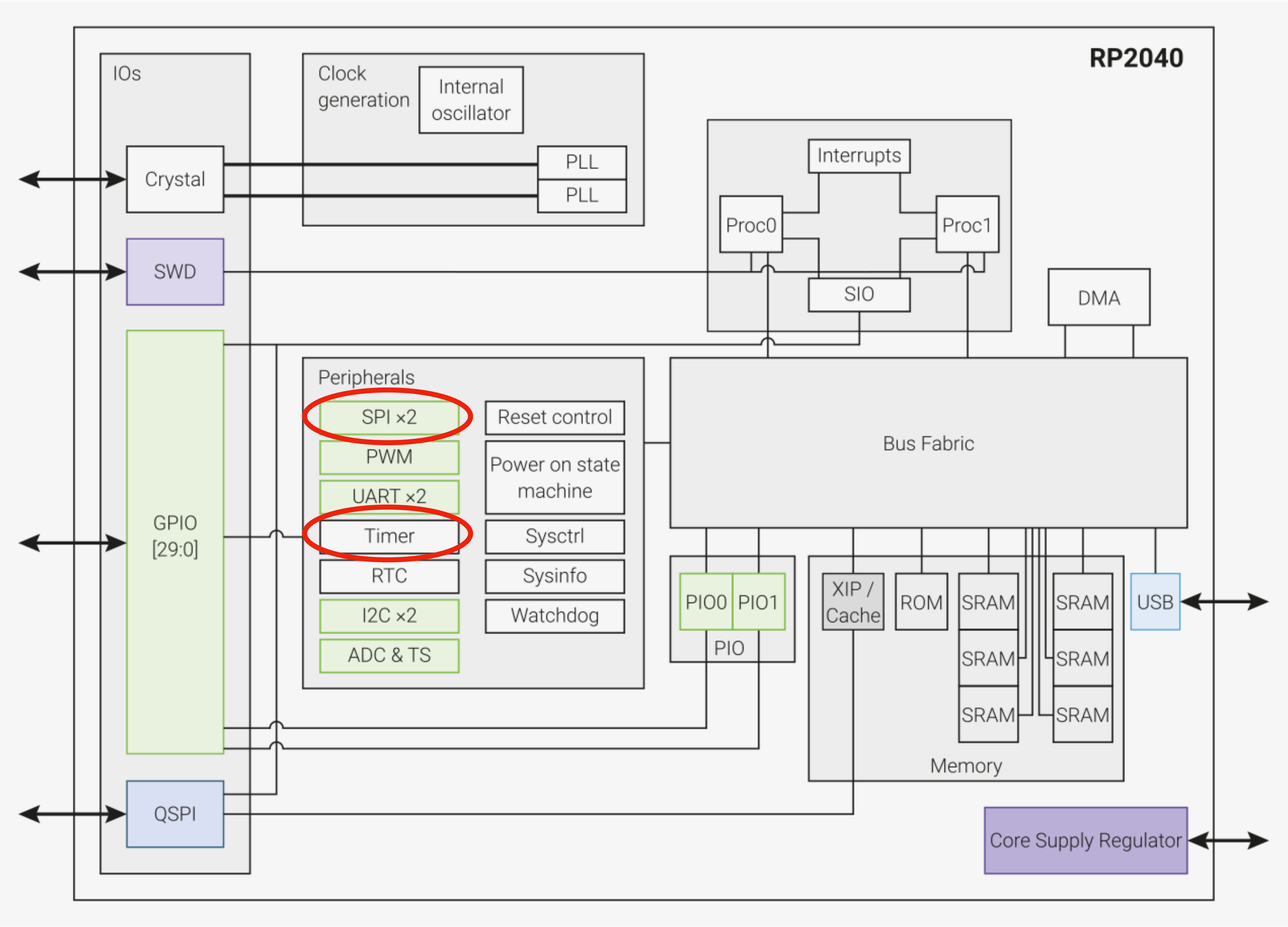


