

# KA556

## Dual Timer

### Features

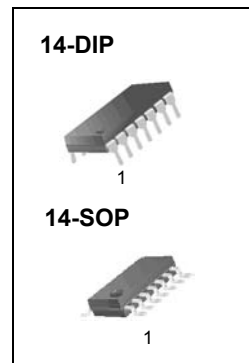
- Replaces two KA555 Timers
- Operates in Both Astable and Monos Table Modes
- High Output Current
- TTL Compatible
- Timing From Microsecond to Hours
- Adjustable Duty Cycle
- Temperature Stability of 0.005% Per °C

### Applications

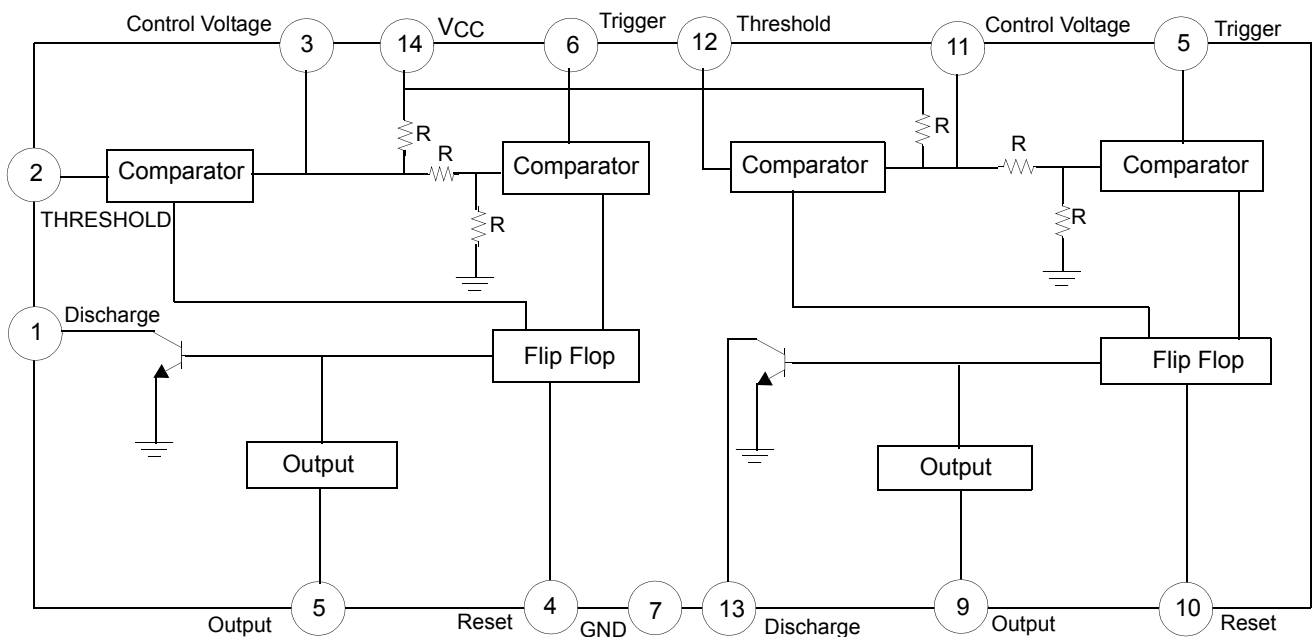
- Precision Timing
- Pulse Shaping
- Pulse Width Modulation
- Frequency Division
- Traffic Light Control
- Sequential Timing
- Pulse Generator
- Time Delay Generator
- Touch Tone Encoder
- Tone Burst Generator

### Description

The KA556 series dual monolithic timing circuits are a highly stable controller capable of producing accurate time delays or oscillation. The KA556 is a dual KA555. Timing is provided an external resistor and capacitor for each timing function. The two timers operate independently of each other, sharing only VCC and ground. The circuits may be triggered and reset on falling waveforms. The output structures may sink or source 200mA.



