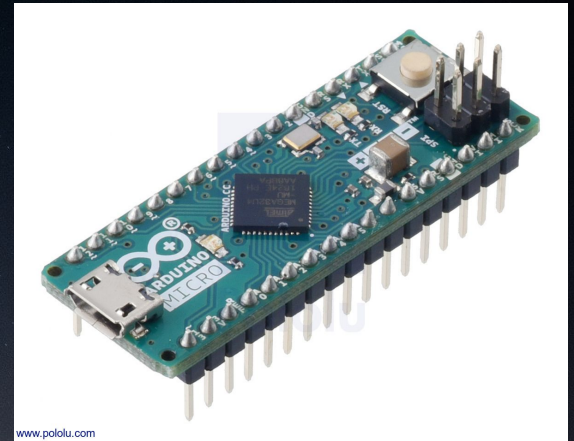


# Para o Arduino e Além ...

---

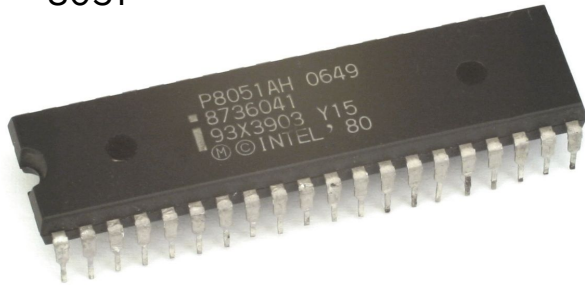
Renato Paiotti

@renatopaiotti

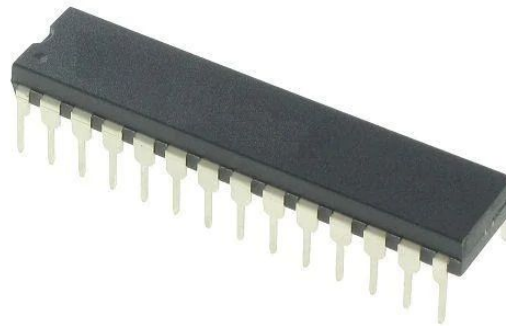


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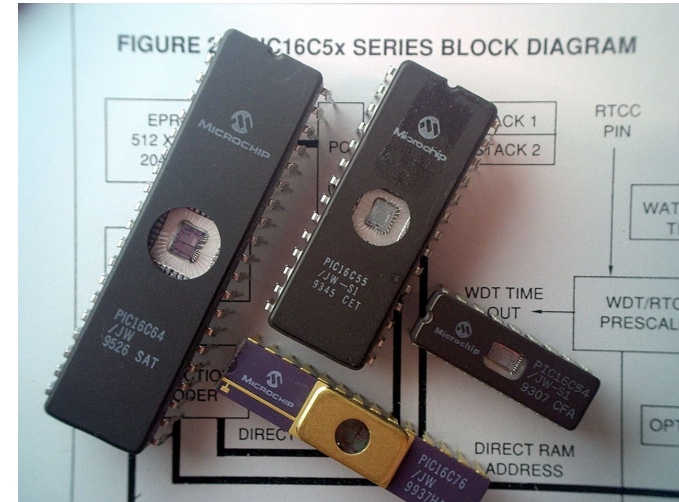
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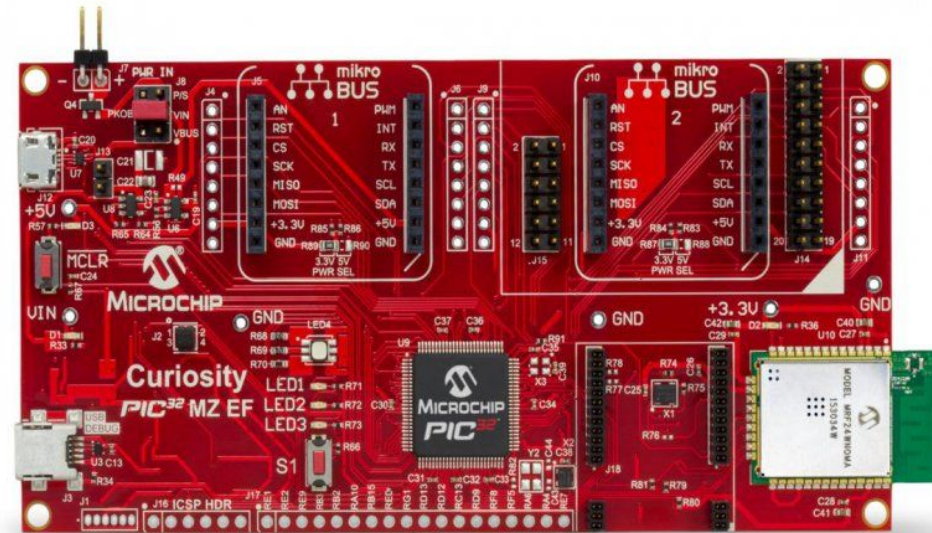
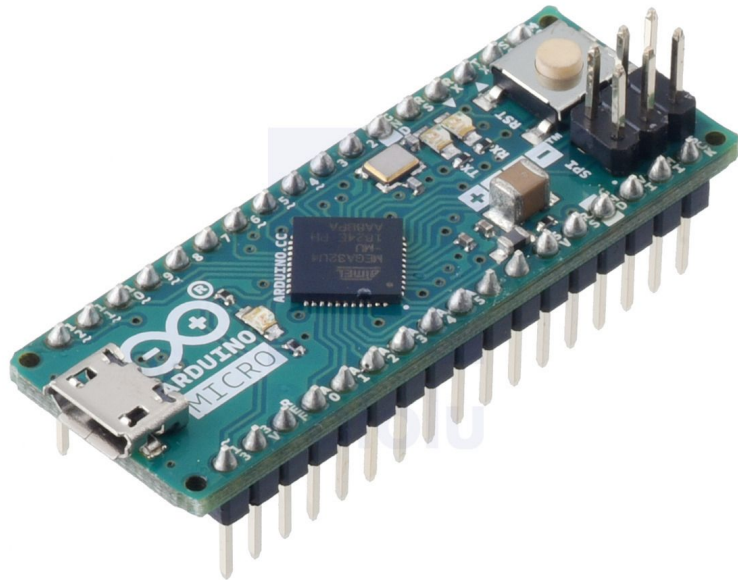
Atmega - Atmel



