



CD74AHC1G14

Single-channel 2V to 5.5V Inverter with Schmitt Trigger Inputs

Version: Rev 1.0.0 Date: 2025-6-25

Features ■■

- Operating Range 2 V to 5.5 V
- Maximum tpd of 6.5 ns at 5 V
- Low Power Consumption, 10-μA Maximum ICC
- ±8-mA Output Drive at 5 V
- Latch-Up Performance Exceeds 250 mA

Application ■■

- Barcode Scanners
- Cable Solutions
- Books
- Embedded PCs
- Field Transmitter: Temperature or Pressure Sensors
- Fingerprint Biometrics
- HVAC: Heating, Ventilating, and Air Conditioning
- Network-Attached Storage (NAS)
- Sever Motherboard and PSU
- Software Defined Radios (SDR)
- TV: High Definition (HDTV), LCD, and Digital
- Video Communications Systems
- Wireless Data Access Cards, Headsets, Keyboards, Mice, and LAN Cards

Description ■■

The CD74AHC1G14 device is a single inverter gate. The device performs the Boolean function $Y = \overline{A}$. The device functions as an independent inverter gate, but because of the Schmitt action, gates may have different input threshold levels for positive- (VT+) and negative-going (VT-) signals.

The CD74AHC1G14 are available in SOT23-5 packages.

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Pin Configurations

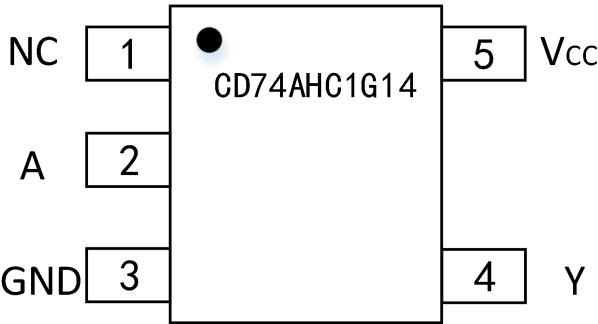


Figure 1. SOT23-5 Pin Configuration

Pin Description

Table 1. Pin description

Pin No.	Pin Name		Description
1	NC	--	No Connection
2	A	I	Input A
3	GND	--	Ground Pin
4	Y	O	Output Y
5	V _{CC}	--	Power Pin

Functional Block diagram

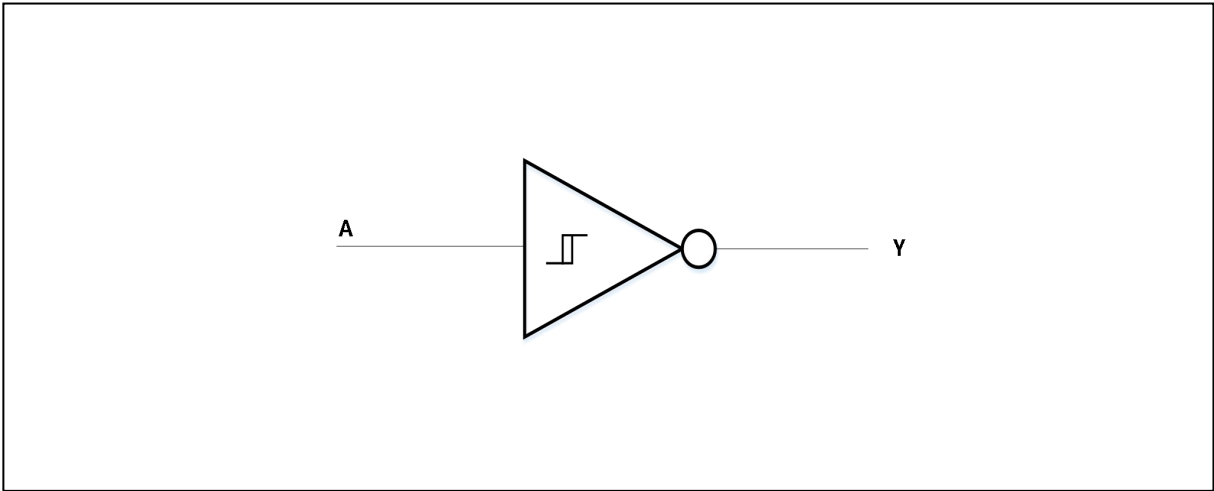


Figure 2. Functional Block Diagram

Table 2. Truth Table

Input A	Output Y
H	L
L	H

Absolute Maximum Ratings

Parameter	Range
Supply Voltage(V _{CC})	-0.5 V to +7 V
Input Voltage(V _I)	-0.5 V to +7 V
Output Voltage(V _O)	-0.5 V to V _{CC} +0.5 V
Input Clamp Current(I _{IK})	-20mA(Max),@V _I < 0
Output Clamp Current(I _{OK})	±20mA(Max),@V _O < 0 or V _O > V _{CC}
Continuous Output Current(I _O)	±25mA(Max),@V _O =0 to V _{CC}
Continuous Current Through V _{CC} or GND	±50mA(Max)
Junction Temperature(T _J)	150°C(Max)
Storage Temperature(T _{stg})	-40°C~150°C
ESD	2 kV(HBM) ,1kV(CDM),200V(MM)

