# ~~RASPBERRY PI5~~
# RASPBERRY PI/SBC

(Pre)Ordered Pi5 day it was announced, promised delivery from first supply, oh well..so…

- Raspberry Pi history
- Raspberry Pi5
- Raspberry Pi availability -> Alternatives (OrangePi)
- All the Raspberry Pi Ham stuff I have found
- Why SBC?
- SBC vs Arduino

Chip Fleming K0CHP

# Raspberry Pi History

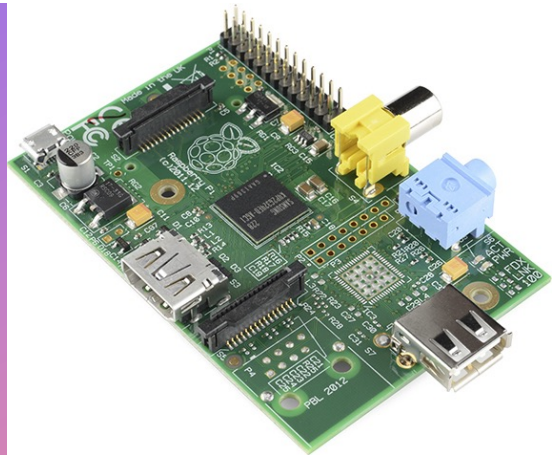
# Why Raspberry Pi?

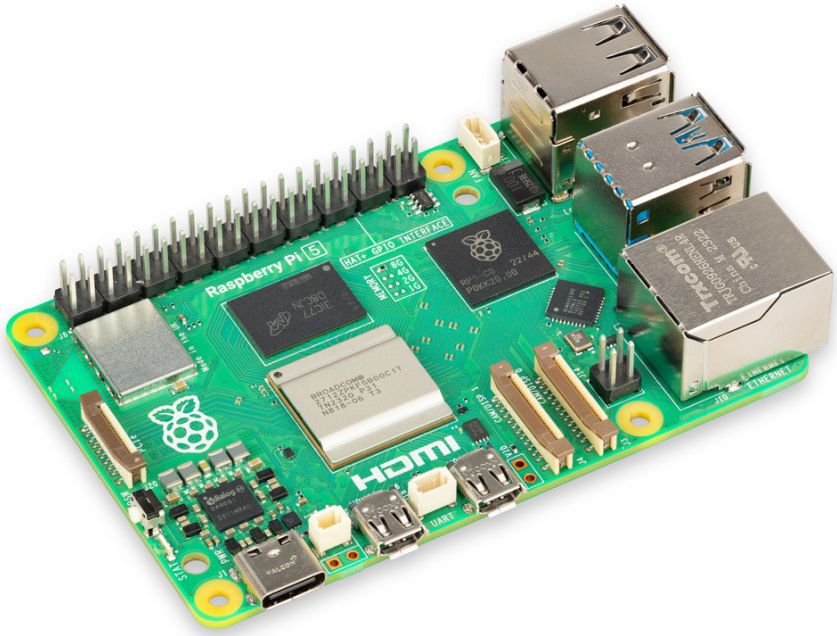
- Many Raspberry Pis made in UK (at a Sony factory) vs China
- Raspberry Pi Community and support
- Raspberry Pi Operating System is the Gold Standard
  - Stable, supported, ONE OS -> ALL RASPBERRY PIs
- Plus other OSs and applications
- Bling!

