

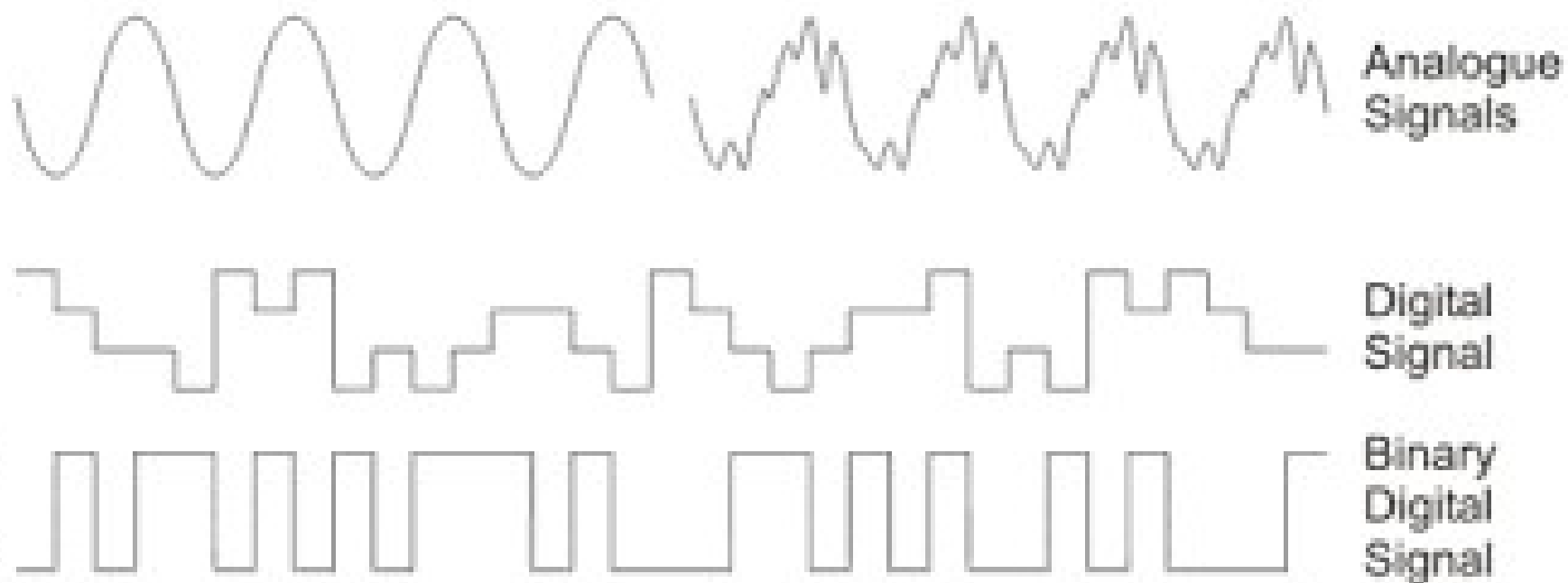
Portas lógicas

Eduardo Furlan Miranda

Baseado em: Tangon, LG; Santos, RC.
Arquitetura e organização de computadores.
EDE, 2016. ISBN 978-85-8482-382-6.

Portas lógicas

- Elementos e/ou componentes básicos da eletrônica digital
 - Ex.: microcontroladores, processadores, circuitos integrados
- Sistema binário, níveis lógicos, tensão

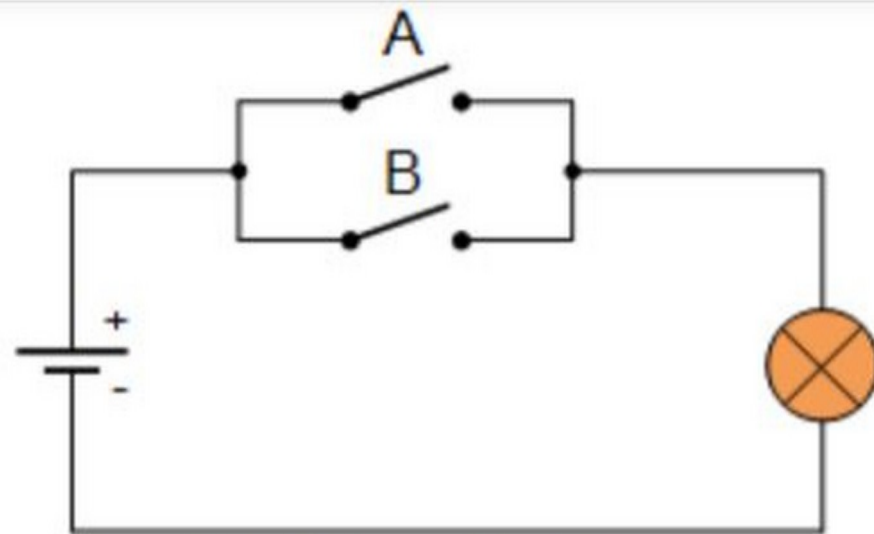
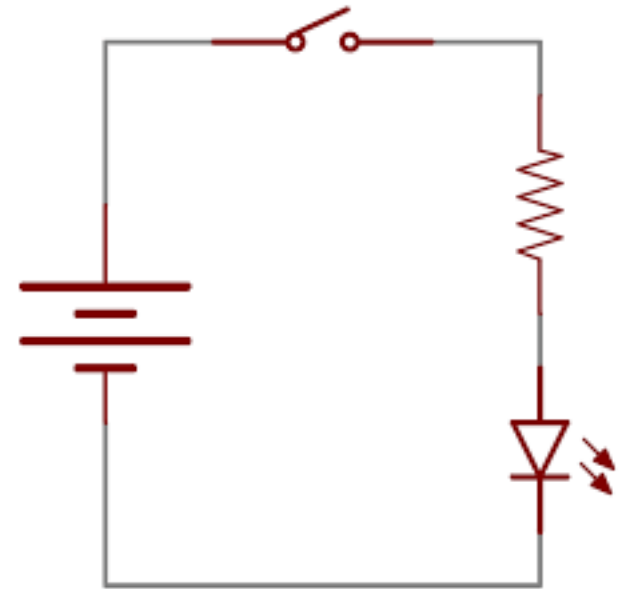


