

MSKSEMI

SEMICONDUCTOR



ESD



TVS



TSS



MOV



GDT



PLED

Product data sheet

GENERAL DESCRIPTION

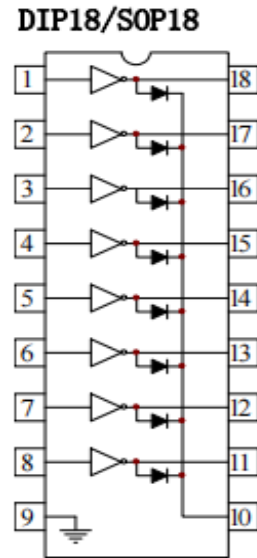
ULN2803 是单片集成高耐压、大电流达林顿管阵列，电路内部包含八个独立的达林顿管驱动单路。电路内部设计有钳位二极管，可用于驱动继电器、步进电机等感性负载，将达林顿管并联可实现更高的输出电流能力。该电路可广泛应用于继电器驱动、照明驱动、显示屏驱动(LED)、步进电机驱动和逻辑缓冲器。ULN2803 的每一路达林顿管串联一个 2.7K 的基极电阻，在 5V 的工作电压下可直接与 TTL/CMOS 电路连接，可直接处理标准逻辑缓冲器所处理的数据。

FEATURES

- 宽输入耐压：0~30V, Ta=25°C
- 输出最大电流：500MA, Ta=25°C
- 输出关态耐压：50V Ta=25°C
- 输入兼容 TTL/CMOS 逻辑信号

PIN CONFIGURATION

管脚序号	管脚定义	管脚功能描述	管脚序号	管脚定义	管脚功能描述
1	1IN	1 通道输入	18	10UT	1 通道输出
2	2IN	2 通道输入	17	20UT	2 通道输出
3	3IN	3 通道输入	16	30UT	3 通道输出
4	4IN	4 通道输入	15	40UT	4 通道输出
5	5IN	5 通道输入	14	50UT	5 通道输出
6	6IN	6 通道输入	13	60UT	6 通道输出
7	7IN	7 通道输入	12	70UT	7 通道输出
8	8IN	8 通道输入	11	80UT	8 通道输出
9	GND	接地	10	COMMON	钳位二极管公共端



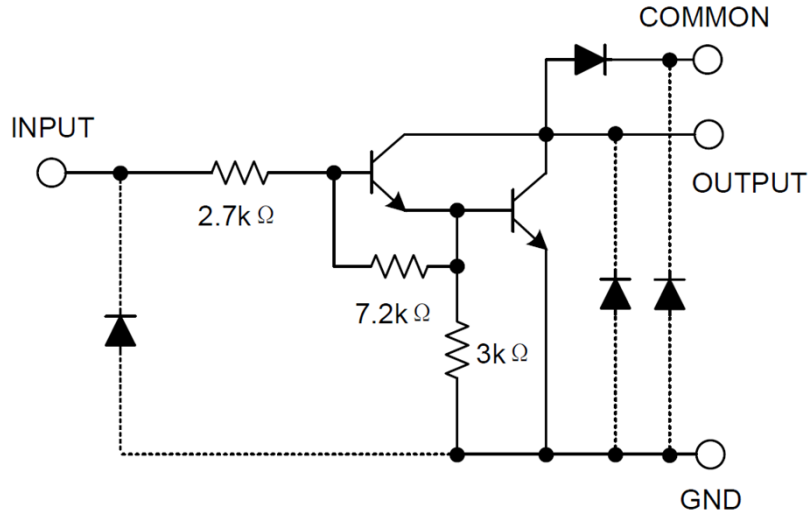
极限参数

参数	符号	极限值	单位
输入电压	V_{IN}	30	V
输出电压	V_{CE}	50	V
集电极电流	I_C	500	mA
基极电流	I_B	25	mA
工作温度	T_A	-40~85	°C
存储温度	T_S	-65~150	°C