| Family | Model | SoC | Memory | Form Factor | Ethernet | Wireless | GPIO | Released | Discontinued |
|---|---|---|---|---|---|---|---|---|---|
| Raspberry Pi | B | BCM2835 | 256 MB | Standard[a] | Yes | No | 26-pin | 2012 | Yes (????) |
| | | | 512 MB | | | | | 2012[38] | |
| | A | | 256 MB | | No | | | 2013 | No |
| | B+ | | 512 MB | | Yes | | 40-pin | 2014 | |
| | A+ | | | Compact[b] | No | | | | |
| Raspberry Pi 2 | B | BCM2836 / 7 | 1 GB | Standard[a] | Yes | No | | 2015 | |
| Raspberry Pi Zero | Zero | BCM2835 | 512 MB | Ultra-compact[c] | No | No | | | |
| | W / WH | | | | | Yes | | 2017 | |
| | 2 W | BCM2710A1[d][38] | | | | | | 2021 | |
| Raspberry Pi 3 | B | BCM2837A0 / B0 | 1 GB | Standard[a] | Yes | Yes | | 2016 | |
| | A+ | BCM2837B0 | 512 MB | Compact[b] | No | Yes[e] | | 2018 | |
| | B+ | | 1 GB | Standard[a] | Yes[f] | | | 2018 | |
| Raspberry Pi 4 | B | BCM2711B0 / C0[40] | 1 GB | Standard[a] | Yes[g] | Yes[e] | | 2019[41] | Yes (2020)[42] |
| | | | | | | | | 2021[43] | No |
| | | | 2 GB | | | | | 2019[41] | |
| | | | 4 GB | | | | | | |
| | | | 8 GB | | | | | 2020 | |
| | 400 | | 4 GB | Keyboard | | | | | |
| Raspberry Pi Pico | Pico | RP2040 | 264 KB | Pico[h] | No | No | 26-pin | 2021 | |
| | W | | | | | Yes[i] | | 2022 | |
| Raspberry Pi 5[44] | | BCM2712 | 4 GB | Standard[a] | Yes[g] | Yes[e] | 40-pin | 2023 | |
| | | | 8 GB | | | | | | |

# RaspberryPi 5

- 2.4GHz quad-core 64-bit Arm Cortex-A76 CPU
- VideoCore VII GPU, supporting OpenGL ES 3.1, Vulkan 1.2
- Dual 4Kp60 HDMI® display output
- 4Kp60 HEVC decoder
- Dual-band 802.11ac Wi-Fi®
- Bluetooth 5.0 / Bluetooth Low Energy (BLE)
- High-speed microSD card interface with SDR104 mode support
- 2 × USB 3.0 ports, supporting simultaneous 5Gbps operation
- 2 × USB 2.0 ports
- Gigabit Ethernet, with PoE+ support (requires separate PoE+ HAT, coming soon)
- 2 × 4-lane MIPI camera/display transceivers
- PCIe 2.0 x1 interface for fast peripherals
- Raspberry Pi standard 40-pin GPIO header
- Real-time clock
- Power button





# Raspberry Pi availability -> Alternatives (OrangePi)

- Chip shortage of last  year dramatically hit Raspberry Pi availability
- SBCs – Single Board Computers, have exploded since Raspberry intro
- Highly recommend “ExplainingComputers.com”
- There are now  many other SBCs, but IMO, none come close to the Raspberry Pi for:
  - Cost/Performance +
  - Ease of getting started - useability o
  - Support - excellent •
    - Community: Anything you can imagine on Youtube
    - Add on hardware: cases, HATs, etc, etc, etc
    - Software: OS’s, apps, drivers, etc
    - Manufacturer

