



概述

TLC555IDR是行业标准的 CMOS 版本 555 系列通用定时器。该 TLC555 可提供产生精确的时间延迟和频率，具有非常低的功率损耗和电源电流尖峰。当芯片作为触发延时使用时，时间延时由一个单一的外部电阻和电容精确控制。在稳定模式下，振荡频率和占空比准确由两个外接电阻和一个电容器设定。

主要特点

- 低电源电流：80uA (典型值)
- 500KHz的稳态频率能力。
- 最低工作电压4.5V。
- 5V电压下，输出与TTL和CMOS逻辑电

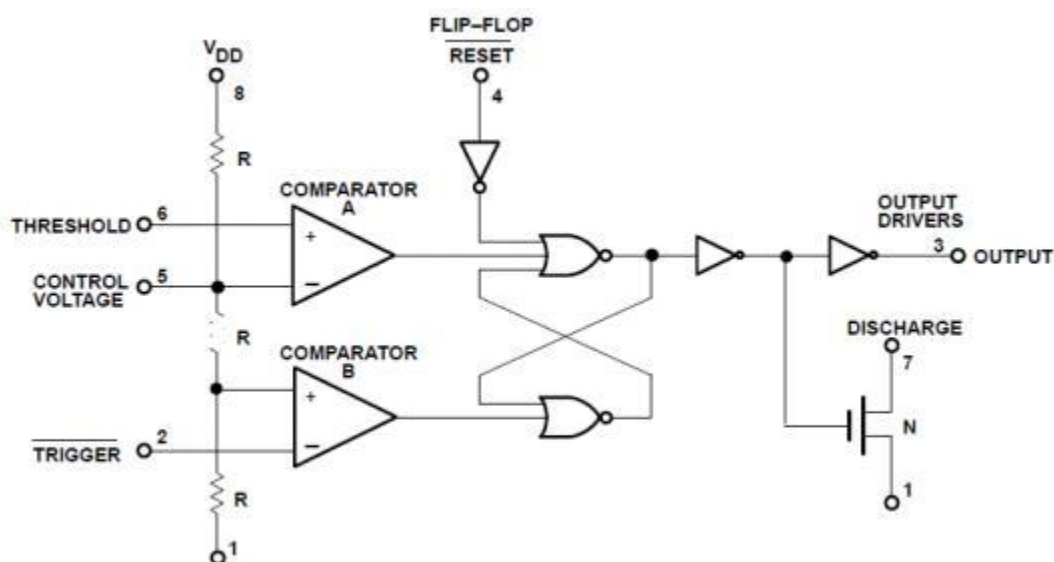
压完全兼容。

- 输出转换期间电源电流尖峰低。
- 极低的触发，阈值和复位电流：20pA(典型值)。
- 在非稳定和单稳态模式下运行，可调节占空比。
- 与555系列定时器引脚兼容。
- 采用SOP8(SOIC-8)封装形式。

主要应用领域

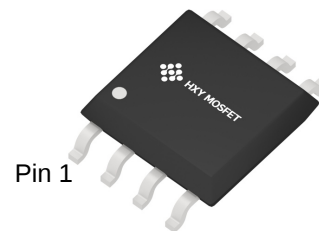
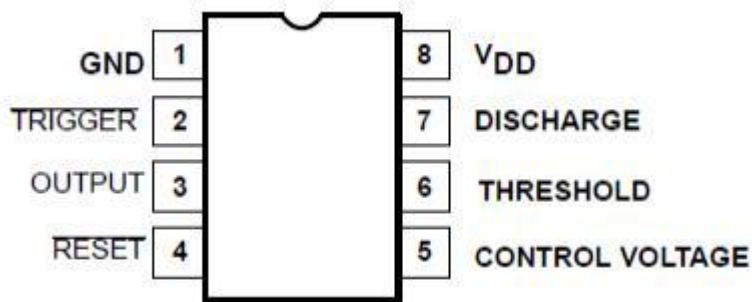
- 脉冲发生器
- 精确计时
- 延时生成
- 脉冲宽度调制

