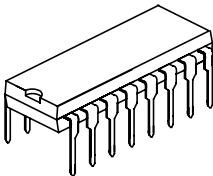




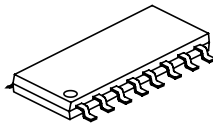
1.产品特性:

ULN2003 为 7 路达林顿结构电路，
每路的输出电流为 500mA ， 峰值电流
为 600mA ， 输出电压为 50V ， 采用共
发射极结构， 每路可以独立输出。该
电路常用于驱动各种负载， 如直流发
动机、 LED 显示灯、 大功率缓存和 5V
TTL 、 CMOS 等通用逻辑电路等。

DIP- 16



SOP-16
(SOIC-16)



2.封装形式及管脚定义

SOP16(SOIC-16)/DIP16 双列封装形式:

图 1 ULN2003 电路外形图

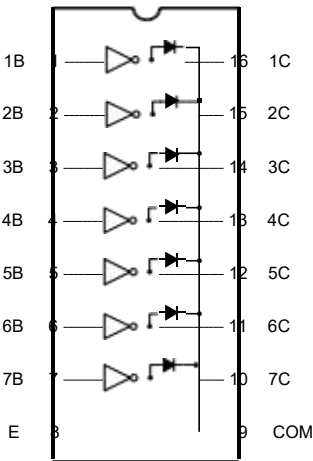


图 2 ULN2003管脚定义图

3.最大额定值

表 1 最大额定值

符号	参数	最大额定值	单位
Vo	输出电压	50	V
Vin	输入电压	30	V
Ic	输出电流	500	mA
Ib	输入电流	25	mA



4.电路原理图

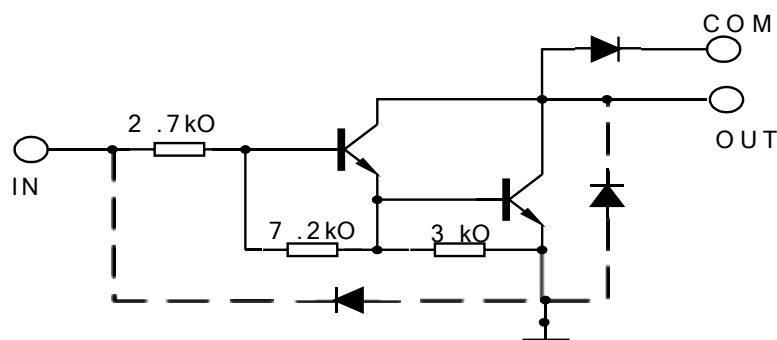


图 3 ULN2003电路原理图

5.电参数

表 2 测试电参数

Symbol	参数说明	测试条件	Min.	Typ.	Max.	单位	测试图
I_{CEX}	输出漏电流	$V_{CE}=50V$	—	—	50.0	μA	Figure 1a.
$V_{CE(sat)}$	集电极-发射极 饱和压降	$I_C=100mA, I_B=250\mu A$	—	0.9	1.1	V	Figure 2.
		$I_C=200mA, I_B=350\mu A$	—	1.1	1.3		
		$I_C=350mA, I_B=500\mu A$	—	1.3	1.6		
$I_{i(on)}$	输入开启电流	$V_i=3.85V$	—	0.93	1.35	mA	Figure 3.
$V_{i(on)}$	输入开启电压	$V_{CE}=2.0V, I_C=200mA$	—	—	2.4	V	Figure 5.
		$V_{CE}=2.0V, I_C=250mA$			2.7		
		$V_{CE}=2.0V, I_C=300mA$			3.0		
I_R	二极管漏电流	$V_R=50V$	-4.0	—	50.0	μA	Figure 6.
V_F	二极管正向压降	$I_F=350mA$	—	1.7	2	V	Figure 7.
I_{CEX-1V}	输出漏电流	$V_{CE}=50V, V_i=1V$	-5	—	80	μA	Figure 1b.



测试线路图

Figure 1a.

