



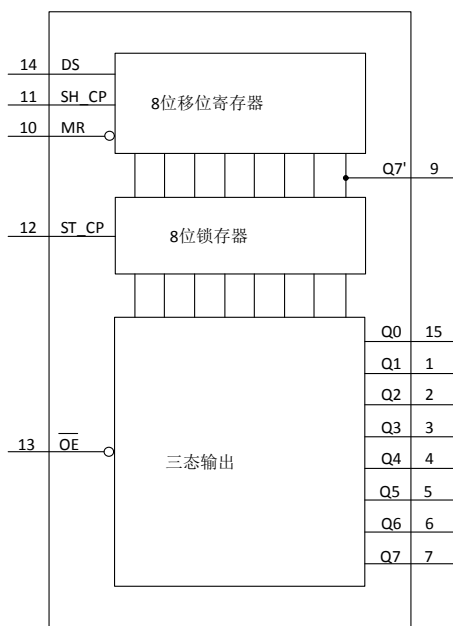
## 概述

74HC595D,118是高速硅栅COMS器件，且其引脚兼容低功耗肖特基TTL。74HC595D,118中由一个8位移位寄存器和一个带有三态并行输出的8位D型锁存器组成。移位寄存器接收串行数据，并提供串行或并行输出。移位寄存器也给8位锁存器提供并行数据。移位寄存器和锁存器有独立的CLK输入端。该元器件还有一个对移位寄存器的异步复位端。

## 特点

- 8位移位寄存器（串行输入，串行或并行输出）
- 具有三态输出的锁存器
- 60MHz(典型值)的移位输出频
- 率ESD保护
- 封装形式：DIP16、SOP16(SOIC-16)

## 功能图



## IEC逻辑图

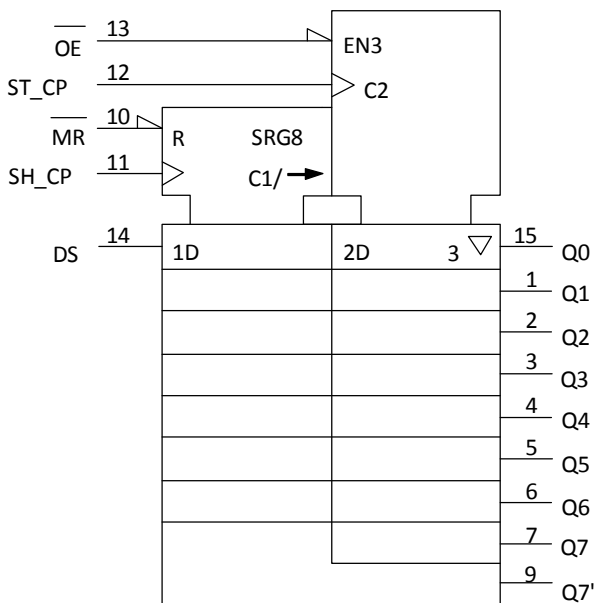
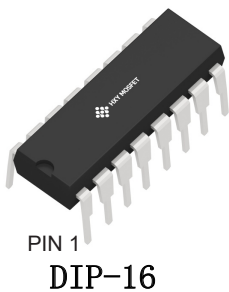
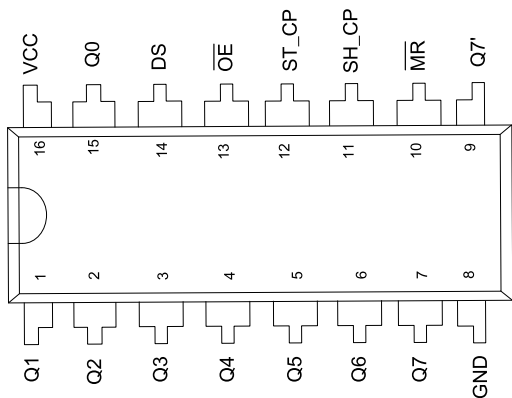


图 1 74HC595D,118 功能图



引脚配置

订购信息



DIP-16



SOP-16  
(SOIC-16)

| 芯片型号         | 封装形式            | 采购代号     |
|--------------|-----------------|----------|
| 74HC595D,118 | DIP-16          | 595DIP16 |
| 74HC595D,118 | SOP-16(SOIC-16) | 595SOP16 |