内部框图



管脚说明

TLC555IDR提供SOP8(SOIC-8)封装形式



真值表

RESET	V _{trigger}	V _{threshold}	OUTPUT	DISCHARGE SWITCH
LOW	--	--	LOW	ON
HIGH	<1/3V _{CC}	--	HIGH	OFF
HIGH	>1/3V _{CC}	>2/3V _{CC}	LOW	ON
HIGH	>1/3V _{CC}	<2/3V _{CC}	如前所述	

极限参数 (注 2)

符号	参数	值	单位
V _{cc}	供电电压	15	V
T _{oper}	工作温度范围	0~85	°C
T _j	结点温度	150	°C
T _{stg}	贮藏温度范围	-65~150	°C

推荐工作条件(TA=25°C)

符号	参数	值	单位
V _{cc}	供电电压	4.5~15	V
V _{th} , V _{trig} , V _{CTRL} , V _{reset}	最大输入电压	-0.3~V _{cc} +0.3	V

电气特性 (注 1,2)

条件: (无特殊规定, 测试电路中, TA=25°C, 所有开关打开, RESET 连接到 VCC)

参数	标识	测试条件	Min	典型值	Max	单位
电源电流	I _s	V _{CC} =5V		30	50	uA
		V _{CC} =10V		60	100	
		V _{CC} =15V		90	150	
控制电压	V _{CTRL}	V _{CC} =5V	3.28	3.33	3.38	V
		V _{CC} =10V	6.6	6.66	6.7	
		V _{CC} =15V	9.95	10	10.15	



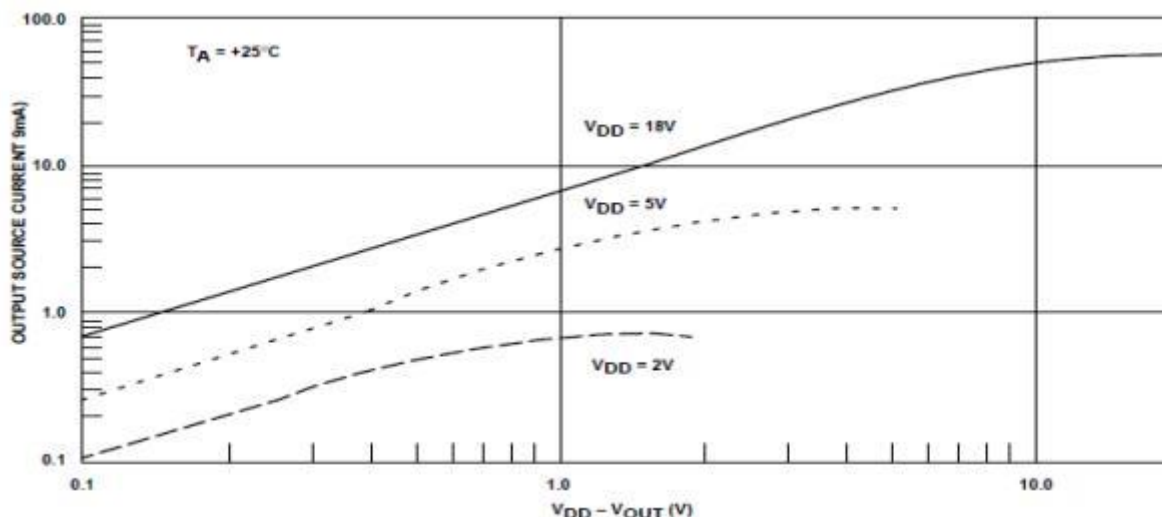
参数	标识	测试条件	Min	典型值	Max	单位
放电端饱和电压	VDIS	VCC=5V, IDIS=10mA		100	400	mV
输出电压(低)	VOL	VCC=5V, Io=3.2mA		0.1	0.4	V
		VCC=15V, Io=3.2mA				
输出电压(高)	VOH	VCC=5V, Io=-2mA	4.0	4.5		V
		VCC=15V, Io=-2mA	14.5	14.75		
触发电压	VTRIG	VCC=5V	1.55	1.66	1.7	V
		VCC=10V	3.23	3.33	3.38	
		VCC=15V	4.95	5	5.05	
触发电流	ITRIG	VCC=5V		10		pA
复位电压	VRES	VCC=5V	0.4	0.7	1.2	V
复位电流	IRES	VCC=5V		10		pA
阈值电流	ITHRESH	VCC=5V		10		pA
放电端漏电流	IDIS	VCC=12V		1.0	100	nA
输出上升	tR	VCC=5V, RL=10MΩ, CL=10pF	35	40	75	ns
下降时间	tF	VCC=5V, RL=10MΩ, CL=10pF	35	40	75	ns
最大频率	Fmax			500		KHz

