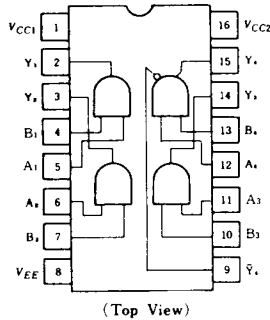


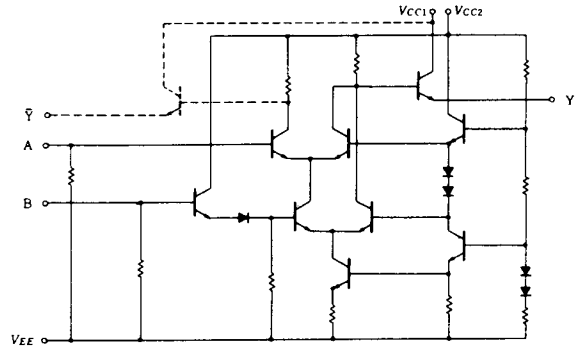
HD10104

Quadruple 2-input AND Gates

PIN ARRANGEMENT



CIRCUIT SCHEMATIC (1/4)



DC CHARACTERISTICS ($V_{EE} = -5.2V$, $T_a = -30 \sim +85^\circ C$)

Item	Symbol	Test Condition		min	typ	max	Unit
Supply Current	I_{EE}		25°C	—	28	35	mA
Input Current	I_{IH}	$V_{IH} = -0.810V$, B input = $-0.810V$	A input	25°C	—	265	μA
		$V_{IH} = -0.810V$	B input	25°C	—	220	
	I_{IL}	$V_{IL} = -1.850V$		25°C	0.5	—	μA
Output Voltage	V_{OH}	$V_{IH} = -0.890V$ or $V_{IL} = -1.890V$		-30°C	-1.060	—	V
		$V_{IH} = -0.810V$ or $V_{IL} = -1.850V$		25°C	-0.960	—	
		$V_{IH} = -0.700V$ or $V_{IL} = -1.825V$		85°C	-0.890	—	
	V_{OL}	$V_{IL} = -1.890V$ or $V_{IH} = -0.890V$		-30°C	-1.890	—	V
		$V_{IL} = -1.850V$ or $V_{IH} = -0.810V$		25°C	-1.850	—	
		$V_{IL} = -1.825V$ or $V_{IH} = -0.700V$		85°C	-1.825	—	
Output Threshold Voltage	V_{ONA}	$V_{IH} = -0.890V$, $V_{IHA} = -1.205V$ or $V_{ILA} = -1.500V$		-30°C	-1.080	—	V
		$V_{IH} = -0.810V$, $V_{IHA} = -1.105V$ or $V_{ILA} = -1.475V$		25°C	-0.980	—	
		$V_{IH} = -0.700V$, $V_{IHA} = -1.035V$ or $V_{ILA} = -1.440V$		85°C	-0.910	—	
	V_{OLA}	$V_{ILA} = -1.500V$ or $V_{IH} = -0.890V$, $V_{IHA} = -1.205V$		-30°C	—	—	V
		$V_{ILA} = -1.475V$ or $V_{IH} = -0.810V$, $V_{IHA} = -1.105V$		25°C	—	—	
		$V_{ILA} = -1.440V$ or $V_{IH} = -0.700V$, $V_{IHA} = -1.105V$		85°C	—	—	

■ AC CHARACTERISTICS ($V_{EE} = -3.2\text{V}$, $V_{CC} = +2.0\text{V}$, $T_a = -30 \sim +85^\circ\text{C}$)

AC CHARACTERISTICS (V _{CC} = 5.0V, V _{EE} = 0V, T _A = 25°C)								
Item	Symbol	Test Condition		min	typ	max	Unit	
Propagation Delay Time	t _{PLH}	A input	R _L = 50Ω	-30°C	1.0	—	4.3	ns
				25°C	1.0	2.2	4.0	
				85°C	1.0	—	4.2	
		B input		-30°C	1.0	—	4.3	
				25°C	1.0	2.7	4.0	
				85°C	1.0	—	4.2	
	t _{PHL}	A input		-30°C	1.0	—	4.3	ns
				25°C	1.0	2.2	4.0	
				85°C	1.0	—	4.2	
		B input		-30°C	1.0	—	4.3	
				25°C	1.0	2.7	4.0	
				85°C	1.0	—	4.2	
Rise/Fall Time	t _{TLH}	A, B input	-30°C	1.5	—	3.7	ns	
			25°C	1.5	2.0	3.5		
			85°C	1.5	—	3.6		
	t _{TNL}		-30°C	1.5	—	3.7	ns	
			25°C	1.5	2.0	3.5		
			85°C	1.5	—	3.6		

Note) Please refer to test circuit and waveform of common item.