



U74AHCT1G32

CMOS IC

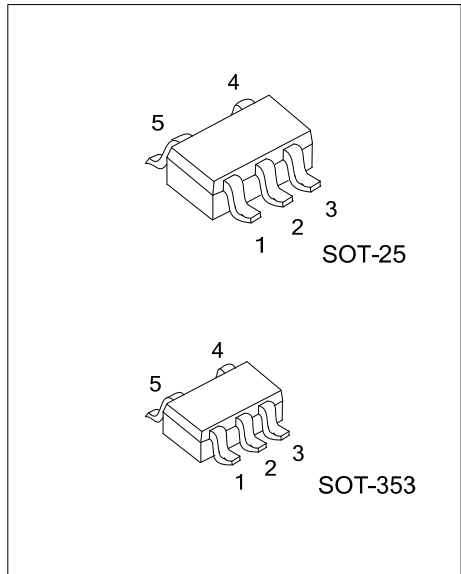
SINGLE 2-INPUT POSITIVE-OR GATE

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

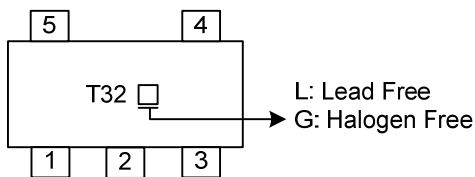


ORDERING INFORMATION

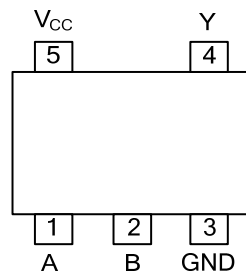
Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74AHCT1G32L-AF5-R	U74AHCT1G32G-AF5-R	SOT-25	Tape Reel
U74AHCT1G32L-AL5-R	U74AHCT1G32G-AL5-R	SOT-353	Tape Reel

<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

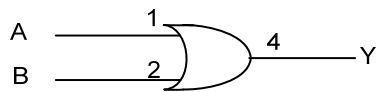


■ FUNCTION TABLE

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

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}	$V_{CC}=4.5V, I_{OL}=50\mu A$			0.1	V
		$V_{CC}=4.5V, I_{OL}=8mA$			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	ΔI_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

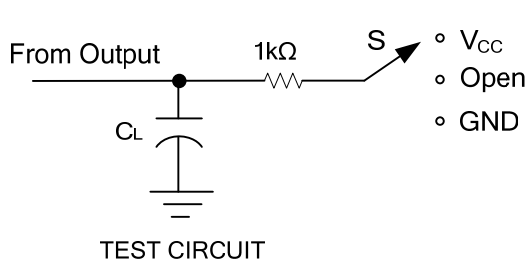
■ DYNAMIC CHARACTERISTICS

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	

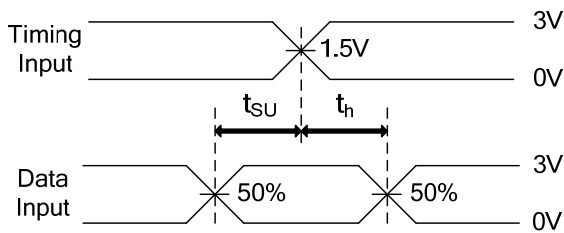
■ OPERATING CHARACTERISTICS ($T_A=25^\circ C$, unless otherwise specified)

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

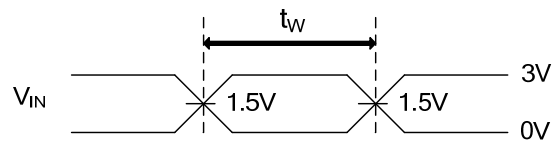
TEST CIRCUIT AND WAVEFORMS



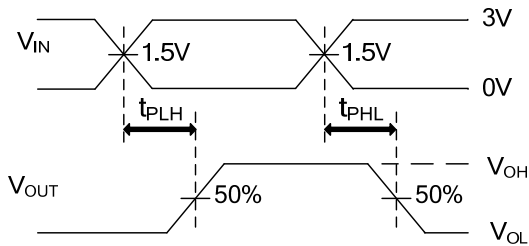
TEST	S
t _{PLH} /t _{PHL}	Open
t _{PHZ} /t _{PZH}	GND
t _{PLZ} /t _{PZL}	V _{CC}



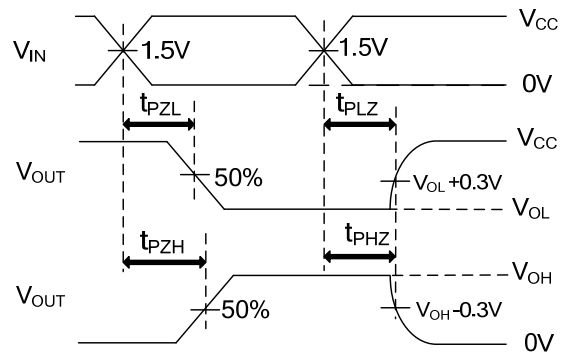
SETUP TIME AND HOLD TIME



PULSE WIDTH



PROPAGATION DELAY TIMES



ENABLE AND DISABLE TIMES

Note: C_L includes probe and jig capacitance.
 P_{RR} ≅ 1MHz, Z_O=50Ω, t_R ≅ 3ns, t_F ≅ 3ns

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