



钰地半导体  
Tudi Semiconductor

## Product Specification

TUDI-ULQ2001-4

七达林顿阵列

网址 [www.sztdbdt.com](http://www.sztdbdt.com) 🔍

**用芯智造 · 卓越品质**

**semiconductor device  
manufacturer**

- Design
- research and development
- production
- and sales



## 特点

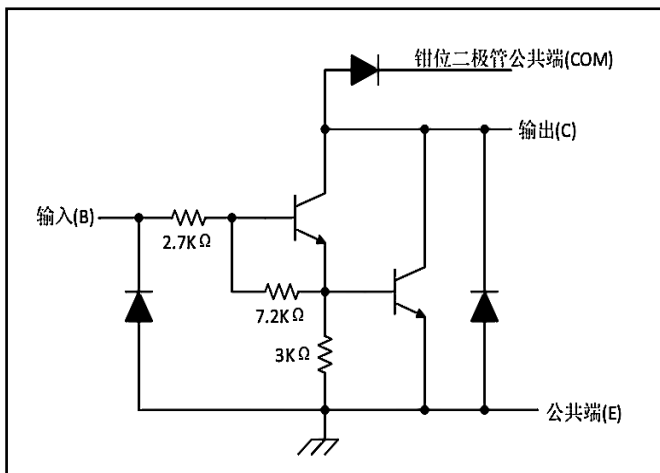
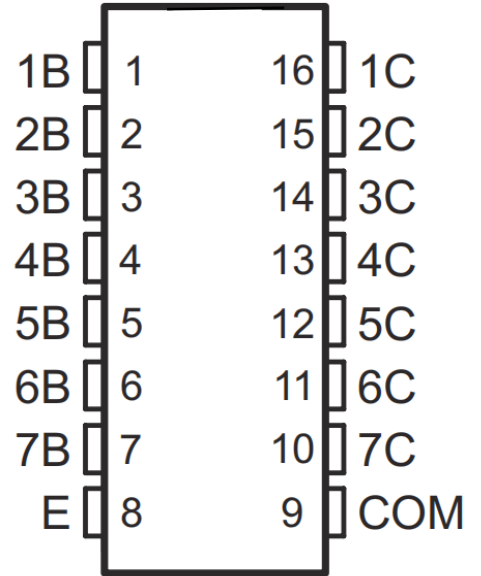
- 每封装包含七个达林顿管
- 每通道输出电流500mA
- 输出电 集成续流二极管，适用于感性负载
- 输出可并联以获得更大电流
- 兼容TTL/CMOS/PMOS/DTL输入
- 输入引脚位于输出引脚对面，便于布局设计

## 说明

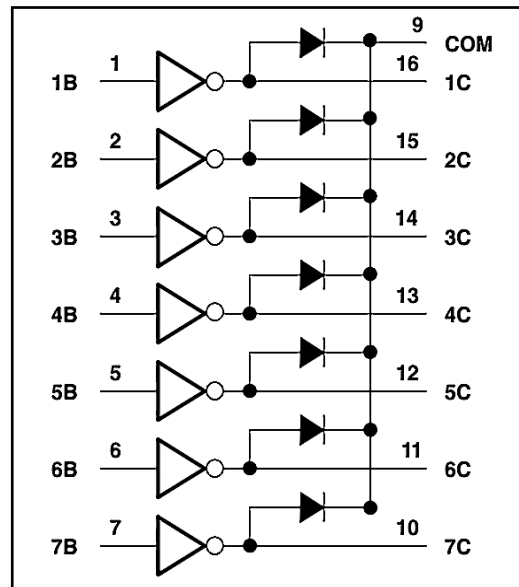
ULQ2001、ULQ2002、ULQ2003和ULQ2004是高压、大电流达林顿阵列，每个阵列包含七个共集电极的达林顿对。每个通道的额定电流为500mA，可承受600mA的峰值电流。内置抑制二极管用于驱动感性负载，且输入引脚与输出引脚位置相反，以简化电路板布局。

