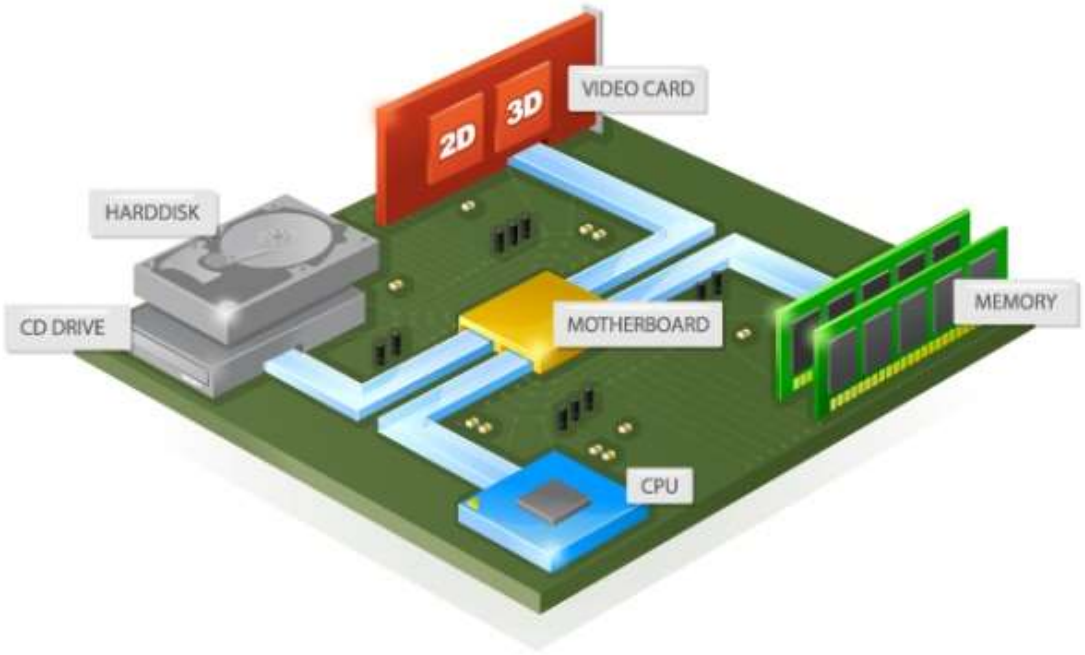
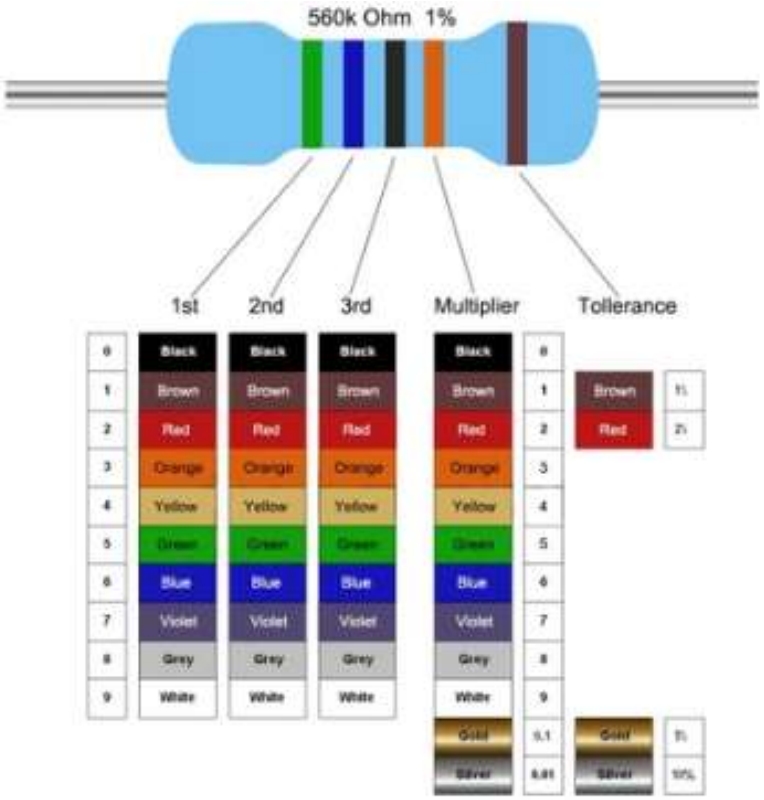
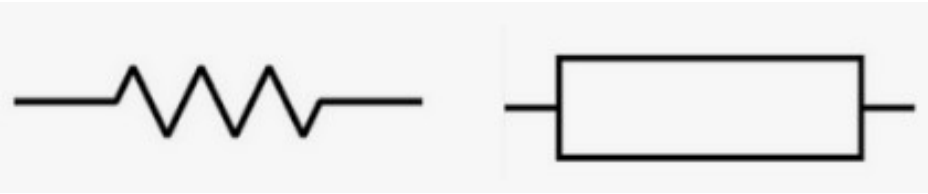
Introdução de Arquitetura de Computadores



