



4A000MH5

2-Input NAND Gate

Features

- 2-input NAND gate.
- Enable to 25 voltage operation.
- Low power-loss.
- High speed operation.

Truth Table

INA	INB	OUT
L	L	H
L	H	H
H	L	H
H	H	L

H : High level voltage

L : Low level voltage

Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
DC Supply Voltage	V _{DD}		-0.3 to +25	V
Input Voltage	V _{IN}		GND-0.3 to V _{DD} +0.3	V
Output Voltage	V _{OUT}		GND-0.3 to V _{DD} +0.3	V
Input Current	I _{IN}		±10	mA
Output Current	I _{OUT}		±75	mA
Allowable Power Dissipation	P _D	Mounted on a ceramic board (600mm ² X0.8mm)	0.8	W
Storage Temperature	T _{stg}		-55 to +150	°C

Recommended Operating Conditions at Ta=25°C

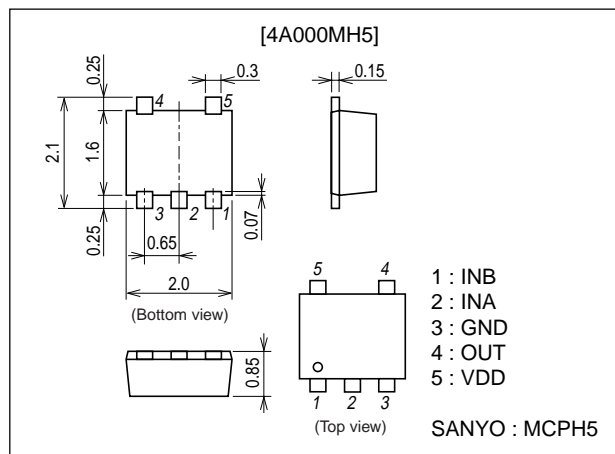
Parameter	Symbol	Conditions	Ratings	Unit
DC Supply Voltage	V _{DD}		3 to +25	V
Input Voltage	V _{IN}		0 to V _{DD}	V
Output Voltage	V _{OUT}		0 to V _{DD}	V
Output Current	I _{OUT}	V _{DD} =25V	±50	mA
Input Rise And Fall Time	Δt / Δv	V _{DD} <5V	≤100	ns / V
		V _{DD} ≥5V	20	ns / V
Operating Temperature	T _{opr}		-40 to +85	°C

Marking : XD

Package Dimensions

unit : mm

2216



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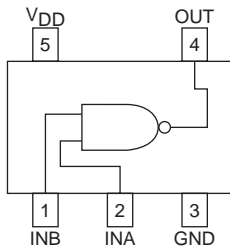
DC Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
High-level Input Voltage	V _{IH}	V _{DD} =5V	3.5			V
		V _{DD} =10V	7.0			V
		V _{DD} =15V	11.0			V
		V _{DD} =25V	18.0			V
Low-level Input Voltage	V _{IL}	V _{DD} =5V			1.5	V
		V _{DD} =10V			3.0	V
		V _{DD} =15V			4.0	V
		V _{DD} =25V			7.0	V
Input Leakage Current	I _{IN}	V _{DD} =25V, V _{IN} =25V			0.1	μA
		V _{DD} =25V, V _{IN} =0			0.1	μA
High-level Output Voltage	V _{OH}	V _{DD} =5V, I _O =1mA	4.5			V
		V _{DD} =10V, I _O =2.5mA	9.0			V
		V _{DD} =15V, I _O =5.0mA	13.5			V
		V _{DD} =25V, I _O =10mA	22.5			V
Low-level Output Voltage	V _{OL}	V _{DD} =5V, I _O =1mA			0.5	V
		V _{DD} =10V, I _O =2.5mA			1.0	V
		V _{DD} =15V, I _O =5.0mA			1.5	V
		V _{DD} =25V, I _O =10mA			2.5	V
Supply Current	I _{DD}	V _{DD} =5V, V _{IN} =V _{DD} , GND			0.25	μA
		V _{DD} =10V, V _{IN} =V _{DD} , GND			0.5	μA
		V _{DD} =15V, V _{IN} =V _{DD} , GND			1.0	μA
		V _{DD} =25V, V _{IN} =V _{DD} , GND			2.0	μA