PIC - Microchip



# Placas de Desenvolvimento





# Na Onda do Arduino

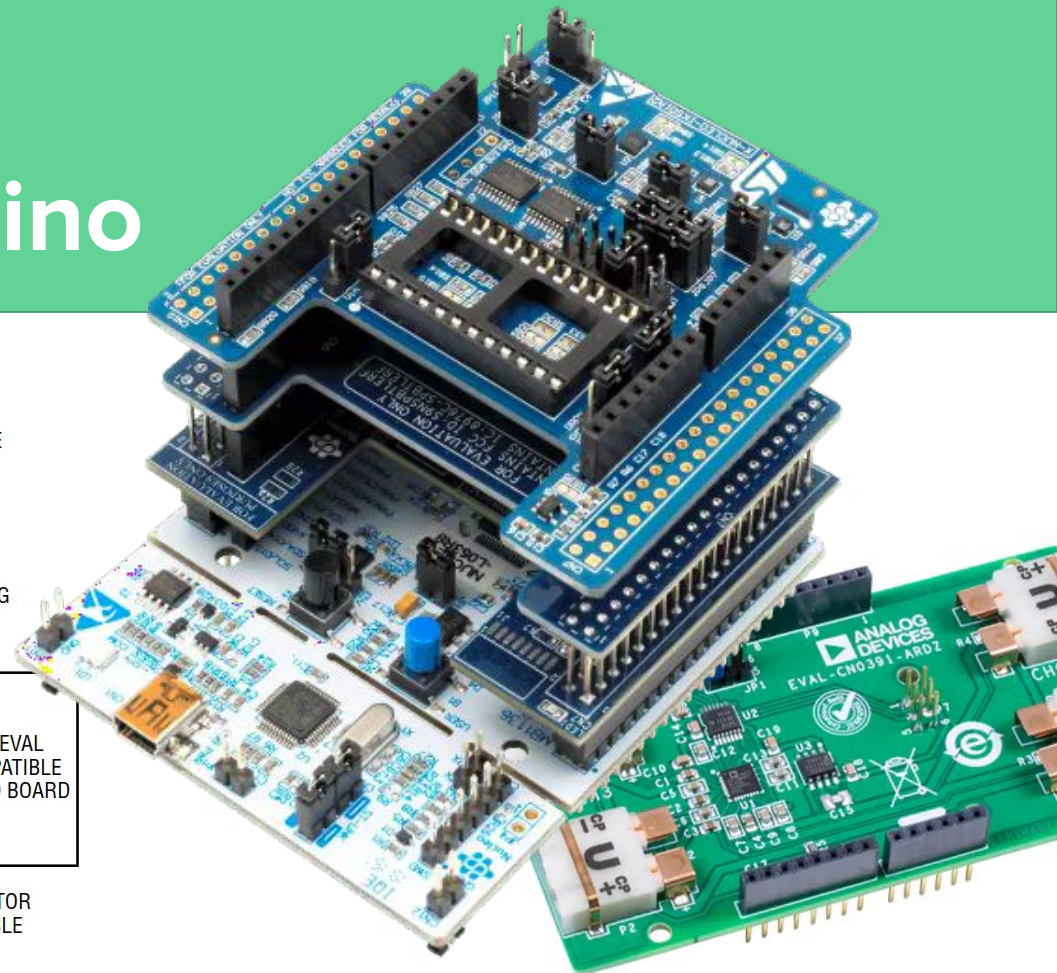
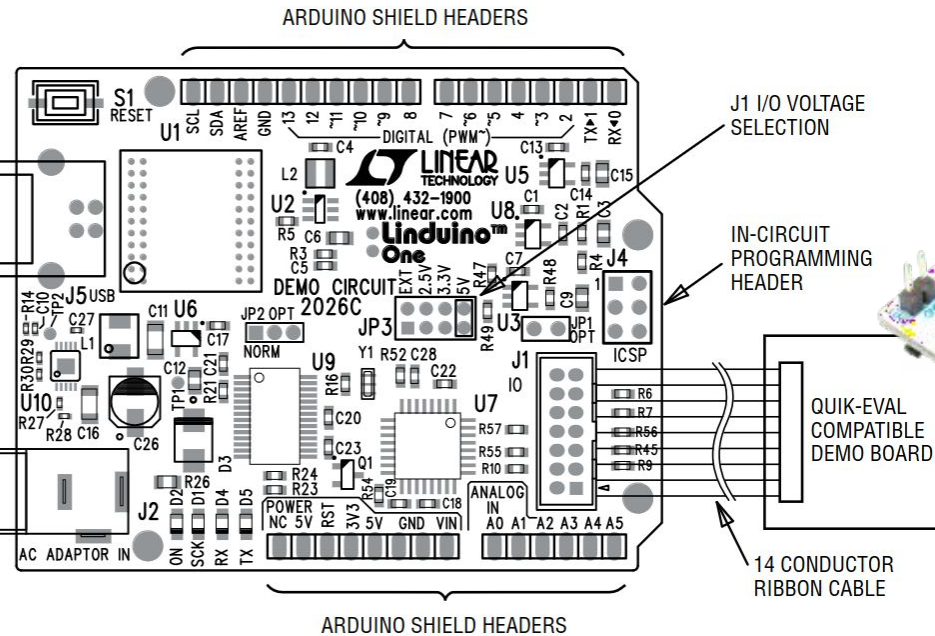
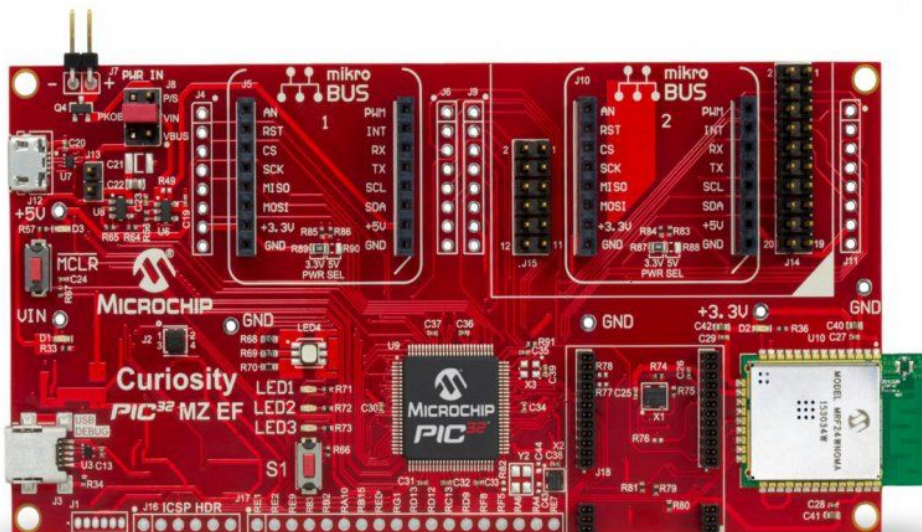