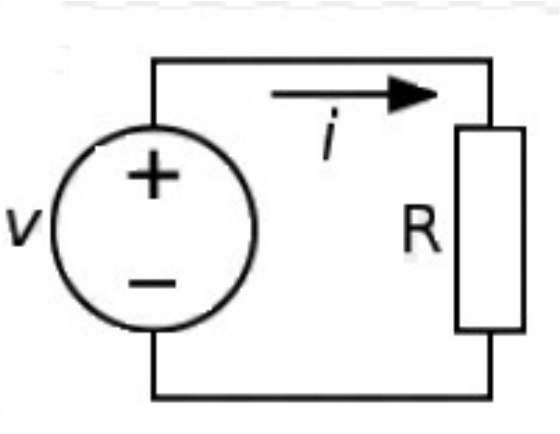
Resistor



Símbolo

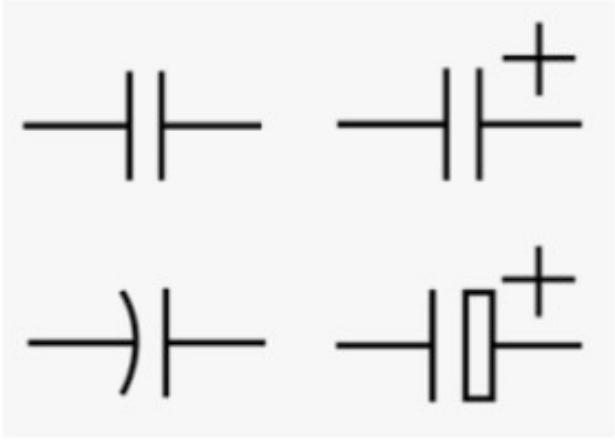


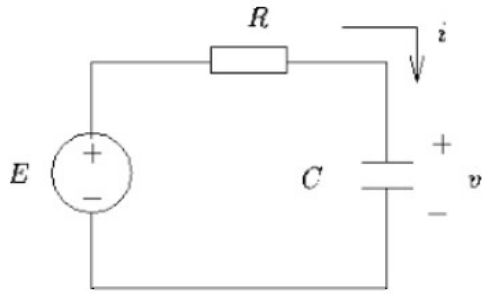
V=R.i



Capacitor

Símbolo

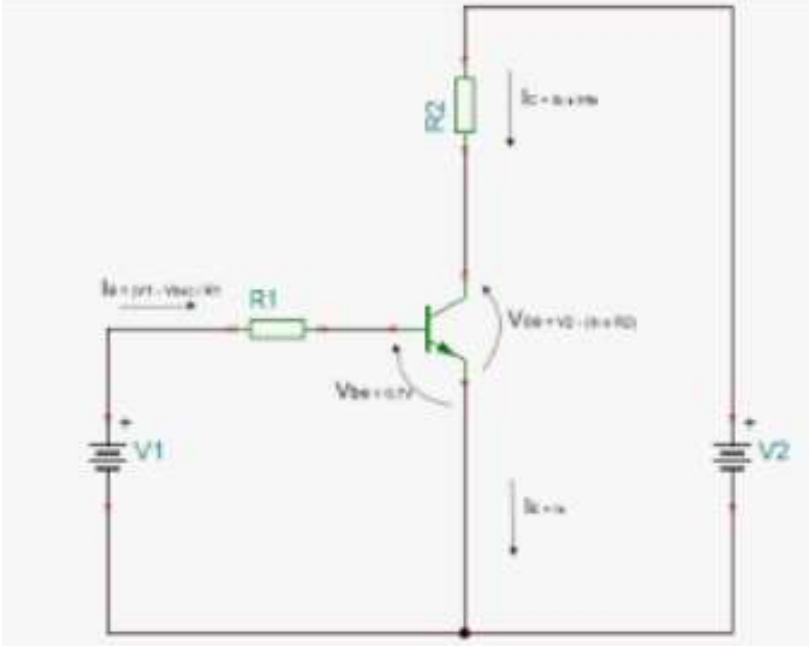




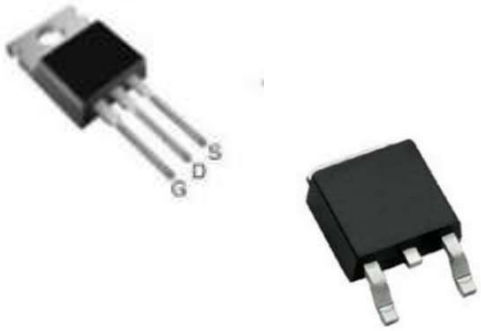
Filtragem de ruído
Temporização
Armazenar carga elétrica

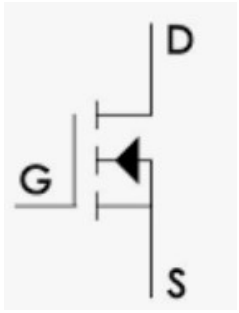
Transistor Bipolar

Amplificar sinais de corrente e tensão
Opera como chave
Base para circuitos lógicos da família TTL