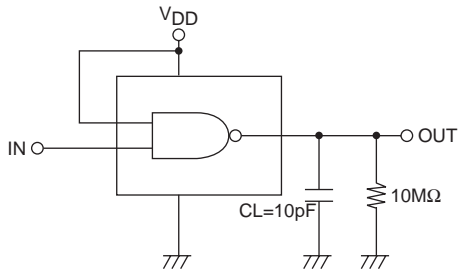
AC Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Output Transition Time	t _{TLH}	V _{DD} =5V		14		ns
		V _{DD} =10V		8		ns
		V _{DD} =15V		7		ns
		V _{DD} =25V		6		ns
	t _{THL}	V _{DD} =5V		14		ns
		V _{DD} =10V		8		ns
		V _{DD} =15V		7		ns
		V _{DD} =25V		6		ns
Propagation Delay Time	t _{PLH}	V _{DD} =5V		40		ns
		V _{DD} =10V		20		ns
		V _{DD} =15V		15		ns
		V _{DD} =25V		12		ns
	t _{PHL}	V _{DD} =5V		40		ns
		V _{DD} =10V		20		ns
		V _{DD} =15V		15		ns
		V _{DD} =25V		12		ns
Input Capacitance	C _{IN}			8	pF	

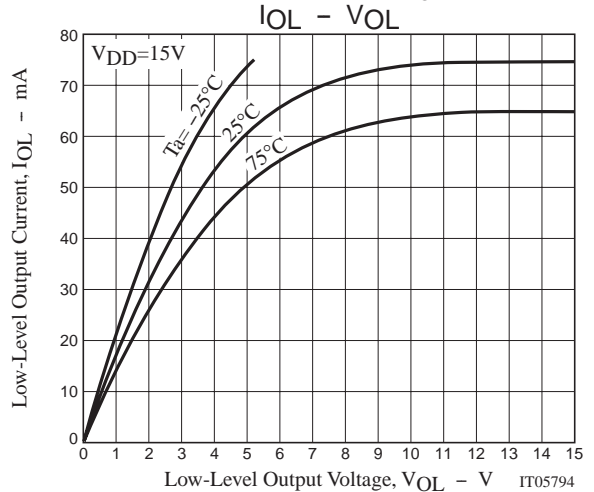
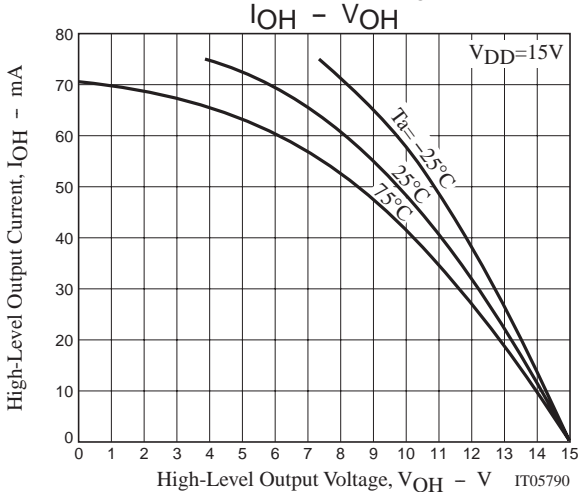
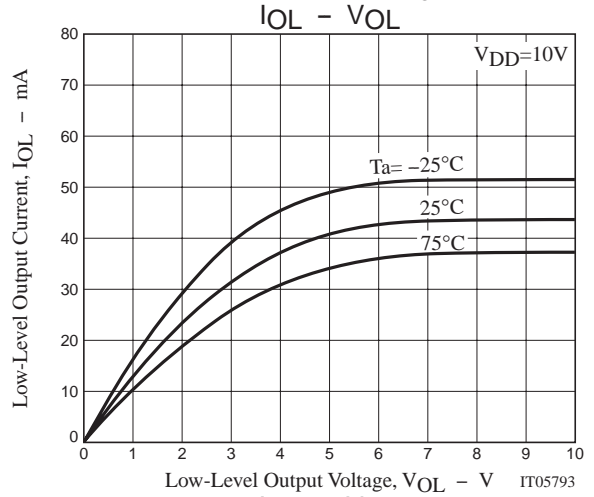
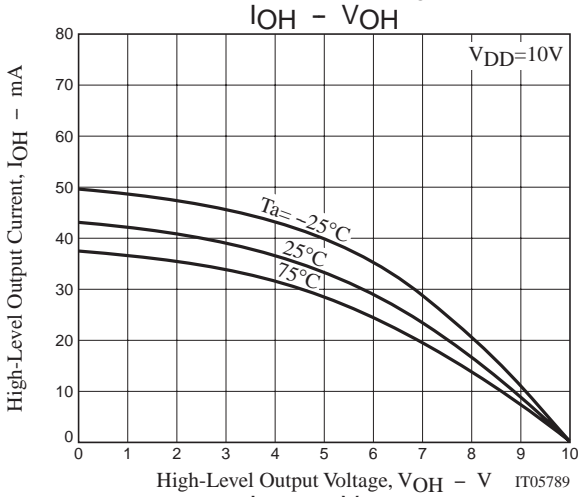
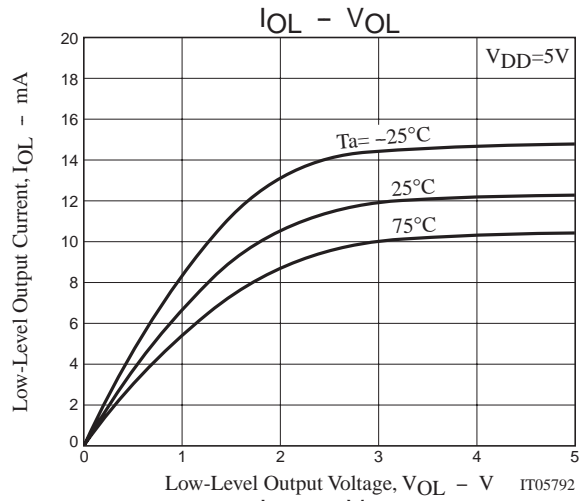
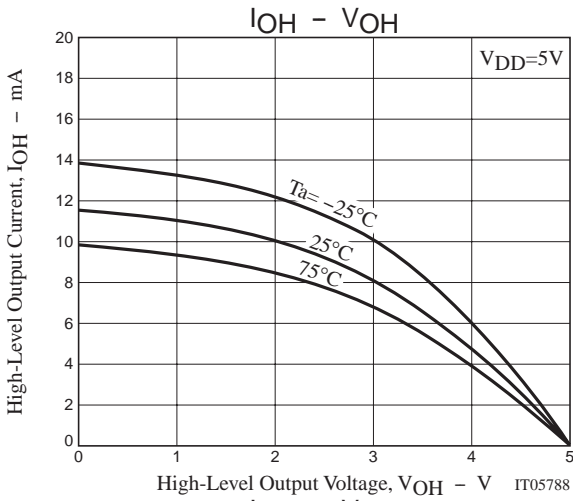
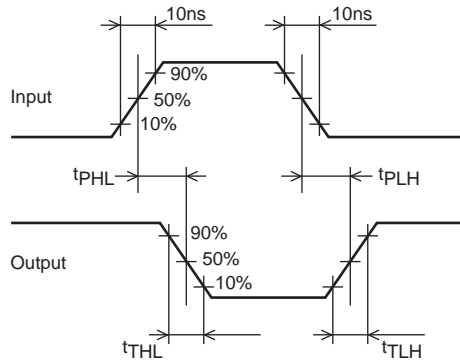
Block Diagram



