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SEMICONDUCTOR



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PLED

NE556DR-MS

产品手册

产品简介

NE556DR-MS 内部集成了两个 556通用时基电路。这两个通用时基电路共用一个电源(VCC)和电源地(GND)，其它线路和管脚都各自独立。每个通用时基电路由阈值比较器、触发比较器、RS 触发器、复位输入、放电 和触发输入六部分电路构成。每个通用时基电路都可通过外接电阻电容实现精确的定时或产生振荡波形。

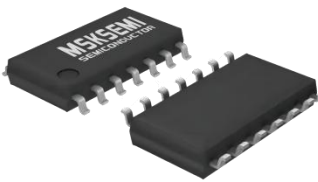
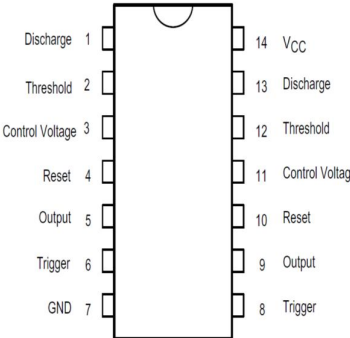
产品特点

- 双路通用时基电路，相互独立运行
- 输出电流大，可达 200mA
- 定时时间可实现微秒级到小时级控制
- 温度稳定性好
- 可实现非稳态和单稳态工作模式

产品用途

- 精确定时
- 脉冲发生器，音频脉冲发生器
- 工业控制
- 脉冲整形、脉宽调制，脉冲相位调制
- 延时发生器，分频器
- 交通信号灯控制

封装形式和管脚功能定义

封装图	管脚定义
 <p>SOP-14</p>	 <p>Discharge 1 14 VCC Threshold 2 13 Discharge Control Voltage 3 12 Threshold Reset 4 11 Control Voltage Output 5 10 Reset Trigger 6 9 Output GND 7 8 Trigger</p>

管脚序号	管脚定义	管脚功能描述
1	Discharge	放电
2	Threshold	阈值
3	Control Voltage	控制电压
4	Reset	复位
5	Output	输出
6	Trigger	触发
7	GND	电源地
8	Trigger	触发
9	Output	输出
10	Reset	复位
11	Control Voltage	控制电压
12	Threshold	阈值
13	Discharge	放电
14	VCC	电源正

