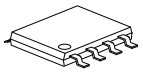
U74AHC2G02

CMOS IC

DUAL 2-INPUT NOR GATE



TSSOP-8

■ DESCRIPTION

The **U74AHC2G32** is a high speed Si-gate CMOS device.
The **U74AHC2G32** provides two 2-input NOR gates.

■ FEATURES

* Symmetrical output impedance
* High noise immunity
* Low power dissipation
* Balanced propagation delays
* Multiple package options
* Specified from -40 °C to +125 °C

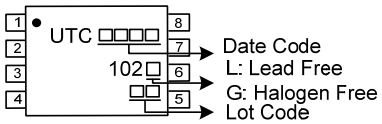
■ ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74AHC2G02L-P08-R	U74AHC2G02G-P08-R	TSSOP-8	Tape Reel

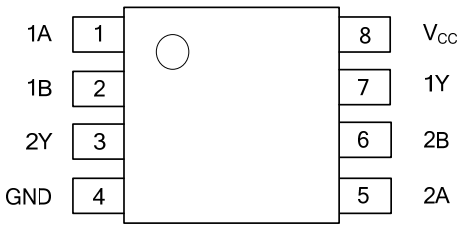
U74AHC2G02G-P08-R

(1)Packing Type	(1) R: Tape Reel
(2)Package Type	(2) P08: TSSOP-8
(3)Green Package	(3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING



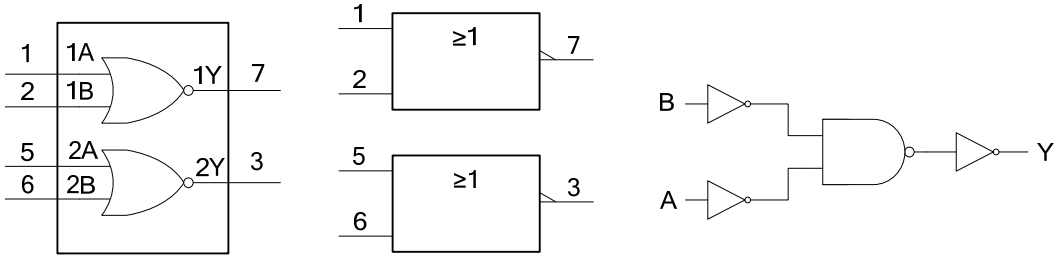
■ PIN CONFIGURATION



■ PIN CONFIGURATION

PIN No	SYMBOL	DESCRIPTION
1, 5	1A, 2A	Data input
2, 6	1B, 2B	Data input
4	GND	Ground (0V)
7, 3	1Y, 2Y	Data output
8	V_{CC}	Supply voltage

■ FUNCTIONAL DIAGRAM



LOGIC SYMBOL IEC LOGIC SYMBOL LOGIC DIAGRAM (one gate)

■ FUNCTION TABLE

Input		Output
nA	nB	nY
L	L	H
L	H	L
H	L	L
H	H	L

H=HIGH voltage level; L=LOW voltage level.

■ ABSOLUTE MAXIMUM RATING (T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	V_{CC}		-0.5		+7.0	V
Input Voltage	V_I		-0.5		+7.0	V
Input Clamping Current	I_{IK}	V_I<-0.5V	-20			mA
Output Clamping Current	I_{OK}	V_O<-0.5V or V_O>V_{CC}+0.5V			±20	mA
Output Current	I_O	V_O=-0.5V ~ (V_{CC}+0.5V)			±25	mA
Supply Current	I_{CC}				75	mA
Ground Current	I_{GND}		-75			mA
Power Dissipation	P_D				300	mW
Storage Temperature	T_{STG}		-65		+150	°C

Note: The input and output voltage ratings may be exceeded if the input and output current ratings are observed.

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

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	V_{CC}		2	5	5.5	V
Input Voltage	V_I		0		5.5	V
Output Voltage	V_O		0		V_{CC}	V
Input Transition Rise and Fall Rate	△t/△V	V_{CC}=3.3V±0.3V			100	ns/V
		V_{CC}=5V±0.5V			20	
Ambient Temperature	T_A		-40		+125	°C

Note: Voltages are referenced to GND (ground=0V).

