

Quadruple 2-Input NAND Gates

General Description

The ET74AHCT00 contains four independent 2-input NAND gates operating from a 1.65V to 5.5V supply.

Features

- Designed for 4.5V to 5.5V V_{CC} Operation
- Over-voltage Tolerant Inputs Accept Voltages to 5.5V
- $\pm 8\text{mA}$ Balanced Output Sink and Source Capability
- Near-zero Static Supply Current Substantially Reduces System Power Requirements
- These Devices are Pb-Free and RoHS Compliant
- ESD Protection Complies with JESD22 Standard
 - HBM: $\pm 2000\text{V}$ Pass (JEDEC JS-001)
 - CDM: $\pm 1500\text{V}$ Pass (JEDEC JS-002)
- Latch-up Performance Exceeds $\pm 200\text{mA}$ per JEDEC JESD78F
- Part No. and Package Information

Part No.	Package	Packing Option	MSL
ET74AHCT00M	SOP14 (8.65 mm $\times$ 6 mm)	Tape and Reel, 4K/Reel	3
ET74AHCT00V	TSSOP14 (4.96 mm $\times$ 6.4 mm)	Tape and Reel, 4K/Reel	3

Applications

- Mobile Device

Pin Configuration

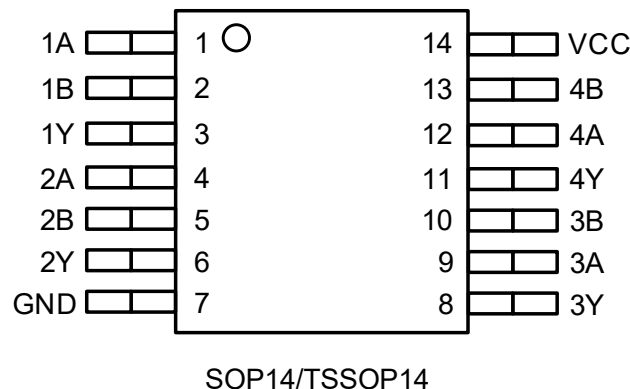


Figure1. Pin Configuration

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Pin Function

Pin		I/O	Description
Name	No.		
1A	1	Input	Channel 1, Input A
1B	2	Input	Channel 1, Input B
1Y	3	Output	Channel 1, Output Y
2A	4	Input	Channel 2, Input A
2B	5	Input	Channel 2, Input B
2Y	6	Output	Channel 2, Output Y
GND	7	—	Ground
3Y	8	Output	Channel 3, Output Y
3A	9	Input	Channel 3, Input A
3B	10	Input	Channel 3, Input B
4Y	11	Output	Channel 4, Output Y
4A	12	Input	Channel 4, Input A
4B	13	Input	Channel 4, Input B
VCC	14	—	Positive Supply

Block Diagram

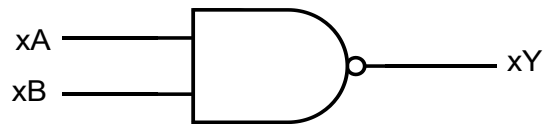


Figure2. Logic Symbol

Functional Table

Input		Output
xA	xB	xY
L	L	H
L	H	H
H	L	H
H	H	L

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Absolute Maximum Ratings

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

Symbol	Parameter		Value	Unit
V _{CC}	DC Supply Voltage (VCC Pin)		-0.5 to 6.5	V
V _I	DC Input Voltage ⁽¹⁾		$-0.5 \leq V_I \leq 6.5$	V
I _{IK}	DC Input Diode Current, V _I < GND		-50	mA
I _{OK}	DC Output Diode Current, V _O < GND, V _O > V _{CC}		-50	mA
I _O	DC Output Sink Current		±50	mA
I _{CC}	DC Supply Current Per Supply Pin		100	mA
I _{GND}	DC Supply Current Per GND Pin		-100	mA
T _{STG}	Storage Temperature Range		-65 to 150	°C
V _{ESD}	ESD Classification	Human Body Model ⁽²⁾	±2000	V
		Charged Device Model ⁽³⁾	±1500	
I _{LU}	Max Latch Up Current Above V _{CC} and GND at 125°C ⁽⁴⁾		±200	mA

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

Note1: I_O absolute maximum rating must be observed.

