ILC5062

SOT-23 Power Supply reset Monitor with 1% precision

Features

- All-CMOS design in SOT-23 or SC70 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
- Active low push-pull output

Applications

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

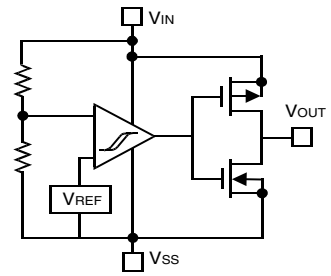
Description

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 ±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 1µA in normal operation.

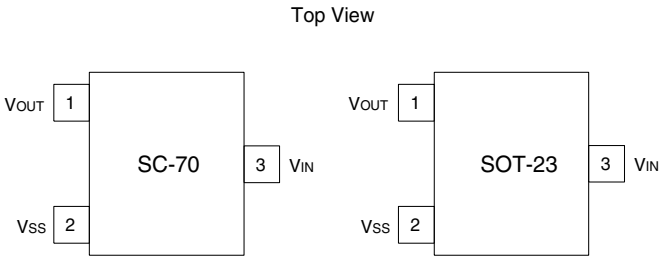
Additionally, a built-in hysteresis of 5% of detect voltage simplifies system design.

Block Diagram



Complementary CMOS Output

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~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 ≤ Topr ≤ 80°C	-200	±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: Vout=Gnd when 1V< V_{IN} <1.5V

Note3: Iout < 10uA 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.

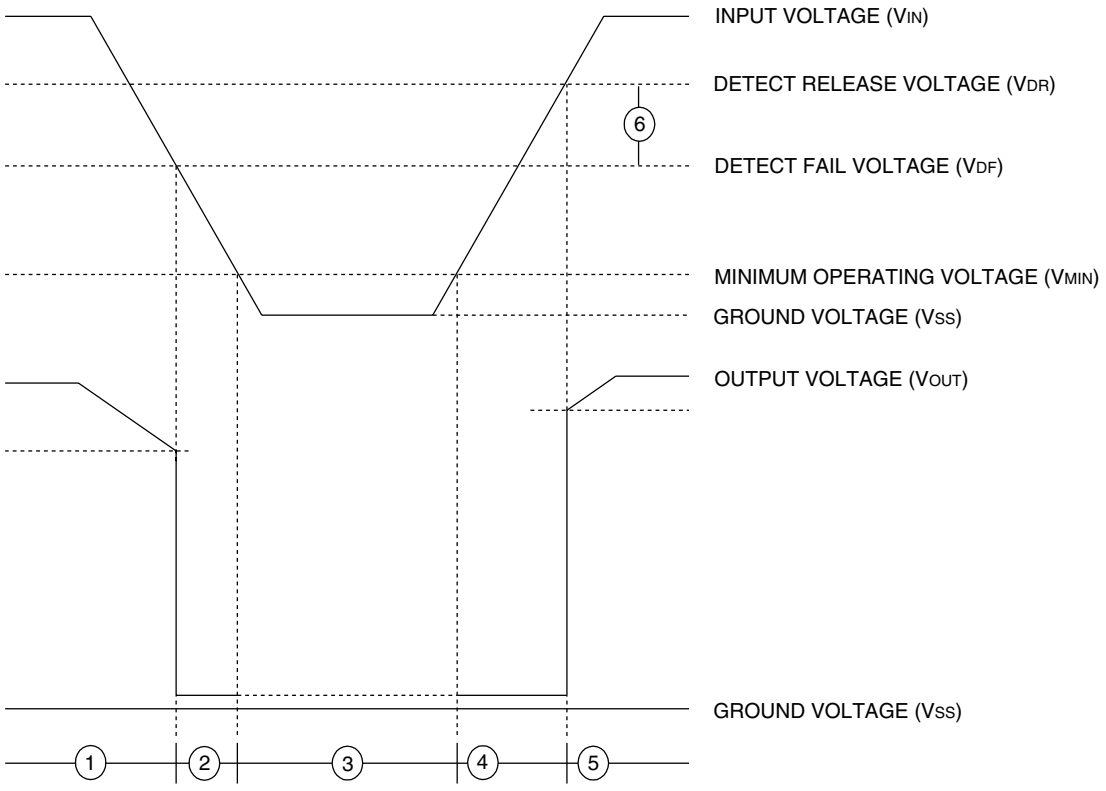
2. When the input V_{IN} voltage falls lower than V_{DF}, V_{OUT} drops near ground voltage.