这些版本可与常见的逻辑系列接口：ULQ2001（通用、DTL、TTL、PMOS、CMOS）；ULQ2002（14-25V PMOS）；ULQ2003（5V TTL、CMOS）；ULQ2004（6-15V CMOMOS）。

ULQ2001A/2002A/2003A和2004A提供16引脚DIP封装和16引脚SOP封装



单路驱动电路原理图



简化版方框图

## 应用

- 继电器驱动器 ● 灯驱动器 ● 显示屏驱动器 ● 线路驱动器 ● 逻辑缓冲器



## 引脚功能

引脚		I/O(1)	说明
名称	编号		
1B	1	I	达林顿基极输入
2B	2	I	达林顿基极输入
3B	3	I	达林顿基极输入
4B	4	I	达林顿基极输入
5B	5	I	达林顿基极输入
6B	6	I	达林顿基极输入
7B	7	I	达林顿基极输入
E	8	—	所有通道共享的共发射极(通常与地面相连)
COM	9	—	反激二极管的共阴极节点(用于感性负载)
7C	10	O	达林顿集电极输出
6C	11	O	达林顿集电极输出
5C	12	O	达林顿集电极输出
4C	13	O	达林顿集电极输出
3C	14	O	达林顿集电极输出
2C	15	O	达林顿集电极输出
1C	16	O	达林顿集电极输出

## 极限参数

极限参数	
存储温度:	65°C~150°C
工作温度范围:	-40°C to 105°C
结温度范围:	40°C~150°C
输入电压:	0.3V~30V
输出电压:	55V
射极到基极的最高耐压:	6.0V
集电极持续工作电流:	500mA
基极持续工作电流:	25mA



## 电参数

参数	测试图	测试条件		2001/2003		2004		单位
				最小值	典型值	最大值	最小值	
Vi(on) 导通状态输入电压	图6	VCE=2V		lc=125mA			5	V
				lc=200mA	2.4		6	
				lc=250mA	2.7			
				lc=275mA			7	
				lc=300mA	3			
				lc=350mA			8	
VOH 开关后高电平输出电压	图10	Vs=50V, lo=300mA		Vs -20		Vs -20		mV
VCE(sat) 集电极-发射极饱和电压	图5	I=250μA, lc=100mA		0.9	1.1	0.9	1.1	V
		I=350μA, lc=200mA		1	1.3	1	1.3	
		I=500μA, lc=350mA		1.2	1.6	1.2	1.6	
CEX 集电极截止电流	图1	VCE=50V, I=0		50		50		μA
	图2	VCE=50V, TA=70°C	I=0 Vi=6V	100		100		
VF 钳位正向电压	图8	IF=350mA		1.7	2	1.7	2	V
I(off) 关断状态输入电流	图3	VCE=50V, TA=70°C	lc=500μA	50	65	50	65	μA
I 输入电流	图4	V=3.85V		0.93		1.35		mA
		V=5V				0.35 0.5		
		V=12V				1 1.45		
IR 钳位反向电流	图7	VR=50V		50		50		μA
		VR=50V	TA=70°C	100		100		
Ci 输入电容		Vi=0,	f=1MHz	15	25	15	25	pF

参数	测试图	测试条件		2002		单位
				最小值	典型值	
Vi(on) 导通状态输入电压	图6	VCE=2V, lc=300mA		13		V
VOH 开关后高电平输出电压	图10	Vs=50V, lo=300mA		Vs -20		mV
VCE(sat) 集电极-发射极饱和电压	图4	I=250μA, lc=100mA		0.9	1.1	V
		I=350μA, lc=200mA		1	1.3	
		I=500μA, lc=350mA		1.2	1.6	
VF 钳位正向电压	图7	IF=350mA		1.7	2	V
CEX 集电极截止电流	图1	VCE=50V, I=0		50		μA
	图2	VCE=50V, TA=70°C	I=0 V=6V	100		
I(off) 关断状态输入电流	图2	VCE=50V,	c=500μA	50	65	μA
I 输入电流	图3	Vi=17V		0.82	1.25	mA
IR 钳位反向电流	图6	VR=50V	TA=70°C	100		μA
		VR=50V		50		
C 输入电容		Vi=0,	f=1MHz	25		pF

