GENERAL PURPOSE TIMERS

DESCRIPTION

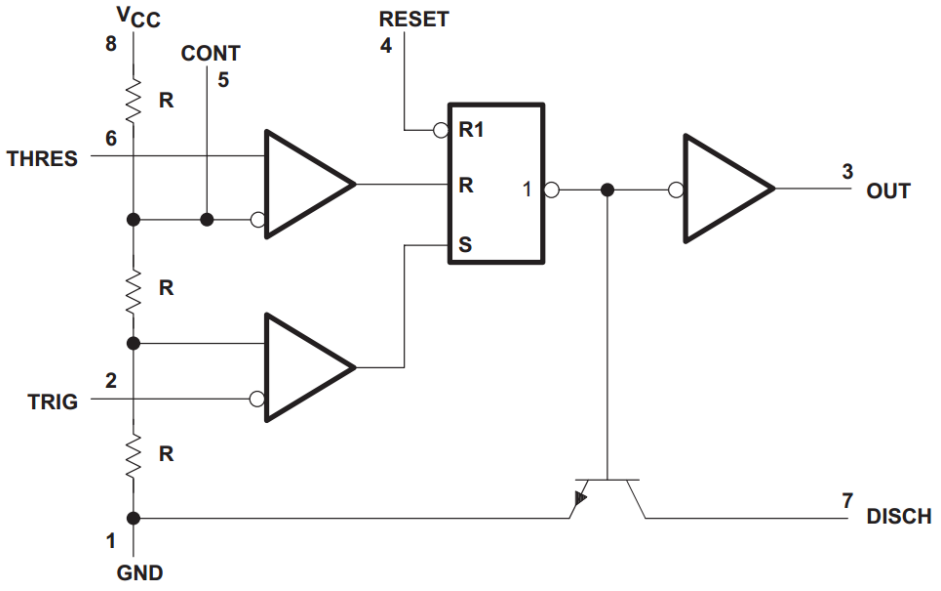
NE555 is a general purpose timer. It is an analog integrated circuit that combines analog signals with logic functions. It can generate precise time delays and oscillations. This timing circuit can be applied to many aspects such as electronic control, electronic detection and electronic alarm. For example: it can constitute an accurate timer, pulse generator, time delay generator, pulse width modulation, phase modulation and sawtooth voltage generator, etc. In the peripheral equipment of a microcomputer, it can be used to constitute a clock generator to generate the required clock pulse.

FEATURES

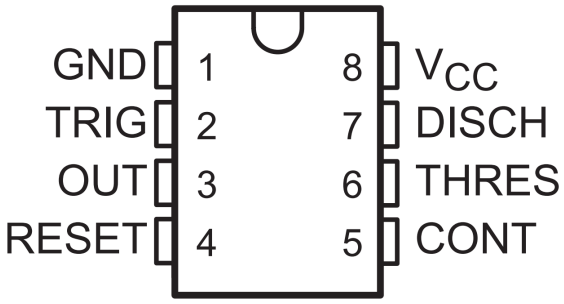
- The static current is small, the typical value is 2.7mA.
- The chip disable input can make the IC power down
- The static current is small when power is off, the typical value is 65uA.
- Can drive a variety of impedance speakers more than 8 Ω
- When using a 32 Ω load, the output power exceeds 250mW
- Low distortion 0.5% TYP.
- In the voice band, the gain can be adjusted from 0dB to 46dB
- Fewer peripheral components
- Package SOP8/DIP8

Functional block diagram and pin description

1.1 Functional block diagram



1.2 Pin description



ELECTRICAL CHARACTERISTICS

2.1 Absolute maximum ratings over operating free-air temperature range

PARAMETER	SYMBOL	VALUE	UNITS
Supply voltage	VCC	18	V
Power consumption (DIP)	PD	600	mW
Operating free-air temperature range	Tamb	0 ~ 70	℃
Storage temperature range	Tstg	-65 ~ 150	℃

