



# U74AHCT1G32

CMOS IC

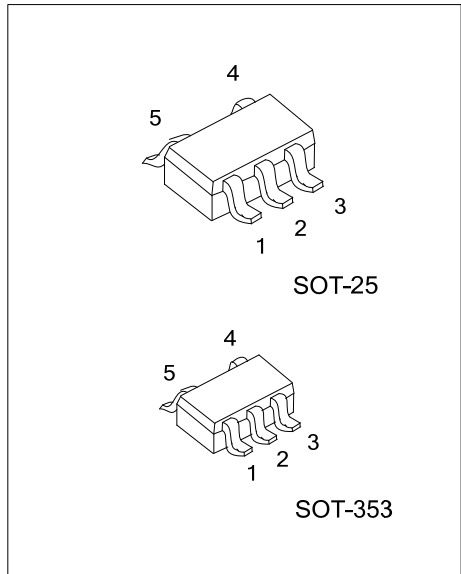
## SINGLE 2-INPUT POSITIVE-OR GATE

### 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:  $I_{CC}=10\mu A(\text{Max}) @ T_A=25^\circ C$

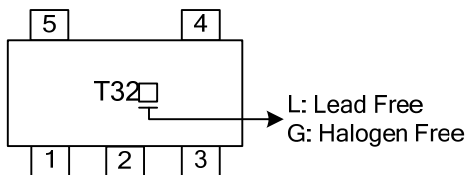


### ORDERING INFORMATION

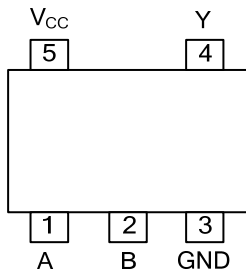
Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74AHCT1G32L-AF5-R	U74AHCT1G32G-AF5-R	SOT-25	Tape Reel
U74AHCT1G32L-AL5-R	U74AHCT1G32G-AL5-R	SOT-353	Tape Reel

<p>U74AHCT1G32G-AF5-R</p> <p>(1) Packing Type (2) Package Type (3) Halogen 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

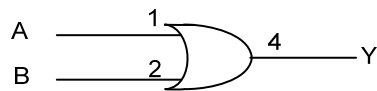


## ■ FUNCTION TABLE

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



## ■ ABSOLUTE MAXIMUM RATING

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
$V_{CC}$ or GND Current	$I_{CC}$	±50	mA
Output Current	$I_{OUT}$	±25	mA
Input Clamp Current	$I_{IK}$	-20	mA
Output Clamp Current	$I_{OK}$	±20	mA
Operating Temperature	$T_{OPR}$	-40 ~ +85	°C
Storage Temperature	$T_{STG}$	-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

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	$V_{CC}$		4.5		5.5	V
Input Voltage	$V_{IN}$		0		5.5	V
Output Voltage	$V_{OUT}$		0		$V_{CC}$	V
High-level Input Voltage	$V_{IH}$		2			V
Low-level Input Voltage	$V_{IL}$				0.8	V
High-level Output Current	$I_{OH}$				-8	mA
Low-level Output Current	$I_{OL}$				8	mA
Input Transition Rise or Fall Rate	$t_R, t_F$				20	ns/V

## ■ ELECTRICAL CHARACTERISTICS

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
High-Level Output Voltage	$V_{OH}$	$V_{CC}=4.5V, I_{OH}=-50\mu A$	4.4	4.5		V
		$V_{CC}=4.5V, I_{OH}=-8mA$	3.94			
Low-Level Output Voltage	$V_{OL}$	$V_{CC}=4.5V, I_{OH}=50\mu A$			0.1	V
		$V_{CC}=4.5V, I_{OH}=8mA$			0.36	
Input Leakage Current	$I_{I(LEAK)}$	$V_{CC}=0\sim 5.5V, V_{IN}=5.5V$ or GND			±0.1	μA
Quiescent Supply Current	$I_Q$	$V_{CC}=5.5V, V_{IN}=V_{CC}$ or GND, $I_{OUT}=0$			1	μA
Additional Quiescent Supply Current	$\Delta I_Q$	$V_{CC}=5.5V$ , One input at 3.4V, Other inputs at $V_{CC}$ or GND			1.35	mA
Input Capacitance	$C_i$	$V_{CC}=4.5V, V_{IN}=V_{CC}$ or GND		2	10	pF