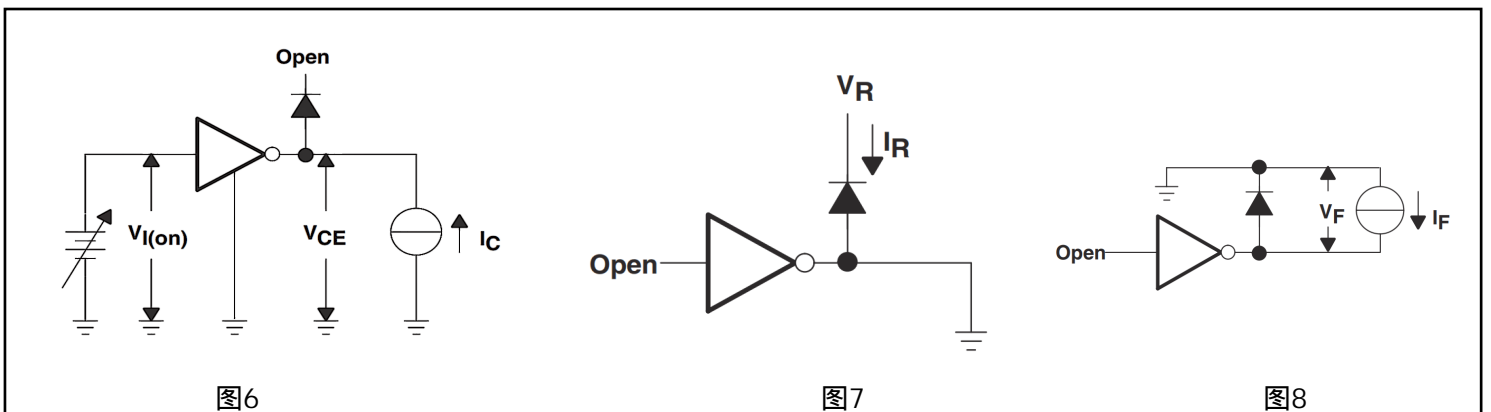
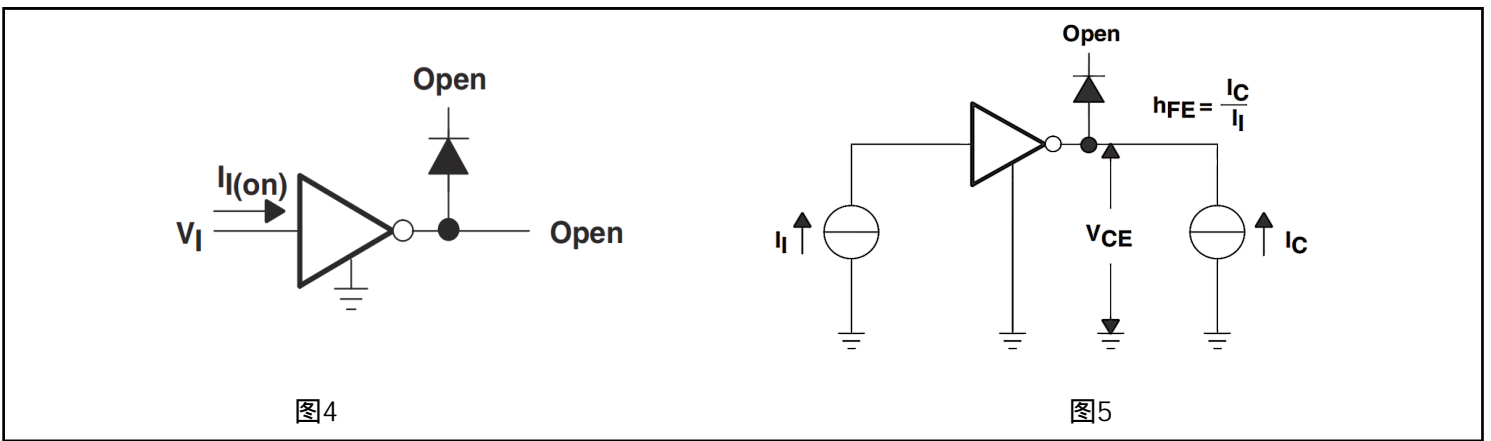