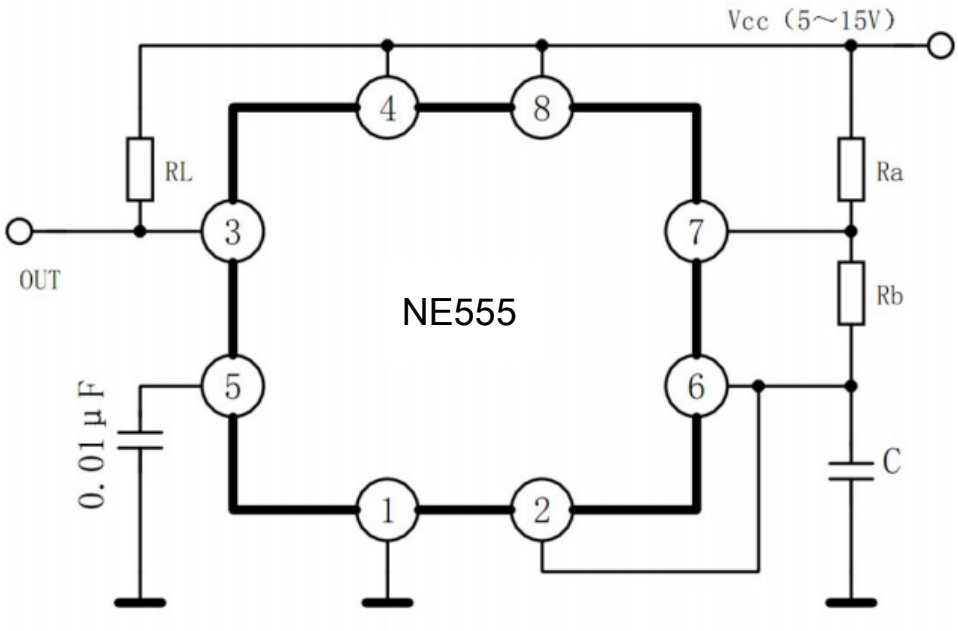
2. 2 Electrical characteristics ,Tamb= 25℃(unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITIONS	VALUE			UNITS
			MIN	TYP	MAX	
Supply current	ICCQ	VCC=5V RL = ∞		3	6	mA
		VCC=15V RL= ∞		10	15	
Supply voltage	VCC		4.5		16	V
THRES voltage level	VTH			0.667*Vcc		V
THRES current	ITH			0.1	0.25	A
TRIG voltage level	VTR	VCC=15V		5		V
		VCC=5V		1.67		
TRIG current	ITR			0.5	2	uA
RESET voltage level	VR		0.4	0.5	1	V
RESET current	IR			0.1	0.4	mA
CONT voltage	VCON	VCC=15V	9	10	11	V
		VCC=5V	2.6	3.33	4	

DISCH switch off-state current	I7(IEAK)	High-level output		20	100	nA
DISCH saturation pressure drop	V7(SAT)	Low-level output VCC 15V I7 = 15mA		180		mV
		Low-level output VCC= 4.5V I7 = 4.5mA		80	200	
High-level output voltage	VOH	VCC= 15V IS = 200mA		12.5		V
		VCC= 15V IS = 100mA	12.75	13.3		
		VCC = 5V IS = 100mA	2.75	3.3		
Low-level output voltage	VOL	VCC=15V ISINK=10mA		0.1	0.25	V
		VCC=15V ISINK=50mA		0.4	0.75	
		VCC=15V ISINK=100mA		2	2.5	
		VCC=15V ISINK=200mA		2.5		
		VCC=5V ISINK=5mA		0.25	0.35	
Output rise time	tr			100		nS
Output fall time	tf			100		
Initial accuracy	ΔtE	Monostable RA.RB=1~100k C=0.1 uF VCC= 5V(15V)		1		%
Rate of change with temperature drift	ΔtT			50		ppm/℃
Rate of change with voltage drift	ΔtV			0.1		%/V
Accuracy within operating temperature range	ΔtOPr			1.5		%
Initial accuracy	ΔtE1	Astable RA.RB=1~100k C=0.1 uF Vcc= 5V(15V)		2.25		%
Rate of change with temperature drift	ΔtT1			150		ppm/℃
Rate of change with voltage drift	ΔtV1			0.3		%/V
Accuracy within operating temperature range	ΔtOpr1			3		%