引脚功能描述

| 引脚编号 | 引脚名称                 | 引脚功能        |
|------|----------------------|-------------|
| 1~7  | Q1、Q2、Q3、Q4、Q5、Q6、Q7 | 并行数据输出      |
| 8    | GND                  | 接地          |
| 9    | Q7'                  | 串行数据输出      |
| 10   | MR                   | 主复位（低电平有效）  |
| 11   | SH_CP                | 移位寄存器时钟输入   |
| 12   | ST_CP                | 锁存器时钟输入     |
| 13   | OE                   | 输出势能（低电平有效） |
| 14   | DS                   | 串行数据输入      |
| 15   | Q0                   | 并行数据输出      |
| 16   | VCC                  | 正电源电压       |



## 极限参数

除非有特殊要求，GND=0V。

| 参数名称       | 符号                   | 条件                                                | 最小   | 最大       | 单位         |
|------------|----------------------|---------------------------------------------------|------|----------|------------|
| 电源电压       | $V_{CC}$             |                                                   | -0.5 | +6.5     | V          |
| 输入二极管电流    | $I_{IK}$             | $V_I < -0.5V \sim V_I > V_{CC} + 0.5V$            | -    | $\pm 20$ | mA         |
| 输出二极管电流    | $I_{OK}$             | $V_I < -0.5V \sim V_I > V_{CC} + 0.5V$            | -    | $\pm 20$ | mA         |
| 输出电源电流或灌电流 | $I_O$                | $V_I < -0.5V \sim V_I > V_{CC} + 0.5V$<br>Q7'标准输出 | -    | +25      | mA         |
|            |                      | Qn总线驱动输出                                          | -    | +35      |            |
| 电源电流或地电流   | $V_{CC}$ 、 $I_{GND}$ |                                                   | -    | $\pm 70$ | mA         |
| 功耗         | $P_D$                | $T_{amb} = -40 \sim +125^\circ C$                 | 500  |          | mW         |
| 贮存温度       | $T_{stg}$            |                                                   | -65  | +150     | $^\circ C$ |

## 推荐工作范围

| 参数                       | 符号/条件         | 最小值 | 典型值 | 最大值      | 单位         |
|--------------------------|---------------|-----|-----|----------|------------|
| 电源电压                     | $V_{CC}$      | 2.0 | 5.0 | 6.0      | V          |
| 输入电压                     | $V_I$         | 0   | -   | $V_{CC}$ | V          |
| 输出电压                     | $V_O$         | 0   | -   | $V_{CC}$ | V          |
| 环境温度                     | $T_{amb}$     | -40 | -   | +125     | $^\circ C$ |
| 输入上升时间 $T_r$ 和下降时间 $T_f$ | $V_{CC}=2.0V$ | -   | -   | 1000     | ns         |
|                          | $V_{CC}=4.5V$ | -   | 6.0 | 500      | ns         |
|                          | $V_{CC}=6.0V$ | -   | -   | 400      | ns         |



