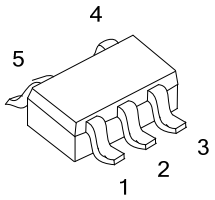
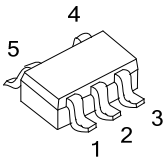
U74AHCT1G32

CMOS IC

SINGLE 2-INPUT POSITIVE-OR GATE



SOT-25



SOT-353

■ DESCRIPTION

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

■ FEATURES

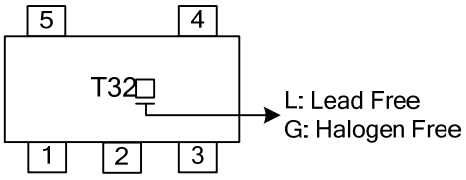
* Inputs are TTL voltage compatible
* Operate from 4.5V to 5.5V
* Max t_{PD} of 8ns @ 5 V
* Low power dissipation: I_{CC}=10μA(Max) @ T_A=25°C

■ ORDERING INFORMATION

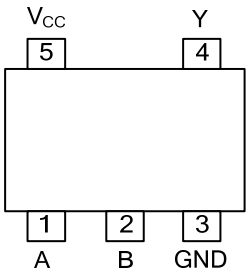
Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74AHCT1G32L-AF5-R	U74AHCT1G32G-AF5-R	SOT-25	Tape Reel
U74AHCT1G32L-AL5-R	U74AHCT1G32G-AL5-R	SOT-353	Tape Reel

U74AHCT1G32G-AF5-R (1)Packing Type (2)Package Type (3)Halogen Free	(1) R: Tape Reel (2) AF5: SOT-25, AL5: SOT-353 (3) G: Halogen Free, L: Lead Free

■ MARKING



■ PIN CONFIGURATION

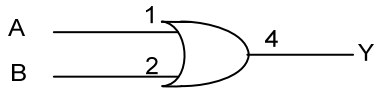


■ FUNCTION TABLE

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	℃
Storage Temperature	T_{STG}	-65 ~ +150	℃

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}=-50μA	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}=50μA			0.1	V
		V_{CC}=4.5V, I_{OH}=8mA			0.36	
Input Leakage Current	$I_{I(LEAK)}$	V_{CC}=0~5.5V, 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

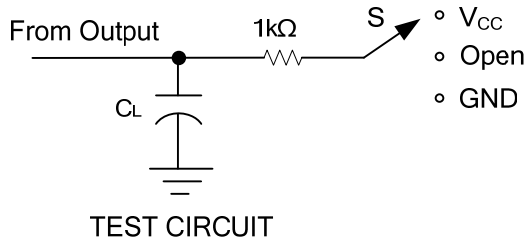
■ DYNAMIC CHARACTERISTICS

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

■ OPERATING CHARACTERISTICS (T_A=25℃)

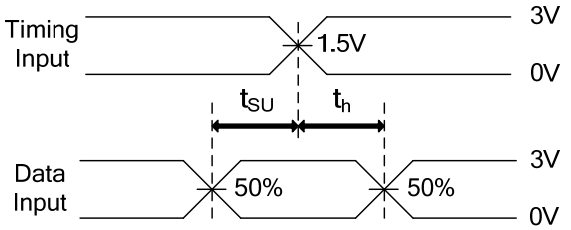
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Power Dissipation Capacitance	C_{PD}	No load, V_{CC}=5V, f=1MHz		11.5		pF

■ TEST CIRCUIT AND WAVEFORMS

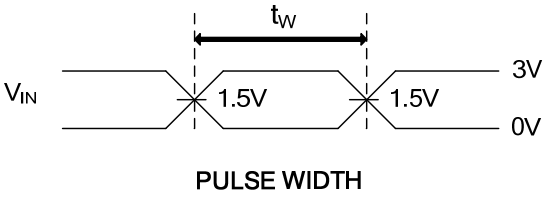


TEST CIRCUIT

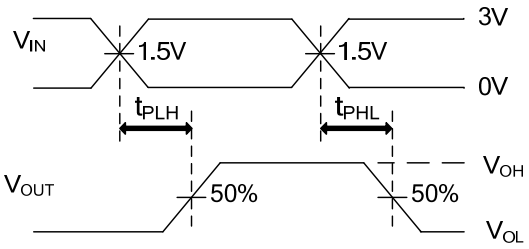
TEST	S
t_{PLH}/t_{PHL}	Open
t_{PHZ}/t_{PZH}	GND
t_{PLZ}/t_{PZL}	V_{CC}



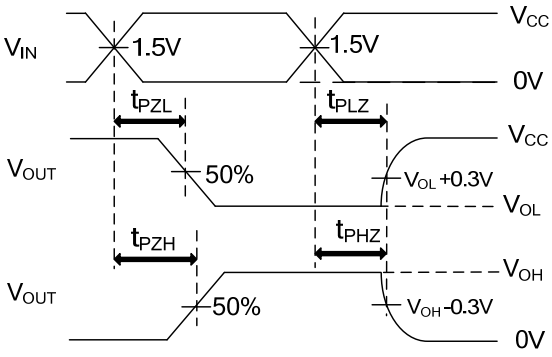
SETUP TIME AND HOLD TIME



PULSE WIDTH



PROPAGATION DELAY TIMES



ENABLE AND DISABLE TIMES

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