注：（1）功率测试条件为玻璃环氧树脂PCB板上（30×30×1.6mm 铜50%）；（2）极限参数是指无论在任何条件下都不能超过的极限值。

如果超过此极限值，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



电学特性

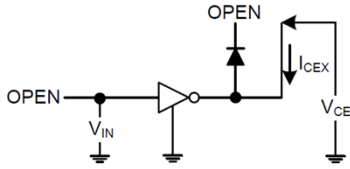
直流电学特性: $T_A=25^{\circ}\text{C}$

符号	项目	测试条件		测试电路	最小值	典型值	最大值	单位
I_{CEX}	输出漏电电流	$V_{CE} = 50V$	$T_a=25^{\circ}\text{C}$	1	-	0	50	μA
			$T_a=85^{\circ}\text{C}$		-	0	100	μA
$V_{CE(SAT)}$	低电平有效输入电压	$I_{OUT} = 350\text{mA}, I_{IN} = 500\mu\text{A}$	2	-	1.02	1.6	V	
				$I_{OUT} = 200\text{mA}, I_{IN} = 350\mu\text{A}$	-	0.96	1.3	V
				$I_{OUT} = 100\text{mA}, I_{IN} = 250\mu\text{A}$	-	0.85	1.1	V
$I_{IN(ON)}$	输入电流	$V_{IN} = 3.85V, I_{OUT} = 350\text{mA}$	3	-	0.71	1.35	mA	
$I_{IN(OFF)}$			4	50	63	-	μA	
$V_{IN(ON)}$	输入电压	$V_{CE} = 2V$	5	$I_{OUT} = 200\text{mA}$	-	1.8	2.4	V
				$I_{OUT} = 250\text{mA}$	-	1.85	2.7	V
				$I_{OUT} = 300\text{mA}$	-	1.9	3.0	V
I_R	钳位二极管反向漏电流	$V_R = 50V,$	$T_a=25^{\circ}\text{C}$	6	-	0	50	μA
			$T_a=85^{\circ}\text{C}$		-	0	100	μA
V_F	钳位二极管正向导通电压	$I_F = 350\text{mA}$	15	-	1.7	2.0	V	
t_{ON}	开启延迟时间	$V_{OUT}=50V, R_L=125\Omega, C_L=15\text{pF}$		-	0.1	1	μS	
t_{OFF}	关断延迟时间	$V_{OUT}=50V, R_L=125\Omega, C_L=15\text{pF}$		-	0.2	1	μS	

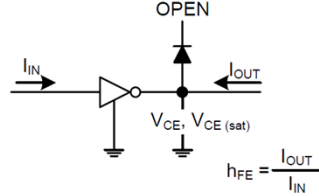
测试方法

1、测试接线图

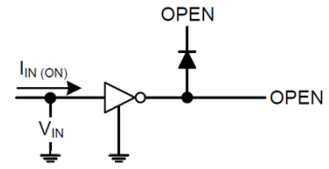
1. I_{CEX}



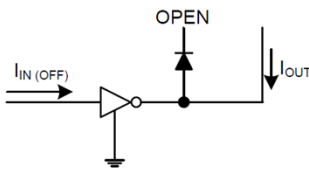
2. $V_{CE(sat)}$, h_{FE}



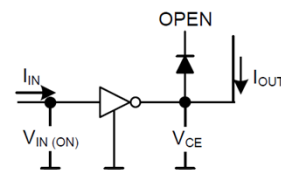
3. $I_{IN(ON)}$



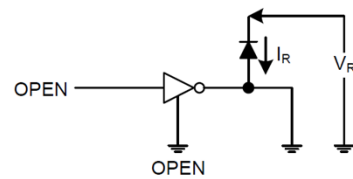
4. $I_{IN(OFF)}$



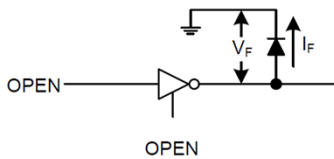
5. $V_{IN(ON)}$



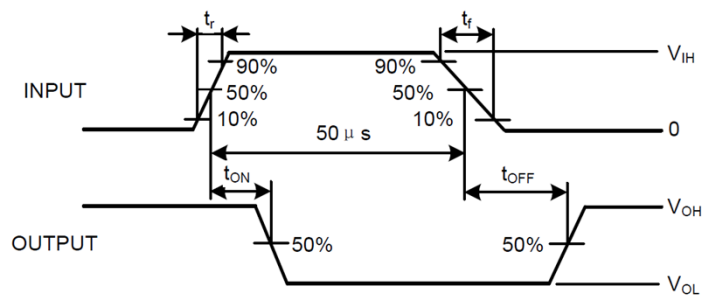
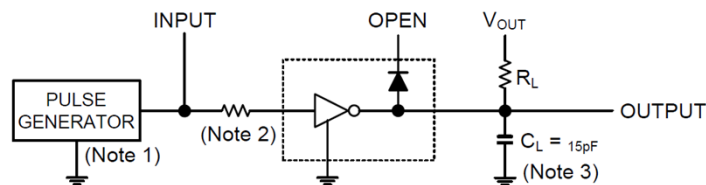
6. I_R