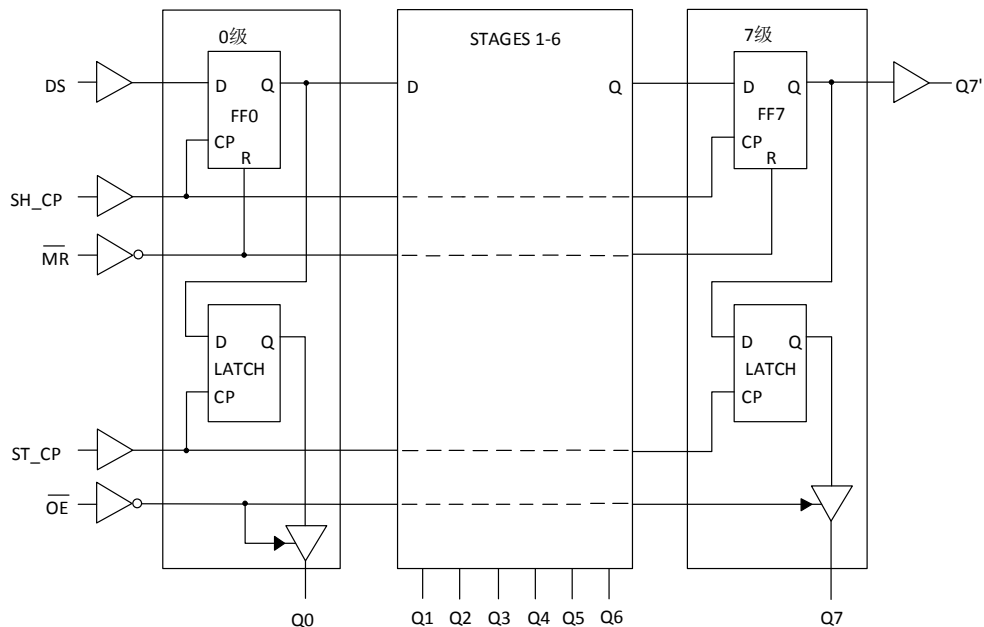
## 电参数：

除非有特殊要求， $T_A = -40^{\circ} \sim +85^{\circ} \text{C}$ ， $GND = 0V$ 。

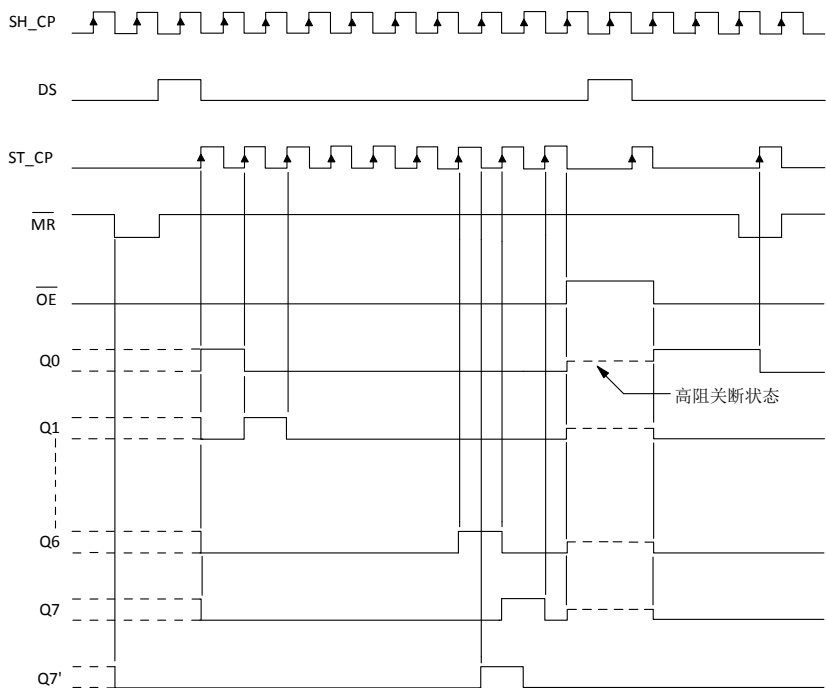
| 特性       | 符号       | 条件                                                  |              | 最小值  | 典型值  | 最大值       | 单位      |
|----------|----------|-----------------------------------------------------|--------------|------|------|-----------|---------|
|          |          | 其他                                                  | $V_{CC}$ (V) |      |      |           |         |
| 输入高电平电压  | $V_{IH}$ |                                                     | 2.0          | 1.4  | -    | -         | V       |
|          |          |                                                     | 4.5          | 3.15 | -    | -         |         |
|          |          |                                                     | 6.0          | 4.2  | -    | -         |         |
| 输入低电平电压  | $V_{IL}$ |                                                     | 2.0          | -    | -    | 0.6       | V       |
|          |          |                                                     | 4.5          | -    | -    | 1.35      |         |
|          |          |                                                     | 6.0          | -    | -    | 1.8       |         |
| 输出高电平电压  | $V_{OH}$ | $V_I = V_{IH}$ 或 $V_{IL}$                           |              |      |      |           | V       |
|          |          | 所有输出<br>$I_O = -20\mu A$                            | 2.0          | 1.9  | 2.0  | -         |         |
|          |          |                                                     | 4.5          | 4.4  | 4.5  | -         |         |
|          |          |                                                     | 6.0          | 5.9  | 6.0  | -         |         |
