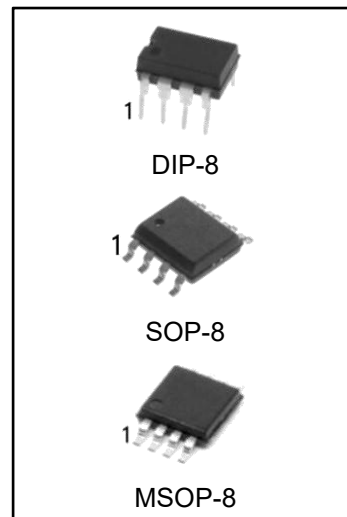


## CMOS general purpose timer

### Features

- Exact equivalent in most cases for SE/NE555.
- Low Supply Current.
- High speed operation – 500 kHz guaranteed.
- Wide operation supply voltage range – 2 to 18 volts.
- Timing from microseconds through hours.
- Operates in both astable and monostable modes.
- Adjustable duty cycle.
- High output source/sink driver can drive TTL/CMOS



### Ordering Information

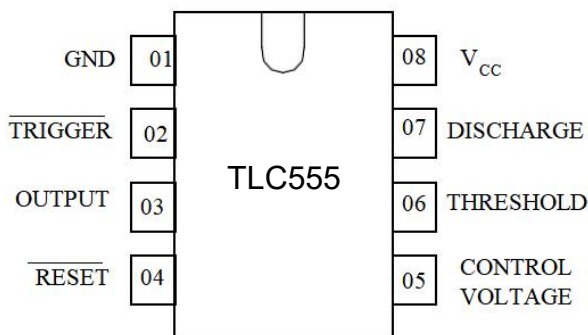
DEVICE	Package Type	MARKING	Packing	Packing Qty
TLC555PG	DIP-8	TLC555	TUBE	2000pcs/box
TLC555DRG	SOP-8	TLC555	REEL	2500pcs/reel
TLC555DGKRG	MSOP-8	C555	REEL	3000pcs/reel

## General Description

The TLC555 is CMOS RC timers providing significantly improved performance over the standard SE/NE555 and 355 timers, while at the same time being direct replacements for those devices in most applications. Improved parameters include low supply current, wide operating supply voltage range, low THRESHOLD, TRIGGER and RESET currents, no crowbaring of the supply current during output transitions, higher frequency performance and no requirement to decouple CONTROL VOLTAGE for stable operation.

Specifically, the TLC555 is stable controller capable of producing accurate time delays of frequencies.

## Pin Assignment



## Truth Table

THRESHOLD	TRIGGER	RESET	OUTPUT	DISCHARGE
X	X	L	L	ON
$> 2/3 V_{CC}$	$> 1/3 V_{CC}$	H	L	ON
$< 2/3 V_{CC}$	$> 1/3 V_{CC}$	H	STABLE	STABLE
X	$< 1/3 V_{CC}$	H	H	OFF

**Maximum Ratings And Recommended Operating Conditions**

Parameter, unit	Symbol	Recommended operating conditions		Maximum ratings	
		Value		Value	
		min	max	min	max
Supply Voltage, V	V <sub>CC</sub>	2.0	18.0	0	18.0
Output Current, mA	I <sub>O</sub>	-	20	-	100
Input Voltage, V	V <sub>TH</sub> , V <sub>TRIG</sub> , V <sub>RST</sub>	-	-	-0.3	V <sub>CC</sub> +0.3
Power Dissipation, mW	P <sub>D</sub>	-	-	-	200
Operating Temperature, °C	TOPR	-40	85	-40	85
Storage Temperature, °C	T <sub>STG</sub>	-	-	-65	150
Lead Temperature, 1 mm from Case for 10 Seconds, °C	T <sub>SOLDER</sub>	-	-		245

**Note:** Absolute Maximum Ratings indicate limits beyond which damage to the device may occur. Operating Ratings indicate conditions for which the device is intended to be functional, but specific performance is not ensured.

