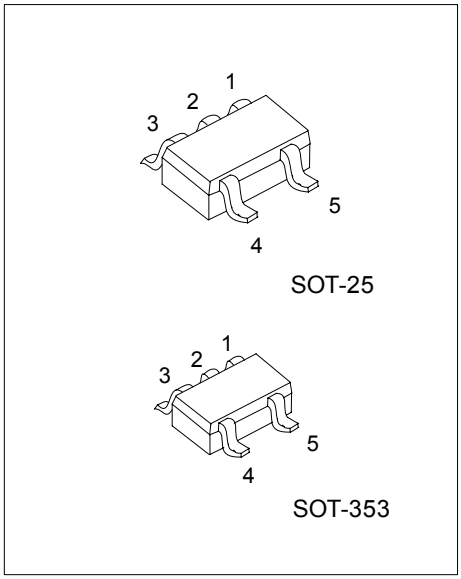
U74AHC1G08

CMOS IC

2-INPUT AND GATE



*Pb-free plating product number:
U74AHC1G08L

■ DESCRIPTION

The U74AHC1G08 is a high-speed Si-gate CMOS device which provides the 2-input AND function.

■ FEATURES

* Operation Voltage Range: 2~5.5V
* Low Power Dissipation: I_{CC}=10μA(Max)
* High Speed: tpd=4.3ns(Typ) at Vcc = 5V

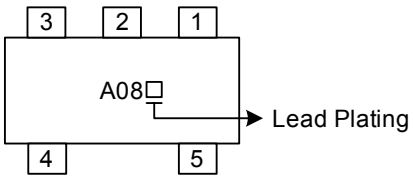
■ ORDERING INFORMATION

Order Number		Package	Packing
Normal	Lead Free Plating		
U74AHC1G08-AF5-R	U74AHC1G08L-AF5-R	SOT-25	Tape Reel
U74AHC1G08-AL5-R	U74AHC1G08L-AL5-R	SOT-325	Tape Reel

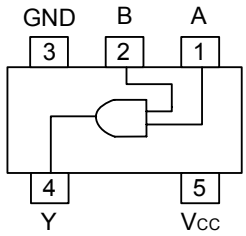
U74AHC1G08L-AF5-R
(1)Packing Type
(2)Package Type
(3)Lead Plating

(1) R: Tape Reel
(2) AF5: SOT-25, AL5: SOT-353
(3) L: Lead Free Plating, Blank: Pb/Sn

■ MARKING



■ PIN CONFIGURATION



■ FUNCTION TABLE (each gate)

INPUTS		OUTPUT
A	**B**	**Y**
L	L	L
L	H	L
H	L	L
H	H	H

■ LOGIC DIAGRAM AND 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
Input Clamp Current	I_{IK}	-20	mA
Output Clamp Current	I_{OK}	±20	mA
Output Current	I_{OUT}	±25	mA
V_{CC} or GND Current	I_{CC}	±50	mA
Storage Temperature	T_{STG}	-65 ~ +150	℃

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 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
High-Level Output Current	I_{OH}	V_{CC}=2V			-50	μA
		V_{CC}=3.3±0.3V			-4	mA
		V_{CC}=3.3±0.3V			-8	mA
Low-Level Output Current	I_{OL}	V_{CC}=2V			50	μA
		V_{CC}=3.3±0.3V			4	mA
		V_{CC}=5±0.5V			8	mA
Input Rise and Fall Times	dt/dv	V_{CC}=3.3+0.3V			100	ns/V
		V_{CC}=5.0+0.5V			20	
Operating Temperature	Tamb		-40		85	℃

■ STATIC CHARACTERISTICS

PARAMETER	SYMBOL	TEST CONDITIONS	V_{CC}(V)	T_A=25℃			-40~85℃		UNIT
				MIN	TYP	MAX	MIN	MAX	
High-Level Input Voltage	V_{IH}		2.0	1.5			1.5		V
			3.0	2.1			2.1		
			5.5	3.85			3.85		
Low-Level Input Voltage	V_{IL}		2.0			0.5		0.5	V
			3.0			0.9		0.9	
			5.5			1.65		1.65	
High-Level Output Voltage	V_{OH}	I_{OH}=-50 μA	2.0	1.9	2.0		1.9		V
			3.0	2.9	3.0		2.9		
			4.5	4.4	4.5		4.4		
		I_{OH}=-4mA	3.0	2.58			2.48		
		I_{OH}=-8mA	4.5	3.94			3.8		
Low-Level Output Voltage	V_{OL}	I_{OL}=50 μA	2.0			0.1		0.1	V
			3.0			0.1		0.1	
			4.5			0.1		0.1	
		I_{OL}=4mA	3.0			0.36		0.44	
		I_{OL}=8mA	4.5			0.36		0.44	
Input Leakage Current		V_{IN}=V_{CC} or GND	0~5.5			±0.1		±1	μA
Quiescent Supply Current		V_{IN}=V_{CC} or GND I_{OUT}=0	5.5			1		10	μA
Input Capacitance		V_{IN}=V_{CC} or GND	5		4	10		10	pF

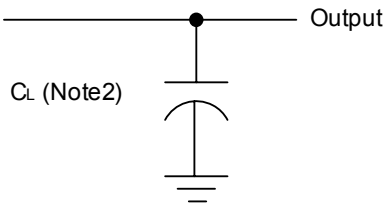
■ DYNAMIC CHARACTERISTICS (Input: t_R, t_F≤3ns; PRR≤1MHz)

PARAMETER	SYMBOL	V_{CC}(V)	C_L (pF)	T_A=25°C			-40~85°C		UNIT
				MIN	TYP	MAX	MIN	MAX	
Propagation delay time Input (A or B) to output(Y)	t_{PLH}	3.3±0.3	15		6.2	8.8	1	10.5	ns
	t_{PHL}				6.2	8.8	1	10.5	
	t_{PLH}		50		8.7	12.3	1	14	
	t_{PHL}				8.7	12.3	1	14	
Propagation delay time Input (A or B) to output(Y)	t_{PLH}	5±0.5	15		4.3	5.9	1	7	ns
	t_{PHL}				4.3	5.9	1	7	
	t_{PLH}		50		5.8	7.9	1	9	
	t_{PHL}				5.8	7.9	1	9	

■ OPERATING CHARACTERISTICS

PARAMETER	SYMBOL	TEST CONDITIONS	TYP	UNIT
Power Dissipation Capacitance	Cpd	No load, f=1MHz, V_{CC}=5	18	pF

■ TEST CIRCUIT AND WAVEFORMS



Note: C_L includes probe and jig capacitance.