



# U7SH32

CMOS IC

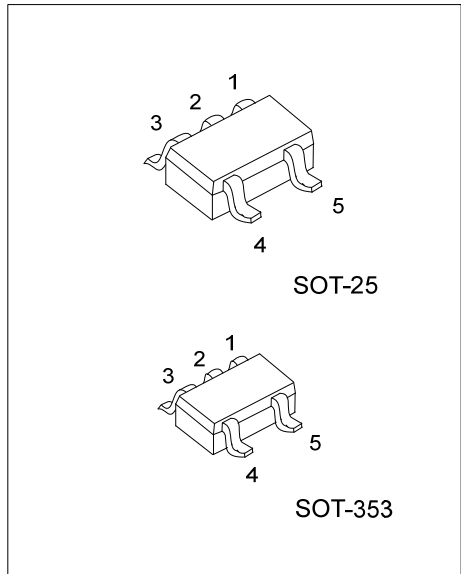
## 2-INPUT OR GATE

### DESCRIPTION

The U7SH32 is a 2-input OR gate, it provides the Function  $Y=A+B$ .

### FEATURES

- \* Operation Voltage Range: 2~5.5V
- \* Low Power Dissipation:  $I_{CC}=2\mu A(\text{Max})$
- \* High Speed:  $t_{PD}=3.8\text{ns}(\text{Typ})$
- \* High Noise Immunity

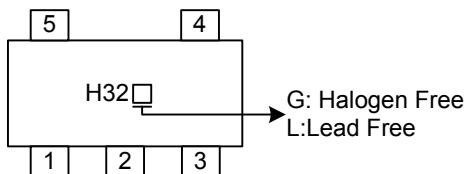


### ORDERING INFORMATION

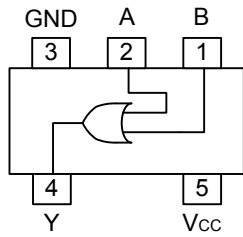
Order Number		Package	Packing
Lead Free	Halogen Free		
U7SH32L-AF5-R	U7SH32G-AF5-R	SOT-25	Tape Reel
U7SH32L-AL5-R	U7SH32G-AL5-R	SOT-353	Tape Reel

<p>U7SH32L-AF5-R</p>	<p>(1)Packing Type (2)Package Type (3)Lead Free</p>	<p>(1) R: Tape Reel (2) AF5: SOT-25, AL5: SOT-353 (3) G: Halogen Free, L: Lead Free</p>
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### MARKING



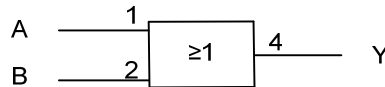
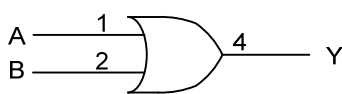
■ PIN CONFIGURATION



■ FUNCTION TABLE (each gate)

INPUT		OUTPUT
A	B	Y
L	L	L
L	H	H
H	L	H
H	H	H

■ LOGIC DIAGRAM (positive logic)



## ■ ABSOLUTE MAXIMUM RATING (unless otherwise specified)(Note 1)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	$V_{CC}$	-0.5~7	V
Input Voltage	$V_{IN}$	-0.5~7	V
Output Voltage	$V_{OUT}$	-0.5~ $V_{CC}+0.5$	V
Input Clamp Current	$I_{IK}$	-20	mA
Output Clamp Current	$I_{OK}$	±20	mA
Output Current	$I_{OUT}$	±25	mA
$V_{CC}$ or GND Current	$I_{CC}$	±50	mA
Power Dissipation	$P_D$	200	mW
Storage Temperature	$T_{STG}$	-65 ~ +150	°C

Note 1. The input and output voltage ratings may be exceeded if the input and output current ratings are observed.

2. Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress ratings only and functional device operation is not implied.