Note2: HBM tested per JEDEC JS-001;

Note3: CDM tested per JEDEC JS-002;

Note4: Latch Up Current Maximum Rating tested per JEDEC JESD78F.

Recommended Operating Conditions

Symbol	Parameter	Min	Max	Unit
V _{CC}	DC Supply Voltage Operating	4.5	5.5	V
V _I	DC Input Voltage	0	V _{CC}	V
V _O	DC Output Voltage (High or Low State)	0	V _{CC}	V
T _A	Operating Temperature Range	-40	125	°C

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Electrical Characteristics

DC Electrical Characteristics

Over operating free-air temperature range; typical values measured at $T_A = 25^\circ\text{C}$ (unless otherwise noted)

Symbol	Parameter	Condition	$V_{CC}(V)$	$T_A = 25^\circ\text{C}$			$-40^\circ\text{C} \leq T_A \leq 125^\circ\text{C}$		Unit
				Min	Typ	Max	Min	Max	
V_{IH}	High-Level Input Voltage		4.5	2			2		V
			5.5	2			2		
V_{IL}	Low-Level Input Voltage		4.5			0.8		0.8	V
			5.5			0.8		0.8	
V_{OH}	High-Level Output Voltage	$I_{OH} = -50\mu\text{A}$	4.5	4.4	4.5		4.4		V
		$I_{OH} = -8\text{mA}$		3.94			3.8		
V_{OL}	Low-Level Output Voltage	$I_{OL} = 50\mu\text{A}$	4.5			0.1		0.1	V
		$I_{OL} = 8\text{mA}$				0.36		0.44	
I_I	Input Leakage Current	$V_I = 5.5\text{V}$ or GND	0~5.5			± 0.1		± 1.0	μA
I_{OFF}	Power Off Leakage Current	$V_I = 5.5\text{V}$ or $V_O = 5.5\text{V}$	0			1		10	μA
I_{CC}	Quiescent Supply Current	$V_I = 5.5\text{V}$ or GND	5.5			1		10	μA

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Electrical Characteristics (Continued)

AC Electrical Characteristics

$t_r = t_f = 3\text{ns}$, over recommended operating free-air temperature range, $V_{CC} = 5\text{V} \pm 0.5\text{V}$ (unless otherwise noted)

Symbol	Parameter	Condition	$T_A = 25^\circ\text{C}$			$-40^\circ\text{C} \leq T_A \leq 125^\circ\text{C}$		Unit
			Min	Typ	Max	Min	Max	
t_{PLH}	Propagation Delay	$C_L = 15\text{pF}$		7	10	1.0	12	ns
t_{PHL}		$C_L = 50\text{pF}$		8.5	12	1.0	14	ns

Capacitance Characteristics

Symbol	Parameter	Condition	Typ	Unit
C_{IN}	Input Capacitance	$V_{CC} = 5\text{V}$, $V_I = 0\text{V}$ or V_{CC}	5	pF
C_{PD}	Power Dissipation Capacitance ⁽⁵⁾	10MHz, $V_{CC} = 5\text{V}$, $V_I = 0\text{V}$ or V_{CC}	19	pF

Note5: C_{PD} is used to determine the dynamic power dissipation (P_D in μW).

$$P_D = C_{PD} \times V_{CC}^2 \times f_i \times N + \Sigma(C_L \times V_{CC}^2 \times f_o) \text{ where:}$$

f_i = input frequency in MHz;

f_o = output frequency in MHz;