Simbologia



- Representação da entrada, saída, etc.
- Bloco lógico: simbologia da junção entre as entradas e saídas lógicas
- Entradas assumem valores 0 ou 1
- Tabela-verdade pode ser usada

Portas

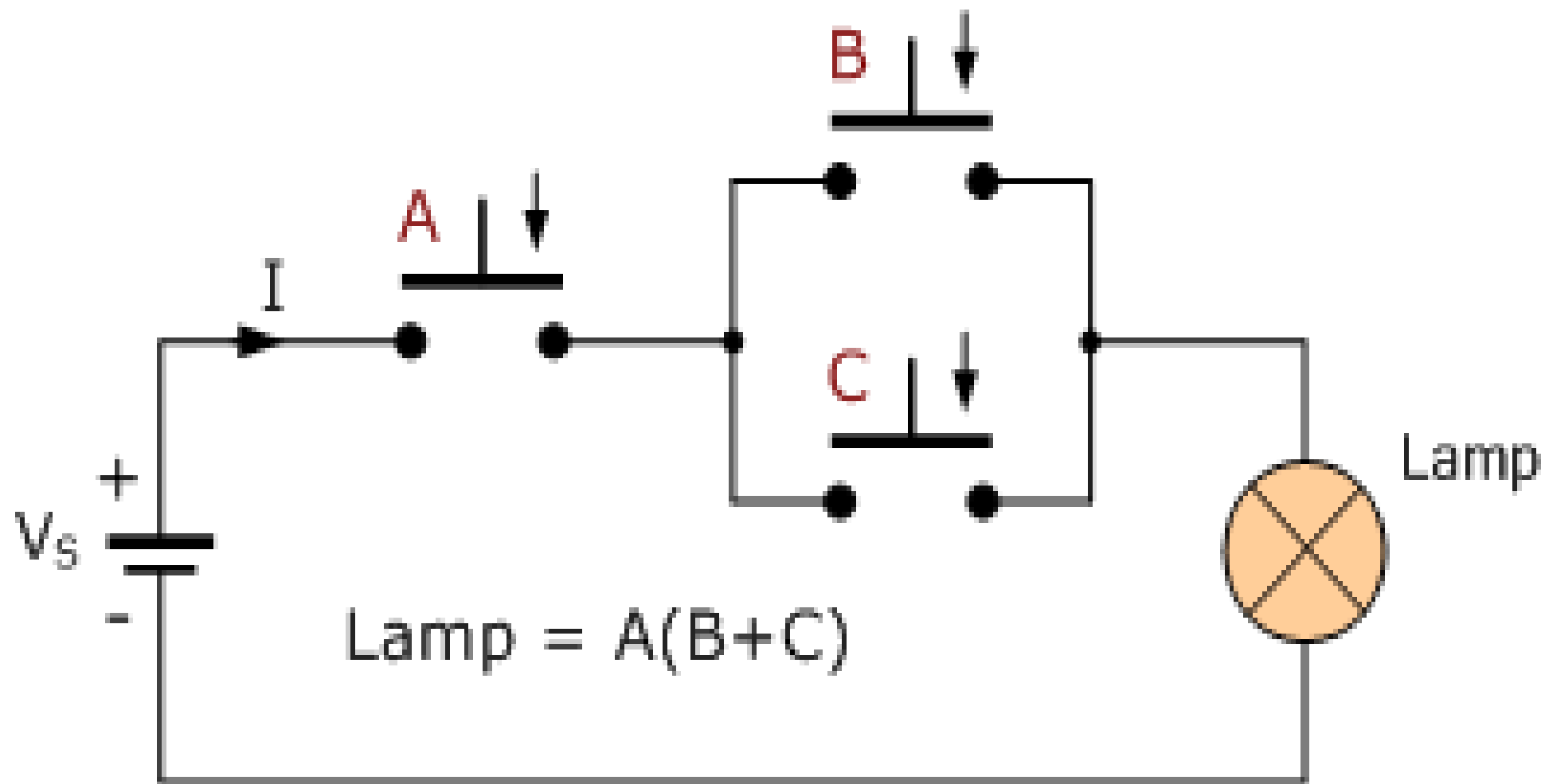


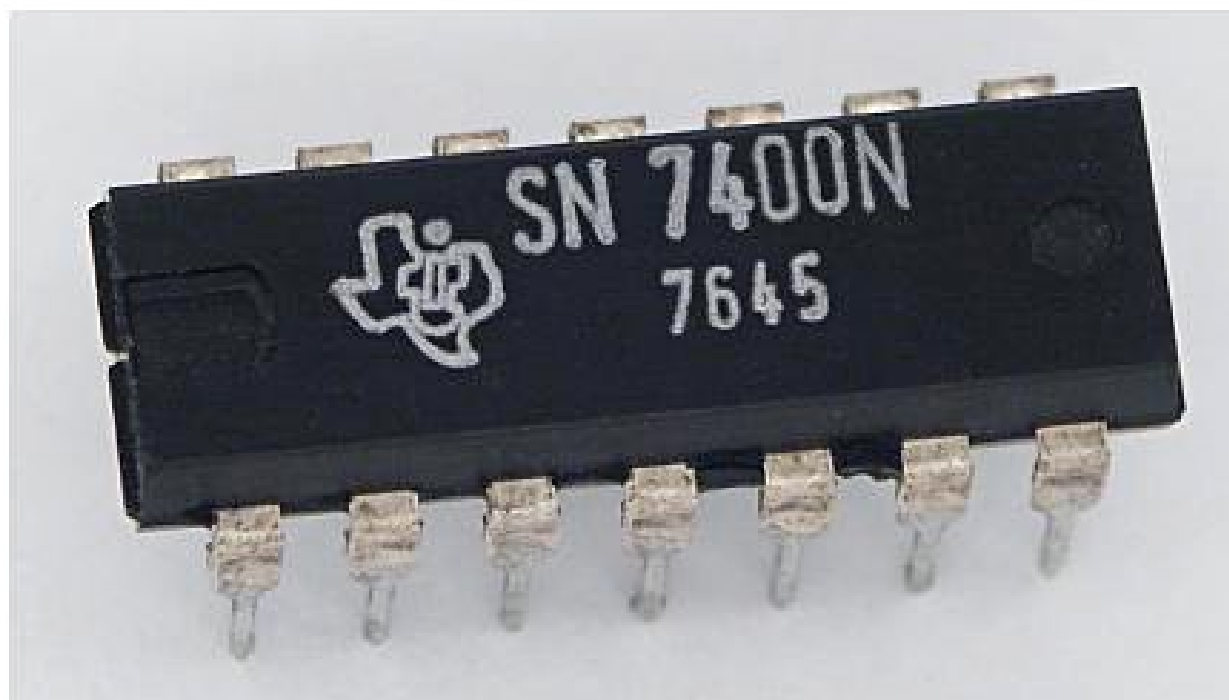
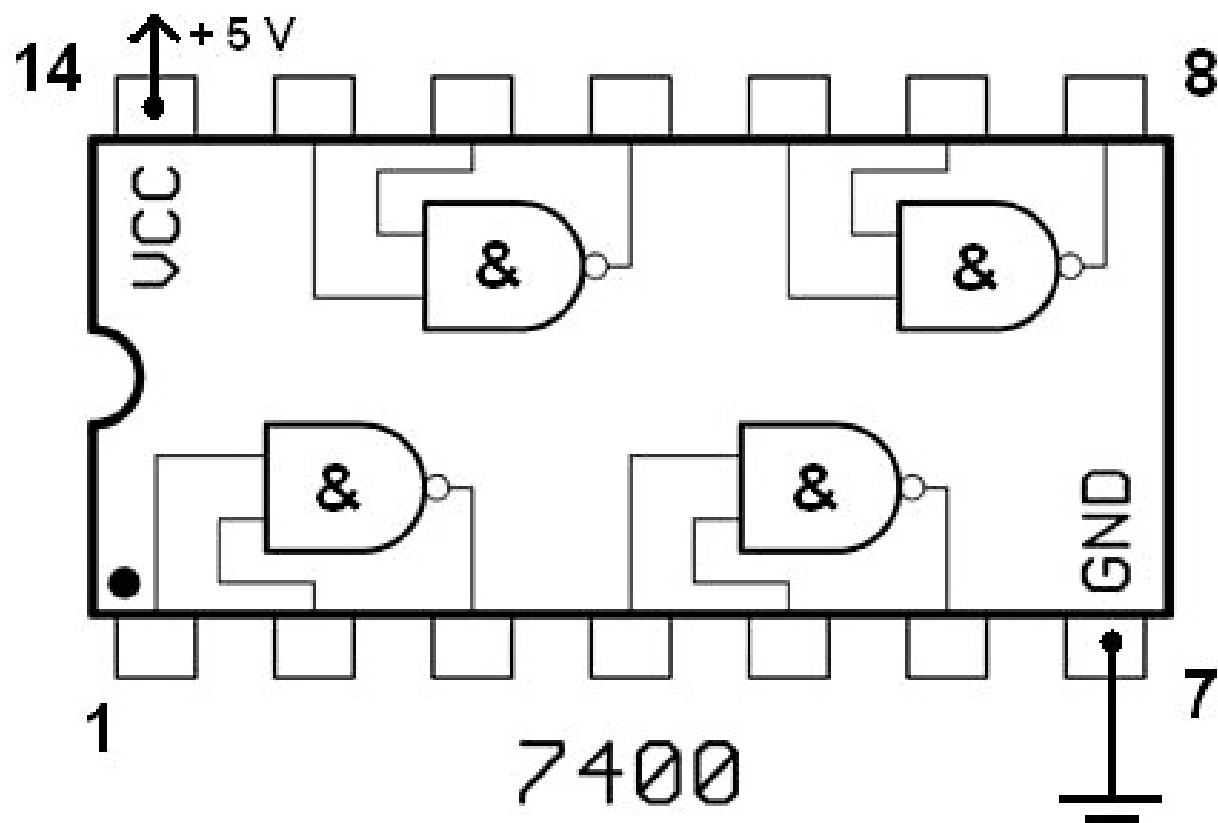
Lamp - ON = "1"
Lamp - OFF = "0"

