



CD74AHC1G04

Single-channel 2V to 5.5V Inverter

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
- Schmitt-Trigger Action at All Inputs Makes the Circuit Tolerant for Slower Input Rise and Fall Time
- Latch-Up Performance Exceeds 250 mA

Application ■■

- Cameras
- E-Meters
- Ethernet Switches
- Infotainment

Description ■■

The CBM74AHC1G04 contains one inverter gate. The device performs the Boolean function $Y = \overline{A}$.

The CBM74AHC1G04 are available in SOT23-5 packages.

Contents

Features.....

- 1 -

Application.....

- 1 -

Description.....

- 1 -

Pin Configurations.....

- 3 -

Pin Description.....

- 3 -

Functional Block diagram.....

- 3 -

Absolute Maximum Ratings.....

- 4 -

Operating Temperatures Range.....

- 4 -

Electrical Characteristics.....

- 5 -

Typical Electrical Characteristics.....

- 7 -

Typical Application.....

- 7 -

Package Outline Dimensions.....

- 8 -

Package/Ordering Information.....

- 9 -

Revision Log.....

- 10 -

Pin Configurations

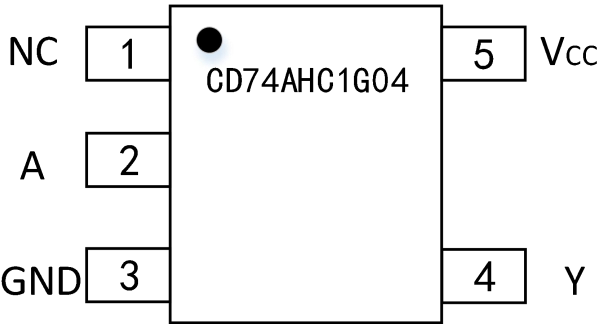


Figure 1. SOT23-5 Pin Configuration

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

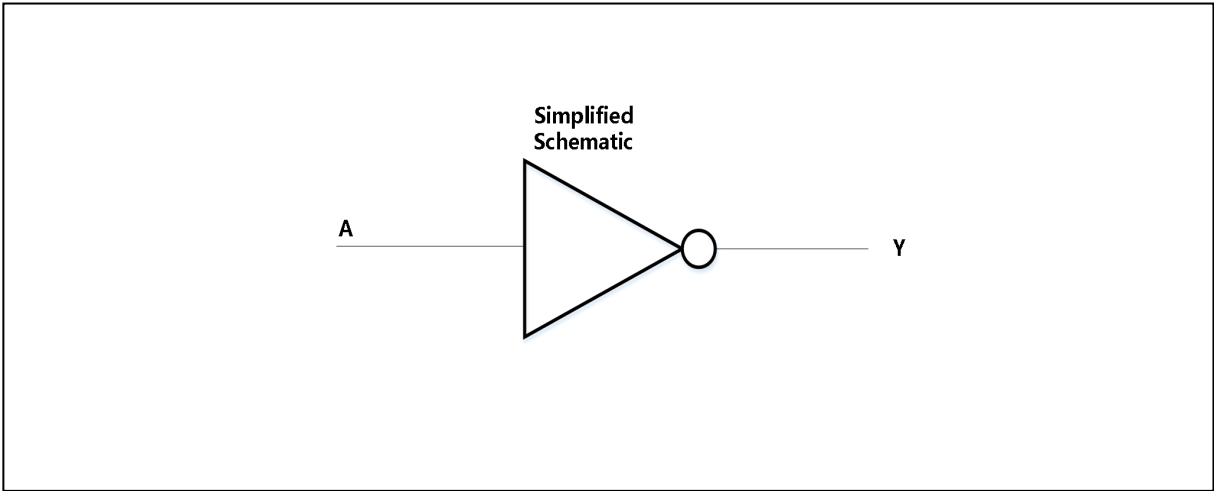


Figure 2. Functional Block Diagram

Table 2. Truth Table

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})	−65°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
High Level Input Voltage(V _{IH})	1.5 V(min) @V _{CC} =2 V ,2.1 V(min) @V _{CC} =3 V ,3.85 V(min) @V _{CC} =5.5 V
Low Level Input Voltage(V _{IL})	0.5 V(max) @V _{CC} =2 V ,0.9 V(max) @V _{CC} =3 V,1.65 V(max) @V _{CC} =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
Input transition rise or fall rate(Δt/Δv)	100ns/v@VCC=3.3 v±0.3 v,20ns/v@VCC=5 v±0.5 v
Operating Free Air Temperature(T _A)	-40°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								
VOH	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	--	--	2.4	--	--	IOH = −4mA,V _{CC} =3V	
	3.94	--	--	3.8	--	--	IOH = −8mA,V _{CC} =4.5V	
VOL	--	--	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	--	--	0.44	IOH = 4mA,V _{CC} =3V	
	--	--	0.36	--	--	0.44	IOH = 8mA,V _{CC} =4.5V	
I _I	--	--	±0.1	--	--	±1	VI = 5.5 V or GND,V _{CC} =0V to 5.5V	μA
I _{CC}	--	--	1	--	--	10	VI = VCC or GND, IO = 0,V _{CC} = 5.5V	μA
C _I	--	2	10	--	--	10	VI = VCC or GND,V _{CC} = 5V	pF

