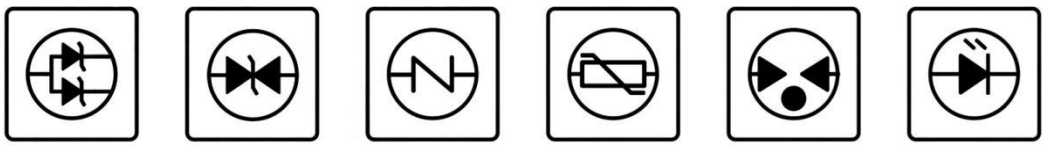
MSKSEMI
SEMICONDUCTOR



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、步进电机等电感性负载，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。

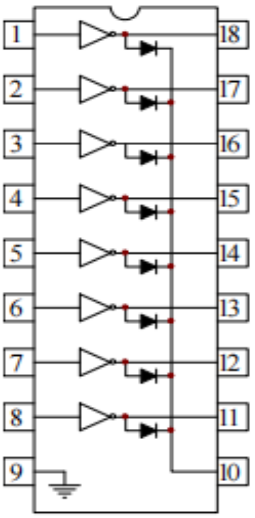
FEATURES

- 宽输入耐压：0~30V, Ta=25℃
- 输出最大电流：500MA, Ta=25℃
- 输出关态耐压：50V Ta=25℃
- 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	1OUT	1 通道输出
2	2IN	2 通道输入	17	2OUT	2 通道输出
3	3IN	3 通道输入	16	3OUT	3 通道输出
4	4IN	4 通道输入	15	4OUT	4 通道输出
5	5IN	5 通道输入	14	5OUT	5 通道输出
6	6IN	6 通道输入	13	6OUT	6 通道输出
7	7IN	7 通道输入	12	7OUT	7 通道输出
8	8IN	8 通道输入	11	8OUT	8 通道输出
9	GND	接地	10	COMMON	钳位二极管公共端

DIP18/SOP18



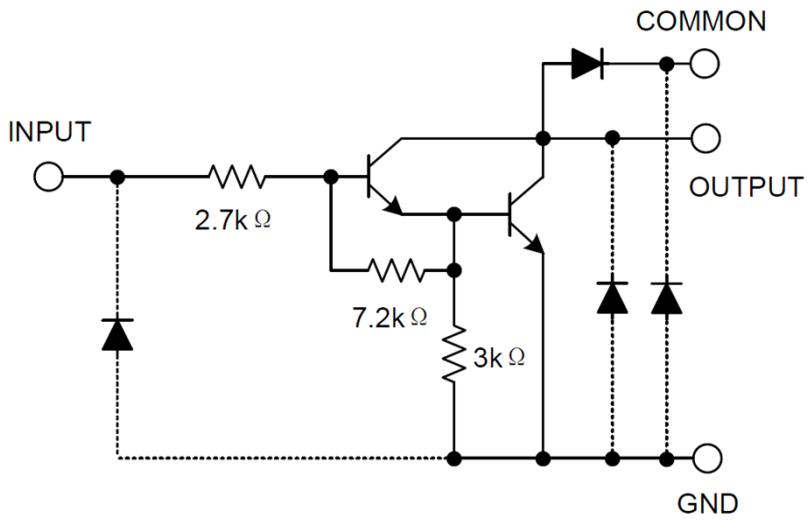
极限参数

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	℃
存储温度	T_S	-65~150	℃

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

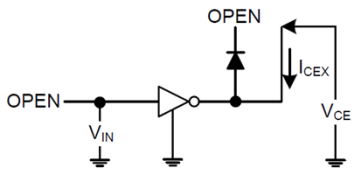
直流电学特性： T_A=25℃

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	Ta=25° C	1	–	0	50	μA
			Ta=85° C		–	0	100	μA
$V_{CE(SAT)}$	低电平有效输入电压	I_{OUT} =350mA, I_{IN} =500μA		2	–	1.02	1.6	V
		I_{OUT} =200mA, I_{IN} 350μA			–	0.96	1.3	V
		I_{OUT} =100mA, I_{IN} =250μA			–	0.85	1.1	V
$I_{IN(ON)}$	输入电流	V_{IN} =3.85V, I_{OUT} 350mA		3	–	0.71	1.35	mA
$I_{IN(OFF)}$		I_{OUT} =500μA, Ta=85° C		4	50	63	–	μA
$V_{IN(ON)}$	输入电压	V_{CE} = 2V	I_{OUT} =200mA	5	–	1.8	2.4	V
			I_{OUT} =250mA		–	1.85	2.7	V
			I_{OUT} =300mA		–	1.9	3.0	V
I_R	钳位二极管反向漏电流	V_R= 50V,	Ta=25° C	6	–	0	50	μA
			Ta=85° C		–	0	100	μA
V_F	钳位二极管正向导通电压	I_F =350mA	15		–	1.7	2.0	V
t_{ON}	开启延迟时间	V_{OUT}=50V, R_L=125Ω, C_L=15pF			–	0.1	1	μS
t_{OFF}	关断延迟时间	V_{OUT}=50V, R_L=125Ω, C_L=15pF			–	0.2	1	μS

