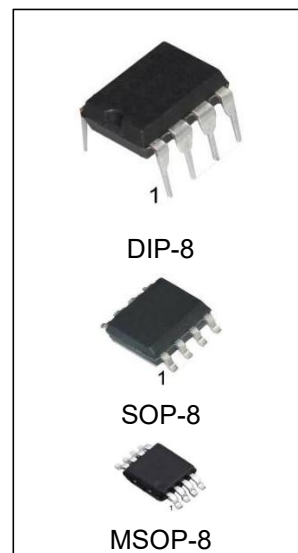


CMOS general purpose timer

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

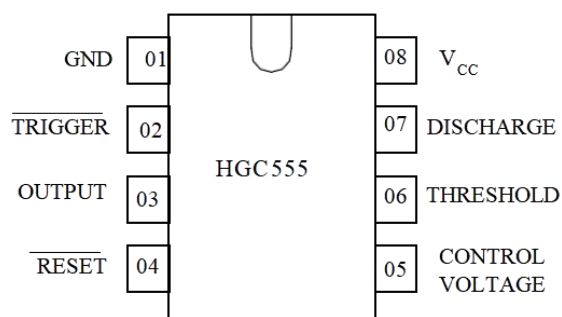
DEVICE	Package Type	MARKING	Packing	Packing Qty
HGC555IN	DIP-8	HGC555I	TUBE	2000pcs/box
HGC555IM/TR	SOP-8	HGC555I	REEL	2500pcs/reel
HGC555IMM/TR	MSOP-8	C555I	REEL	3000pcs/reel

General Description

The HGC555 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 crowbarbing of the supply current during output transitions, higher frequency performance and no requirement to decouple CONTROL VOLTAGE for stable operation.

Specifically, the HGC555 is stable controller capable of producing accurate time delays or frequencies.

Pin Assignment



Truth Table

THRESHOLD	TRIGGER	RESET	OUTPUT	DISCHARGE
X	X	L	L	ON
$> \frac{2}{3} V_{CC}$	$> \frac{1}{3} V_{CC}$	H	L	ON
$< \frac{2}{3} V_{CC}$	$> \frac{1}{3} V_{CC}$	H	STABLE	STABLE
X	$< \frac{1}{3} V_{CC}$	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 _{CC}	2.0	18.0	0	18.0
Output Current, mA	I _O	-	20	-	100
Input Voltage, V	V _{TH} , V _{TRIG} , V _{RST}	-	-	-0.3	V _{CC} +0.3
Power Dissipation, mW	P _D	-	-	-	200
Operating Temperature, °C	TOPR	-40	85	-40	85
Storage Temperature, °C	TSTG	-	-	-65	150
Lead Temperature, 1 mm from Case for 10 Seconds, °C	TSOLDER	-	-		260

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 _{OL} , I _{OH}	V _{CC} , B	min	max	
Threshold Voltage, V	V _{TH}		5.0	0.65 V _{CC}	0.70 V _{CC}	25 ± 10
				0.60 V _{CC}	0.80 V _{CC}	-20, 70
Trigger voltage, V	V _{TRIG}		5.0	0.31 V _{CC}	0.36 V _{CC}	25 ± 10
				0.28 V _{CC}	0.40 V _{CC}	-20, 70
Reset voltage, V	V _{RST}		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 _{CV}			0.65 V _{CC}	0.69 V _{CC}	25 10
				0.60 V _{CC}	0.80 V _{CC}	-20, 70
Output voltage Low, V	V _{OL}	I _{OL} = 3.2 mA	5.0		0.4	25 ± 10
		I _{OL} = 20 mA	15.0		1.0	
		I _{OL} = 3.2 mA	5.0		0.6	-20, 70
		I _{OL} = 20 mA	15.0		1.5	
Output voltage High, V	V _{OH}	I _{OH} = -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 _{CC}		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 _L , C _L	V _{CC} , V	Min	Max	
Rise (Fall) Time of Output, ns	t _{THL} , t _{TLH}	R _L = 10 M , C _L = 10 pF	5.0	35	75	25 ± 10
				70	150	-20, 70
Guaranteed Max Osc Freq, kHz	f _{MAX}	Astable Operation	2.0- 18.0	500		25 ± 10
				200		-20, 70
Initial accuracy, %		R _L = 1 - 100 k C _L = 0.1 μF		5		
Drift with Temperature, %/°C	f		5.0		0.02	-20, 70
			10.0		0.03	
			15.0		0.06	
Drift with Supply Voltage, %/B	f		5.0		3	25 ± 10
				6	-20, 70	

