Single OR gate
BU4S71

The BU4S71 is an ultra-compact IC with one circuit of the dual-input positive logic OR gate built into an SMP package.

●Features

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

●Absolute maximum ratings (Ta = 25°C)

Parameter	Symbol	Limits	Unit
Power supply voltage	V_{DD}	V_{SS} – 0.3 ~ V_{SS} + 18	V
Power dissipation	Pd	170	mW
Input current	I_{IN}	± 10	mA
Operating temperature	Topr	– 40 ~ + 85	°C
Storage temperature	Tstg	– 55 ~ + 150	°C
Input voltage	V_{IN}	V_{SS} – 0.3 ~ V_{DD} + 0.3	V

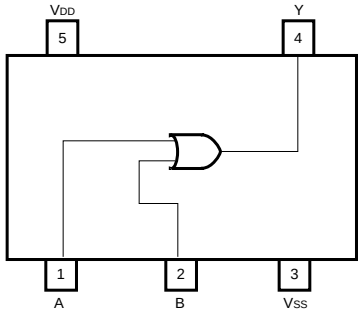
Note 1: These values indicate the range limits of the voltage that can be applied to each pin without destroying it. Operation is not guaranteed at these values.

Note 2: Reduced by 1.7mW for each increase in Ta of 1°C over 25°C.

●Recommended operating conditions (Ta = 25°C, V_{SS} = 0V)

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

●Block diagram



●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	2.75	—	V	5	| I_{OUT} | < 1µA	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} | < 1µA	
		—	4.5	3.0	V	10		
		—	6.75	4.0	V	15		
Input high level current	I_{IH}	—	—	0.3	µA	18	V_{IH} = 18V	
Input low level current	I_{IL}	—	—	– 0.3	µA	18	V_{IL} = 0V	
Output high level voltage	V_{OH}	4.95	5.0	—	V	5	| I_{OUT} | < 1µA 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} | < 1µA 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} = 4.6V	
		– 2.1	– 4.0	—	mA	5	V_{OH} = 2.5V	
		– 1.3	– 2.2	—	mA	10	V_{OH} = 9.5V	
		– 3.4	– 9.0	—	mA	15	V_{OH} = 13.5V	
Output low level current	I_{OL}	0.51	1.2	—	mA	5	V_{OL} = 0.4V	
		1.3	3.2	—	mA	10	V_{OL} = 0.5V	
		3.4	12.0	—	mA	15	V_{OL} = 1.5V	
Static current dissipation	I_{DD}	—	0.001	0.25	µA	5	V_{IN} = V_{SS} or V_{DD}	
		—	0.001	0.5	µA	10		
		—	0.002	1.0	µA	15		

Switching characteristics (unless otherwise noted, V_{SS} = 0V, Ta = 25°C, C_L = 50pF)

Parameter	Symbol	Min.	Typ.	Max.	Unit	V_{DD} (V)	Conditions	Measurement circuit
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

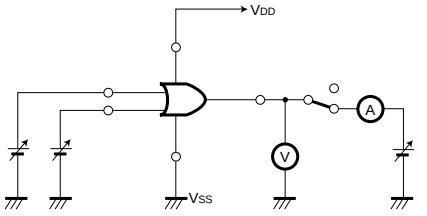


Fig. 1 DC characteristics measurement circuit

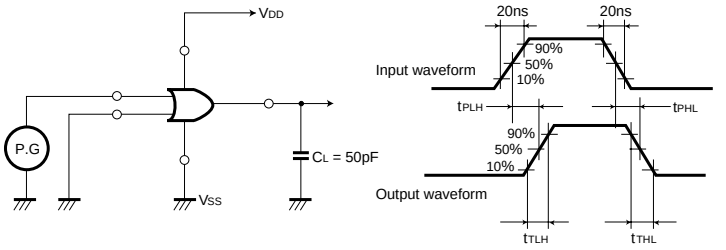
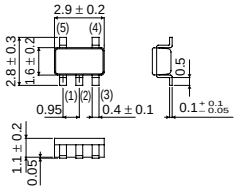


Fig. 2 Switching characteristics measurement circuit

●External dimensions (Units: mm)



SMP5