

Dual monostable multivibrator

BU4528B / BU4528BF

The BU4528B and BU4528BF are monostable multivibrators with trigger and reset functions that can be activated. Each chip has two built-in circuits.

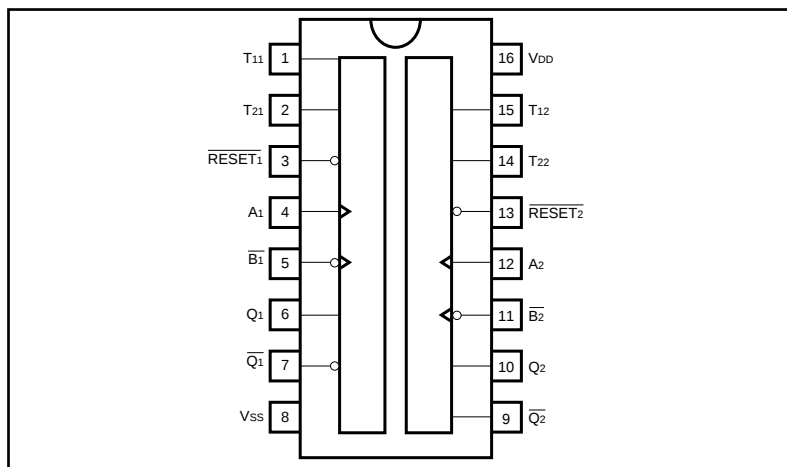
Triggers can initiate both rising and falling in response to Input A and Input B. As the output monostable pulse width is determined by the time constant of the external resistance (R_x) and the capacitor (C_x), a wide range of output pulse widths can be set.

Setting the $\overline{\text{RESET}}$ input to "L" enables external asynchronous resetting and this $\overline{\text{RESET}}$ input can be utilized to reduce the time from the trigger disable input or the power on until the BU4528B and BU4528BF are ready for monostable operation.

●Features

- 1) Low power dissipation.
- 2) Wide range of operating power supply voltages.
- 3) High input impedance.
- 4) High fan-out.
- 5) Direct drive of 2 L-TTL inputs and 1 LS-TTL input.

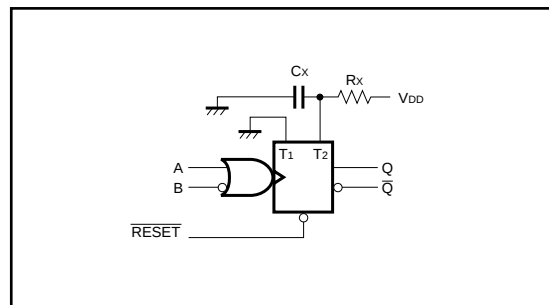
●Block diagram



●Truth table

INPUT			OUTPUT	
$\overline{\text{RESET}}$	A	B	Q	$\overline{Q}$
H		H		
H	L			
H		L	Not Triggered	
H	H		Not Triggered	
H	L, H,	H	Not Triggered	
H	L	L, H,	Not Triggered	
L	X	X	L	H
	X	X	Not Triggered	

●Logic circuit diagram



●Absolute maximum ratings (Ta = 25°C, V_{SS} = 0V)

Parameter	Symbol	Limits	Unit
Power supply voltage	V _{DD}	− 0.3 ~ + 18	V
Power dissipation	P _d	1000 (DIP), 500 (SOP)	mW
Operating temperature	T _{opr}	− 40 ~ + 85	°C
Storage temperature	T _{stg}	− 55 ~ + 150	°C
Input voltage	V _{IN}	− 0.3 ~ V _{DD} + 0.3	V

●Electrical characteristics

DC characteristics (unless otherwise noted, Ta = 25°C, V_{SS} = 0V)

Parameter	Symbol	Min.	Typ.	Max.	Unit	V _{DD} (V)	Conditions
Input high level voltage	V _{IH}	3.5	—	—	V	5	—
		7.0	—	—		10	
		11.0	—	—		15	
Input low level voltage	V _{IL}	—	—	1.5	V	5	—
		—	—	3.0		10	
		—	—	4.0		15	
Input high level current	I _{IH}	—	—	0.3	μA	15	V _{IH} = 15V
Input low level current	I _{IL}	—	—	− 0.3	μA	15	V _{IL} = 0V
Output high level voltage	V _{OH}	4.95	—	—	V	5	I _O = 0mA
		9.95	—	—		10	
		14.95	—	—		15	
Output low level voltage	V _{OL}	—	—	0.05	V	5	I _O = 0mA
		—	—	0.05		10	
		—	—	0.05		15	
Output high level current	I _{OH}	− 0.16	—	—	mA	5	V _{OH} = 4.6V
		− 0.4	—	—		10	V _{OH} = 9.5V
		− 1.2	—	—		15	V _{OH} = 13.5V
Output low level current	I _{OL}	0.44	—	—	mA	5	V _{OL} = 0.4V
		1.1	—	—		10	V _{OL} = 0.5V
		3.0	—	—		15	V _{OL} = 1.5V
Static current dissipation	I _{DD}	—	—	20	μA	5	V _I = V _{DD} or GND
		—	—	40		10	
		—	—	80		15	

