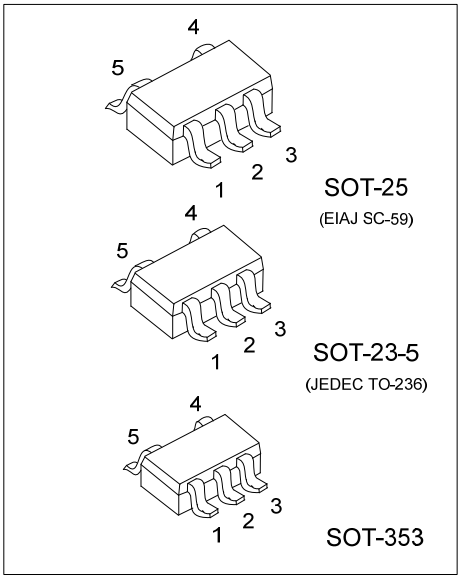
U74AHC1G32

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

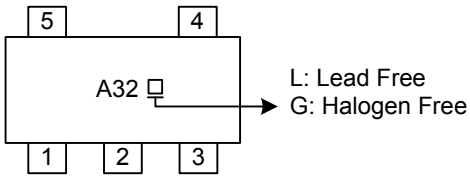
* Operate from 2V to 5.5V
* Max t_{PD} of 5.5ns at 5 V

■ ORDERING INFORMATION

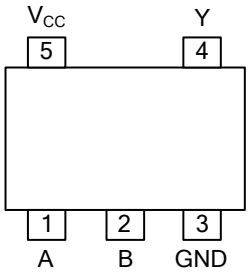
Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74AHC1G32L-AE5-R	U74AHC1G32G-AE5-R	SOT-23-5	Tape Reel
U74AHC1G32L-AF5-R	U74AHC1G32G-AF5-R	SOT-25	Tape Reel
U74AHC1G32L-AL5-R	U74AHC1G32G-AL5-R	SOT-353	Tape Reel

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

■ MARKING



■ PIN CONFIGURATION

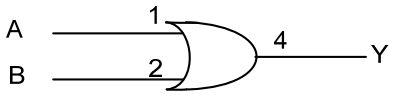


■ FUNCTION TABLE

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 (T_A=25°C, unless otherwise specified)

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
Power Dissipation	SOT-23-5	P_D	300	mW
	SOT-25		360	mW
	SOT-353		250	mW
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}		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	Δt/Δv	V_{CC}=3.3V±0.3V			100	ns/V
		V_{CC}=5.0V±0.5V			20	
Operating Temperature	T_A		-40		+125	°C

■ ELECTRICAL CHARACTERISTICS (T_A=25°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}=-50μA	1.9	2.0		V
		V_{CC}=3.0V, I_{OH}=-50μA	2.9	3.0		V
		V_{CC}=4.5V, I_{OH}=-50μA	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}=50μA			0.1	V
		V_{CC}=3.0V, I_{OL}=50μA			0.1	V
		V_{CC}=4.5V, I_{OL}=50μA			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}=0~5.5V, 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

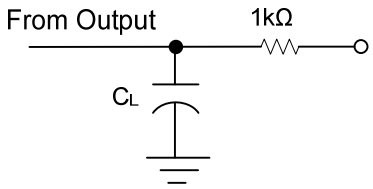
■ DYNAMIC CHARACTERISTICS (T_A=25°C, Input: t_R, t_F≤3ns; P_{RR}≤1MHz)

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

■ OPERATING CHARACTERISTICS (T_A=25°C, unless otherwise specified)

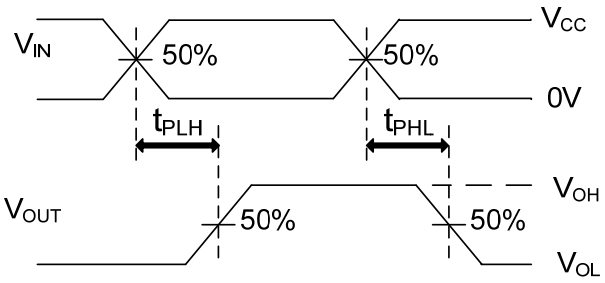
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Power Dissipation Capacitance	C_{PD}	No load, V_{CC}=5V, f=1MHz		14		pF

■ TEST CIRCUIT AND WAVEFORMS



TEST CIRCUIT

SETUP TIME AND HOLD TIME



PROPAGATION DELAY TIMES

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