Digital circuit design notes

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[1]The notes are from the following books [1, 2]. Not intended for distribution outside the class.

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Chapter 1

Implementation

1.1 Buy gates

and Flat Packages, and Plastic and Ceramic DIPs

- **Dependable Texas Instruments Quality and Reliability**

description

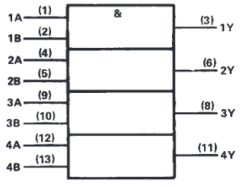
These devices contain four independent 2-input AND gates.

The SN5408, SN54LS08, and SN54S08 are characterized for operation over the full military temperature range of −55°C to 125°C. The SN7408, SN74LS08 and SN74S08 are characterized for operation from 0° to 70°C.

FUNCTION TABLE (each gate)

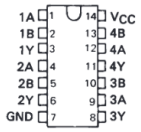
INPUTS		OUTPUT
A	B	Y
H	H	H
L	X	L
X	L	L

logic symbol†

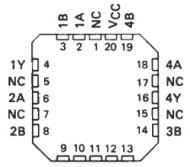


† This symbol is in accordance with ANSI/IEEE Std 91-1984 and IEC Publication 617-12.
Pin numbers shown are for D, J, N, and W packages.

SN74LS08, SN74S08 . . . D, J OR N PACKAGE
(TOP VIEW)

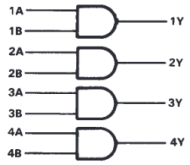


SN54LS08, SN54S08 . . . FK PACKAGE
(TOP VIEW)

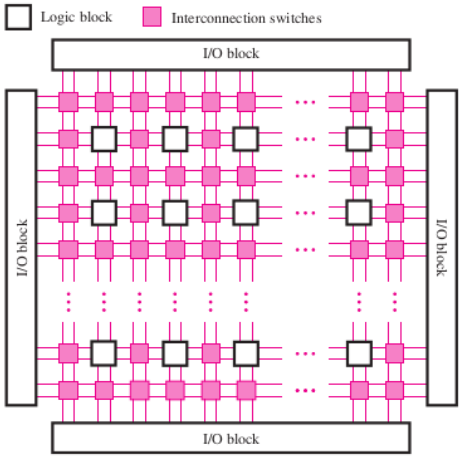


NC—No internal connection

logic diagram (positive logic)



1.2 FPGA [2, Section B.6.5]



(a) General structure of an FPGA

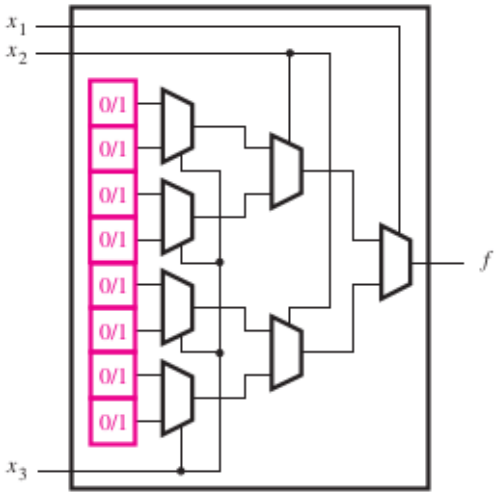


Figure B.37 A three-input LUT.

Bibliography

[1] Sarah L Harris and David Harris. *Digital design and computer architecture*. Morgan Kaufmann, 2022.

[2] Brown Stephen and Vranesic Zvonko. *Fundamentals of digital Logic with Verilog design*. McGraw Hill, 2022.