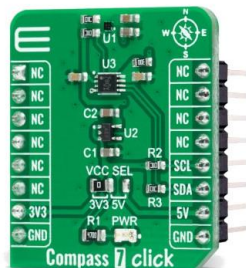
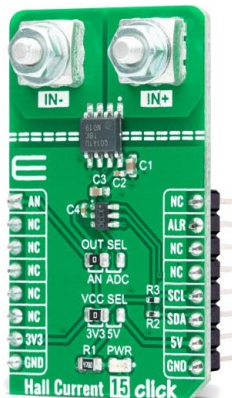
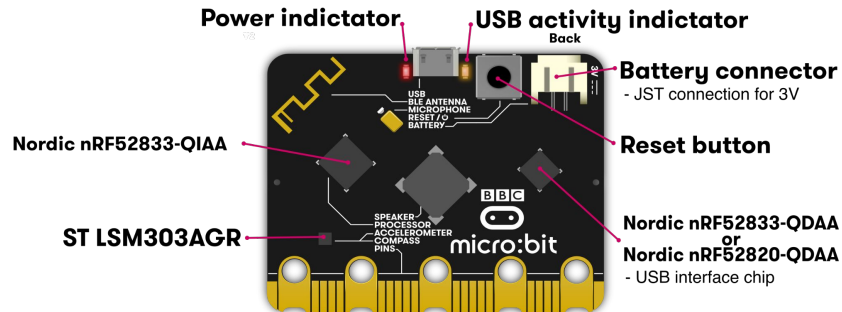
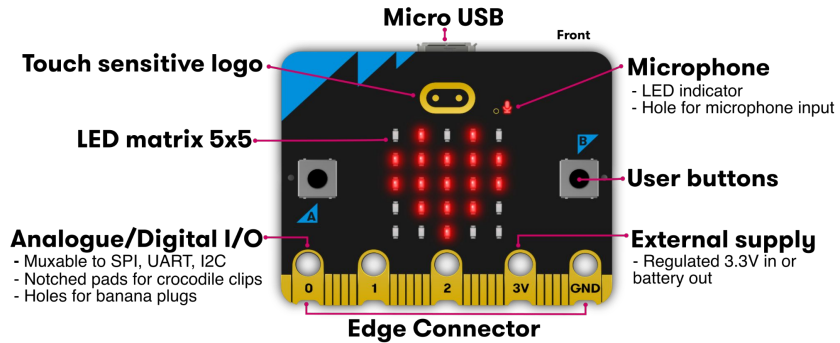


