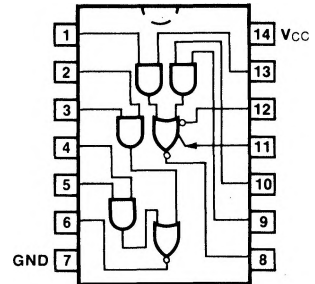


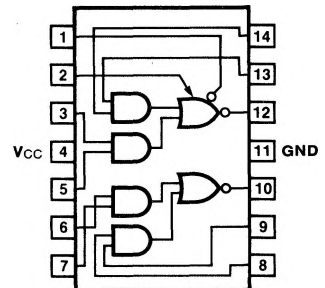
# 54/7450 54H/74H50

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
		$V_{CC} = +5.0\text{ V} \pm 5\%$ , $T_A = 0^\circ\text{C to } +70^\circ\text{C}$	$V_{CC} = +5.0\text{ V} \pm 10\%$ , $T_A = -55^\circ\text{C to } +125^\circ\text{C}$	
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			
$I_{CCH}$ $I_{CCL}$	Power Supply Current	8.0 14	12.8 24	mA	$V_{IN} = \text{Gnd}$ $V_{IN} = \text{Open}$	$V_{CC} = \text{Max}$

**DC CHARACTERISTICS OVER OPERATING TEMPERATURE RANGE: Using Expander Pins**

SYMBOL	PARAMETER		54/74		54/74H		UNITS	CONDITIONS	
			Min	Max	Min	Max			
VOH	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				
VOH	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						
VOL	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				
VOL	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						
VBE(Q)	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>1</sub> = 0.62 mA
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						

**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		11		ns	Expander Pins Open Figs. 3-1, 3-4	
			15		11				
t <sub>PLH</sub> t <sub>PHL</sub>	Propagation Delay				11*		ns	C <sub>L</sub> = 25 pF R <sub>L</sub> = 280 Ω, C <sub>X</sub> = 15 pF	
					7.4*				

\*Typical Value

**ADDED PROPAGATION DELAY TIME vs EXPANDER-NODE CAPACITANCE**

