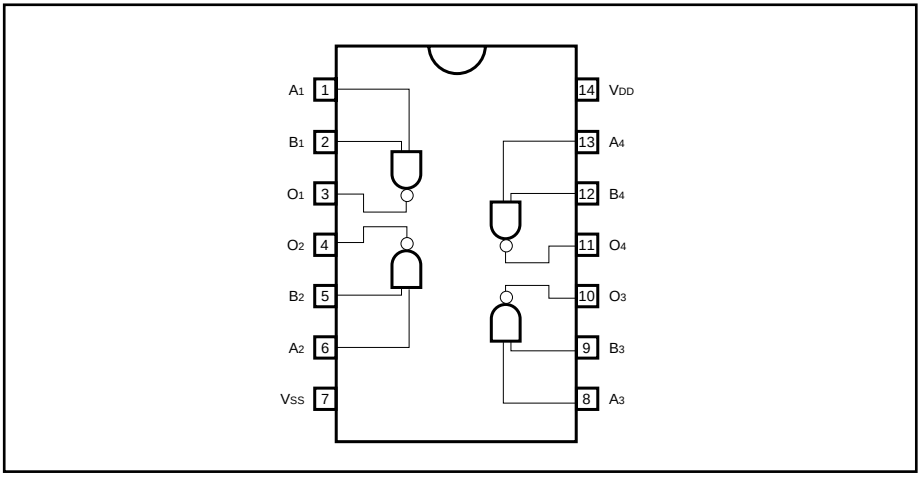
Quad 2-input NAND gate
BU4011B / BU4011BF / BU4011BFV

The BU4011B, BU4011BF, and BU4011BFV are dual-input positive logic NAND gates.
Four circuits are contained on a single chip. An inverter-based buffer has been added to the gate output, enabling improved input / output propagation characteristics, and an increased load capacitance minimizes fluctuation in propagation time.

●Features

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

●Block diagram



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

Parameter	Symbol	Limits	Unit
Power supply voltage	V_{DD}	– 0.3 ~ + 18	V
Power dissipation	Pd	1000 (DIP), 450 (SOP) 350 (SSOP-B14)	mW
Operating temperature	Topr	– 40 ~ + 85	°C
Storage temperature	Tstg	– 55 ~ + 150	°C
Input voltage	V_{IN}	– 0.3 ~ V_{DD} + 0.3	V

●Electrical characteristics

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	V_{DD} (V)	Conditions	Measurement circuit
Input high-level voltage	V_{IH}	3.5	—	—	V	5	—	Fig. 1
		7.0	—	—		10		
		11.0	—	—		15		
Input low-level voltage	V_{IL}	—	—	1.5	V	5	—	Fig. 1
		—	—	3.0		10		
		—	—	4.0		15		
Input high-level current	I_{IH}	—	—	0.3	µA	15	V_{IH} = 15V	Fig. 1
Input low-level current	I_{IL}	—	—	– 0.3	µA	15	V_{IL} = 0V	Fig. 1
Output high-level voltage	V_{OH}	4.95	—	—	V	5	I_O = 0mA	Fig. 1
		9.95	—	—		10		
		14.95	—	—		15		
Output low-level voltage	V_{OL}	—	—	0.05	V	5	I_O = 0mA	Fig. 1
		—	—	0.05		10		
		—	—	0.05		15		
Output high-level current	I_{OH}	– 0.16	—	—	mA	5	V_{OH} = 4.6V	Fig. 1
		– 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	Fig. 1
		1.1	—	—		10	V_{OL} = 0.5V	
		3.0	—	—		15	V_{OL} = 1.5V	
Static current dissipation	I_{DD}	—	—	1	µA	5	V_I = V_{DD} or GND	—
		—	—	2		10		
		—	—	4		15		

Switching characteristics (unless otherwise noted, Ta = 25°C, Vss = 0V, C_L = 50pF)

