

SC18IS602/603 Demo Board

Board Connection

- I2C
 - This I2C header is used to connect an I2C host such as a microcontroller with I2C bus master capability interfacing to SC18IS602/603 (I2C-to-SPI bus controller) Bridge. The signals need to be attached to the I2C bus are VCC, SDA, SCL, INT, RST, and GND.
 - This -INT signal is an interrupt signal output from the SC18IS602/603 to the I2C host. If an interrupt method is used, the INT signal should be connected to the input interrupt of the I2C host for servicing the interrupt when occurred.
 - This -RST signal is a reset signal input to the SC18IS602/603 from the I2C host. The host can reset the SC18IS602/603 and upon reset, the SC18IS602/603 registers will be initialized with the default values.

- SPI
 - This SPI header is used to connect SPI slave devices. The signals need to be attached to the SPI bus are VCC, MISO, MOSI, SCLK, GND. The four chip selects (SS0, SS1, SS2, SS3) need to be connected to the SPI slave devices so one chip select is for one SPI slave device. Thus, up to four SPI slave devices can be connected to the SC18IS602/603

 - If the four chip-selects are not used to select the SPI slave devices. They can be used for general-purpose input/output (GPIO). Peripherals such as LEDs and switches can be connected to the GPIO. The programmable GPIO can drive LEDs as output from the SC18IS602/603 and detect switches as input to the SC18IS602/603.

- Address
 - This address header is used to select an I2C address of SC18IS602/603 on the I2C-bus. The SC18IS602/603 has three bit addresses (A0, A1, A2) so 8 different addresses can be selected and the host can identify the SC18IS602/603 with its I2C address.

- SC18IS602/603
 - SC18IS602 uses an internal clock so it does not require an external clock. An oscillator installed on the OSC1 location should be removed.
 - SC18IS603 requires an external clock so an oscillator should be installed on the OSC1 location.

The block diagram below shows an example of the SC18IS602/603 as I2C-to-SPI bus Bridge for a serial interface application between a host processor with I2C master interface capability and multiple SPI slave devices

- The host with I2C master interface capability sends I2C messages to the SC18IS602/603 via I2C bus. Then, the SC18IS602/603 convert the I2C messages to SPI messages and pass them to the SPI bus controller of SC18IS602/603, which controls the communication between SPI slave devices,
- The SC18IS602/603 receives messages from the SPI slave devices and generate an interrupt signal so the host can retrieve the messages via I2C bus interface
- The host can also send I2C messages to the SC18IS602/603 to program the GPIO register for turning on/off the LEDs as output and detecting on/off the switches as input

The Usage Scenario of SC18IS602/603 (I²C-to-SPI) Bridge

