

# LM555/NE555

## Single Timer

### Features

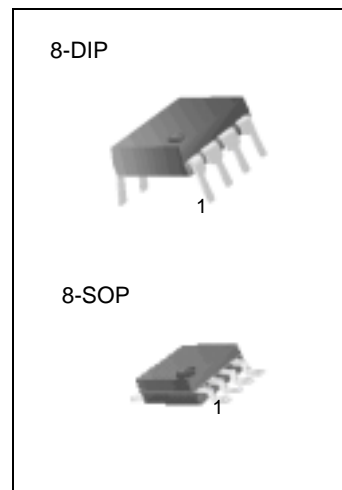
- High Current Drive Capability (200mA)
- Adjustable Duty Cycle
- Temperature Stability of 0.005%/°C
- Timing From  $\mu$ Sec To Hours
- Turn Off Time Less Than 2 $\mu$ Sec

### Applications

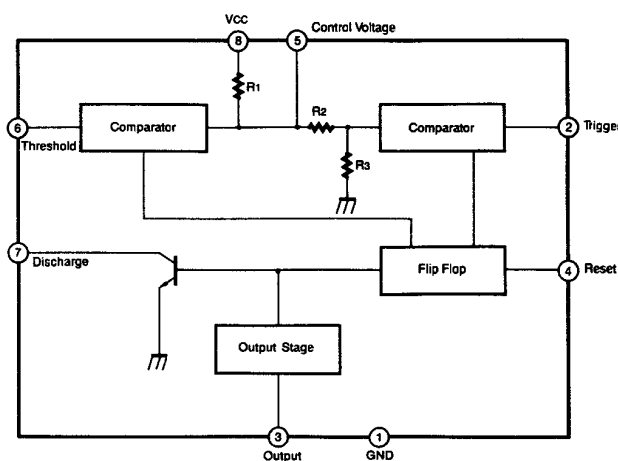
- Precision Timing
- Pulse Generation
- Time Delay Generation
- Sequential Timing

### Description

LM555/NE555 is a highly stable controller capable of producing accurate timing pulses. With monostable operation, the time delay is controlled by one external resistor and one capacitor. With astable operation, the frequency and duty cycle are accurately controlled with two external resistors and one capacitor.



### Internal Block Diagram



**Absolute Maximum Ratings (TA = 25°C)**

Parameter	Symbol	Value	Unit
Supply Voltage	VCC	16	V
Lead Temperature (soldering 10sec)	TLEAD	300	°C
Power Dissipation	PD	600	mW
Operating Temperature Range LM555/NE555	TOPR	0 ~+ 70	°C
Storage Temperature Range	TSTG	- 65 ~ + 150	°C

## Electrical Characteristics

( $T_A = 25^\circ\text{C}$ ,  $V_{CC} = 5 \sim 15\text{V}$ , unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Supply Voltage	$V_{CC}$		4.5	-	16	V
Supply Current * <sup>1</sup> (low stable)	$I_{CC}$	$V_{CC} = 5\text{V}$ , $R_L = \infty$	-	3	6	mA
		$V_{CC} = 15\text{V}$ , $R_L = \infty$	-	7.5	15	mA
Timing Error * <sup>2</sup> (Monostable) Initial Accuracy Drift with Temperature Drift with Supply Voltage	ACCUR $\Delta t/\Delta T$ $\Delta t/\Delta V_{CC}$	$R_A = 1\text{K}\Omega$ to $100\text{K}\Omega$ $C = 0.1\mu\text{F}$	-	1.0 50 0.1	3.0 - 0.5	% ppm/ $^\circ\text{C}$ %/V
Timing Error * <sup>2</sup> (astable) Initial Accuracy Drift with Temperature Drift with Supply Voltage	ACCUR $\Delta t/\Delta T$ $\Delta t/\Delta V_{CC}$	$R_A = 1\text{K}\Omega$ to $100\text{K}\Omega$ $C = 0.1\mu\text{F}$	-	2.25 150 0.3	-	% ppm/ $^\circ\text{C}$ %/V
Control Voltage	$V_C$	$V_{CC} = 15\text{V}$	9.0	10.0	11.0	V
		$V_{CC} = 5\text{V}$	2.6	3.33	4.0	V
Threshold Voltage	$V_{TH}$	$V_{CC} = 15\text{V}$	-	10.0	-	V
		$V_{CC} = 5\text{V}$	-	3.33	-	V
Threshold Current * <sup>3</sup>	$I_{TH}$	-	-	0.1	0.25	$\mu\text{A}$
Trigger Voltage	$V_{TR}$	$V_{CC} = 5\text{V}$	1.1	1.67	2.2	V
		$V_{CC} = 15\text{V}$	4.5	5	5.6	V
Trigger Current	$I_{TR}$	$V_{TR} = 0\text{V}$		0.01	2.0	$\mu\text{A}$
Reset Voltage	$V_{RST}$	-	0.4	0.7	1.0	V
Reset Current	$I_{RST}$	-		0.1	0.4	mA
Low Output Voltage	$V_{OL}$	$V_{CC} = 15\text{V}$ $I_{SINK} = 10\text{mA}$ $I_{SINK} = 50\text{mA}$	-	0.06 0.3	0.25 0.75	V V
		$V_{CC} = 5\text{V}$ $I_{SINK} = 5\text{mA}$	-	0.05	0.35	V
High Output Voltage	$V_{OH}$	$V_{CC} = 15\text{V}$ $I_{SOURCE} = 200\text{mA}$ $I_{SOURCE} = 100\text{mA}$	12.75	12.5 13.3	-	V V
		$V_{CC} = 5\text{V}$ $I_{SOURCE} = 100\text{mA}$	2.75	3.3	-	V
Rise Time of Output	$t_R$	-	-	100	-	ns
Fall Time of Output	$t_F$	-	-	100	-	ns
Discharge Leakage Current	$I_{LKG}$	-	-	20	100	nA

