4-BIT MAGNITUDE COMPARATORS

Logic Diagram (SN74)
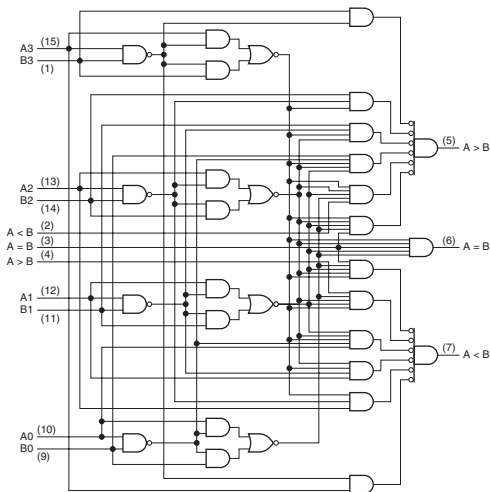
FUNCTION TABLE (SN74)

COMPARING INPUTS				CASCADING INPUTS			OUTPUTS		
A3, B3	A2, B2	A1, B1	A0, B0	A>B	A<B	A=B	A>B	A<B	A=B
A3>B3	X	X	X	X	X	X	H	L	L
A3<B3	X	X	X	X	X	X	L	H	L
A3=B3	A2>B2	X	X	X	X	X	H	L	L
A3=B3	A2<B2	X	X	X	X	X	L	H	L
A3=B3	A2=B2	A1>B1	X	X	X	X	H	L	L
A3=B3	A2=B2	A1<B1	X	X	X	X	L	H	L
A3=B3	A2=B2	A1=B1	A0>B0	X	X	X	H	L	L
A3=B3	A2=B2	A1=B1	A0<B0	X	X	X	L	H	L
A3=B3	A2=B2	A1=B1	A0=B0	H	L	L	H	L	L
A3=B3	A2=B2	A1=B1	A0=B0	L	H	L	L	H	L
A3=B3	A2=B2	A1=B1	A0=B0	H	H	L	L	L	L
A3=B3	A2=B2	A1=B1	A0=B0	L	L	L	H	H	L
A3=B3	A2=B2	A1=B1	A0=B0	X	X	H	L	L	H

ELECTRICAL CHARACTERISTICS AND RECOMMENDED OPERATING CONDITIONS

PARAMETER	MAX or MIN	TTL	LS	S	SN74 HC	CD74 HC	CD74 HCT	UNIT
I_{CC}	MAX	88	20	115	0.08	0.16	0.16	mA
I_{OH}	MAX	-0.4	-0.4	-1	-4	-4	-4	mA
I_{OL}	MAX	16	8	20	4	4	4	mA

SWITCHING CHARACTERISTICS

PARAMETER	INPUT	OUTPUT	Number of Gate Levels	MAX or MIN	TTL	LS	S	SN74 HC	CD74 HC	CD74 HCT
t_{PLH}	Any A or B data input	A < B, A > B	3	MAX	26	36	16	58	59	56
		A = B	4	MAX	35	45	18	50	53	60
t_{PHL}	Any A or B data input	A < B, A > B	3	MAX	30	30	16.5	58	59	56
		A = B	4	MAX	30	45	16.5	50	53	60
t_{PLH}	A < B, A = B	A > B	1	MAX	11	22	7.5	44	42	45
t_{PHL}	A < B, A = B	A > B	1		17	17	8.5	44	42	45
t_{PLH}	A = B	A = B	2	MAX	20	20	10.5	37	-	-
t_{PHL}	A = B	A = B	2		17	26	7.5	37	-	-
t_{PLH}	A > B, A = B	A < B	1	MAX	11	22	7.5	44	42	45
t_{PHL}	A > B, A = B	A < B	1		17	17	8.5	44	42	45

UNIT: ns