概述：

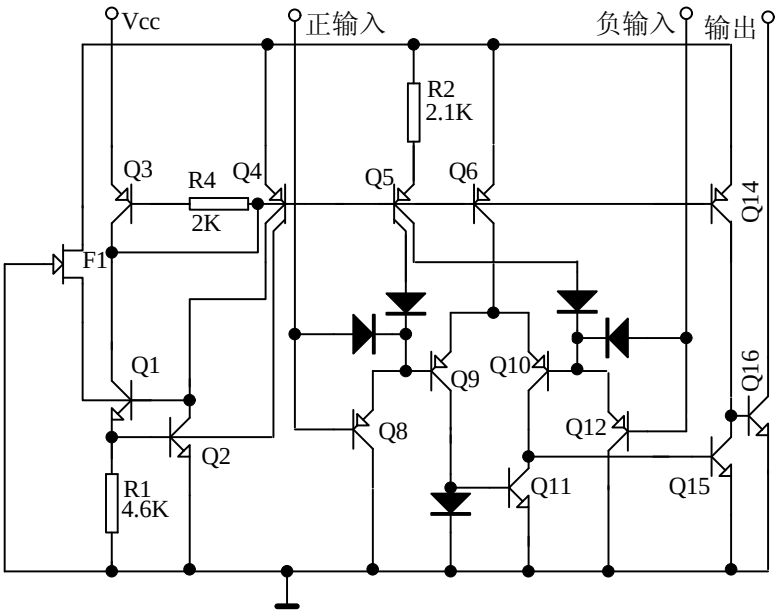
LM293ADR是由两个独立、精确的电压比较器组成，其失调电压不超过 2.0mV。可在单电源下或双电源下工作。并且其电流大小不受电源电压幅度大小影响。这些比较器有一个独特的性能，就是即使在单电源下工作时，其输入共模电压范围也能达到零电平。主要用于消费类和工业类电子产品中。

采用 SOP-8(SOIC-8) 封装形式。

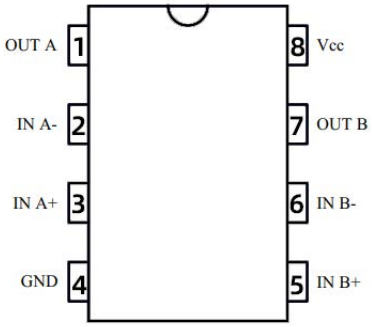
主要特点：

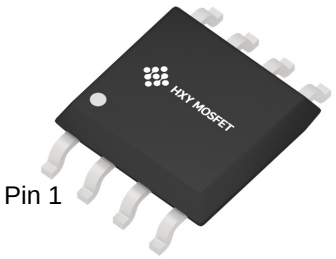
- 工作电源电压范围宽： 单电源：2.0V~36V
  双电源：±1.0V~±18V
- 电源电流小：0.8mA 与电源电压无关
- 输入偏置电流低：25nA
- 输入失调电流低：5.0nA
- 输入失调电压低：5.0mV
- 输入共模电压范围可达零电平
- 输入差分电压的范围与电源电压的范围一致。
- 可与 TTL、DTL、ECL、MOS 和 CMOS 兼容。

内部电路图



引出端功能符号





引出端序号	功　能	符　号	引出端序号	功　能	符　号
1	比较器 1 输出	OUT A	5	比较器 2 正相输入	IN2+
2	比较器 1 反相输入	IN1-	6	比较器 2 反相输入	IN2-
3	比较器 1 正相输入	IN1+	7	比较器 2 输出	OUT B
4	地	GND	8	电源	Vcc

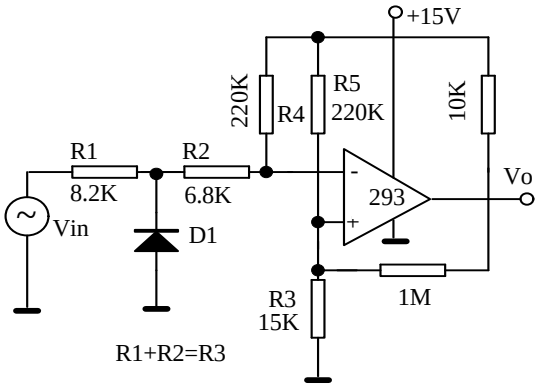
极限值（绝对最大额定值，若无其它规定，Tamb=25℃）

参 数 名 称		符　号	数　值		单　位
			最　小	最　大	
电源电压	双电源电压	Vcc	-	±18	V
	单电源电压			36	
输入差分电压		V_{IDR}		36	V
输入共模电压		V_{ICR}	-0.3	36	V
输出对地短路电流		I_{OG}		20	mA
最大工作结温		$T_{J(MAX)}$		125	℃
功耗（*）		P_D		570	mW
工作环境温度		Tamb	0	70	℃
贮存温度		Tstg	-65	150	℃