Figure 1. Linduino One Basic Connections

# Do outro lado da história

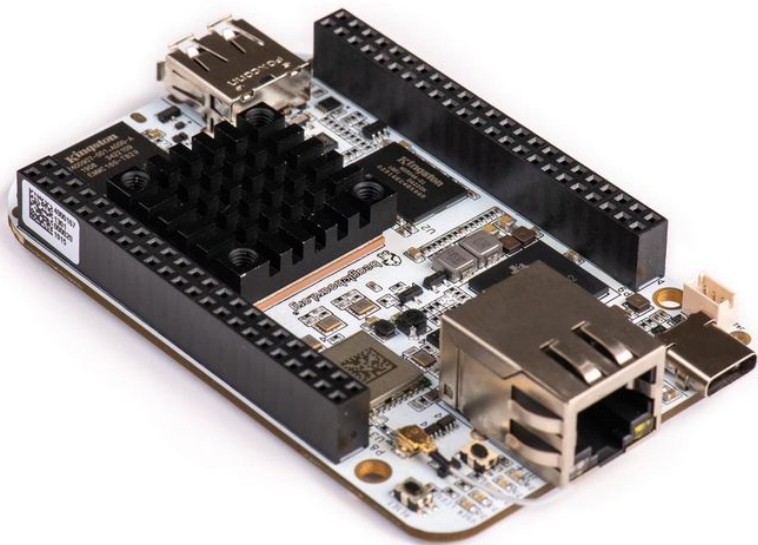


# Alternativas





# Alternativas





102110646



Images are for reference only  
See Product Specifications

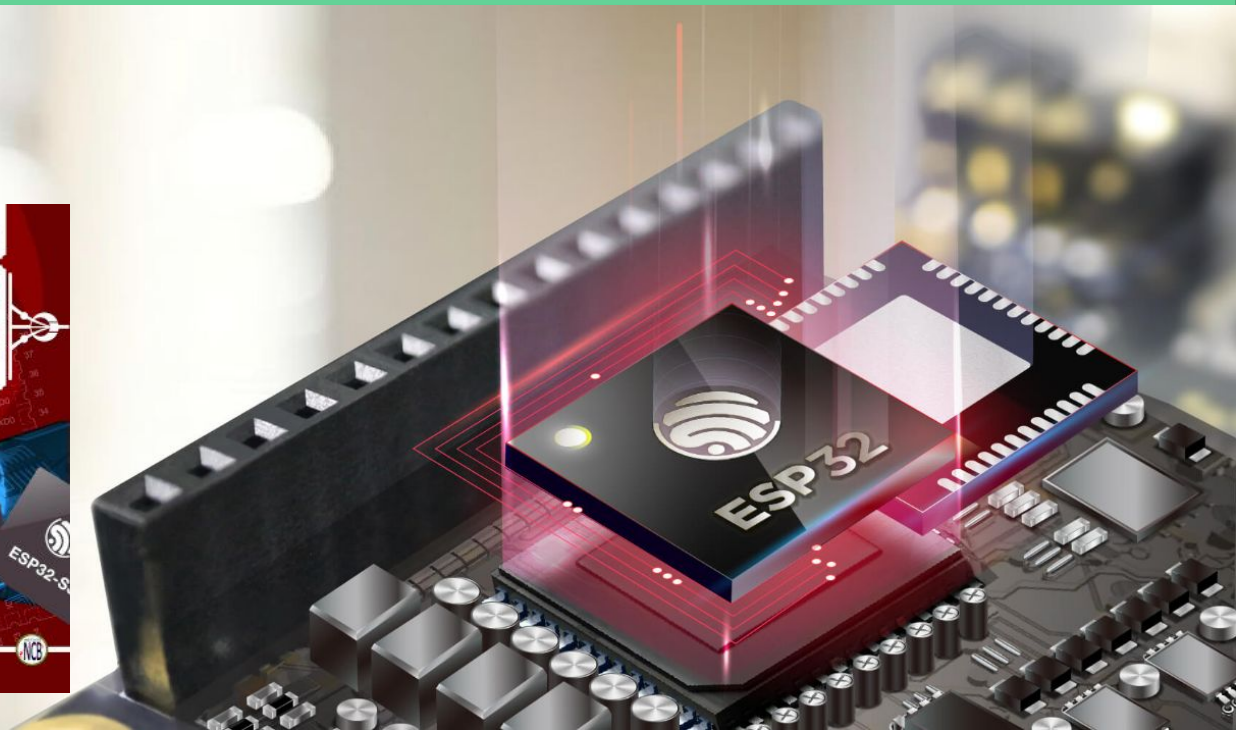


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<b>Mfr. #:</b>	102110646
<b>Mfr.:</b>	<a href="#">BeagleBoard by Seeed Studio</a>
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# Alternativas

