Authentic I2C Virtual Peripherals for SX-28

I2C serial bus has been widely used for over a decade to provide economical implementation for board level interface between different devices. Software implementations of I2C Slave protocol would not be an easy and convenient task for commonly used microcontrollers. However, this is not the case with SX-28 microcontroller. The advantage of fast clock (and instructions) rate of SX-28 microcontrollers makes it possible to implement the I2C with very little burden on system resources. Authentic I2C Slave VP takes only 1% of SX CPU resources to continuously monitor the I2C bus, and insures timely response to I2C bus Master requests.

I2CS.src (I2C Slave) virtual peripheral consists of four relatively independent subroutines:

I2CS_Init subroutine provides correct configuration of SX-28 I/O Ports.

I2CS_Send_Byte – supports transmission of the data byte to the Master.

I2CS_Get_Byte – supports reception of the data byte from the Master.

I2CS_Send_Akcnowledgement – generates the ACK signal.

Main I2CS module - I2CS_Execute executes the data transfer protocol based on 10-bit I2C addressing mode. It is worth mentioning that I2CS subroutines may be combined to support other modifications of I2C protocol.

I2CS allows Master directly access one RAM bank of the Slave SX microcontroller. Only one byte of information can be transferred at a time.

I2CS supports bus clock rates up to 1.8 MHz, and will easily work with standard clock rate of 400 KHz.

Demo program I2CSdemo.src is provided as an example of implementation of I2CS VP. The demo program supports simple read and write operations to one of the SX RAM banks using RTCC interrupt to start the I2CS VP.

Extensive documentation and source files are included.

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