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 ouput stays at the ground level (V_{SS}) between the minimum operating voltage (V_{MIN}) and the detect release voltage (V_{DR}).

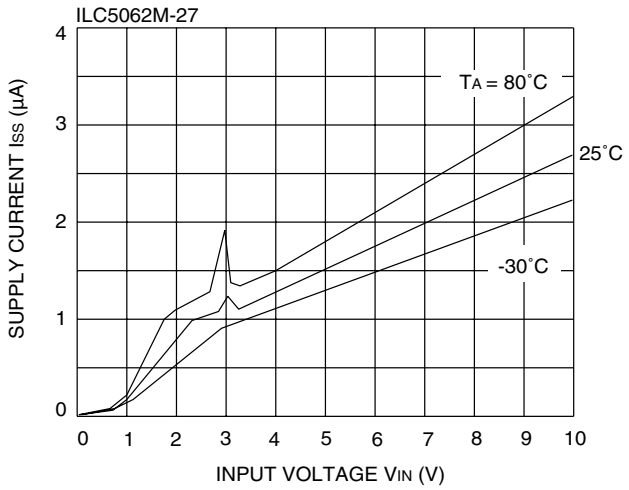
5. If the input voltage increases more than V_{DR}, the output voltage at V_{OUT} pin equals the input voltage at V_{IN} pin.

