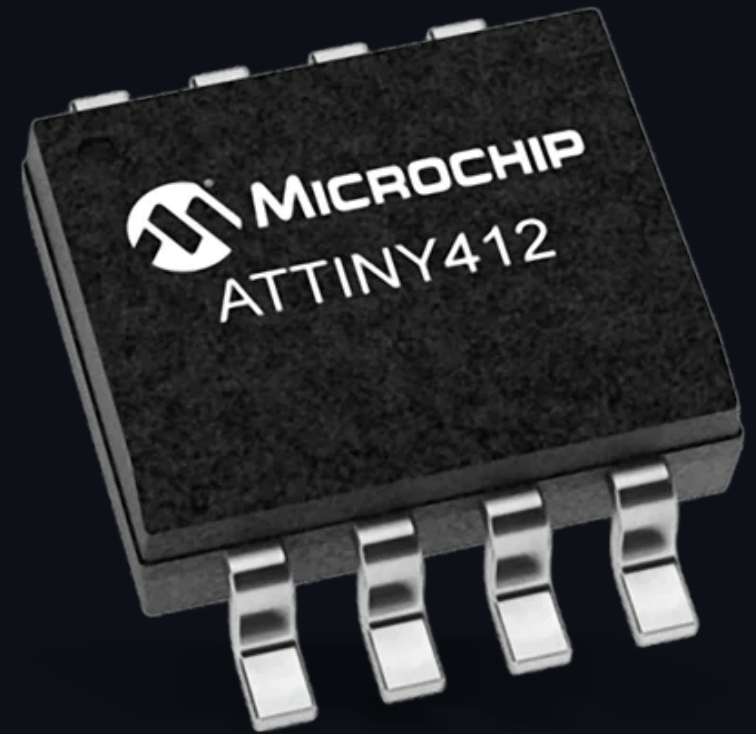


# An MCU To Rule Them All

Krisjanis Rijnieks / Aalto Fablab  
Fab Academy Instructor since 2018



# What is MCU

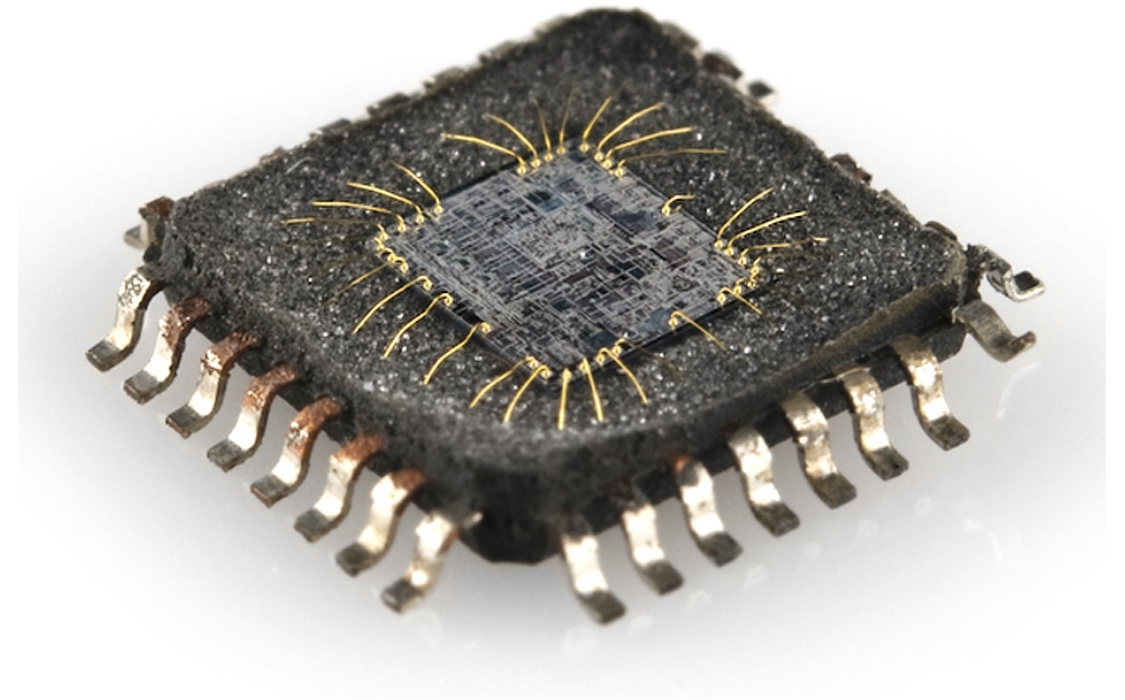
Microcontroller: small computer on a single integrated circuit (IC) chip

NOT Microprocessor



## Integrated Circuit (IC)

a set of electronic circuits on one small flat piece of semiconductor material, usually silicon.