订单信息

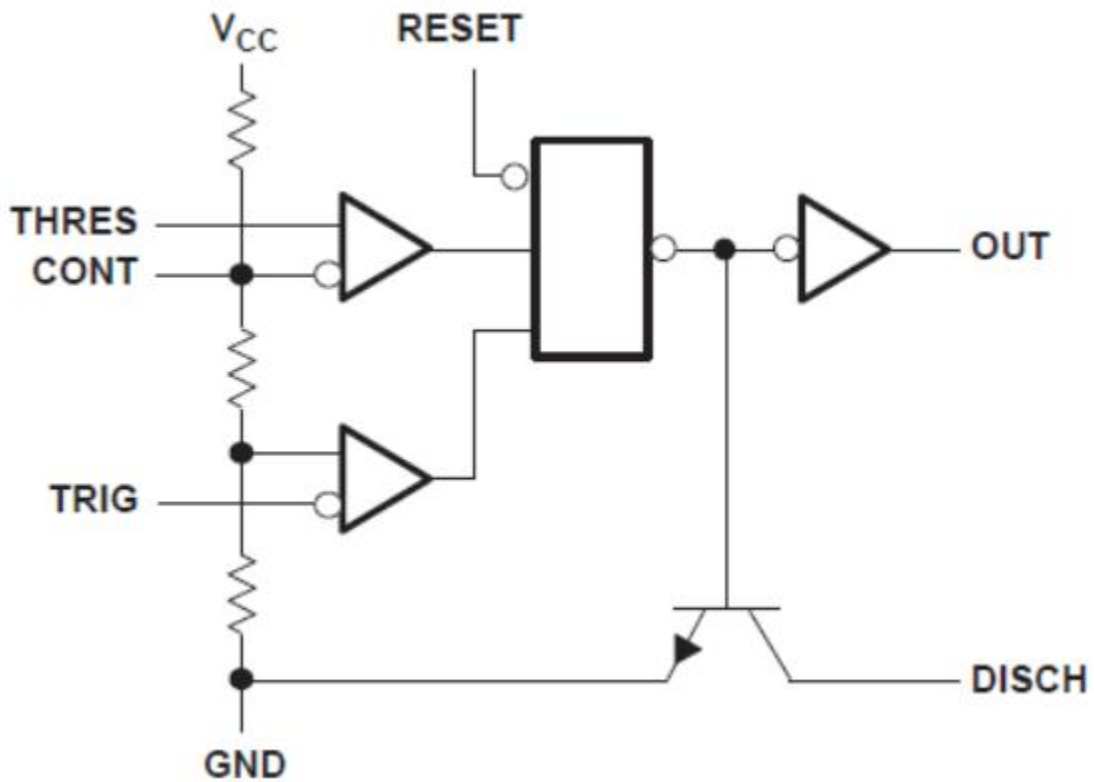
P/N	PKG	QTY
NE556DR-MS	SOP-14	2500PCS

极限参数

项目	符号	极限值 ⁽¹⁾	单位
电源电压	VCC	18	V
耗散功率	PD	400	mW
工作温度	TA	0~70	°C
储存温度	TS	-65~150	°C
焊接温度	TW	260, 10s	°C

注：(1) 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。

等效原理图 (单路时基电路等效原理图)



功能逻辑

REST	TRIG	THRES	OUT	DISCH
L	X	X	L	ON
H	<1/3VDD	X	H	OFF
H	>1/3VDD	>2/3VDD	L	ON
H	>1/3VDD	<2/3VDD	保持原状态	保持原状态

电学特性 ($T_A=25^\circ\text{C}$, 除非特别指定)

测试项目	符号	测试条件	最小值	典型值	最大值	单位	
工作电压	V_{CC}		4.5		16	V	
工作电流	I_{CC}	$V_{CC}=5\text{V}, V_{OUT}=H, R_L=\infty$		5	10	mA	
		$V_{CC}=15\text{V}, V_{OUT}=H, R_L=\infty$		11	20	mA	
		$V_{CC}=15\text{V}, V_{OUT}=L, R_L=\infty$		17	30	mA	
控制电压	V_{Cont}	$V_{CC}=15\text{V}$	8	10	11	V	
		$V_{CC}=5\text{V}$	2.6	3.3	4	V	
阈值电压	V_{TH}	$V_{CC}=15\text{V}$	8.8	10	11.2	V	
		$V_{CC}=5\text{V}$	2.4	3.3	4.2	V	
阈值电流	I_{TH}	$V_{CC}=15\text{V}, V_{TH}=11.2\text{V}$			250	nA	
触发电压	V_{TRIG}	$V_{CC}=15\text{V}$	4.5	5.0	5.6	V	
		$V_{CC}=5\text{V}$	1.1	1.67	2.2	V	
触发电流	I_{TRIG}	$V_{CC}=15\text{V}, V_{TRIG}=0\text{V}$			500	nA	
复位电压	V_{RESET}	$V_{CC}=15\text{V}$		0.7	1.5	V	
复位电流	I_{RESET}	$V_{RESET}=0.4\text{V}, V_{CC}=15\text{V}$	0.4	0.3	10	uA	
		$V_{RESET}=0\text{V}, V_{CC}=15\text{V}$		0.2	1.0	mA	
放电管漏电流	$I_{DIS(OFF)}$	$V_{CC}=15\text{V}, V_{DISH}=15\text{V}$		10		nA	
放电管导通压降	V_{DISL}	$V_{CC}=15\text{V}, I_{DISL}=15\text{mA}$		0.15	0.5	V	
输出低电压	V_{OL}	$V_{CC}=15\text{V}$	$I_{OL}=5\text{mA}$		0.05		V
			$I_{OL}=50\text{mA}$		0.4		
			$I_{OL}=100\text{mA}$		1.4		
			$I_{OL}=200\text{mA}$		2.7		
		$V_{CC}=5\text{V}$	$I_{OL}=5\text{mA}$		0.08		
			$I_{OL}=8\text{mA}$		0.15		
输出高电压	V_{OH}	$V_{CC}=15\text{V}$	$I_{OH}=-100\text{mA}$		13.3		V
			$I_{OH}=-200\text{mA}$		12.0		
		$V_{CC}=5\text{V}$	$I_{OH}=-100\text{mA}$		3.3		
输出上升沿时间	t_r	$V_{CC}=15\text{V}, C_i=15\text{pF}$		100		ns	