## ■ RECOMMENDED OPERATING CONDITIONS

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	$V_{CC}$		2		5.5	V
Input Voltage	$V_{IN}$		0		5.5	V
Output Voltage	$V_{OUT}$		0		$V_{CC}$	V
Input Transition Rise or Fall Rate	dt/dv	$V_{CC}=3.3+0.3V$			100	ns/V
		$V_{CC}=5.0+0.5V$			20	
Operating Temperature	$T_A$		-40		85	°C

## ■ STATIC CHARACTERISTICS

PARAMETER	SYMBOL	TEST CONDITIONS	$T_A=25^{\circ}C$			$-40\sim 85^{\circ}C$		UNIT
			MIN	TYP	MAX	MIN	MAX	
High-Level Input Voltage	$V_{IH}$	$V_{CC}=2.0V$	1.5			1.5		V
		$V_{CC}=3.0V$	2.1			2.1		
		$V_{CC}=5.5V$	3.85			3.85		
Low-Level Input Voltage	$V_{IL}$	$V_{CC}=2.0V$			0.5		0.5	V
		$V_{CC}=3.0V$			0.9		0.9	
		$V_{CC}=5.5V$			1.65		1.65	
High-Level Output Voltage	$V_{OH}$	$V_{CC}=2.0V, I_{OH}=-50\mu A$	1.9	2.0		1.9		V
		$V_{CC}=3.0V, I_{OH}=-50\mu A$	2.9	3.0		2.9		
		$V_{CC}=4.5V, I_{OH}=-50\mu A$	4.4	4.5		4.4		
		$V_{CC}=3.0V, I_{OH}=-4mA$	2.58			2.48		
		$V_{CC}=4.5V, I_{OH}=-8mA$	3.94			3.8		
Low-Level Output Voltage	$V_{OL}$	$V_{CC}=2.0V, I_{OL}=50\mu A$			0.1		0.1	V
		$V_{CC}=3.0V, I_{OL}=50\mu A$			0.1		0.1	
		$V_{CC}=4.5V, I_{OL}=50\mu A$			0.1		0.1	
		$V_{CC}=3.0V, I_{OL}=4mA$			0.36		0.44	
		$V_{CC}=4.5V, I_{OL}=8mA$			0.36		0.44	
Input Leakage Current	$I_{I(LEAK)}$	$V_{CC}=0\sim 5.5V, V_{IN}=V_{CC}$ or GND			±0.1		±1	μA
Quiescent Supply Current	$I_{CC}$	$V_{CC}=5.5V, V_{IN}=V_{CC}$ or GND, $I_{OUT}=0$			2		20	μA
Input Capacitance	$C_{IN}$	$V_{CC}=5V, V_{IN}=V_{CC}$ or GND		4	10		10	pF

■ **DYNAMIC CHARACTERISTICS** (Input:  $t_R$ ,  $t_F=3ns$ )

PARAMETER	SYMBOL	TEST CONDITIONS	T <sub>A</sub> =25°C			-40~85°C		UNIT
			MIN	TYP	MAX	MIN	MAX	
Propagation Delay From Input (A or B) to Output(Y)	$t_{PLH}$	$V_{CC}=3.3\pm 0.3$ , $C_L=15pF$		5.5	7.9	1.0	9.5	ns
	$t_{PHL}$			5.5	7.9	1.0	9.5	
	$t_{PLH}$	$V_{CC}=3.3\pm 0.3$ , $C_L=50pF$		8.0	11.4	1.0	13.0	
	$t_{PHL}$			8.0	11.4	1.0	13.0	
Propagation Delay From Input (A or B) to Output(Y)	$t_{PLH}$	$V_{CC}=5\pm 0.5$ , $C_L=15pF$		3.8	5.5	1.0	6.5	ns
	$t_{PHL}$			3.8	5.5	1.0	6.5	
	$t_{PLH}$	$V_{CC}=5\pm 0.5$ , $C_L=50pF$		5.3	10	1.0	8.5	
	$t_{PHL}$			5.3	10	1.0	8.5	
Power Dissipation Capacitance	$C_{PD}$	No load		15				pF

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