# Foundry

In the microelectronics industry, a **semiconductor fabrication plant** (commonly called a **fab**; sometimes **foundry**)



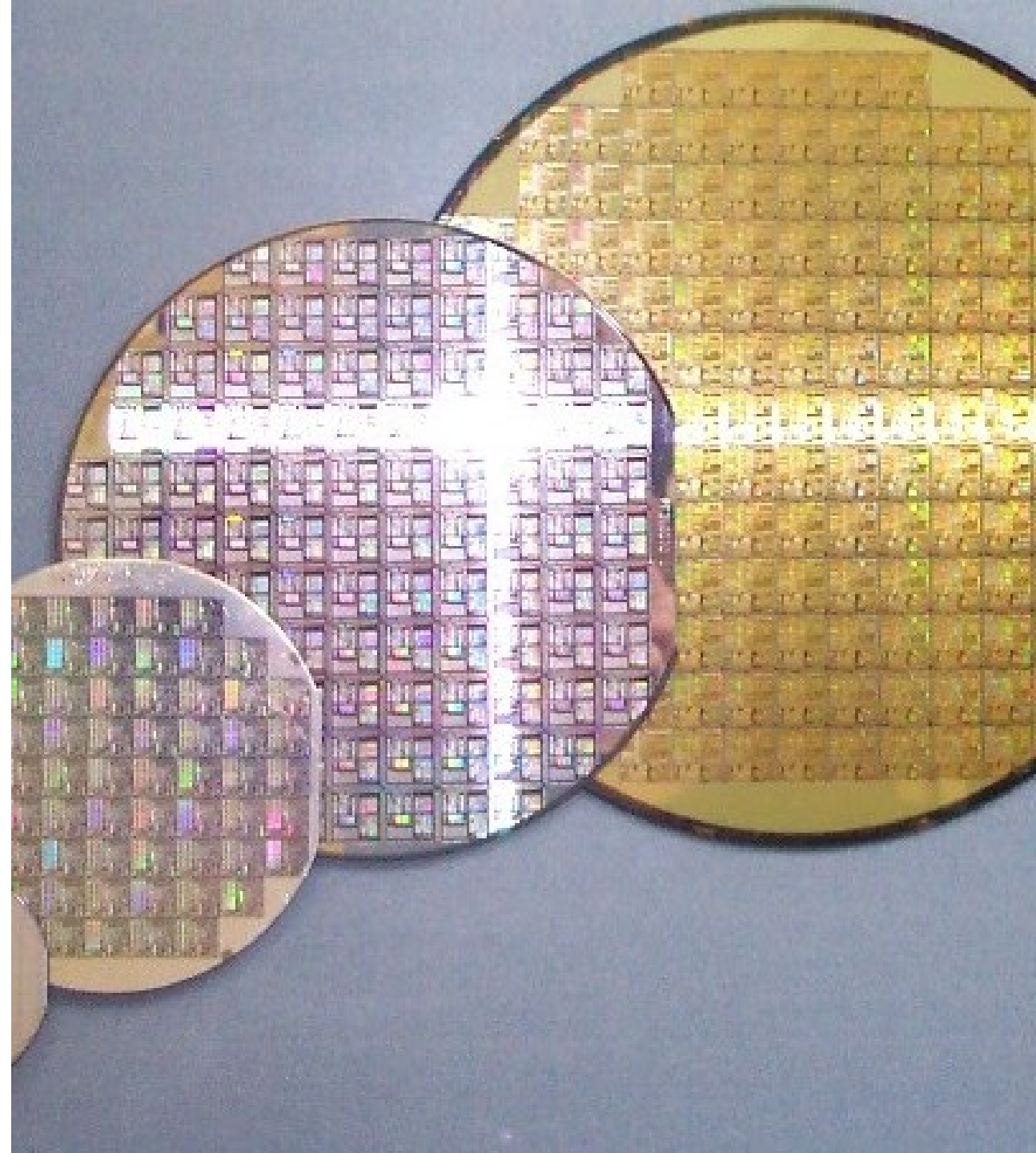
# Cleanroom

A cleanroom or clean room is an engineered space, which maintains a very low concentration of airborne particulates