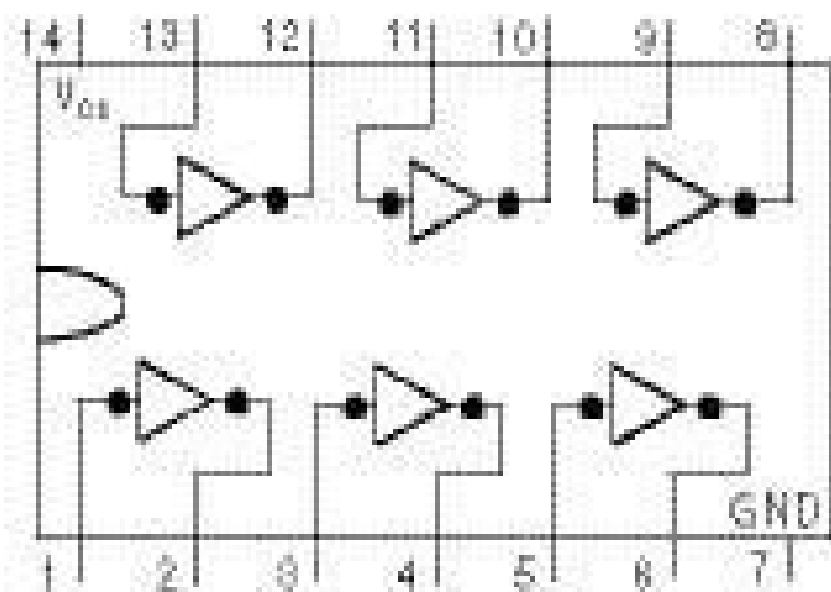
Switch A - Open = "0", Closed = "1"

Switch B - Open = "0", Closed = "1"

