LM556/NE556 Dual Timer

SEMICONDUCTOR IM

Features

- Replaces Two LM555/NE556 Timers
- Operates in Both Astable And Monostable Modes
- High Output Current
- TTL Compatible
- Timing From Microsecond To Hours
- Adjustable Duty Cycle
- Temperature Stability Of 0.005% Per °C

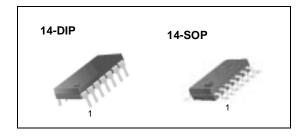
Applications

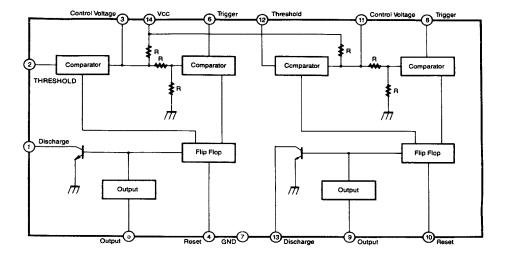
- Precision Timing
- Pulse Shaping
- Pulse Width Modulation
- Frequency Division
- Traffic Light Control
- Sequential Timing
- Pulse Generator
- Time Delay Generator
- Touch Tone Encoder
- Tone Burst Generator

Internal Block Diagram

Description

The LM556/NE556 series dual monolithic timing circuits are a highly stable controller capable of producing accurate time delays or oscillation. The LM556/NE556 is a dual LM555. Timing is provided an external resistor and capacitor for each timing function. The two timers operate independently of each other, sharing only V_{CC} and ground. The circuits may be triggered and reset on falling waveforms. The output structures may sink or source 200mA.





Absolute Maximum Ratings (T_A = 25°C)

Parameter	Symbol	Value	Unit
Supply Voltage	Vcc	16	V
Lead Temperature (soldering 10sec)	TLEAD	300	٥C
Power Dissipation	PD	600	mW
Operating Temperature Range LM556/NE556	TOPR	0 ~ + 70	°C
Storage Temperature Range	TSTG	- 65 ~ + 150	°C

Electrical Characteristics

(TA = 25° C, VCC = 5 ~ 15V, unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Тур.	Max.	Units
Supply Voltage	Vcc	-	4.5	-	16	V
Supply Current * ₁ (two timers) (low state)	Icc	$V_{CC} = 5V, R_L = \infty$ $V_{CC} = 15V, R_L = \infty$	-	5 16	12 30	mA mA
Timing Error *2(monostable) Initial Accuracy Drift with Temperature Drift with Supply Voltage	ACCUR Δt/ΔT Δt/ΔVCC	$R_A = 2K\Omega$ to 100KΩ C = 0.1μF T = 1.1RC	-	0.75 50 0.1	-	% ppm/°C %/V
Control Voltage	Vc	VC VCC = 15V		10.0	11.0	V
		$V_{CC} = 5V$	2.6	3.33	4.0	V
Threshold Voltage	Vth	VCC = 15V	8.8	10.0	11.2	V
		VCC = 5V 2.4		3.33	4.2	V
Threshold Current*3	ITH	-	-	30	250	nA
Trigger Voltage	Vtr	Vcc = 15V	4.5	5.0	5.6	V
		VCC = 5V	1.1	1.6	2.2	V
Trigger Current	ITR	VTR = 0V	-	0.01	2.0	μA
Reset Voltage*5	Vrst	-	0.4	0.6	1.0	V
Reset Current	IRST	-	-	0.03	0.6	mA
Low Output Voltage	Vol	$V_{CC} = 15V$ $I_{SINK} = 10mA$ $I_{SINK} = 50mA$ $I_{SINK} = 100mA$ $I_{SINK} = 200mA$ $V_{CC} = 5V$ $I_{SINK} = 8mA$ $I_{SINK} = 5mA$	-	0.1 0.4 2.0 2.5 0.25 0.15	0.25 0.75 3.2 0.35 0.25	V V
High Output Voltage	Vон	V _{CC} = 15V ISOURCE = 200mA ISOURCE = 100mA V _{CC} = 5V	12.75	12.5 13.3	-	V
		ISOURCE = 100mA	2.75	3.3	-	V
Rise Time of Output	tR	-	-	100	300	ns
Fall Time of Output	tF	-	-	100	300	ns
Discharge Leakage Current	ILKG	-	-	10	100	nA
Matching Characteristics*4 Initial Accuracy Drift with Temperature Drfit with Supply Voltage	ACCUR Δt/ΔT Δt/ΔVCC	-	-	1.0 10 0.2	2.0 0.5	% ppm/°C %/V
Timing Error (astable)*2 Initial Accuracy Drift with Temperature Drift with Supply Voltage	ACCUR Δt/ΔT Δt/ΔVcc	$V_{CC} = 15V$ RA,RB = 1KΩ to 100KΩ C = 0.1µF	-	2.25 150 0.3	-	% ppm/°C %/V