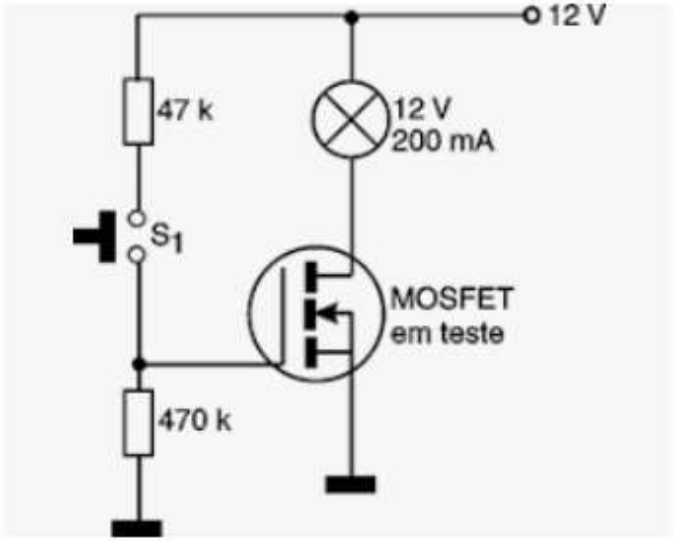


Transistor MOSFET

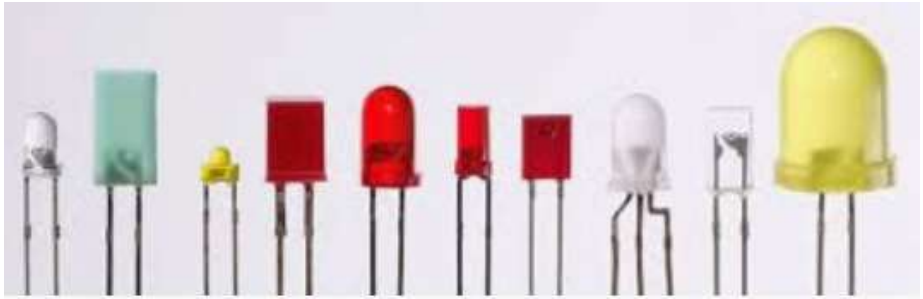


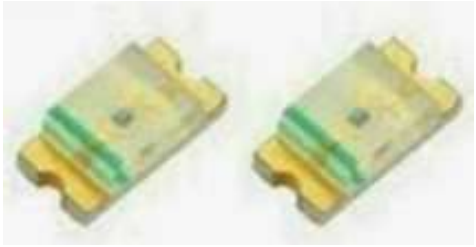


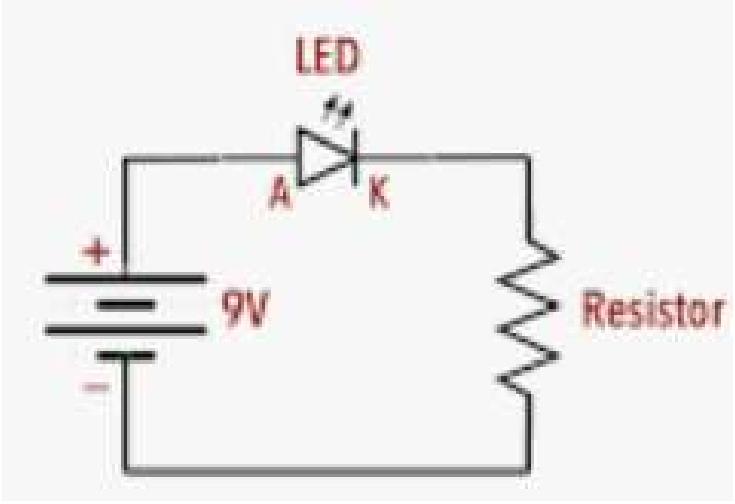
Amplificar sinais de tensão
Opera como chave
Base para circuitos lógicos da família CMOS



LED - Light Emitter Diode



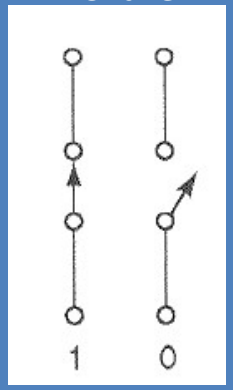




SISTEMAS DIGITAIS

Estados lógicos em sistemas digitais

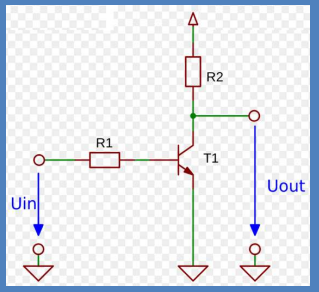
Chave



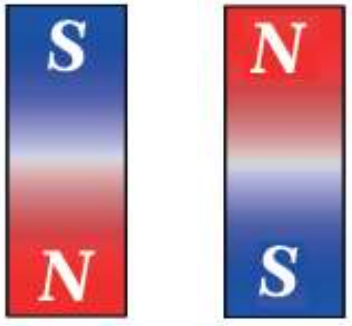
Lâmpada

Acesa = 1
Apagada=0

Transistor



Saturado = 0
Cortado = 1

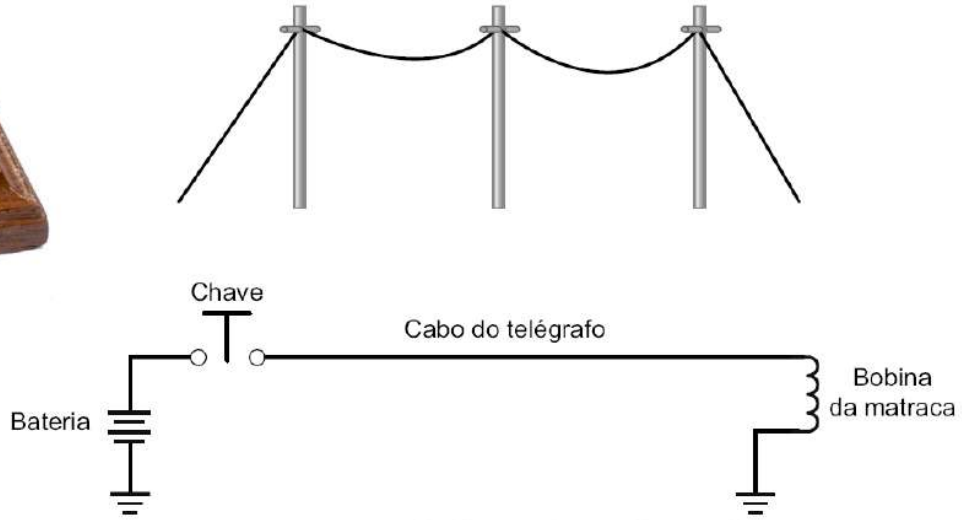


Disco rígido (HD)
Fita magnética)