7. V_F



8. t_{ON} , t_{OFF}



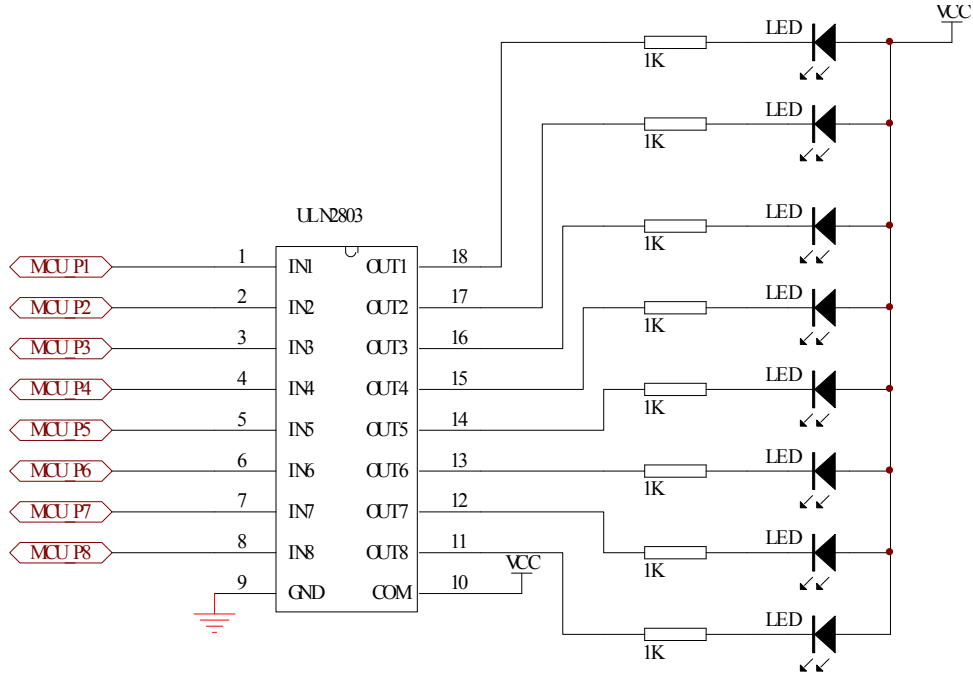
注：（1）脉冲宽度为 50US，占空比为 10%，输出负载 125Ω， $t_r \leq 5ns$ ， $t_f \leq 10ns$ ；

