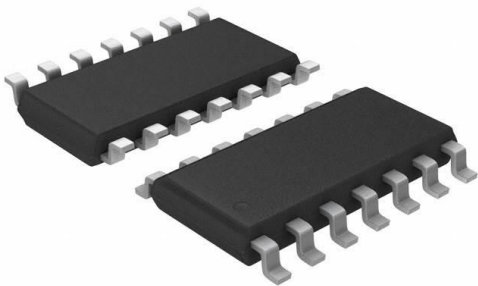


# NE556DT Datasheet

[www.digi-electronics.com](http://www.digi-electronics.com)




<https://www.DiGi-Electronics.com>

DiGi Electronics Part Number	NE556DT-DG
Manufacturer	<a href="#">STMicroelectronics</a>
Manufacturer Product Number	NE556DT
Description	IC OSC TIMER DUAL 500KHZ 14SOIC
Detailed Description	555 Type, Timer/Oscillator (Dual) IC 500kHz 14-SO

This model NE556DT is available at DiGi Electronics.

DiGi Electronics offers a global database of semiconductor and electronic component datasheets.

We welcome your inquiries regarding pricing, lead time, or other product-related questions.

 [Request a Quote](#)

 [Datasheet Search](#)



Tel: +00 852-30501935

RFQ Email: [Info@DiGi-Electronics.com](mailto:Info@DiGi-Electronics.com)

DiGi is a global authorized distributor of electronic components.

## Purchase and inquiry

Manufacturer Product Number:

NE556DT

Series:

-

Type:

555 Type, Timer/Oscillator (Dual)

Frequency:

500kHz

Current - Supply:

20 mA

Package / Case:

14-SOIC (0.154", 3.90mm Width)

Mounting Type:

Surface Mount

Manufacturer:

STMicroelectronics

Product Status:

Obsolete

Count:

-

Voltage - Supply:

4.5V ~ 16V

Operating Temperature:

0°C ~ 70°C

Supplier Device Package:

14-SO

Base Product Number:

NE556

## Environmental & Export classification

RoHS Status:

ROHS3 Compliant

REACH Status:

REACH Unaffected

HTSUS:

8542.39.0001

Moisture Sensitivity Level (MSL):

1 (Unlimited)

ECCN:

EAR99



# NE556 SA556 - SE556

## GENERAL PURPOSE DUAL BIPOLAR TIMERS

- LOW TURN OFF TIME
- MAXIMUM OPERATING FREQUENCY GREATER THAN 500kHz
- TIMING FROM MICROSECONDS TO HOURS
- OPERATES IN BOTH ASTABLE AND MONOSTABLE MODES
- HIGH OUTPUT CURRENT CAN SOURCE OR SINK 200mA
- ADJUSTABLE DUTY CYCLE
- TTL COMPATIBLE
- TEMPERATURE STABILITY OF 0.005% PER°C

### DESCRIPTION

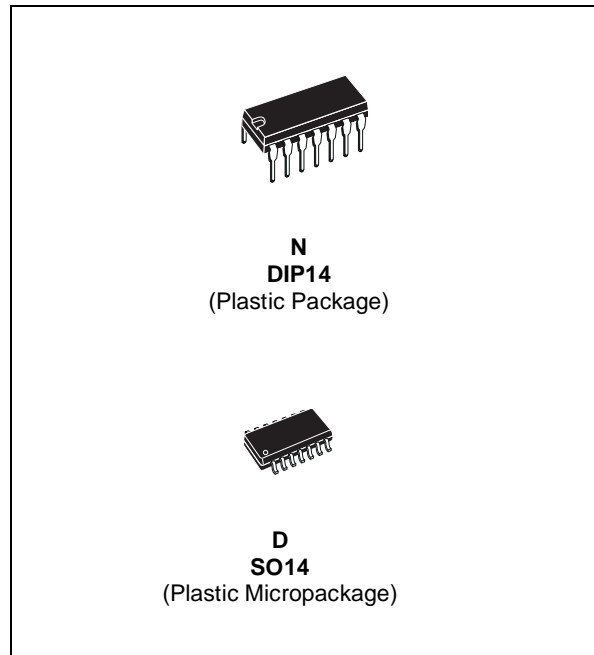
The NE556 dual monolithic timing circuit is a highly stable controller capable of producing accurate time delays or oscillation. In the time delay mode of operation, the time is precisely controlled by one external resistor and capacitor. For a stable operation as an oscillator, the free running frequency and the duty cycle are both accurately controlled with two external resistors and one capacitor.