|          |          | Q7' 标准输出<br>$I_O = -4.0mA$<br>$I_O = -5.2mA$        | 4.5          | 3.84 | 4.32 | -         |         |
|          |          |                                                     | 6.0          | 5.34 | 5.81 | -         |         |
|          |          | Qn 总线驱动输出<br>$I_O = -6.0mA$<br>$I_O = -7.8mA$       | 4.5          | 3.84 | 4.32 | -         |         |
|          |          |                                                     | 6.0          | 5.34 | 5.81 | -         |         |
| 输出低电平电压  | $V_{OL}$ | $V_I = V_{IH}$ 或 $V_{IL}$                           |              |      |      |           | V       |
|          |          | 所有输出<br>$I_O = -20A$                                | 2.0          | -    | 0    | 0.1       |         |
|          |          |                                                     | 4.5          | -    | 0    | 0.1       |         |
|          |          |                                                     | 6.0          | -    | 0    | 0.1       |         |
|          |          | Q7' 标准输出<br>$I_O = -4.0mA$<br>$I_O = -5.2mA$        | 4.5          | -    | 0.15 | 0.33      |         |
|          |          |                                                     | 6.0          | -    | 0.16 | 0.33      |         |
|          |          | Qn 总线驱动输出<br>$I_O = -6.0mA$<br>$I_O = -7.8mA$       | 4.5          | -    | 0.16 | 0.33      |         |
|          |          |                                                     | 6.0          | -    | 0.16 | 0.33      |         |
| 输入漏电流    | $I_I$    | $V_I = V_{CC}$ 或 $GND$                              | 6.0          | -    | -    | $\pm 1.0$ | $\mu A$ |
| 三态输出关断电流 | $I_{OZ}$ | $V_I = V_{IH}$ 或 $V_{IL}$<br>$V_O = V_{CC}$ 或 $GND$ | 6.0          | -    | -    | $\pm 5.0$ | $\mu A$ |
| 静态电流     | $I_{CC}$ | $V_I = V_{CC}$ 或 $GND$<br>$I_O = 0$                 |              | 6.0  | -    | 80        | $\mu A$ |