■ 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}=2V	1.5			V
		V_{CC}=3V	2.1			V
		V_{CC}=5.5V	3.85			V
Low-level Input Voltage	V_{IL}	V_{CC}=2V			0.5	V
		V_{CC}=3V			0.9	V
		V_{CC}=5.5V			1.65	V
Output Voltage HIGH-Level	V_{OH}	V_{CC}=2V, I_{OH}=-50μA	1.9	2.0		V
		V_{CC}=3V, I_{OH}=-50μA	2.9	3.0		V
		V_{CC}=4.5V, I_{OH}=-50μA	4.4	4.5		V
		V_{CC}=3V, I_{OH}=-4mA	2.58			V
		V_{CC}=4.5V, I_{OH}=-8mA	3.94			V
Output Voltage LOW-Level	V_{OL}	V_{CC}=2V, I_{OL}=50μA			0.1	V
		V_{CC}=3V, I_{OL}=50μA			0.1	V
		V_{CC}=4.5V, I_{OL}=50μA			0.1	V
		V_{CC}=3V, I_{OL}=4mA			0.36	V
		V_{CC}=4.5V, I_{OL}=8mA			0.36	V
Input Leakage Current	I_I	V_{CC}=0 to 5.5V, V_I= 5.5V or GND			±0.1	μA
Quiescent Supply Current	I_{CC}	V_{CC}=5.5V, V_I=V_{CC} or GND, I_{OUT}=0			1	μA

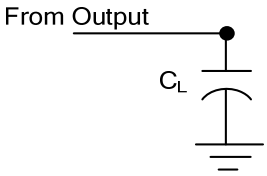
■ SWITCHING CHARACTERISTICS ($t_r = t_f \leq 3ns$, $T_A=25°C$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS		MIN	TYP	MAX	UNIT
Propagation delay from input (nA, nB) to output (nY)	t_{PLH} / t_{PHL}	V_{CC}=3.3±0.3V	C_L=15pF		5.6	7.9	ns
			C_L=50pF		8.1	11.4	ns
		V_{CC}=5±0.5V	C_L=15pF		3.6	5.5	ns
			C_L=50pF		5.1	7.5	ns

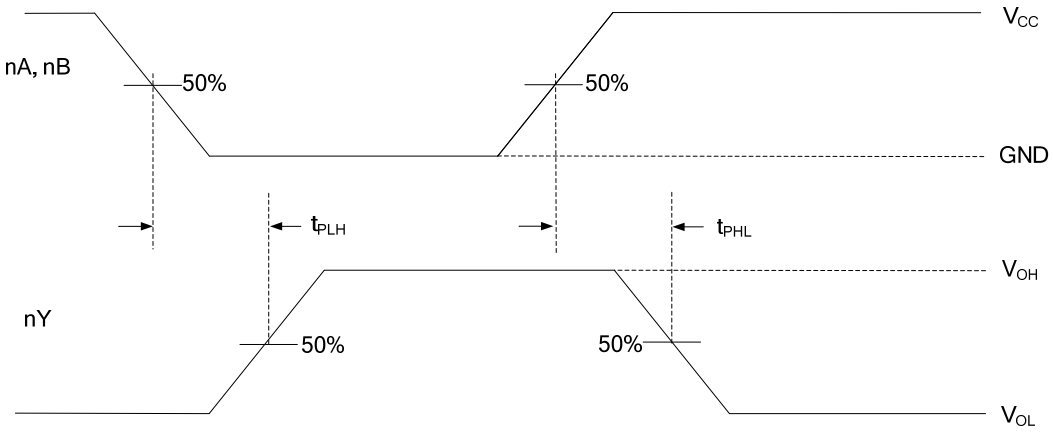
■ CAPACITIVE CHARACTERISTICS ($T_A=25°C$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Input Capacitance	C_{IN}			4	10	pF
Power Dissipation Capacitance	C_{PD}	No load, f_i=1MHz		15		pF

■ TEST CIRCUIT AND WAVEFORMS



TEST CIRCUIT



PROPAGATION DELAY TIME