



Descriptions

ICM7555CBAZ is a general-purpose timer in the CMOS version. ICM7555CBAZ can provide precise time delay and frequency generation, with very low power loss and power supply current spikes. When the chip is used as a trigger delay, the time delay is precisely controlled by a single external resistor and capacitor. In stable mode, the oscillation frequency and duty cycle are accurately set by two external resistors and one capacitor. It adopts SOP-8(SOIC-8) packaging.

Feature

- Low supply current: 80uA (typical)
- 500KHz Stable frequency
- Lowest Operating Voltage 4.5V
- Output fully compatible with CMOS, TTL, and MOS under 5V
- Low supply current spike during output conversion
- Very low trigger, threshold and reset currents: 20pA (Typical)
- Operate in non-stable and mono-stable modes with adjustable duty cycle

Applications

- Active Filter
- Pulse generation
- Sequential timing
- Time delay generation
- Pulse width modulation

Ordering Information

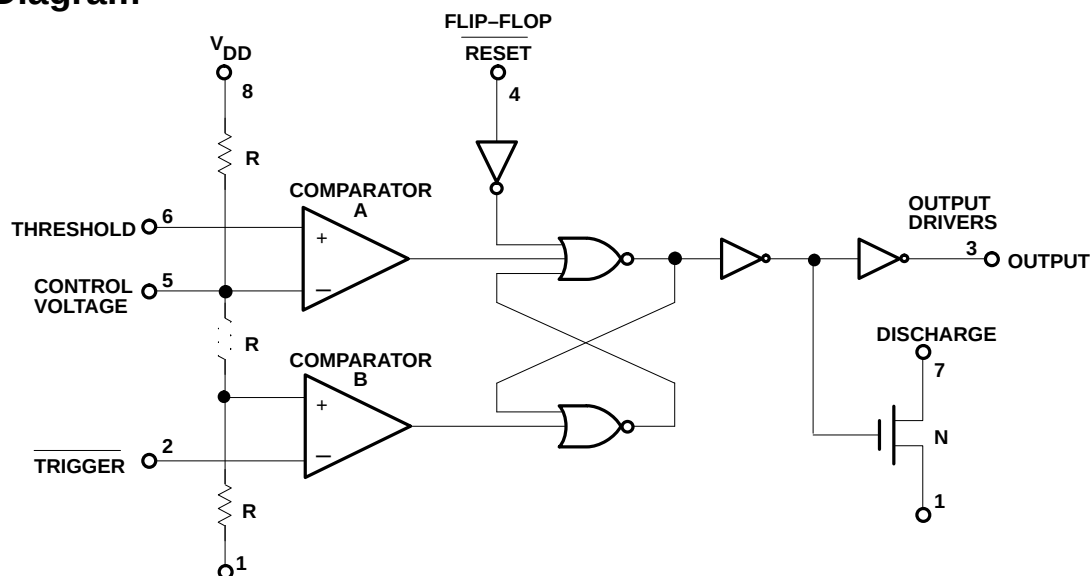
Product Model	Package Type	Packing	Packing Qty
ICM7555CBAZ	SOP-8(SOIC-8)	Tape	4000Pcs/Reel

Recommended Operating Conditions(Ta=25°C)

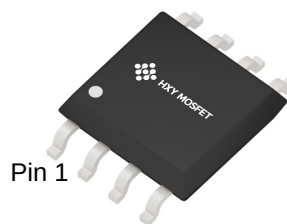
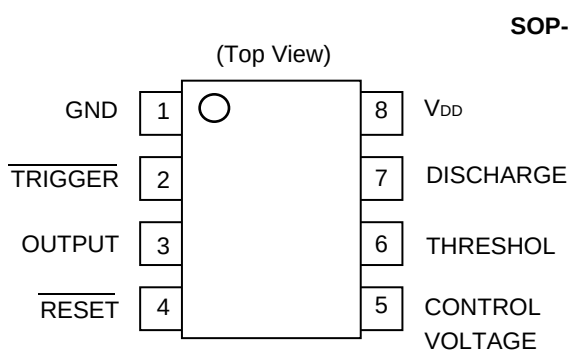
Symbol	Parameter	Value	Unit
V _{DD}	Supply Voltage	4.5~15	V
V _{th} , V _{trig} , V _{CTRL} , V _{reset}	Maximum Input Voltage	-0.3~V _{DD} +0.3	V