Switching characteristics (Ta = 25°C, CL = 50pF, VSS = 0V)

Parameter	Symbol	Min.	Typ.	Max.	Unit	VDD (V)	Conditions
Output rise time	t _{TLH}	—	100	—	ns	5	—
		—	50	—	ns	10	
		—	40	—	ns	15	
Output fall time	t _{THL}	—	100	—	ns	5	—
		—	50	—	ns	10	
		—	40	—	ns	15	
Propagation delay time, A or B to Q or $\bar{Q}$	t _{PLH} t _{PHL}	—	325	—	ns	5	Cx = 15pF, Rx = 5kΩ
		—	120	—	ns	10	
		—	90	—	ns	15	
Propagation delay time, A or B to Q or $\bar{Q}$	t _{PLH} t _{PHL}	—	705	—	ns	5	Cx = 1000pF, Rx = 10kΩ
		—	290	—	ns	10	
		—	210	—	ns	15	
Propagation delay, Reset to Q or $\bar{Q}$	t _{PLH} t _{PHL}	—	325	—	ns	5	Cx = 15pF, Rx = 5kΩ
		—	90	—	ns	10	
		—	60	—	ns	15	
		—	1000	—	ns	5	Cx = 1000pF, Rx = 10kΩ
		—	300	—	ns	10	
		—	250	—	ns	15	
Minimum input pulse width	t _{WIN}	—	70	—	ns	5	Cx = 1000pF, Rx = 10kΩ Cx = 15pF, Rx = 5kΩ
		—	30	—	ns	10	
		—	30	—	ns	15	
Output pulse width	t _{WOUT1}	—	550	—	ns	5	Cx = 15pF, Rx = 5kΩ
		—	350	—	ns	10	
		—	300	—	ns	15	
Output pulse width	t _{WOUT2}	25	40	55	μs	5	Cx = 1000pF, Rx = 10kΩ
		10	50	90	μs	10	
		15	55	95	μs	15	
Minimum trigger time	t _{tr}	—	0	—	ns	5	Cx = 1000pF, Rx = 10kΩ Cx = 15pF, Rx = 5kΩ
		—	0	—	ns	10	
		—	0	—	ns	15	
Input capacitance	C _{IN}	—	5	—	pF	—	—