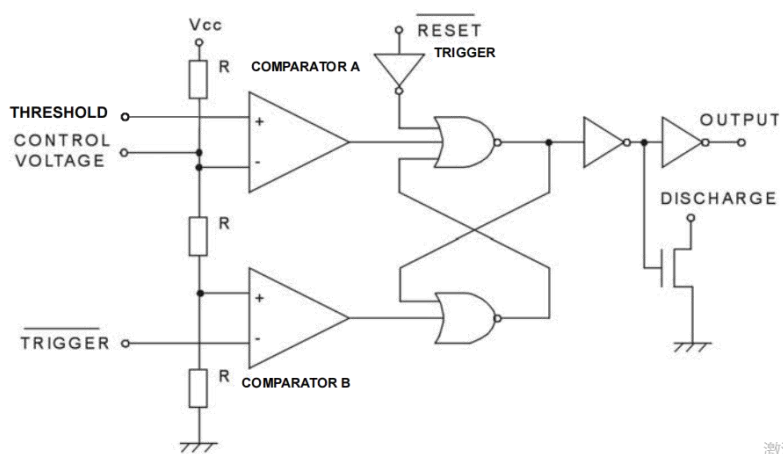


Figure 1. Block Diagram

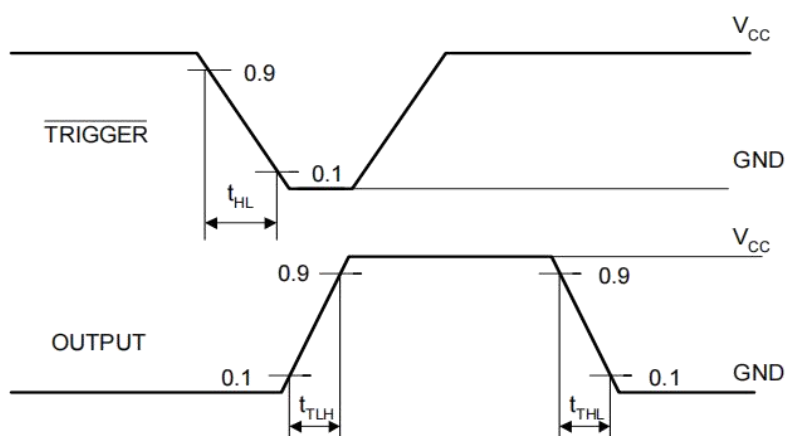
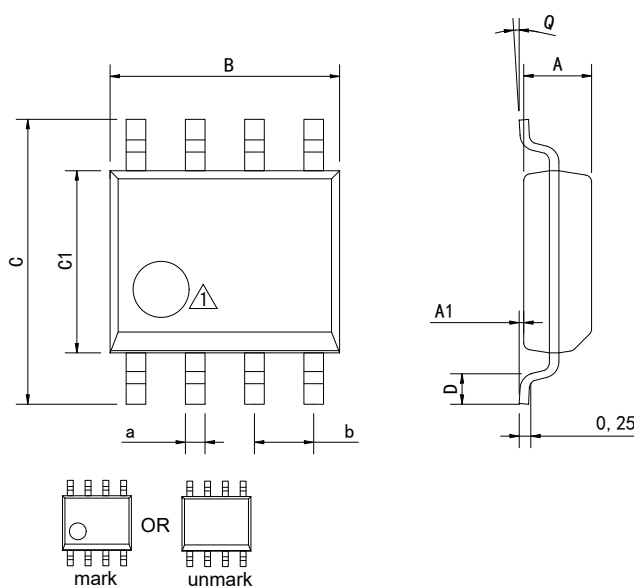