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

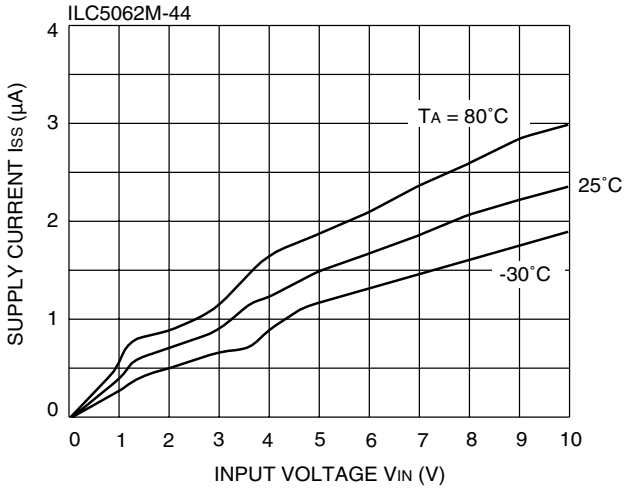


Typical Performance Characteristics - General conditions for all curves

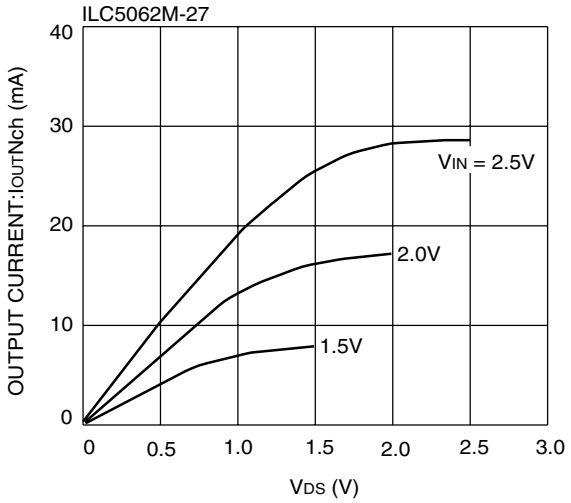
Supply Current vs Input Voltage



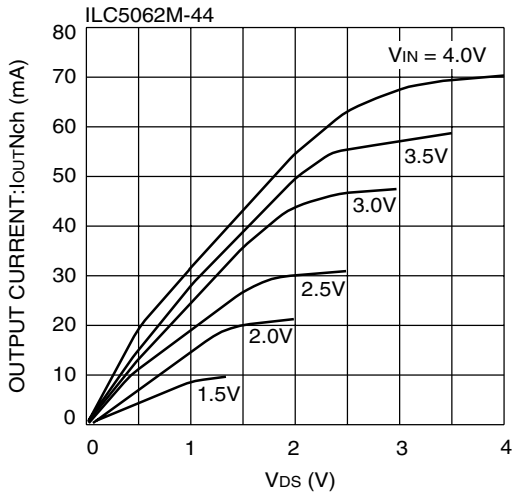
Supply Current vs Input Voltage



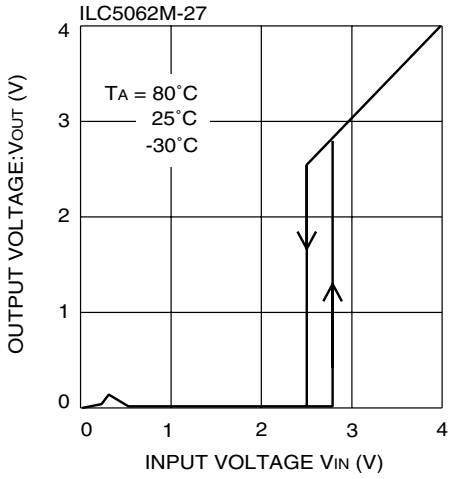
N-ch Driver Output Current vs VDS



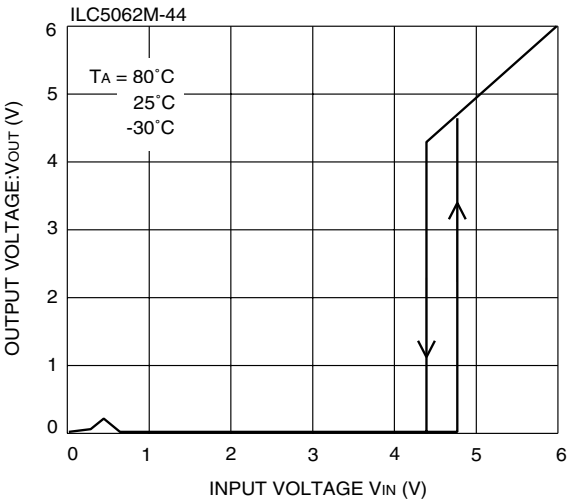
N-ch Driver Output Current vs VDS