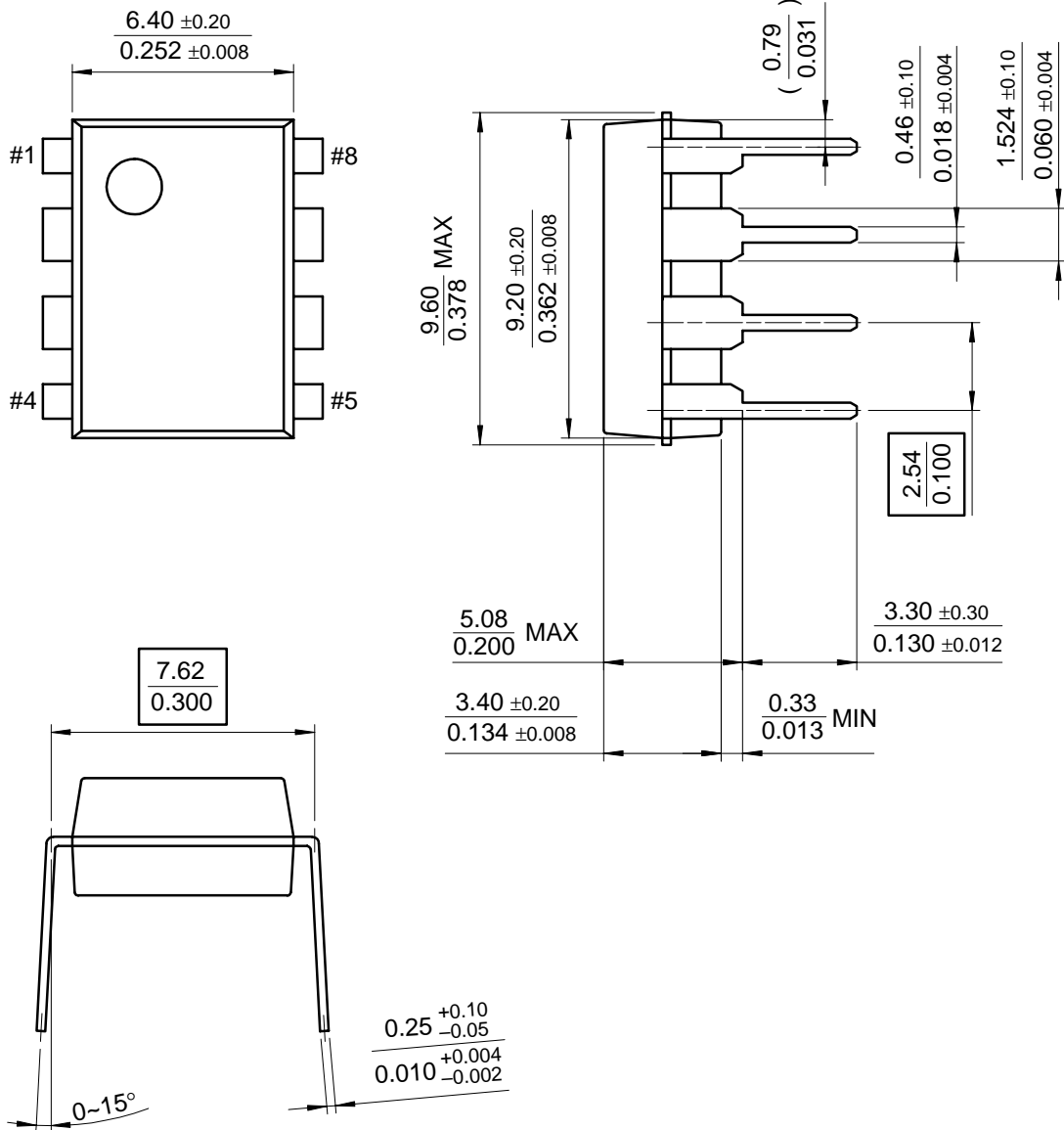
### Notes:

- Supply current when output is high is typically 1mA less at  $V_{CC} = 5\text{V}$
- Tested at  $V_{CC} = 5.0\text{V}$  and  $V_{CC} = 15\text{V}$
- This will determine maximum value of  $R_A + R_B$  for 15V operation, the max. total  $R = 20\text{M}\Omega$ , and for 5V operation the max. total  $R = 6.7\text{M}\Omega$

# Mechanical Dimensions

## Package

### 8-DIP





**Ordering Information**

<b>Product Number</b>	<b>Package</b>	<b>Operating Temperature</b>
LM555CN	8-DIP	0 ~ +70°C
LM555CM	8-SOP	

<b>Product Number</b>	<b>Package</b>	<b>Operating Temperature</b>
NE555N	8-DIP	0 ~ +70°C



**LIFE SUPPORT POLICY**

FAIRCHILD'S PRODUCTS ARE NOT AUTHORIZED FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS WITHOUT THE EXPRESS WRITTEN APPROVAL OF THE PRESIDENT OF FAIRCHILD SEMICONDUCTOR INTERNATIONAL. As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, and (c) whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury of the user.
2. A critical component in any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.