The circuit may be triggered and reset on falling waveforms, and the output structure can source or sink up to 200mA.

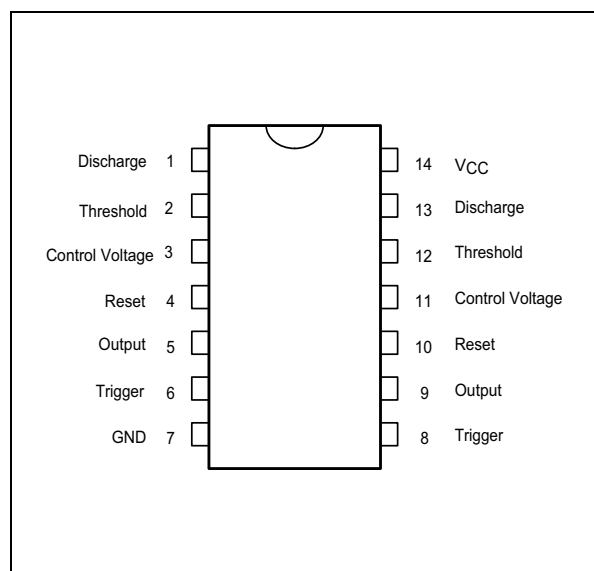
### ORDER CODE

Part Number	Temperature Range	Package	
		N	D
NE556	0°C, 70°C	•	•
SA556	-40°C, 105°C	•	•
SE556	-55°C, 125°C	•	•

N = Dual in Line Package (DIP)  
D = Small Outline Package (SO) - also available in Tape & Reel (DT)

