PCB for Raspberry Pi Zero

Functions to be performed, optional configurations

- Radio receiver
  - Generate PWM x 4
  - Receive correction data from Altitude / position monitor
  - Correct altitude
  - Correct position
- Radio transmitter
- Altitude / position monitor
  - Send data to receiver

Components on Board

- Raspberry Pi Zero W
- nRF24 radio
- 5Mb camera
  - Standard or
  - Interchangeable lens
- Ultrasonic distance transducer

At this point I realized that I could not make this configuration work.

The Radio receiver needs updates from the Altitude / position sensor to perform needed corrections. The Raspberry Pi does not have a slave mode for SPI or I2C. Short of “bit banging” there is no convenient way to communicate.

A possible solution is to use an SPI RAM to pass data. Tristate control pins, CSn and CK will allow the two devices (Receiver and Altitude / position monitor) to access the RAM. One, or at the most two wires can be used to arbitrate access.

~~One possible solution is to implement a buffer in a programmable device with two SPI slaves and a fifo. As many (most) current devices are BGA or similar, this limits choice. My desire is to pick a solution that I can hand assemble myself. After a brief search I have found Lattice ICE40LP384-SG32 in a 32 QFN package.~~