

ELM7S00

2-input NAND Gate

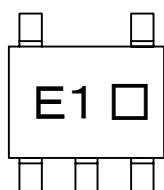
DESCRIPTION

ELM7S00 is a Silicon CMOS's High-Speed CMOS 2-input NAND Gate IC. It realizes High-Speed drive similar to LS-TTL with lower power consumption which CMOS features. Inner Circuit which consists of 3-phase composition obtains wider noise allowance and constant output.

FEATURES

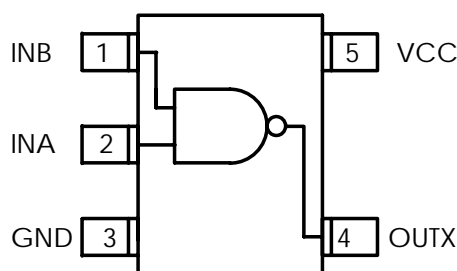
- Very small SOT-25 (2.9 × 1.6 × 1.1mm) 5 - pin package
- Fed by embossed taping load to automatic placer (3,000pcs/reel)
- Same Electrical Characteristics as 74HC Series
- Power Voltage range : 2.0 ~ 6.0V
- Operation Temp. range : - 40 ~ +85°C
- | IOH | = IOL = 2mA (min)

MARKING



E1: Identify ELM7S00
□: Lot No.

PIN CONFIGURATION (TOP VIEW)



MAXIMUM ABSOLUTE RATINGS

Parameter	Symbol	Value	Units
Power Voltage	VCC	-0.5~+7.0	V
Input Voltage	VIN	-0.5~VCC+0.5	V
Output Voltage	VOUT	-0.5~VCC+0.5	V
Input Protection Diode Current	I _{IK}	± 20	mA
Output Parasitic Diode Current	I _{OK}	± 20	mA
Output Current	I _O	± 25	mA
VCC/GND Current	I _{CC} , I _{GN}	± 25	mA
Loss Tolerance	PT	200	mW
Storage Temp.	T _{stg}	-65~+150	°C

SUGGESTED OPERATING CONDITION

Parameter	Symbol	Value	Units
Power Voltage	VCC	2.0~6.0	V
Input Voltage	VIN	0~VCC	V
Output Voltage	VOUT	0~VCC	V
Operating Temp.	T _{opr}	-40~+85	°C
High-input, Down-time	t _r , t _f	0~1000 (VCC=2.0V)	ns
		0~500 (VCC=4.5V)	
		0~400 (VCC=6.0V)	

CMOS LOGIC IC ELM7S00 2-input NAND Gate

■ DC ELECTRICAL CHARACTERISTICS

Parameter	Sym.	VCC	Ta = 25°C			Ta = -40~+85°C		Units	Conditions	
			Min.	Typ.	Max.	Min.	Max.			
Input Voltage	VIH	2.0	1.5	-	-	1.5	-	V		
		4.5	3.15	-	-	3.15	-			
		6.0	4.2	-	-	4.2	-			
	VIL	2.0	-	-	0.5	-	0.5	V		
		4.5	-	-	1.35	-	1.35			
		6.0	-	-	1.8	-	1.8			
Output Voltage	VOH	2.0	1.9	2.0	-	1.9	-	V	VIN= VIH	IOH = -20 μA
		4.5	4.4	4.5	-	4.4	-			or VIL
		6.0	5.9	6.0	-	5.9	-		IOH = -2.6mA	
		4.5	4.18	4.36	-	4.13	-		VIN= VIH	
		6.0	5.68	5.84	-	5.63	-			IOL = 2mA
	VOL	2.0	-	0.0	0.1	-	0.1	V	VIN= VIH	IOL = 2.6mA
		4.5	-	0.0	0.1	-	0.1			
		6.0	-	0.0	0.1	-	0.1			
		4.5	-	0.11	0.26	-	0.33			
		6.0	-	0.13	0.26	-	0.33			
Input Current	IIN	6.0	-0.1	-	0.1	-1.0	1.0	μA	VIN = VCC or GND	
Static Current	ICC	6.0	-	-	1.0	-	10.0	μA	VIN = VCC or GND	

■ AC ELECTRICAL CHARACTERISTICS

(CL=15pF, tr=tf=6ns, VCC=5V)

Parameter	Sym.	Ta = 25°C			Units	Conditions
		Min.	Typ.	Max.		
High Output Down-time	tTLH	-	4	10	ns	Refer to following test circuit
	tTHL	-	3	10		
Propagation Delay-time	tPLH	-	5	15	ns	Refer to following test circuit
	tPHL	-	5	15		

(CL=50pF, tr=tf=6ns)

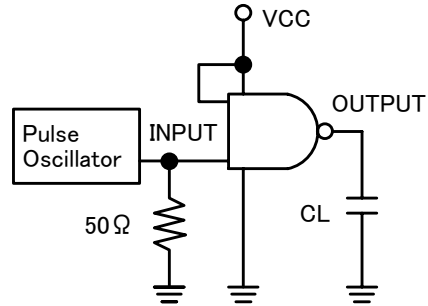
Parameter	Sym.	VCC	Ta = 25°C			Ta = -40~+85°C		Units	Conditions	
			Min.	Typ.	Max.	Min.	Max.			
High-Output Down-time	tTLH	2.0	-	18	125	-	155	ns	Refer to test circuit	
		4.5	-	7	25	-	31			
		6.0	-	6	21	-	26			
	tTHL	2.0	-	14	125	-	155	ns		
		4.5	-	6	25	-	31			
		6.0	-	6	21	-	26			
Propagation Delay-time	tPLH	2.0	-	16	100	-	125	ns	Refer to test circuit	
		4.5	-	8	20	-	25			
		6.0	-	7	17	-	21			
	tPHL	2.0	-	16	100	-	125	ns		
		4.5	-	6	20	-	25			
		6.0	-	5	17	-	21			
Input Capacity	CIN	-	-	5	10	-	10	pF		
Equivalent Inner Capacity	CPD	-	-	10	-	-	-	pF		

* CPD is IC's Inner equivalent capacity which is calculated from non-loaded operating consumption current referred to following test circuit. Averaged operating current consumption at non-load is calculated as following formula;

$$ICC (opr) = GPD \cdot VCC \cdot fIN + ICC$$

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■ TEST CIRCUIT



* Output should be opened when measuring Current Consumption.

■ MEASURED WAVE PATTERN