（2） $R=0$ ， $V_{IH}:3V$

（3）包括探针和测试夹具的电容

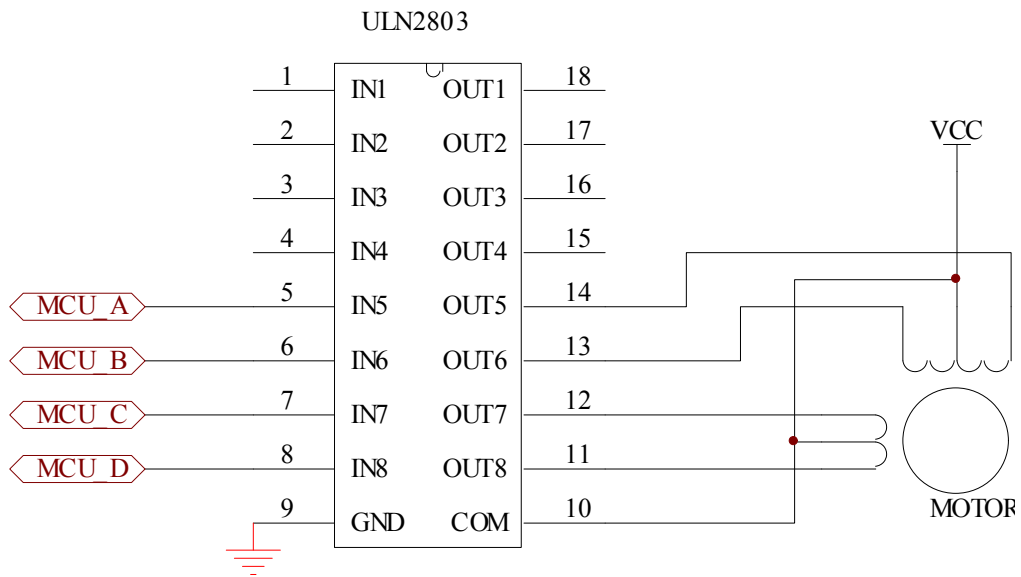
典型应用线路

1、LED 驱动电路



注：1K 的电阻可根据 VCC 的电压和所需 LED 的电流进行调整

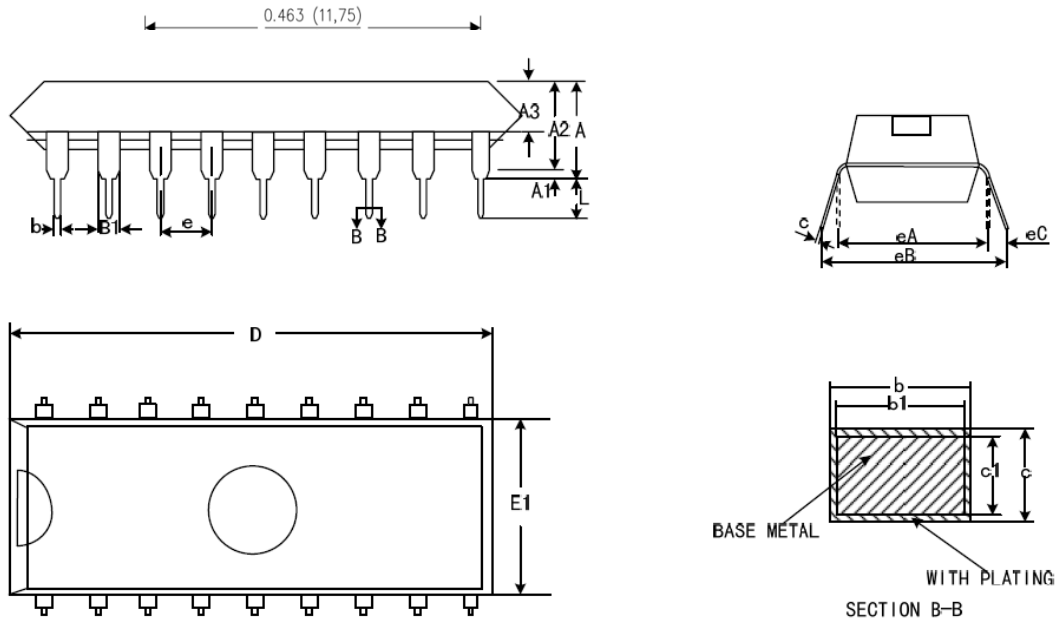
2、步进电机驱动电路



PACKAGE MECHANICAL DATA

单位：毫米 / 英寸

DIP18



SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	3.60	3.80	4.00
A1	0.51	—	—
A2	3.10	3.30	3.50
A3	1.42	1.52	1.62
b	0.44	—	0.53
b1	0.43	0.46	0.48
B1	1.52BSC		
c	0.25	—	0.31
c1	0.24	0.25	0.26
D	22.70	22.90	23.10
E1	6.40	6.60	6.80
e	2.54BSC		
eA	7.62BSC		
eB	7.62	—	9.50
eC	0	—	0.94
L	3.00	—	—