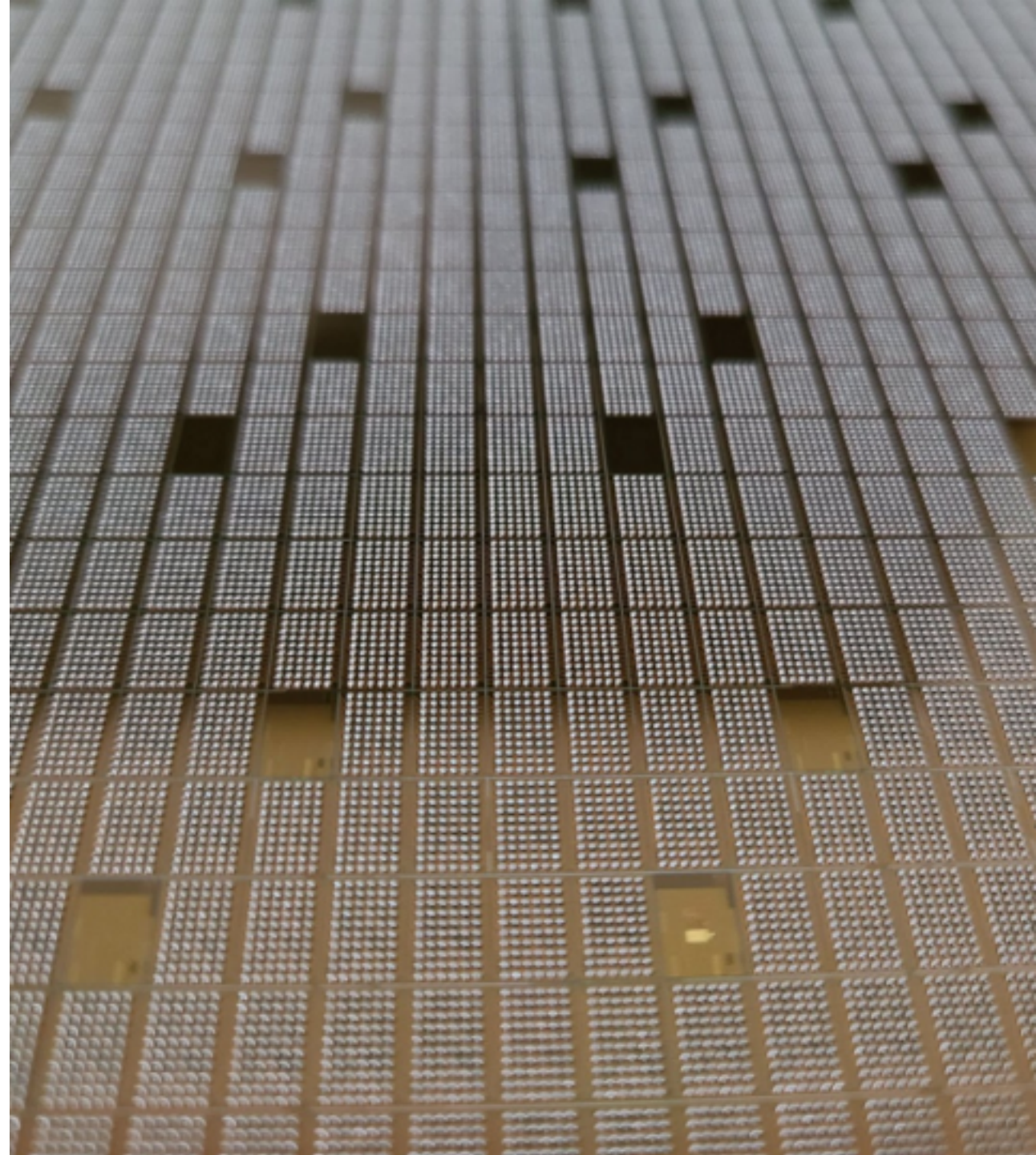
# Wafers

A wafer is a thin slice of semiconductor, such as a crystalline silicon, used for the fabrication of integrated circuits and, in photovoltaics, to manufacture solar cells.



## Google + Skywater

July 28 (Reuters) - U.S. chip manufacturer SkyWater Technology Inc (SKYT.O) and Alphabet Inc's (GOOGL.O) Google Public Sector announced on Thursday they are expanding an open source platform to design chips that can be made in SkyWater's Minnesota facility.

