SN74LVC1G09

Single 2-Input Positive-AND Gate With Open-Drain Output

Description

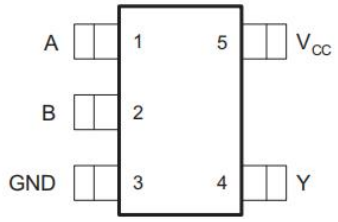
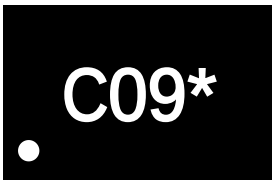
The SN74LVC1G09xxxx is designed for 1.65-V to 5.5- V VCC operation.

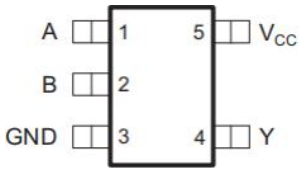
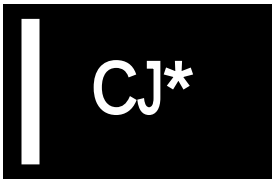
is a single 2-input AND gate with open-drain output . It performs the Boolean function Y=A • B or $Y = \overline{\overline{A} + \overline{B}}$ logic . For digital operation this device must have an external pullup resistor to establish a logic HIGH-level.

Features

- Supports 5-V VCC Operation
- Inputs and Open-Drain Output accept voltages to 5.5V
- Low Power Consumption, 10-μA Max ICC
- ±24mA output drive(VCC=3.3V)
- Ioff supports partial-power-down mode

Connection Diagrams and Pin Description

PIN DESCRIPTION	MARKING
 SOT-23-5	

PIN DESCRIPTION	MARKING
 SC70-5	

PIN No. DBV/DCK	NAME	I/O	FUNCTION
1	A	I	Input
2	B	I	Input
3	GND		Ground
4	Y	O	Output
5	VCC		Supply Voltage

ORDER INFORMATION

ORDERING NUMBER	PACKAGE	PACKING OPTION
SN74LVC1G09DBVR	SOT23-5	3000PCS
SN74LVC1G09DCKR	SC70-5	3000PCS

Logic Diagram

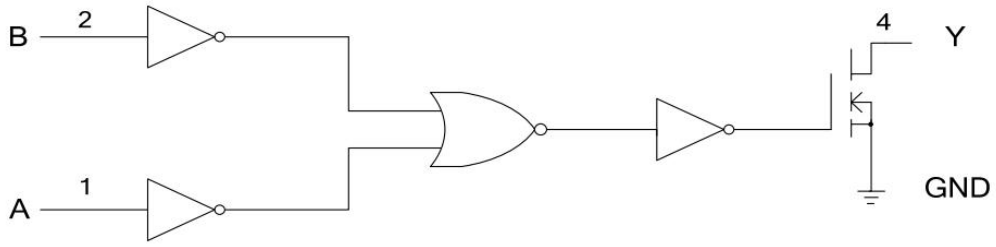


Figure 3.1：SN74LVC1G09 Logic Diagram

Function Table

Input		Output
A	B	Y
0	1	0
0	0	0
1	0	0
1	1	1

X = don't care, 1≡High State, 0≡Low State,Z=High Impedance

Absolute Maximum Ratings

Symbol	Parameter	MIN	MAX	Unit
V_{CC}	Supply Voltage	-0.5	6.5	V
V_I	Input Voltage Range	-0.5	6.5	V
V_O	Voltage Range(applied to any output in the high-impedance or power-off state)(1)	-0.5	6.5	V
	Voltage Range(applied to any output in the high or low state)	-0.5	VCC + 0.5	V
I_O	Continuous Output Current		±50	mA
T_J	Junction Temperature		125	℃
T_{OP}	Operating Temperature	0	70	℃

Absolute maximum ratings are those values beyond which the device could be permanently damaged,These are stress ratings only,which do not imply functional operation of the device at these or any other conditions beyond those indicated under normal operating conditions.

(1) The input and output negative-voltage ratings may be exceeded if the input and output current ratings are observed.