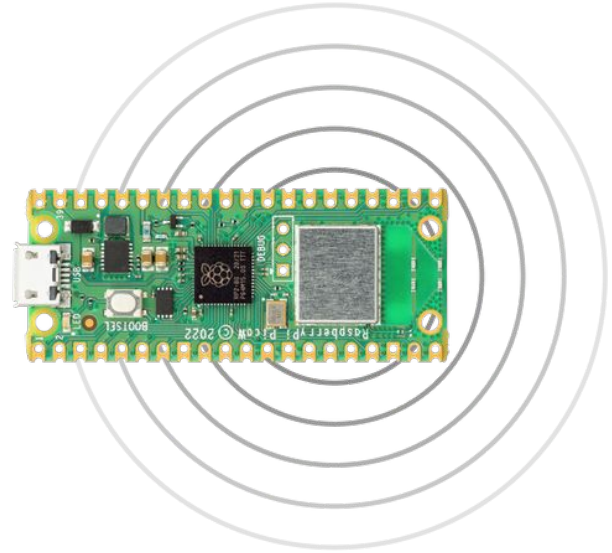
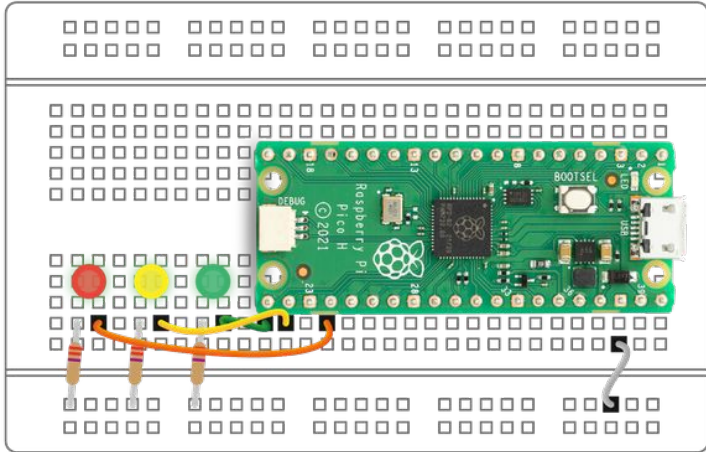






# Alternativas

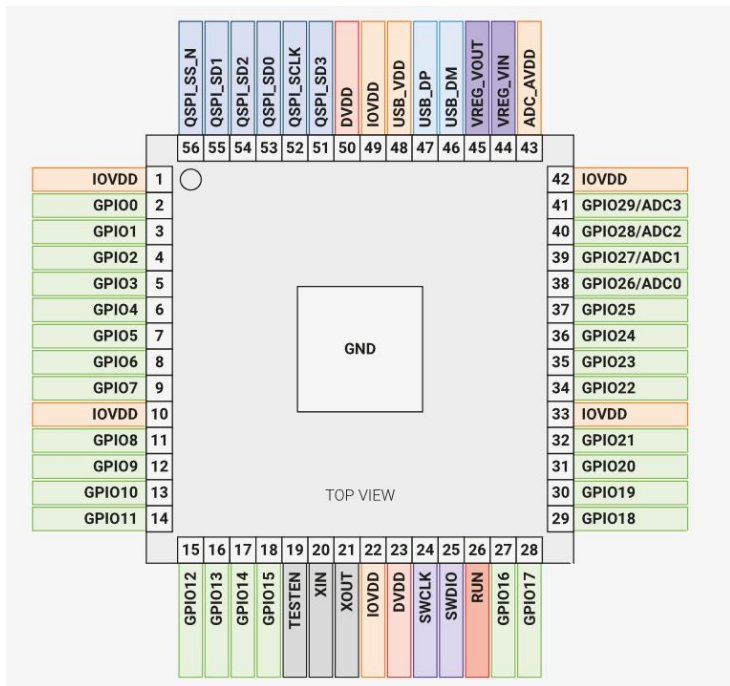
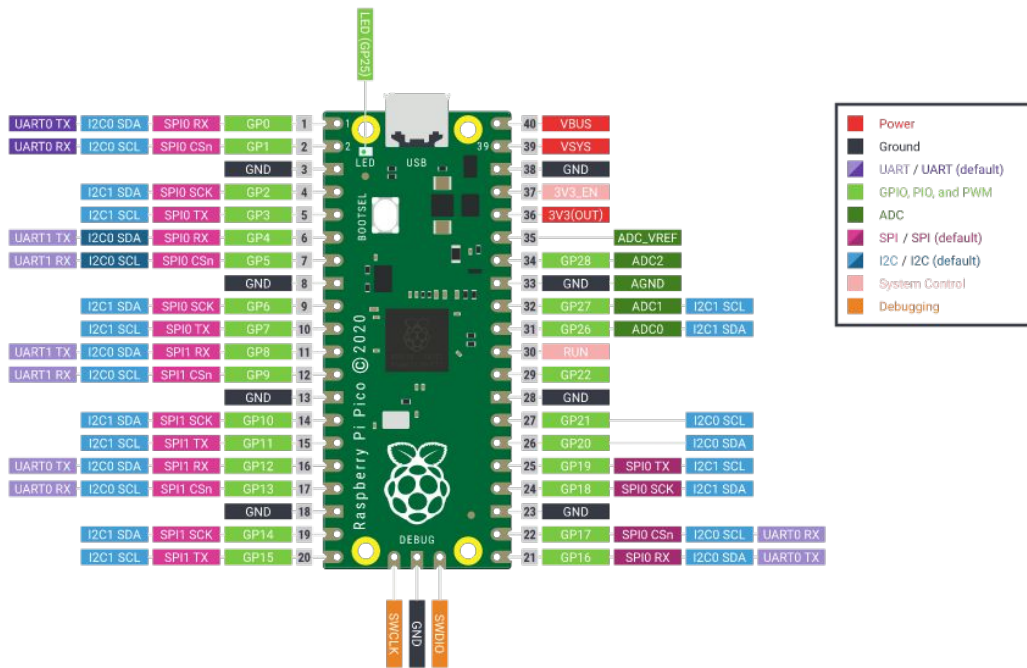
## Raspberry Pi **Pico**