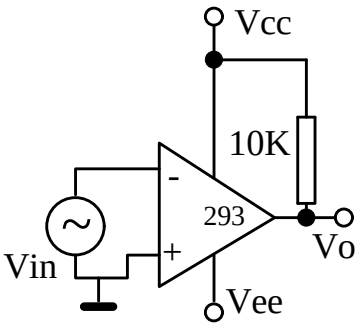
电特性 （若无其它规定，Vcc=5V，Tamb=25℃）

特 性	测试条件	符 号	规 范 值			单位
			最 小	典 型	最 大	
输入失调电压	Ta=25℃	V_{IO}		±1.0	±5.0	mV
	0℃ ≤ Ta ≤ 70℃				±9.0	
输入失调电流	Ta=25℃	I_{IO}		±5.0	±50	nA
	0℃ ≤ Ta ≤ 70℃				±150	
输入偏置电流	Ta=25℃	I_{IB}		25	250	nA
	0℃ ≤ Ta ≤ 70℃				400	
输入共模电压范围	Ta=25℃	V_{ICR}	0		Vcc-1.5	V
	0℃ ≤ Ta ≤ 70℃		0		Vcc-2.0	
电源电流	R_L=∞ 双比较器	Icc		0.4	1.0	mA
	R_L=∞ 双比较器，Vcc=30V				2.5	
电压增益	R_L ≥ 15KΩ，Vcc=15V	Gv	50	200		V/mV
大信号响应时间	V_{IN}=TTL 逻辑摆幅，V_{REF}=1.4V，V_{RL}=5.0V，R_L=5.1KΩ	tRES		300		ns
响应时间	V_{RL}=5.0V，R_L=5.1KΩ	tRES		1.3		ns
输入差分电压		V_{ID}			Vcc	V
输出陷电流	$V_{IN(-)}$ ≥ 1.0V，$V_{IN(+)}$ =0V，Vo ≤ 1.5V	I_{SINK}	6.0	16		mA
输出饱和电压	$V_{IN(-)}$ ≥ 1.0V，$V_{IN(+)}$ =0V，I_{SINK} ≤ 4.0mA	V_{SAT}		150	400	mV
	$V_{IN(-)}$ ≥ 1.0V，$V_{IN(+)}$ =0V，I_{SINK} ≤ 4.0mA 0℃ ≤ Ta ≤ 70℃				700	
输出漏电流	$V_{IN(+)}$ ≥ 1.0V，$V_{IN(-)}$ =0V，Vo=5.0V	I_{OL}		0.1		nA
	$V_{IN(+)}$ ≥ 1.0V，$V_{IN(-)}$ =0V，Vo=30V 0℃ ≤ Ta ≤ 70℃				1000	

应用图

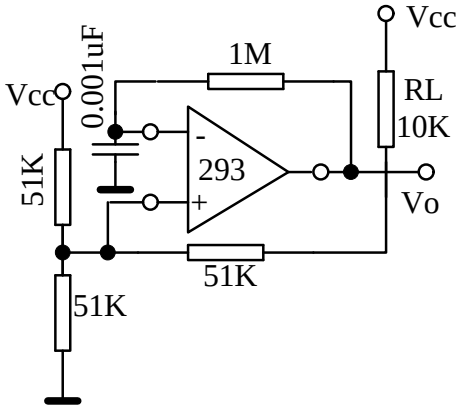


过零检波器(单电源应用

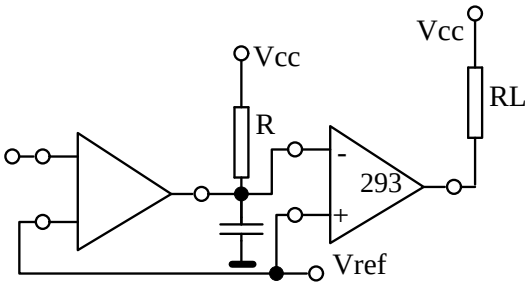


过零检波器(双电源应用)

