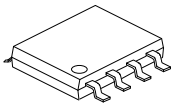
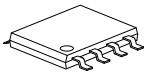
U74AHC3G04

CMOS IC

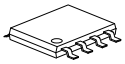
INVERTER



SOP-8



TSSOP-8



MSOP-8

■ DESCRIPTION

The **U74AHC3G04** are high-speed Si-gate CMOS devices providing three inverting buffers with the function $Y = \overline{A}$.

■ FEATURES

* Low Power Dissipation
* Symmetrical Output Impedance
* Balanced Propagation Delays
* High Noise Immunity

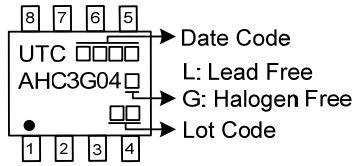
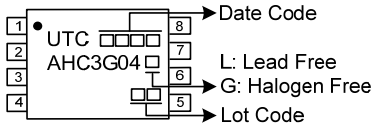
■ ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
U74AHC3G04L-P08-R	U74AHC3G04G-P08-R	TSSOP-8	Tape Reel
U74AHC3G04L-S08-R	U74AHC3G04G-S08-R	SOP-8	Tape Reel
U74AHC3G04L-SM1-R	U74AHC3G04G-SM1-R	MSOP-8	Tape Reel

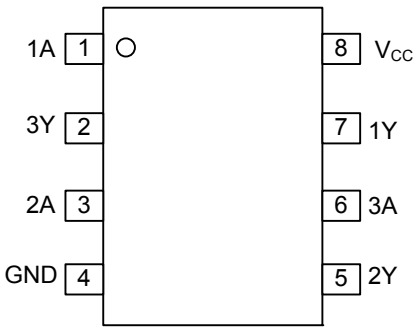
U74AHC3G04G-P08-R
(1)Packing Type
(2)Package Type
(3)Green Package

(1) R: Tape Reel
(2) P08: TSSOP-8, S08: SOP-8, SM1:MSOP-8
(3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING

SOP-8 / MSOP-8	TSSOP-8
	

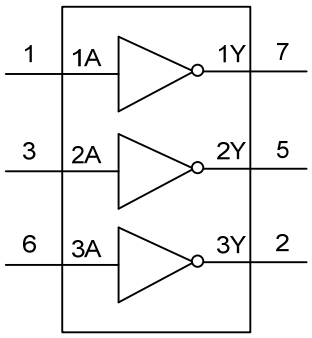
■ PIN CONFIGURATION



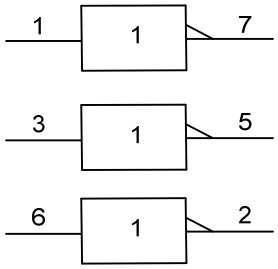
■ FUNCTION TABLE (each gate)

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

■ LOGIC DIAGRAM (each gate)



Logic symbol



IEC logic symbol

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

PARAMETER	SYMBOL	CONDITIONS	RATINGS	UNIT
Supply Voltage	V_{CC}		-0.5 ~ 7.0	V
Input Voltage	V_{IN}		-0.5 ~ 7.0	V
Output Voltage	V_{OUT}		-0.5 ~ V_{CC} +0.5	V
V_{CC} or GND Current	I_{CC}		±75	mA
Output Current	I_{OUT}	-0.5V < V_{OUT} < V_{CC} +0.5V	±25	mA
Input Clamp Current	I_{IK}	V_{IN} < -0.5V	-20	mA
Output Clamp Current	I_{OK}	V_{OUT} < -0.5V or V_{OUT} > + 0.5V	±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	CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	V_{CC}		2.0	5.0	5.5	V
Input Voltage	V_{IN}		0		5.5	V
Output Voltage	V_{OUT}		0		V_{CC}	V
Operating Temperature	T_A		-40		85	°C
Input Rise or Fall Times	t_R, t_F	V_{CC} = 3.3 ± 0.3V			100	ns/V
		V_{CC} = 5.0 ± 0.5V			20	