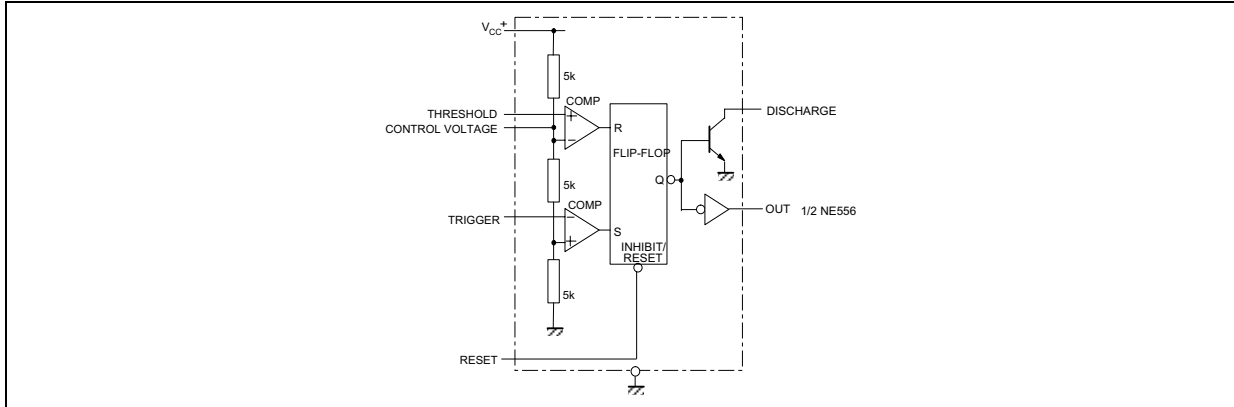


### PIN CONNECTIONS (top view)

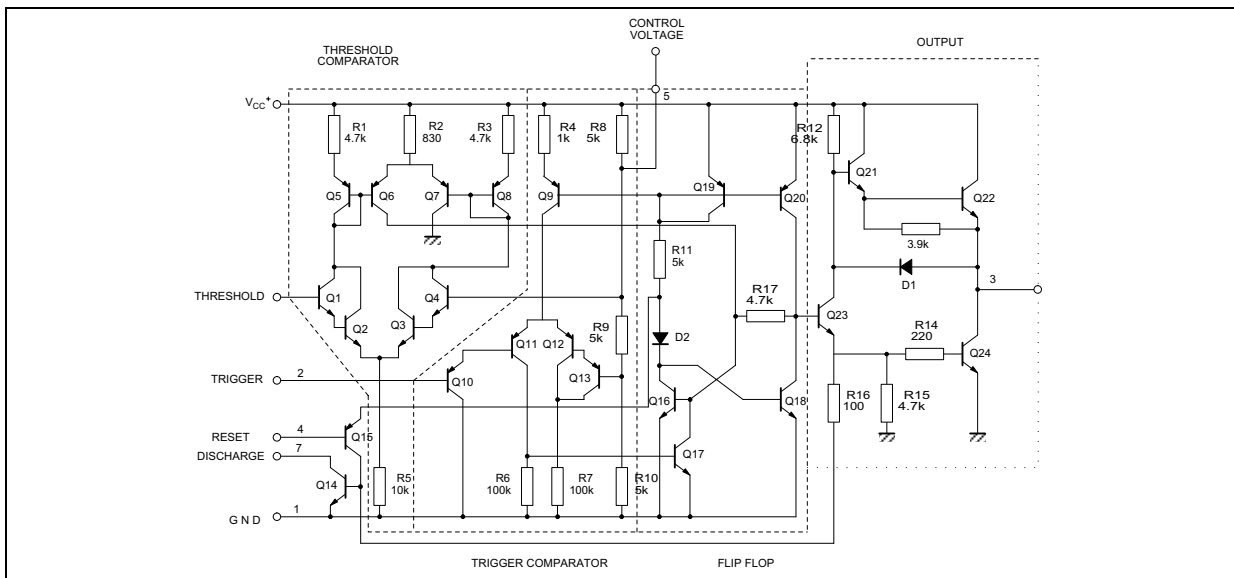


**NE556- SA556-SE556**

**BLOCK DIAGRAM**



**SCHEMATIC DIAGRAM**



**ABSOLUTE MAXIMUM RATINGS**

Symbol	Parameter	Value	Unit
$V_{CC}$	Supply Voltage	18	V
$T_j$	Junction Temperature	150	°C
$T_{stg}$	Storage Temperature Range	-65 to 150	°C

**OPERATING CONDITIONS**

Symbol	Parameter	Value	Unit	
$V_{CC}$	Supply Voltage	NE556 SA556 SE556	4.5 to 16 4.5 to 16 4.5 to 18	V
$V_{th}, V_{trig}, V_{cl}, V_{reset}$	Maximum Input Voltage		$V_{CC}$	V
$T_{oper}$	Operating Free Air Temperature Range	for NE556 for SA556 for SE556	0 to 70 -40 to 105 -55 to 125	°C

## NE556-SA556-SE556

ELECTRICAL CHARACTERISTICS  $T_{amb} = +25^{\circ}\text{C}$ ,  $V_{CC} = +5\text{V}$  to  $+15\text{V}$  (unless otherwise specified)