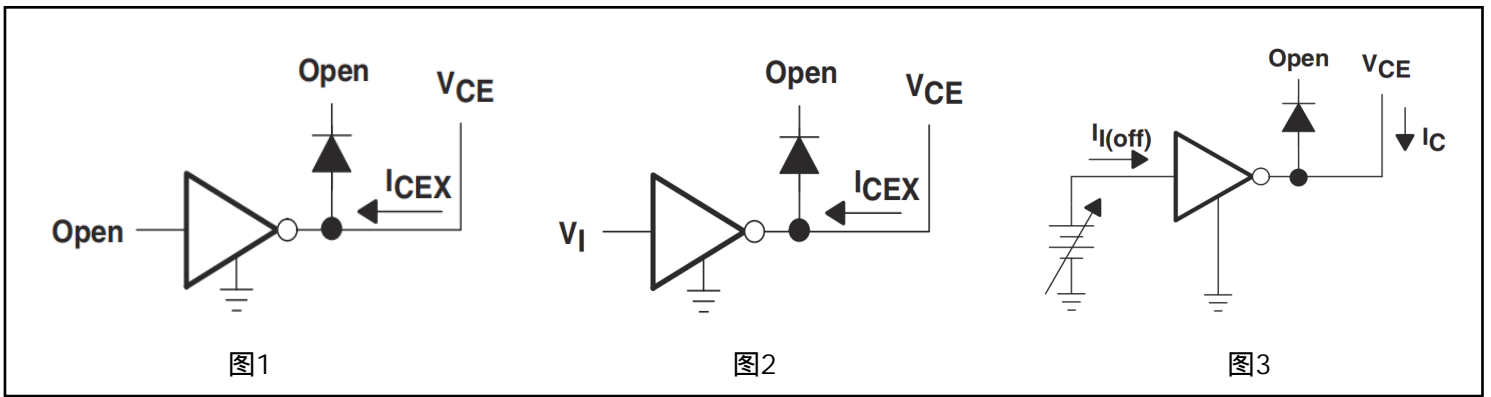
( 除非特殊说明 : V + = 5V , Ta = 25 )