## 逻辑图



## 时序图





## 参考测量资料

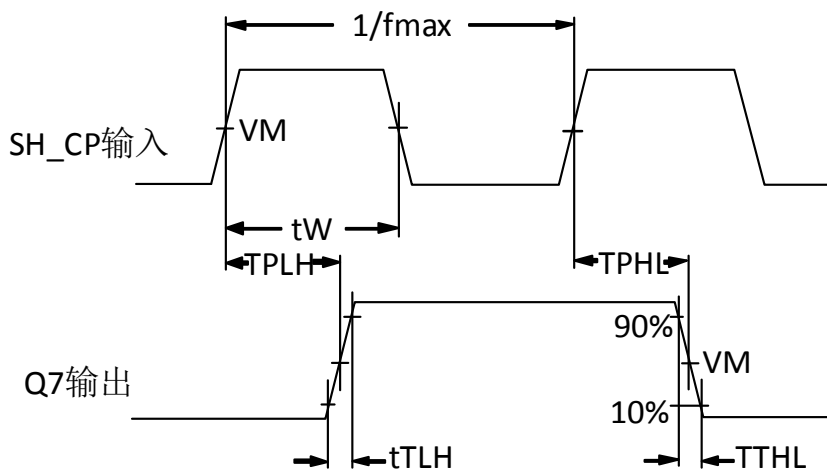


图 1 SH\_CP 至 Q7' 的传播时延、移位寄存器时钟宽度及最大移位时钟频率的波形图

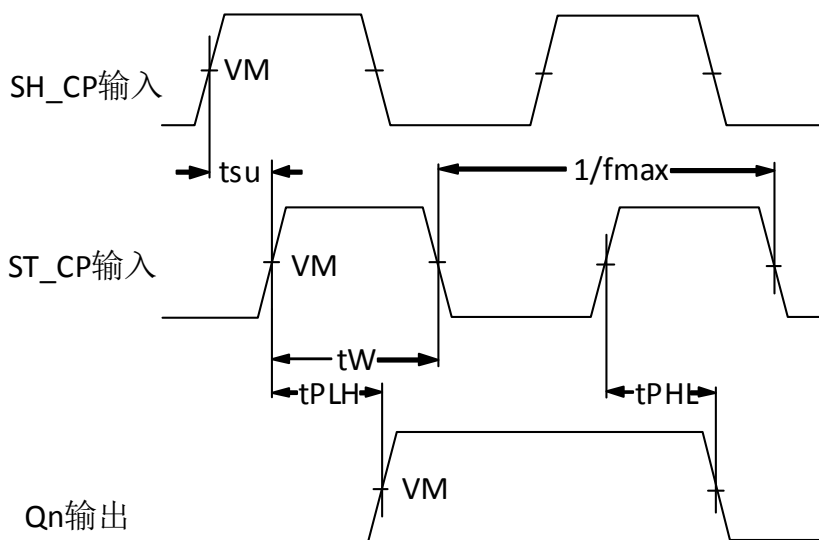


图 2 ST\_CP 至 Qn 传播时延、锁存器脉冲宽度及移位寄存器 CLK 到锁存器 CLK 的建立时间



## 参考测量资料

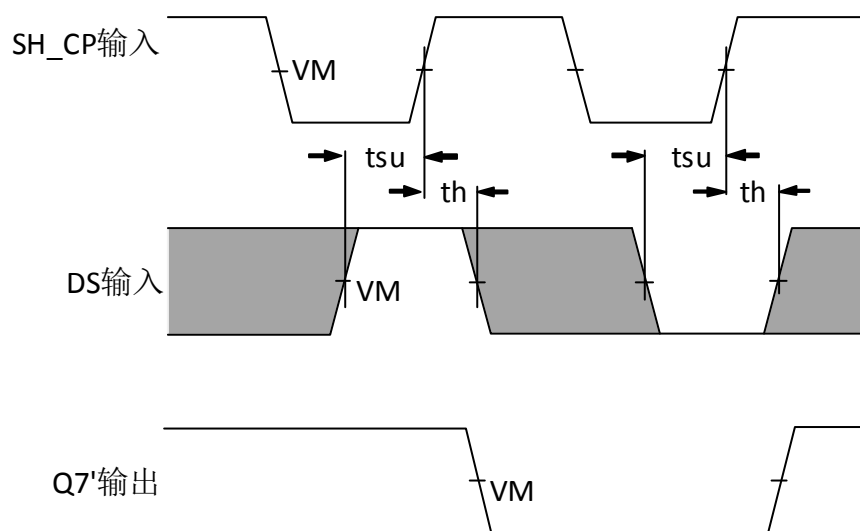


