



## 产品简介

SN74LVC1G00DBVR是一款的2输入与非门集成电路,可实现 $Y=\bar{A}+\bar{B}$ 和 $Y=\bar{A}*\bar{B}$ 的数学逻辑运算。采用先进的CMOS工艺设计,具有低功耗和高输出驱动能力的工作特点,电源电压VCC在1.65V和5.5V之间芯片均可正常工作。并且

SN74LVC1G00DBVR 具有多种小型封装外形,可广泛应用于高端精密仪器和小型化低功耗的手持设备,以及人工智能等领域。

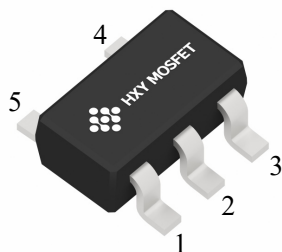
## 产品特点

- 低输入电流: 典型值 0.1uA
- 低静态功耗: 典型值 0.1uA
- 高输出驱动: VCC=4.5V, 大于 32MA
- 宽工作电压范围: 1.65V to 5.5V
- 封装形式: SOT-23-5L/SO-70-5L

## 产品用途

- 便携式音频接口
- 蓝光播放器和家庭影院
- 数字电视
- 固态硬盘
- 无线耳机, 智能手表等
- 智能穿戴设备

## 封装形式和管脚功能定义



SOT-23-5L/SO-70-5L

| 名称              | 管脚 | 说明  |
|-----------------|----|-----|
| A               | 1  | 输入  |
| B               | 2  | 输入  |
| GND             | 3  | 电源地 |
| Y               | 4  | 输出  |
| V <sub>CC</sub> | 5  | 电源正 |



极限参数

| 参数                | 符号        | 极限值      | 单位 |
|-------------------|-----------|----------|----|
| 工作电压              | $V_{CC}$  | 6.5      | V  |
| 输入                | $V_{IN}$  | -0.5~6.5 | V  |
| 输出电压 (1)          | $V_{OUT}$ | -0.5~6.5 | V  |
| 单个管脚输出电流          | $I_{OUT}$ | 25       | mA |
| $V_{CC}$ 或 GND 电流 | $I_{CC}$  | 50       | mA |
| 存储温度              | $T_S$     | -65~150  | °C |
| 引脚焊接温度            | $T_W$     | 260, 10s | °C |

注：1、在 $V_{CC}=0V$ 断电状态下，输出所能承受的极限电压，  
2、极限参数是指无论在任何条件下都不能超过的极限值。万一超过此极限值，将有可能造成产品劣化等物理性损伤；同时在接近极限参数下，不能保证芯片可以正常工作。

原理逻辑图



真值表

| Inputs |   | Output |
|--------|---|--------|
| A      | B | Y      |
| L      | L | H      |
| L      | H | H      |
| H      | L | H      |
| H      | H | L      |

工作条件

| 项目      | 符号       | 测试条件                        | 最小值             | 典型值 | 最大值             | 单位 |
|---------|----------|-----------------------------|-----------------|-----|-----------------|----|
| 工作电压    | $V_{CC}$ | -                           | 1.65            | -   | 5.5             | V  |
| 输入高电平电压 | $V_{IH}$ | $V_{CC} = 1.65V \sim 1.95V$ | $0.65 * V_{CC}$ | -   | -               | V  |
|         |          | $V_{CC} = 2.3V \sim 2.7V$   | 1.7V            | -   | -               |    |
|         |          | $V_{CC} = 3V \sim 5.5V$     | $0.7 * V_{CC}$  | -   | -               |    |
| 输入高电平电压 | $V_{IH}$ | $V_{CC} = 1.65V \sim 1.95V$ | -               | -   | $0.35 * V_{CC}$ | V  |
|         |          | $V_{CC} = 2.3V \sim 2.7V$   | -               | -   | 0.7             |    |
|         |          | $V_{CC} = 3V \sim 5.5V$     | -               | -   | $0.3 * V_{CC}$  |    |
| 输入电压    | $V_I$    | -                           | 0               | -   | 5.5             | V  |
| 输出电压    | $V_O$    | -                           | 0               | -   | $V_{CC}$        | V  |
| 高电平输出电流 | $I_{OH}$ | $V_{CC} = 1.65V$            | -               | -   | -4              | mA |
|         |          | $V_{CC} = 2.3V$             | -               | -   | -8              |    |
|         |          | $V_{CC} = 3V$               | -               | -   | -16             |    |
|         |          | $V_{CC} = 4.5V$             | -               | -   | -32             |    |
| 低电平输出电流 | $I_{OL}$ | $V_{CC} = 1.65V$            | -               | -   | 4               | mA |
|         |          | $V_{CC} = 2.3V$             | -               | -   | 8               |    |
|         |          | $V_{CC} = 3V$               | -               | -   | 16              |    |
|         |          | $V_{CC} = 4.5V$             | -               | -   | 32              |    |