### Internal Block Diagram



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

<b>Parameter</b>	<b>Symbol</b>	<b>Value</b>	<b>Unit</b>
Supply Voltage	VCC	16	V
Lead Temperature (Soldering 10sec)	TLEAD	300	°C
Power Dissipation	PD	600	mW
Operating Temperature Range KA556/KA556I	TOPR	0 ~ +70 / -40 ~ +85	°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 *1(Two Timers) (Low State)	$I_{CC}$	$V_{CC} = 5\text{V}, R_L = \infty$ $V_{CC} = 15\text{V}, R_L = \infty$	-	5 16	12 30	mA mA
Timing Error *2(Monos Table) Initial Accuracy Drift with Temperature Drift with Supply Voltage	ACCUR $\Delta t/\Delta T$ $\Delta t/\Delta V_{CC}$	$R_A = 2\text{k}\Omega$ to $100\text{k}\Omega$ $C = 0.1\mu\text{F}$ $T = 1.1RC$	-	0.75 50 0.1	-	% ppm/ $^\circ\text{C}$ %/V
Control Voltage	$V_{CC}$	$V_{CC} = 15\text{V}$	9.0	10.0	11.0	V
		$V_{CC} = 5\text{V}$	2.6	3.33	4.0	V
Threshold Voltage	$V_{TH}$	$V_{CC} = 15\text{V}$	8.8	10.0	11.2	V
		$V_{CC} = 5\text{V}$	2.4	3.33	4.2	V
Threshold Current*3	$I_{TH}$	-	-	30	250	nA
Trigger Voltage	$V_{TR}$	$V_{CC} = 15\text{V}$	4.5	5.0	5.6	V
		$V_{CC} = 5\text{V}$	1.1	1.6	2.2	V
Trigger Current	$I_{TR}$	$V_{TR} = 0\text{V}$	-	0.01	2.0	$\mu\text{A}$
Reset Voltage*5	$V_{RST}$	-	0.4	0.6	1.0	V
Reset Current	$I_{RST}$	-	-	0.03	0.6	mA
Low Output Voltage	$V_{OL}$	$V_{CC} = 15\text{V}$ $I_{SINK} = 10\text{mA}$ $I_{SINK} = 50\text{mA}$ $I_{SINK} = 100\text{mA}$ $I_{SINK} = 200\text{mA}$	-	0.1 0.4 2.0 2.5	0.25 0.75 3.2	V
		$V_{CC} = 5\text{V}$ $I_{SINK} = 8\text{mA}$ $I_{SINK} = 5\text{mA}$	-	0.25 0.15	0.35 0.25	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
		$V_{CC} = 5\text{V}$ $I_{SOURCE} = 100\text{mA}$	2.75	3.3	-	V
Rise Time of Output	$t_R$	-	-	100	300	ns
Fall Time of Output	$t_F$	-	-	100	300	ns
Discharge Leakage Current	$I_{LKG}$	-	-	10	100	nA
Matching Characteristics*4 Initial Accuracy Drift with Temperature Drift with Supply Voltage	ACCUR $\Delta t/\Delta T$ $\Delta t/\Delta V_{CC}$	-	-	1.0 10 0.2	2.0 - 0.5	% ppm/ $^\circ\text{C}$ %/V
Timing Error (astable)*2 Initial Accuracy Drift with Temperature Drift with Supply Voltage	ACCUR $\Delta t/\Delta T$ $\Delta t/\Delta V_{CC}$	$V_{CC} = 15\text{V}$ $R_A, R_B = 1\text{k}\Omega$ to $100\text{k}\Omega$ $C = 0.1\mu\text{F}$	-	2.25 150 0.3	-	% ppm/ $^\circ\text{C}$ %/V