Symbol	Parameter	SE556			NE556 - SA556			Unit
		Min.	Typ.	Max.	Min.	Typ.	Max.	
$I_{CC}$	Supply Current ( $R_L \infty$ ) - note <sup>1)</sup> (2 timers) Low Stage $V_{CC} = +5\text{V}$		6	10		6	12	mA
	High State $V_{CC} = +15\text{V}$		20	24		20	30	
	Timing Error (monostable) ( $R_A = 2\text{k}$ to $100\text{k}\Omega$ , $C = 0.1\mu\text{F}$ ) Initial Accuracy - note <sup>2)</sup> Drift with Temperature Drift with Supply Voltage		0.5 30 0.05	2 100 0.2		1 50 0.1	3 30 0.5	% ppm/ $^{\circ}\text{C}$ %/V
	Timing Error (astable) ( $R_A, R_B = 1\text{k}\Omega$ to $100\text{k}\Omega$ , $C = 0.1\mu\text{F}$ , $V_{CC} = +15\text{V}$ ) Initial Accuracy - see note 2 Drift with Temperature Drift with Supply Voltage		1.5 90 0.15			2.25 150 0.3		% ppm/ $^{\circ}\text{C}$ %/V
$V_{CL}$	Control Voltage Level $V_{CC} = +15\text{V}$	9.6	10	10.4	9	10	11	V
	$V_{CC} = +5\text{V}$	2.9	3.33	3.8	2.6	3.33	4	
$V_{th}$	Threshold Voltage $V_{CC} = +15\text{V}$	9.4	10	10.6	8.8	10	11.2	V
	$V_{CC} = +5\text{V}$	2.7	3.33	4	2.4	3.33	4.2	
$I_{th}$	Threshold Current - note <sup>3)</sup>		0.1	0.25		0.1	0.25	$\mu\text{A}$
$V_{trig}$	Trigger Voltage $V_{CC} = +15\text{V}$	4.8	5	5.2	4.5	5	5.6	V
	$V_{CC} = +5\text{V}$	1.45	1.67	1.9	1.1	1.67	2.2	
$I_{trig}$	Trigger Current ( $V_{trig} = 0\text{V}$ )		0.5	0.9		0.5	2.0	$\mu\text{A}$
$V_{reset}$	Reset Voltage <sup>4)</sup>	0.4	0.7	1	0.4	0.7	1	V
$I_{reset}$	Reset Current $V_{reset} = +0.4\text{V}$		0.1	0.4		0.1	0.4	mA
	$V_{reset} = 0\text{V}$		0.4	1		0.4	1.5	
$V_{OL}$	Low Level Output Voltage $V_{CC} = +15\text{V}$							V
	$I_{O(sink)} = 10\text{mA}$		0.1	0.15		0.1	0.25	
	$I_{O(sink)} = 50\text{mA}$		0.4	0.5		0.4	0.75	
	$I_{O(sink)} = 100\text{mA}$		2	2.2		2	2.5	
	$I_{O(sink)} = 200\text{mA}$		2.5			2.5		
	$V_{CC} = +5\text{V}$		0.1	0.25		0.3	0.4	
$V_{OH}$	High Level Output Voltage $V_{CC} = +15\text{V}$							V
	$I_{O(sink)} = 200\text{mA}$		13	12.5		12.5		
	$I_{O(sink)} = 100\text{mA}$		13.3			13.3		
$I_{dis(off)}$	Discharge Pin Leakage Current (output high) ( $V_{dis} = 10\text{V}$ )		20	100		20	100	nA
	Discharge pin Saturation Voltage (output low) - note <sup>5)</sup> $V_{CC} = +15\text{V}$ , $I_{dis} = 15\text{mA}$ $V_{CC} = +5\text{V}$ , $I_{dis} = 4.5\text{mA}$		180 80	480 200		180 80	480 200	mV
$t_r$	Output rise Time		100	200		100	300	ns
$t_f$	Output Fall Time		100	200		100	300	ns
$t_{off}$	Turn off Time - note <sup>6)</sup> ( $V_{reset} = V_{CC}$ )		0.5			0.5		$\mu\text{s}$

1. Supply current when output is high is typically 1mA less.

2. Tested at  $V_{CC} = +5\text{V}$  and  $V_{CC} = +15\text{V}$

3. This will determine the maximum value of  $R_A + R_B$  for +15V operation the max total is  $R = 20\text{M}\Omega$  and for 5V operation the max total  $R = 3.5\text{M}\Omega$

4. Specified with trigger input high

5. No protection against excessive pin 7 current is necessary, providing the package dissipation rating will not be exceeded

6. Time measured from a positive going input pulse from 0 to  $0.8 \times V_{CC}$  into the threshold to the drop from high to low of the output trigger is tied to threshold.