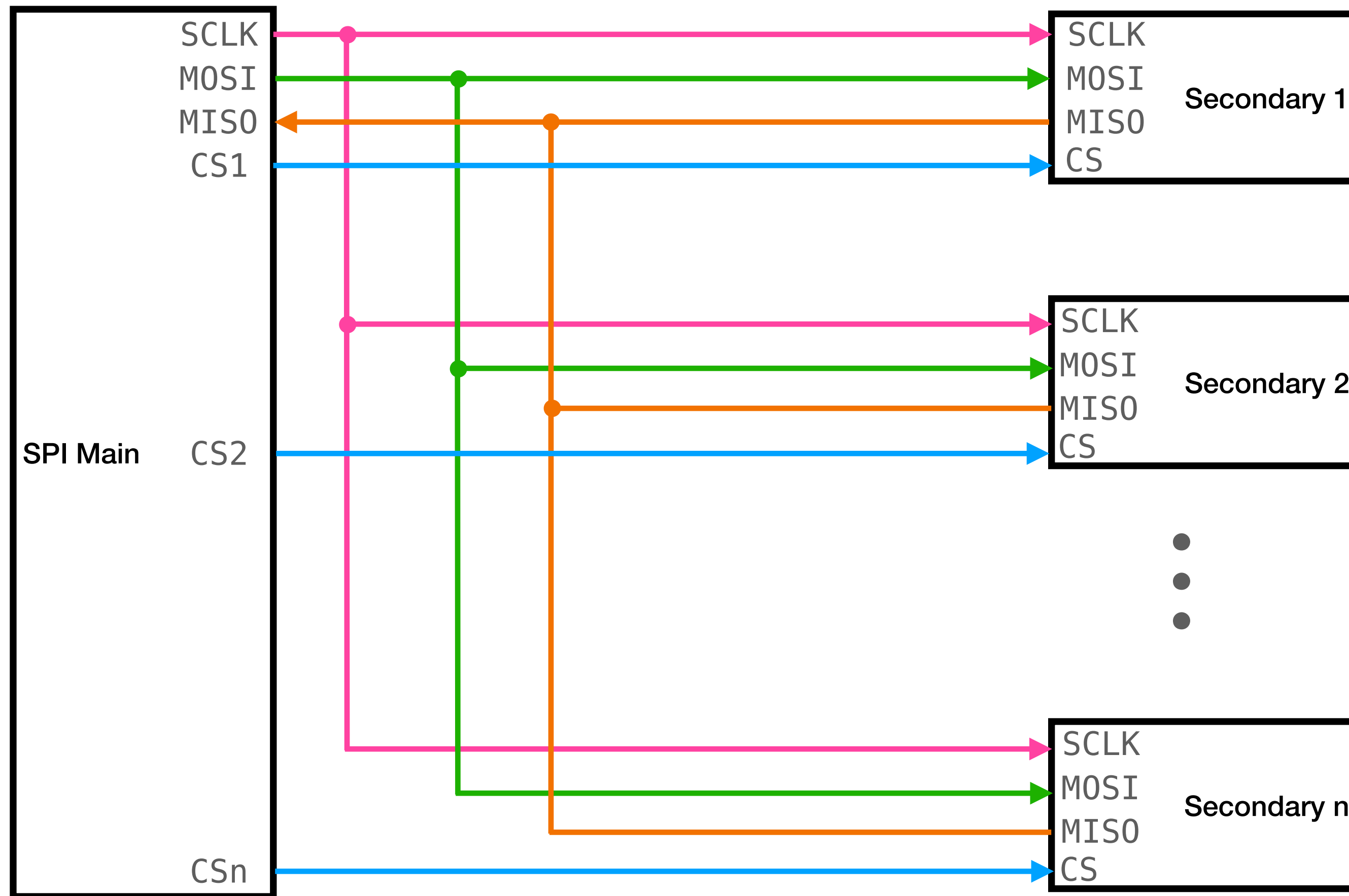
Raspberry Pi Pico (RP2040)