Operating Temperatures Range

参数	范围
Supply Voltage(V _{CC})	2 V to +5.5 V
Input Voltage(V _I)	0 V to +5.5 V
Output Voltage(V _O)	0 V to +V _{CC} V
High Level Output Current	-50µA(max) @V _{CC} =2 V,-4mA(max) @V _{CC} =3.3 V ±0.3 V , -8mA(max) @V _{CC} =5 V ±0.5 V
Low Level Output Current(I _{OL})	50µA(max) @V _{CC} =2 V ,4mA(max) @V _{CC} =3.3 V ±0.3 V , 8mA(max) @V _{CC} =5 V ±0.5 V
Operating Free Air Temperature(T _A)	-55°C to + 125°C

Electrical Characteristics

Over operating free-air temperature range (unless otherwise noted)

Table 3.

Parameter	+25°C			-40° C to +125° C			Test Conditions	UNIT
	Min	Typ	Max	Min	Typ	Max		
Output Characteristics								
V _{T+} Positive-going input threshold voltage	1.2	--	2.2	1.2	--	2.2	V _{CC} =3V	V
	1.75	--	3.15	1.75	--	3.15	V _{CC} =4.5V	
	2.15	--	3.85	2.15	--	3.85	V _{CC} =5.5V	
V _{T+} Negative-going input threshold voltage	0.9	--	1.9	0.9	--	1.9	V _{CC} =3V	V
	1.35	--	2.75	1.35	--	2.75	V _{CC} =4.5V	
	1.65	--	3.35	1.65	--	3.35	V _{CC} =5.5V	
ΔV _T Hysteresis (V _{T+} -V _{T-})	0.3	--	1.2	0.25	--	1.2	V _{CC} =3V	V
	0.4	--	1.4	0.35	--	1.4	V _{CC} =4.5V	
	0.5	--	1.6	0.45	--	1.6	V _{CC} =5.5V	
V _{OH}	1.9	2	--	1.9	--	--	IOH = -50 μA,V _{CC} =2V	V
	2.9	3	--	2.9	--	--	IOH = -50 μA,V _{CC} =3V	
	4.4	4.5	--	4.4	--	--	IOH = -50 μA,V _{CC} =4.5V	
	2.58	--	--	2.48	--	--	IOH = -4mA,V _{CC} =3V	
	3.94	--	--	3.8	--	--	IOH = -8mA,V _{CC} =4.5V	
V _{OL}	--	--	0.1	--	--	0.1	IOH = 50 μA,V _{CC} =2V	V
	--	--	0.1	--	--	0.1	IOH = 50 μA,V _{CC} =3V	
	--	--	0.1	--	--	0.1	IOH = 50 μA,V _{CC} =4.5V	
	--	--	0.36	--	--	0.55	IOH = 4mA,V _{CC} =3V	
	--	--	0.36	--	--	0.55	IOH = 8mA,V _{CC} =4.5V	
I _I	--	--	±0.1	--	--	±1	V _I = 5.5 V or GND,V _{CC} =0V to 5.5V	μA
I _{CC}	--	--	1	--	--	10	V _I = V _{CC} or GND, IO = 0,V _{CC} = 5.5V	μA
C _I	--	2	10	--	--	10	V _I = V _{CC} or GND,V _{CC} = 5V	pF

Switching Characteristics, VCC = 3.3 V ± 0.3 V;over recommended operating free-air temperature range (unless otherwise noted)

Table 4.

Parameter	From (Input)	To (Output)	Output Capacitance	+25°C			−40° C to +85° C			−40° C to +125° C			UNIT
				Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
Switching Characteristics													
t _{PLH}	A	Y	CL = 15 pF	--	8.3	12.8	1	--	15	1	--	16	ns
t _{PHL}				--	8.3	12.8	1	--	15	1	--	16	
t _{PLH}	A	Y	CL = 15 pF	--	10.8	16.3	1	--	18.5	1	--	19.5	ns
t _{PHL}				--	10.8	16.3	1	--	18.5	1	--	19.5	

Switching Characteristics, VCC = 5 V ± 0.5 V;over recommended operating free-air temperature range(unless otherwise noted)

Table 5.