**Dc Electrical Characteristics** (Voltages Referenced to GND)

Parameter, units	Symbol	Test Conditions		Value		Temperature, °C
		I <sub>OL</sub> , I <sub>OH</sub>	V <sub>CC</sub> , B	min	max	
Threshold Voltage, V	V <sub>TH</sub>		5.0	0.65 V <sub>CC</sub>	0.70 V <sub>CC</sub>	25 ± 10
				0.60 V <sub>CC</sub>	0.80 V <sub>CC</sub>	-20, 70
Trigger voltage, V	V <sub>TRIG</sub>		5.0	0.31 V <sub>CC</sub>	0.36 V <sub>CC</sub>	25 ± 10
				0.28 V <sub>CC</sub>	0.40 V <sub>CC</sub>	-20, 70
Reset voltage, V	V <sub>RST</sub>		2.0	0.4	1.0	25 ± 10
			18.0			
			2.0	0.2	1.5	-20, 70
			18.0			
Control Voltage Lead, V	V <sub>CV</sub>			0.65 V <sub>CC</sub>	0.69 V <sub>CC</sub>	25 10
				0.60 V <sub>CC</sub>	0.80 V <sub>CC</sub>	-20, 70
Output voltage Low, V	V <sub>OL</sub>	I <sub>OL</sub> = 3.2 mA	5.0		0.4	25 ± 10
		I <sub>OL</sub> = 20 mA	15.0		1.0	
		I <sub>OL</sub> = 3.2 mA	5.0		0.6	-20, 70
		I <sub>OL</sub> = 20 mA	15.0		1.5	
Output voltage High, V	V <sub>OH</sub>	I <sub>OH</sub> = -0.8 mA	5.0	4.0		25 ± 10
			15.0	14.3		
			5.0	3.5		-20, 70
			15.0	14.0		
Supply Current, µA	I <sub>CC</sub>		2.0		200	25 ± 10
			18.0		300	
			2.0		400	-20, 70
			18.0		600	

## Ac Electrical Characteristics

Parameter, unit	Symbol	Test Conditions		Value		Tempe- rature, °C
		R <sub>L</sub> , C <sub>L</sub>	V <sub>CC</sub> , V	Min	Max	
Rise (Fall) Time of Output, ns	t <sub>THL</sub> , t <sub>TLH</sub>	R <sub>L</sub> = 10 MΩ, C <sub>L</sub> = 10 pF	5.0	35	75	25 ± 10
				70	150	-20, 70
Guaranteed Max Osc Freq, kHz	f <sub>MAX</sub>	Astable Operation	2.0- 18.0	500		25 ± 10
				200		-20, 70
Initial accuracy, %		R <sub>L</sub> = 1 - 100 kΩ C <sub>L</sub> = 0.1 μF		5		
Drift with Temperature, %/°C	αf		5.0		0.02	-20, 70
			10.0		0.03	
			15.0		0.06	
Drift with Supply Voltage, %/B	Δf		5.0		3	25 ± 10
				6	-20, 70	

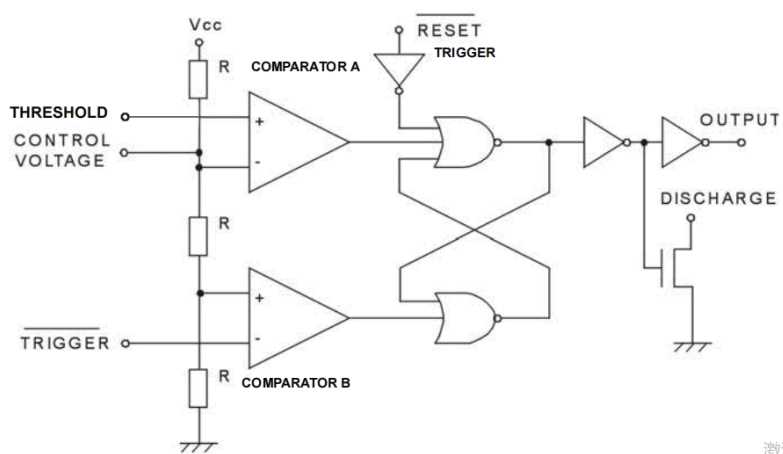


Figure 1. Block Diagram

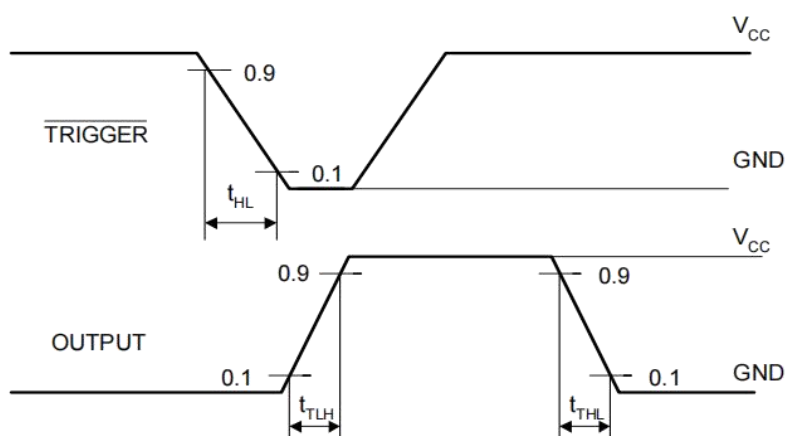
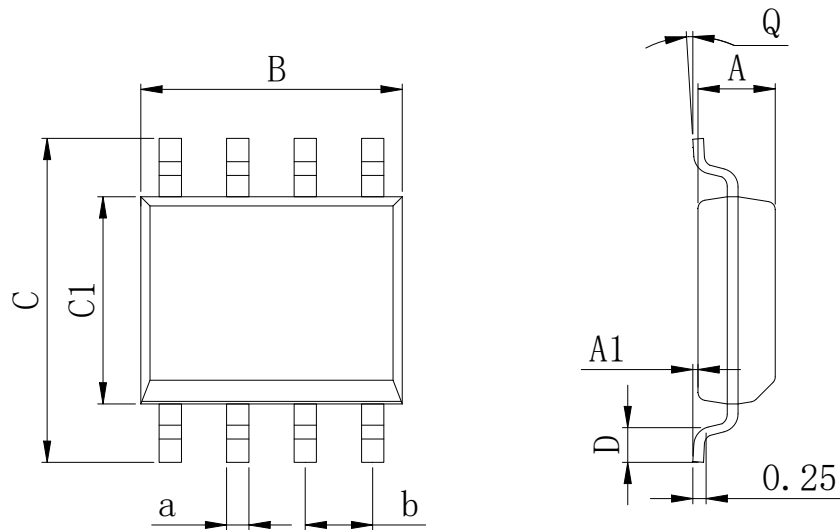