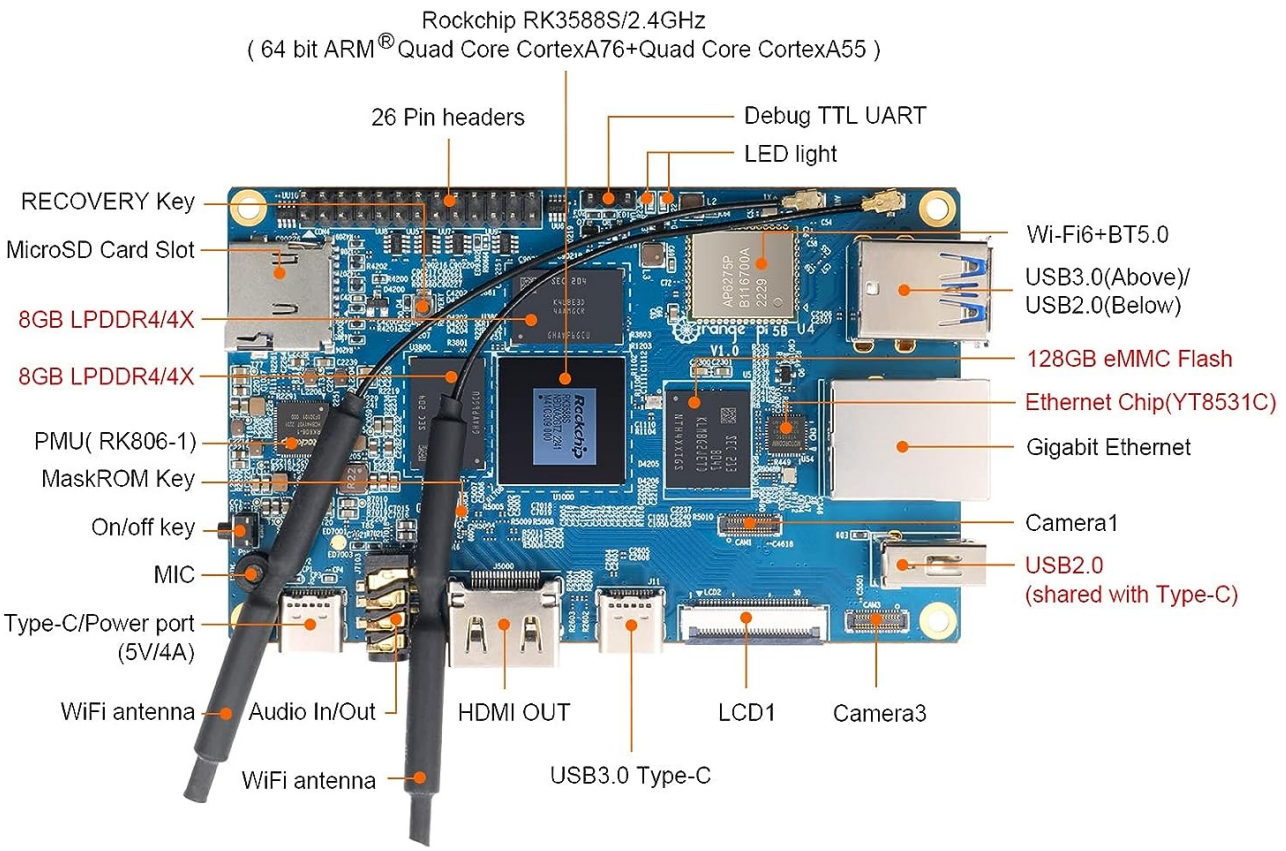
# OrangePi

- Closest Raspberry Pi copier – but NOT CLONES
- Very Chinesey
- Limited support: minimal community, manufacturer
- Each model requires its own OS versions – major PIA
- Limited OS choices
  - Orange Pi OS – Linux but limited
  - Ubuntu – great implementation – my choice but limited app support
  - Android – sucks
  - One or two others, no third parties I,ve found
- Very impressive hardware: features, specs,  and performance
- Limited Bling
- Amazon, etc