NE556- SA556-SE556

Figure 1 : Minimum Pulse Width Required for Triggering

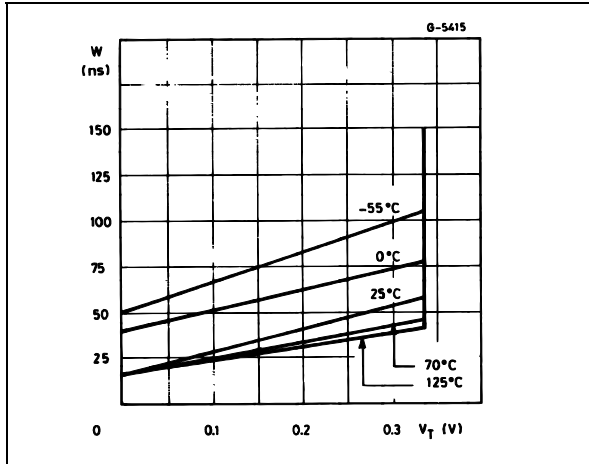


Figure 2 : Supply Current versus Supply Voltage

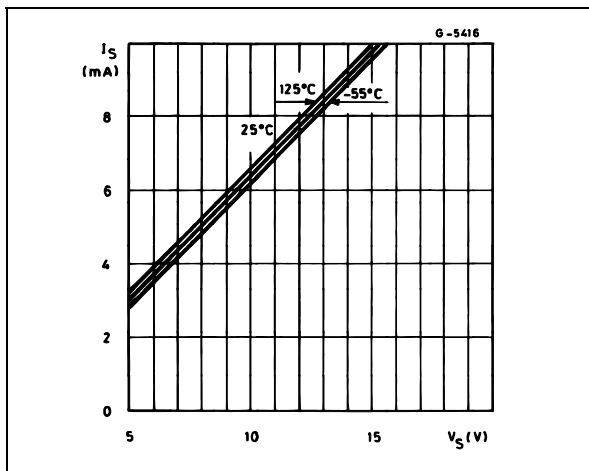


Figure 3 : Delay Time versus Temperature