注 1：所有电压都相对于该接地引脚测定，除非另有规定。

注 2：绝对最大额定值指超出该工作限制可能出现芯片损坏。工作额定值表明该设备可以工作，但不保证特殊的性能界限。电气特性的测试条件这保证特定性能指标下的直流和交流电气规范。这假定该芯片是在工作额定范围内。规格不保证没有限制条件的参数，然而典型值是芯片性能的一个很好的体现。

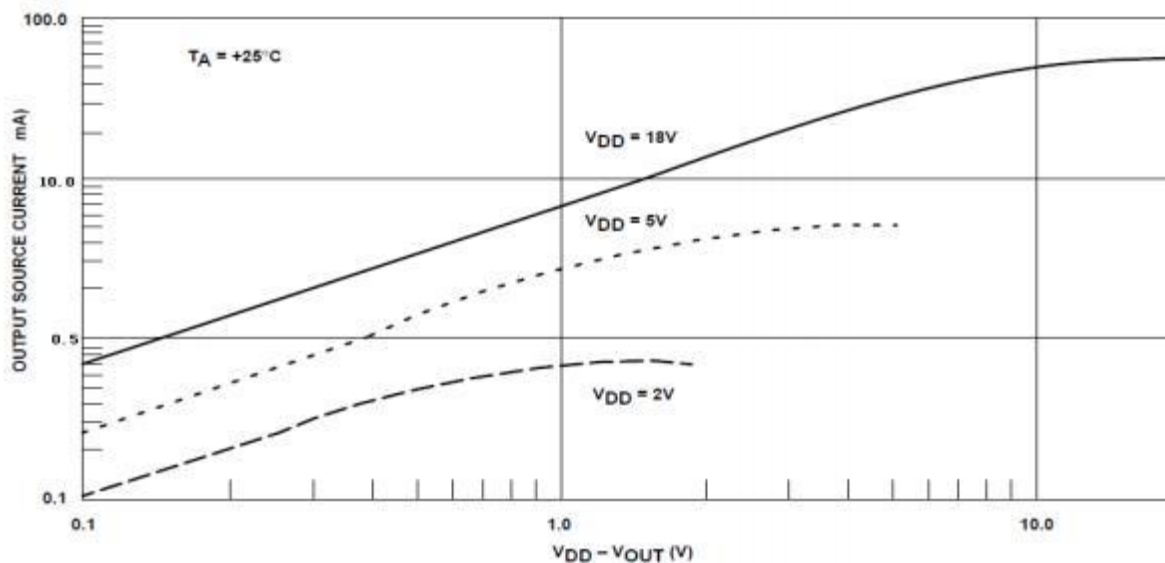
典型性能

1、高输出电压降与输出源电流