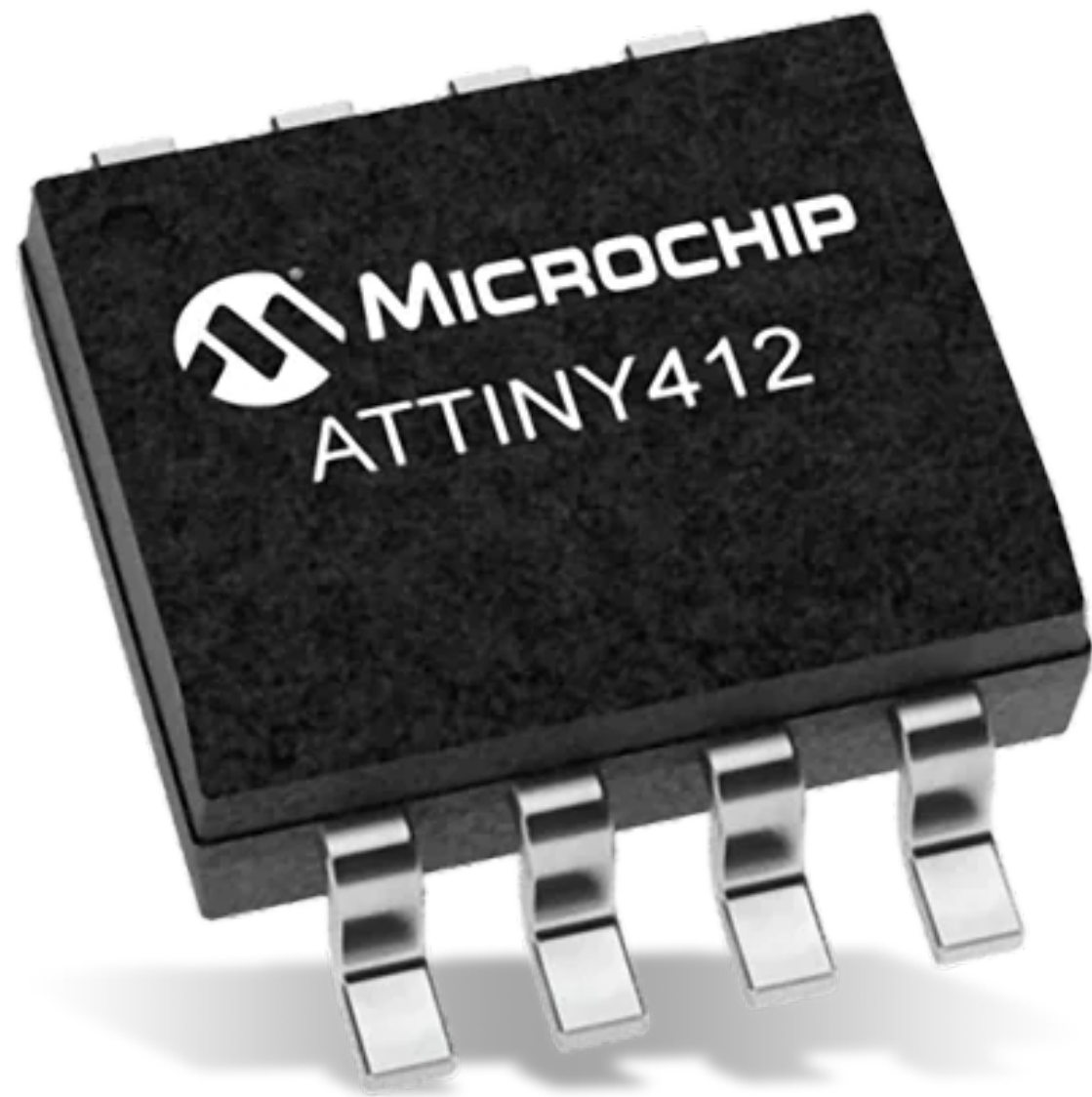


## Open Source ASIC

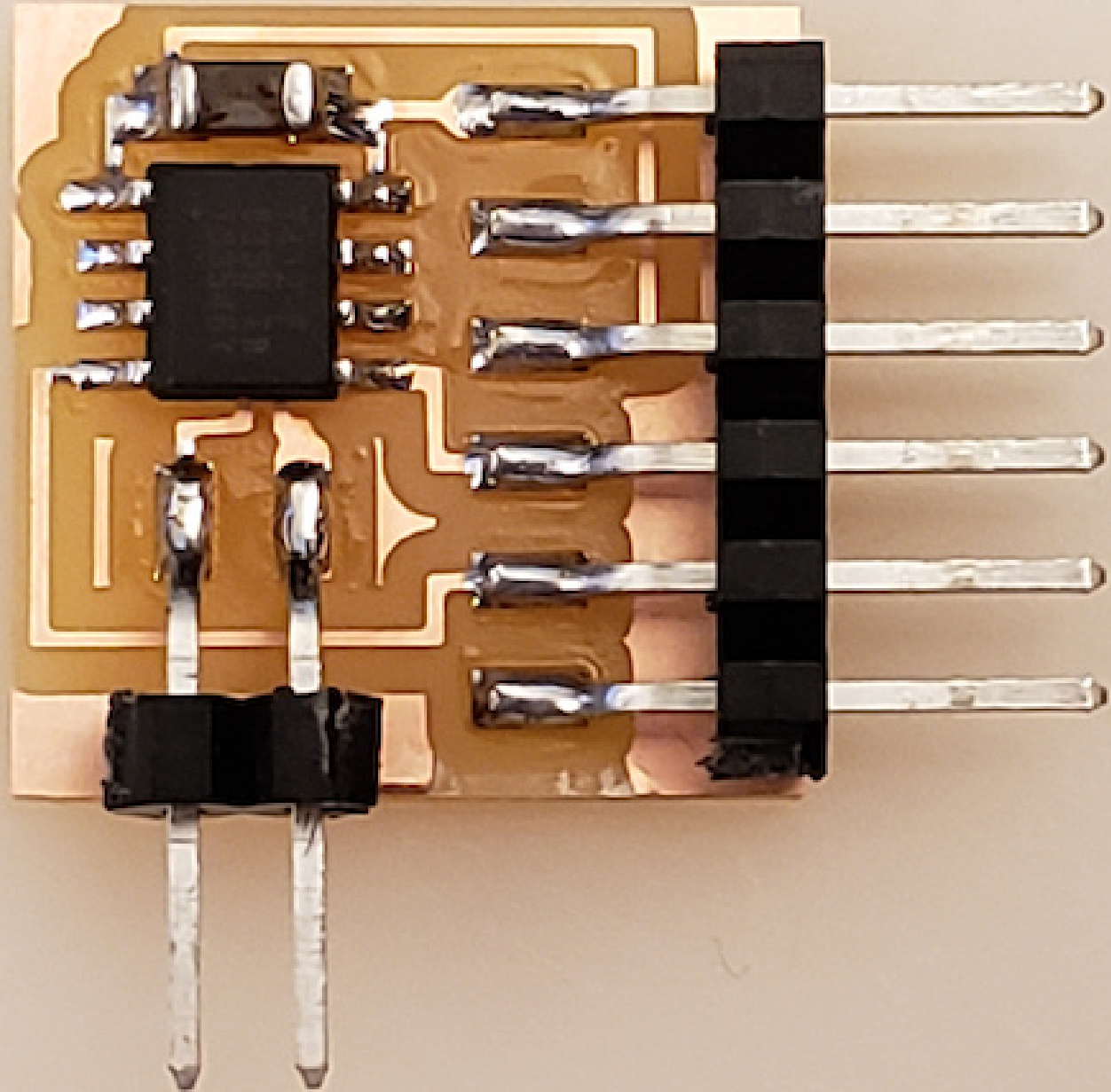
Every other month, you can submit your open source designs to be included in the OpenMPW shuttle program and