Lecture 3: Timers, Timer Interrupts, SPI



Timer Peripheral

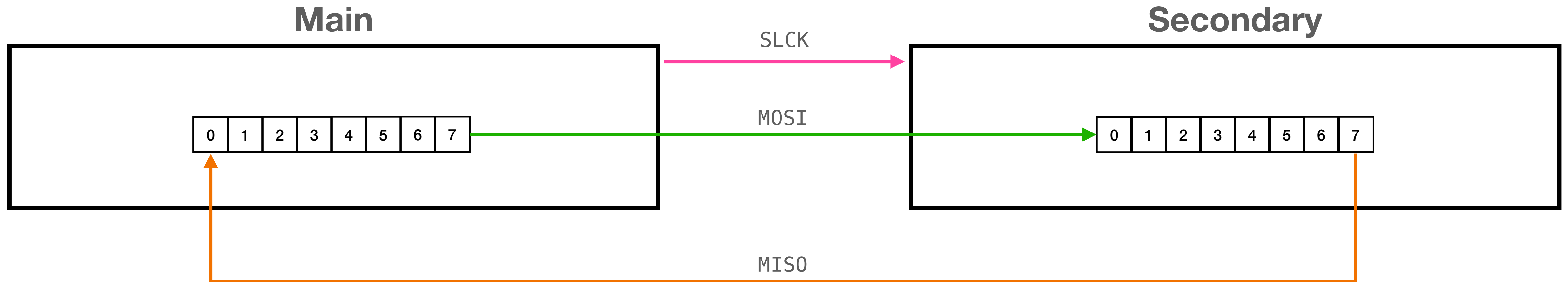
Hooking up the hardware



Different manufacturers often call these lines by different names. Read the datasheet! If you understand the function of each line in the SPI protocol, then you will understand which to connect, even if they have different naming conventions.

At a high level . . .

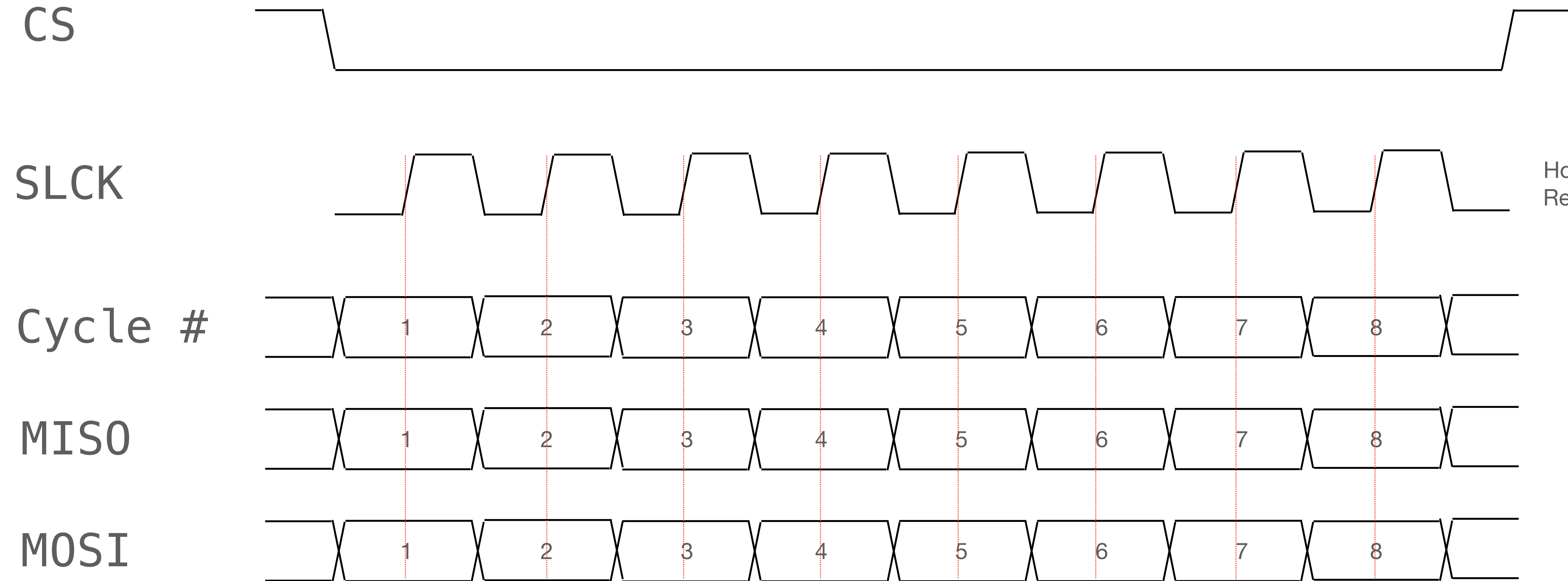
Two shift registers form an inter-chip ring buffer.