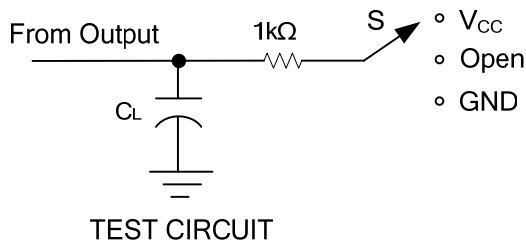
## ■ DYNAMIC CHARACTERISTICS

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Propagation Delay Time Input(A or B) to Output(Y)	$t_{PLH}$	$V_{CC}=5V\pm 0.5V, C_L=15pF$		5	6.9	ns
	$t_{PHL}$			5	6.9	
	$t_{PLH}$	$V_{CC}=5V\pm 0.5V, C_L=50pF$		5.5	7.9	
	$t_{PHL}$			5.5	7.9	

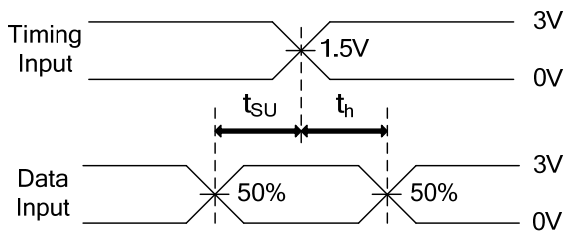
## ■ OPERATING CHARACTERISTICS ( $T_A=25^\circ C$ )

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Power Dissipation Capacitance	$C_{PD}$	No load, $V_{CC}=5V, f=1MHz$		11.5		pF

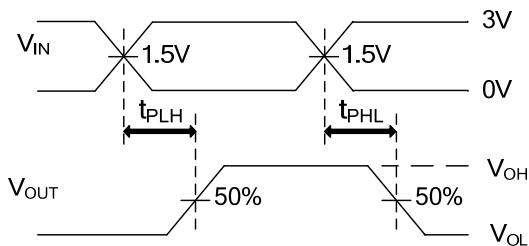
## ■ TEST CIRCUIT AND WAVEFORMS



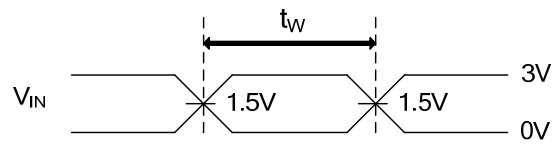
TEST	S
$t_{PLH}/t_{PHL}$	Open
$t_{PHZ}/t_{PZH}$	GND
$t_{PLZ}/t_{PZL}$	$V_{CC}$



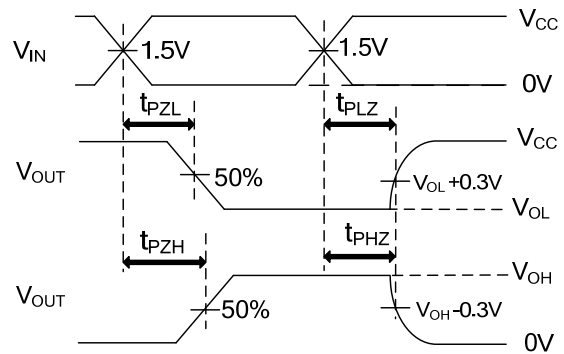
SETUP TIME AND HOLD TIME



PROPAGATION DELAY TIMES



PULSE WIDTH



ENABLE AND DISABLE TIMES

Note:  $C_L$  includes probe and jig capacitance.  
 $P_{RR} \leq 1\text{MHz}$ ,  $Z_0 = 50\Omega$ ,  $t_R \leq 3\text{ns}$ ,  $t_F \leq 3\text{ns}$

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