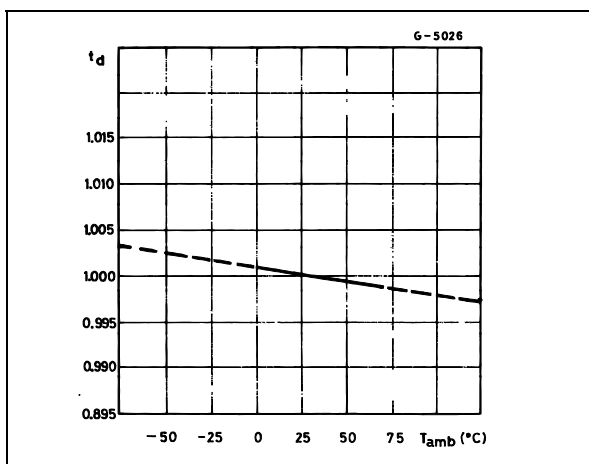


Figure 4 : Low Output Voltage versus Output Sink Current

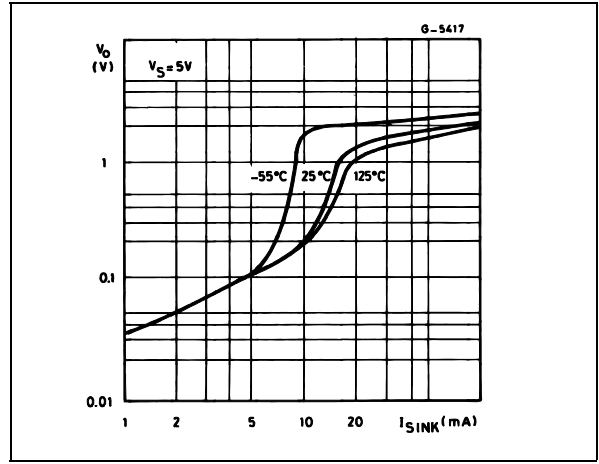


Figure 5 : Low Output Voltage versus Output Sink Current

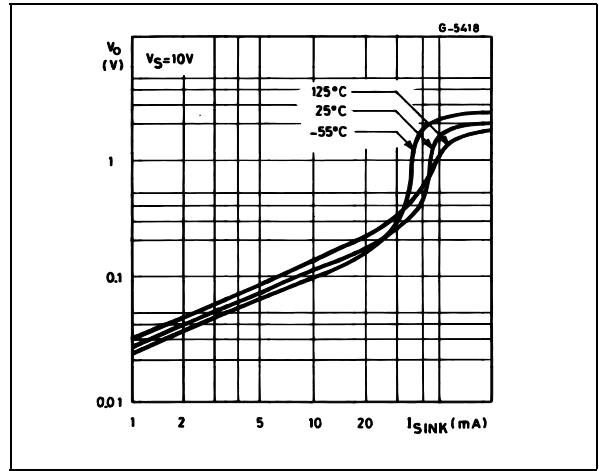
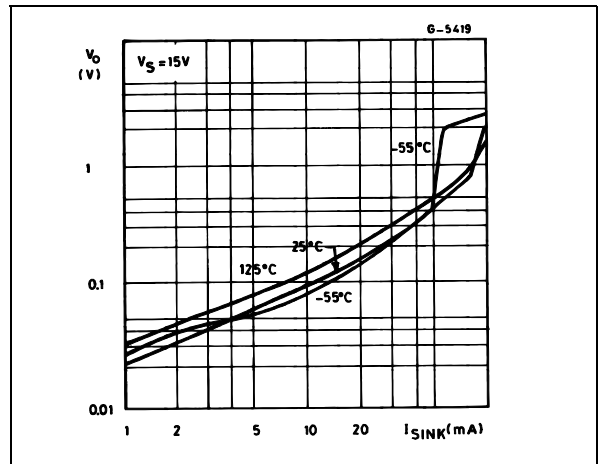


