



## U74AHCT1G32

CMOS IC

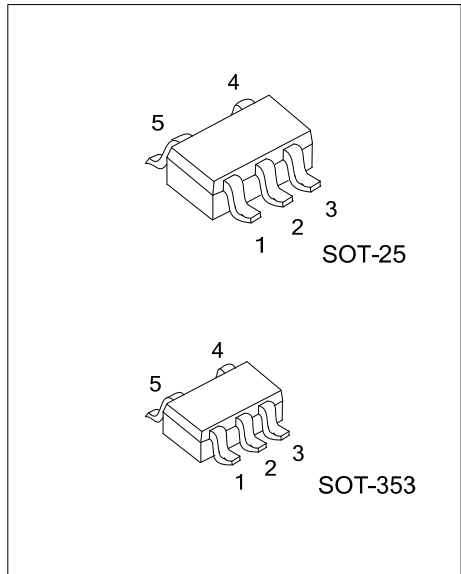
### SINGLE 2-INPUT POSITIVE-OR GATE

#### DESCRIPTION

The UTC **U74AHCT1G32** is a single 2-input positive-or gate, which provides the function  $Y=A+B$  in positive logic.

#### FEATURES

- \* Inputs are TTL voltage compatible
- \* Operate from 4.5V to 5.5V
- \* Max  $t_{PD}$  of 8ns @ 5 V
- \* Low power dissipation:  $I_{CC}=10\mu A(\text{Max}) @ T_A=25^\circ C$

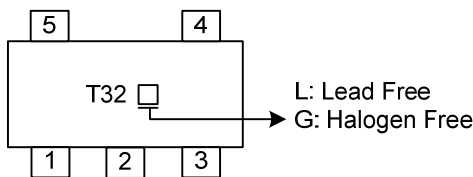


#### ORDERING INFORMATION

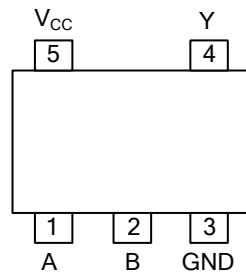
Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74AHCT1G32L-AF5-R	U74AHCT1G32G-AF5-R	SOT-25	Tape Reel
U74AHCT1G32L-AL5-R	U74AHCT1G32G-AL5-R	SOT-353	Tape Reel

<p>U74AHCT1G32G-AF5-R</p> <p>(1) Packing Type (2) Package Type (3) Green Package</p>	<p>(1) R: Tape Reel (2) AF5: SOT-25, AL5: SOT-353 (3) G: Halogen Free and Lead Free, L: Lead Free</p>
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#### MARKING



■ PIN CONFIGURATION

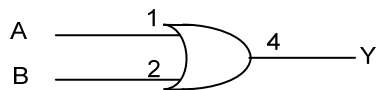


■ FUNCTION TABLE

INPUT(A)	INPUT(B)	OUTPUT(Y)
H	X	H
X	H	H
L	L	L

Note: H: high voltage level; L: low voltage level.

■ LOGIC DIAGRAM



Logic symbol

■ ABSOLUTE MAXIMUM RATING (T<sub>A</sub>=25°C, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V <sub>CC</sub>	-0.5 ~ 7	V
Input Voltage	V <sub>IN</sub>	-0.5 ~ 7	V
Output Voltage	V <sub>OUT</sub>	-0.5 ~ V <sub>CC</sub> +0.5	V
V <sub>CC</sub> or GND Current	I <sub>CC</sub>	±50	mA
Output Current	I <sub>OUT</sub>	±25	mA
Input Clamp Current	I <sub>IK</sub>	-20	mA
Output Clamp Current	I <sub>OK</sub>	±20	mA
Operating Temperature	T <sub>OPR</sub>	-40 ~ +125	°C
Storage Temperature	T <sub>STG</sub>	-65 ~ +150	°C

Note: 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 (T<sub>A</sub>=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	V <sub>CC</sub>		4.5		5.5	V
Input Voltage	V <sub>IN</sub>		0		5.5	V
Output Voltage	V <sub>OUT</sub>		0		V <sub>CC</sub>	V
High-level Input Voltage	V <sub>IH</sub>		2			V
Low-level Input Voltage	V <sub>IL</sub>				0.8	V
High-level Output Current	I <sub>OH</sub>				-8	mA
Low-level Output Current	I <sub>OL</sub>				8	mA
Input Transition Rise or Fall Rate	Δt/ΔV				20	ns/V

