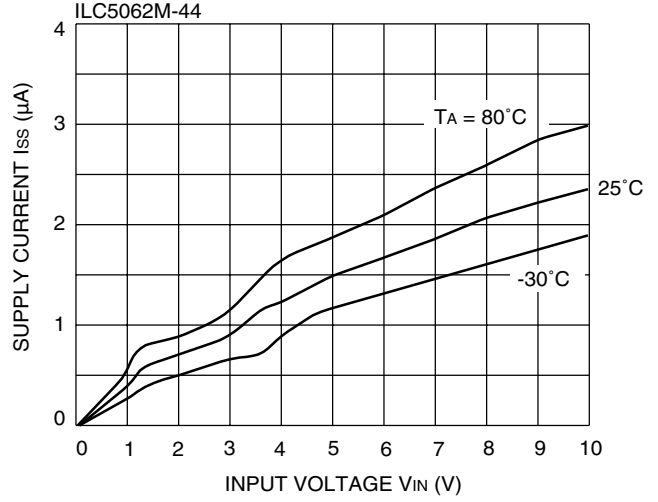


Typical Performance Characteristics - General conditions for all curves

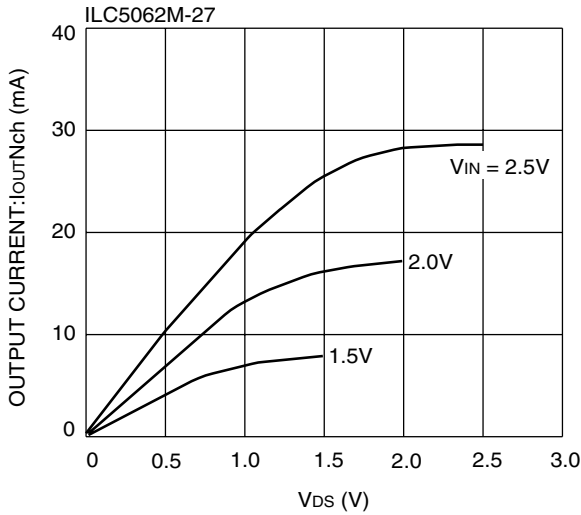
Supply Current vs Input Voltage



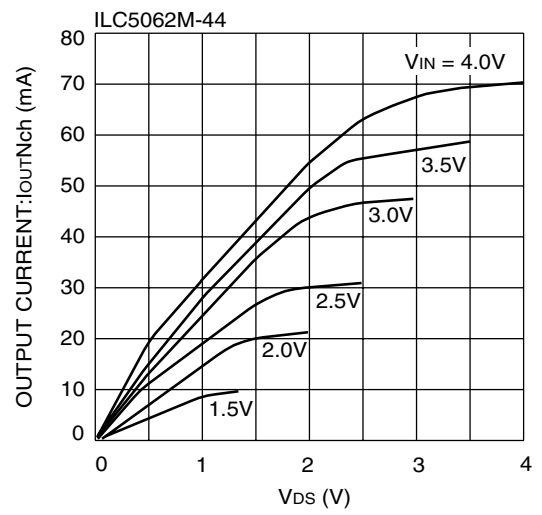
Supply Current vs Input Voltage



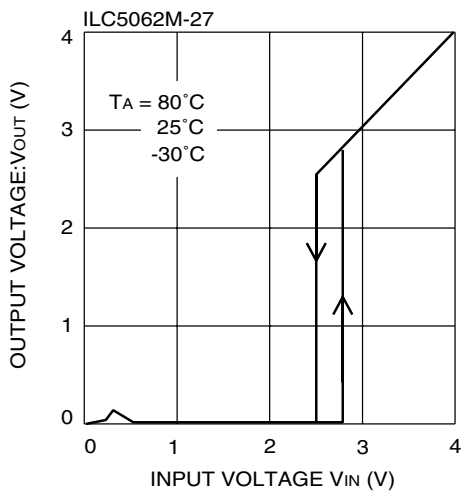
N-ch Driver Output Current vs Vds



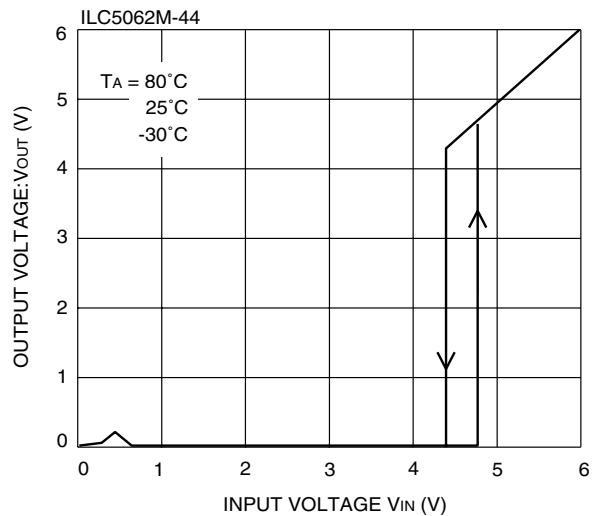