Parameter	Symbol	Min.	Typ.	Max.	Unit.	V_{DD} (V)	Conditions	Measurement circuit
Output rise time	t_{TLH}	—	180	360	ns	5	—	Fig. 2
		—	90	180		10		
		—	65	130		15		
Output fall time	t_{THL}	—	100	200	ns	5	—	Fig. 2
		—	50	100		10		
		—	40	80		15		
"L" to "H" Propagation delay time	t_{PLH}	—	90	180	ns	5	—	Fig. 2
		—	50	100		10		
		—	40	80		15		
"H" to "L" Propagation delay time	t_{PHL}	—	90	180	ns	5	—	Fig. 2
		—	50	100		10		
		—	40	80		15		
Input capacitance	C_{IN}	—	5	—	pF	—	—	—

●Measurement circuits

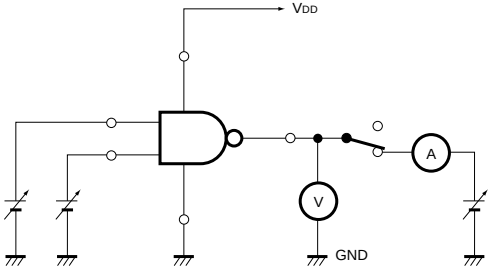
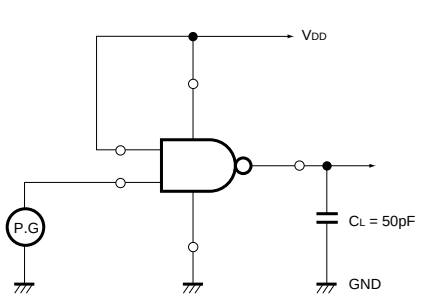


Fig. 1 DC characteristics



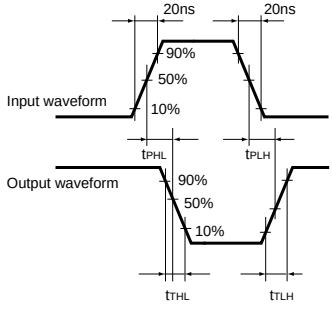


Fig. 2 Switching characteristics

●Electrical characteristic curve

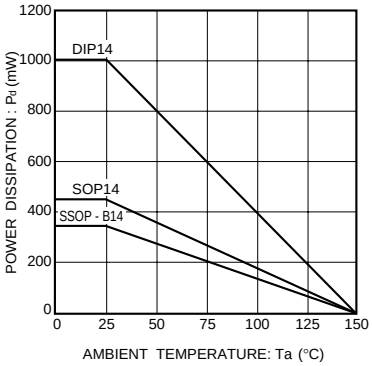
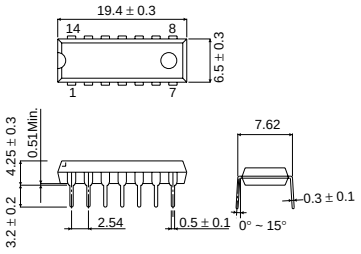


Fig. 3 Power dissipation vs. Ta

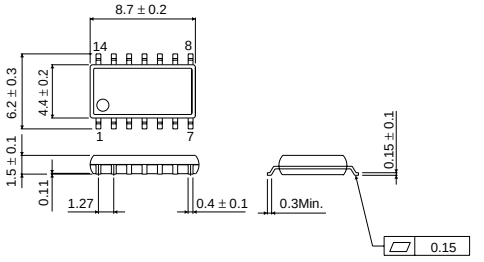
●External dimensions (Units: mm)

BU4011B



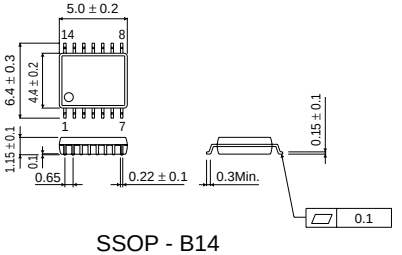
DIP14

BU4011BF



SOP14

BU4011BFV



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