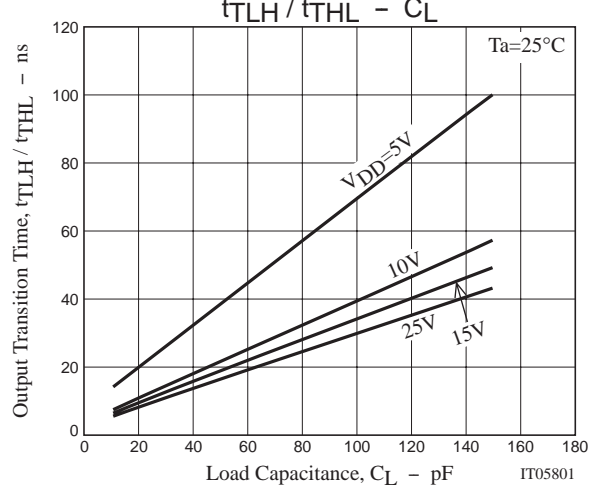
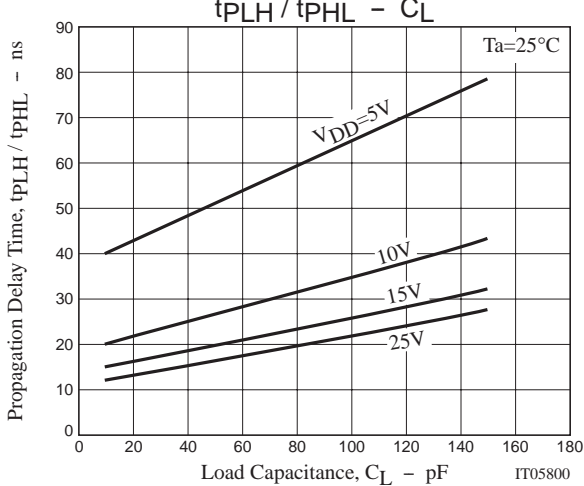
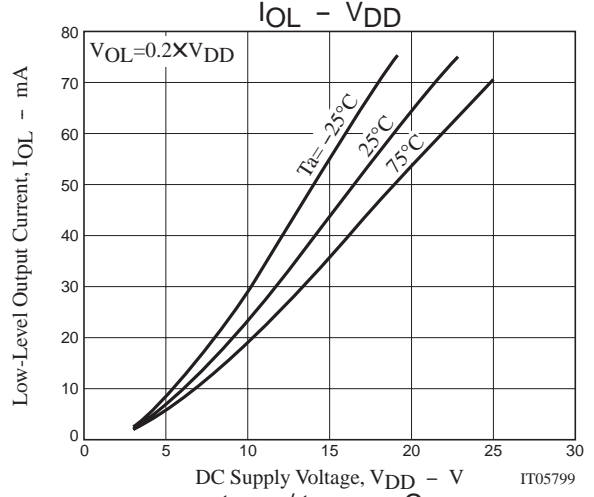
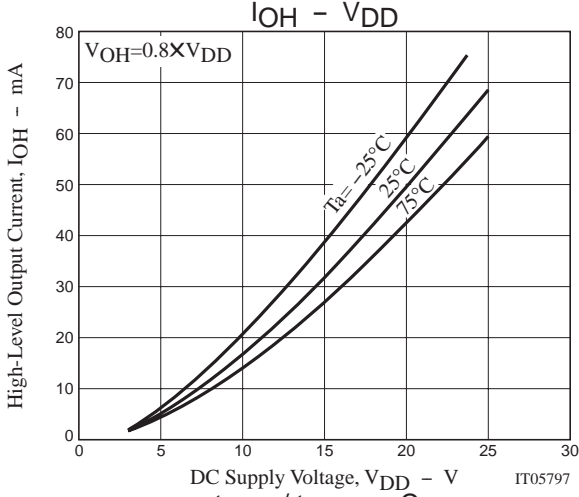