■ 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_{CC}=5.5V	3.85			
Low-Level input voltage	V_{IL}	V_{CC}=2.0V			0.5	V
		V_{CC}=3.0V			0.9	
		V_{CC}=5.5V			1.65	
High-Level Output Voltage	V_{OH}	V_{CC}=2.0V, V_{IN}=V_{IH} or V_{IL}, I_{OH}=-50μA	1.9	2.0		V
		V_{CC}=3.0V, V_{IN}=V_{IH} or V_{IL}, I_{OH}=-50μA	2.9	3.0		
		V_{CC}=4.5V, V_{IN}=V_{IH} or V_{IL}, I_{OH}=-50μA	4.4	4.5		
		V_{CC}=3.0V, V_{IN}=V_{IH} or V_{IL}, I_{OH}=-4.0mA	2.58			
		V_{CC}=4.5V, V_{IN}=V_{IH} or V_{IL}, I_{OH}=-8.0mA	3.94			
Low-Level Output Voltage	V_{OL}	V_{CC}=2.0V, V_{IN}=V_{IH} or V_{IL}, I_{OL}=50μA			0.1	V
		V_{CC}=3.0V, V_{IN}=V_{IH} or V_{IL}, I_{OL}=50μA			0.1	
		V_{CC}=4.5V, V_{IN}=V_{IH} or V_{IL}, I_{OL}=50μA			0.1	
		V_{CC}=3.0V, V_{IN}=V_{IH} or V_{IL}, I_{OL}=4.0mA			0.36	
		V_{CC}=4.5V, V_{IN}=V_{IH} or V_{IL}, I_{OL}=8.0mA			0.36	
Input Leakage Current	$I_{I(LEAK)}$	V_{CC}=5.5V, V_{IN}=V_{CC} or GND			0.1	μA
Quiescent Supply Current	I_{CC}	V_{CC}=5.5V, V_{IN}=V_{CC} or GND, I_{OUT}=0			10	μA
Input Capacitance	C_{IN}	V_{IN}=V_{CC} or GND		1.5	10	pF

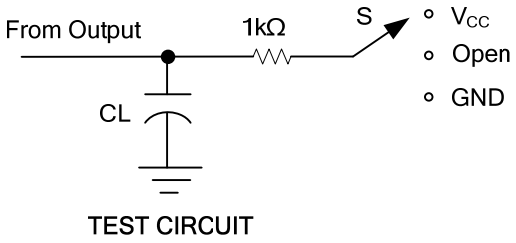
■ SWITCHING CHARACTERISTICS ($t_R = t_F \leq 3.0$ ns, $T_A = 25°C$)

PARAMETER	SYMBOL	TEST CONDITIONS		MIN	TYP	MAX	UNIT
Propagation delay from input (A) to output(Y)	t_{PLH} / t_{PHL}	C_L=15pF	V_{CC}=3.0 ~ 3.6V			7.1	ns
			V_{CC}=3.3V		4.3		ns
			V_{CC}=4.5 ~ 5.5V			5.5	ns
			V_{CC}=5V		3.1		ns
		C_L=50pF	V_{CC}=3.0 ~ 3.6V			10.6	ns
			V_{CC}=3.3V		6.1		ns
			V_{CC}=4.5 ~ 5.5V			7.5	ns
			V_{CC}=5V		4.5	-	ns

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

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Power Dissipation Capacitance	C_{PD}	C_L=50pF, f=1MHz, V_{IN}=GND or V_{CC}		9		pF

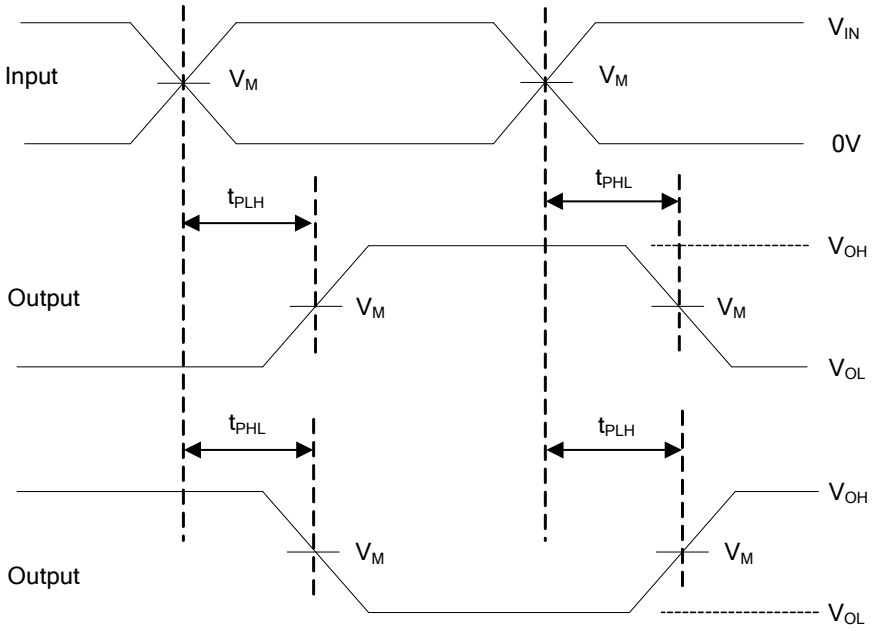
■ TEST CIRCUIT AND WAVEFORMS



TEST CIRCUIT

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

V_I INPUT REQUIREMENTS	V_M INPUT	V_M OUTPUT
GND to V_{CC}	50%V_{CC}	50%V_{CC}



Propagation delay times
Inverting and noninverting outputs

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