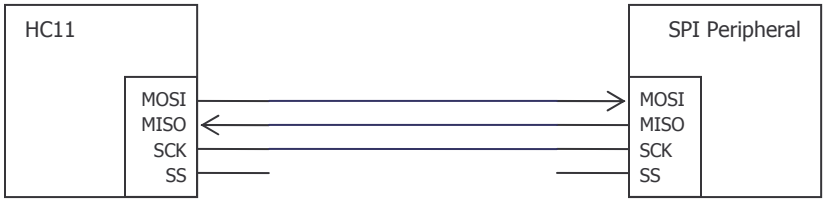
HC11 Synchronous Peripheral Interface



When you write a byte to the SPDR, it begins putting one bit on MOSI to be sent on the wire to the peripheral device. It also generates a clock signal to be sent to the peripheral device.

This is a full duplex communication. While one is transmitting to the other, the other is simultaneously transmitting back. It is a closed cycle.

It takes 8 clock cycles to transfer 1 byte = 8 bits.

Usually the microcontroller is the only device that initiates transmission. The peripheral cannot then initiate but must wait for the microcontroller. The circle cannot be broken.

Programming for SPI Communication

The SPI interface is very straight forward.

Registers:
SPDR
SPCR
SPSR – (“spicer”)

SPDR
Data register

SPSR

SPIF	WCOL	-	MODF	-	-	-	-

Initiates SPI communication.

When an event completes, the SPIF goes high.

Clearing the flag bit:
LDAA SPSR
...
LDAA SPDR

This matched set automatically cleared the SPIF flag.

A write collision occurs (WCOL) when you try to store something into SPSR when it is in the middle of a transmission – while it is still busy.

SPCR

SPIE	SPE	DWOM	MSTR	CPOL	CPHA	SPR1	SPR0

SPIE – enable interrupt
SPE – turns the SPI component on. Like the ADC's power-up bit.
MSTR – determines whether component is the master (1). Slave is 0.

Enable the component by turning it on
Set master or slave.
Enable interrupts if you want. Set the

Write to the SPDR.