NE556C LINEAR INTEGRATED CIRCUIT

T-51-19

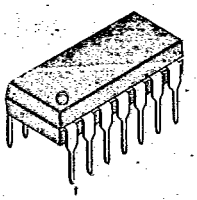
DUAL TIMER

The NE556 series dual monolithic timing circuits are a highly stable controller capable of producing accurate time delays or oscillation.

The NE556 is a dual NE555. 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.

14 DIP



FEATURES

- **Replaces Two NE555 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**

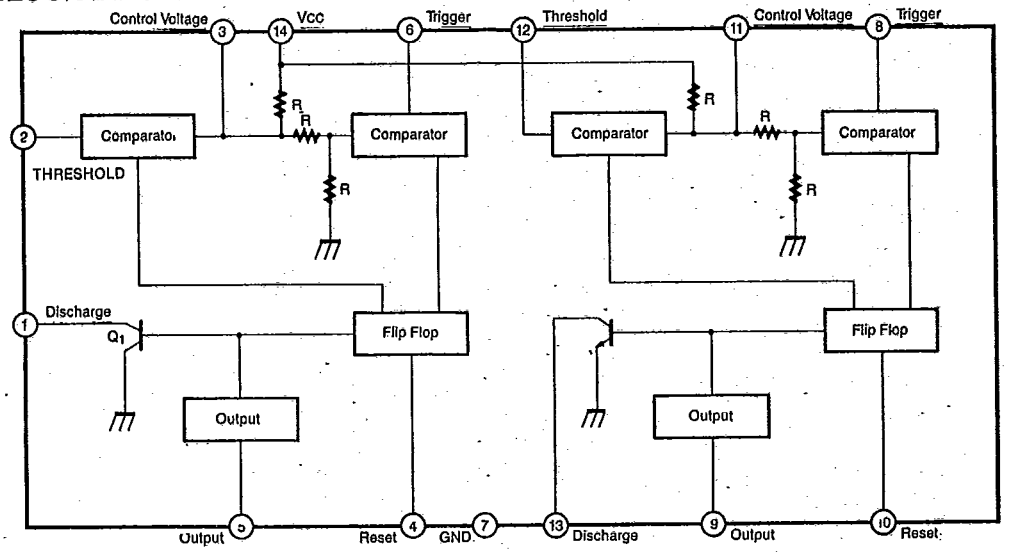
APPLICATIONS

- 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

ORDERING INFORMATION

Device	Package	Operating Temperature
NE556CN	14 DIP	0~ +70°C

BLOCK DIAGRAM



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ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

Characteristic	Symbol	Value	Unit
Supply Voltage	V_{CC}	16	V
Lead Temperature (soldering 10 sec)	T_{lead}	300	°C
Power Dissipation	P_D	600	mW
Operating Temperature Range	T_{opr}	0 ~ +70	°C
Storage Temperature Range	T_{stg}	−65 ~ +150	°C

ELECTRICAL CHARACTERISTICS

(Ta = 25°C, V_{CC} = 5 to 15V, unless otherwise specified)

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit
Supply Voltage	V_{CC}		4.5		16	V
*1 Supply Current (Two timers) (low state)	I_{CC}	V_{CC} = 5V, R_L = ∞ V_{CC} = 15V, R_L = ∞		5 16	12 30	mA mA
*2 Timing Error (monostable) Initial Accuracy Drift with Temperature Drift with Supply Voltage	MT_1	R_A = 2KΩ to 100KΩ C = 0.1μF T = 1.1R_C		 0.75 50 0.1		 % ppm/°C %/V
Control Voltage	V_C	V_{CC} = 15V	9.0	10.0	11.0	V
		V_{CC} = 5V	2.6	3.33	4.0	V
Threshold Voltage	V_{TH}	V_{CC} = 15V	8.8	10.0	11.2	V
		V_{CC} = 5V	2.4	3.33	4.2	V
*3 Threshold Current	I_{TH}			30	250	nA
Trigger Voltage	V_{TR}	V_{CC} = 15V	4.5	5.0	5.6	V
		V_{CC} = 5V	1.1	1.6	2.2	V
Trigger Current	I_{TR}	V_T = 0V		0.01	2.0	μA
*5 Reset Voltage	V_{RE}		0.4	0.6	1.0	V
Reset Current	I_{RE}			0.03	0.6	mA
Output Voltage Low	V_{OL}	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 V V V V

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ELECTRICAL CHARACTERISTICS

(Ta=25°C, V_{CC}=5 to 15V, unless otherwise specified)

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit
Output Voltage (high)	V_{OH}	V_{CC}=15V I_{source}=200mA I_{source}=100mA	 12.75	 12.5 13.3		 V V
		V_{CC}=5V I_{source}=100mA	2.75	3.3		V
Rise Time of Output	T_r			100	300	nsec
Fall Time of Output	T_f			100	300	nsec
Discharge Leakage Current	I_D			10	100	nA
*4 Matching Characteristics Initial Accuracy Drift with Temperature Drift with Supply Voltage	M_{CH}			 1.0 10 0.2	 2.0 0.5	 % ppm/°C %/V
*2 Timing Error (astable) Initial Accuracy Drift with Temperature Drift with Supply Voltage	MT_2	R_A, R_B=1kΩ to 100kΩ C=0.1μF V_{CC}=15V		 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 V_{CC}=5V and V_{CC}=15V

*3. This will determine the maximum value of R_A+R_B for 15V operation. The maximum total R=20MΩ, and for 5V operation the maximum total R=6.6MΩ.

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

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