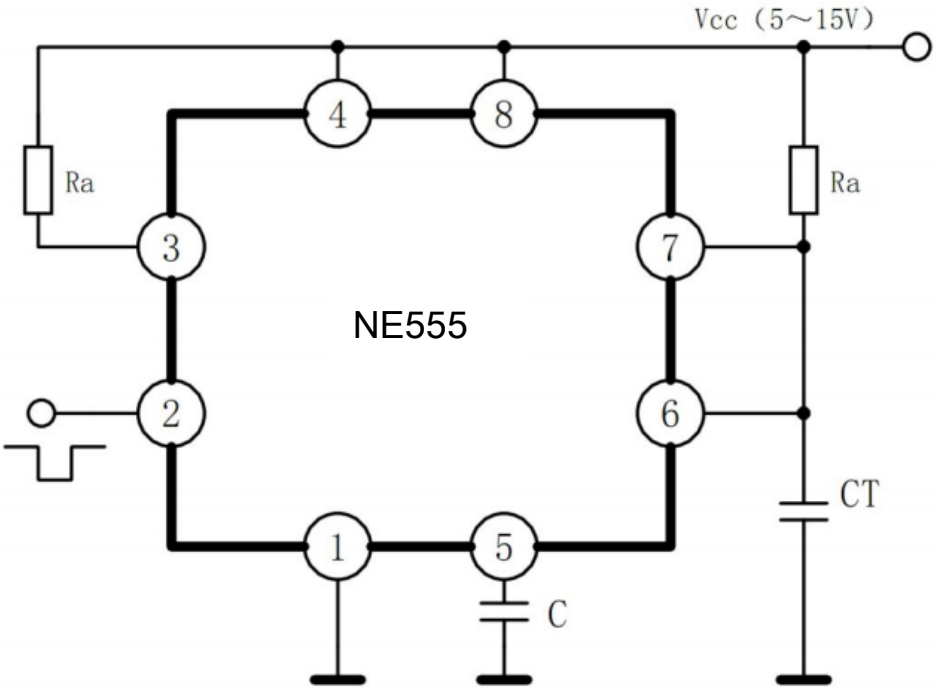
APPLICATION CIRCUIT AND APPLICATION INSTRUCTIONS

3.1 Oscillator application circuit

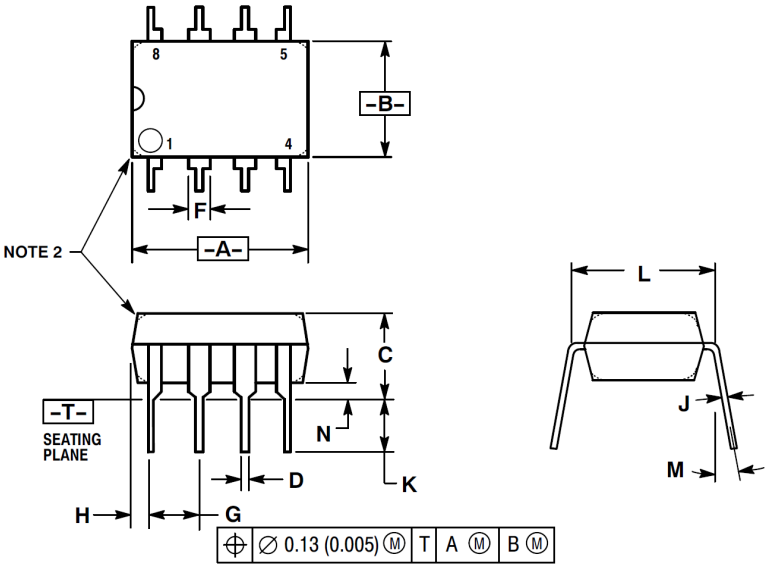


Oscillation period:$T=0.693(R_A+2R_B)C$ Duty:$D=R_B/(R_A+2R_B)$

3. 2 Monostable application circuit



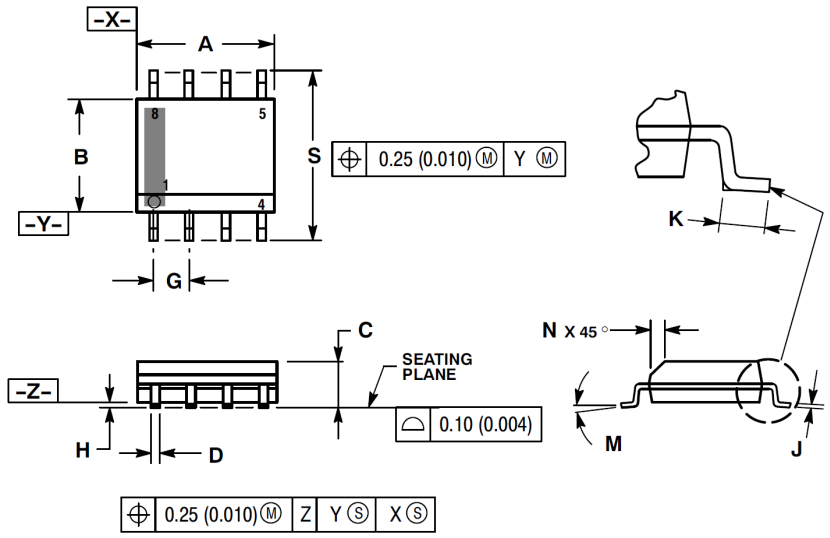
MECHANICAL DIMENSIONS



NOTES:
1. DIMENSION L TO CENTER OF LEAD WHEN FORMED PARALLEL.
2. PACKAGE CONTOUR OPTIONAL (ROUND OR SQUARE CORNERS).
3. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.

	MILLIMETERS		INCHES	
DIM	MIN	MAX	MIN	MAX
A	9.40	10.16	0.370	0.400
B	6.10	6.60	0.240	0.260
C	3.94	4.45	0.155	0.175
D	0.38	0.51	0.015	0.020
F	1.02	1.78	0.040	0.070
G	2.54 BSC		0.100 BSC	
H	0.76	1.27	0.030	0.050
J	0.20	0.30	0.008	0.012
K	2.92	3.43	0.115	0.135
L	7.62 BSC		0.300 BSC	
M	---	10°	---	10°
N	0.76	1.01	0.030	0.040

DIP8



NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETER.
3. DIMENSION A AND B DO NOT INCLUDE MOLD PROTRUSION.
4. MAXIMUM MOLD PROTRUSION 0.15 (0.006) PER SIDE.
5. DIMENSION D DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE DAMBAR PROTRUSION SHALL BE 0.127 (0.005) TOTAL IN EXCESS OF THE D DIMENSION AT MAXIMUM MATERIAL CONDITION.
6. 751-01 THRU 751-06 ARE OBSOLETE. NEW STANDARD IS 751-07.

	MILLIMETERS		INCHES	
DIM	MIN	MAX	MIN	MAX
A	4.80	5.00	0.189	0.197
B	3.80	4.00	0.150	0.157
C	1.35	1.75	0.053	0.069
D	0.33	0.51	0.013	0.020
G	1.27 BSC		0.050 BSC	
H	0.10	0.25	0.004	0.010
J	0.19	0.25	0.007	0.010
K	0.40	1.27	0.016	0.050
M	0°	8°	0°	8°
N	0.25	0.50	0.010	0.020
S	5.80	6.20	0.228	0.244

SOP8