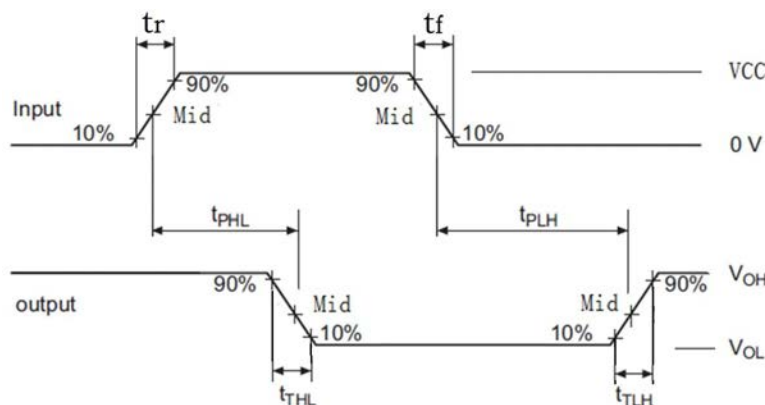
## 电学特性

直流电学特性:  $T_A=25^{\circ}\text{C}$

| 项目      | 符号              | 测试条件                                         | $V_{CC}$                  | 典型值    | 最大值  | 单位 |
|---------|-----------------|----------------------------------------------|---------------------------|--------|------|----|
| 高电平负载电压 | $V_{OH}$        | $I_{OH} = -100\mu\text{A}$                   | 1.65V~5.5V                | 1.64   | -    | V  |
|         |                 | $I_{OH} = -4\text{ mA}$                      | 1.65V                     | 1.47   | -    |    |
|         |                 | $I_{OH} = -8\text{ mA}$                      | 2.3V                      | 2.15   | -    |    |
|         |                 | $I_{OH} = -16\text{ mA}$                     | 3V                        | 2.73   | -    |    |
|         |                 | $I_{OH} = -32\text{ mA}$                     | 4.5V                      | 4.0    | -    |    |
| 低电平负载电压 | $V_{OL}$        | $I_{OH} = 100\mu\text{A}$                    | 1.65V~5.5V                | 0.01   | -    | V  |
|         |                 | $I_{OH} = 4\text{ mA}$                       | 1.65V                     | 0.11   | -    |    |
|         |                 | $I_{OH} = 8\text{ mA}$                       | 2.3V                      | 0.11   | -    |    |
|         |                 | $I_{OH} = 16\text{ mA}$                      | 3V                        | 0.2    | -    |    |
|         |                 | $I_{OH} = 32\text{ mA}$                      | 4.5V                      | 0.35   | -    |    |
| 输入电流    | $I_I$           | A                                            | $V_I = 5.5\text{V}$ 或 GND | 0~5.5V | 0.01 | uA |
|         |                 | B                                            |                           |        | 0.01 |    |
| 关断电流    | $I_{OFF}$       | $V_I$                                        | $V_I = 5.5\text{V}$       | 0      | 0.01 | uA |
|         |                 | $V_O$                                        | $V_O = 5.5\text{V}$       | 0      | 0.01 |    |
| 工作电流    | $I_{CC}$        | $V_I = 5.5\text{V}, I_O = 0$                 | 1.65V~5.5V                | 0.01   | 10   | uA |
|         |                 | $V_I = \text{GND}, I_O = 0$                  |                           | 0.01   | 10   |    |
| 工作电流变化值 | $\Delta I_{CC}$ | A= $V_{CC}-0.6\text{V}$<br>B= $V_{CC}$ 或 GND | 3V~5.5V                   | 25     | -    | uA |
|         |                 | B= $V_{CC}-0.6\text{V}$<br>A= $V_{CC}$ 或 GND |                           | 25     | -    | uA |

交流电学特性:  $T_A=25^{\circ}\text{C}$   $V_{CC}=5.0\text{V}$ ,  $t_r=t_f \leq 20\text{ns}$  见测试方法。

| 项目                   | 符号        | 测试条件              | 最小值 | 典型值 | 最大值 | 单位 |
|----------------------|-----------|-------------------|-----|-----|-----|----|
| 最大传输延迟时间<br>A、B to Y | $t_{PHL}$ | $C_L=15\text{pF}$ | -   | 10  | -   | ns |
|                      | $t_{PLH}$ | $C_L=15\text{pF}$ | -   | 10  | -   | ns |



注: 1、 $C_L$ 电容为外接贴片电容 (0603), 靠近输出管脚接入, 电容地靠近芯片GND;

