

LabB11_T0

Documentation

F28335 – SPI-A Communication

External EEPROM ST M95080

1. Project Dependencies

The project expects the following support files:

- F28335 Header Files Version 1.20 (sprc530.zip) installed in:

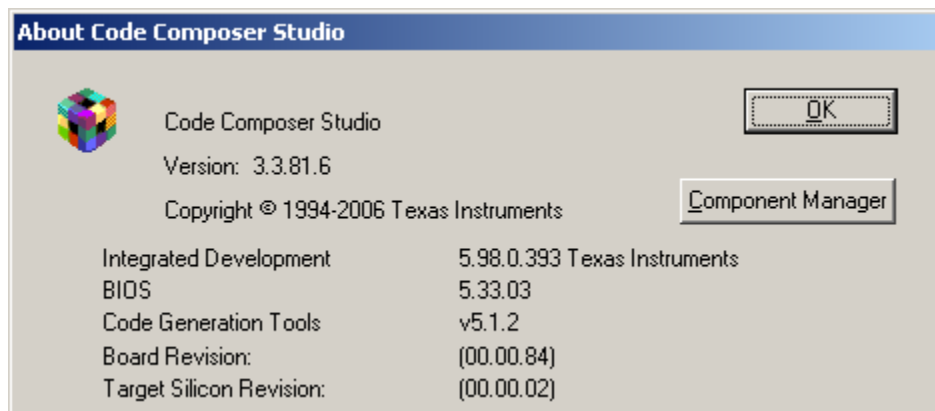
C:\tidcs\c28\DSP2833x\v120

- Code Generation Tools Version 5.1.2 installed in:

C:\CCStudio_v3.3\C2000\cgtools5.1.2

- CodeComposerStudio Version 3.3.81.6 (Service Release 11) installed in:

C:\CCStudio_v3.3



2. Project Objective

The SPI-A channel of the F28335 is connected in parallel to an external EEPROM and DAC.

- EEPROM: M95080 ST-Microelectronics; Chip-select is pin GPIO27
- DAC: TLV 5617A Texas Instruments; Chip-select is pin GPIO26

The EEPROM of size 1024 x 8 is controlled by 6 commands:

- Write Enable (0x06)
- Write Disable (0x04)
- Read Status Register (0x05)
- Write Status Register(0x01)
- Read(0x03)
- Write(0x02)

For Details see datasheet (m95080.pdf; © STMicroelectronics) in project folder.

The control time base is generated by CPU Timer0 with a periodic interrupt request @ 100ms.

The DSP-Watchdog timer is active; it is serviced in Timer0-ISR and main-loop.

The objective of the project is to sample 2 pushbuttons (GPIO21, GPIO25) with active level 0.

If GPIO21 is pressed down, a SPI – write command into address 0x40 is initiated and value 0x55 will be written into the EEPROM.

If GPIO25 is pressed down, a SPI – read command from address 0x40 is initiated. The received value is display with 8 LED's, which are connected to 8 GPIO output lines (GPIO 0...7).

The SPI-A is initialized to:

- SYSCLK = 150 MHz
- LOSPCP = 2 (divide by 4); 37.5 MHz
- SPIBRR = 25; SPICLK = 1.5 MHz
- 16 Bit SPI Data Transfer
- Clock polarity = 1; data out on falling edge of CLK
- Clock phase = 0; no clock delay between CLK and data
- SPI – Master/Slave = 1; Master – Mode
- Talk = 1; transmit enabled
- No SPI-A Interrupts enabled

3. Project Control Loop

CPU Timer0 – ISR increments the global variable “CpuTimer0.InterruptCount” every 100 ms.

The control loop in main waits for a 100 ms interval. It then samples the control buttons GPIO21 (‘write’) and GPIO25 (‘read’).

If GPIO21 is zero, value 0x55 is written into EEPROM – address 0x40.

If GPIO25 is zero, it reads the value from EEPROM – address 0x40 and displays it on 8 GPIO – outputs (GPIO 0...7), which are connected to 8 LED.

4. Function Test

Run the code. The eZdsp LED-GPIO32 should blink with 100 ms.

Push and release S1 (GPIO21).

Push and release S2 (GPIO25).

The value 0x55 should be displayed the LED-Line (GPIO 0...7).