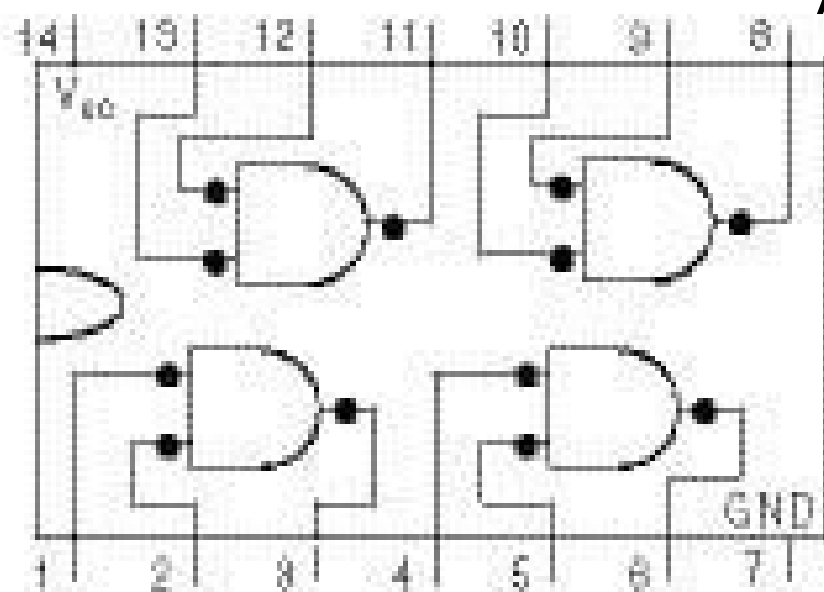
AND e OR



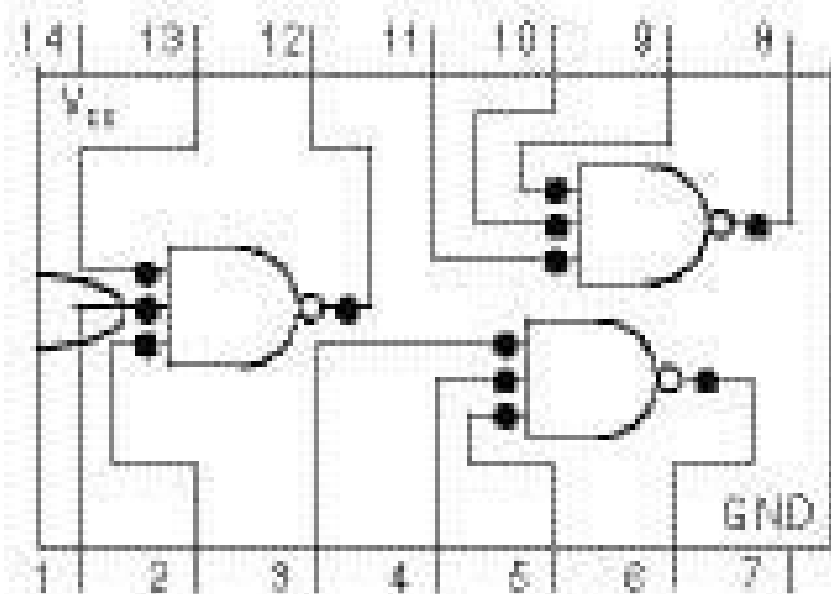




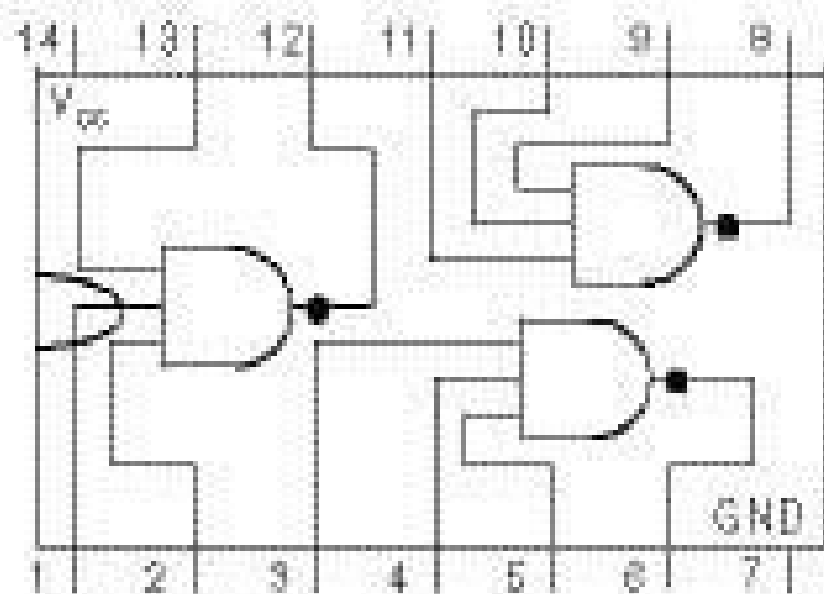
7407*7417



7408/7409*



7410/7412*



7411/7415*



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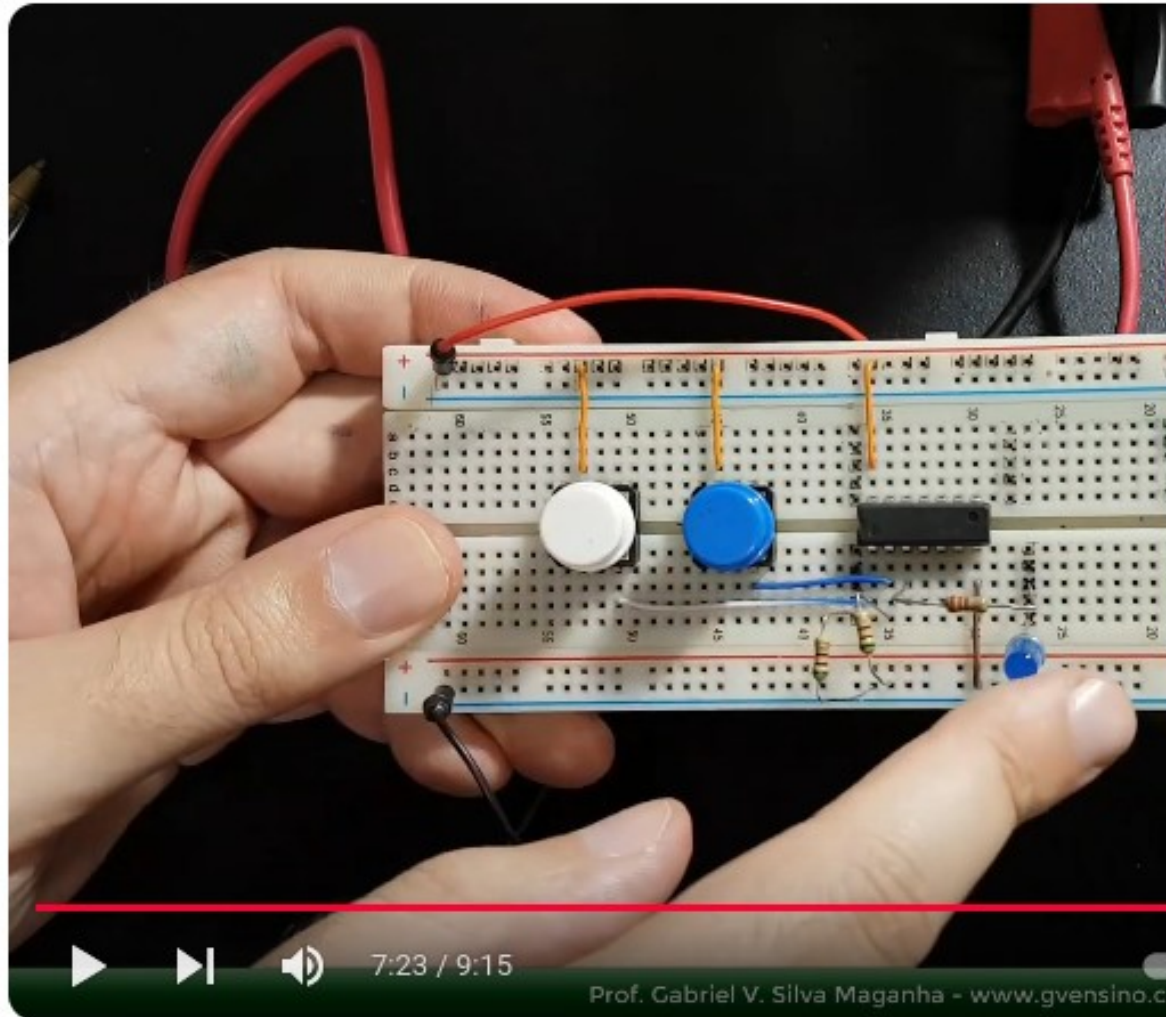