电学特性($T_A=25^{\circ}\text{C}$, 除非特别指定)

测试项目		符号	测试条件	最小值	典型值	最大值	单位
输出下降沿时间		t_F	$V_{CC}=15\text{V}, C_L=15\text{pF}$		100		ns
定时初始间隔误差 ⁽¹⁾	单稳态 ⁽²⁾	t_{mer}	$V_{CC}=15\text{V}$		1		%
	非稳态 ⁽³⁾	t_{aer}	$V_{CC}=15\text{V}$		2		
	Timer1-timer2 ⁽⁴⁾	t_{d12er}			± 1		
定时电压变化灵敏度	单稳态电路	t_{mv}	$V_{CC}=5\text{V to }15\text{V}$		0.1		%/V
	非稳态电路	t_{av}	$V_{CC}=5\text{V to }15\text{V}$		0.3		
	Timer1-timer 2	t_{d12v}			± 0.2		
定时温度变化灵敏度	单稳态电路	t_{mt}	$V_{CC}=15\text{V}, T_A = 0 \text{ to } 60^{\circ}\text{C}$		50		ppm/ $^{\circ}\text{C}$
	非稳态电路	t_{at}	$V_{CC}=15\text{V}, T_A = 0 \text{ to } 60^{\circ}\text{C}$		150		
	Timer1-timer 2	t_{d12t}			± 10		

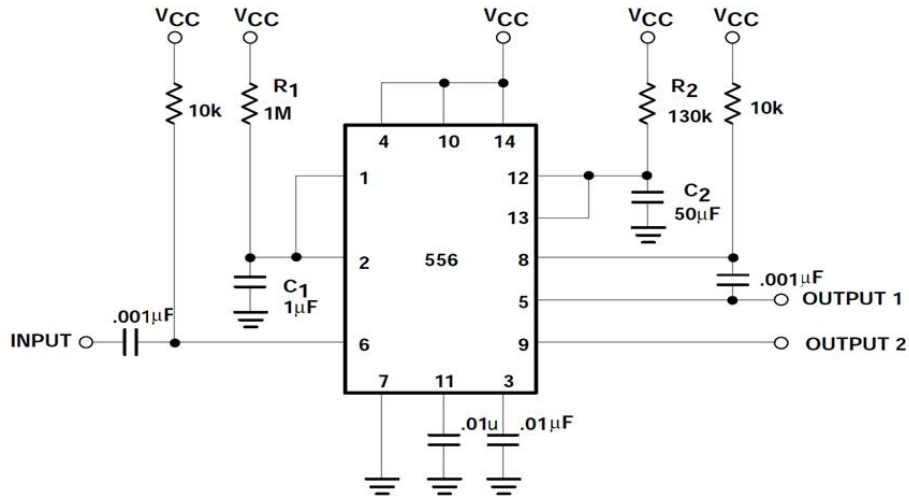
注：(1) 时间间隔误差定义为测量值与每个过程运行的随机样本平均值之间的差异；

(2) 见典型应用图中的单稳态电路, $R_A=2\text{K to }100\text{K}$, $C=0.1\mu\text{F}$; (3) 见典型应用图中的非稳态电路, $R_A=R_B=1\text{K to }100\text{K}$, $C=0.1\mu\text{F}$;