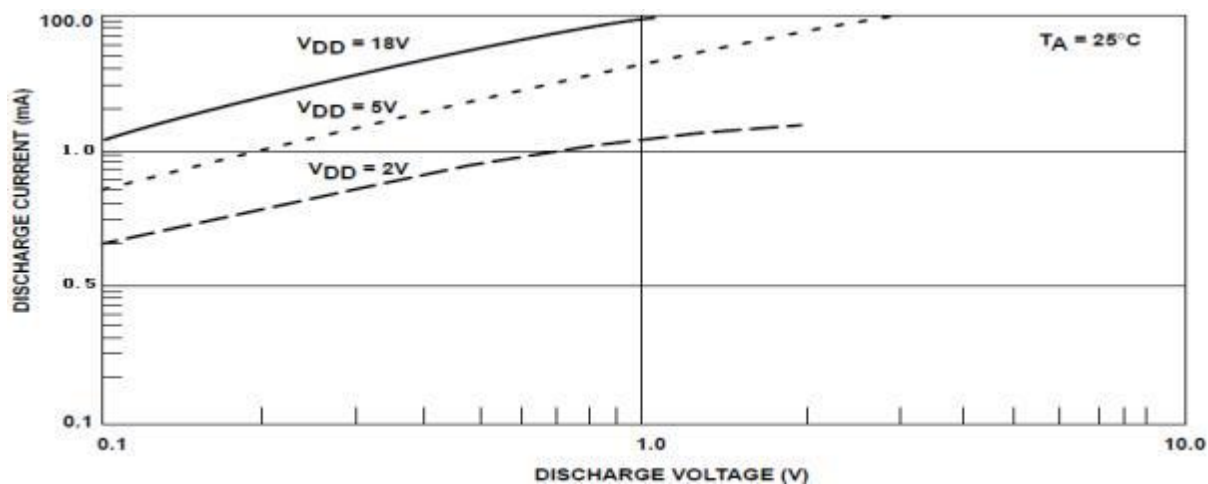




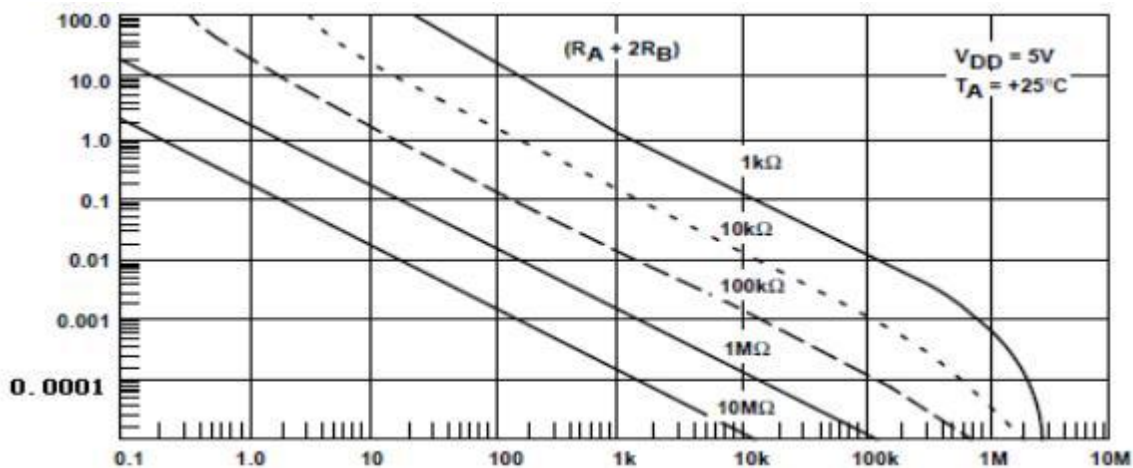
2、低输出电压与输出吸收电流



3、放电低输出电压与放电吸收电流



4、 R_A 、 R_B 、C 与频率





应用信息

单稳态

在这种操作模式中，定时器用作一个触发器(图 1)。外部电容通过内部电路初步放电。当一个小于 $1/3V_S$ 的负触发脉冲加在触发终端，触发器设置了电容器释放短路电流，并驱动输出为高电平。