Switching Characteristics, V_{CC} = 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	--	5	7.1	1	--	8.5	1	--	9.5	ns
t _{PHL}				--	5	7.1	1	--	8.5	1	--	9.5	
t _{PLH}	A	Y	CL = 15 pF	--	7.5	10.6	1	--	12	1	--	13	ns
t _{PHL}				--	7.5	10.6	1	--	12	1	--	13	

Switching Characteristics, V_{CC} = 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	Y	CL = 15 pF	--	3.8	5.5	1	--	6.5	1	--	7	ns
t _{PHL}				--	3.8	5.5	1	--	6.5	1	--	7	
t _{PLH}	A	Y	CL = 50 pF	--	5.3	7.5	1	--	6.5	1	--	7	ns
t _{PHL}				--	5.3	7.5	1	--	6.5	1	--	7	

Operating Characteristics (V_{CC} = 5 V, T_A = 25°C)

Parameter	Test Conditions	TYP	UNIT
Cpd Power dissipation capacitance	No load, f = 1 MHz	12	pF

Typical Electrical Characteristics

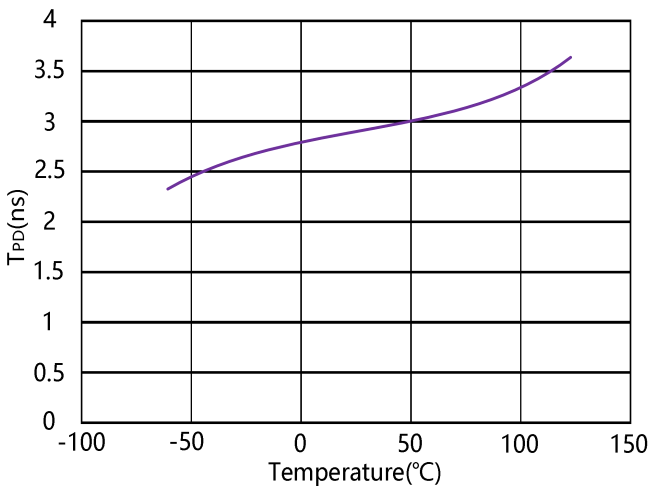


Figure 3. T_{PD} vs Temperature at 5 V

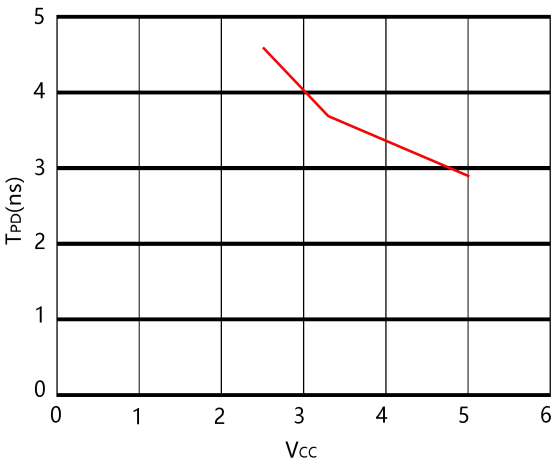


Figure 4. T_{PD} vs V_{CC} at 25°C

Typical Application

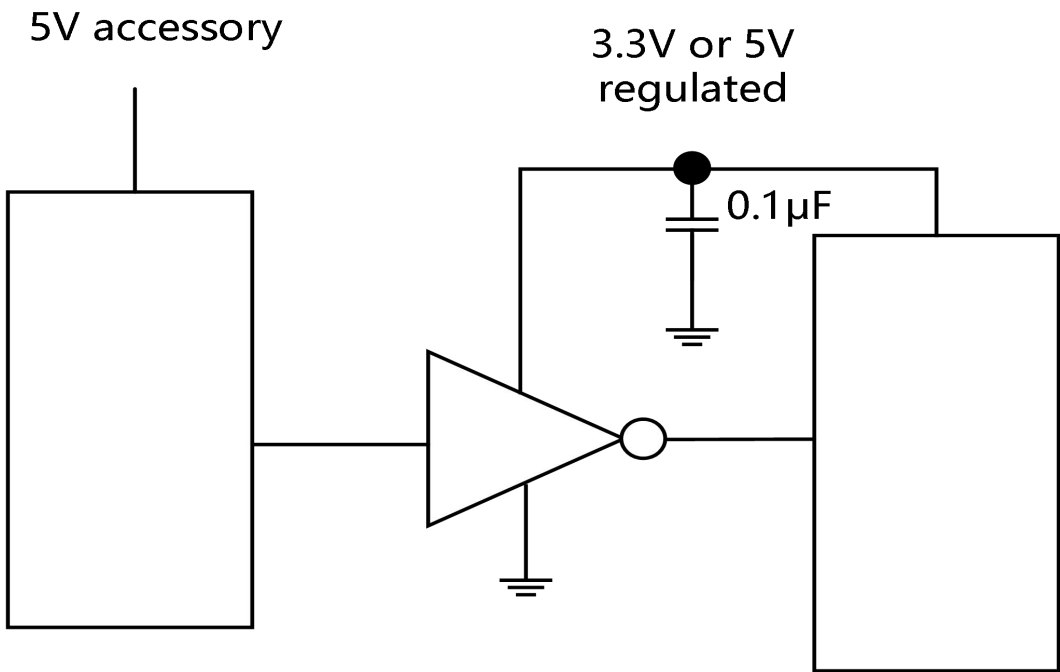


Figure 5. Typical Application Schematic

Package Outline Dimensions

SOT23-5

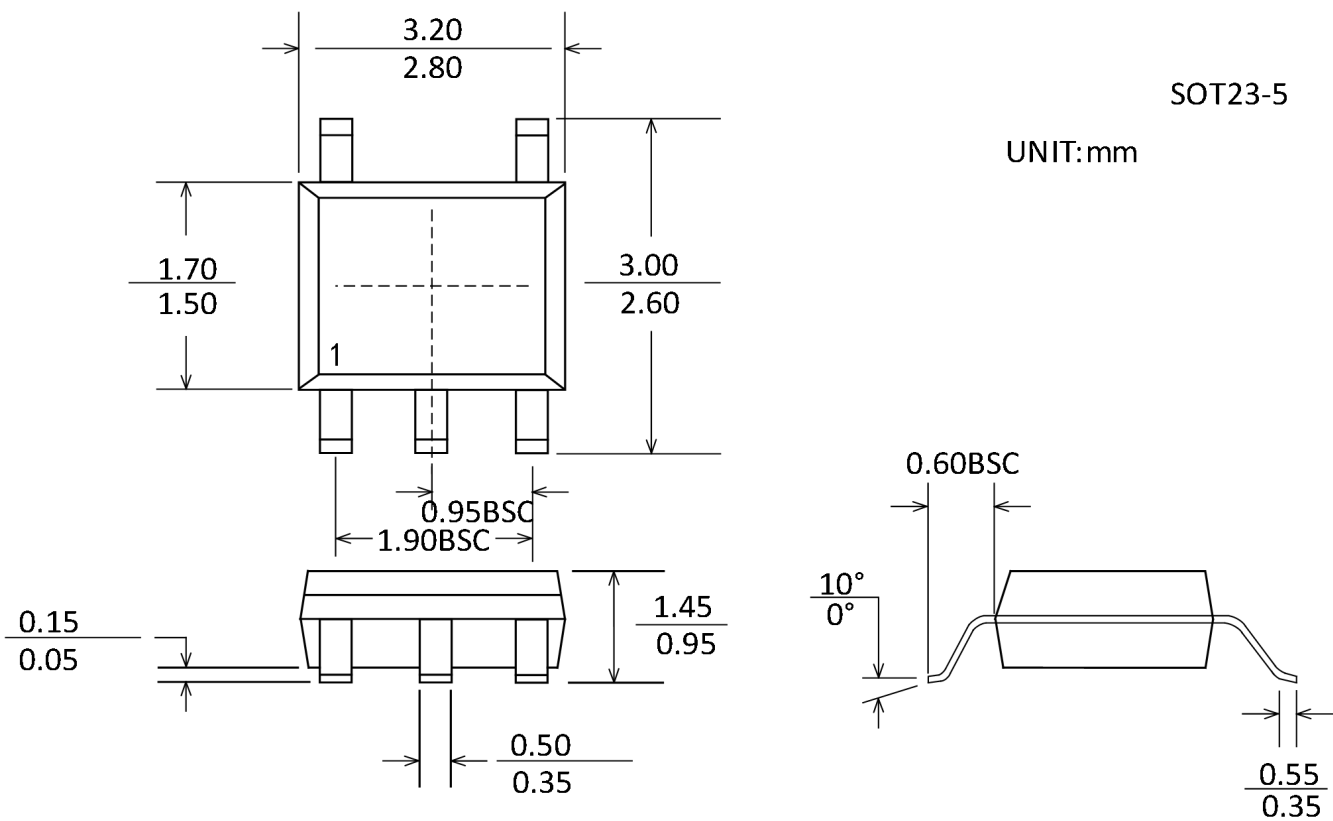


Figure 5. 5-Lead Small Outline Package [SOT23-5]

Package/Ordering Information

MODEL	TEMPERATURE	PACKAGE DESCRIPTION	PACKAGE OPTION
CD74AHC1G04AST	-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	