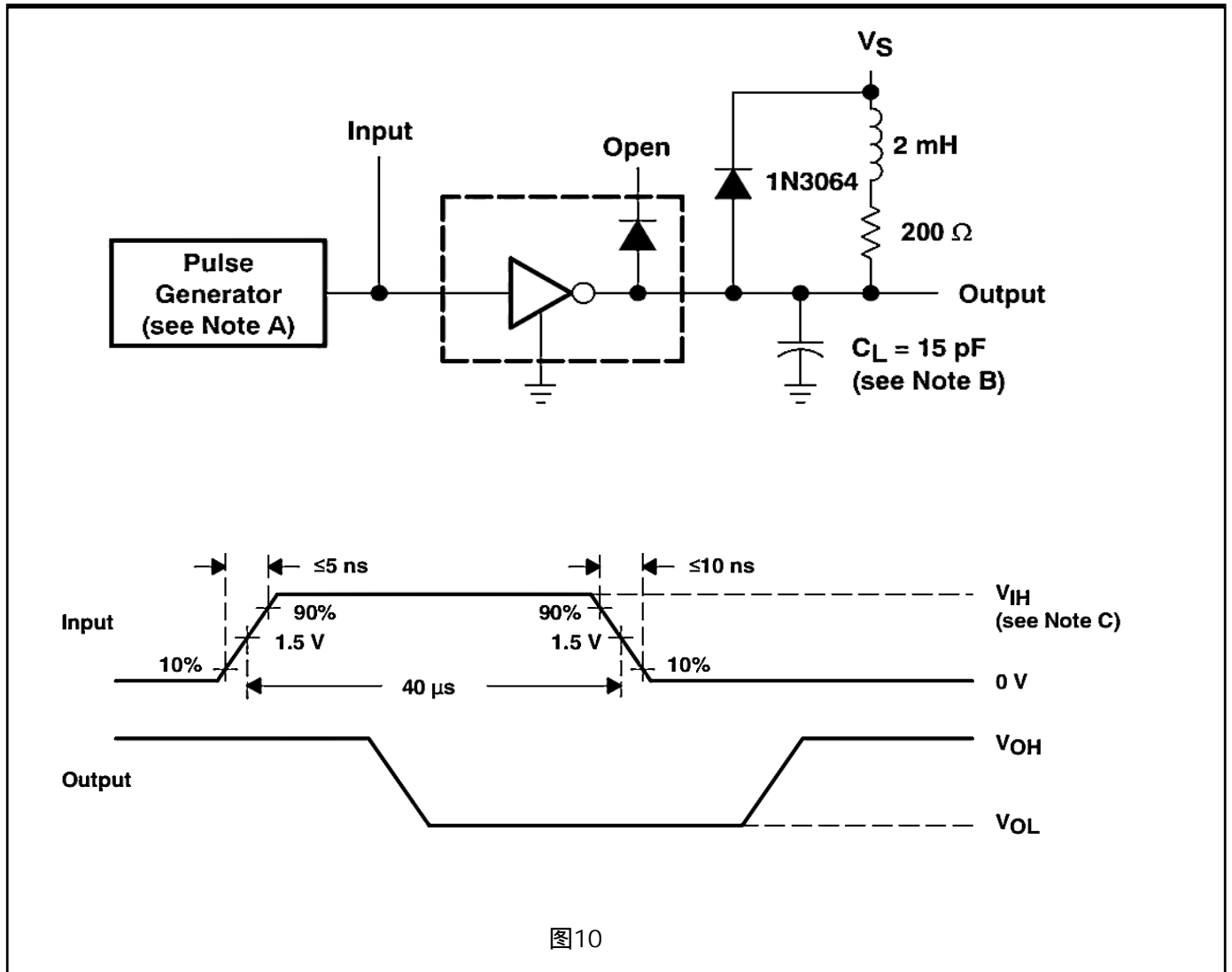
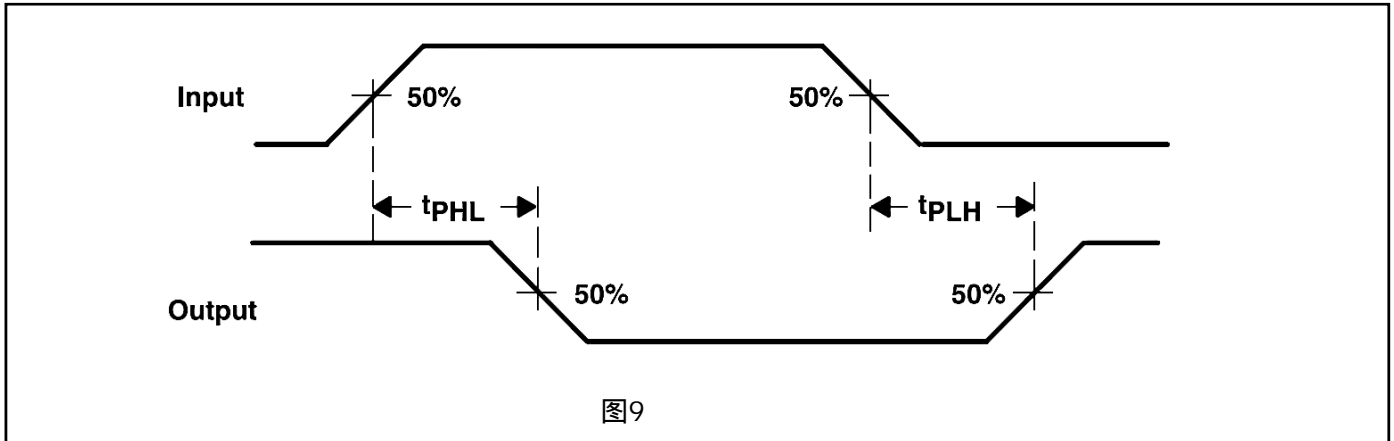