SISTEMAS DIGITAIS

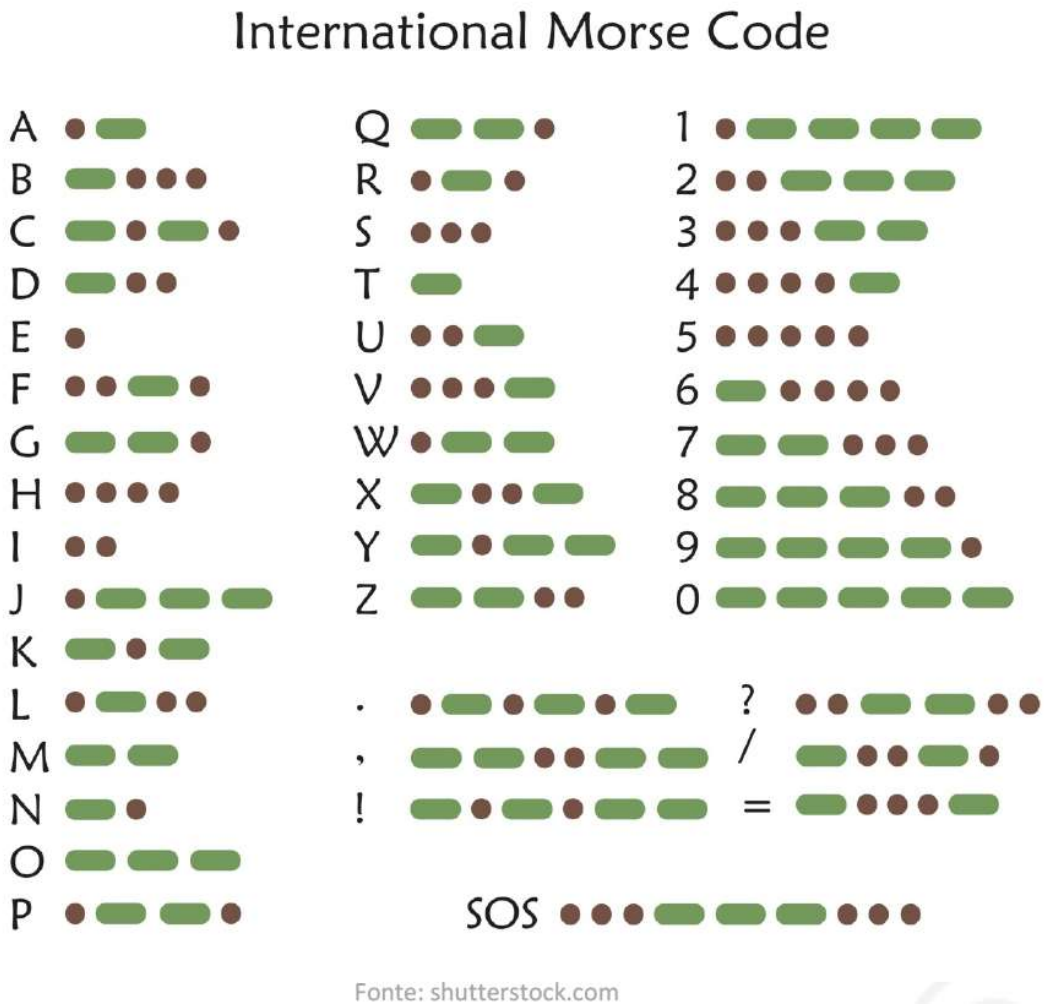
Telégrafo

Fonte: shutterstock.com



SISTEMAS DIGITAIS

Telégrafo – Representação da informação

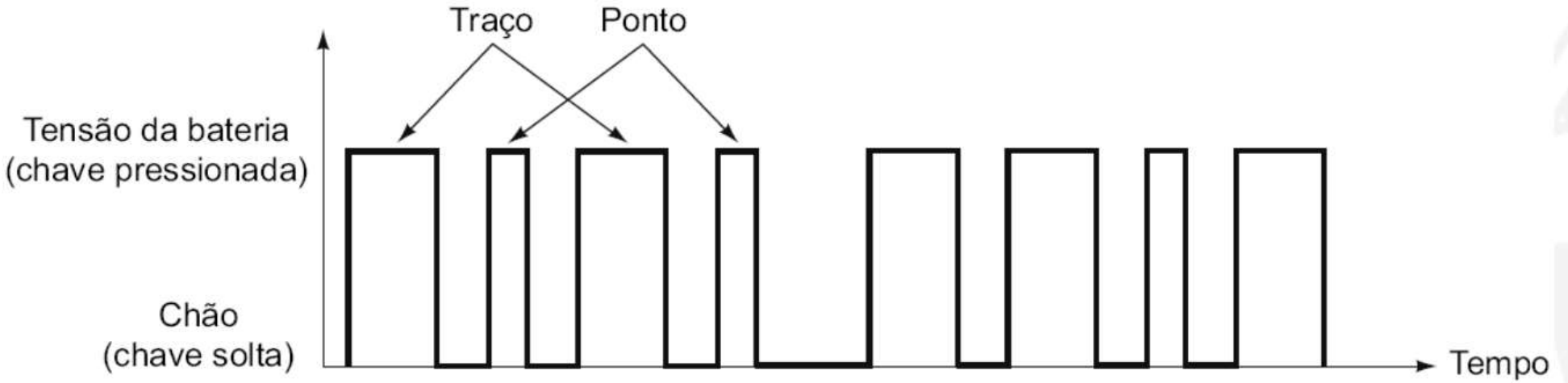


Fonte: shutterstock.com

SISTEMAS DIGITAIS

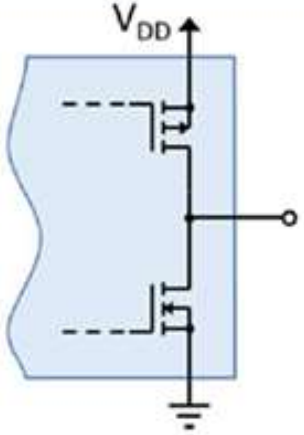
Telégrafo – Representação da informação

Diagrama de tempo do telégrafo

