

74LVC2G04 Dual Inverter Gate

1. General Description

1.1 Description

This dual inverter inverter is designed for 1.65-V to 5.5-V VCC operation.

The 74LVC2G04 device performs the Boolean function $Y = \overline{A}$.

This device is fully specified for partial-power-down applications using I_{off} . The I_{off} circuitry disables the outputs, preventing damaging current backflow through the device when it is powered down.

1.2 Features

- Supports 5-V VCC Operation

- Inputs Accept Voltages to 5.5 V
- Low Power Consumption, 10- μ A Max ICC
- ± 24 -mA Output Drive at 3.3 V
- I_{off} Supports Partial-Power-Down Mode Operation

1.3 Device Information

PART NUMBER	PACKAGE
74LVC2G04	SOT23(LT)
	SC70(CT)
	DSBGA(AG)
	SOT-5X3(DT)

2. Connection Diagrams and Pin Description

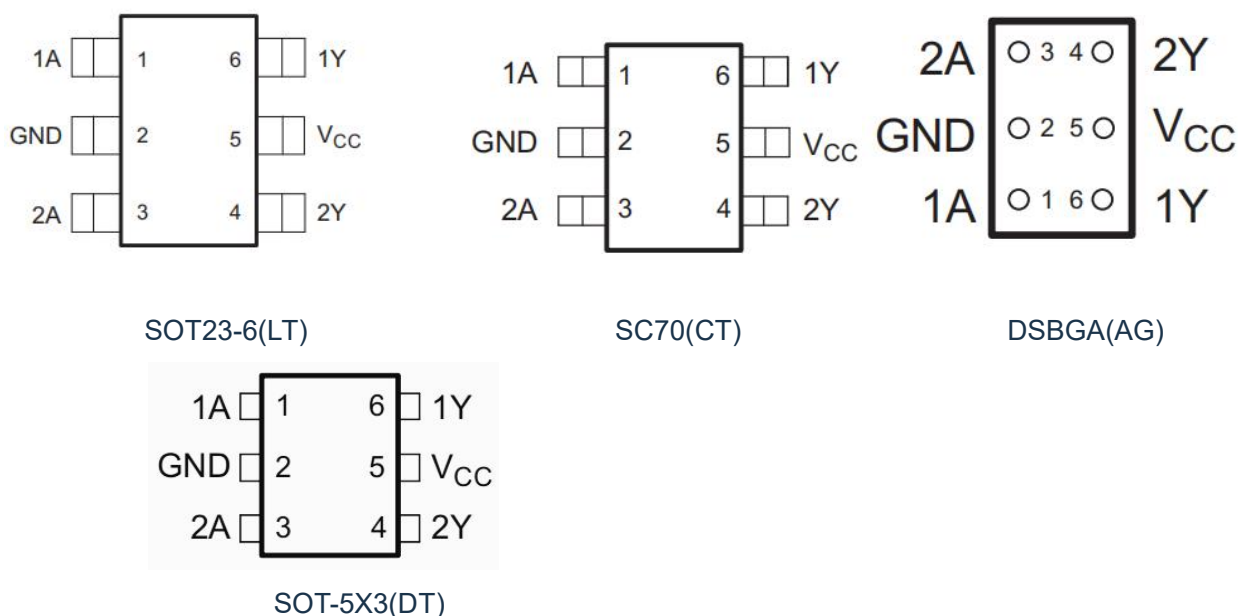


Figure 2.1 Top View

PIN		I/O	FUNCTION
NAME	No.		
1A	1	I	Gate 1 logic signal
1Y	6	O	Gate 1 inverted signal
2A	3	I	Gate 2 logic signal
2Y	4	O	Gate 2 inverted signal
GND	2	-	Ground
VCC	5	-	Supply Voltage

3. System Diagram

3.1 Logic Diagram

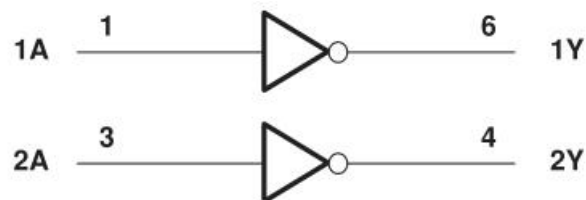


Figure 3.1: 74LVC2G04 Logic Diagram

3.2 Function Table

Input	Output
A	Y
1	0
0	1

1=High State, 0=Low State



4. Specifications

4.1 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	V _{CC} + 0.5	V
I _O	Continuous Output Current		±50	mA
T _J	Junction Temperature		125	°C
T _{OP}	Operating Temperature	0	70	°C

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.