## 开关特性

参数	测试条件	2001/2002/2003/2004		单位
		最小值	典型值	
t <sub>pLH</sub> 传播延迟时间, 低电平到高电平输出	请参阅图9	0.25	1	μS
t <sub>pHL</sub> 传播延迟时间, 高电平到低电平输出	请参阅图9	0.25	1	μS

## 电路测试

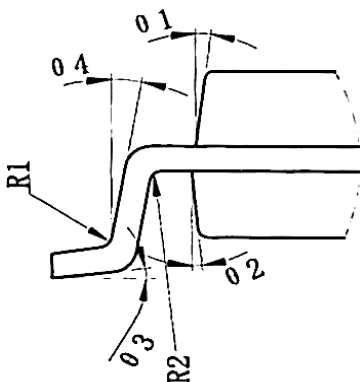
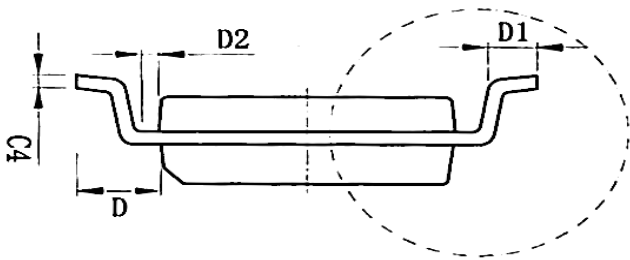
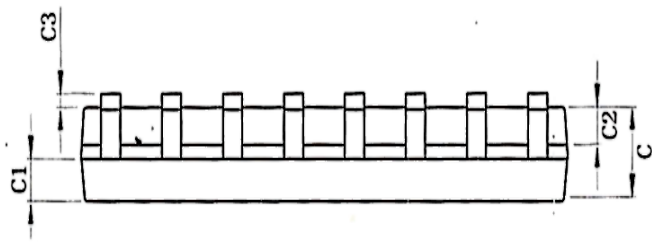
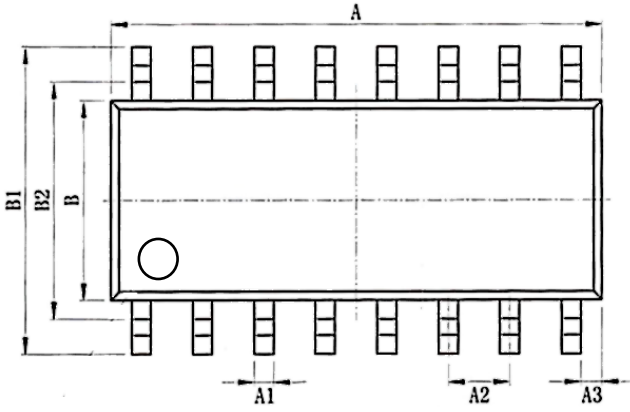




- 注：1、极限值是指超出该范围，器件有可能被损坏，并非器件的正常工作条件范围。电参数表提供了器件的工作条件范围；  
2、除特别指明外，所有条件适用于达林顿阵列；  
3、通常条件下，每路输出在  $70^{\circ}\text{C}$ 、 $V^{CE(Sat)} = 1.6\text{V}$  下脉冲宽度为 20ms 的持续工作