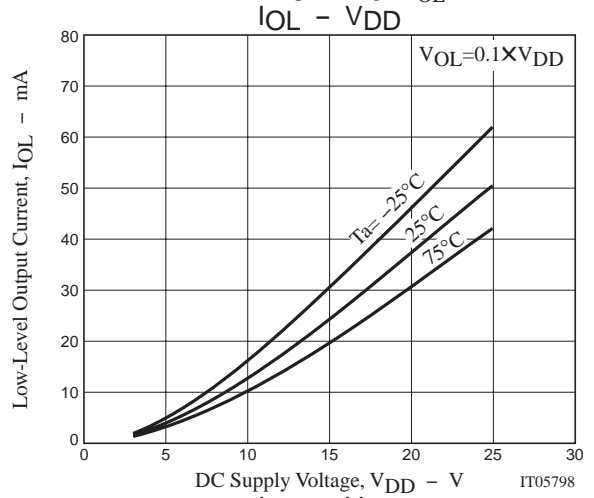
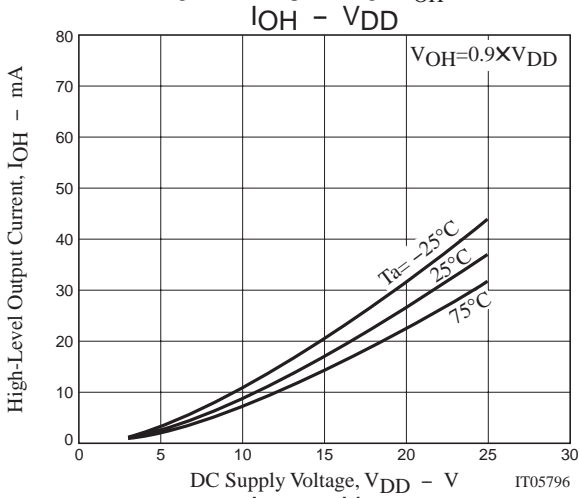
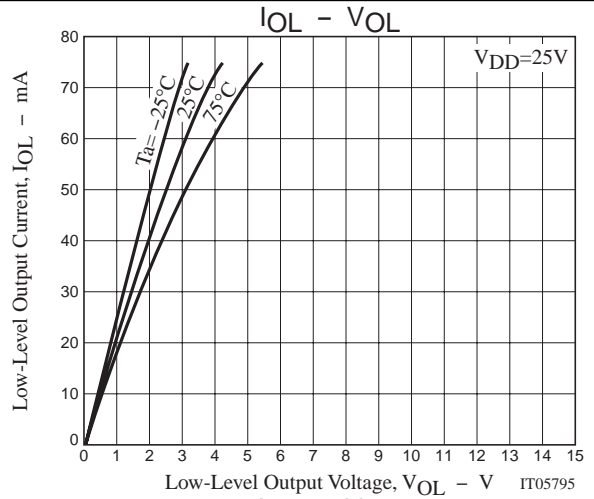
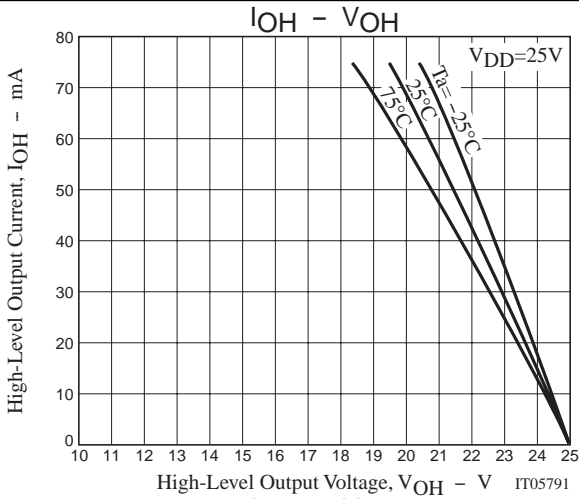
Switching Time Test Circuit