图3 DS输入数据的建立、持续时间

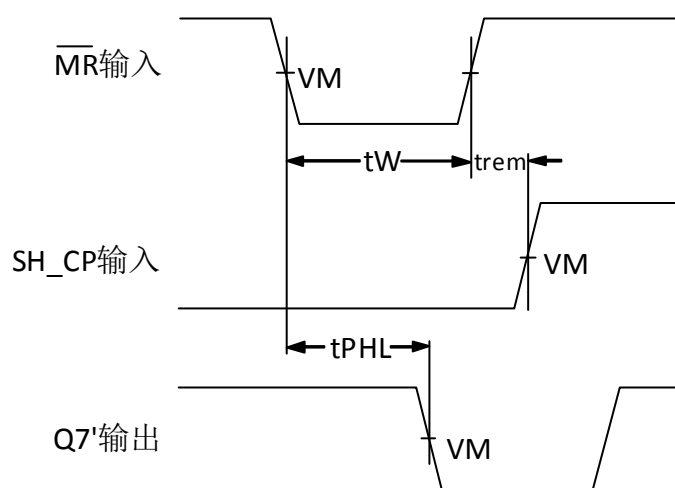


图4 MR 脉冲宽度、MR 至 Q7'的传播时延及 MR 至 SH\_CP 的时间



## 参考测量资料

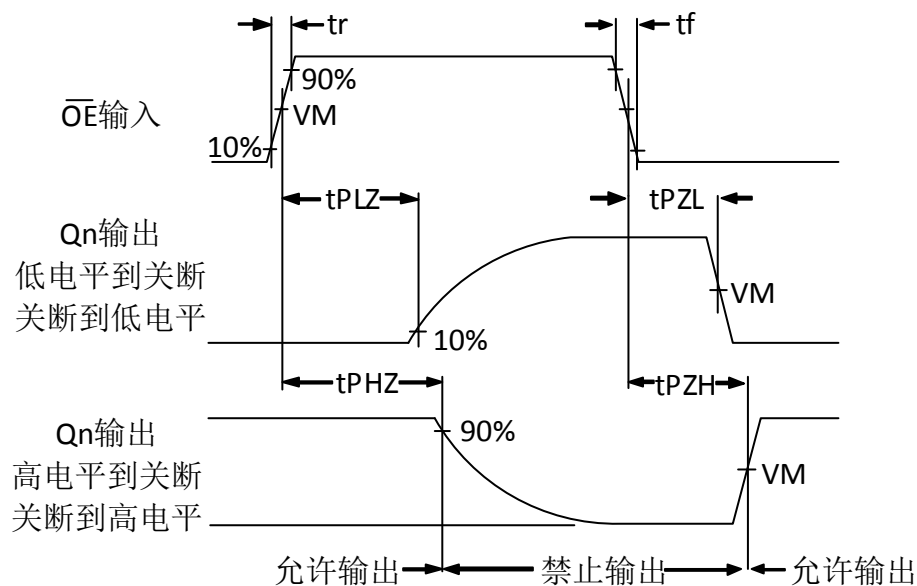


图 5  $\overline{OE}$  输入端的三态允许、禁止输出时间波形

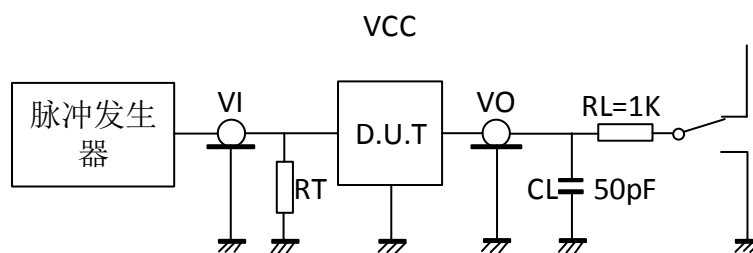
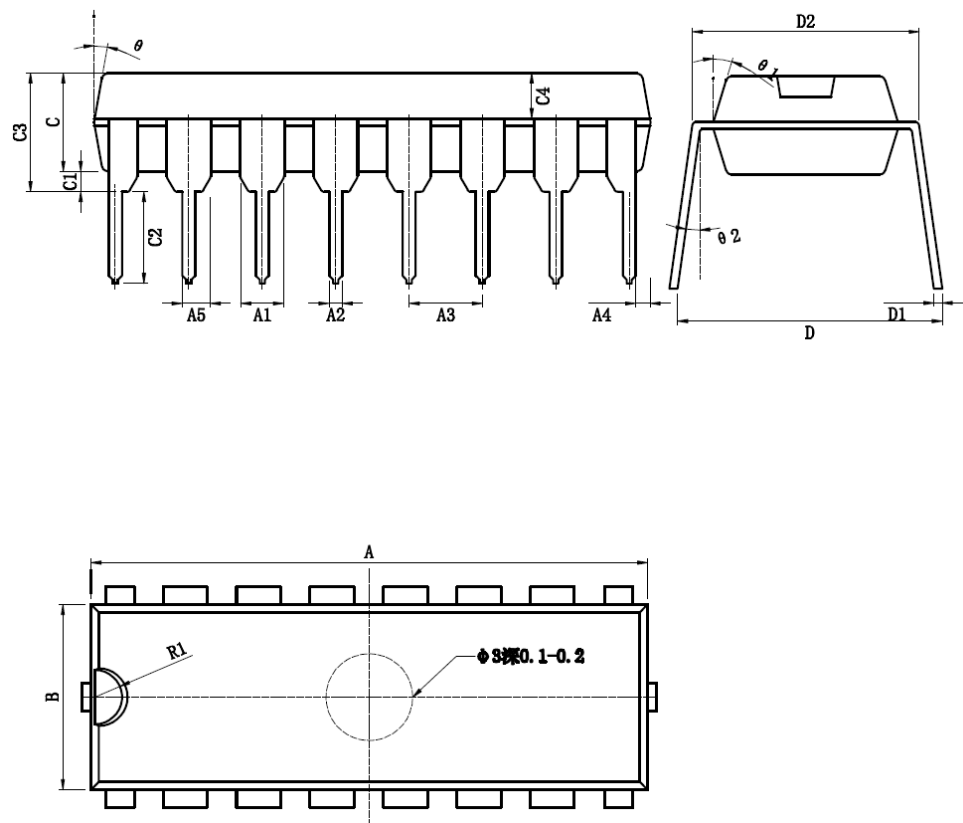