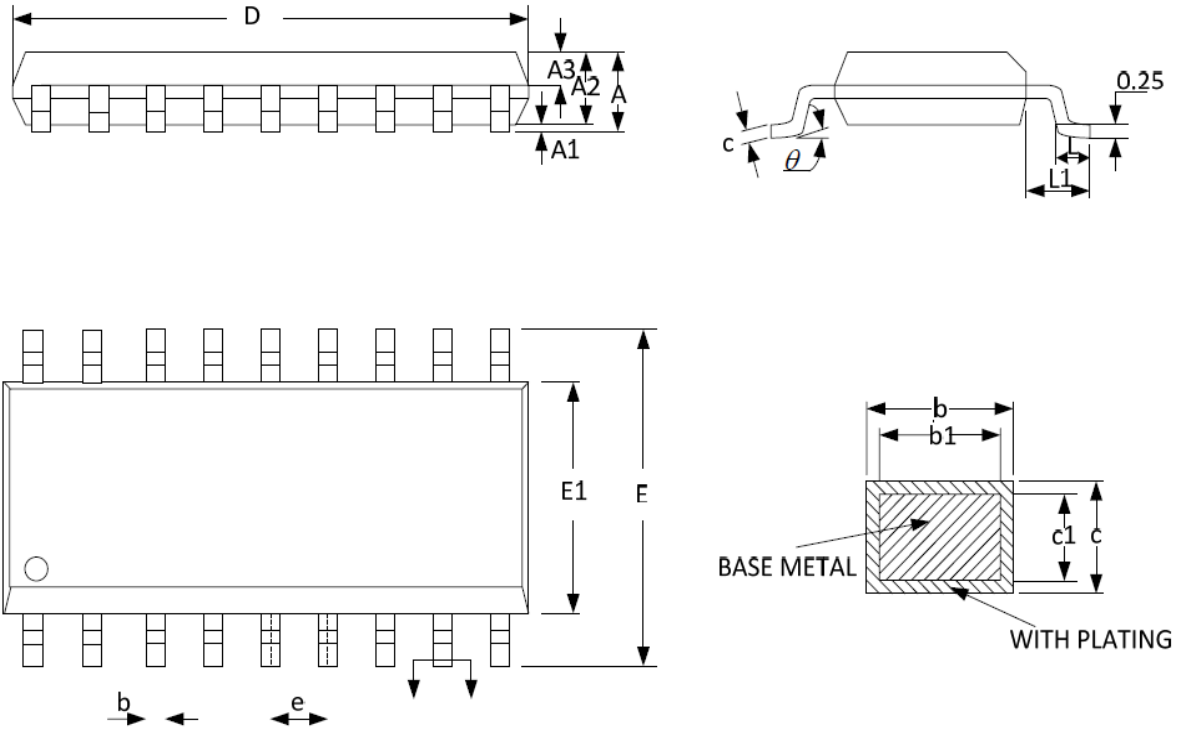
REEL SPECIFICATION

P/N	PKG	QTY
ULN2803	DIP-18	20/管

PACKAGE MECHANICAL DATA

单位：毫米 / 英寸

SOP-18



SYMBOL	MILLMETER		
	MIN	NOM	MAX
A	-	-	2.70
A1	0.08	0.18	0.28
A2	2.10	2.30	2.50
A3	0.92	1.02	1.12
b	0.35	-	0.44
b1	0.34	0.37	0.39
c	0.26	-	0.31
c1	0.24	0.25	0.26
D	11.25	11.45	11.65
E	10.10	10.30	10.50
E1	7.30	7.50	7.70
e	1.27BSC		
L	0.70	0.85	1.00
L1	1.40BSC		
θ	0°	-	8°

REEL SPECIFICATION

P/N	PKG	QTY
ULN2803	SOP-18	2000

Attention

- Any and all MSKSEMI Semiconductor 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 MSKSEMI Semiconductor representative nearest you before using any MSKSEMI Semiconductor products described or contained herein in such applications.
- MSKSEMI Semiconductor 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 MSKSEMI Semiconductor products described or contained herein.
- Specifications of any and all MSKSEMI Semiconductor 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.
- MSKSEMI Semiconductor 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 MSKSEMI Semiconductor 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 MSKSEMI Semiconductor.
- Information (including circuit diagrams and circuit parameters) herein is for example only ; it is not guaranteed for volume production. MSKSEMI Semiconductor believes information herein is accurate and reliable, but no guarantees are made or implied regarding its use or any infringement 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 MSKSEMI Semiconductor product that you intend to use.

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for [Darlington Transistors](#) category:

Click to view products by [MSKSEMI](#) manufacturer:

Other Similar products are found below :

[BDV64B](#) [SBSP52T1G](#) [Jantx2N6058](#) [LB1205-L-E](#) [2N6053](#) [MPSA63](#) [2N6667](#) [NTE256](#) [TIP120](#) [MJ11028](#) [TIP127](#) [Jantx2N6352](#)
[NJVBUB323ZT4G](#) [ULN2003](#) [ULN2803QN](#) [GN2003B](#) [MJD127T4G-JSM](#) [KID65004AF-EL/P](#) [ULN2803](#) [ULN2803CDWR](#) [HT62783ARTZ](#)
[ULN2803A](#) [2SB1560](#) [2SB852KT146B](#) [2SD2560](#) [TIP112TU](#) [BCV27](#) [MMBTA13-TP](#) [MMBTA14-TP](#) [MMSTA28T146](#)
[BSP50H6327XTSA1](#) [NTE2557](#) [NJVNJD35N04T4G](#) [MPSA29-D26Z](#) [MJD127T4](#) [BCV26E6327HTSA1](#) [BCV47](#) [FMMT734](#)
[BCV46E6327HTSA1](#) [BCV47E6327HTSA1](#) [BSP61H6327XTSA1](#) [BU941ZPFI](#) [FZT600](#) [FZT605](#) [2SB1316TL](#) [NTE245](#) [NTE2649](#) [NTE46](#)
[NTE98](#) [ULN2003ADR2G](#)