get a chance to get them manufactured at no cost.

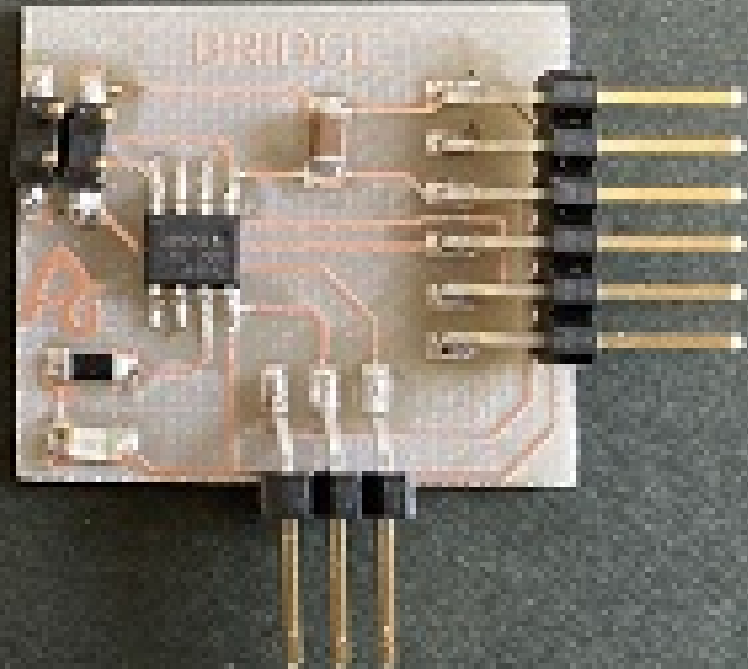
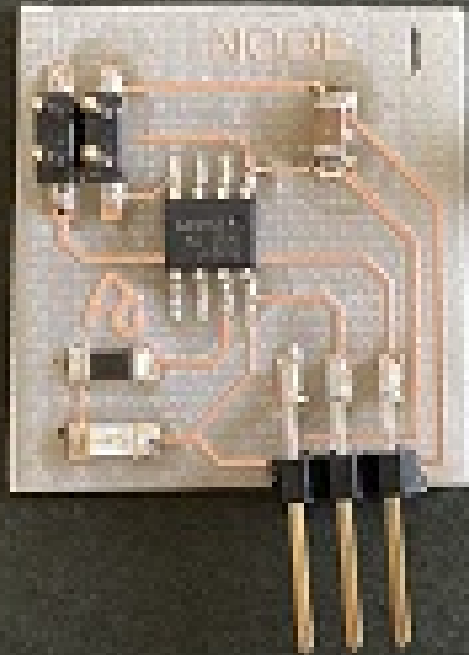
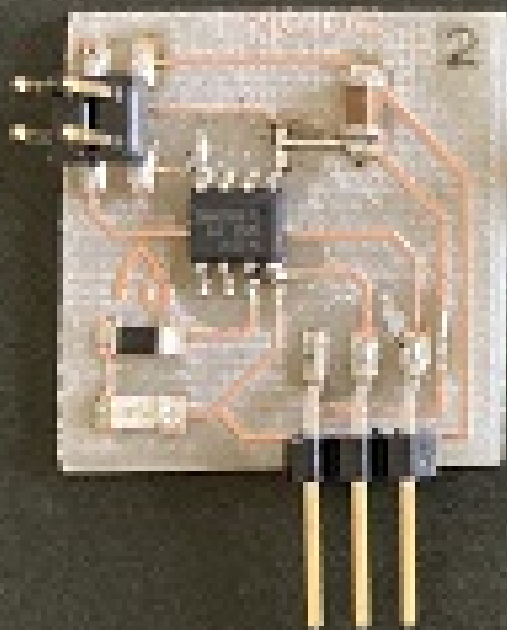
<https://developers.google.com/silicon>