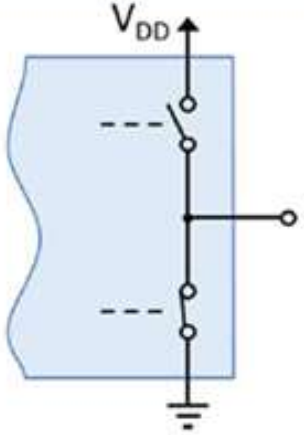


Circuitos lógicos com transistor MOSFET

Estágio de saída típico de um circuito digital

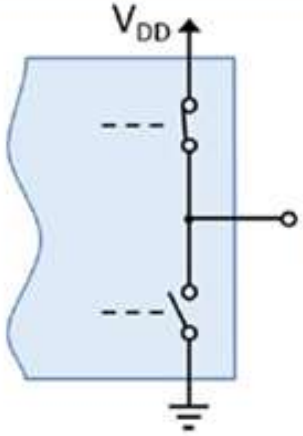


Circuito equivalente para nível lógico '**0**'



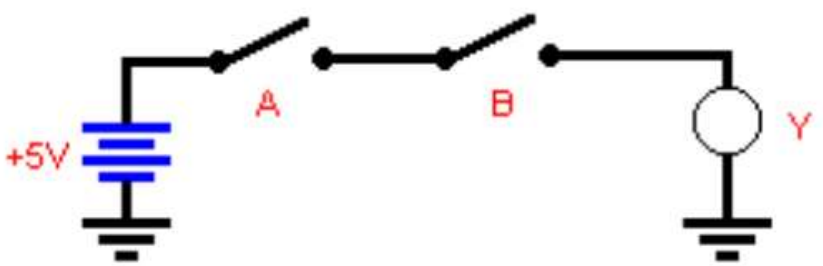
Tensão de saída próxima de 0V

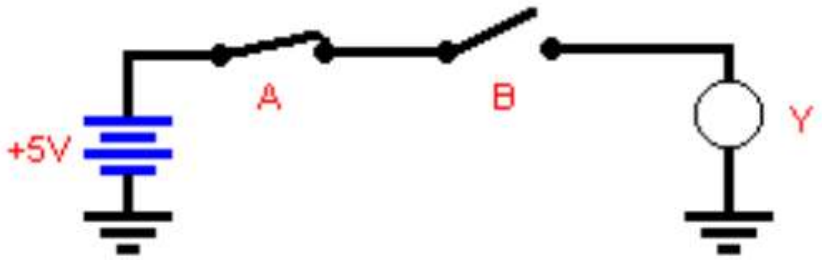
Circuito equivalente para nível lógico '**1**'