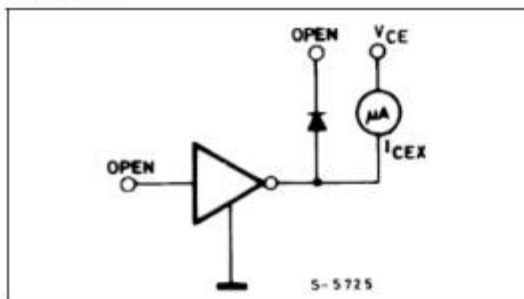


Figure 1b.

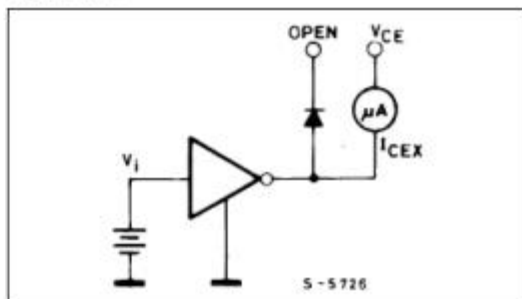


Figure 2.

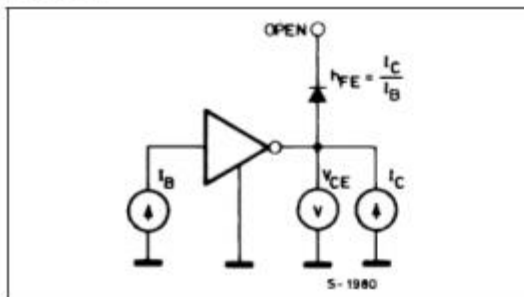


Figure 3.

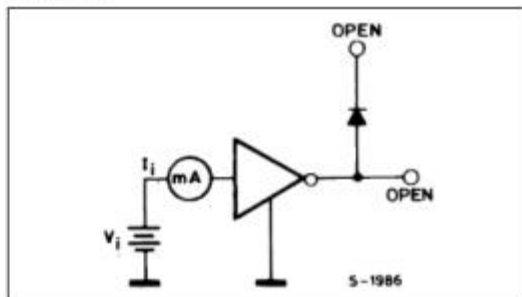


Figure 4.

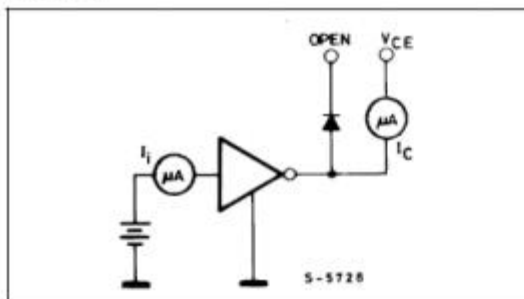


Figure 5.

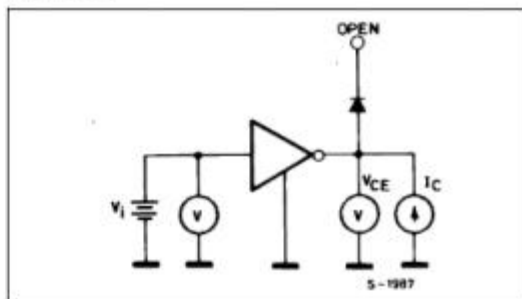


Figure 6.

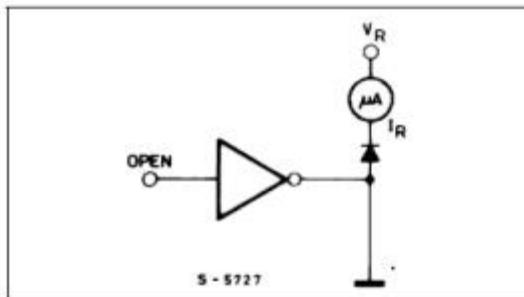
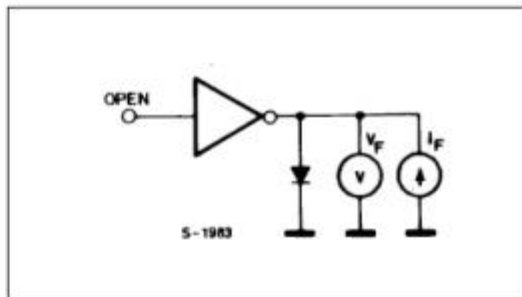


Figure 7.