Block Diagram



Pins Configurations



Truth Table

$\overline{\text{Reset}}$	V_{trigger}	$V_{\text{threshold}}$	Output	Discharge Switch
LOW	--	--	LOW	ON
HIGH	$<1/3V_{\text{DD}}$	--	HIGH	OFF
HIGH	$>1/3V_{\text{DD}}$	$>2/3V_{\text{DD}}$	LOW	ON
HIGH	$>1/3V_{\text{DD}}$	$<2/3V_{\text{DD}}$	Sustain	

Extreme Ratings

Symbol	Parameter	Value	Unit
V_{DD}	Supply Voltage	18	V
T_{oper}	Operating Temperature	-20~85	°C
T_{j}	Junction Temperature	150	°C
T_{stg}	Storage Temperature Range	-50~150	°C



Electrical Characteristics (Note 1,2)

Ta=25°C, All switches are on, RESET connect to V_{DD}.

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Supply Current	I _{CC}	V _{DD} =5V TRI=RESET=THRE=0		40	60	uA
		V _{DD} = 10V TRI=RESET=THRE=0		60	100	
		V _{DD} = 15V TRI=RESET=THRE=0		80	150	
Control Voltage	V _{CON}	V _{DD} =5V	3.13	3.33	3.50	V
		V _{DD} = 10V	6.33	6.66	6.99	
		V _{DD} = 15V	9.5	10	10.5	
Discharge Saturation Voltage	V _{DIS}	V _{DD} =5V, I _{dis} = 10ma		100	400	mV
Output Voltage (Low)	V _{OL}	V _{DD} =5V , I _o =3.2ma		0.1	0.4	V
		V _{DD} = 15V , I _o =3.2ma				
Output Voltage (High)	V _{OH}	V _{DD} =5V , I _o =-2ma	4.0	4.5		V
		V _{DD} = 15V , I _o =-2ma	14.5	14.75		
Trigger Voltage	V _{TRIG}	V _{DD} =5V	1.55	1.66	1.75	V
		V _{DD} = 10V	3.15	3.33	3.50	V
		V _{DD} = 15V	4.75	5	5.25	V
Trigger Current	I _{TRIG}	V _{DD} =5V			50	nA
Reset Voltage	V _{RST}	V _{DD} =5V	0.4	0.7	1.2	V
Reset Current	I _{RST}	V _{DD} =5V			50	nA
Threshold Current	I _{THRESH}	V _{DD} =5V			50	nA
Discharge Current	I _{DIS}	V _{DD} = 12V			0.1	uA
Rise Time	t _R	V _{DD} = 5V , R _L = 10M Ω ,C _L = 10pF	35	40	75	ns
Fall Time	t _F	V _{DD} = 5V , R _L = 10M Ω ,C _L = 10pF	35	40	75	ns
Maximum Frequency	F _{MAX}			500		Khz

Note 1: All voltages are measured relative to the ground pin unless otherwise specified.

Note 2: The absolute maximum rating refers to the possibility of chip damage beyond the working limit. The operating rating indicates that the equipment is operable but does not guarantee special performance limits. Test conditions for electrical characteristics This ensures specific performance indicators under the DC and AC gas specifications. This assumes that the chip is within the operating rating range. Specifications do not guarantee unconstrained parameters, however typical values are a good indication of chip performance.



Application Information

In this mode of operation, the timer is used as a trigger (Figure 1). The external capacitor is initially discharged through the internal circuit.