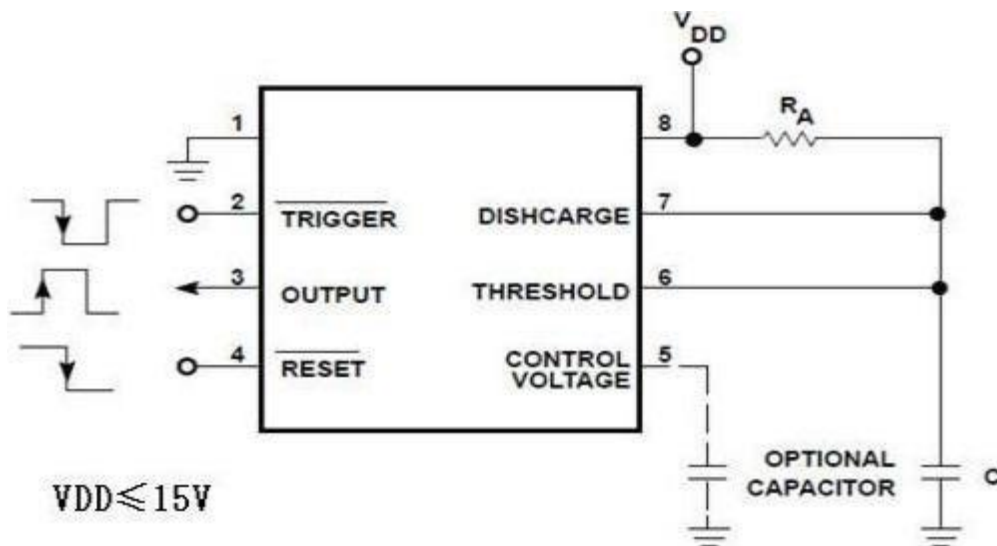


图 1：单稳态(单次)

稳态运行

该电路如图 2 连接(触发的和阈值的终端连接在一起)，它会触发本身和释放运行作为一个多谐振荡器。外部电容通过 $R_A + R_B$ 充电和通过 R_B 放电。从而占空比可通过这两个电阻的比值被精确地设置。