# OrangePi 5B - $147

# Orange Pi 5B

## Rockchip RK3588S

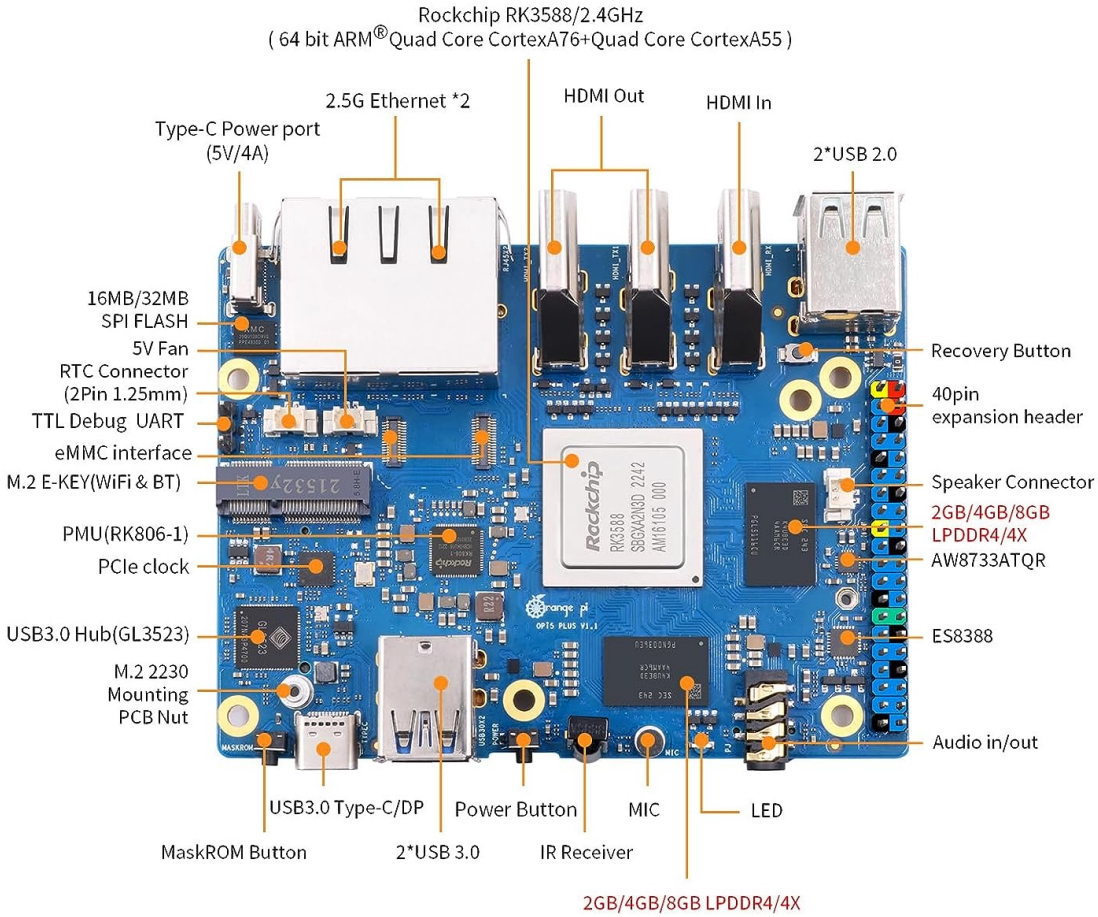


# OrangePi 5Plus $168

- NVME PCIe x4!
- EMMC
- WiFi/Bt addl M.2 module - $30

Orange Pi 5 Plus

Rockchip RK3588



# All the Raspberry Pi Ham stuff I have found

## Ham-Pi : https://mawcg.org/ham-pi/

- APRX – Digipeater software mainly focussed on digipeating APRS.
- AX25 – Driver that allows the Raspi OS to communicate via AX25 protocol.
- BlueDV – Digital Voice software that can communicate via D-Star, DMR and fusion using an AMBE 3K USB dongle.
- Chirp – Programs a large variety of radios.
- CONKY – A desktop widget designed by MAWCG that provides real-time details about the system and ham radio.
- CQRLog – A logging application
- Darkice – Darkice send audio streams to streaming sites like Broadcastify.com.
- Direwolf – Virtual Audio TNC
- FieldDayLogger – A log program designed just for field day.
- FLDIGI – Digital Mode software that can communicate on many digital modes like PSK(32, 64, etc), CW, FSQ, Contestia, Olivia, RTTY, WEFAX and many more.
  - FLAMP – File Amateur Multicast Protocol
  - FLMSG – Forms Management Editor
  - FLRIG – Rig Control for FLDIGI
- GPREDICT – Satellite pass prediction software
- GPS – Driver to read GPS devices that are USB or on a HAT including the MAWCG designed Raspberry Pi HAT

## Ham-Pi : https://mawcg.org/ham-pi/

- HamClock – An open source version of HamClock that shows lots of information about Conditions.
- HamLib – Radio control (CAT) for many different radios. It is used by many different software packages.
- HamPi Display – Displays Statistics and information on MAWCG designed Raspberry Pi HAT
- JS8CALL – Keyboard to Keyboard (Chat) using the JS8 weak signal mode.
- M0IAX
- PAT – Web Based Winlink Client
  - ARDOPC – ARDOP Client
  - ARDOPGUI – ARDOP GUI
  - EES – Emergency Email Server for PAT
  - GARIM
  - WinlinkMenu – Setup options for PAT
- Propagation
- PULSE
- PYQSO – Contact Logging Software written in Python
- QSSTV – An SSTV application for decoding SSTV pictures.
- RTC – Real Time Clock utility
- weewx – Open source weather web page generator. Works with many weather systems and can output multiple ways including APRS.
- WSJTX – All of the FT and JT protocols and WSPR
  - GridTracker – Addon for WSJTX to track grids when operating WSJTX.
- XASTIR – APRS Client
- YAAC – APRS Client

# Why SBC?

- Fun – I grew up in UNIX
- OS access and programming
- GPIO - Control stuff
- Much more flexible than “PC”
- Cost/Performance
- Customizable

# • SBC vs Arduino

- SBC is a full “PC”,: monitor, keyboard, OS, high level UI, etc.
- Arduino is development board for dedicated microcontroller:
  - NO OS, limited display capability, limited user interface
  - ATmega328P microcontroller: 8 bit RISC, 20MHz, 32KB
  - I usually just use microcontroller in custom board