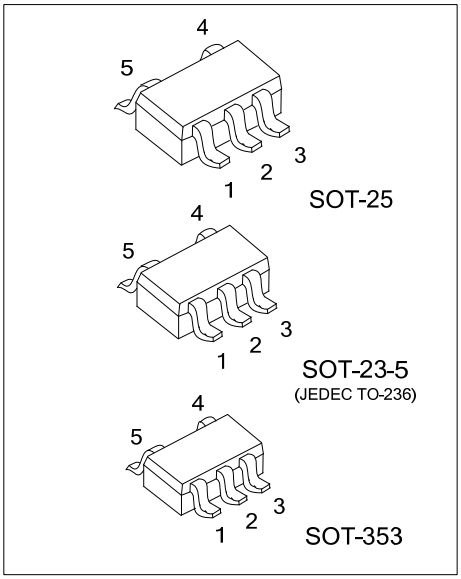
U74AHC1G04

CMOS IC

SINGLE INVERTER GATE



■ DESCRIPTION

The **U74AHC1G04** is a inverter gate, it provides the Function $Y = \overline{A}$.

■ FEATURES

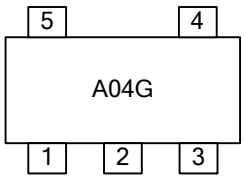
* Operation Voltage Range: 2V ~ 5.5V
* Low power consumption, I_{CC} = 1μA (Max) at 5.5V
* ±8mA output driver at 5V

■ ORDERING INFORMATION

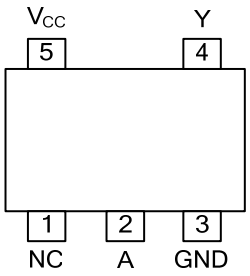
Ordering Number	Package	Packing
U74AHC1G04G-AE5-R	SOT-23-5	Tape Reel
U74AHC1G04G-AF5-R	SOT-25	Tape Reel
U74AHC1G04G-AL5-R	SOT-353	Tape Reel

U74AHC1G04G-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

■ MARKING



■ PIN CONFIGURATION

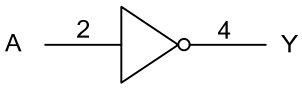


■ FUNCTION TABLE

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

Note: H: high voltage level; L: low voltage level.

■ LOGIC DIAGRAM



Logic symbol

IEC logic symbol

■ 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
Storage Temperature	T_{STG}	-65 ~ +150	°C

Notes: 1. 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.
2. The input and output voltage ratings may be exceeded if the input and output current ratings are observed.

■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	SOT-23-5	θ_{JA}	280	°C/W
	SOT-25		230	
	SOT-353		350	

■ RECOMMENDED OPERATING COMDITIONS

PARAMETER	SYMBOL	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}		0		V_{CC}	V
Input Transition Rise or Fall Rate	$\Delta t/\Delta v$	V_{CC}=5.0+0.5V			20	ns/V
Operating Temperature	T_A		-40		125	°C

■ ELECTRICAL CHARACTERISTICS

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}			0		V_{CC}	V
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	I_{OH}=-50μA	1.9	2.0		V
		V_{CC}=3.0V		2.9	3.0		
		V_{CC}=4.5V		4.4	4.5		
		V_{CC}=3.0V, I_{OH}=-4mA		2.58			
		V_{CC}=4.5V, I_{OH}=-8mA		3.94			
Low-Level Output Voltage	V_{OL}	V_{CC}=2.0V	I_{OH}=-50μA			0.1	V
		V_{CC}=3.0V				0.1	
		V_{CC}=4.5V				0.1	
		V_{CC}=3.0V, I_{OH}=4mA				0.36	
		V_{CC}=4.5V, I_{OH}=8mA				0.36	
Input Leakage Current	$I_{I(LEAK)}$	V_{CC}=0V~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

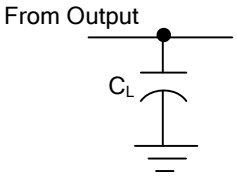
■ DYNAMIC CHARACTERISTICS

PARAMETER	SYMBOL	TEST CONDITIONS		MIN	TYP	MAX	UNIT
Propagation Delay Time Input(A) to Output(Y)	t_{PLH}	V_{CC}=3.3V±0.3V	C_L=15pF		5	7.1	ns
		V_{CC}=5V±0.5V			3.8	5.5	ns
	t_{PHL}	V_{CC}=3.3V±0.3V			5	7.1	ns
		V_{CC}=5V±0.5V			3.8	5.5	ns
	t_{PLH}	V_{CC}=3.3V±0.3V	C_L=50pF		7.5	10.6	ns
		V_{CC}=5V±0.5V			5.3	7.5	ns
	t_{PHL}	V_{CC}=3.3V±0.3V			7.5	10.6	ns
		V_{CC}=5V±0.5V			5.3	7.5	ns

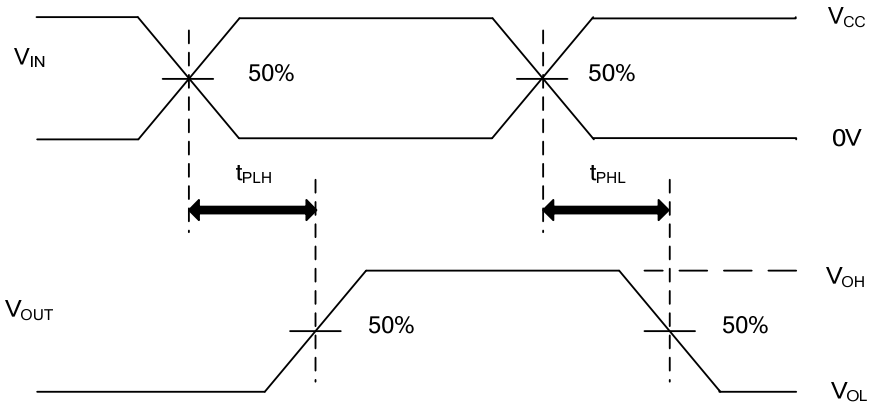
■ OPERATING CHARACTERISTICS (T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Power Dissipation Capacitance	C_{PD}	V_{CC}=5V, f=1MHz, No load		12		pF

■ TEST CIRCUIT AND WAVEFORMS



TEST CIRCUIT



PROPAGATION DELAY TIMES

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