



**Absolute Maximum Ratings**

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$V_{CC}$	DC Supply voltage		-0.5	+7	V
$I_{IK} I_{OK}$	DC input or output diode current	for $V_I < -0.5$ or $V_I > V_{CC} + 0.5V$		20	mA
$I_O$	DC output source or sink current	for $-0.5V < V_O < V_{CC} + 0.5V$		35	mA
$I_{CC}$	DC $V_{CC}$ or GND current			70	mA
$T_{stg}$	Storage temperature range		-65	150	°C
$P_D$	Power dissipation per package	above +70°C. derate linearly with 8mW/K		500	mW
$T_L$	Lead temperature	At distance 1/16 ± 1/32 in. from case for 60 sec(CERAMIC) 10 sec(PLASTIC)		300 260	°C

**Recommended Operating Conditions**

CHARACTERISTIC	LIMITS		UNITS
	MIN.	MAX.	
Supply-Voltage Range $V_{CC}$ : GD54/74HC Types GD54/74HCT Types	2 4.5	6 5.5	V
DC Input or Output Voltage $V_I, V_O$	0	$V_{CC}$	V
Operating Temperature $T_A$ : GD74 Types GD54 Types	-40 -55	+85 +125	°C
Input Rise and Fall times $t_r, t_f$ : GD54/74HC Types at 2V at 4.5V at 6V GD54/74HCT Types at 4.5V		1000 500 400 500	ns

**Logic Diagram**

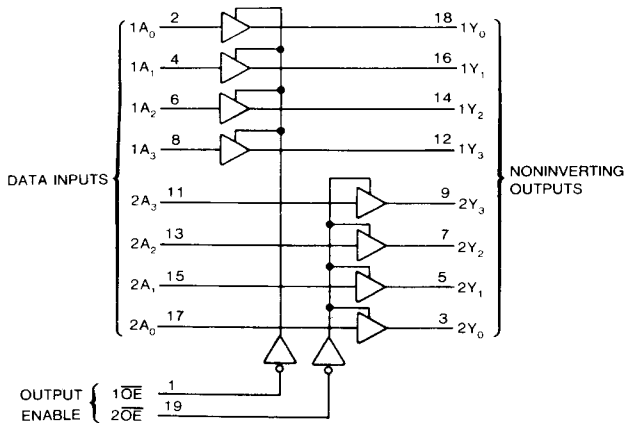


Fig. 2 Logic diagram

DC Electrical Characteristics for HC

SYMBOL	PARAMETER	TEST CONDITION	V <sub>CC</sub> (V)	T <sub>A</sub> =25°C			GD74HC244		GD54HC244		UNIT
				MIN.	TYP.	MAX.	MIN.	MAX.	MIN.	MAX.	
V <sub>IH</sub>	HIGH level input Voltage		2.0 4.5 6.0	1.5 3.15 4.2			1.5 3.15 4.2		1.5 3.15 4.2	V	
V <sub>IL</sub>	LOW level input voltage		2.0 4.5 6.0			0.3 0.9 1.2		0.3 0.9 1.2	0.3 0.9 1.2	V	
V <sub>OH</sub>	HIGH level output voltage	V <sub>IN</sub> =V <sub>IH</sub> or V <sub>IL</sub>	I <sub>OH</sub> =-20μA	2.0 4.5 6.0	1.9 4.4 5.9	2.0 4.5 6.0		1.9 4.4 5.9	1.9 4.4 5.9	V	
			I <sub>OH</sub> =-6mA I <sub>OH</sub> =-7.8mA	4.5 6.0	3.98 5.48	4.3 5.2		3.84 5.34	3.7 5.2		
V <sub>OL</sub>	LOW level output voltage	V <sub>IN</sub> =V <sub>IH</sub> or V <sub>IL</sub>	I <sub>OL</sub> =20μA	2.0 4.5 6.0			0.1 0.1 0.1		0.1 0.1 0.1	V	
			I <sub>OL</sub> =6mA I <sub>OL</sub> =7.8mA	4.5 6.0		0.17 0.15	0.26 0.26		0.33 0.33		0.4 0.4
I <sub>IN</sub>	Input leakage Current	V <sub>IN</sub> =V <sub>CC</sub> or GND	6.0			0.1		1.0	1.0	μA	
I <sub>OZ</sub>	Three-State leakage current	V <sub>IN</sub> =V <sub>IH</sub> or V <sub>IL</sub> V <sub>O</sub> =V <sub>CC</sub> or GND	6.0		0.01	0.5		5.0	10.0	μA	
I <sub>CC</sub>	Quiescent Supply Current	V <sub>IN</sub> =V <sub>CC</sub> or GND I <sub>out</sub> =0μA	6.0			8		80	160	μA	