图 6 3 态输出的测试电路图



外形封装图

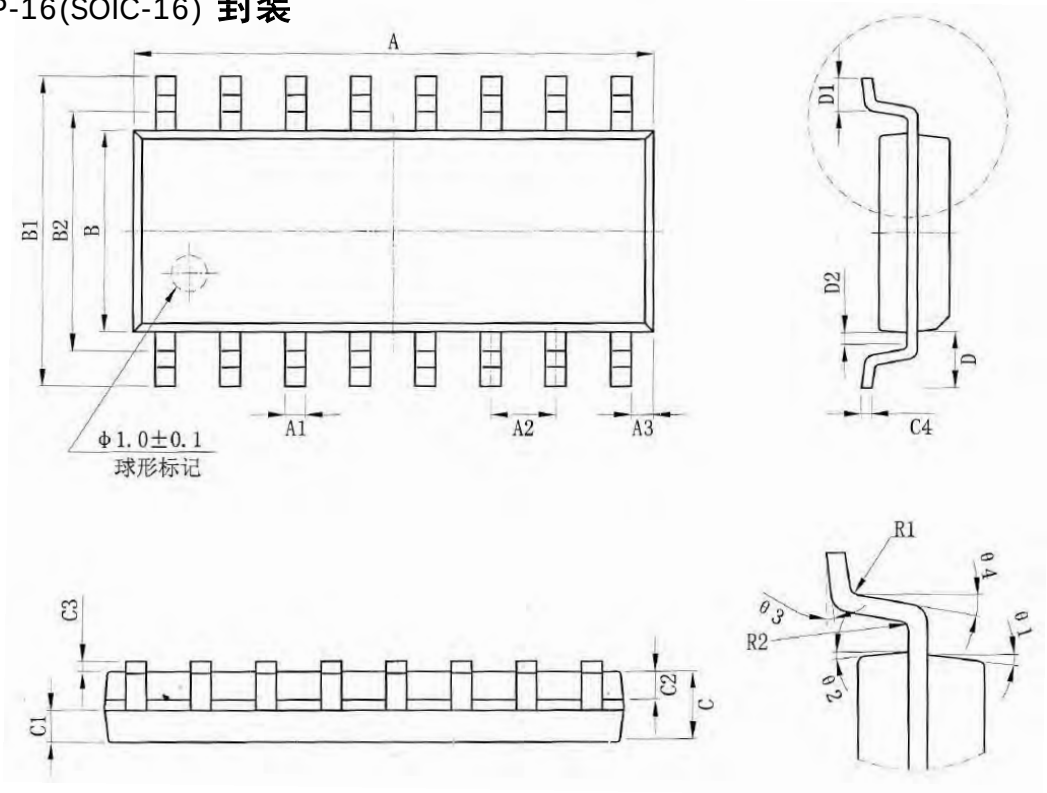
DIP-16 封装



| 符号 | 尺寸 ( mm ) |       | 符号 | 尺寸 ( mm ) |      |
|----|-----------|-------|----|-----------|------|
|    | 最小        | 最大    |    | 最小        | 最大   |
| A  | 19.00     | 19.20 | C3 | 3.85      | 4.45 |
| A1 | 1.524TYP  |       | C4 | 1.40      | 1.50 |
| A2 | 0.41      | 0.51  | D  | 8.20      | 8.80 |
| A3 | 2.54TYP   |       | D1 | 0.20      | 0.35 |
| A4 | 0.38TYP   |       | D2 | 7.74      | 8.00 |
| A5 | 0.99TYP   |       | θ  | 10°TYP    |      |
| B  | 6.30      | 6.50  | θ1 | 17°TYP    |      |
| C  | 3.00      | 3.20  | θ2 | 6°TYP     |      |
| C1 | 0.51TYP   |       | R1 | 1.27TYP   |      |
| C2 | 3.00      | 3.60  |    |           |      |



SOP-16(SOIC-16) 封装



| 符号 | 尺寸 ( mm ) |       | 符号 | 尺寸 ( mm ) |       |
|----|-----------|-------|----|-----------|-------|
|    | 最小        | 最大    |    | 最小        | 最大    |
| A  | 9.80      | 10.00 | C3 | 0.05      | 0.25  |
| A1 | 0.356     | 0.456 | C4 | 0.203     | 0.233 |
| A2 | 1.27TYP   |       | D  | 0.15TYP   |       |
| A3 | 0.302TYP  |       | D1 | 0.40      | 0.70  |
| B  | 3.85      | 3.95  | D2 | 0.15      | 0.25  |
| B1 | 5.84      | 6.24  | R1 | 0.20TYP   |       |
| B2 | 5.00TYP   |       | R2 | 0.20TYP   |       |
| C  | 1.40      | 1.60  | θ1 | 8°~12°TYP |       |
| C1 | 0.61      | 0.71  | θ2 | 8°~12°TYP |       |
| C2 | 0.54      | 0.64  | θ3 | 0°~12°    |       |
|    |           |       | θ4 | 4°~12°    |       |



### Attention

- Any and all HUA XUAN YANG ELECTRONICS products described or contained herein do not have specifications that can handle applications that require extremely high levels of reliability, such as life-support systems, aircraft's control systems, or other applications whose failure can be reasonably expected to result in serious physical and/or material damage. Consult with your HUA XUAN YANG ELECTRONICS representative nearest you before using any HUA XUAN YANG ELECTRONICS products described or contained herein in such applications.
- HUA XUAN YANG ELECTRONICS assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all HUA XUAN YANG ELECTRONICS products described or contained herein.