When the master loads the transmit register (int, short, or byte), the transmit begins. Data is *simultaneously* and *synchronously* sent from master to peripheral, and from peripheral to master over the MOSI/MISO lines.

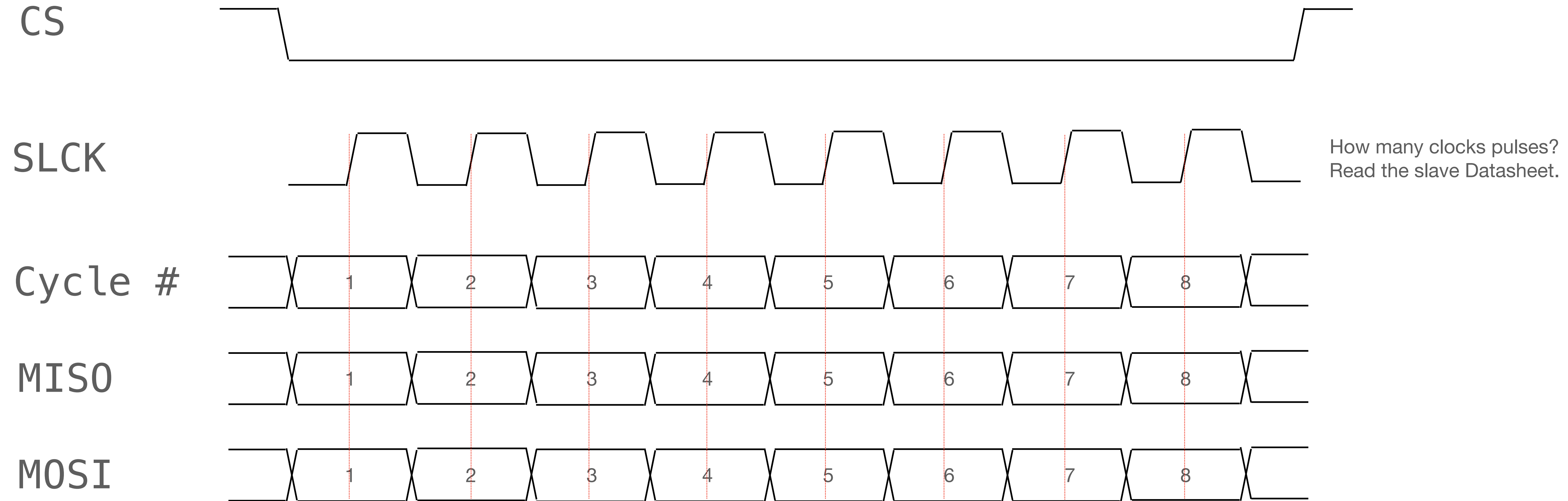
Necessarily full duplex. You must send data to receive data.