DC Electrical Characteristics for HCT

SYMBOL	PARAMETER	TEST CONDITION	V <sub>CC</sub> (V)	T <sub>A</sub> =25°C			GD74HCT244		GD54HCT244		UNIT
				MIN.	TYP.	MAX.	MIN.	MAX.	MIN.	MAX.	
V <sub>IH</sub>	HIGH level input Voltage		4.5 to 5.0	2.0			2.0		2.0	V	
V <sub>IL</sub>	LOW level input voltage		4.5 to 5.5			0.8		0.8	0.8	V	
V <sub>OH</sub>	HIGH level output voltage	V <sub>IN</sub> =V <sub>IH</sub> or V <sub>IL</sub>	I <sub>OH</sub> =-20μA	4.5	4.4	4.5		4.4	4.4	V	
			I <sub>OH</sub> =-6mA	4.5	3.98	4.3		3.84	3.7		
V <sub>OL</sub>	LOW level output voltage	V <sub>IN</sub> =V <sub>IH</sub> or V <sub>IL</sub>	I <sub>OL</sub> =20μA	4.5			0.1		0.1	V	
			I <sub>OL</sub> =6mA	4.5		0.17	0.26		0.33		0.4
I <sub>IN</sub>	Input leakage Current	V <sub>IN</sub> =V <sub>CC</sub> or GND	5.5			0.1		1.0	1.0	μA	
I <sub>OZ</sub>	Three-State leakage current	V <sub>IN</sub> =V <sub>IH</sub> or V <sub>IL</sub> V <sub>O</sub> =V <sub>CC</sub> or GND	5.5		0.01	0.5		5.0	10.0	μA	
I <sub>CC</sub>	Quiescent Supply Current	V <sub>IN</sub> =V <sub>CC</sub> or GND I <sub>out</sub> =0μA	5.5			8		80	160	μA	

AC Characteristics for HC:  $t_r=t_f=6ns$   $C_L=50$  pF

SYMBOL	PARAMETER	V <sub>CC</sub> (V)	T <sub>A</sub> =25°C			GD74HC244		GD54HC244		UNIT
			MIN.	TYP.	MAX.	MIN.	MAX.	MIN.	MAX.	
$t_{PLH}$ / $t_{PHL}$	Propagation Delay Time $nA_n$ to $nY_n$	2.0		30	100		120		140	ns
		4.5		9	18		24		28	
		6.0		8	16		20		25	
$t_{PZH}$ / $t_{PZL}$	3-state Output Enable Time $n\overline{OE}$ to $nY_n$	2.0		35	140		180		210	ns
		4.5		10	28		36		42	
		6.0		9	26		32		36	
$t_{PLZ}$ / $t_{PHZ}$	3-state Output Disable Time $n\overline{OE}$ to $nY_n$	2.0		35	140		180		210	ns
		4.5		10	28		36		42	
		6.0		9	26		32		36	
$t_{TLH}$ / $t_{THL}$	Output Transition Time	2.0		15	60		75		90	ns
		4.5		6	12		15		18	
		6.0		5	10		13		15	

AC Characteristics for HCT:  $t_r=t_f=6ns$   $C_L=50$  pF

SYMBOL	PARAMETER	V <sub>CC</sub> (V)	T <sub>A</sub> =25°C			GD74HCT244		GD54HCT244		UNIT
			MIN.	TYP.	MAX.	MIN.	MAX.	MIN.	MAX.	
$t_{max}$	Propagation Delay Time $nA_n$ to $nY_n$	4.5		12	22		26		30	ns
$t_{PLH}$ / $t_{PHL}$	Propagation Delay Time $n\overline{OE}$ to $nY_n$	4.5		18	30		38		45	ns
		4.5		15	25		32		38	ns
$t_{TLH}$ / $t_{THL}$	Output Transition Time	4.5		7	12		15		18	ns
		4.5		7	12		15		18	ns

AC Waveforms