### Notes:

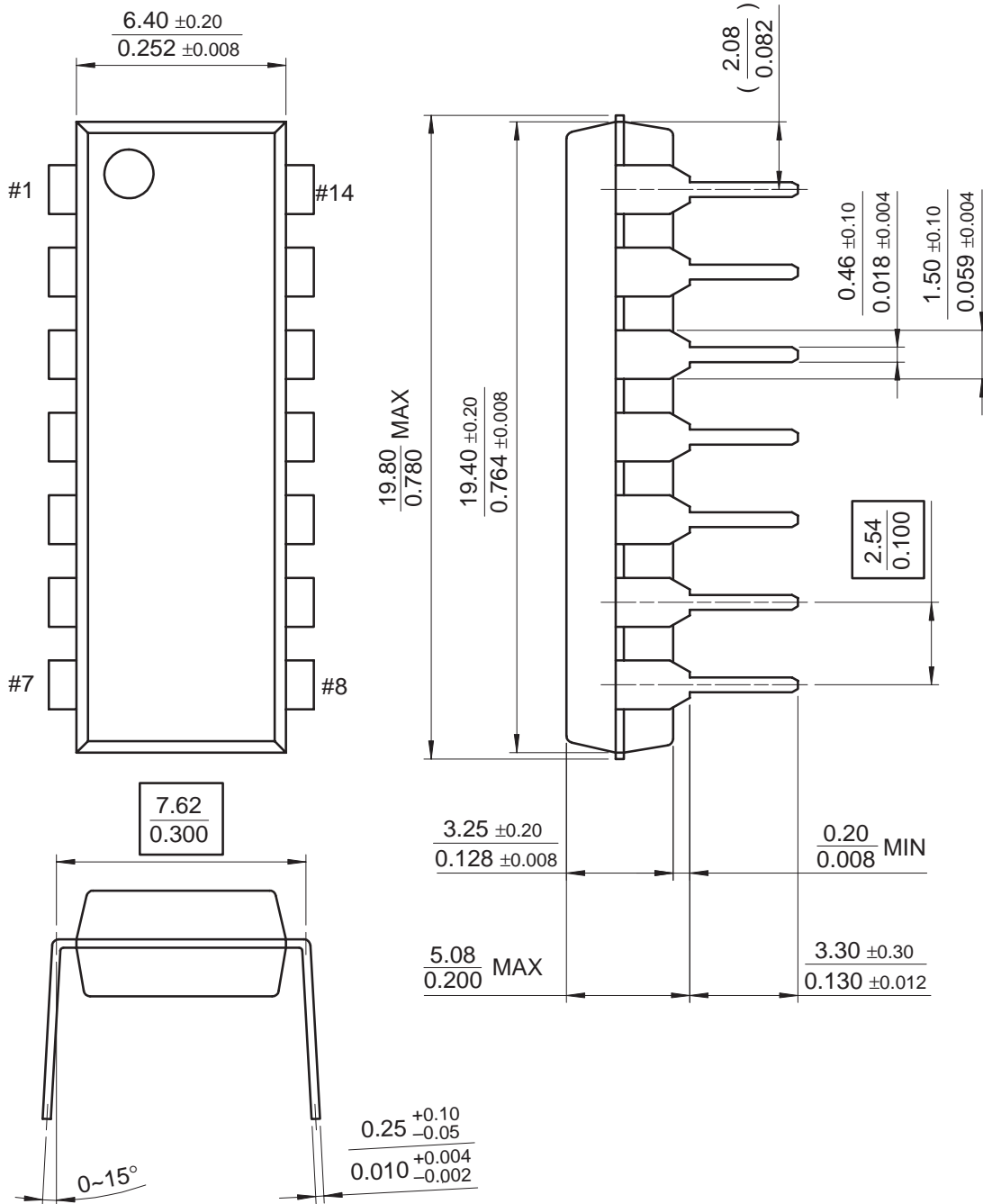
- Supply current when output is high is typically 1.0mA less at  $V_{CC} = 5\text{V}$
- Tested at  $V_{CC} = 5\text{V}$  and  $V_{CC} = 15\text{V}$
- This will determine the maximum value of  $R_A + R_B$  for 15V operation.  
The maximum total  $R = 20\text{M}\Omega$ , and for 5V operation the maximum total  $R = 6.6\text{M}\Omega$ .
- Matching characteristics refer to the difference between performance characteristics of each timer section in the monostable mode.
- As reset voltage lowers, timing is inhibited and then the output goes low.