4.2 Recommended Operating Conditions

Symbol	Parameter		MIN	MAX	Unit
V _{CC}	Supply Voltage		1.65	5.5	V
V _{IH}	High-level input voltage, control input	V _{CC} = 1.65 V to 1.95 V	V _{CC} × 0.65	--	V
		V _{CC} = 2.3 V to 2.7 V	1.7	--	
		V _{CC} = 3 V to 3.6 V	V _{CC} × 0.7	--	
		V _{CC} = 4.5 V to 5.5 V	V _{CC} × 0.7	--	
V _{IL}	Low-level input voltage, control input	V _{CC} = 1.65 V to 1.95 V	--	V _{CC} × 0.35	V
		V _{CC} = 2.3 V to 2.7 V	--	0.7	
		V _{CC} = 3 V to 3.6 V	--	0.8	
		V _{CC} = 4.5 V to 5.5 V	--	V _{CC} × 0.3	
I _{OH}	High-level output current	V _{CC} = 1.65 V	--	-4	mA
		V _{CC} = 2.3 V	--	-8	
		V _{CC} = 3 V	--	-16	
			--	-24	
		V _{CC} = 4.5 V	--	-32	
I _{OL}	Low-level output current	V _{CC} = 1.65 V	--	4	mA
		V _{CC} = 2.3 V	--	8	
		V _{CC} = 3 V	--	16	
			--	24	
		V _{CC} = 4.5 V	--	32	



4.3 Electrical Characteristics

4.3.1 DC Specifications

($T_a=25^{\circ}\text{C}$, voltages are referenced to GND (ground=0V), unless otherwise specified)

Symbol	Parameter	Test Condition	MIN	TYP	MAX	Unit
V_{OL}	Low Level Output Voltage	$V_{CC}=1.65\text{V to }4.5\text{V}, I_{OL}=100\mu\text{A}$	--	--	0.1	V
		$V_{CC}=1.65\text{V}, I_{OL}=4\text{mA}$	--	0.09	--	V
		$V_{CC}=2.3\text{V}, I_{OL}=8\text{mA}$	--	0.1	--	V
		$V_{CC}=3\text{V}, I_{OL}=16\text{mA}$	--	0.15	--	V
		$V_{CC}=3\text{V}, I_{OL}=24\text{mA}$	--	0.25	--	V
		$V_{CC}=4.5\text{V}, I_{OL}=32\text{mA}$	--	0.25	--	V
V_{OH}	High Level Output Voltage	$V_{CC}=1.65\text{V to }4.5\text{V}, I_{OH}=100\mu\text{A}$	$V_{CC}-0.1$	--	--	V
		$V_{CC}=1.65\text{V}, I_{OH}=4\text{mA}$	--	1.47	--	V
		$V_{CC}=2.3\text{V}, I_{OH}=8\text{mA}$	--	2.15	--	V
		$V_{CC}=3\text{V}, I_{OH}=16\text{mA}$	--	2.8	--	V
		$V_{CC}=3\text{V}, I_{OH}=24\text{mA}$	--	2.7	--	V
		$V_{CC}=4.5\text{V}, I_{OH}=32\text{mA}$	--	4.2	--	V
I_I	A Inputs Leakage Current	$V_{CC}=0 \text{ to } 5.5\text{V}, V_I=5.5\text{V or GND}$	--	--	± 1	μA
I_{off}	Power Off Leakage Current	$V_{CC}=0\text{V}, V_I \text{ or } V_O=5.5\text{V}$	--	--	± 10	μA
I_{CC}	Quiescent Supply Current	$V_{CC}=1.65\text{V to }5.5\text{V}, V_I=5.5\text{V or GND}, I_O=0$	--	0	10	μA
ΔI_{CC}	Additional Quiescent Supply Current Per Input Pin	$V_{CC}=3\text{V to }5.5\text{V}, \text{one input at } V_{CC}-0.6\text{V}, \text{Other inputs at } V_{CC} \text{ or GND}$	--	--	500	μA