7.特性曲线图

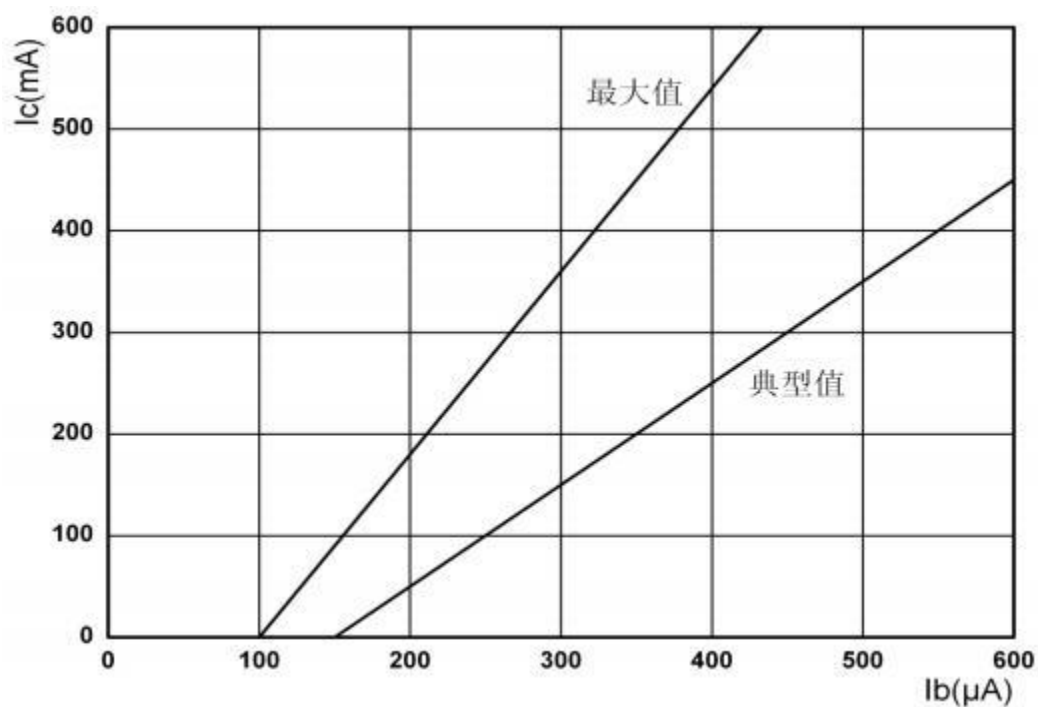


图 4 输出电压和输入电流特性曲线图

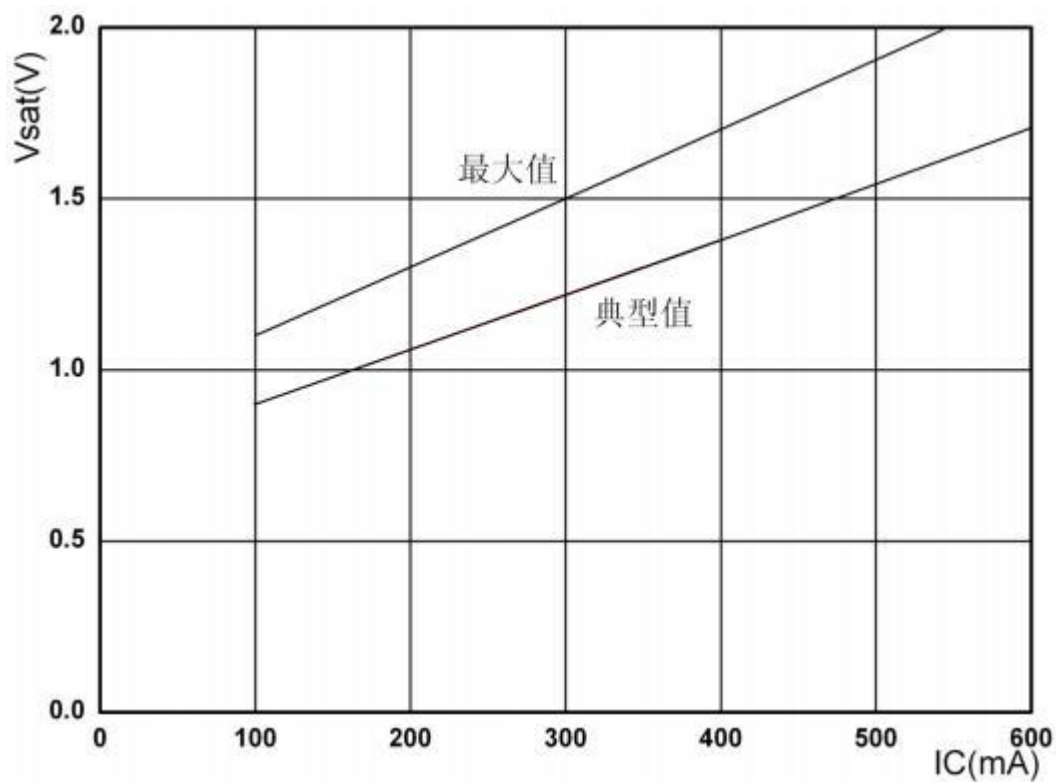
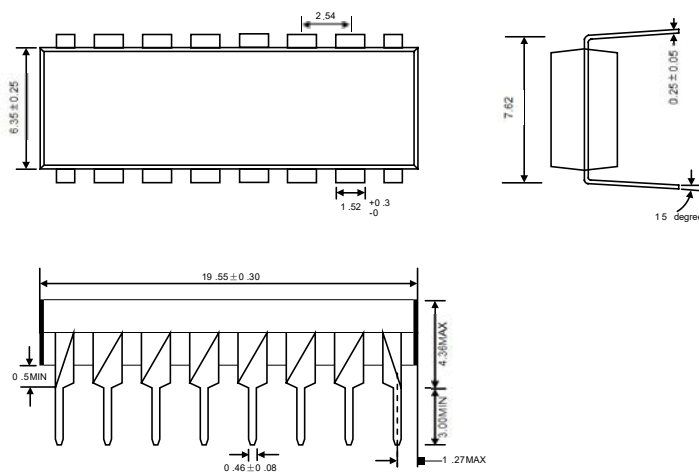


图 5 饱和压降和输出电压特性曲线图

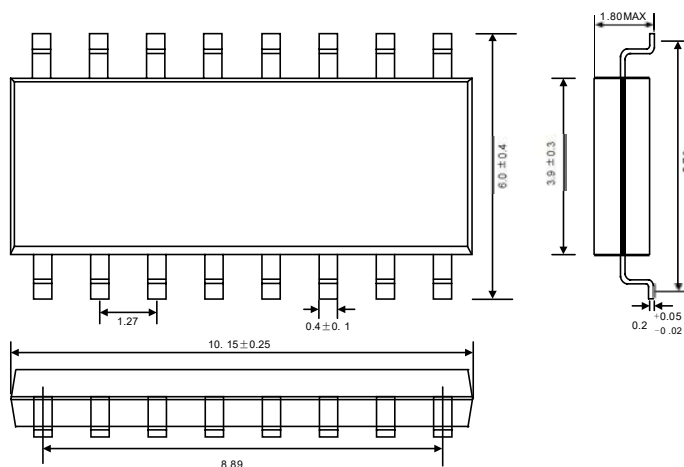


8.封装信息及尺寸

DIP-16



SOP-16 (SOIC-16)



注：尺寸单位为MM

图 6 ULN2003 封装及尺寸图



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.