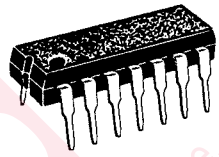
MN74HC00/MN74HC00S

Quad 2-Input NAND Gates

■ Outline

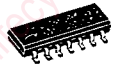
The MN74HC00/MN74HC00S is a 2-input positive logic NAND gate having four built-in circuits in one chip. Owing to the silicon gate CMOS process, this NAND gate has realized low power consumption and high noise immunity equivalent to those of a sandard CMOS and the operation speed as high as of an LS TTL. The buffer added to the gate output improves the input/ output transfer characteristic and minimizes the propagation delay time fluctuation caused by the load capacity increase. The MN74HC00/MN74HC00S can directly drive ten LS TTL inputs. To protect the input and output against electrostatic breakdown, a resistor and a diode are used for the V_{CC} and the GND. The pin configuration and the function are the same as those of the standard 54LS/74LS logic family.

P-1



14-pin plastic DIL package

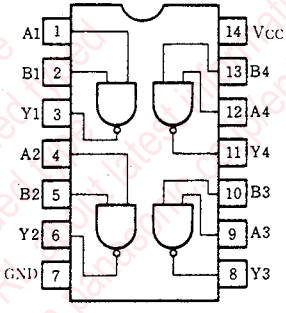
P-2



14-pin PANAFLAT package (SO-14D)

■ Logic Diagram (1 Gate)

Pin Configuration



■ Absolute Maximum Ratings

Item			Symbol	Rating	Unit
Supply voltage			V_{CC}	−0.5~+7.0	V
Input output voltage			V_I, V_O	−0.5~V_{CC}+0.5	V
Input protective diode current			I_{IK}	±20	mA
Output parasitic diode current			I_{OK}	±20	mA
Output current			I_O	±25	mA
Supply current			I_{CC}, I_{GND}	±50	mA
Storage temperature			T_{stg}	−65~+150	°C
Power dissipation	MN74HC00	Ta=−40~+60°C	P_D	400	mW
		Ta=+60~+85°C		Decrease to 200mW at the rate of 8mW/°C	
	MN74HC00S	Ta=−40~+60°C	P_D	275	mW
		Ta=+60~+85°C		Decrease to 200mW at the rate of 3.8mW/°C	

Maintenance/ Discontinued
Maintenance/Discontinued includes following four Product lifecycle stage.
planed maintenance type
maintenance type
planed discontinued type
discontinued type
Please refer following URL for latest information.
http://www.semicon.panasonic.co.jp/en/

■ Recommended Operating Conditions

Item	Symbol	V_{CC}(V)	Rating	Unit
Operating power supply voltage	V_{CC}		1.4~6.0	V
Input output voltage	V_I, V_O		0~V_{CC}	V
Operating temperature	T_A		−40~+85	°C
Input rise, fall time	t_r, t_f	2.0	0~1000	ns
		4.5	0~500	ns
		6.0	0~400	ns

■ DC Characteristics (GND=0V)

Item	Symbol	V_{CC} (V)	Test Condition V_I	Test Condition I_O	Test Condition Unit	Temperature Ta=25°C min.	Temperature Ta=25°C typ.	Temperature Ta=25°C max.	Temperature Ta=−40~+85°C min.	Temperature Ta=−40~+85°C max.	Unit
Input voltage high level	V_{IH}	2.0				1.5			1.5		V
		4.5				3.15			3.15		
		6.0				4.2			4.2		
Input voltage low level	V_{IL}	2.0						0.3		0.3	V
		4.5						0.9		0.9	
		6.0						1.2		1.2	
Output voltage high level	V_{OH}	2.0	V_{IH} or V_{IL}	−20.0	μA	1.9	2.0		1.9		V
		4.5		−20.0	μA	4.4	4.5		4.4		
		6.0		−20.0	μA	5.9	6.0		5.9		
		4.5		−4.0	mA	3.92			3.84		
		6.0		−5.2	mA	5.48			5.34		
Output voltage low level	V_{OL}	2.0	V_{IH}	20.0	μA		0.0	0.1		0.1	V
		4.5		20.0	μA		0.0	0.1		0.1	
		6.0		20.0	μA		0.0	0.1		0.1	
		4.5		4.0	mA			0.26		0.33	
		6.0		5.2	mA			0.26		0.33	
Input leakage current	I_I	6.0	V_I=V_{CC} or GND					±0.1		±1.0	μA
Static supply current	I_{CC}	6.0	V_I=V_{CC} or GND, I_O=0					2.0		20.0	μA