When a negative trigger pulse of less than $1/3V_{DD}$ is added to the trigger terminal, the trigger sets the capacitor to release the short-circuit current and drives the output as High level.

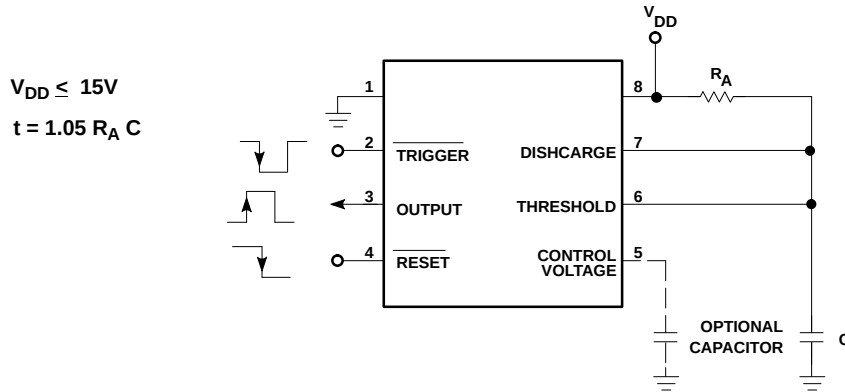


Figure 1: Monostable

Stable Operation

The circuit is connected in Figure 2 (the triggered and the threshold terminals are connected together), which will trigger itself and release the operation as a multi-vibrator. The external capacitor is charged by $R_A + R_B$ and discharged by R_B . Thus the duty cycle can be set precisely by the ratio of these two resistors.

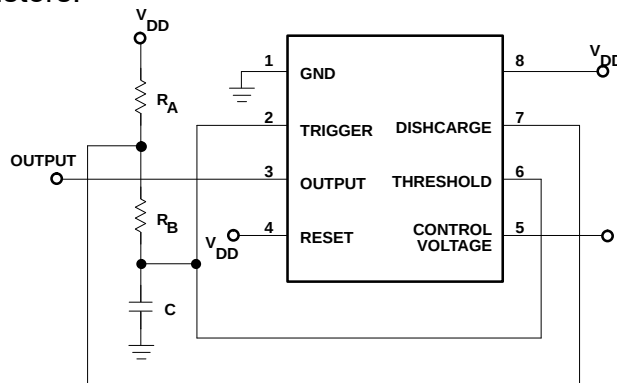
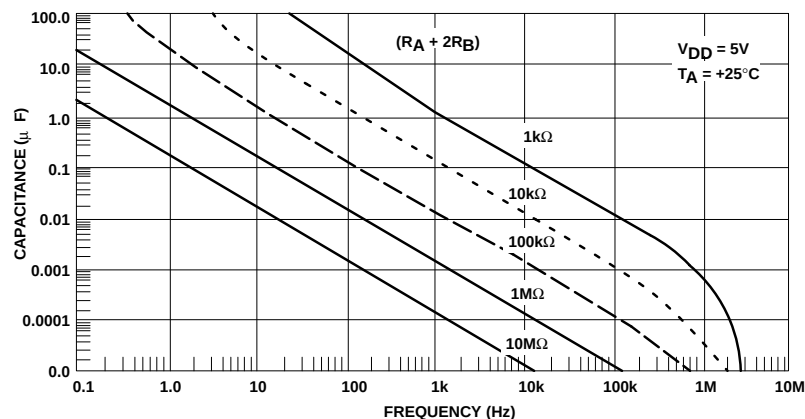


Figure 2: Stable (Variable Duty Cycle Oscillator)