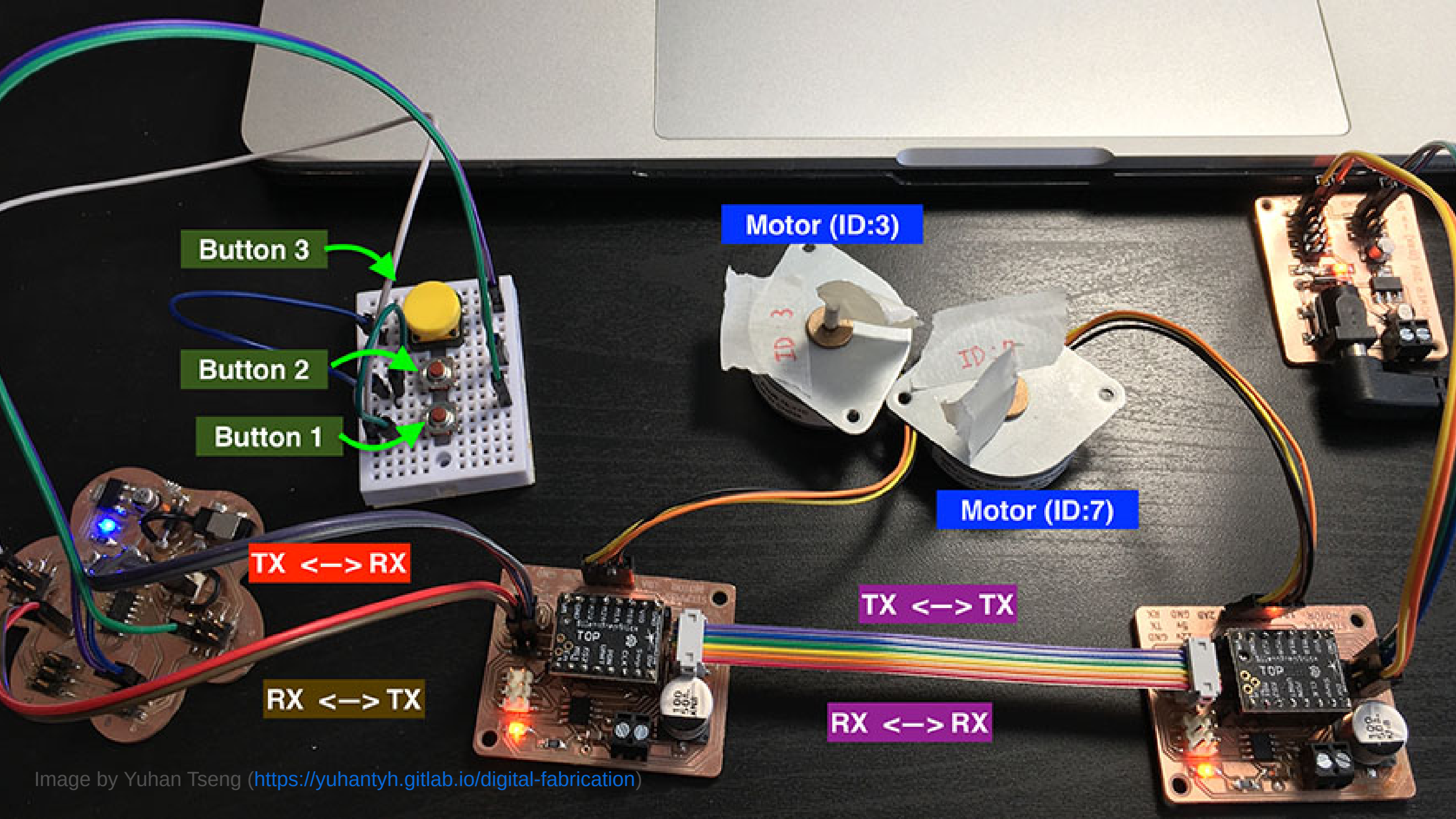




**You Will Make These**







Button 3

Button 2

Button 1

Motor (ID:3)

Motor (ID:7)