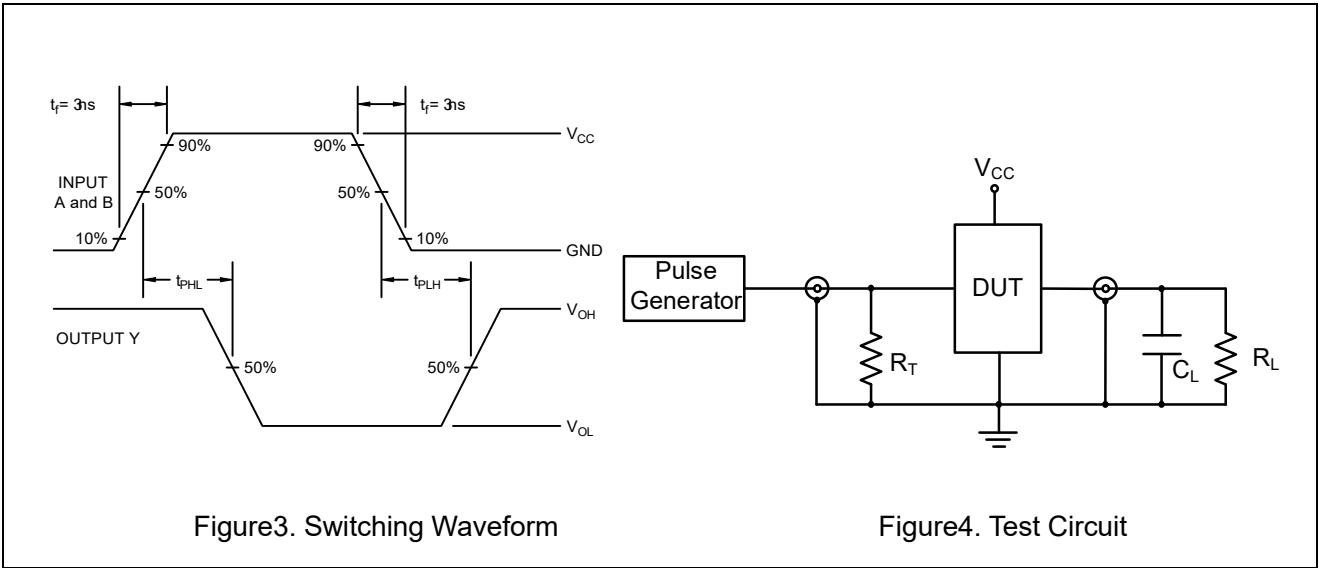
C_L = output load capacitance in pF;

V_{CC} = supply voltage in V;

N = number of inputs switching;

$\Sigma(C_L \times V_{CC}^2 \times f_o)$ = sum of outputs.

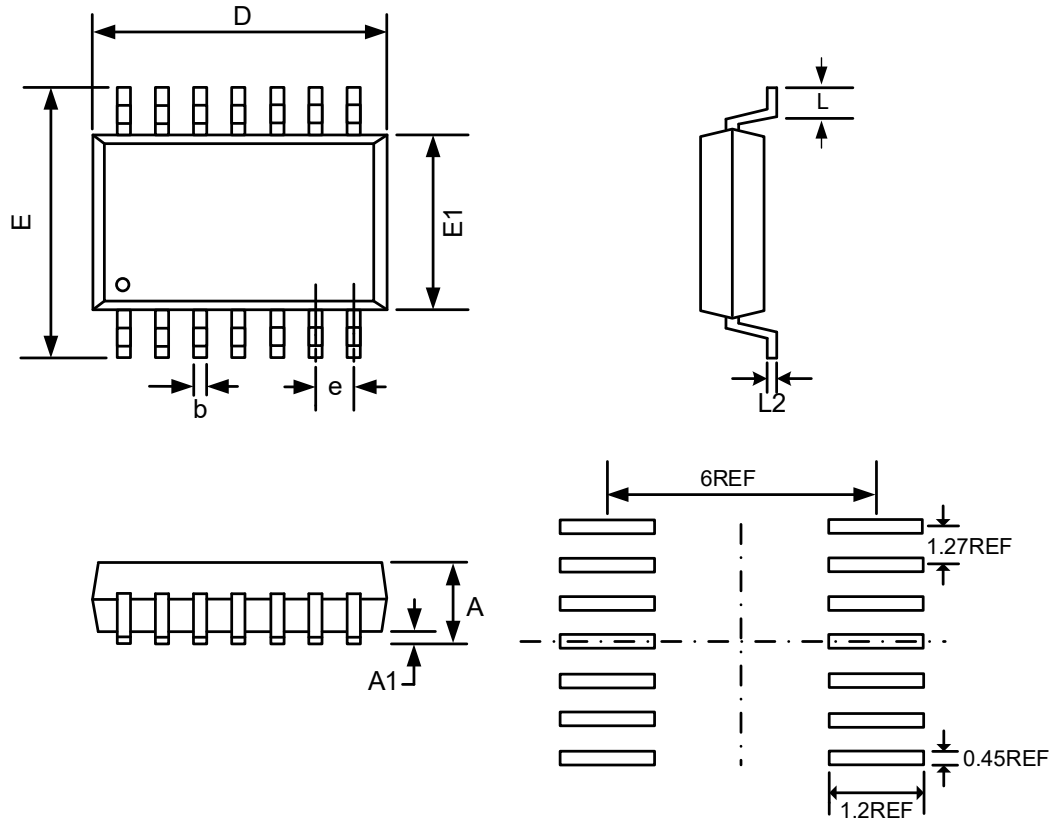
AC Test Circuit



ET74AHCT00

Package Dimension

SOP14 (3.9mm × 8.65mm)