应用图



方波振荡器



延时发生器

使用说明：

LM293ADR是高增益、宽频带器件，象大多数比较器一样，如果输出端到输入端有寄生电容而产生耦合，则很容易产生振荡。这种现象仅仅出现在当比较器改变状态时，输出电压过渡的间隙。电源加旁路滤波并不能解决这个问题，标准 PC 板的设计对减小输入—输出寄生电容耦合是有助的。减小输入电阻至小于 10KΩ将减小反馈信号，而且增加甚至很小的正反馈量（滞回 1.0~10mV）能导致快速转换，使得不可能产生由于寄生电容引起的振荡。除非利用滞后，否则直接插入 IC 并在引脚上加上电阻将引起输入—输出在很短的转换周期内振荡，如果输入信号是脉冲波形，并且上升和下降时间相当快，则滞回将不需要。

比较器的所有没有用的引脚必须接地。

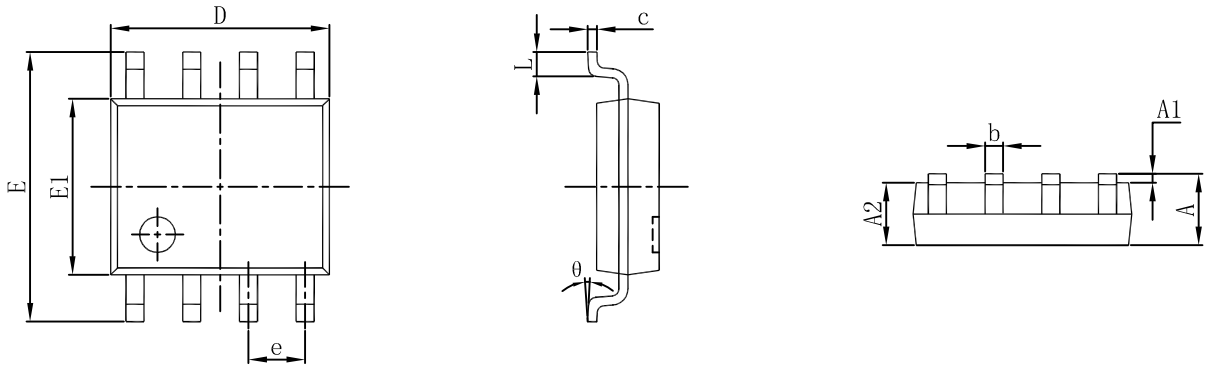
LM293ADR偏置网络确立了其静态电流与电源电压范围 2.0~30V 无关。

通常电源不需要加旁路电容。

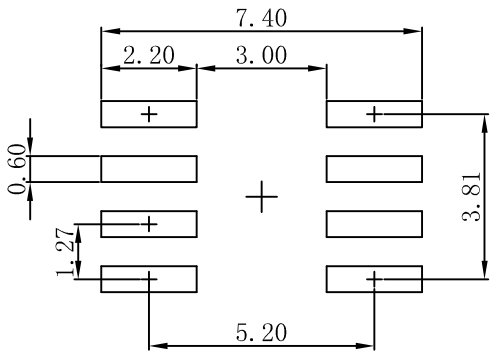
差分输入电压可以大于 Vcc 并不损坏器件。保护部分必须能阻止输入电压向负端超过 -0.3V。

LM293ADR的输出部分是集电极开路，发射极接地的 NPN 输出晶体管，可以用多集电极输出提供或功能。输出负载电阻能衔接在可允许电源电压范围内的任何电源电压上，不受 Vcc端电压值的限制。此输出能作为一个简单的对地 SPS 开路（当不用负载电阻没被运用），输出部分的陷电流被可能得到的驱动和器件的β值所限制。当达到极限电流（16mA）时，输出晶体管将退出而且输出电压将很快上升。输出饱和电压被输出晶体管大约 60Ω的γ_{SAT}限制。当负载电流很小时，输出晶体管的低失调电压（约 1.0mV）允许输出箝位在零电平。

封装信息：SOP-8(SOIC-8)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	**Max**	**Min**	**Max**
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.007	0.010
D	4.800	5.000	0.189	0.197
e	1.270 (BSC)		0.050 (BSC)	
E	5.800	6.200	0.228	0.244
E1	3.800	4.000	0.150	0.157
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°



Note:
1.Controlling dimension:in millimeters.
2.General tolerance:± 0.05mm.
3.The pad layout is for reference purposes only.

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