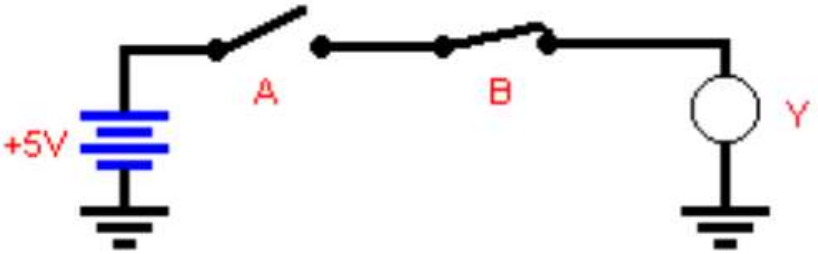


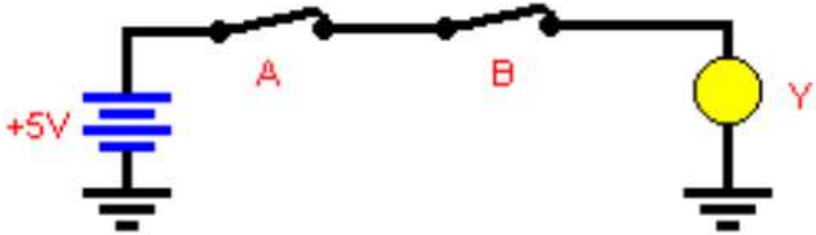
Tensão de saída próxima de V_{DD}

Circuitos lógicos com chaves e lâmpada

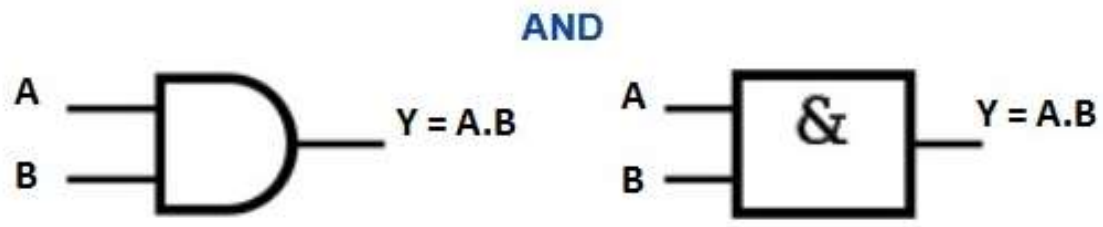






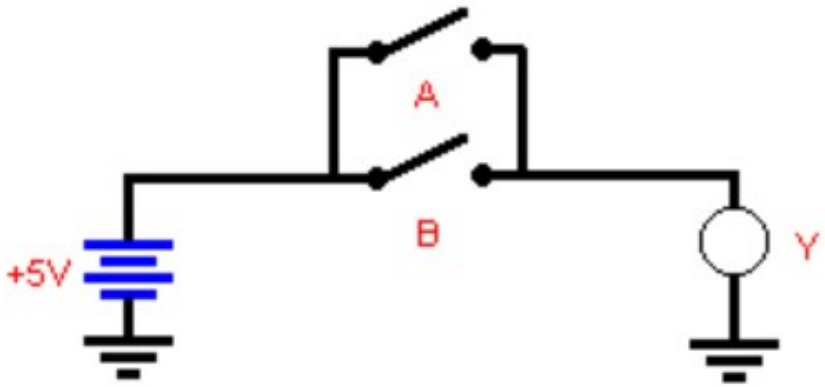


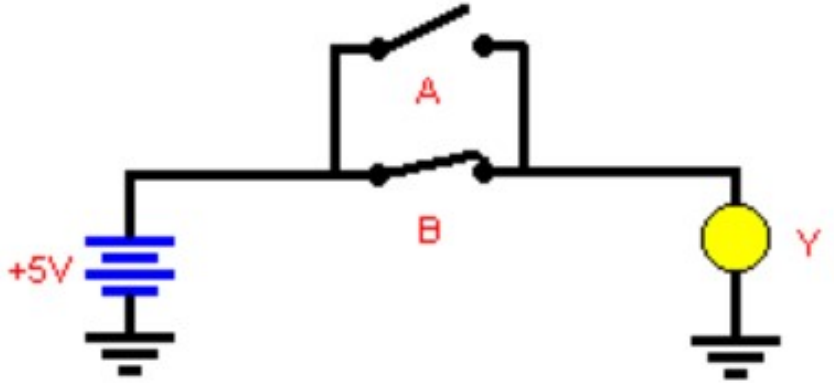
Circuitos lógicos com chaves e lâmpada

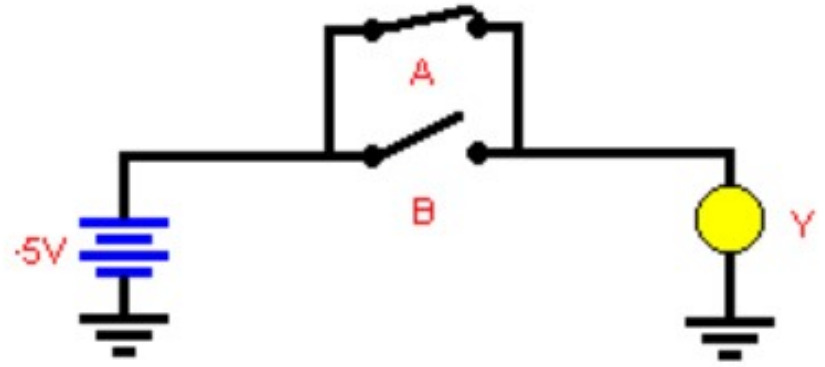


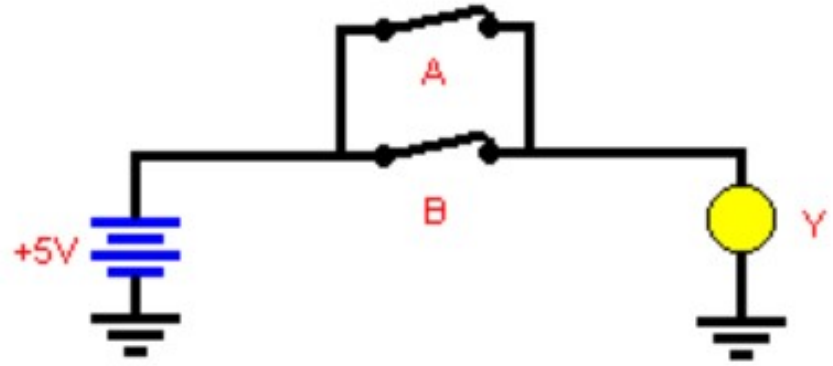