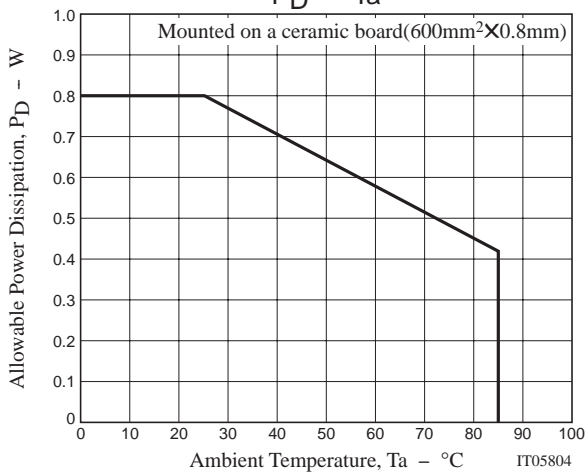
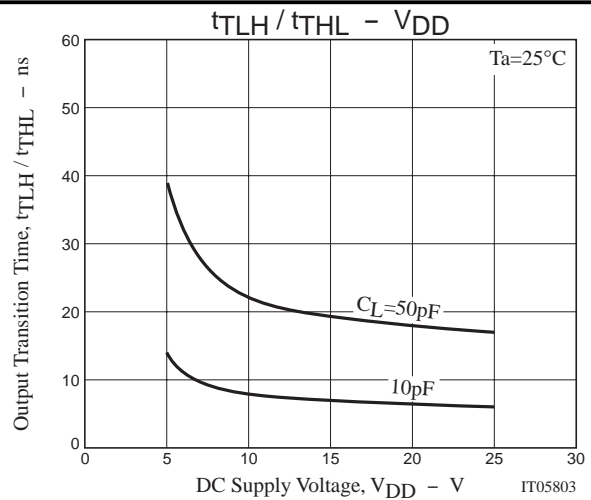
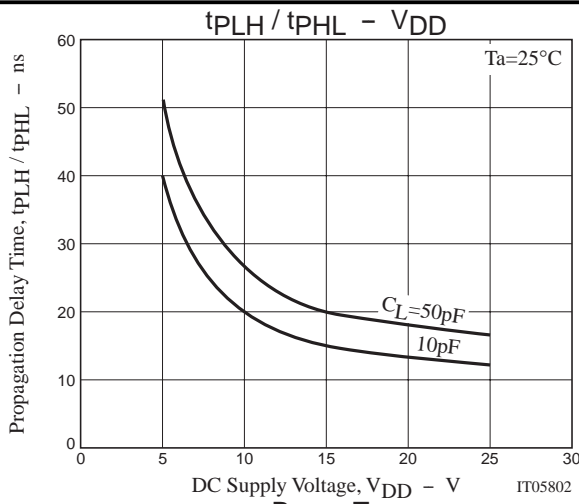
Switching Time Wave Form



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