

# Single 2-input AND gate

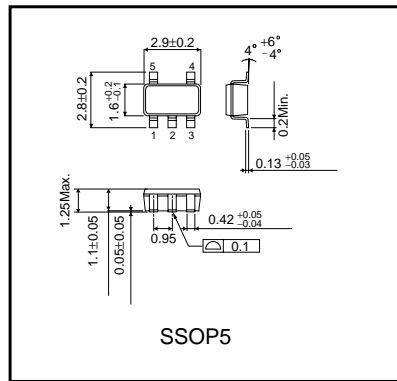
## BU4S81G2

The BU4S81G2 is an ultra-compact IC with one dual-input positive logic AND gate BU4081B circuit built into an SMP .

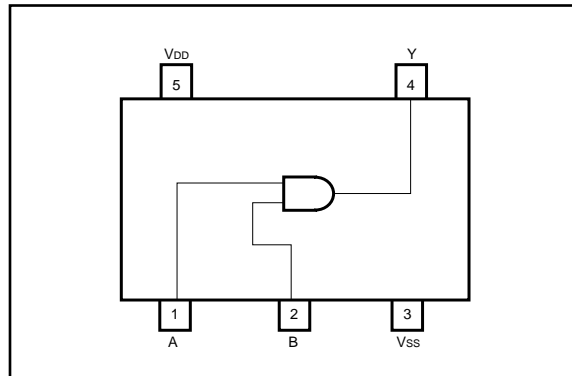
**●Features**

- 1) Low current dissipation.
- 2) Super-mini mold package designed for surface mounting.
- 3) Wide range of operating power supply voltages.
- 4) Direct drive of 2 L-TTL inputs and 1 LS-TTL input.

**●External dimensions (Unit : mm)**



**●Block diagram**



**●Absolute maximum ratings (Ta=25°C)**

Parameter	Symbol	Limits	Unit
Power supply voltage	V <sub>DD</sub>	V <sub>SS</sub> -0.3 to V <sub>SS</sub> +18	V
Power dissipation	P <sub>d</sub>	540	mW
Input current	I <sub>IN</sub>	±10	mA
Operating temperature	T <sub>opr</sub>	-40 to +85	°C
Storage temperature	T <sub>stg</sub>	-55 to +150	°C
Input voltage	V <sub>IN</sub>	V <sub>SS</sub> -0.3 to V <sub>DD</sub> +0.3	V

\*1 These values indicate the limits at which voltage can be applied to the terminal without causing destruction, but operation is not guaranteed at these values.

\*2 Power dissipation is reduced by 5.4mW for each increase in Ta of 1°C over 25°C.

## Standard ICs

●Recommended operating conditions ( $T_a=25^\circ\text{C}$ ,  $V_{SS}=0\text{V}$ )

Parameter	Symbol	Min.	Typ.	Max.	Unit
Power supply voltage	$V_{DD}$	3	–	16	V
Input voltage	$V_{IN}$	0	–	$V_{DD}$	V

## ●Electrical characteristics

DC characteristics (unless otherwise noted,  $V_{SS} = 0\text{V}$ ,  $T_a = 25^\circ\text{C}$ )

Parameter	Symbol	Min.	Typ.	Max.	Unit	$V_{DD}$ (V)	Conditions	Measurement circuit
Input high level voltage	$V_{IH}$	3.5	2.75	—	V	5	$ I_{OUT}  < 1\mu\text{A}$	Fig.1
		7.0	5.5	—	V	10		
		11.0	8.25	—	V	15		
Input low level voltage	$V_{IL}$	—	2.25	1.5	V	5	$ I_{OUT}  < 1\mu\text{A}$	
		—	4.5	3.0	V	10		
		—	6.75	4.0	V	15		
Input high level current	$I_{IH}$	—	—	0.3	$\mu\text{A}$	18	$V_{IH} = 18\text{V}$	
Input low level current	$I_{IL}$	—	—	-0.3	$\mu\text{A}$	18	$V_{IL} = 0\text{V}$	
Output high level voltage	$V_{OH}$	4.95	5.0	—	V	5	$ I_{OUT}  < 1\mu\text{A}$ $V_{IN} = V_{SS}$ or $V_{DD}$	
		9.95	10.0	—	V	10		
		14.95	15.0	—	V	15		
Output low level voltage	$V_{OL}$	—	—	0.05	V	5	$ I_{OUT}  < 1\mu\text{A}$ $V_{IN} = V_{SS}$	
		—	—	0.05	V	10		
		—	—	0.05	V	15		
Output high level current	$I_{OH}$	-0.51	-1.0	—	mA	5	$V_{OH} = 4.6\text{V}$	
		-2.1	-4.0	—	mA	5	$V_{OH} = 2.5\text{V}$	
		-1.3	-2.2	—	mA	10	$V_{OH} = 9.5\text{V}$	
		-3.4	-9.0	—	mA	15	$V_{OH} = 13.5\text{V}$	
Output low level current	$I_{OL}$	0.51	1.2	—	mA	5	$V_{OL} = 0.4\text{V}$	
		1.3	3.2	—	mA	10	$V_{OL} = 0.5\text{V}$	
		3.4	12.0	—	mA	15	$V_{OL} = 1.5\text{V}$	
Static current dissipation	$I_{DD}$	—	0.001	0.25	$\mu\text{A}$	5	$V_{IN} = V_{SS}$ or $V_{DD}$	
		—	0.001	0.5	$\mu\text{A}$	10		
		—	0.002	1.0	$\mu\text{A}$	15		

Standard ICs

●Switching characteristics (unless otherwise noted,  $V_{SS} = 0V$ ,  $T_a = 25^\circ C$ ,  $C_L = 50pF$ )

Parameter	Symbol	Min.	Typ.	Max.	Unit	$V_{DD}$ (V)	Conditions	Measurement circuit
						5		
Output rise time	$t_{TLH}$	—	70	200	ns	5	—	Fig.2
		—	35	100	ns	10		
		—	30	80	ns	15		
Output fall time	$t_{THL}$	—	70	200	ns	5	—	
		—	35	100	ns	10		
		—	30	80	ns	15		
Propagation delay time	$t_{PLH}$	—	90	200	ns	5	—	
		—	45	100	ns	10		
		—	30	80	ns	15		
	$t_{PHL}$	—	90	200	ns	5	—	
		—	45	100	ns	10		
		—	30	80	ns	15		

●Measurement circuits

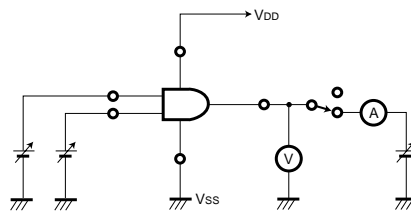


Fig.1 DC characteristics measurement circuit

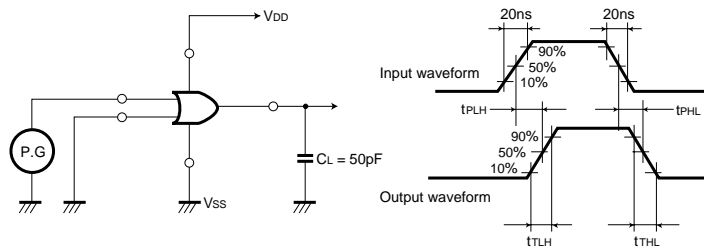


Fig. 2 Switching characteristics measurement circuit

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