■ ELECTRICAL CHARACTERISTICS (Unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	T <sub>A</sub> =25°C			T <sub>A</sub> =-40~+125°C			UNIT
			MIN	TYP	MAX	MIN	TYP	MAX	
High-Level Output Voltage	V <sub>OH</sub>	V <sub>CC</sub> =4.5V, I <sub>OH</sub> =-50μA	4.4	4.5		4.4			V
		V <sub>CC</sub> =4.5V, I <sub>OH</sub> =-8mA	3.94			3.7			
Low-Level Output Voltage	V <sub>OL</sub>	V <sub>CC</sub> =4.5V, I <sub>OL</sub> =50μA			0.1			0.1	V
		V <sub>CC</sub> =4.5V, I <sub>OL</sub> =8mA			0.36			0.55	
Input Leakage Current	I <sub>I(LEAK)</sub>	V <sub>CC</sub> =0~5.5V, V <sub>IN</sub> =5.5V or GND			±0.1			±2.0	μA
Quiescent Supply Current	I <sub>Q</sub>	V <sub>CC</sub> =5.5V, V <sub>IN</sub> =V <sub>CC</sub> or GND, I <sub>OUT</sub> =0			1			40	μA
Additional Quiescent Supply Current	ΔI <sub>Q</sub>	V <sub>CC</sub> =5.5V, One input at 3.4V, Other inputs at V <sub>CC</sub> or GND			1.35			1.5	mA

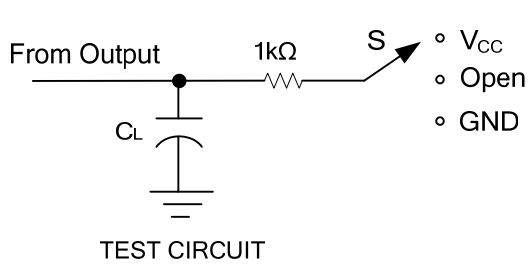
■ DYNAMIC CHARACTERISTICS (Unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	T <sub>A</sub> =25°C			T <sub>A</sub> =-40~+125°C			UNIT
			MIN	TYP	MAX	MIN	TYP	MAX	
Propagation Delay Time Input(A or B) to Output(Y)	t <sub>PLH</sub>	V <sub>CC</sub> =5V±0.5V, C <sub>L</sub> =15pF		5	7.9	1		9	ns
	t <sub>PHL</sub>			5	7.9	1		9	ns
	t <sub>PLH</sub>	V <sub>CC</sub> =5V±0.5V, C <sub>L</sub> =50pF		5.5	8.9	1		10	ns
	t <sub>PHL</sub>			5.5	8.9	1		10	ns

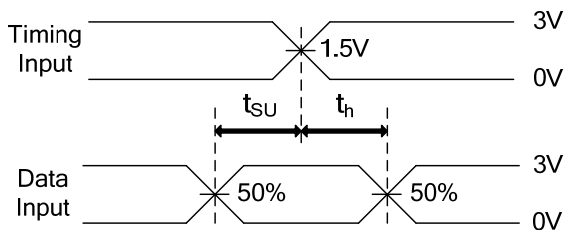
■ OPERATING CHARACTERISTICS (T<sub>A</sub>=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Input Capacitance	C <sub>I</sub>	V <sub>CC</sub> =4.5V, V <sub>IN</sub> =V <sub>CC</sub> or GND		2	10	pF
Power Dissipation Capacitance	C <sub>PD</sub>	V <sub>CC</sub> =5V, f=1MHz, No load		11.5		pF

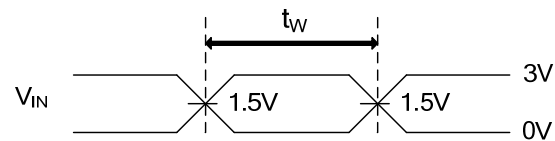
## TEST CIRCUIT AND WAVEFORMS



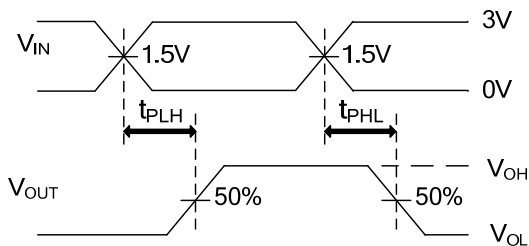
TEST	S
t <sub>PLH</sub> /t <sub>PHL</sub>	Open
t <sub>PHZ</sub> /t <sub>PZH</sub>	GND
t <sub>PLZ</sub> /t <sub>PZL</sub>	V <sub>CC</sub>



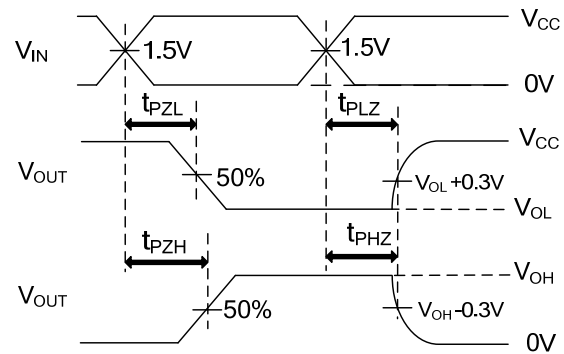
SETUP TIME AND HOLD TIME



PULSE WIDTH



PROPAGATION DELAY TIMES



ENABLE AND DISABLE TIMES

Note: C<sub>L</sub> includes probe and jig capacitance.  
 P<sub>RR</sub> ≅ 1MHz, Z<sub>O</sub>=50Ω, t<sub>R</sub> ≅ 3ns, t<sub>F</sub> ≅ 3ns

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