VOUT vs VIN

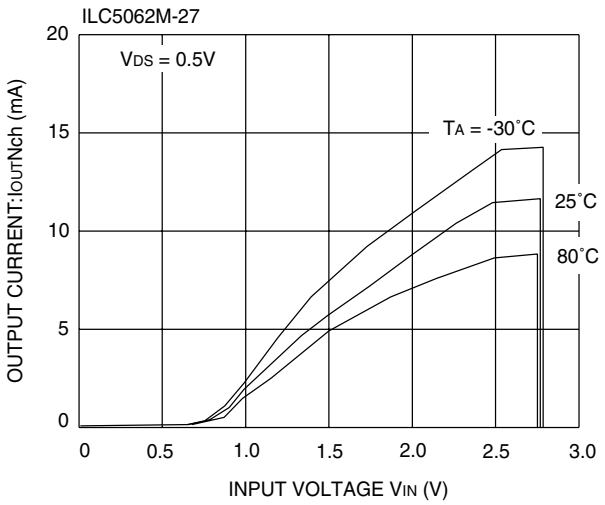


VOUT vs VIN

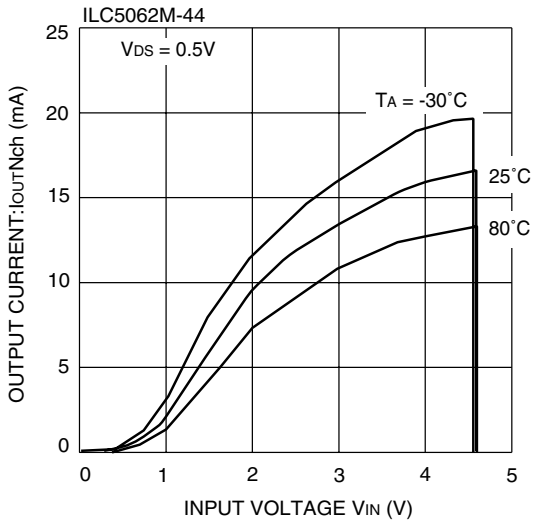


Typical Performance Characteristics - General conditions for all curves

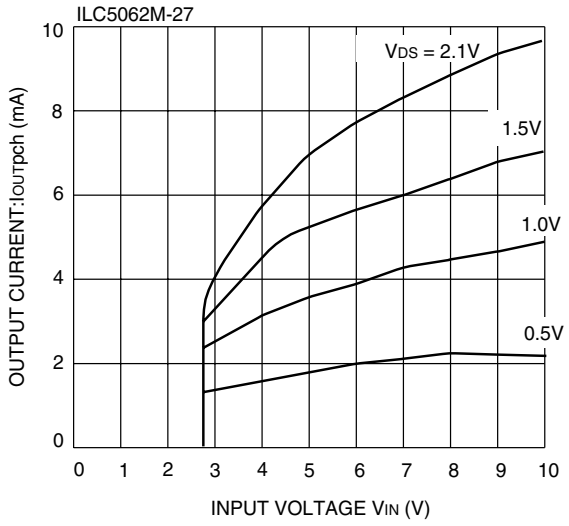
N-ch Driver Output Current vs Input Voltage



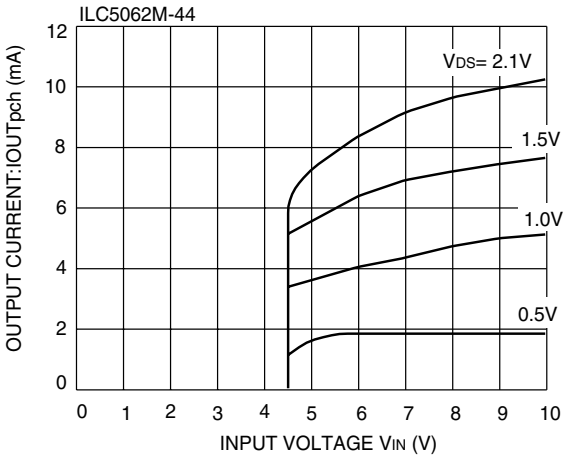
N-ch Driver Output Current vs Input Voltage



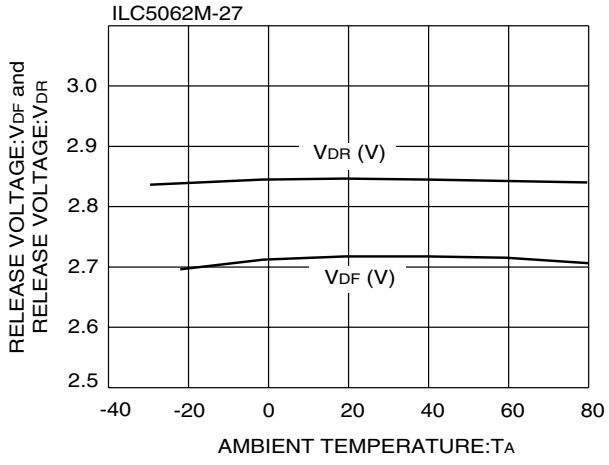
P_ch Driver Output Current vs Input Voltage