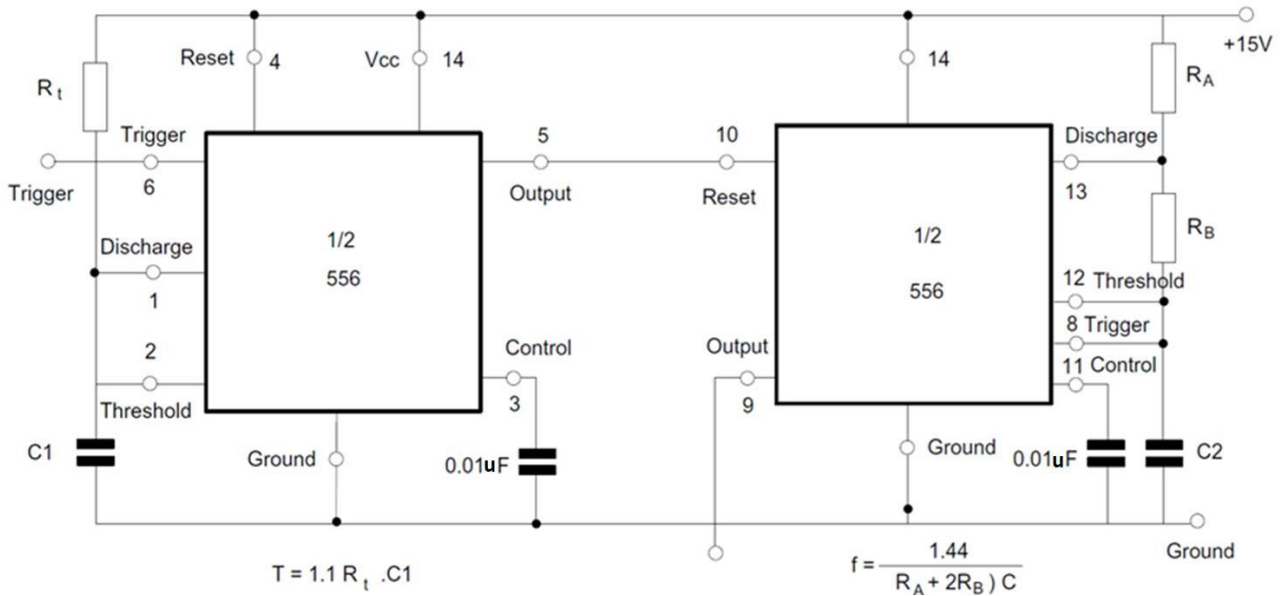
(4) Timer1-timer2, 指 NE556 两组定时器定时精度之间的差值。