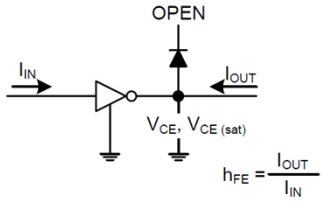
测试方法

1、测试接线图

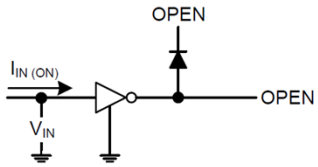
1. I_{CEX}



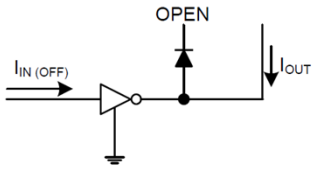
2. $V_{CE\ (sat)}$, h_{FE}



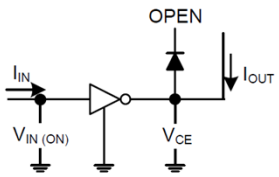
3. $I_{IN\ (ON)}$



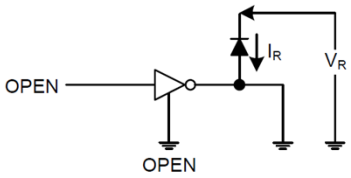
4. $I_{IN\ (OFF)}$



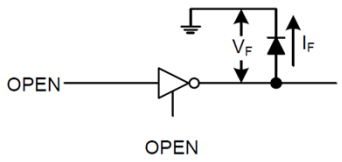
5. $V_{IN\ (ON)}$



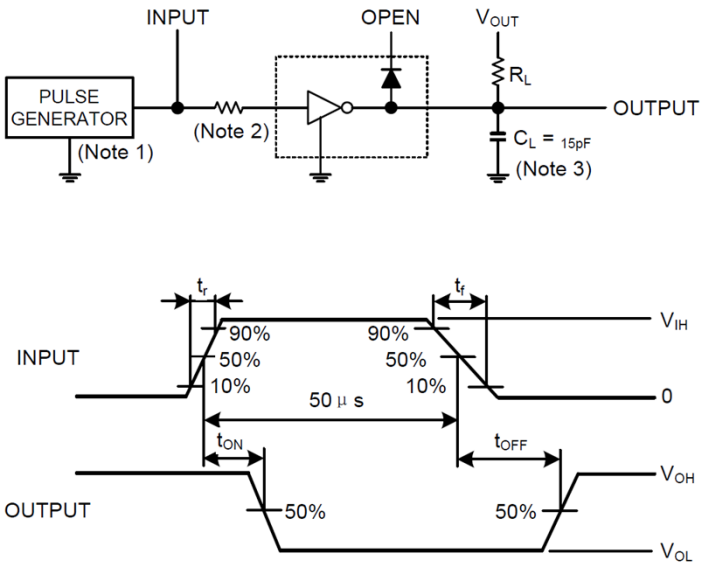
6. I_R



7. V_F



8. t_{ON}, t_{OFF}



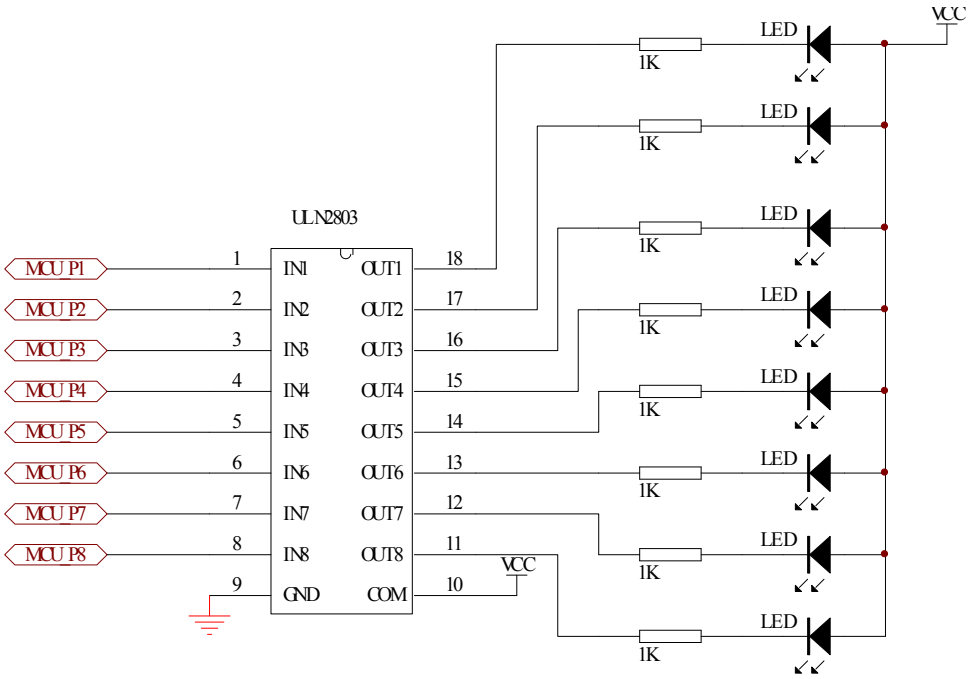
注： （1）脉冲宽度为 50US，占空比为 10%，输出负载 125Ω， tr<=5ns， tf<=10ns；