A	B	A AND B
0	0	0
0	1	0
1	0	0
1	1	1

Circuitos lógicos com chaves e lâmpada

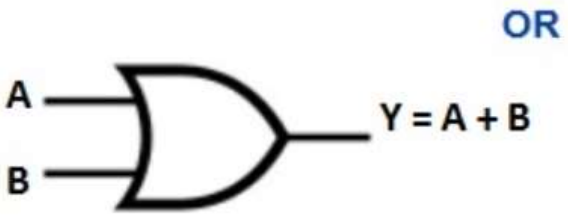


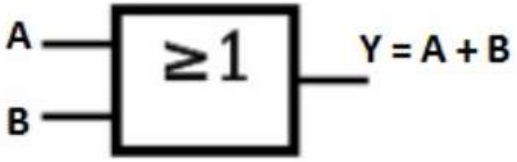






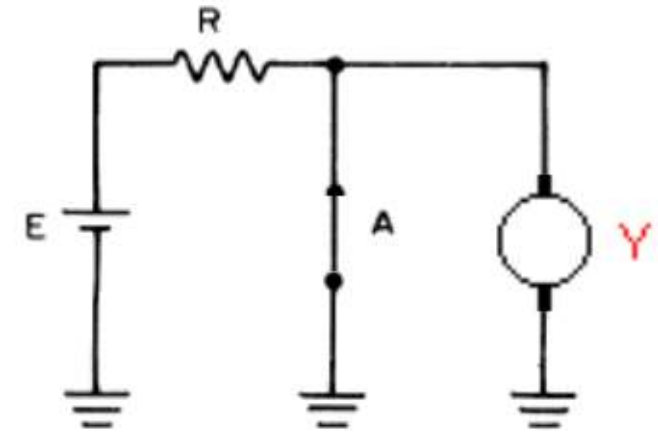
Circuitos lógicos com chaves e lâmpada

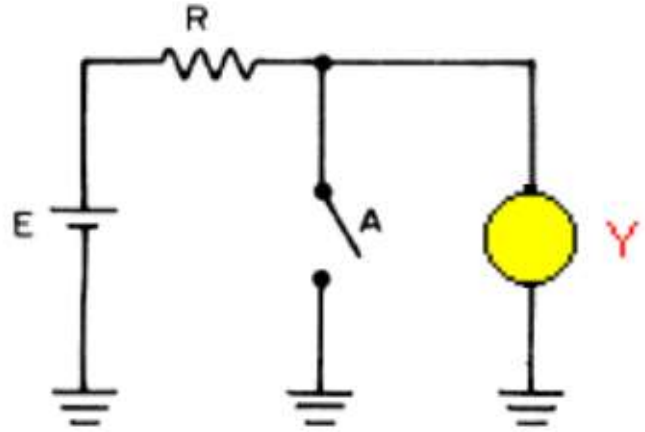




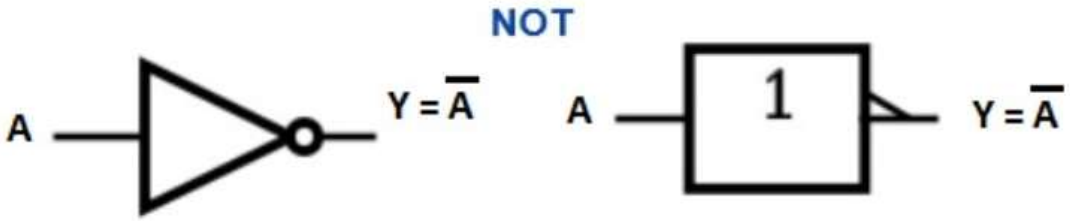
ENTRADA		SAÍDA
A	B	A OR B
0	0	0
0	1	1
1	0	1
1	1	1

