

Quad 2-input EXCLUSIVE-OR gate

74LV86

FEATURES

- Optimized for Low Voltage applications: 1.0 to 3.6 V
- Accepts TTL input levels between $V_{CC} = 2.7$ V and $V_{CC} = 3.6$ V
- Typical V_{OLP} (output ground bounce) < 0.8 V at $V_{CC} = 3.3$ V, $T_{amb} = 25$ °C.
- Typical V_{OHV} (output V_{OH} undershoot) > 2 V at $V_{CC} = 3.3$ V, $T_{amb} = 25$ °C.
- Output capability: standard
- I_{CC} category: SSI

DESCRIPTION

The 74LV86 a low-voltage Si-gate CMOS device and is pin and function compatible with 74HC/HCT86.

The 74LV86 provides the 2-input EXCLUSIVE-OR function.

FUNCTION TABLE

INPUTS		OUTPUTS
nA	nB	nY
L	L	L
L	H	H
H	L	H
H	H	L

H = HIGH voltage level

L = LOW voltage level

QUICK REFERENCE DATA

GND = 0 V; $T_{amb} = 25$ °C; $t_r = t_f \leq 2.5$ ns

SYMBOL	PARAMETER	CONDITIONS	TYPICAL	UNIT
t_{PHL}/t_{PLH}	propagation delay nA, nB to nY	$C_L = 15$ pF $V_{CC} = 3.3$ V	11	ns
C_i	input capacitance		3.5	pF
C_{PD}	power dissipation capacitance per gate	notes 1 and 2	30	pF

Notes to the quick reference data

1. C_{PD} is used to determine the dynamic power dissipation (P_D in μ W)
 $P_D = C_{PD} \times V_{CC}^2 \times f_i + \Sigma (C_L \times V_{CC}^2 \times f_o)$ where:
 f_i = input frequency in MHz; C_L = output load capacity in pF;
 f_o = output frequency in MHz; V_{CC} = supply voltage in V;
 $\Sigma (C_L \times V_{CC}^2 \times f_o)$ = sum of the outputs.
2. The condition is $V_i = \text{GND to } V_{CC}$

ORDERING AND PACKAGE INFORMATION

TYPE NUMBER	PACKAGES			
	PINS	PACKAGE	MATERIAL	CODE
74LV86N	14	DIL	plastic	DIL14/SOT27
74LV86D	14	SO	plastic	SO14/SOT108A
74LV86DB	14	SSOP	plastic	SSOP14/SOT337
74LV86PW	14	TSSOP	plastic	TSSOP14/SOT402

PINNING

PIN NO.	SYMBOL	NAME AND FUNCTION
1, 4, 9, 12	1A to 4A	data inputs
2, 5, 10, 13	1B to 4B	data inputs
3, 6, 8, 11	1Y to 4Y	data outputs
7	GND	ground (0 V)
14	V_{CC}	positive supply voltage

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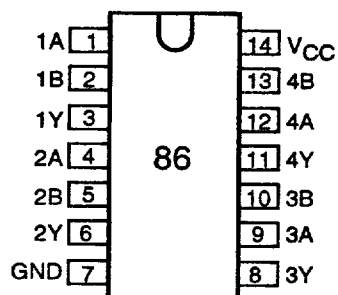


Fig.1 Pin configuration.

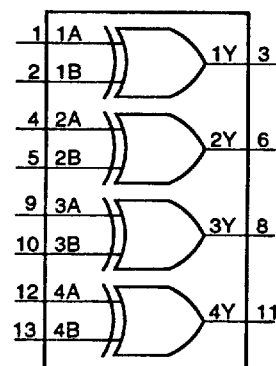


Fig.2 Logic symbol.

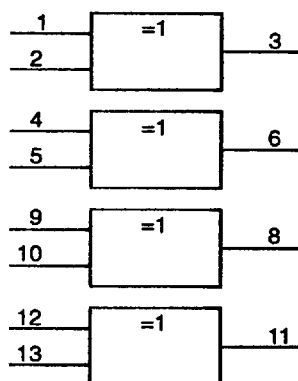


Fig.3 IEC Logic symbol.

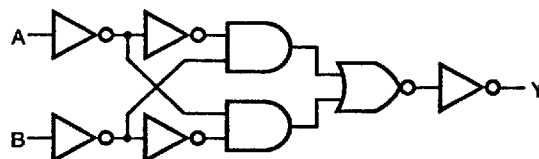


Fig.4 Logic diagram (one gate).

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DC CHARACTERISTICS FOR 74LV86

For the DC characteristics see chapter "LV family characteristics", section "Family specifications".

Output capability: standard

 I_{CC} category: SSI

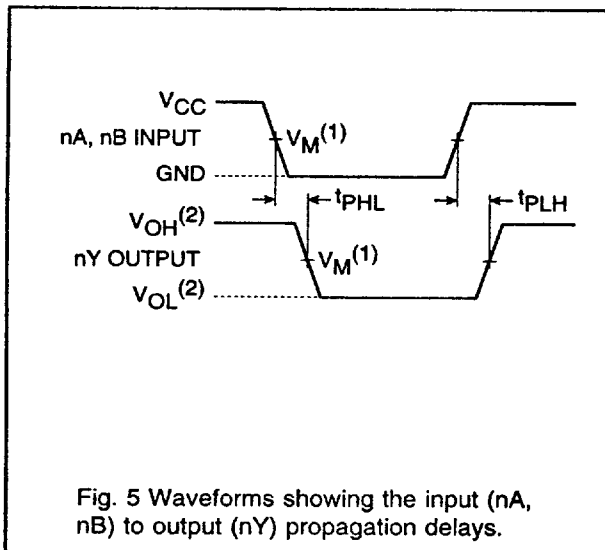
AC CHARACTERISTICS FOR 74LV86

GND = 0 V; $t_r = t_f \leq 2.5$ ns; $C_L = 50$ pF

SYMBOL	PARAMETER	T _{amb} (°C)					UNIT	TEST CONDITIONS	
		-40 to +85			-40 to +125			V _{cc} (V)	WAVEFORMS
		MIN.	TYP.	MAX.	MIN.	MAX.			
t _{PHL} /t _{PLH}	propagation delay nA, nB to nY	-	70	-	-	-	ns	1.2	Fig.5
		-	24	44	-	54			
		-	18	33	-	40			
		-	13*	26	-	32			
								3.0 to 3.6	

Notes: All typical values are measured at $T_{amb} = 25$ °C.* Typical values are measured at $V_{CC} = 3.3$ V.

AC WAVEFORMS



- Notes: (1) $V_M = 0.5 \cdot V_{CC}$ at $V_{CC} < 2.7$ V
 $V_M = 1.5$ V at $V_{CC} \geq 2.7$ V
 (2) V_{OL} and V_{OH} are the typical output voltage drop that occur with the output load.