Parameter	From (Input)	To (Output)	Output Capacitance	+25°C			−40° C to +85° C			−55° C to +125° C			UNIT
				Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
Switching Characteristics													
t _{PLH}	A or B	Y	CL = 15 pF	--	5.5	8.6	1	--	10	1	--	11	ns
t _{PHL}				--	5.5	8.6	1	--	10	1	--	11	
t _{PLH}	A or B	Y	CL = 50 pF	--	7	10.6	1	--	12	1	--	11	ns
t _{PHL}				--	7	10.6	1	--	12	1	--	11	

Operating Characteristics(VCC = 5 V, TA = 25°C)

Parameter	Test Conditions	TYP	UNIT
Cpd Power dissipation capacitance	No load, f = 1 MHz	9	pF

Typical Electrical Characteristics

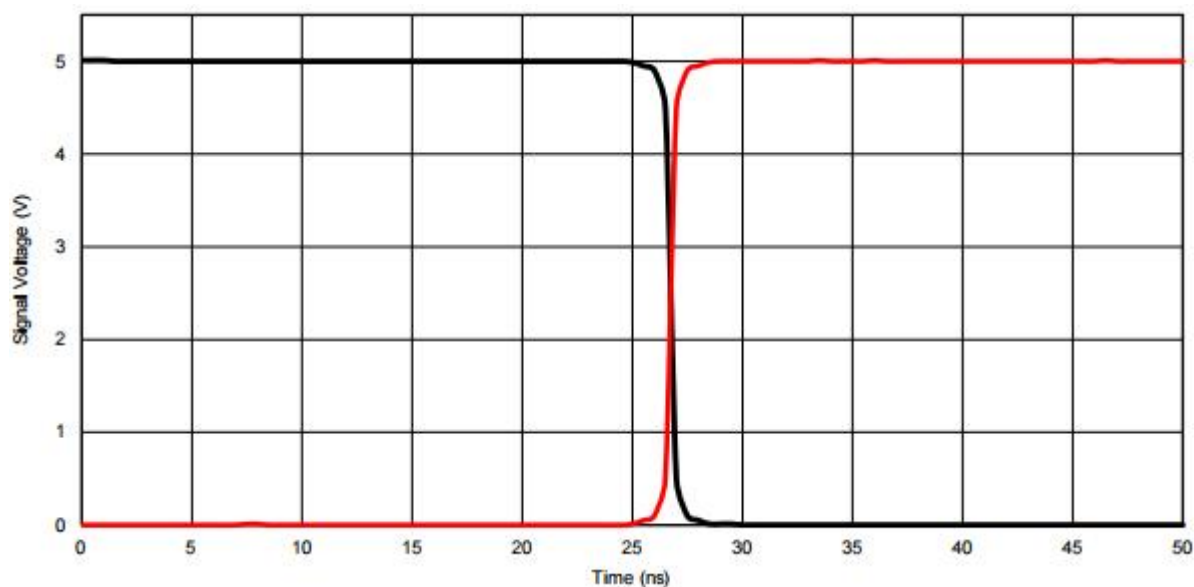


Figure 3. Response Time vs Output Voltage

Typical Application

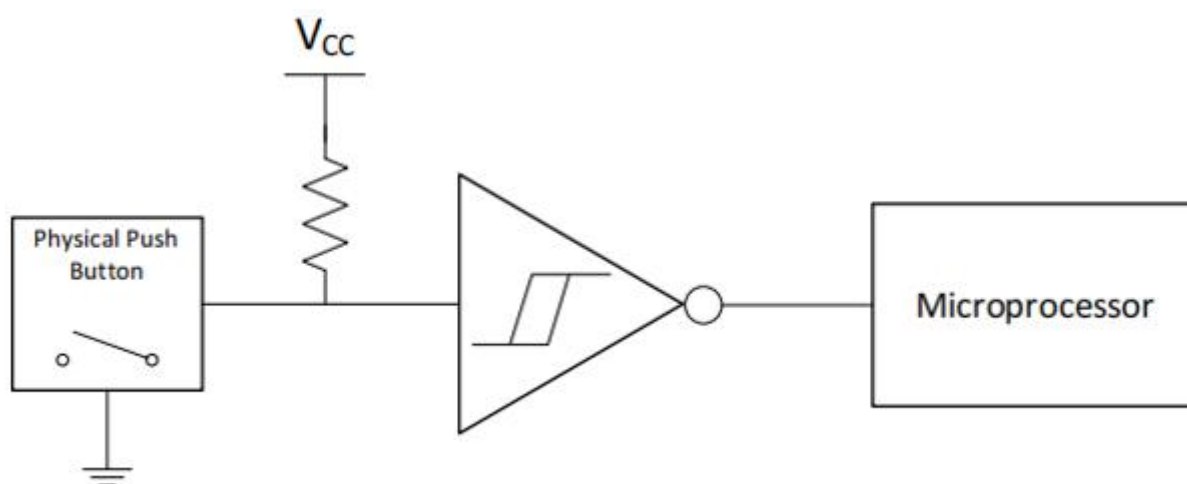


Figure 4. Power Sequencing Application

Package Outline Dimensions

SOT23-5

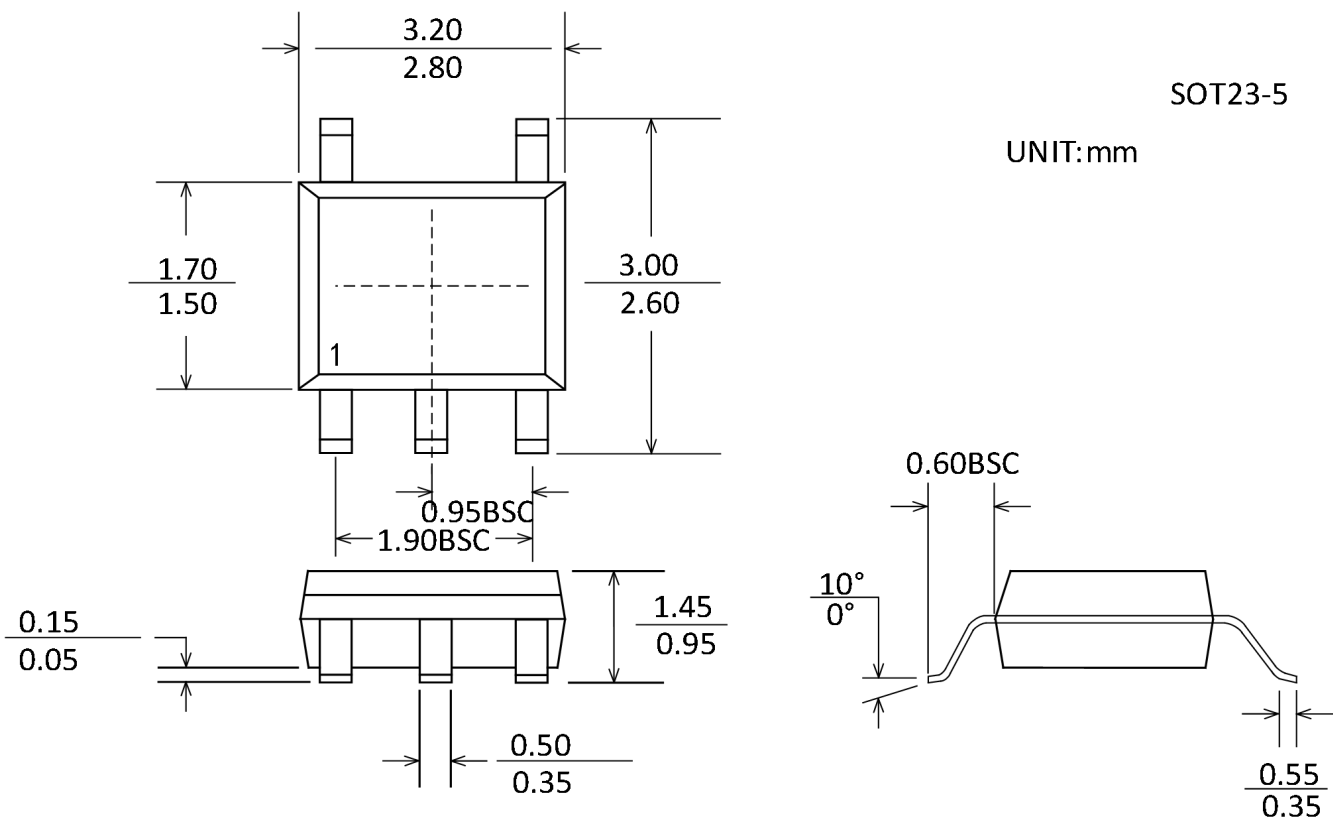


Figure 5. 5-Lead Small Outline Package [SOT23-5]

Package/Ordering Information

MODEL	TEMPERATURE	PACKAGE DESCRIPTION	PACKAGE OPTION
CD74AHC1G14AST	-40°C~125°C	SOT23-5	Tape and Reel,3000

Revision Log

Version	Revision date	Change content	Reason for Change	Modified by	Reviewed By	Note
V1.0	2025.6.25	Initial version	Regular update	WW	LYL	