

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	P _d	170	mW
Input current	I _{IN}	± 10	mA
Operating temperature	T _{OPR}	- 40 ~ + 85	°C
Storage temperature	T _{STG}	- 55 ~ + 150	°C
Input voltage	V _{IN}	V _{SS} - 0.3 ~ V _{DD} + 0.3	V

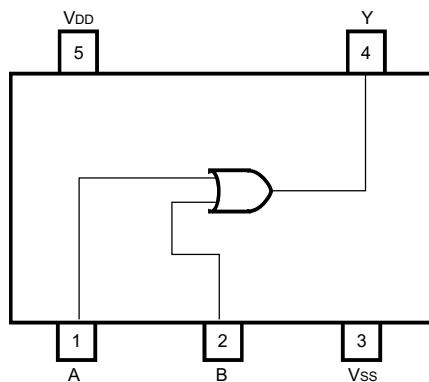
Note 1: These values indicate the range limits of the voltage that can be applied to each pin without destroying it. Operation is not guaranteed at these values.

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, $V_{SS} = 0V$, $T_a = 25^\circ C$)

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 A$		
		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 A$		
		—	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} < 1\mu 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 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	$V_{OH} = 4.6V$		
		-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			

Fig.1

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	
Output rise time	t _{T LH}	—	70	200	ns	5	—	Fig.2	
		—	35	100	ns	10			
		—	30	80	ns	15			
Output fall time	t _{T HL}	—	70	200	ns	5	—	Fig.2	
		—	35	100	ns	10			
		—	30	80	ns	15			
Propagation delay time	t _{P LH}	—	90	200	ns	5	—	Fig.2	
		—	45	100	ns	10			
		—	30	80	ns	15			
	t _{P HL}	—	90	200	ns	5	—		
		—	45	100	ns	10			
		—	30	80	ns	15			

● Measurement circuits

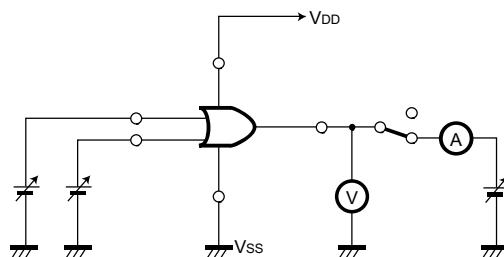


Fig. 1 DC characteristics measurement circuit

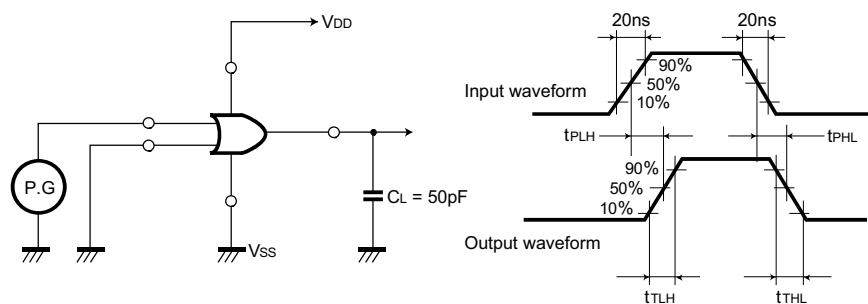


Fig. 2 Switching characteristics measurement circuit

- External dimensions (Units: mm)