Notes:

*1. Supply current when output is high is typically 1.0mA less at $V_{CC} = 5V$

*2. Tested at VCC = 5V and VCC = 15V

*3. This will determine the maximum value of RA + RB for 15V operation.

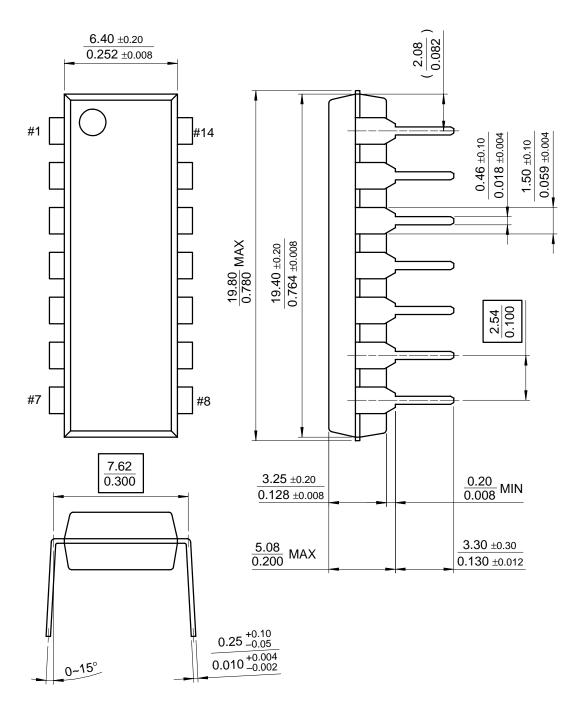
The maximum total R = 20M Ω , and for 5V operation the maximum total R = 6.6M Ω .

*5. As reset voltage lowers, timing is inhibited and then the output goes low.

^{*4.} Matching characteristics refer to the difference between performance characteristics of each timer section in the monostable mode.

Mechanical Dimensions

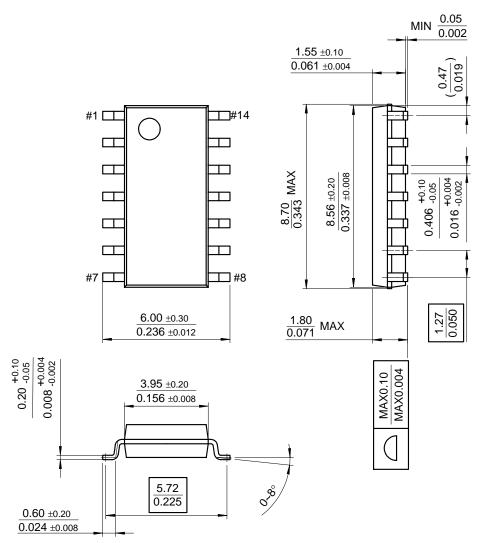
Package



14-DIP

Mechanical Dimensions (Continued)

Package



14-SOP

Ordering Information

Product Number	Package	Operating Temperature		
LM556CN	14-DIP			
LM556CM	14-SOP	0 ~ + 70°C		
NE556	14-DIP	0~+70 C		
NE556D	14-SOP			

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