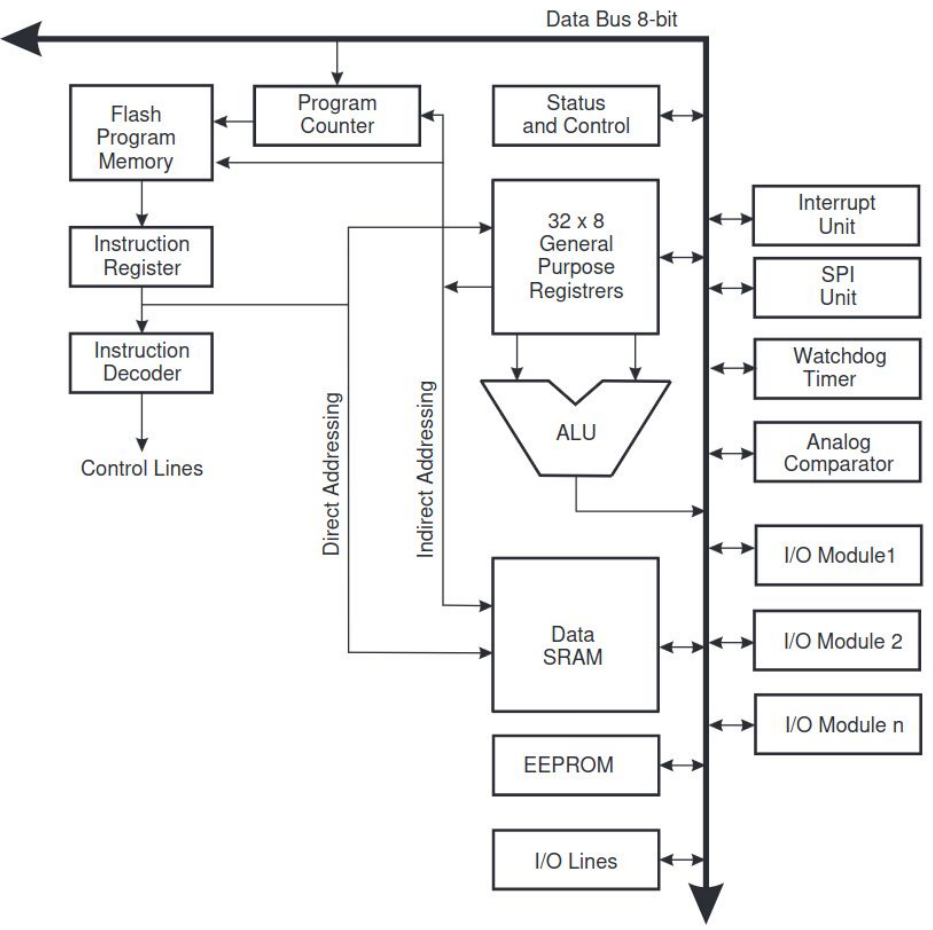




# Alternativas

# Raspberry Pi **Pico**





# Arquitetura do AVR

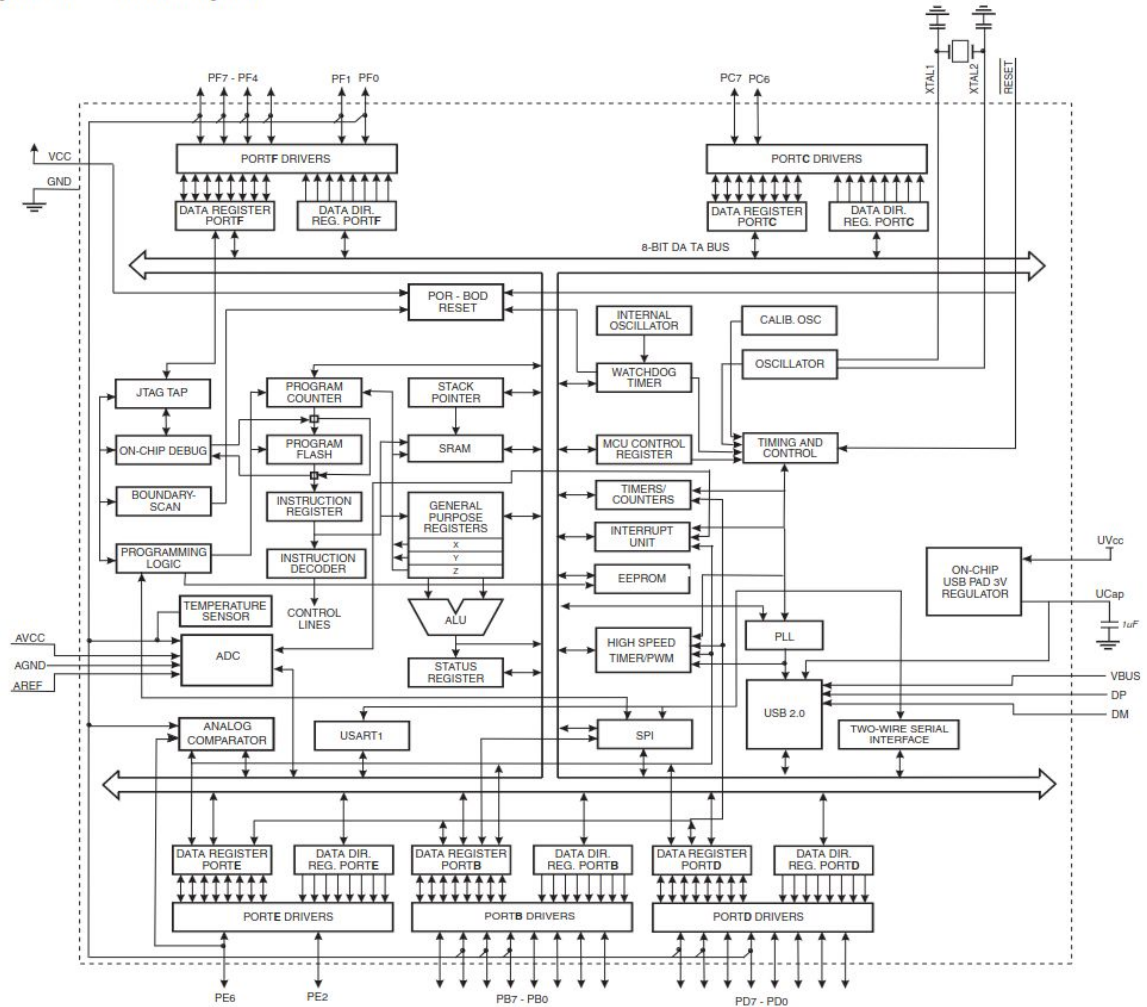




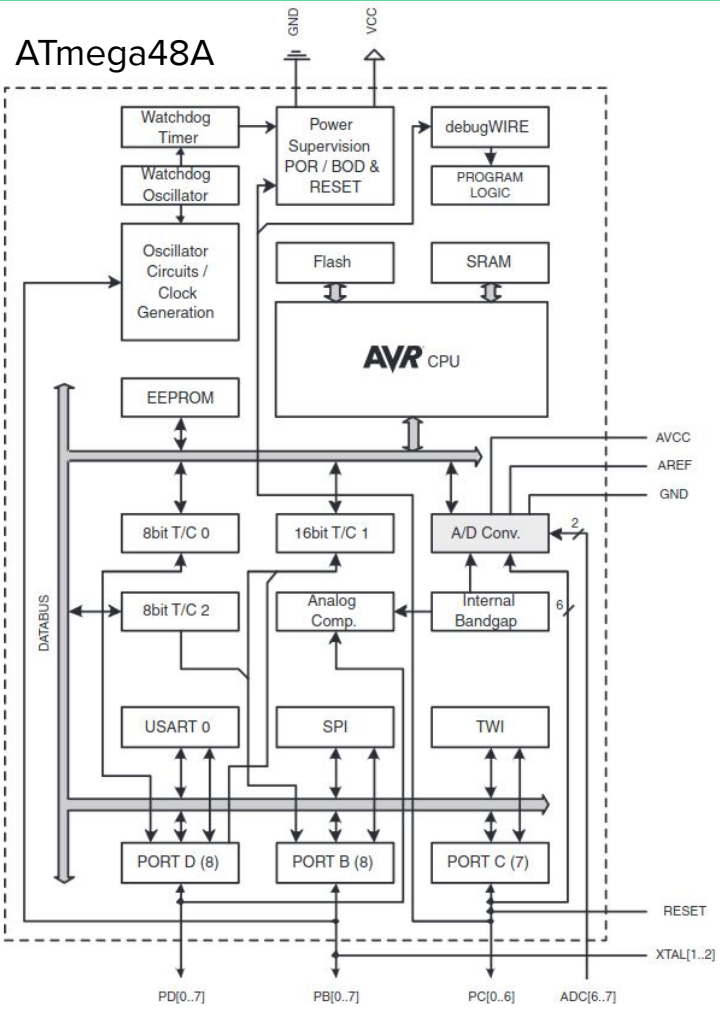
# Arquitetura AVR

## ATMEGA32U4RC

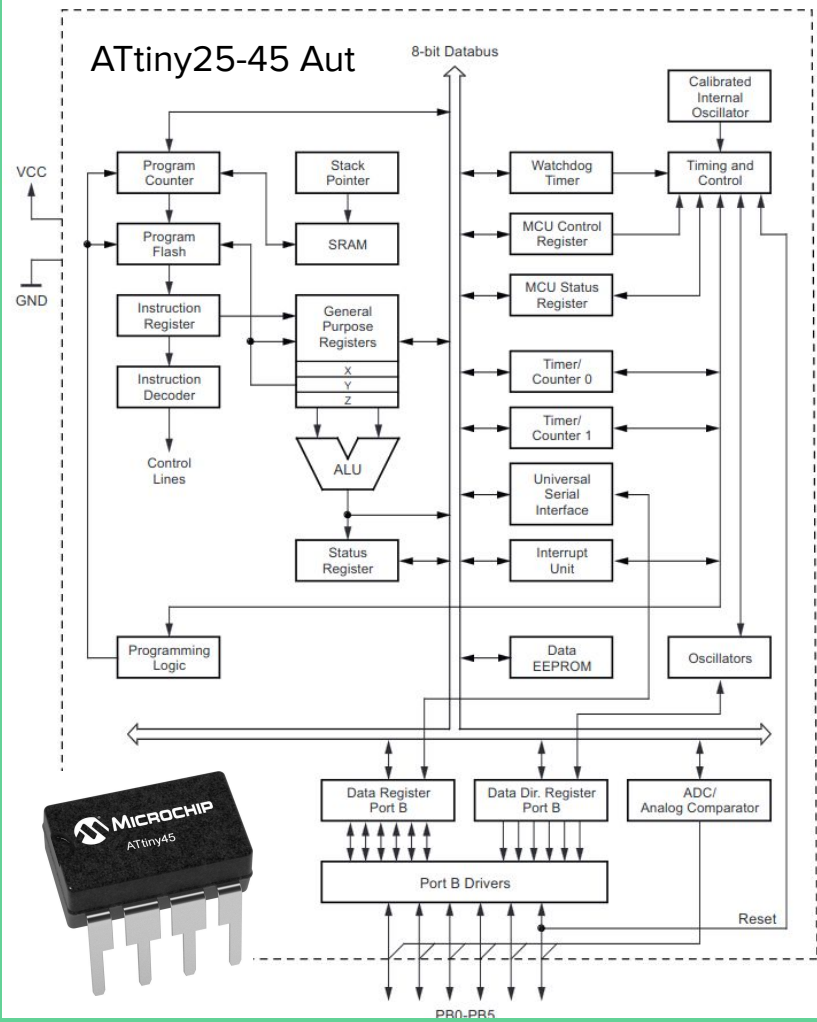
Figure 2-1. Block Diagram



# ATmega48A



# ATtiny25-45 Aut



# Além...



## Features

- Common features
  - STM32 microcontroller in 32-pin package
  - 1 user LED
  - 1 reset push-button
  - Board connectors:
    - Arduino™ Nano V3 expansion connector
    - Micro-AB USB connector for the ST-LINK
  - Flexible power-supply options: ST-LINK, USB  $V_{BUS}$  or external sources
  - On-board ST-LINK debugger/programmer with USB re-enumeration capability: mass storage, Virtual COM port and debug port
