



U74AHC1G32

CMOS IC

SINGLE 2-INPUT POSITIVE-OR GATE

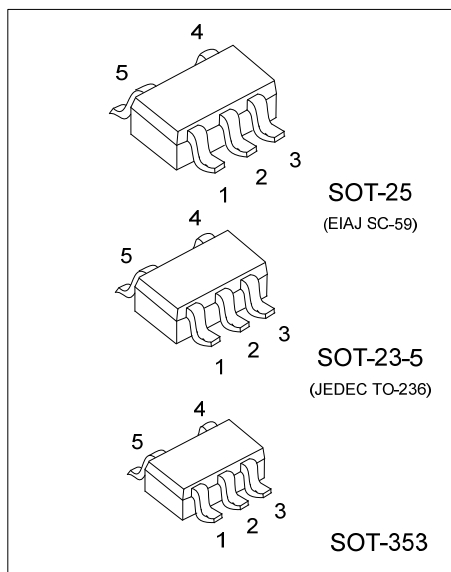
DESCRIPTION

The UTC **U74AHC1G32** is a single 2-input positive-or gate, which provides the function $Y=A+B$ in positive logic.

FEATURES

* Operate from 2V to 5.5V

* Max t_{PD} of 5.5ns at 5V

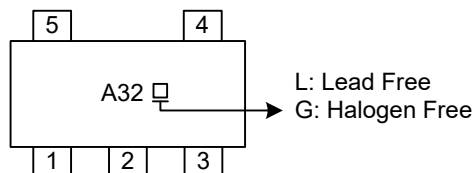


ORDERING INFORMATION

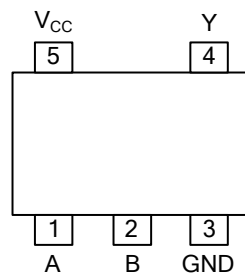
Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74AHC1G32L-AE5-R	U74AHC1G32G-AE5-R	SOT-23-5	Tape Reel
U74AHC1G32L-AF5-R	U74AHC1G32G-AF5-R	SOT-25	Tape Reel
U74AHC1G32L-AL5-R	U74AHC1G32G-AL5-R	SOT-353	Tape Reel

U74AHC1G32G-AE5-R	(1)Packing Type (2)Package Type (3)Green Package	(1) R: Tape Reel (2) AE5: SOT-23-5, AF5: SOT-25, AL5: SOT-353 (3) G: Halogen Free and Lead Free, L: Lead Free
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MARKING



■ PIN CONFIGURATION

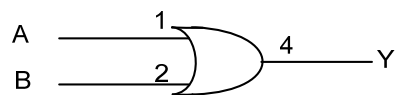


■ FUNCTION TABLE

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

H = High voltage level ; L = Low voltage level ; X = Don't care

■ LOGIC DIAGRAM



■ **ABSOLUTE MAXIMUM RATING** ($T_A=25^{\circ}\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	CONDITIONS	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}	$V_{OUT}=0 \sim V_{CC}$	± 25	mA
Input Clamp Current	I_{IK}	$V_{IN} < 0$	-20	mA
Output Clamp Current	I_{OK}	$V_{OUT} < 0$ or $V_{OUT} > V_{CC}$	± 20	mA
Power Dissipation	SOT-23-5	P_D	300	mW
	SOT-25		360	mW
	SOT-353		250	mW
Storage Temperature	T_{STG}		-65 ~ +150	$^{\circ}\text{C}$

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}		2		5.5	V
Input Voltage	V_{IN}		0		5.5	V
Output Voltage	V_{OUT}	High or low state	0		V_{CC}	V
Input Transition Rise or Fall Rate	$\Delta t/\Delta v$	$V_{CC}=3.3V \pm 0.3V$			100	ns/V
		$V_{CC}=5.0V \pm 0.5V$			20	ns/V
Operating Temperature	T_A		-40		+125	$^{\circ}\text{C}$