Circuitos lógicos com chaves e lâmpada



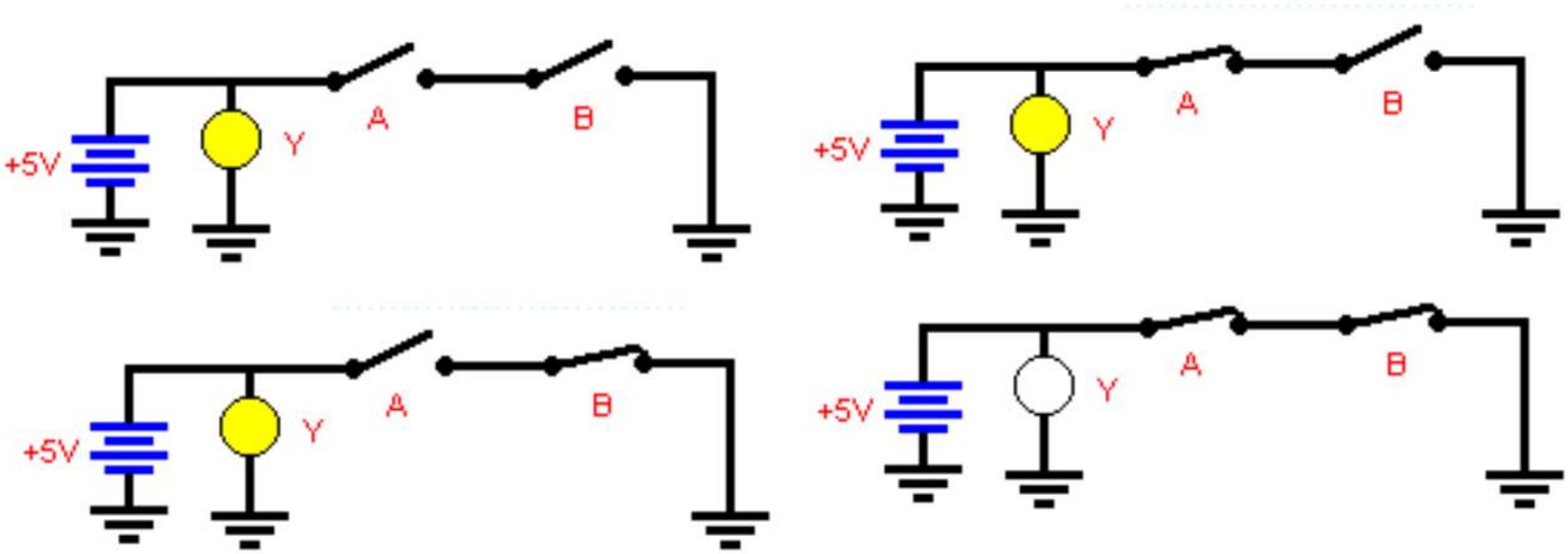


Circuitos lógicos com chaves e lâmpada

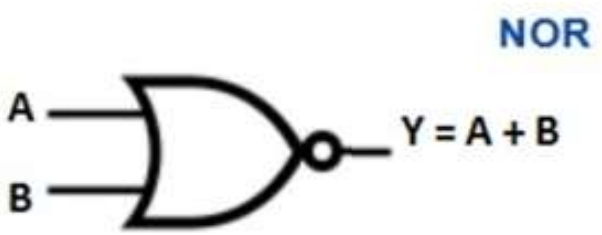


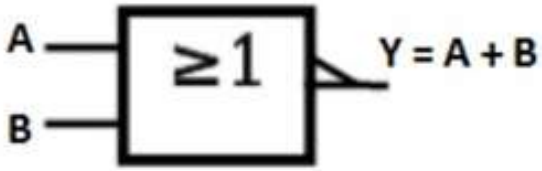
ENTRADA	SAÍDA
A	NOT A
0	1
1	0

Circuitos lógicos com chaves e lâmpada



Circuitos lógicos com chaves e lâmpada





ENTRADA		SAÍDA
A	B	$\overline{A \text{ OR } B}$
0	0	1
0	1	0
1	0	0
1	1	0

Representação da informação

Sistema de numeração decimal
- Posicional
- Algarismos de 0 a 9
- Base 10

3 3 3 , 3

$3 = 3 \times 10^0$

$30 = 3 \times 10^1$

$300 = 3 \times 10^2$

$0{,}3 = 3 \times 10^{-1}$

Figura 0.1 – Sistema decimal em escala de cinzas

0 1 2 3 4 5 6 7 8 9

Representação da informação

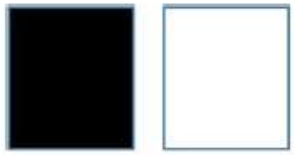
Sistema de numeração binário
- Posicional
- Algarismos 0 e 1
- Base 2

$101{,}01_2$

$= 1 \times 2^0 + 0 \times 2^1 + 1 \times 2^2 + 0 \times 2^{-1} + 1 \times 2^{-2} = 5 + 0{,}25$

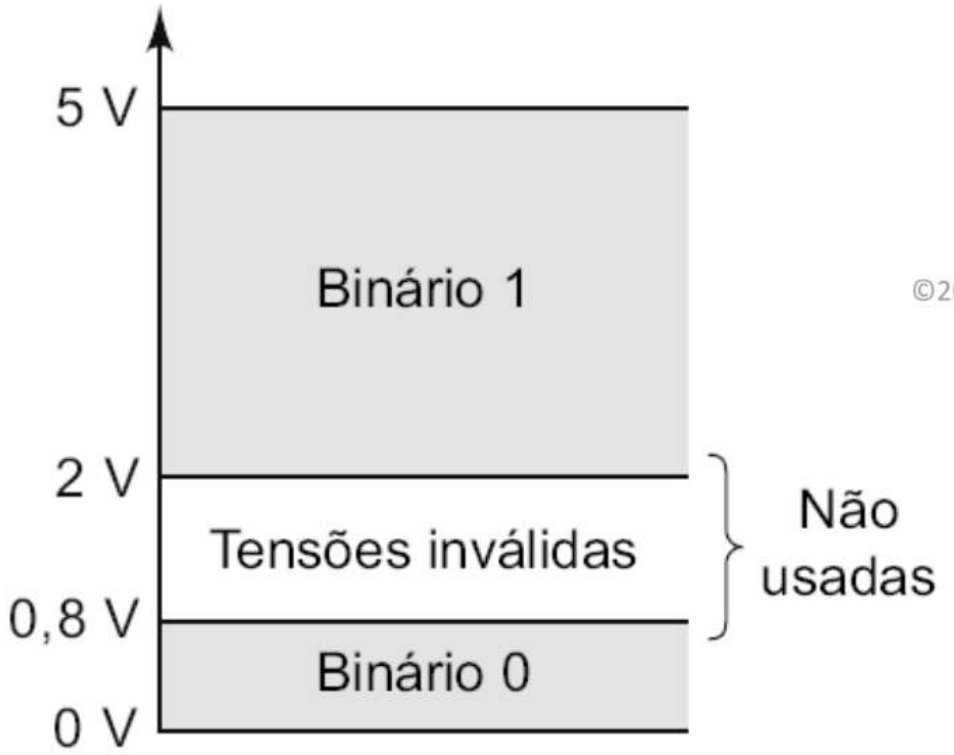
$= 5{,}25_{10}$

Figura 0.2 – Sistema binário



0 1

Representação binária em circuitos eletrônicos



(obs.: valores de tensão para a família lógica TTL)

Representação da informação

1 byte	8 bits
1 Kbyte	2^{10} bytes = 1024 bytes
1 Mbyte	2^{20} bytes = 1024^2 bytes
1 Gbyte	2^{30} bytes = 1024^3 bytes