# Mechanical Dimensions

## Package

Dimensions in millimeters

### 14-DIP

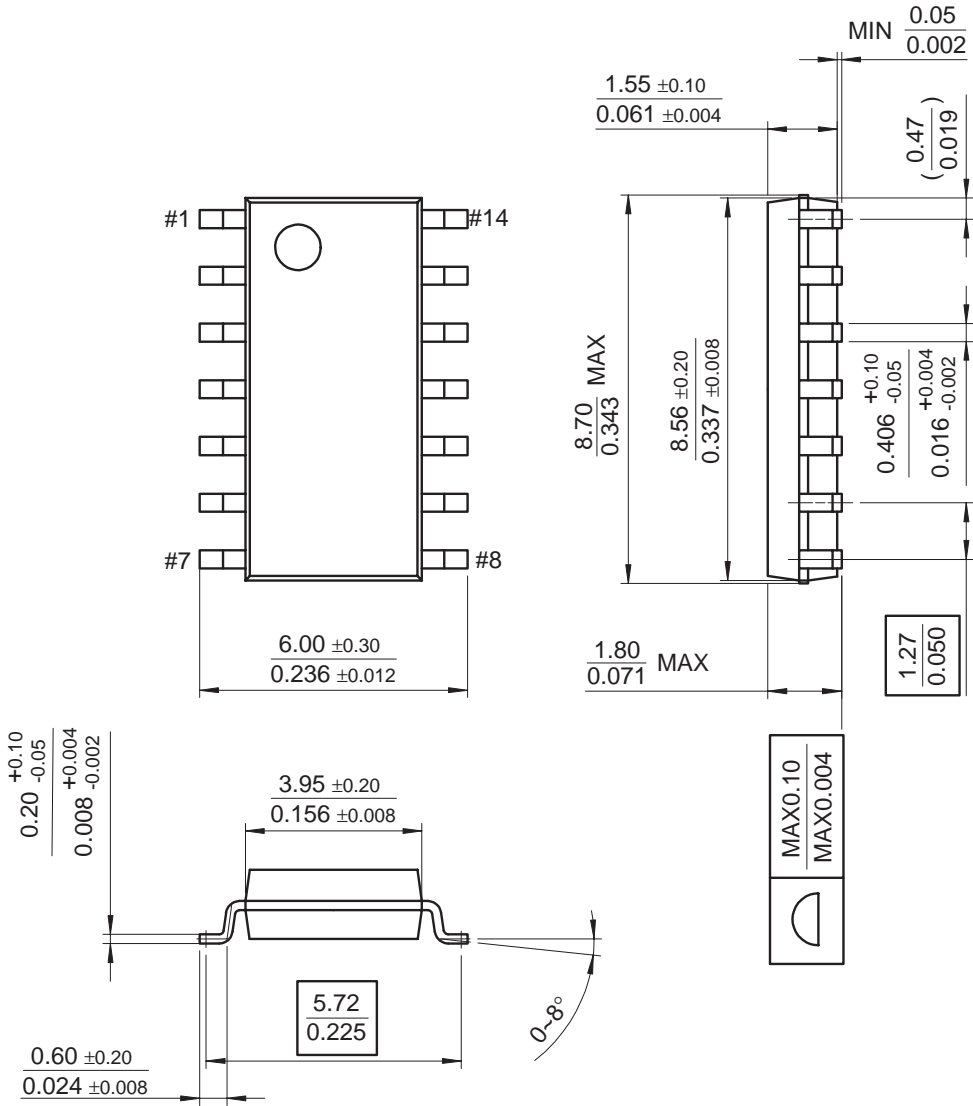


Mechanical Dimensions (Continued)

Package

Dimensions in millimeters

14-SOP



## Ordering Information

Product Number	Package	Operating Temperature
KA556	14-DIP	0 ~ +70°C
KA556D	14-SOP	
KA556I	14-DIP	-40 ~ +85°C
KA556ID	14-SOP	

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