（2）R=0，VIH:3V

（3）包括探针和测试夹具的电容

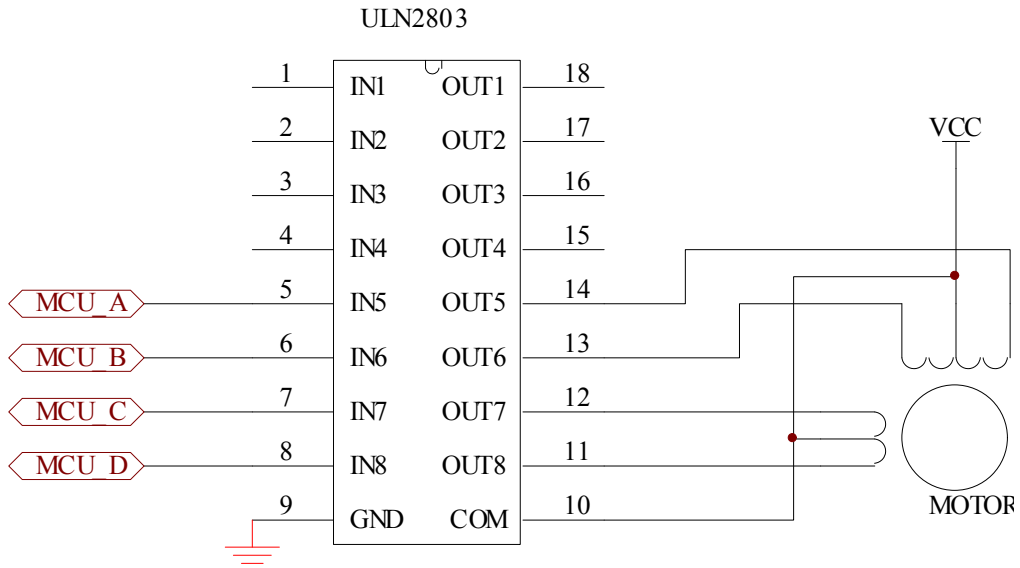
典型应用线路

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

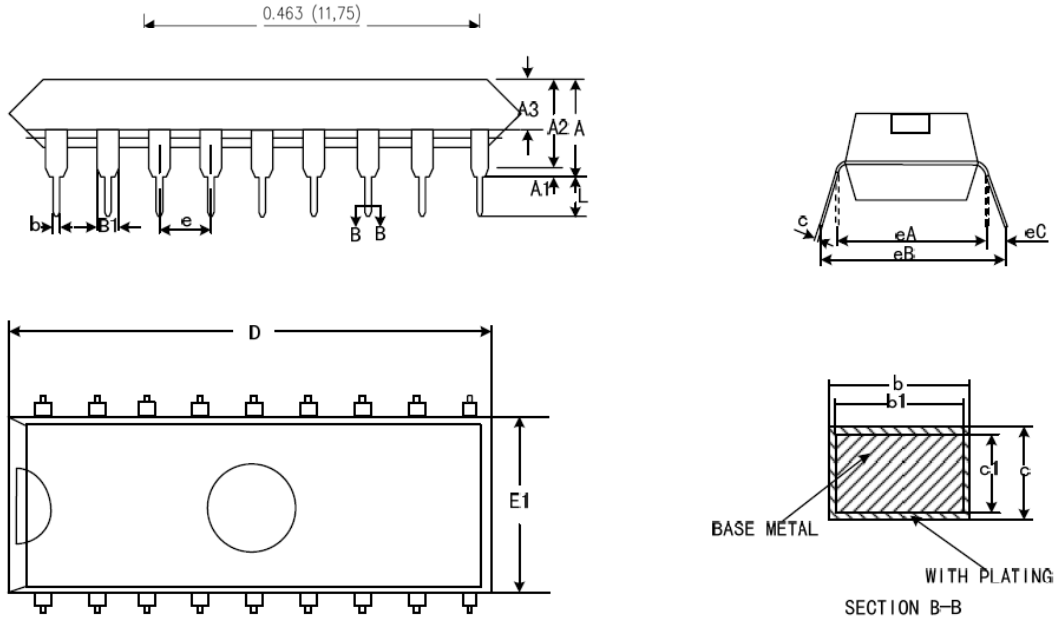
2、 步进电机驱动电路