Tabela-Verdade E

A	B	S
0	0	0
0	1	0
1	0	0
1	1	1

7:23 / 9:15

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Portas Lógicas E e OU na prática



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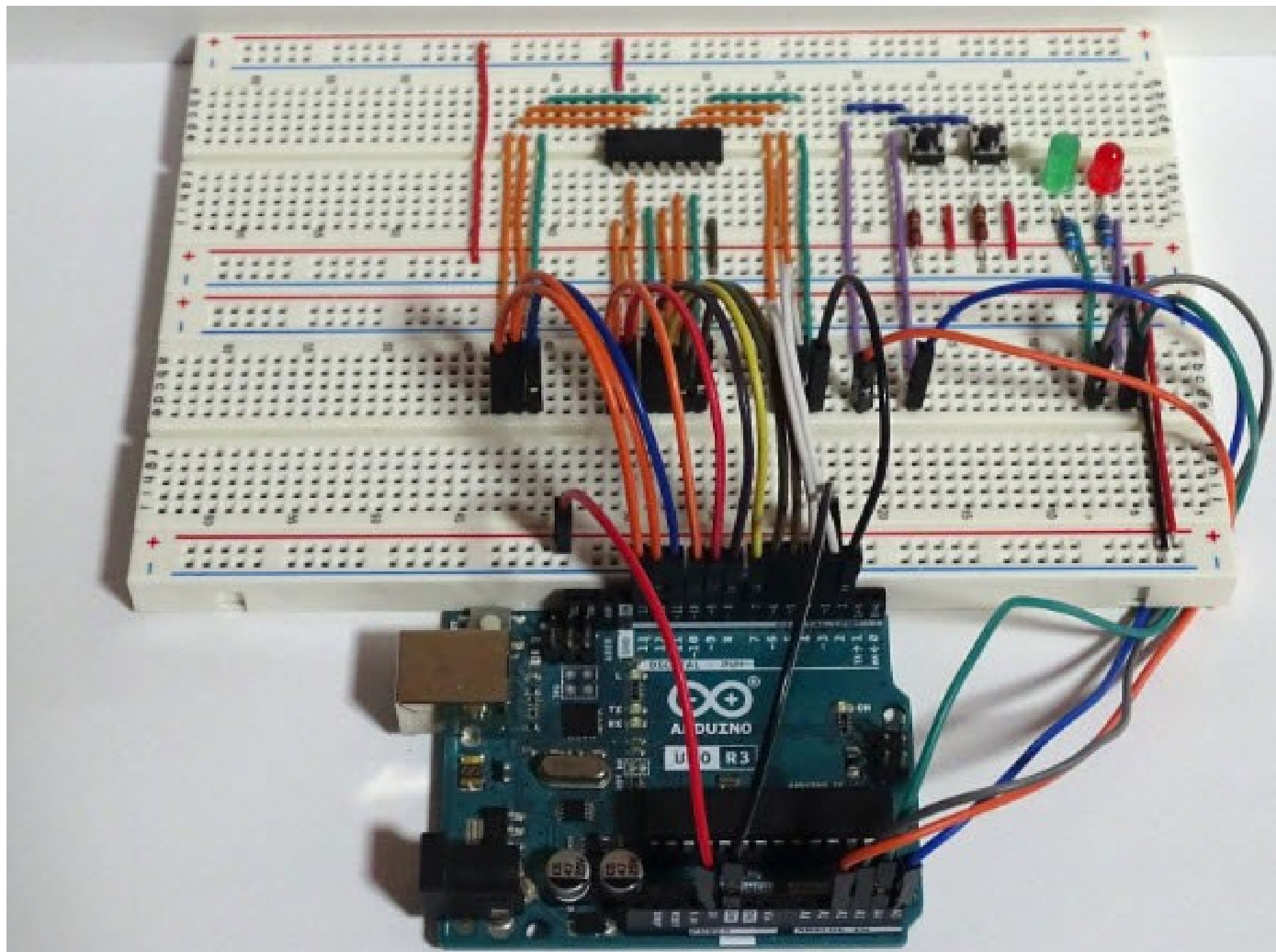