Timing diagram



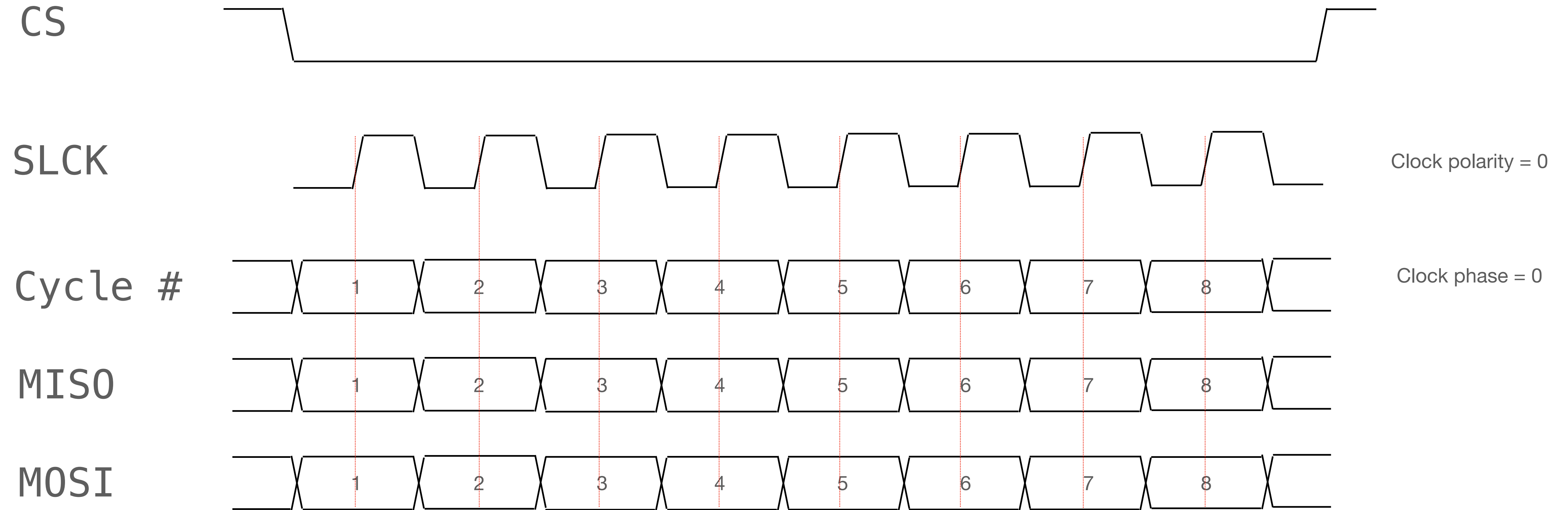
How many clocks pulses?
Read the slave Datasheet.