- Specifications of any and all HUA XUAN YANG ELECTRONICS products described or contained herein stipulate the performance, characteristics, and functions of the described products in the independent state, and are not guarantees of the performance, characteristics, and functions of the described products as mounted in the customer's products or equipment. To verify symptoms and states that cannot be evaluated in an independent device, the customer should always evaluate and test devices mounted in the customer's products or equipment.
- HUA XUAN YANG ELECTRONICS CO.,LTD. strives to supply high-quality high-reliability products. However, any and all semiconductor products fail with some probability. It is possible that these probabilistic failures could give rise to accidents or events that could endanger human lives, that could give rise to smoke or fire, or that could cause damage to other property. When designing equipment, adopt safety measures so that these kinds of accidents or events cannot occur. Such measures include but are not limited to protective circuits and error prevention circuits for safe design, redundant design, and structural design.
- In the event that any or all HUA XUAN YANG ELECTRONICS products(including technical data, services) described or contained herein are controlled under any of applicable local export control laws and regulations, such products must not be exported without obtaining the export license from the authorities concerned in accordance with the above law.
- No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording, or any information storage or retrieval system, or otherwise, without the prior written permission of HUA XUAN YANG ELECTRONICS CO.,LTD.
- Information (including circuit diagrams and circuit parameters) herein is for example only ; it is not guaranteed for volume production. HUA XUAN YANG ELECTRONICS believes information herein is accurate and reliable, but no guarantees are made or implied regarding its use or any infringements of intellectual property rights or other rights of third parties.
- Any and all information described or contained herein are subject to change without notice due to product/technology improvement, etc. When designing equipment, refer to the "Delivery Specification" for the HUA XUAN YANG ELECTRONICS product that you intend to use.