3.6K



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SIM1

ARDUINO

SIMULINO

```
programa14_OU | Arduino 1.8.1
Arquivo Editar Sketch Ferramentas Ajuda

programa14_OU.g
11 pinMode(botaol, INPUT_PULLUP);
12
13 pinMode(led, OUTPUT);
14 pinMode(buzzer, OUTPUT);
15
16 }
17
18
19 void loop() {
20
21   if (!digitalRead(botaol) || !digitalRead(botao2) || !digitalRead(botao3) ) {
22     digitalWrite(led, HIGH);
23   } else {
24     digitalWrite(led, LOW);
25   }
26
27
28 }
```

Compilação terminada.

C:\Program Files (x86)\Arduino\hardware\tools\avr\bin\avr-objcopy -O ihex -j .eep
"C:\Program Files (x86)\Arduino\hardware\tools\avr\bin\avr-objcopy" -O ihex -R .eep
O sketch usa 952 bytes (2%) de espaço de armazenamento para programas. O máximo são
Variáveis globais usam 9 bytes (0%) de memória dinâmica, deixando 2039 bytes para v

10:10 / 11:36

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ARDUÍNO #28: Lógica OU no Arduino



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C/C++

		Operador	Tipo
Operador unário			
		++, --	Incremento/Decremento
Operador binário			
		+, -, *, /, %	Aritméticos
		<, <=, >, >=, ==, !=	Relacionais
		&&, , !	Lógicos
		&, , <<, >>, ~, ^	Bitwise
		=, +=, -=, *=, /=, %=	Atribuição
Operador ternário			
		?:	Condicional



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Tabela-Verdade E

A	B	S
0	0	0
0	1	0
1	0	0
1	1	1

7:23 / 9:15 Prof. Gabriel V. Silva Maganha - www.gvensino.com.br

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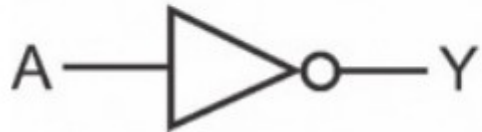


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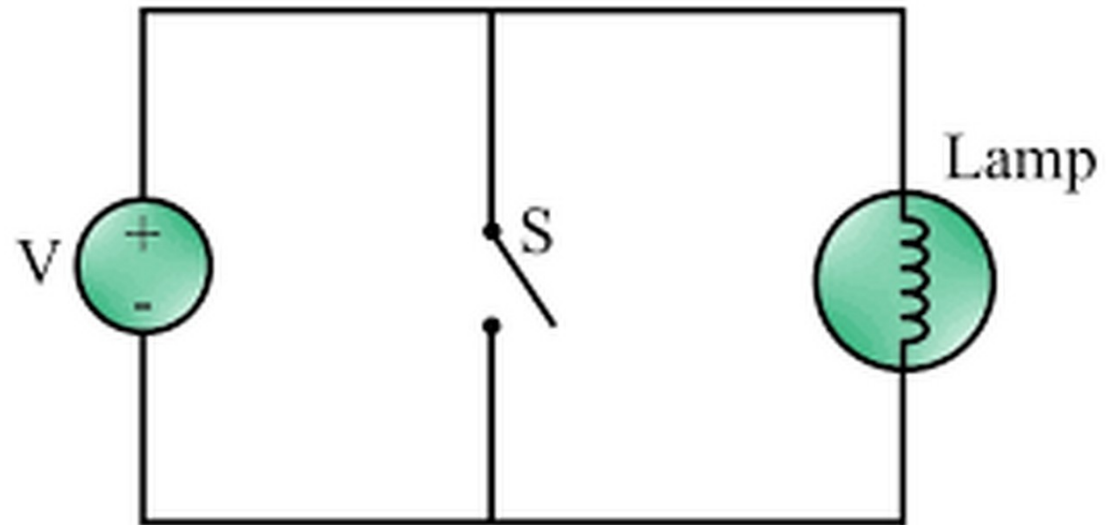
Inversor (negação)