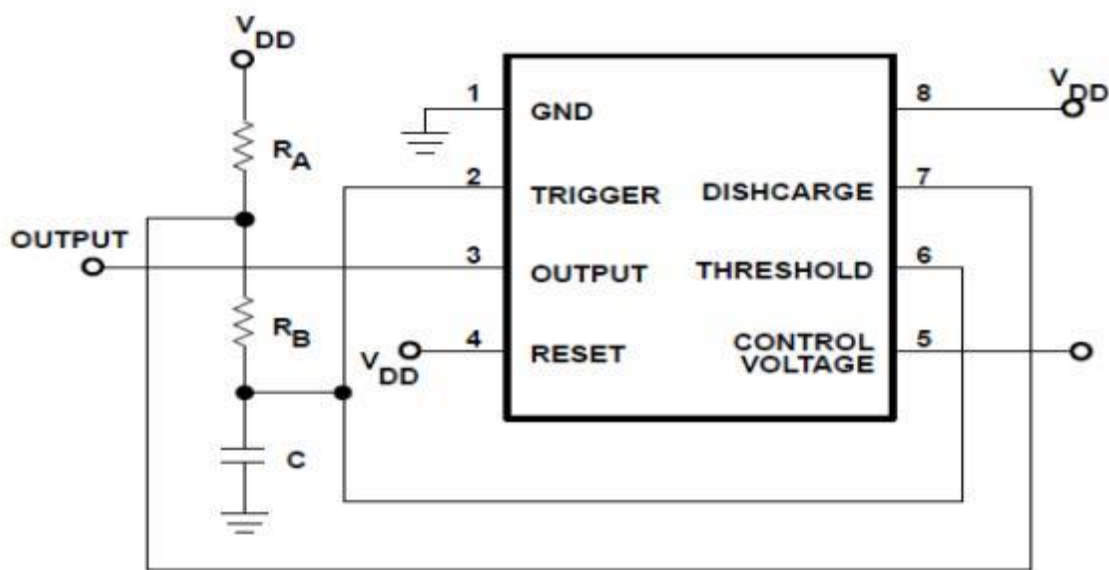
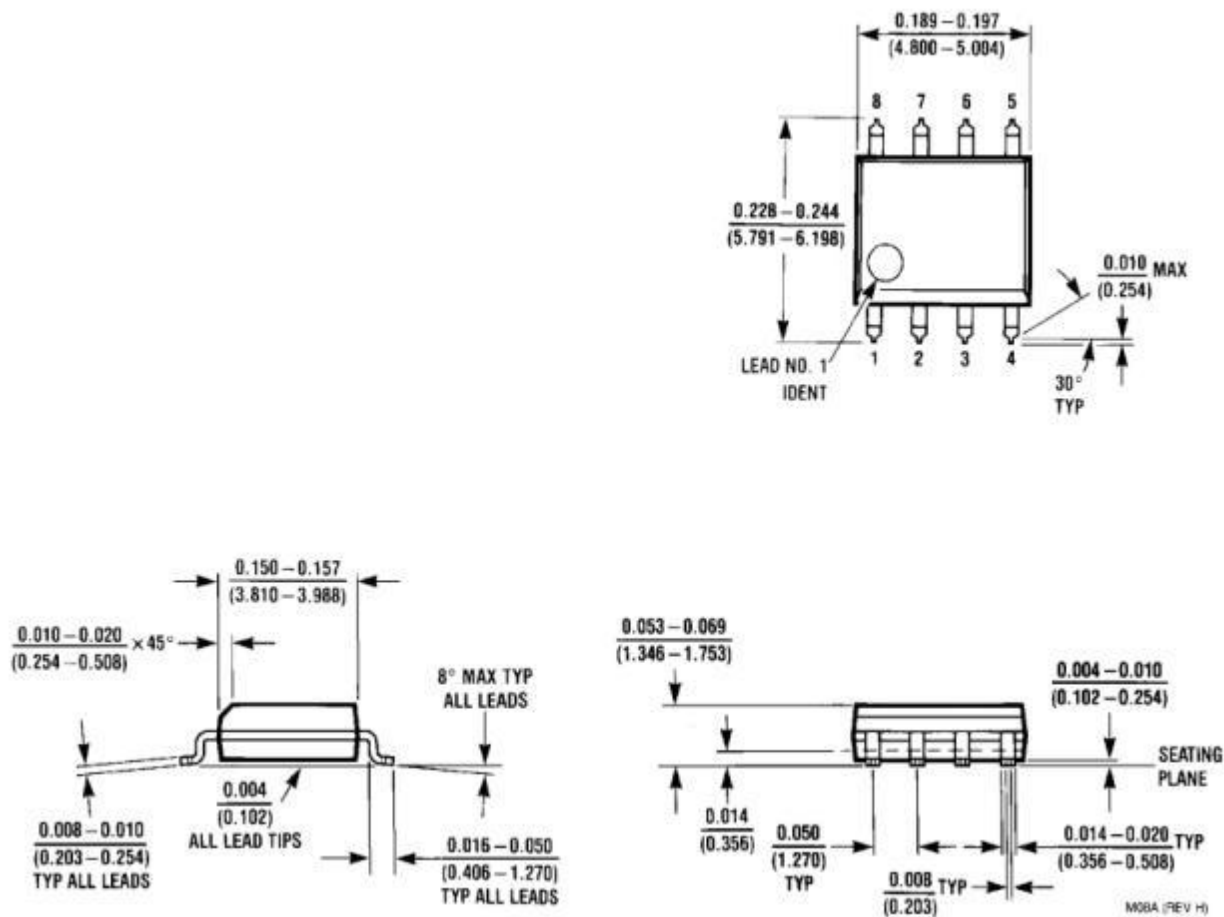


图 2：稳态(可变占空比振荡器)



TLC555IDR

8 引脚塑料 SOP 英寸(毫米), 除非另有说明





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