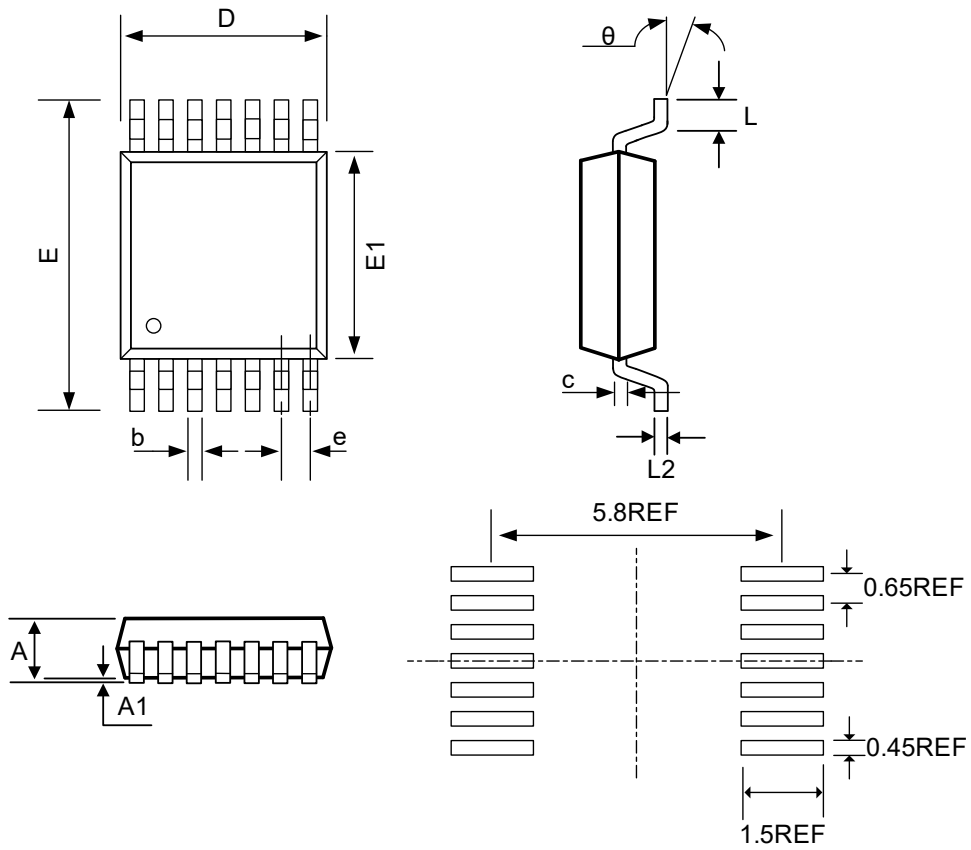
COMMON DIMENSIONS

(Unit: mm)

SYMBOL	MIN	MAX
A	--	1.75
A1	0.10	0.25
b	0.36	0.51
D	8.55	8.75
E	5.80	6.20
E1	3.80	4.00
e	1.22	1.32
L	0.45	0.75
L2	0.25 BSC	

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TSSOP14 (4.4mm × 5.0mm)



COMMON DIMENSIONS

(Unit: mm)

SYMBOL	MIN	MAX
A	--	1.20
A1	0.05	0.15
b	0.19	0.30
c	0.15 REF	
D	4.90	5.10
E	6.20	6.60
E1	4.30	4.50
e	0.65BSC	
L	0.50	0.72
L2	0.25 REF	
θ	0°	8°

ET74AHCT00

Marking Information

C00A
XXXXX

●

ET74AHCT00M
C00A = Part Number
XXXXX = Tracking Number

C00AV
XXXXX

●

ET74AHCT00V
C00AV = Part Number
XXXXX = Tracking Number

Revision History and Checking Table

Version	Date	Revision Item	Modifier	Function & Spec Checking	Package & Tape Checking
1.0	2026-03-29	Official Version	Wang anran	Yang xiaoxu	Liu jiaying