Símbolo



Expressão da Função

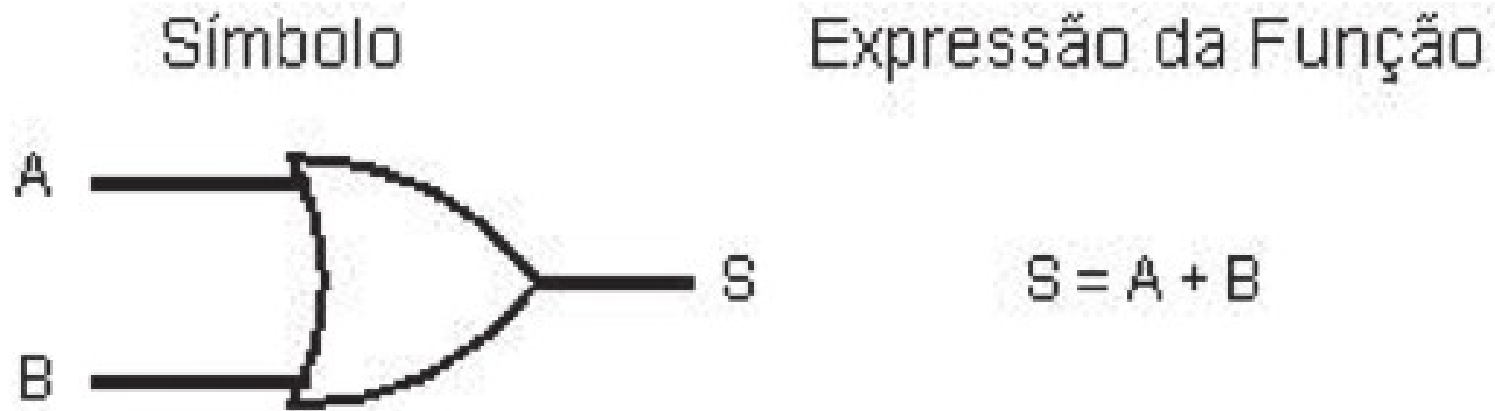
$$S = \bar{A}$$



- Tabela-verdade NOT

A		S
0		1
1		0

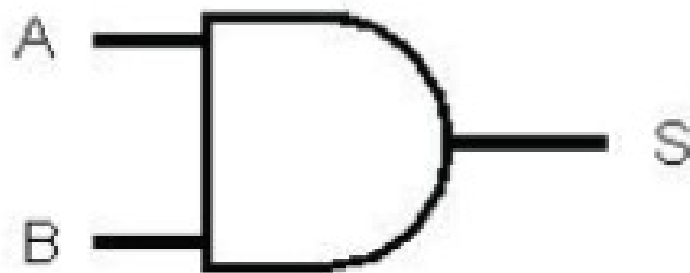
Porta OR



A		S
A	B	S
0	0	0
0	1	1
1	0	1
1	1	1

Porta AND

Símbolo



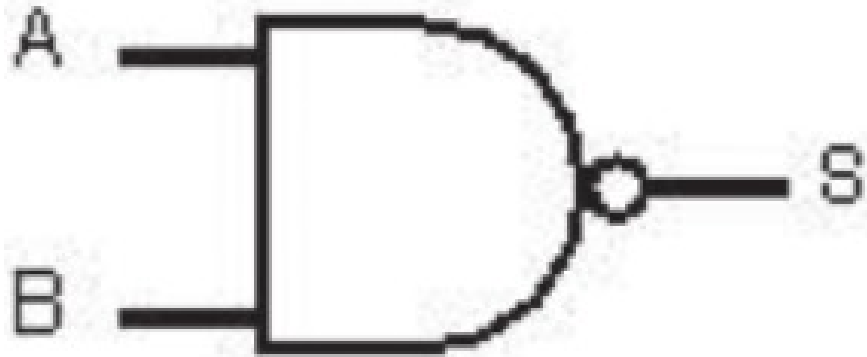
Expressão da Função

$$S = A \wedge B$$

A		B	S
0		0	0
0		1	0
1		0	0
1		1	1

Porta NAND

Símbolo



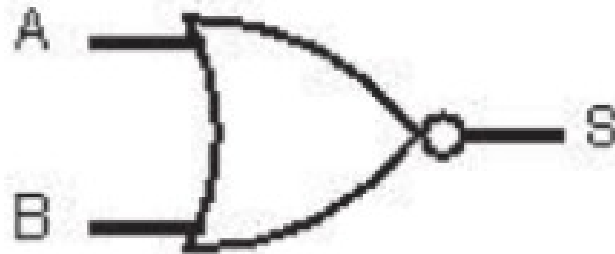
Expressão da Função

$$S = \overline{A \times B}$$

A	B	S
0	0	1
0	1	1
1	0	1
1	1	0

Port NOR

Símbolo



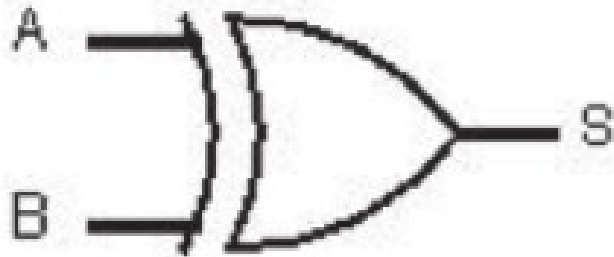
Expressão da Função

$$S = \overline{A + B}$$

A	B	S
0	0	1
0	1	0
1	0	0
1	1	0

Porta XOR

Símbolo



Expressão da Função

$$S = A \oplus B$$

A	B	S
0	0	0
0	1	1
1	0	1
1	1	0

Porta XNOR

Símbolo



Expressão da Função

$$S = \overline{A \oplus B}$$

A	B	S
0	0	1
0	1	0
1	0	0
1	1	1



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Portas Lógicas



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