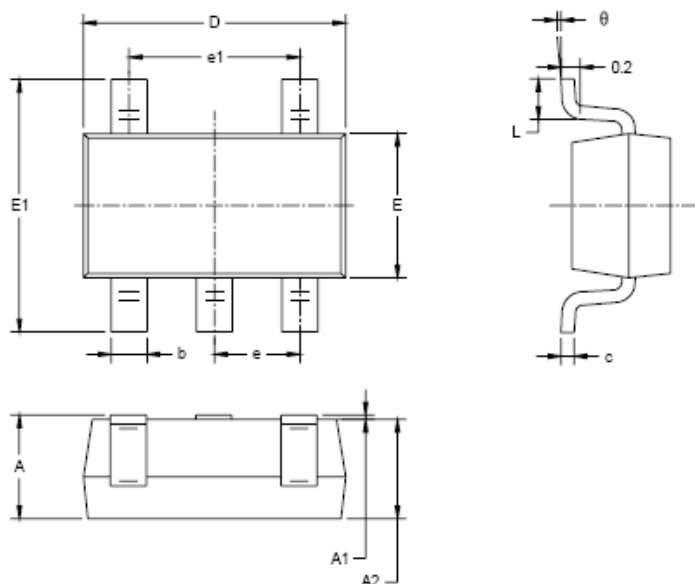
2、Input: 端口输入电平,  $f=500\text{kHz}$ ,  $D=50\%$ ;  $t_r=t_f \leq 20\text{ns}$ ;

3、Output: Y端输出测试。



## 电学特性

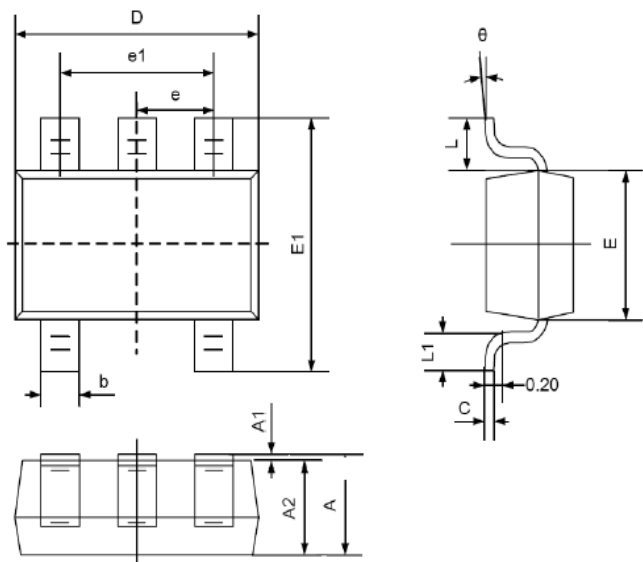
SOT-23-5L



| Symbol | Dimensions<br>In Millimeters |       | Dimensions<br>In Inches |       |
|--------|------------------------------|-------|-------------------------|-------|
|        | MIN                          | MAX   | MIN                     | MAX   |
| A      | 1.050                        | 1.250 | 0.041                   | 0.049 |
| A1     | 0.000                        | 0.100 | 0.000                   | 0.004 |
| A2     | 1.050                        | 1.150 | 0.041                   | 0.045 |
| b      | 0.300                        | 0.500 | 0.012                   | 0.020 |
| c      | 0.100                        | 0.200 | 0.004                   | 0.008 |
| D      | 2.820                        | 3.020 | 0.111                   | 0.119 |
| E      | 1.500                        | 1.700 | 0.059                   | 0.067 |
| E1     | 2.650                        | 2.950 | 0.104                   | 0.116 |
| e      | 0.950 BSC                    |       | 0.037 BSC               |       |
| e1     | 1.900 BSC                    |       | 0.075 BSC               |       |
| L      | 0.300                        | 0.600 | 0.012                   | 0.024 |
| θ      | 0°                           | 8°    | 0°                      | 8°    |



S0-70-5L



| Symbol | Dimensions<br>In Millimeters |       | Dimensions<br>In Inches |       |
|--------|------------------------------|-------|-------------------------|-------|
|        | Min                          | Max   | Min                     | Max   |
| A      | 0.900                        | 1.100 | 0.035                   | 0.043 |
| A1     | 0.000                        | 0.100 | 0.000                   | 0.004 |
| A2     | 0.900                        | 1.000 | 0.035                   | 0.039 |
| b      | 0.150                        | 0.350 | 0.006                   | 0.014 |
| C      | 0.080                        | 0.150 | 0.003                   | 0.006 |
| D      | 2.000                        | 2.200 | 0.079                   | 0.087 |
| E      | 1.150                        | 1.350 | 0.045                   | 0.053 |
| E1     | 2.150                        | 2.450 | 0.085                   | 0.096 |
| e      | 0.650TYP                     |       | 0.026TYP                |       |
| e1     | 1.200                        | 1.400 | 0.047                   | 0.055 |
| L      | 0.525REF                     |       | 0.021REF                |       |
| L1     | 0.260                        | 0.460 | 0.010                   | 0.018 |
| θ      | 0°                           | 8°    | 0°                      | 8°    |



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