典型应用线路

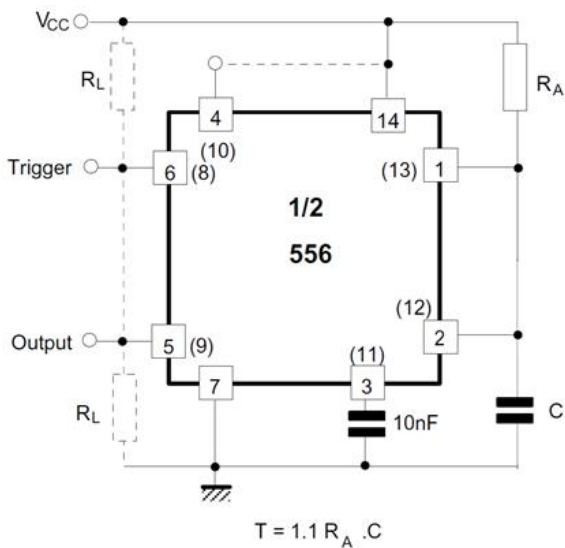
1、双计时器电路



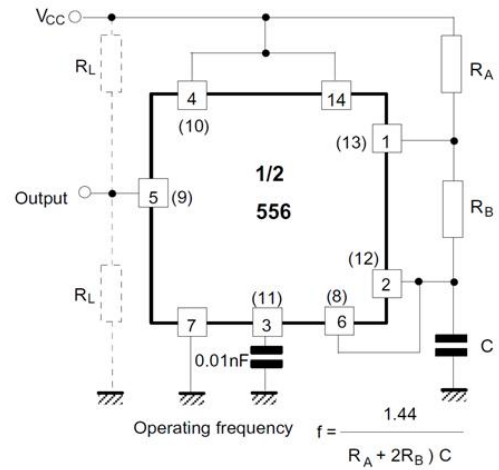
2、音频脉冲发生器



3、单稳态电路



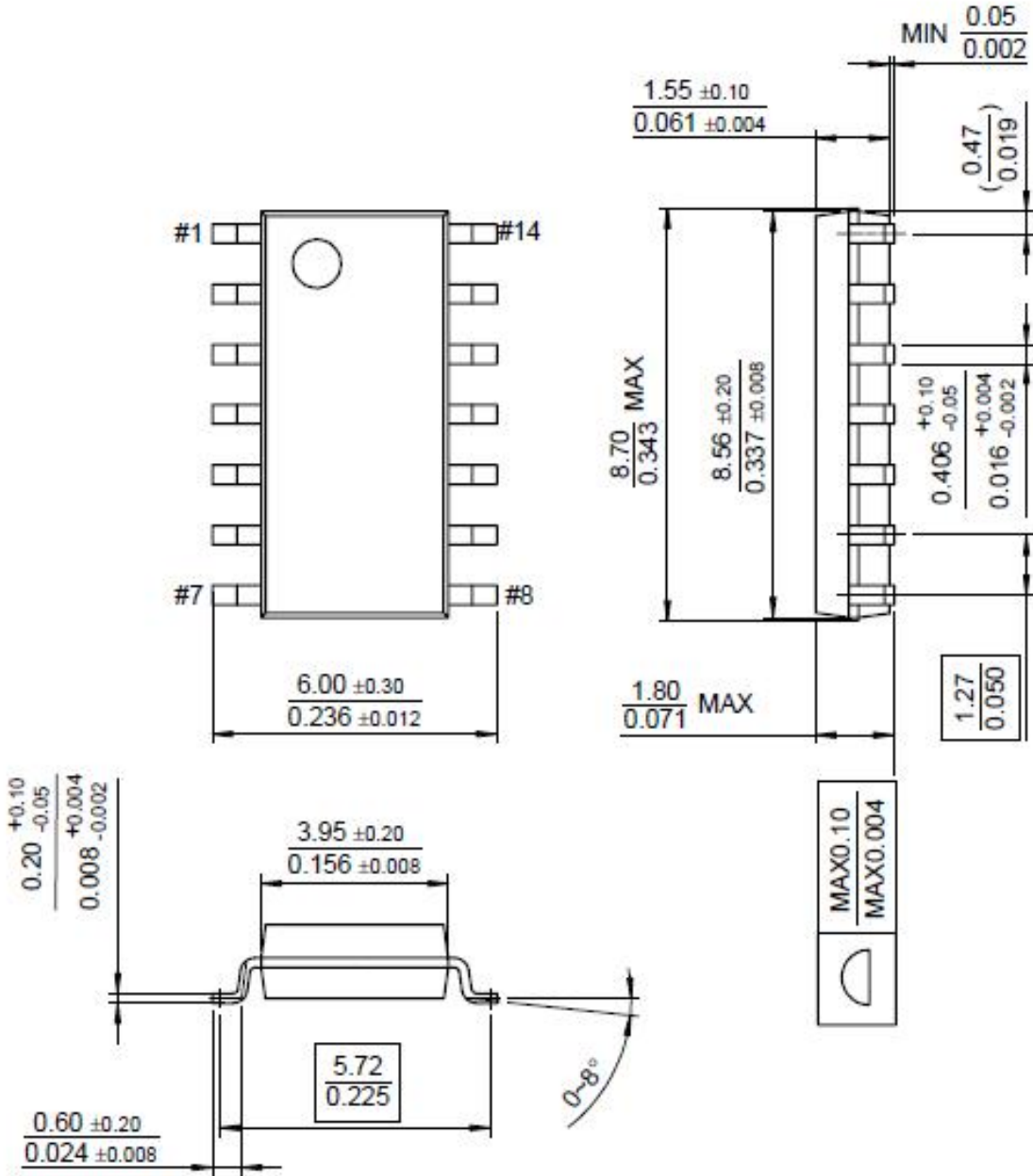
4、非稳态电路



封装信息 (封装信息仅做参考,具体以订货为准)

单位: 毫米 / 英寸

SOP-14



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