Timing diagram

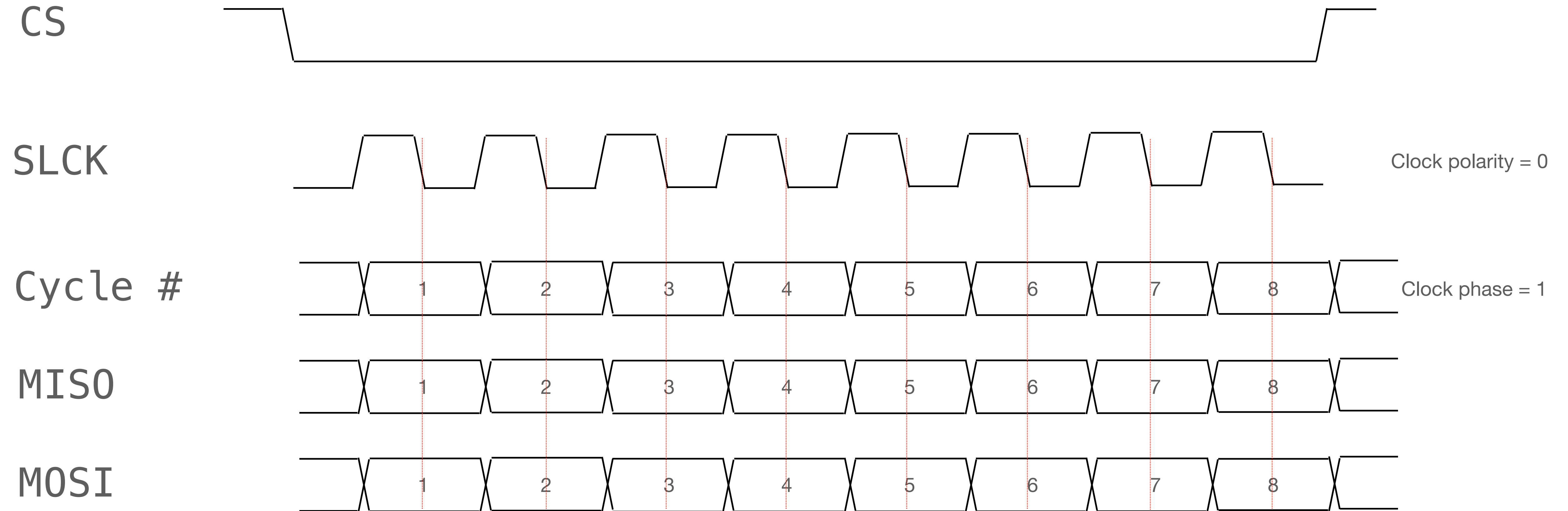


There are 4 different SPI modes.

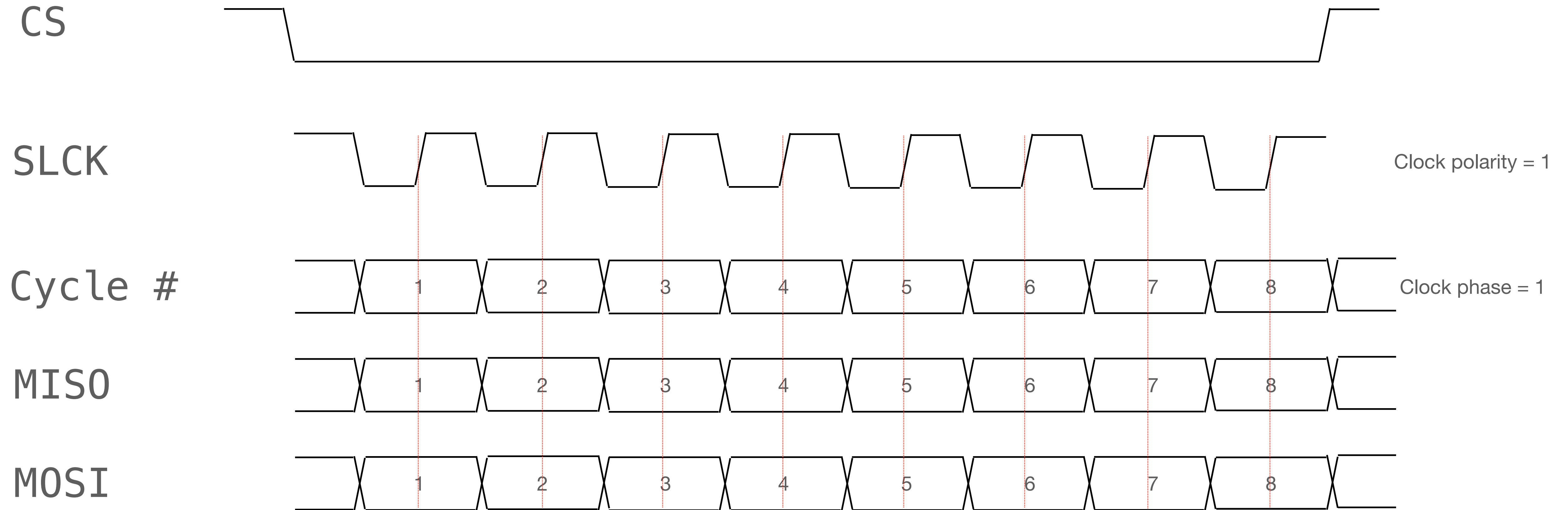
Timing diagram



Timing diagram



Timing diagram



Timing diagram