● Measurement circuits

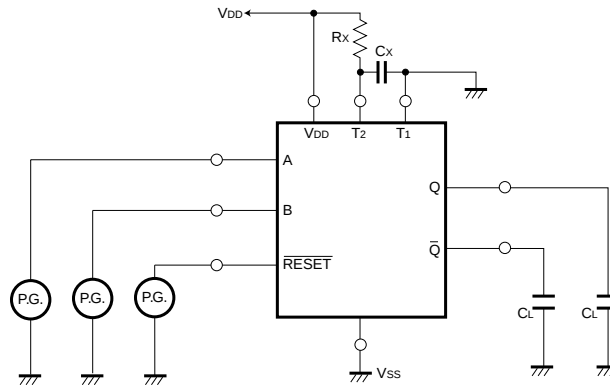


Fig. 1 Switching time measurement circuit

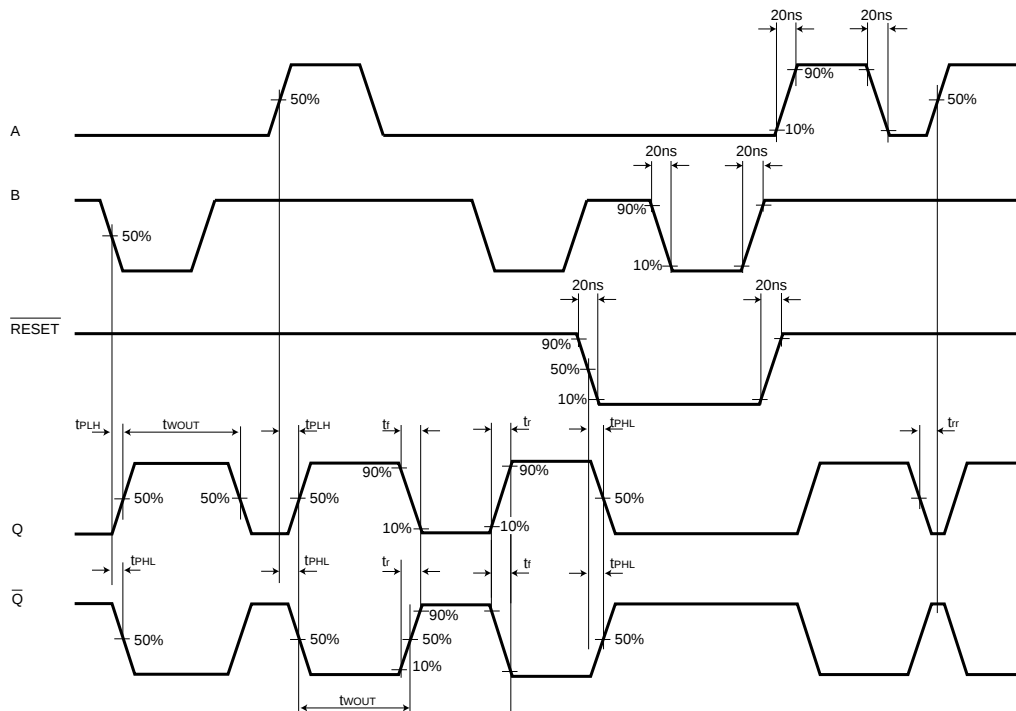


Fig. 2 Switching time waveform

●Timing chart

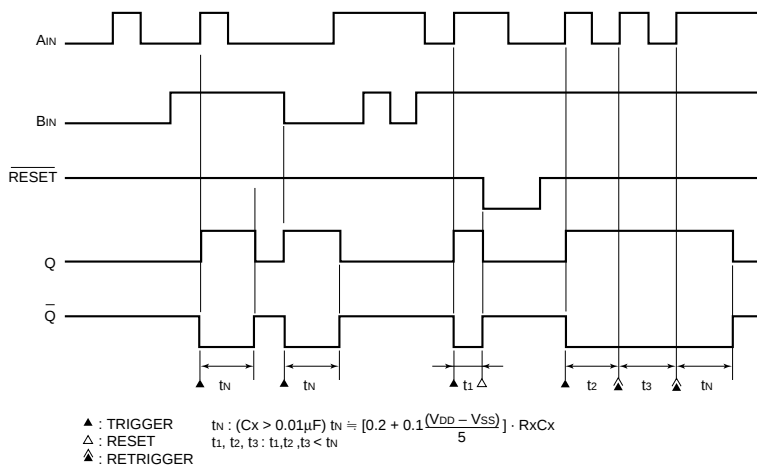
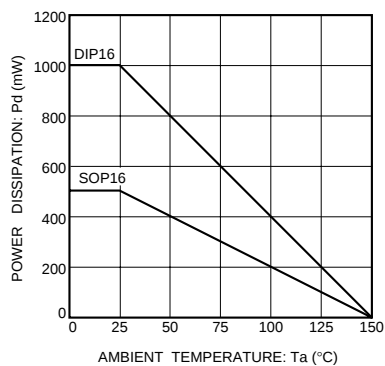


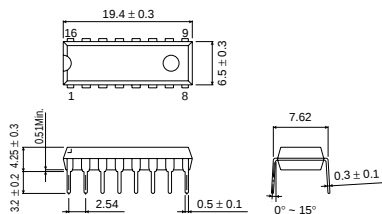
Fig. 3

●Electrical characteristic curve

Fig. 4 Power dissipation vs. T_a

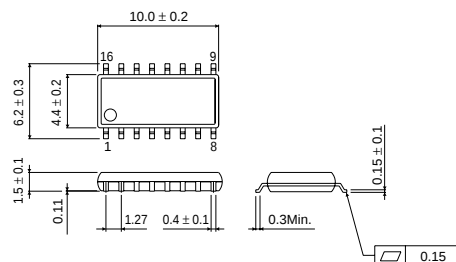
●External dimensions (Units: mm)

BU4528B



DIP16

BU4528BF



SOP16