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	_	_

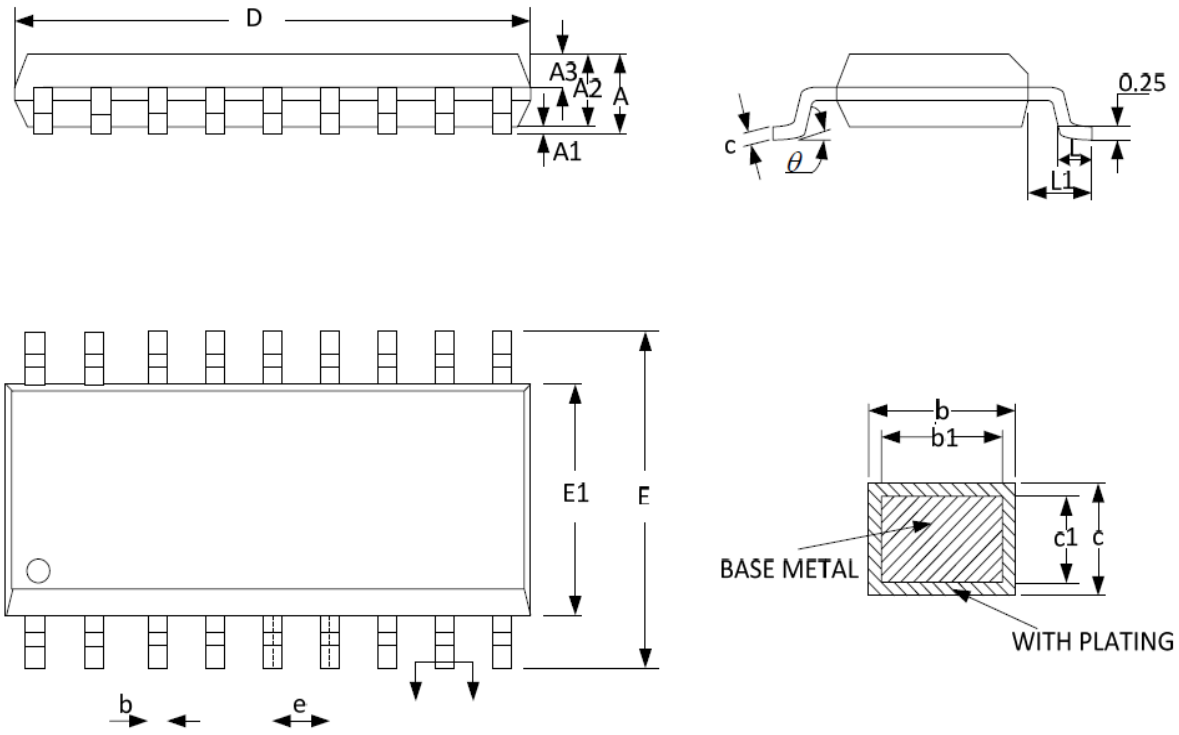
REEL SPECIFICATION

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

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