

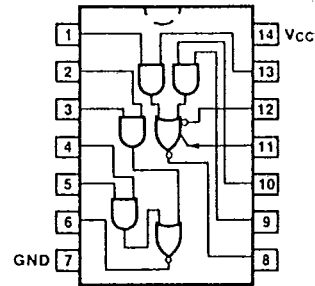
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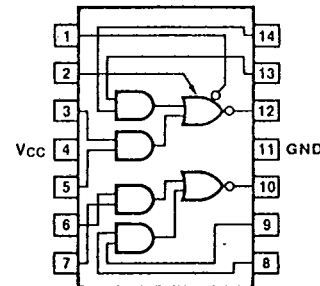
**54/7450**  
**54H/74H50**

EXPANDABLE DUAL 2-WIDE 2-INPUT  
AND-OR-INVERT GATE

CONNECTION DIAGRAMS  
PINOUT A



PINOUT B



ORDERING CODE: See Section 9

PKGS	PIN OUT	COMMERCIAL GRADE	MILITARY GRADE	PKG TYPE
		V <sub>CC</sub> = +5.0 V ±5%, T <sub>A</sub> = 0°C to +70°C	V <sub>CC</sub> = +5.0 V ±10%, T <sub>A</sub> = -55°C to +125°C	
Plastic DIP (P)	A	7450PC, 74H50PC		9A
Ceramic DIP (D)	A	7450DC, 74H50DC	5450DM, 54H50DM	6A
Flatpak (F)	B	7450FC, 74H50FC	5450FM, 54H50FM	3I

INPUT LOADING/FAN-OUT: See Section 3 for U.L. definitions

PINS	54/74 (U.L.) HIGH/LOW	54/74H (U.L.) HIGH/LOW
Inputs	1.0/1.0	1.25/1.25
Outputs	20/10	12.5/12.5

DC CHARACTERISTICS OVER OPERATING TEMPERATURE RANGE: Expander Pins Open

SYMBOL	PARAMETER	54/74		54/74H		UNITS	CONDITIONS
		Min	Max	Min	Max		
I <sub>CC</sub>	Power Supply Current	8.0		12.8		mA	V <sub>IN</sub> = Gnd
I <sub>CC</sub> L		14		24			V <sub>IN</sub> = Open

DC CHARACTERISTICS OVER OPERATING TEMPERATURE RANGE: Using Expander Pins

SYMBOL	PARAMETER		54/74		54/74H		UNITS	CONDITIONS	
			Min	Max	Min	Max			
V <sub>OH</sub>	Output HIGH Voltage	XM			2.4		V	I <sub>1</sub> = 320 μA I <sub>2</sub> = -320 μA I <sub>OH</sub> = -500 μA	
		XC			2.4				
V <sub>OH</sub>	Output HIGH Voltage	XM	2.4				V	I <sub>1</sub> = 0.15 mA I <sub>2</sub> = -0.15 mA I <sub>OH</sub> = -400 mA	
		XC	2.4						
V <sub>OL</sub>	Output LOW Voltage	XM			0.4		V	I <sub>1</sub> = 470 μA R <sub>1</sub> = 68 Ω I <sub>OL</sub> = 20 mA	
		XC			0.4				
V <sub>OL</sub>	Output LOW Voltage	XM	0.4				V	I <sub>1</sub> = 0.3 mA R <sub>1</sub> = 138 Ω I <sub>OL</sub> = 16 mA	
		XC	0.4						
V <sub>BE(Q)</sub>	Base-Emitter Voltage of Output Transistor Q	XM			1.0		V	I <sub>1</sub> = 700 μA I <sub>OL</sub> = 20 mA R <sub>1</sub> = 0 Ω	
		XC			1.0				
		XM	1.1						I <sub>OL</sub> = 16 mA R <sub>1</sub> = 0 Ω
		XC	1.0						
I <sub>INX</sub>	Expander-Node Input Current	XM			-5.85		mA	V <sub>X</sub> = 1.4 V, V <sub>CC</sub> = Min T <sub>A</sub> = Min	
		XC			-6.3				
I <sub>X</sub>	Expander Current	XM	2.9				mA	V <sub>1</sub> = 0.4 V, I <sub>OL</sub> = 16 mA V <sub>CC</sub> = Min, T <sub>A</sub> = Min	
		XC	3.1						

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AC CHARACTERISTICS: V<sub>CC</sub> = +5.0 V, T<sub>A</sub> = +25°C (See Section 3 for waveforms and load configurations)

SYMBOL	PARAMETER	54/74		54/74H		UNITS	CONDITIONS
		Min	Max	Min	Max		
t <sub>PLH</sub> t <sub>PHL</sub>	Propagation Delay	22	15	11	11	ns	Expander Pins Open Figs. 3-1, 3-4
t <sub>PLH</sub> t <sub>PHL</sub>	Propagation Delay			11*	7.4*	ns	C <sub>L</sub> = 25 pF R <sub>L</sub> = 280 Ω, C <sub>X</sub> = 15 pF

\*Typical Value

ADDED PROPAGATION DELAY TIME vs EXPANDER-NODE CAPACITANCE

