QSPI
Queued Synchronous Peripheral Interface

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QSPI
Queued Synchronous Peripheral Interface

**Highlights**

QSPI module provides synchronous serial communication with external devices using clock, data-in, data-out and slave select signals.

- Master and Slave full duplex operation
- Up to 50 Mbit/s

**Key Features**

- Queue support
- Flexible frame format

**Customer Benefits**

- Configuration and data via the same Queue (Tx or Rx FIFO)
- Configurable shift direction, clock polarity and phase
QSPI
Queue support

› The Tx-FIFO could keep the data to be sent and additionally the configuration data for the SPI module
› This enables dynamic and comfortable switching of SPI frame timings and data configuration independent for each channel:
  - Data length
  - LSB/MSB shift first
  - Clock polarity and clock phase
  - Flexible baud rates and delays
  - Parity Type
  - Flexible frame length
QSPI
Flexible frame format

› Programmable number of data bits: 2 to 32 data bits (plus parity: 3 to 33 bits)
› 4 to 32 data bits possible for 50 Mbit/s
› Programmable shift direction: LSB or MSB shift first
› Programmable clock polarity: Idle low or idle high state for the shift clock
› Programmable clock phase: data shift with leading or trailing edge of the shift clock
› Flexible baud rate and delays (leading, trailing, idle) generation
QSPI
System integration

- FIFOs can be handled by DMA controller
- Interrupt generation on
  - transmitter FIFO event
  - receiver FIFO event
  - error condition
  - phase transition
- Seven slave select inputs SLSI in Slave Mode
- Sixteen programmable slave select outputs SLSO in Master Mode
Application example
SPI master

4-Wire SPI

- SCLKO
- MRST/MISO
- MTSR/MOSI
- SLSO

Overview

- Typical 4-wire SPI Master communication
- Support for Full-duplex, Half-duplex and Simplex modes

Advantages

- Full configuration of Idle, Leading and Trailing delays
- Flexible timing control allows to program the duty cycle and the sampling point properties of the serial clock
Application Example
SPI slave

Overview

› Typical 4-wire SPI Slave communication
› Support for Full-duplex, Half-duplex and Simplex modes

Advantages

› Easy configuration with shift clock phase and polarity
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