5. Application Information

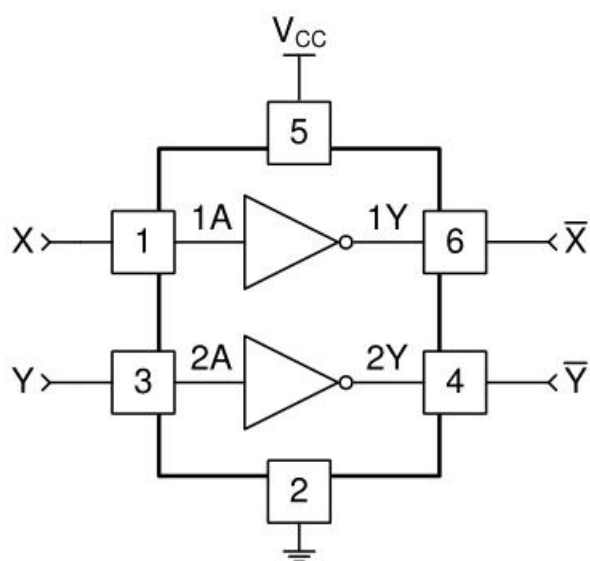


Figure 5.1: Application Schematic

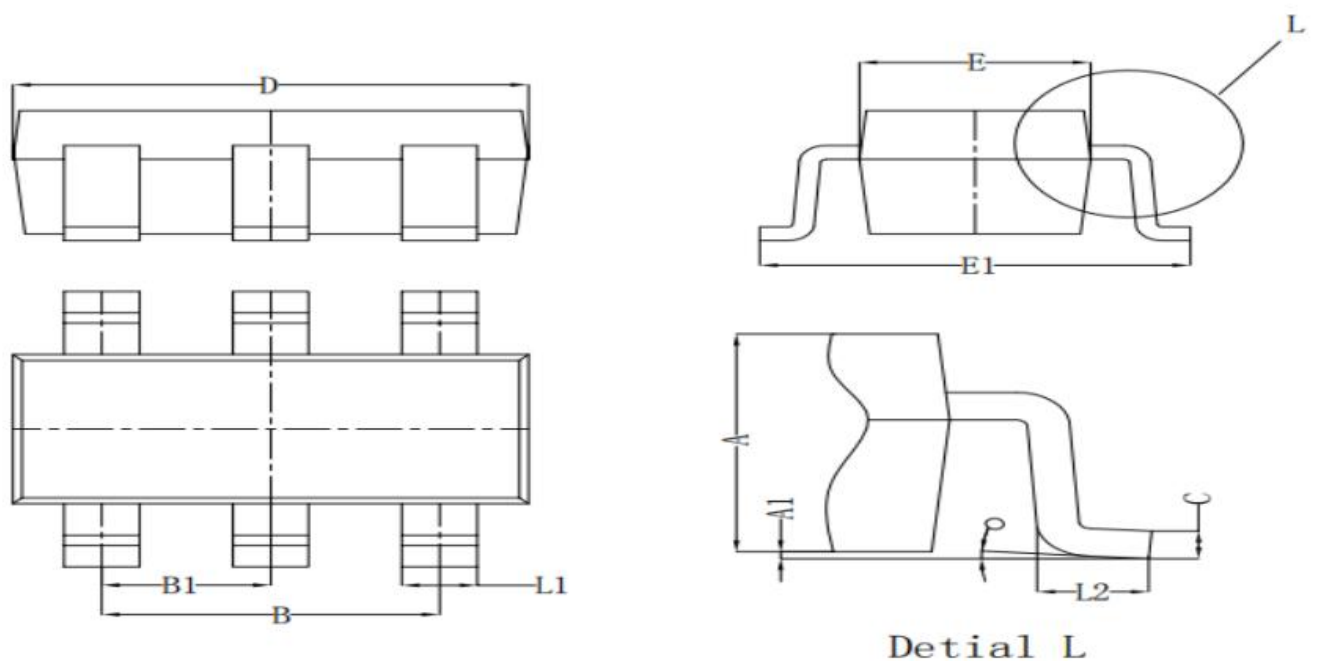


6. Ordering Information

Orderable Device	Package Type	Pins	Packing	Package Qty
74LVC2G04LT06ARCQ	SOT23	6	Tape & Reel	3000
74LVC2G04CT06ARCQ	SC70	6	Tape & Reel	3000
74LVC2G04AG06ARCQ	DSBGA	6	Tape & Reel	3000
74LVC2G04DT06ARDQ	SOT-5X3	6	Tape & Reel	4000

