Basic Astable Circuit

Vcc (+5 to 15v)

R1

R2

555

Output

C1

C2

t1 = .693(R1+R2)C1

t2 = .693(R2)C1

$$Frequency = \frac{1.44}{(R1+(2xR2)C1}$$

Here pins 2 and 6 are connected so the circuit will trigger itself each timing cycle, thereby functioning as an oscillator. C1 charges through R1 and R2 but discharges through R2. The charge on C1 ranges from 1/3 Vcc to 2/3 Vcc. The oscillation frequency is independent of Vcc.
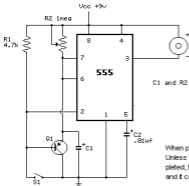
Bouncefree Switch

Vcc (+5 to 15v)

Output Pulse

delay

close S1   open S1

R1
100k

8   4

7

555   output

6

2

1   5

C1
.01 to 10uf

R2
100k

Vcc

S2

C2
.01uf
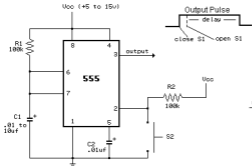
C1 (uF)	Delay (seconds)
.1	.01
1	.1
10	1.0

Event Failure Alarm
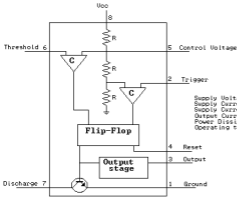
Vcc +9v

R2 1meg

R1
4.7k

555

C1 and R2 control delay

C2
.01uf

When power is applied, C1 starts to charge through R2.
Unless S1 is closed BEFORE the timing cycle is com-
pleted, the buzzer will sound. Use any switch for S1
and it can be mounted externally from the circuit.

Q1=2N3906   C1=2.2uf to 47uf

Inside of 555 Timer Chip
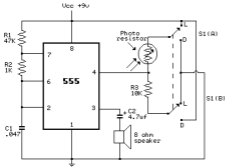
Vcc

Threshold 6

5 Control Voltage

C = Comparator

2 Trigger

C = Comparator

Supply Voltage (Vcc)::4.5 to 15v
Supply Current (Vcc=5v)::3 to 6 ma
Supply Current (Vcc=15v)::10 to 15 ma
Output Current = 200ma Maximum
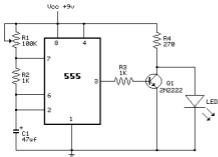Power Dissipation 600mw
Operating temp, 0 to 70 degrees C

Flip-Flop

Output
stage

4 Reset

3 Output

Discharge 7

1 Ground

Light/Dark Detector

R1 and C1 determine frequency of tone. When S1 is in "L" position the speaker will emit a tone when the photo resistor is struck by light. When S1 is in "D" position the speaker will emit a tone when photo resistor is NOT illuminated.
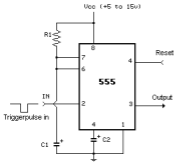
LED Flasher

R1	Rate (Hz)
100K	.2
47K	.6
22K	1.1
10K	2.1
4.2K	3.6
2.2K	6.1
1.0K	8.3

Vcc +9v

R1
100K

R2
1K

555

R3
1K

R4
270

Q1
2N2222

LED

C1
47uf

Basic Monostable Circuit

Brought to you by:

Make reset and trigger momentarily low to reset timing cycle. Otherwise keep reset at Vcc.

Monostable pulse out

T = R1 x C1
T is independent of Vcc
T = Time in seconds
R = Resistance in Ohms
C = Capacitance in Farads

A negative trigger pulse on Pin 2 turns off a transistor that otherwise shorts C1 to ground, the output then goes high as C1 charges through R1. When the charge on C1 is 2/3 Vcc the 555 discharges C1 to ground. The output then goes low.

Timer Operated Relay
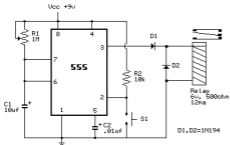
Closing S1 will start the timing cycle. The relay will be activated during the timing cycle. C1 and R1 control the time delay. C2 prevents triggering, D2 absorbs the energy generated when the relay coil is switched off.

R1	C1=10uf	C1=100uf
100k	1s	16
220k	2s	33
470k	5s	70
1M	10s	17%

Approximate delay times in seconds

Toy Organ
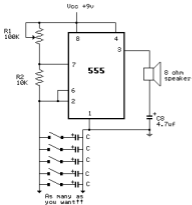
C (uf)	Frequency (Hz)
.22	52
.16	70
.1	111
.068	170
.047	230
.033	340
.022	490
.016	718
.01	1,172
.0068	1,670
.0047	2,240
.0033	3,152
.0022	4,671
.0016	6,936
.001	9,297

As many as
you want!!!

Variable Frequency Pulse Generator

Vcc (+5 to 15v)

R1
1k

R2
1k

555

Output

C1
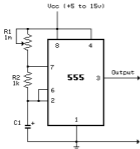
C1=.002 to 1uf

C1	R1=10k	R1=100k	R1=1M
.0022	42,470	5,240	528
.0033	30,490	3,740	371
.0047	21,522	2,638	261
.0068	16,209	1,987	197
.01	11,622	1,414	140
.015	7,910	876	87
.022	4,969	601	60
.033	3,408	400	42
.047	2,361	286	28
.068	1,701	210	20
.1	1,139	138	14
.15	804	97	10
.22	648	65	6

FREQUENCIES