Typical Performance

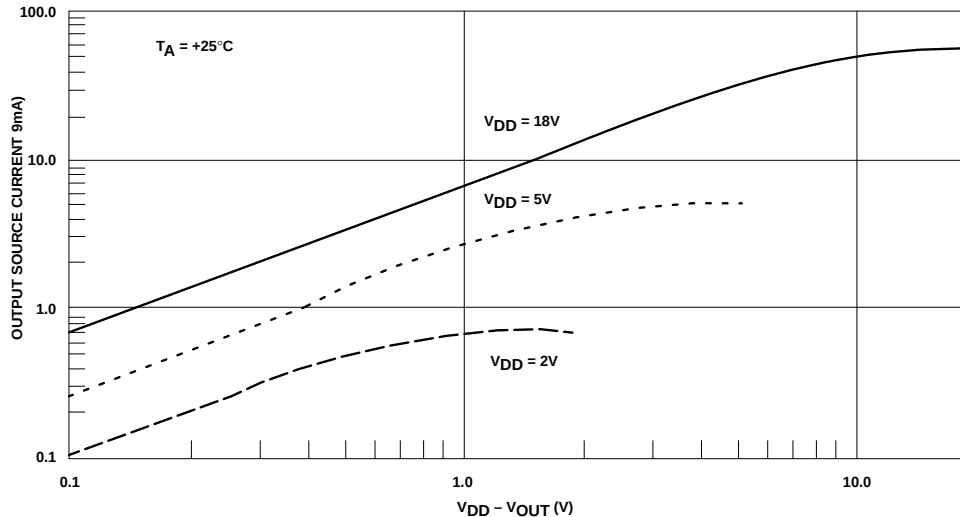
1、Ra、Rb、C and Frequency



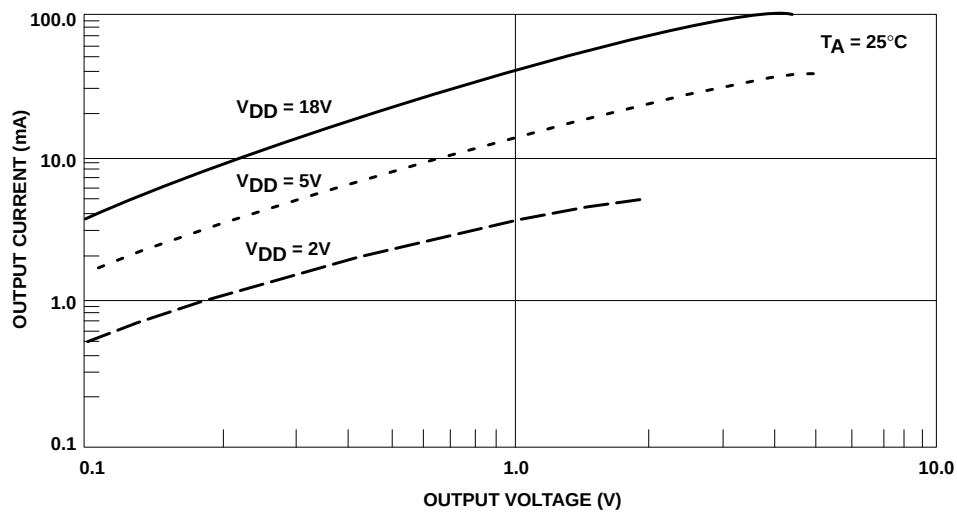


Typical Performance

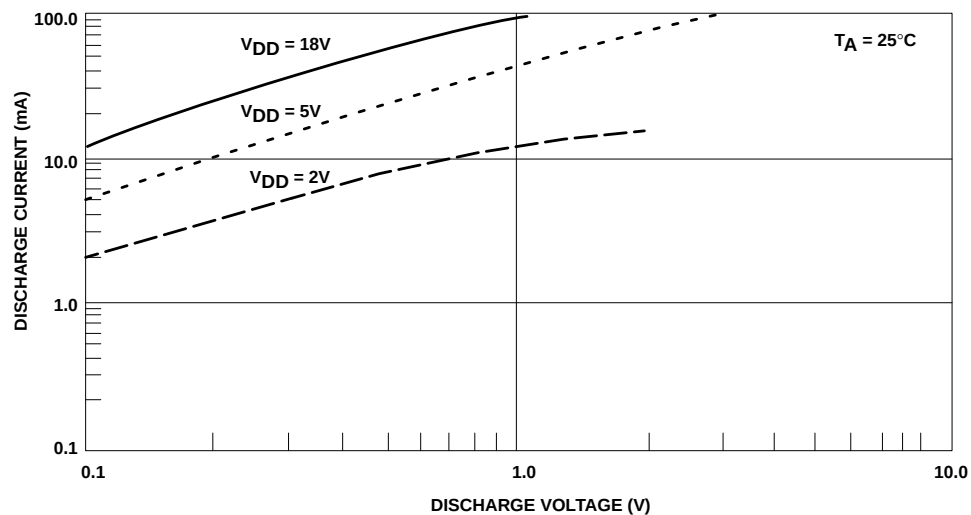
2、High Output Voltage Drop And Output Source Current



3、Low Output Voltage And Output Absorption Current



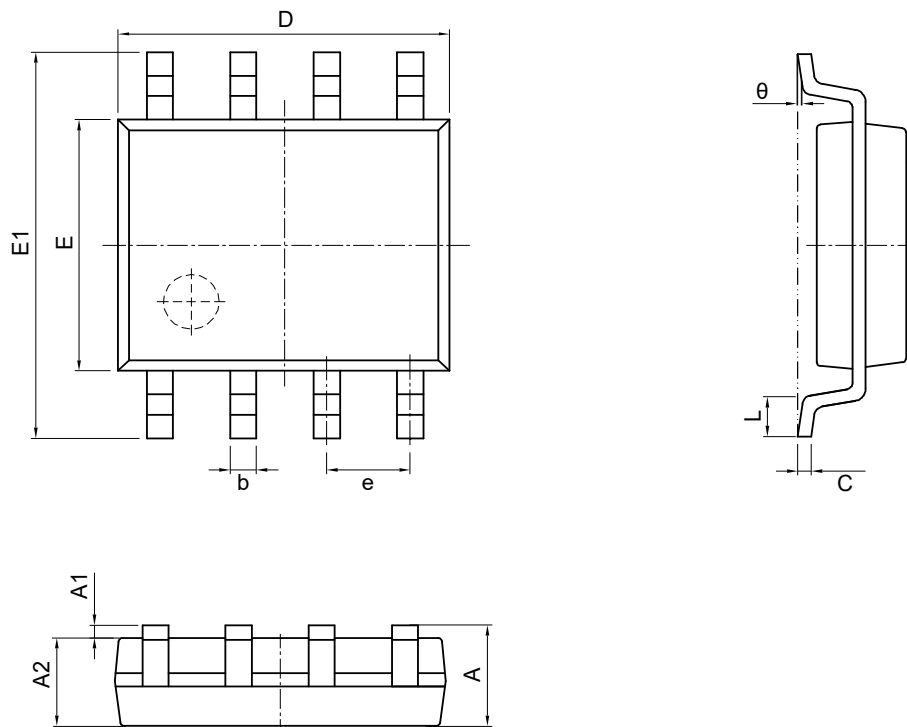
4、Discharge Low Output Voltage And Discharge Absorption Current





Package Information

SOP-8



Symbol	Size	Dimensions In Millimeters		Symbol	Size	Dimensions In Inches	
		Min(mm)	Max(mm)			Min(in)	Max(in)
A		1.350	1.750	A		0.053	0.069
A1		0.100	0.250	A1		0.004	0.010
A2		1.350	1.550	A2		0.053	0.061
b		0.330	0.510	b		0.013	0.020
c		0.170	0.250	c		0.006	0.010
D		4.700	5.100	D		0.185	0.200
E		3.800	4.000	E		0.150	0.157
E1		5.800	6.200	E1		0.228	0.224
e		1.270(BSC)		e		0.050(BSC)	
L		0.400	1.270	L		0.016	0.050
θ		0°	8°	θ		0°	8°



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