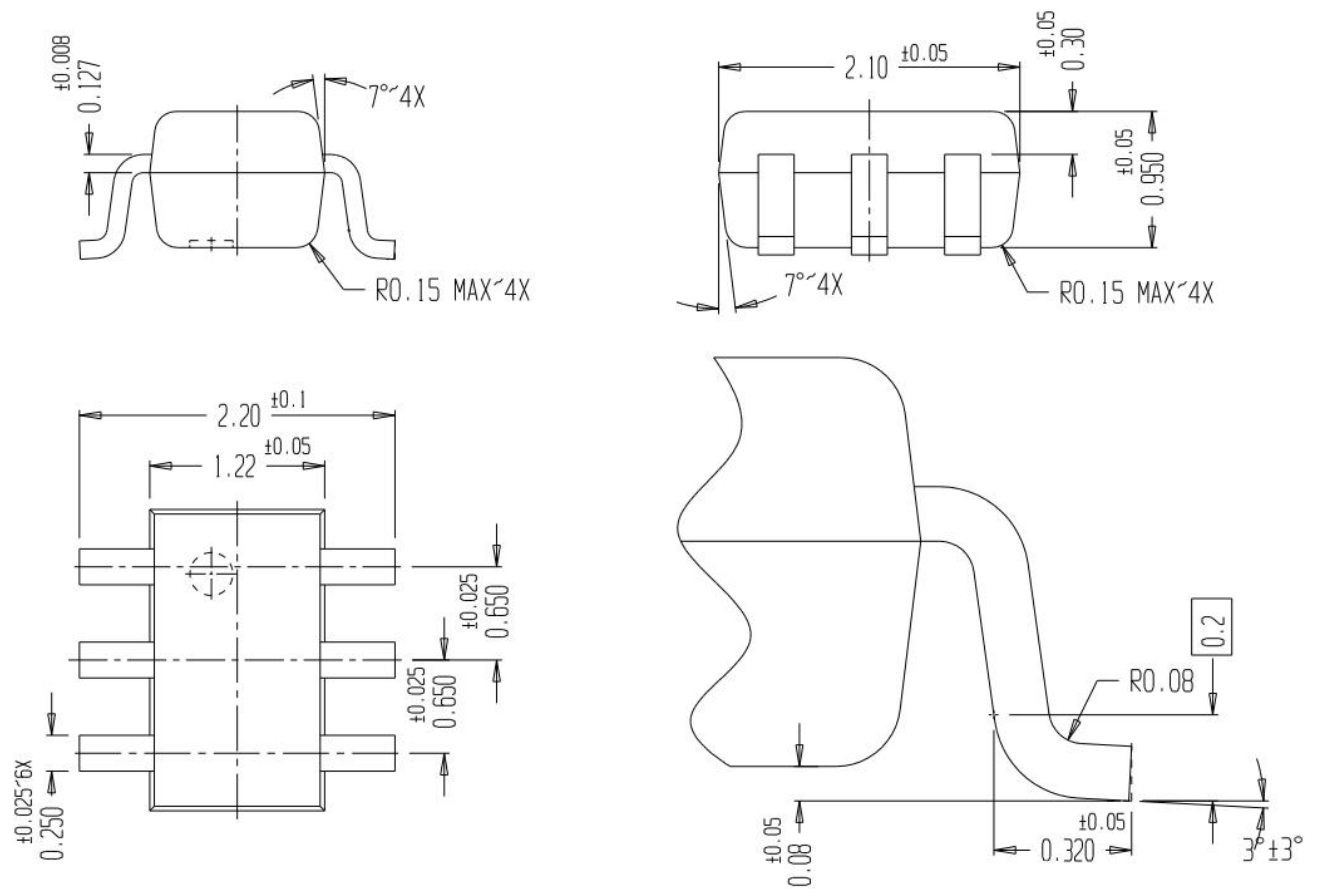
7. Package Information

7.1 SOT23-6

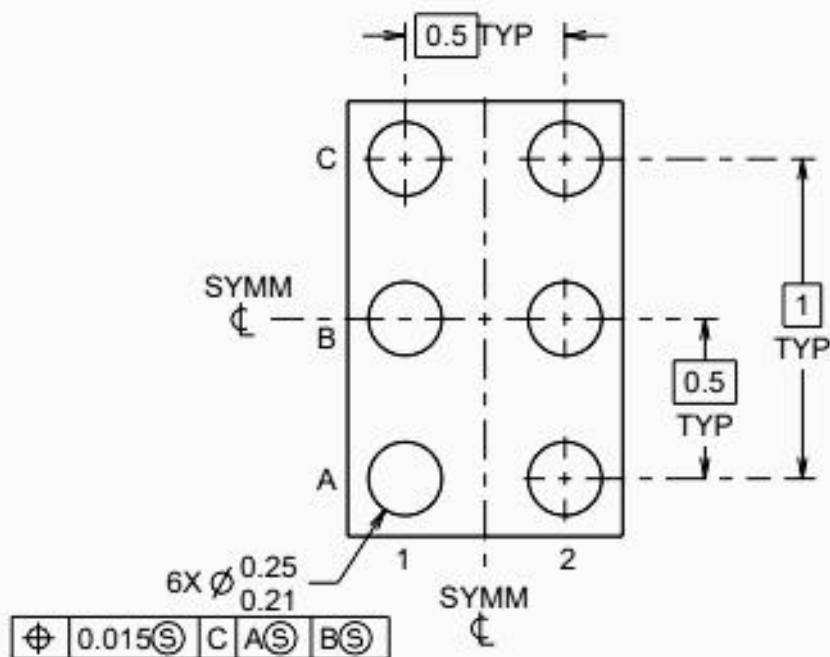
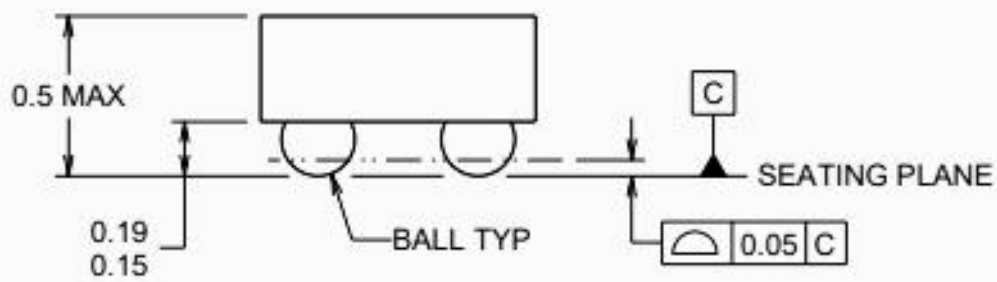
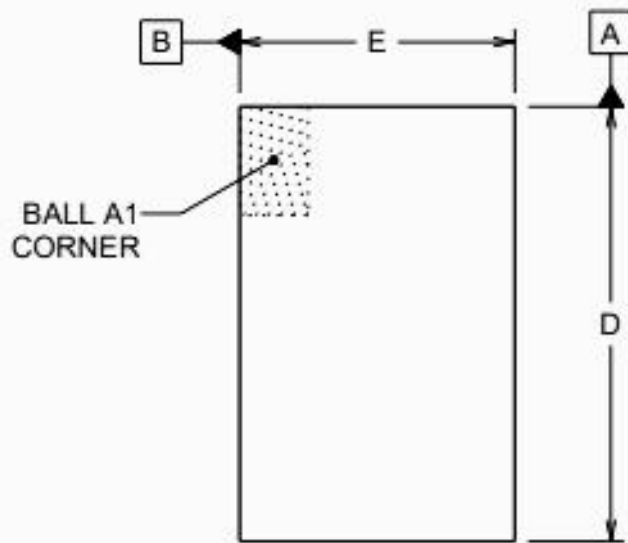


Symbol	Dim in mm		
	Min	Nor	Max
A	1.050	1.100	1.150
A1	0.000	0.050	0.100
L1	0.300	0.400	0.500
C	0.100	0.150	0.200
D	2.820	2.920	3.020
E	1.500	1.600	1.700
E1	2.650	2.800	2.950
B	1.800	1.900	2.000
B1	0.950 TYP		
L2	0.300	0.450	0.600
o	0°	4°	8°

7.2 SC70-6



7.3 DSBGA(AG)-6



7.4 SOT5X3-6