TX  $\leftrightarrow$  RX

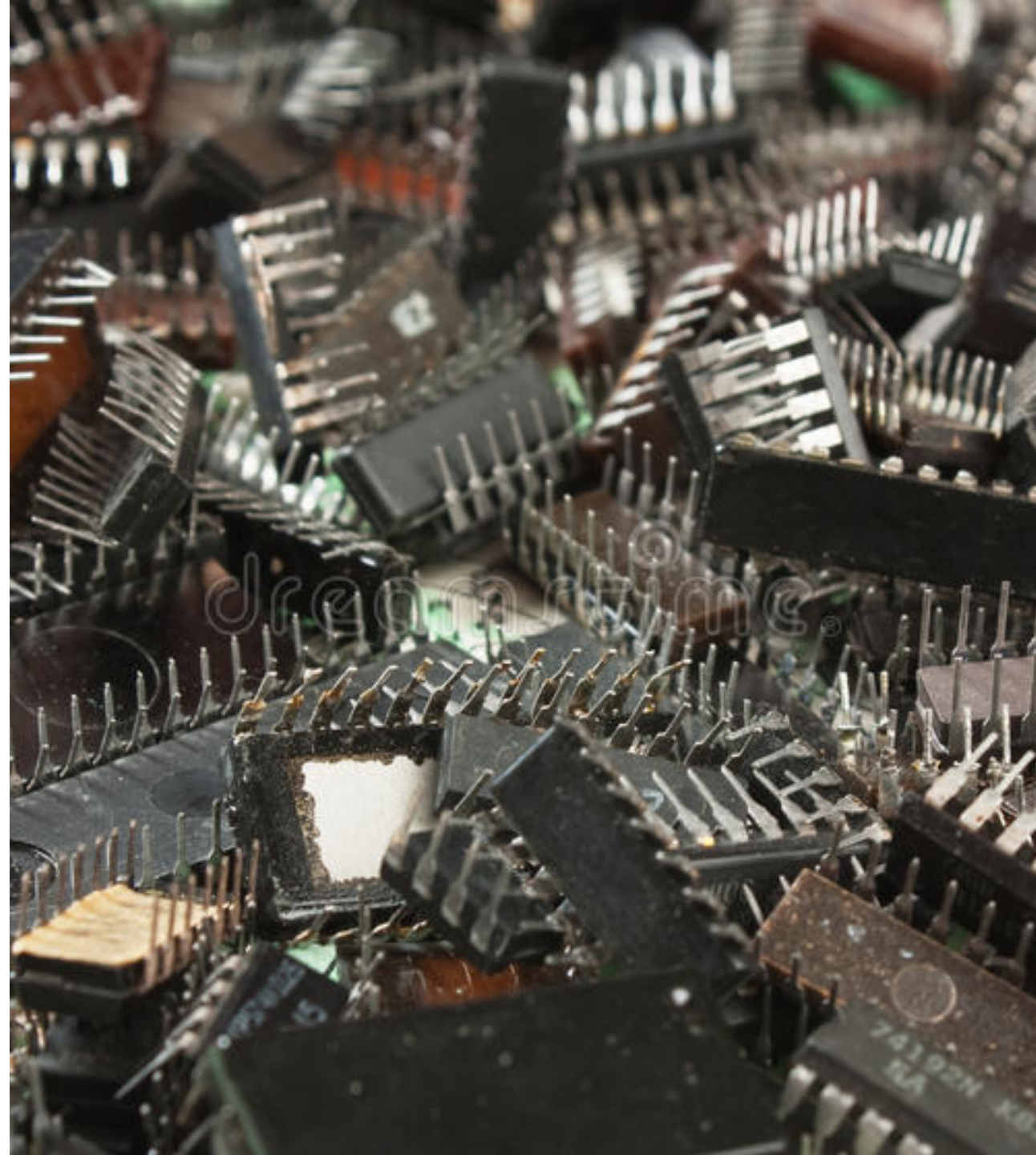
TX  $\leftrightarrow$  TX

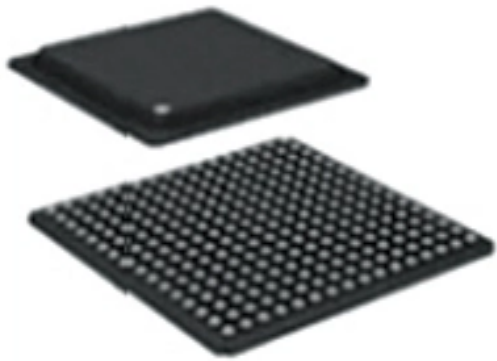
RX  $\leftrightarrow$  TX

RX  $\leftrightarrow$  RX