  - Comprehensive free software libraries and examples available with the STM32Cube MCU Package
  - Support of a wide choice of Integrated Development Environments (IDEs) including IAR™, Keil® and GCC-based IDEs
- Board-specific features
  - 24 MHz crystal oscillator
  - Arm® Mbed Enabled™ compliant





- › Enhanced TriCore™ v1.8
- › Up to 6CPUs, upto 500MHz

**On-Chip Memory**

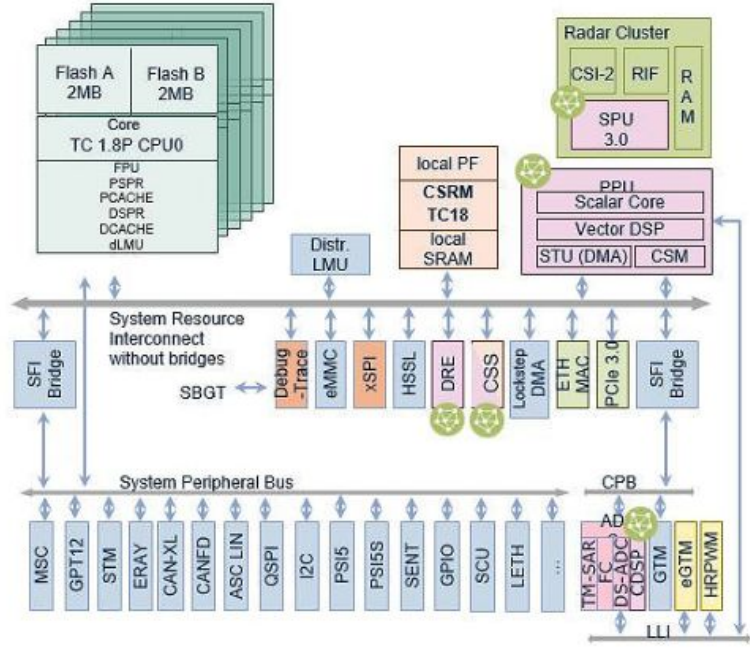
- › Upto 25MB on chip-flash
- › Full A/B Swap support for SOTA
- › More Tightly Coupled SRAM

**AURIX™ Accelerator Suite**

- › **Parallel Processing Unit (PPU)**  
Programmable SIMD Vector DSP
- › **DRE- Data Routing Engine**  
communications accelerator
- › **cDSP** dedicated ADC accelerator
- › **SPU 3.0** dedicated radar accelerator
- › **CSS:** Provides security acceleration

**xSPI**

- › External Memory Interface



**Debug and Trace**

- › Safe and secure in the field

**ADC**

- › Enhanced ADCs plus additional DSP accelerator

**Radar Cluster**

- › 4 x TC3xx performance, 800M Samples/s
- › Radar DMA
- › CSI-2 Interface

**Real-time Control**

- › New eGTM timers, High Resolution PWMs
- › Low latency interconnect (LLI) to PPU for fast processing

**Security**

- › **CSRm:** High performance Security Modules
- › **CSS:** Dedicated communication security satellites

**High-speed Comm I/F**

- › PCIe 3.0
- › 100Mb- 5 Gbps Ethernet

**Future proof Comm I/F**

- › CAN-XL
- › 10Mb – 5Gbps Ethernet



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