■ AC Characteristics (GND=0V, Input transition time≦6ns, C_L=50pF)

Item	Symbol	V_{CC} (V)	Test Condition	Temperature Ta=25°C min.	Temperature Ta=25°C typ.	Temperature Ta=25°C max.	Temperature Ta=−40~+85°C min.	Temperature Ta=−40~+85°C max.	Unit
Output rise time	t_{TLH}	2.0			25	75		95	ns
		4.5			8	15		19	
		6.0			7	13		16	
Output fall time	t_{THL}	2.0			20	75		95	ns
		4.5			7	15		19	
		6.0			6	13		16	
Propagation time (L→H)	t_{PLH}	2.0			25	75		95	ns
		4.5			8	15		19	
		6.0			7	13		16	
Propagation time (H→L)	t_{PHL}	2.0			25	75		95	ns
		4.5			8	15		19	
		6.0			7	13		16	

Maintenance/Discontinued
Please visit following URL for latest information.
http://www.semicon.panasonic.co.jp/en/

Request for your special attention and precautions in using the technical information and semiconductors described in this book

(1) If any of the products or technical information described in this book is to be exported or provided to non-residents, the laws and regulations of the exporting country, especially, those with regard to security export control, must be observed.

(2) The technical information described in this book is intended only to show the main characteristics and application circuit examples of the products. No license is granted in and to any intellectual property right or other right owned by Panasonic Corporation or any other company. Therefore, no responsibility is assumed by our company as to the infringement upon any such right owned by any other company which may arise as a result of the use of technical information described in this book.

(3) The products described in this book are intended to be used for standard applications or general electronic equipment (such as office equipment, communications equipment, measuring instruments and household appliances).
Consult our sales staff in advance for information on the following applications:
- Special applications (such as for airplanes, aerospace, automobiles, traffic control equipment, combustion equipment, life support systems and safety devices) in which exceptional quality and reliability are required, or if the failure or malfunction of the products may directly jeopardize life or harm the human body.
- Any applications other than the standard applications intended.

(4) The products and product specifications described in this book are subject to change without notice for modification and/or improvement. At the final stage of your design, purchasing, or use of the products, therefore, ask for the most up-to-date Product Standards in advance to make sure that the latest specifications satisfy your requirements.

(5) When designing your equipment, comply with the range of absolute maximum rating and the guaranteed operating conditions (operating power supply voltage and operating environment etc.). Especially, please be careful not to exceed the range of absolute maximum rating on the transient state, such as power-on, power-off and mode-switching. Otherwise, we will not be liable for any defect which may arise later in your equipment.
 Even when the products are used within the guaranteed values, take into the consideration of incidence of break down and failure mode, possible to occur to semiconductor products. Measures on the systems such as redundant design, arresting the spread of fire or preventing glitch are recommended in order to prevent physical injury, fire, social damages, for example, by using the products.

(6) Comply with the instructions for use in order to prevent breakdown and characteristics change due to external factors (ESD, EOS, thermal stress and mechanical stress) at the time of handling, mounting or at customer's process. When using products for which damp-proof packing is required, satisfy the conditions, such as shelf life and the elapsed time since first opening the packages.

(7) This book may be not reprinted or reproduced whether wholly or partially, without the prior written permission of our company.

20080805

Maintenance/Discontinued includes following Products
planed maintenance type
maintenance type
planed discontinued type
discontinued type
Please visit following URL about latest information.
http://www.semicon.panasonic.co.jp/en/
Maintenance/Discontinued

This datasheet has been downloaded from:

www.DatasheetCatalog.com

Datasheets for electronic components.