■ **ELECTRICAL CHARACTERISTICS** ($T_A=25^{\circ}\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
High-Level Input Voltage	V_{IH}	$V_{CC}=2.0V$	1.5			V
		$V_{CC}=3.0V$	2.1			V
		$V_{CC}=5.5V$	3.85			V
Low-Level Input Voltage	V_{IL}	$V_{CC}=2.0V$			0.5	V
		$V_{CC}=3.0V$			0.9	V
		$V_{CC}=5.5V$			1.65	V
High-Level Output Voltage	V_{OH}	$V_{CC}=2.0V, I_{OH}=-50\mu A$	1.9	2.0		V
		$V_{CC}=3.0V, I_{OH}=-50\mu A$	2.9	3.0		V
		$V_{CC}=4.5V, I_{OH}=-50\mu A$	4.4	4.5		V
		$V_{CC}=3.0V, I_{OH}=-4mA$	2.58			V
		$V_{CC}=4.5V, I_{OH}=-8mA$	3.94			V
Low-Level Output Voltage	V_{OL}	$V_{CC}=2.0V, I_{OL}=50\mu A$			0.1	V
		$V_{CC}=3.0V, I_{OL}=50\mu A$			0.1	V
		$V_{CC}=4.5V, I_{OL}=50\mu A$			0.1	V
		$V_{CC}=3.0V, I_{OL}=4mA$			0.36	V
		$V_{CC}=4.5V, I_{OL}=8mA$			0.36	V
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, $I_{OUT}=0A$			1	μA
Input Capacitance	C_I	$V_{CC}=5.0V, V_{IN}=V_{CC}$ or GND		2	10	pF

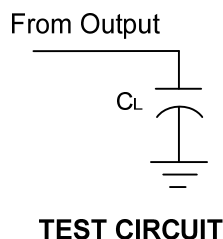
■ **DYNAMIC CHARACTERISTICS** ($T_A=25^{\circ}\text{C}$, Input: $t_R, t_F \leq 3\text{ns}$; $P_{RR} \leq 1\text{MHz}$)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Propagation Delay Time Input (A or B) to Output (Y)	t_{PLH}	$V_{CC}=3.3V \pm 0.3V, C_L=15\text{pF}$		5.5	7.9	ns
	t_{PHL}			5.5	7.9	
	t_{PLH}	$V_{CC}=3.3V \pm 0.3V, C_L=50\text{pF}$		8	12	
	t_{PHL}			8	12	
Propagation Delay Time Input (A or B) to Output (Y)	t_{PLH}	$V_{CC}=5V \pm 0.5V, C_L=15\text{pF}$		3.8	5.5	ns
	t_{PHL}			3.8	5.5	
	t_{PLH}	$V_{CC}=5V \pm 0.5V, C_L=50\text{pF}$		5.3	7.5	
	t_{PHL}			5.3	7.5	

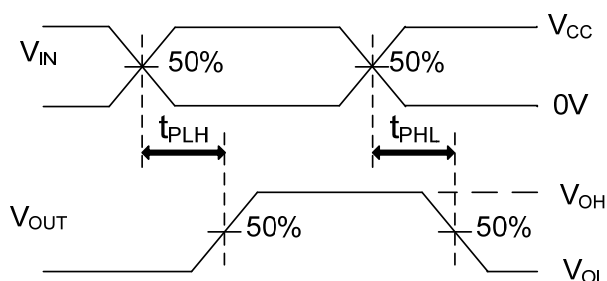
■ **OPERATING CHARACTERISTICS** ($T_A=25^{\circ}\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Power Dissipation Capacitance	C_{PD}	No load, $V_{CC}=5V, f=1\text{MHz}$		14		pF

■ TEST CIRCUIT AND WAVEFORMS



SETUP TIME AND HOLD TIME



PROPAGATION DELAY TIMES

Note: C_L includes probe and jig capacitance.

$P_{RR} \cong 1\text{MHz}$, $Z_O = 50\Omega$, $t_R \cong 3\text{ns}$, $t_F \cong 3\text{ns}$

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