Electrical Characteristics

DC Specifications

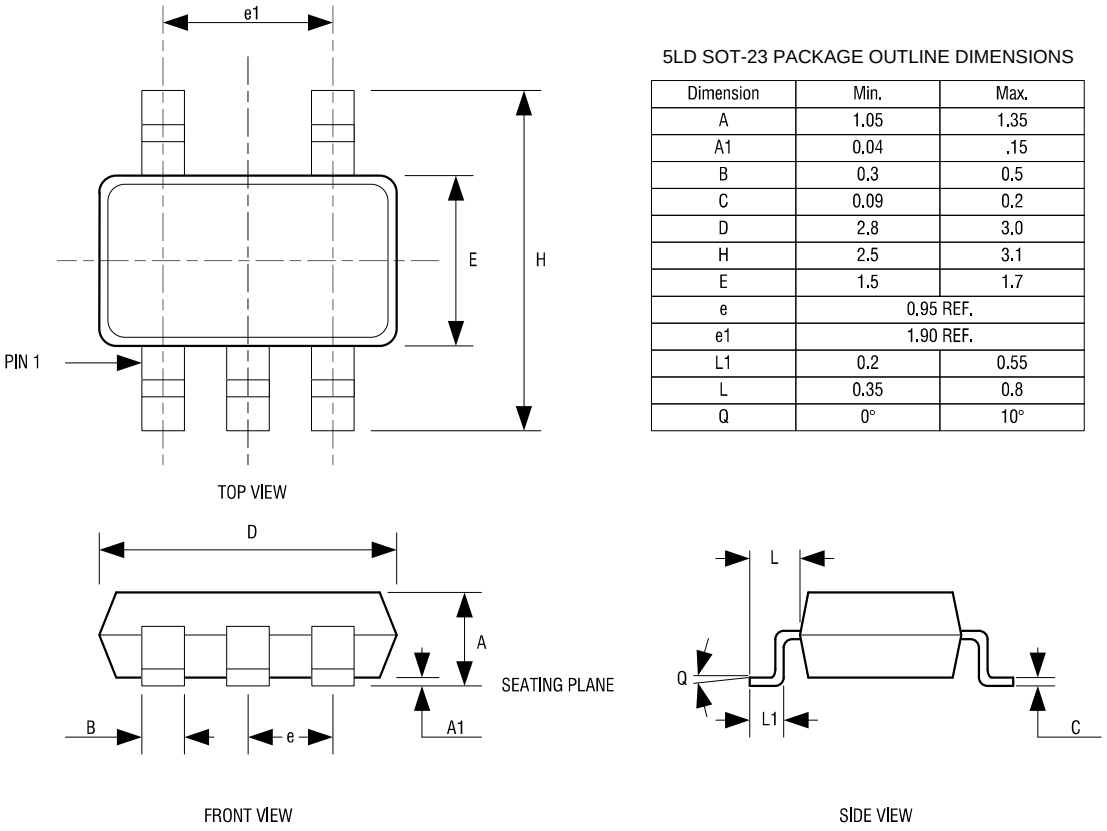
(T_a=25℃, voltages are referenced to GND (ground=0V), unless otherwise specified)

Symbol	Parameter	Test Condition	MIN	TYP	MAX	Unit
V_{IH}	High Level Input Voltage	V_{CC}=1.65V to 1.95V	0.65V_{CC}	--	--	V
		V_{CC}=2.3V to 2.7V	1.7	--	--	V
		V_{CC}=3V to 5.5V	0.7V_{CC}	--	--	V
V_{IL}	Low Level Input Voltage	V_{CC}=1.65V to 1.95V	--	--	0.35V_{CC}	V
		V_{CC}=2.3V to 2.7V	--	--	0.7	V
		V_{CC}=3V to 3.6V	--	--	0.8	V
		V_{CC}=4.5V to 5.5V	--	--	0.3V_{CC}	V
I_{OL}	Low Level Output Current	V_{CC}=1.65V	--	--	4	mA
		V_{CC}=2.3V	--	--	8	mA
		V_{CC}=3V	--	--	16	mA
			--	--	24	mA
		V_{CC}=4.5V	--	--	32	mA

Symbol	Parameter	Test Condition	MIN	TYP	MAX	Unit
V_{OL}	Low Level Output Voltage	V_{CC}=1.65V to 5.5V,I_{OH}=100uA	--	--	0.1	V
		V_{CC}=1.65V,I_O=4mA	--	0.09	--	V
		V_{CC}=2.3V,I_O=8mA	--	0.10	--	V
		V_{CC}=3V,I_O=16mA	--	0.15	--	V
		V_{CC}=3V,I_O=24mA	--	0.25	--	V
		V_{CC}=4.5V,I_O=32mA	--	0.25	--	V
I_I	A or B Inputs Leakage Current	V_{CC}=0 to 5.5V,V_I=V_{CC} or GND	--	0	±1	uA
I_{off}	Power Off Leakage Current	V_{CC}=0V,V_I or V_O=5.5V	--	0	±10	uA
I_{OZ}	3-State Output OFF-State Current	V_{CC}=3.6V, V_O = 0 to 5.5V	--	0	10	uA
I_{CC}	Quiescent Supply Current	V_{CC}=1.65V to 5.5V,V_I=V_{CC} or GND,I_O=0	--	0	10	uA
ΔI_{CC}	Additional Quiescent Supply Current Per Input Pin	V_{CC}=3V to 5.5V,one input at V_{CC} -0.6V,Other inputs at V_{CC} or GND	--	--	500	uA