Figure 2. Switching Waveforms

Physical Dimensions

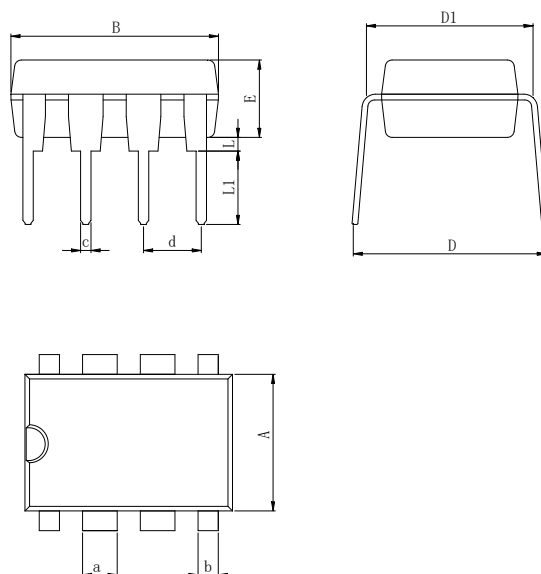
SOP-8



① Package top mark may be in lower left corner or unmark

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	

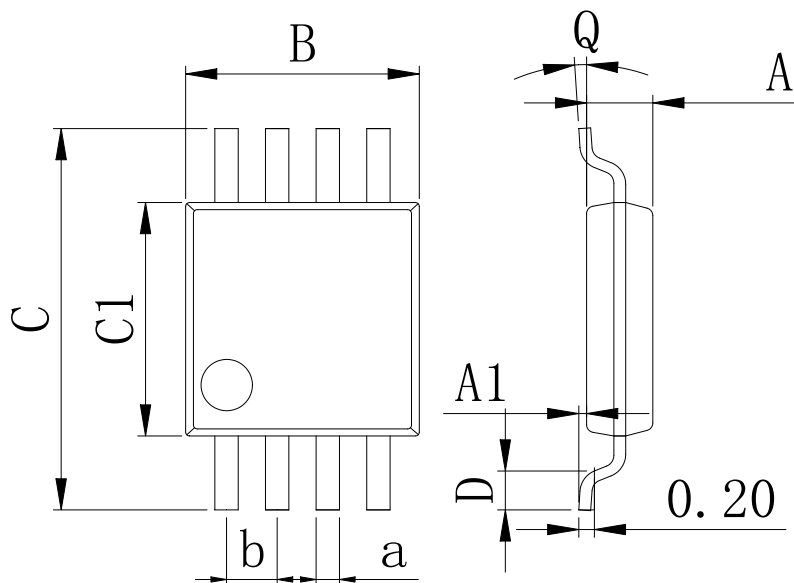
DIP-8



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

REVISION NUMBER	DATE	REVISION	PAGE
V1.0	2015-3	New	1-9
V1.1	2019-9	Update encapsulation type 、 Updated DIP-8 dimension 、 Add annotation for Maximum Ratings	1、 3、 6
V1.2	2024-11	Update Lead Temperature	3
V1.3	2025-12	Update important statements、 Update SOP-8 Dimension drawing	6、 9

IMPORTANT STATEMENT:

Huaguan Semiconductor reserves the right to change products and services offered without prior notice. Customers should obtain the latest relevant information before placing orders and verify that such information is current and complete. Huaguan Semiconductor assumes no responsibility or liability for altered documents.

Customers are responsible for complying with safety standards and implementing safety measures when using Huaguan Semiconductor products in system design and end-product manufacturing. You assume full responsibility for: selecting the appropriate Huaguan Semiconductor products for your application; designing, validating, and testing your application; and ensuring that your application complies with applicable standards and all other safety, security, or other requirements. This is to prevent potential risks that may lead to personal injury or property damage.

Huaguan Semiconductor products are not approved for use in life support, military, aerospace, or other high-risk applications. Huaguan products are neither intended nor warranted for use in such systems or equipment. Any failure or malfunction may lead to personal injury or severe property damage. Such applications are deemed "Unsafe Use." Unsafe Use includes, but is not limited to: surgical and medical equipment, nuclear energy control equipment, aircraft or spacecraft instruments, control or operation of vehicle power, braking, or safety systems, traffic signal instruments, all types of safety devices, and any other applications intended to support or sustain life. Huaguan Semiconductor shall not be liable for consequences resulting from Unsafe Use in these fields. Users must independently evaluate and assume all risks. Any issues, liabilities, or losses arising from the use of products beyond their approved applications shall be solely borne by the user. Users may not claim any compensation from Huaguan Semiconductor based on these terms. If any third party claims against Huaguan Semiconductor due to such Unsafe Use, the user shall compensate Huaguan Semiconductor for all resulting damages and liabilities.

Huaguan Semiconductor provides technical and reliability data (including datasheets), design resources (including reference designs), application or other design advice, web tools, safety information, and other resources for its semiconductor products. However, no guarantee is made that these resources are free from defects, and no express or implied warranties are provided. The use of testing and other quality control techniques is limited to Huaguan Semiconductor's quality assurance scope. Not all parameters of each device are tested.

Huaguan Semiconductor's documentation authorizes you to use these resources only for developing applications related to the products described herein. You are not granted rights to any other intellectual property of Huaguan Semiconductor or any third party. Any other reproduction or display of these resources is strictly prohibited. You shall fully indemnify Huaguan Semiconductor and its agents against any claims, damages, costs, losses, and liabilities arising from your use of these resources. Huaguan Semiconductor shall not be held responsible.