Figure 2. Switching Waveforms

## Physical Dimensions

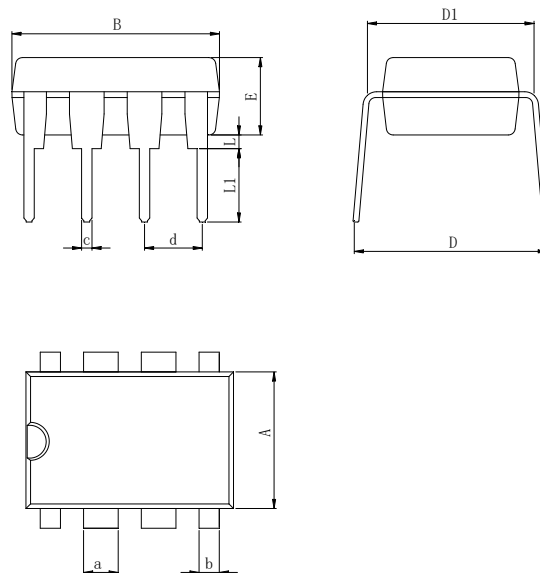
### SOP-8



Dimensions In Millimeters(SOP-8)

Symbol:	A	A1	B	C	C1	D	Q	a	b
Min:	1.35	0.05	4.90	5.80	3.80	0.40	0°	0.35	1.27 BSC
Max:	1.55	0.20	5.10	6.20	4.00	0.80	8°	0.45	

### DIP-8

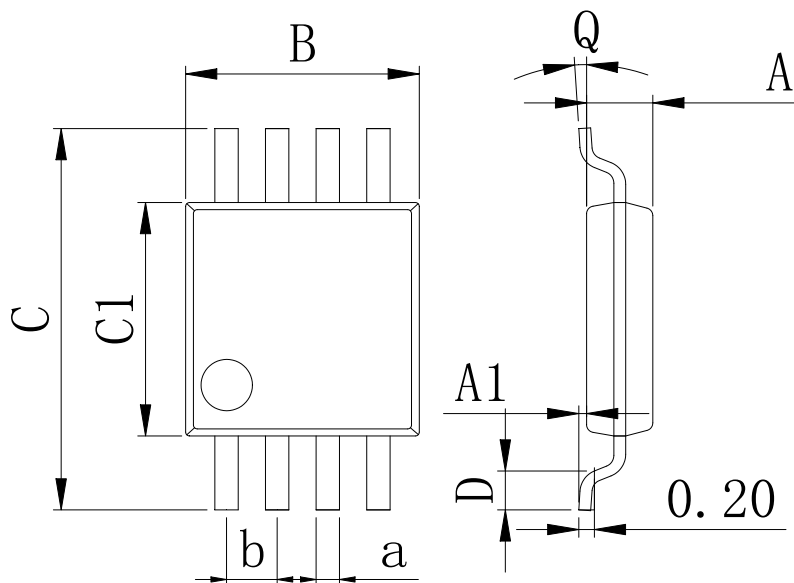


Dimensions In Millimeters(DIP-8)

Symbol:	A	B	D	D1	E	L	L1	a	b	c	d
Min:	6.10	9.00	8.10	7.42	3.10	0.50	3.00	1.50	0.85	0.40	2.54 BSC
Max:	6.68	9.50	10.9	7.82	3.55	0.70	3.60	1.55	0.90	0.50	

## Physical Dimensions

MSOP-8



Dimensions In Millimeters(MSOP-8)									
Symbol:	A	A1	B	C	C1	D	Q	a	b
Min:	0.80	0.05	2.90	4.75	2.90	0.35	0°	0.25	0.65 BSC
Max:	0.90	0.20	3.10	5.05	3.10	0.75	8°	0.35	

## Revision History

DATE	REVISION	PAGE
2015-3-6	New	1-9
2023-9-14	Update encapsulation type、Update Lead Temperature、Updated DIP-8 dimension、 Add annotation for Maximum Ratings.	1、 3、 6



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