N-ch Driver Output Current vs Vds



Vout vs Vin

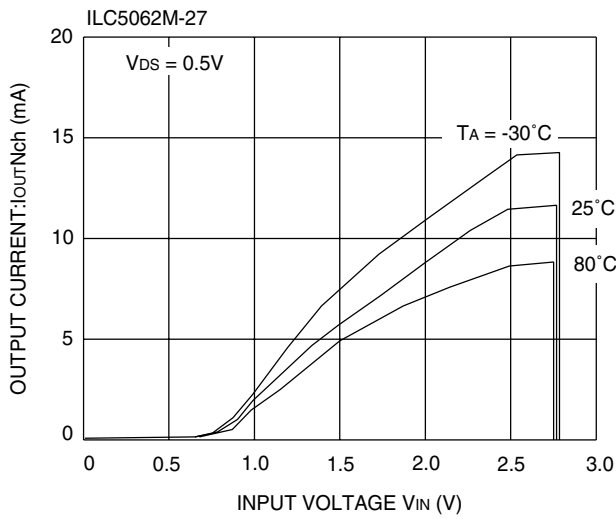


Vout vs Vin

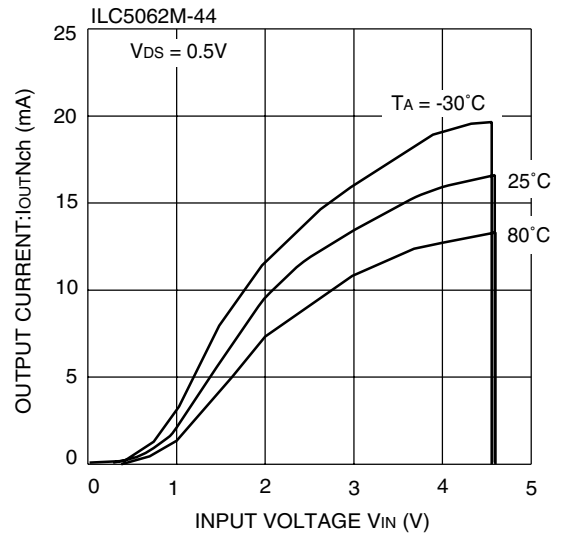


Typical Performance Characteristics - General conditions for all curves

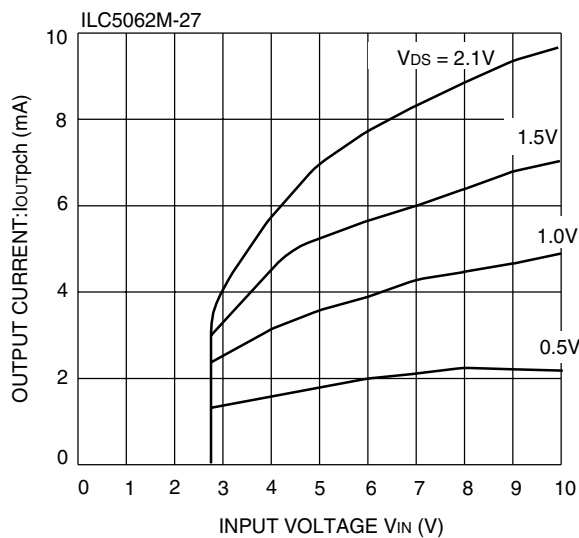
N-ch Driver Output Current vs Input Voltage



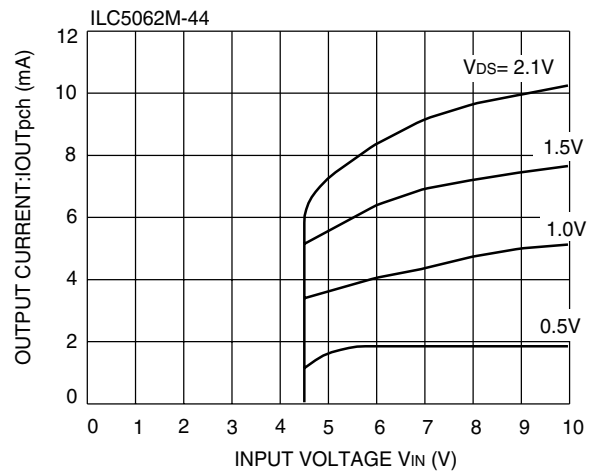
N-ch Driver Output Current vs Input Voltage



