QSPI
Queued Synchronous Peripheral Interface
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**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
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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