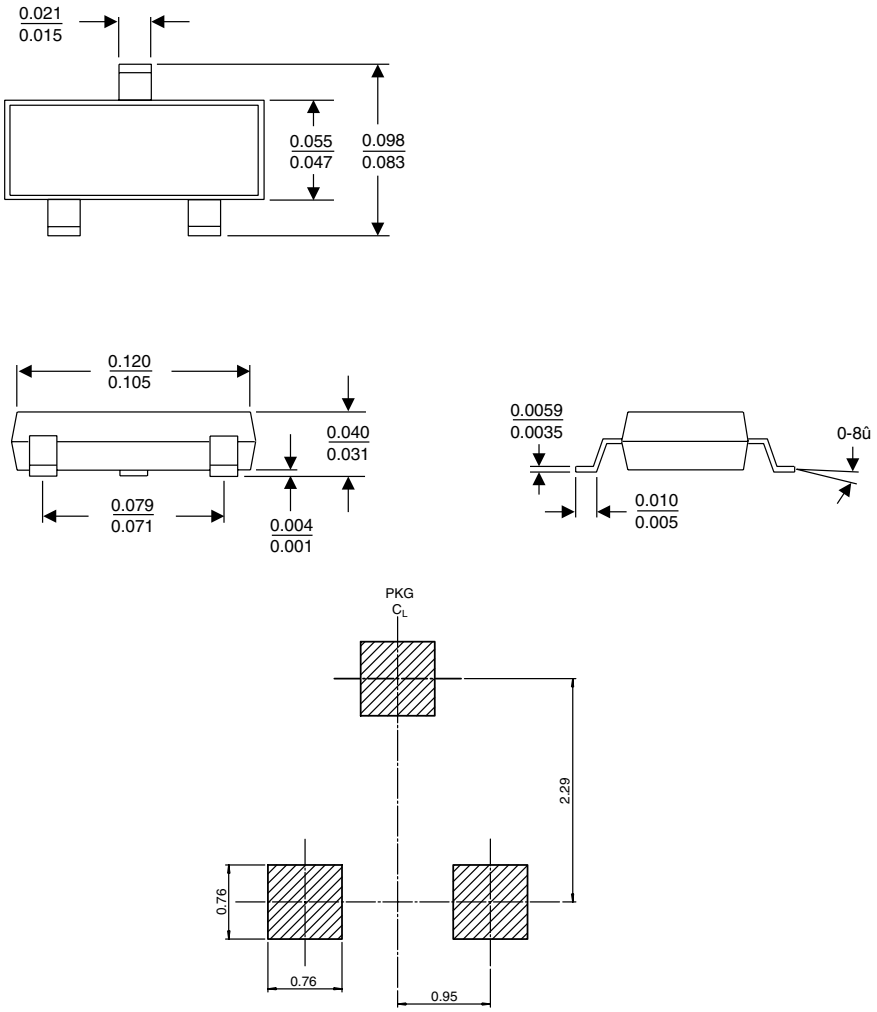
P_ch Driver Output Current vs Input Voltage



VDR and VDF vs Temperature

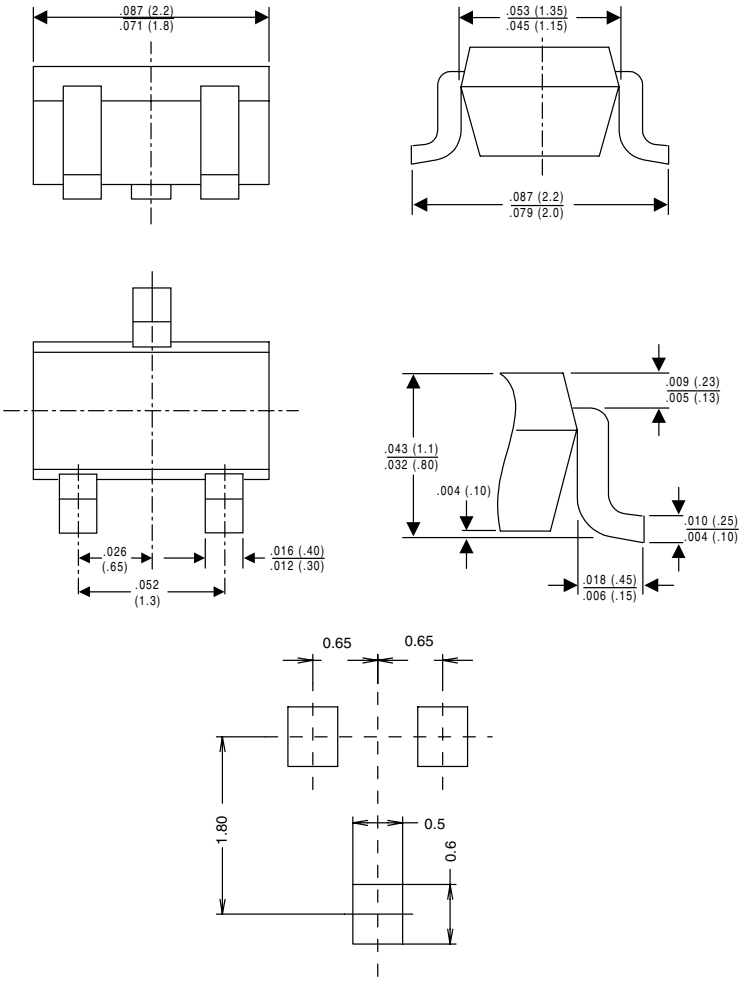


SOT-23



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.