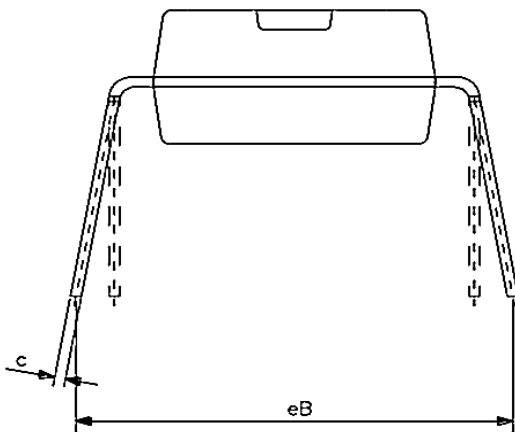
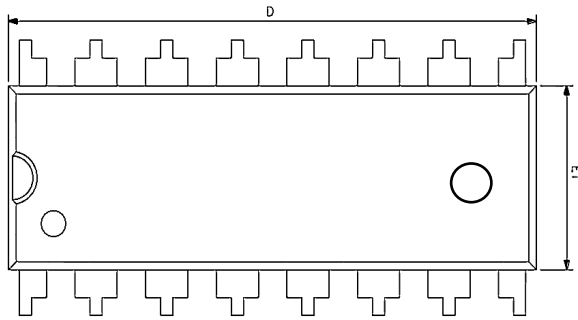
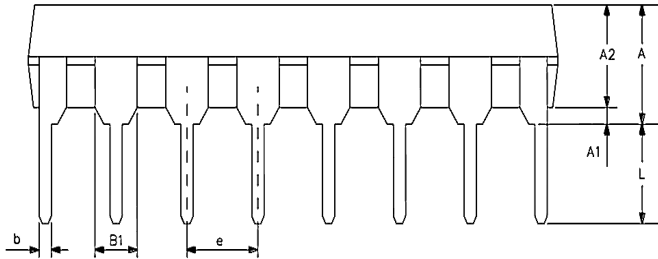
Package SOP16



SIZE SYMBOL	MIN./mm	MAX./mm
A	9.80	10.00
A1	0.356	0.456
A2	1.27TYP	
A3	0.302TYP	
B	3.85	3.95
B1	5.84	6.24
B2	5.00 TYP	
C	1.40	1.60
C1	0.61	0.71
C2	0.54	0.64
C3	0.05	0.25
C4	0.203	0.233
D	1.05 TYP	
D1	0.40	0.70
D2	0.15	0.25
R1	0.20TYP	
R2	0.20TYP	
01	8°~12°TYP4	
02	8°~12°TYP4	
03	0°~8°	
04	4°~12°	



Package DIP16



SIZE SYMBOL	MIN./mm	MAX./mm
A2	3.20	3.60
A1	0.51	—
A	3.60	5.33
L	3.00	3.60
b	0.36	0.56
B1	1.52	
D	18.80	19.94
E1	6.20	6.60
e	2.54	
C	0.20	0.36
eB	7.62	9.30
R	0.20TYP	
R1	0.30TYP	
$\theta$	0°	8°
$\theta_1$	45°TYP	
$\theta_2$	12°TYP	
$\theta_3$	0°	8°
$\theta_4$	0°	10°



## 订购信息

Order Number	Package	Package Quantity	Marking On The park	Temperature
ULQ2001A-TUDI	DIP16	Tube,25,A box of 1000	ULQ2001A	-40°C to 105°C
ULQ2003A-TUDI	DIP16	Tube,25,A box of 1000	ULQ2003A	
ULQ2004A-TUDI	DIP16	Tube,25,A box of 1000	ULQ2004A	
ULQ2003D1013TR-TUDI	SOP16	Tape,Reel,2500	ULQ2003	
ULQ2003D1013TRY-TUDI	SOP16	Tape,Reel,2500	ULQ2003Y	
ULQ2004D1013TR-TUDI	SOP16	Tape,Reel,2500	ULQ2004	



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