PACKAGE DESCRIPTION

SOT-23-5



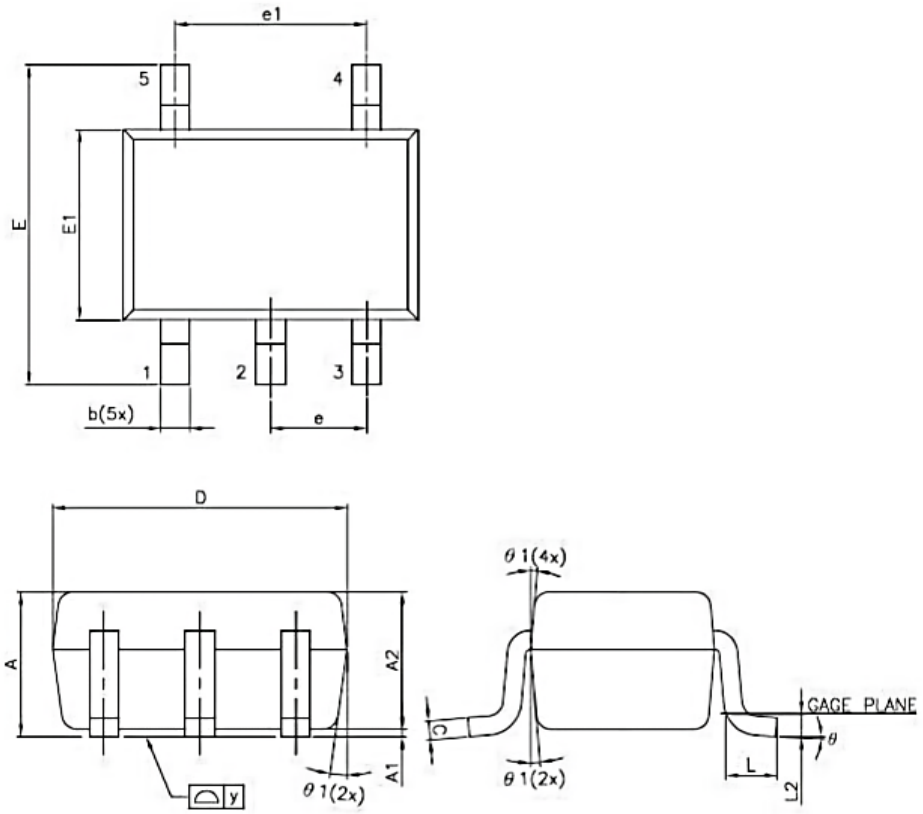
5LD SOT-23 PACKAGE OUTLINE DIMENSIONS

Dimension	Min.	Max.
A	1.05	1.35
A1	0.04	.15
B	0.3	0.5
C	0.09	0.2
D	2.8	3.0
H	2.5	3.1
E	1.5	1.7
e	0.95 REF.	
e1	1.90 REF.	
L1	0.2	0.55
L	0.35	0.8
Q	0°	10°

NOTE:

1.DIMENSIONS ARE IN MLLIMETERS
2.DRAWING NOT TO SCALE
3.DIMENSIONS ARE INCLUSIVE OF PLATING
4.DIMENSIONS ARE EXCLUSVE OF MOLD FLASH AND METAL BURR

SC70-5



Symbol	Dim in mm		
	MIN	TYP	MAX
A	0.90	1.00	1.10
A1	0.00	0.05	0.10
A2	0.90	0.95	1.00
b	0.15	0.25	0.35
C	0.10	0.12	0.15
D	1.80	2.00	2.20
E	2.15	2.25	2.35
E1	1.15	1.25	1.35
e	0.650TYP.		
el	1.20	1.30	1.40
L	0.25	0.30	0.40
L2	0.15TYP.		
Y	0.00	0.05	0.10
θ	4°	8°	12°