## Packages

- SOIC-8
- SOIC-14
- 1206
- SOT
- TQFP

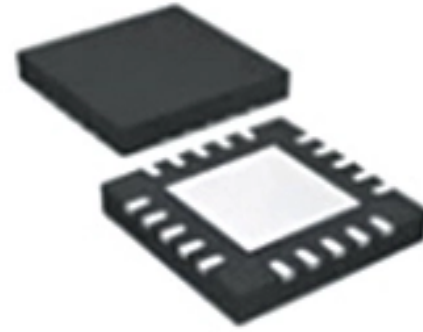




BGA



DIP



QFN



QFP



SOP



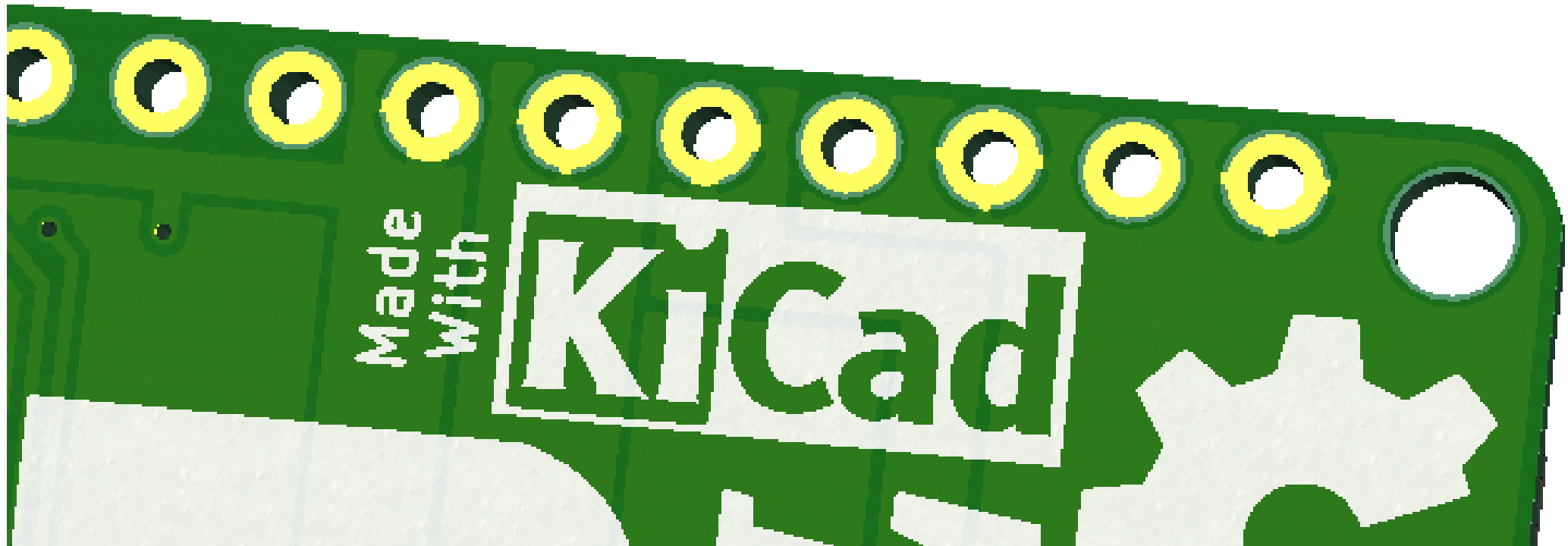
SOP



SOT23



SOT223



**Demo**