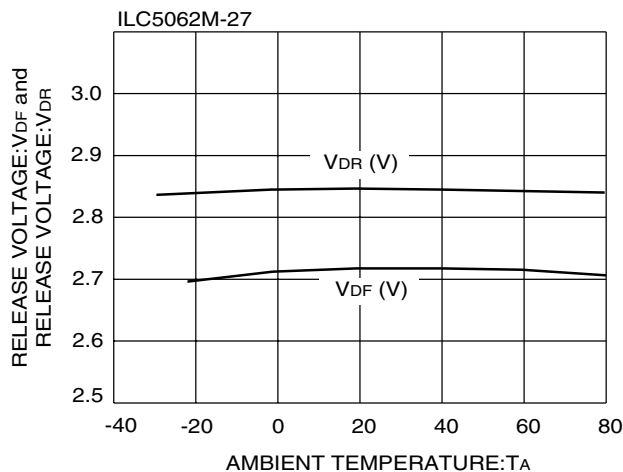
P_ch Driver Output Current vs Input Voltage



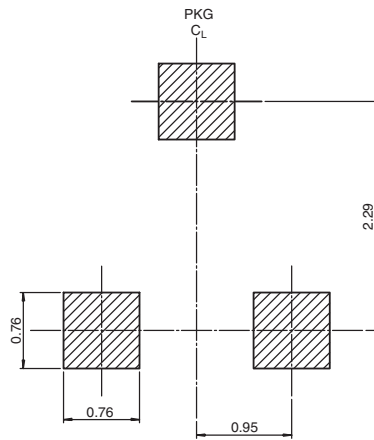
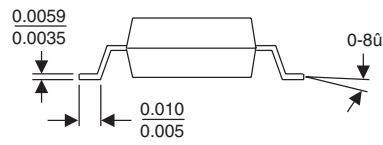
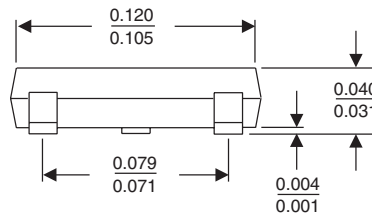
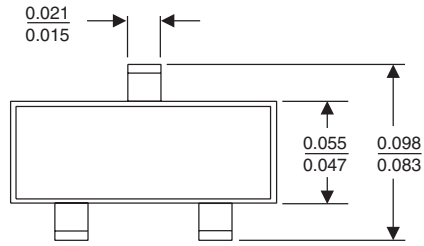
P_ch Driver Output Current vs Input Voltage



VDR and VDF vs Temperature

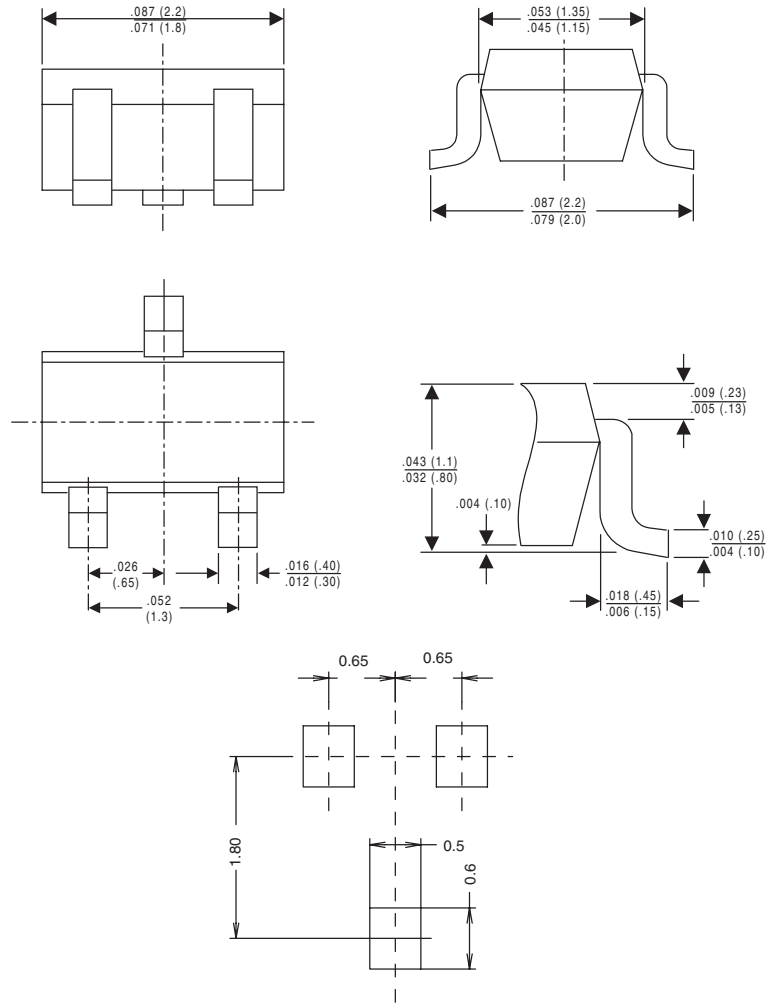


SOT-23



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
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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