Figure 6 : Low Output Voltage versus Output Sink Current

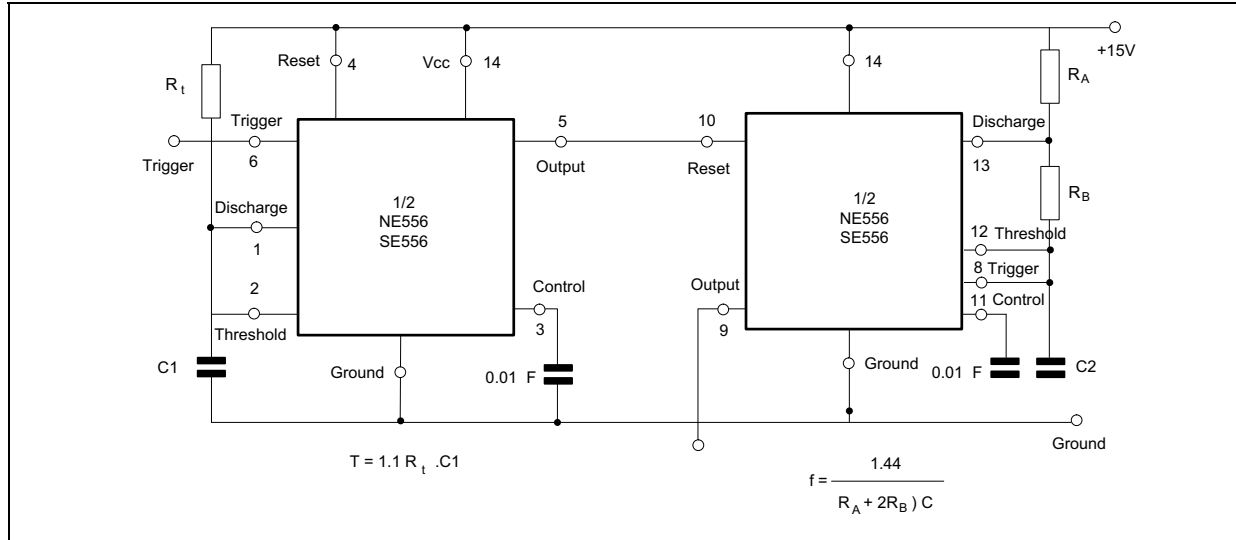




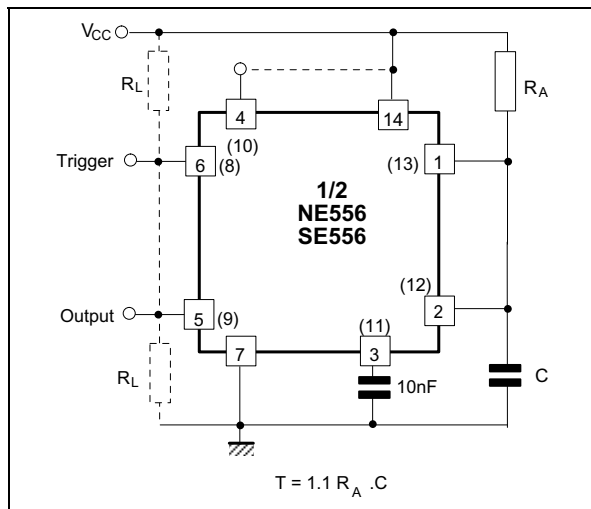
## NE556- SA556-SE556

### TONE BURST GENERATOR

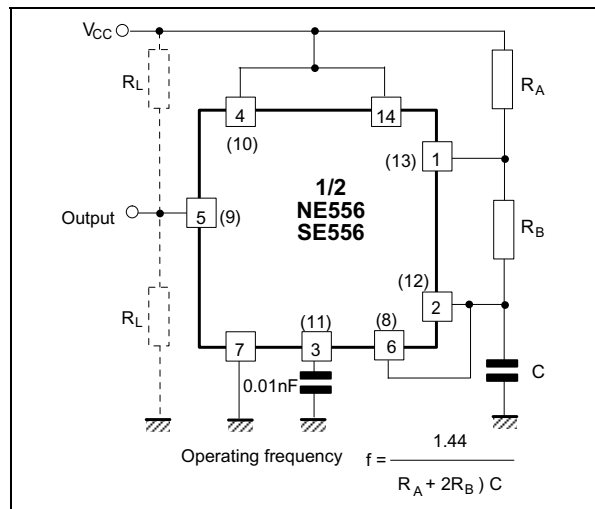
For a tone burst generator the first timer is used as a monostable and determines the tone duration when triggered by a positive pulse at pin 6. The second timer is enabled by the high output of the monostable. It is connected as an astable and determines the frequency of the tone.



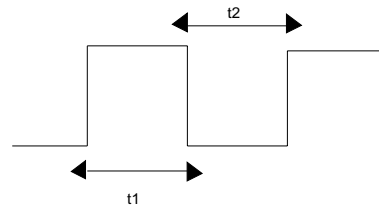
### MONOSTABLE OPERATION



### ASTABLE OPERATION



$t_1 = 0.693 (R_A + R_B) C$  Output High  
 $t_2 = 0.693 R_B C$  Output Low



## PACKAGE MECHANICAL DATA

## Plastic DIP-14 MECHANICAL DATA

DIM.	mm.			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
a1	0.51			0.020		
B	1.39		1.65	0.055		0.065
b		0.5			0.020	
b1		0.25			0.010	
D			20			0.787
E		8.5			0.335	
e		2.54			0.100	
e3		15.24			0.600	
F			7.1			0.280
l			5.1			0.201
L		3.3			0.130	
Z	1.27		2.54	0.050		0.100

