PSoC 4 CAN Full Example Project
1.0

Features

- Configures Transmit and Receive mailboxes in Full CAN Mode

General Description

This example project demonstrates how to configure the CAN component to transmit and receive messages over the CAN bus in the Full CAN mode.

This is only one part of the CAN example project. Use this example along with CAN_Basic_P4_Example for complete demonstration.

Development kit configuration

This example project is designed to be executed on CY8CKIT-044 from Cypress Semiconductor. A full description of the kit, along with more example programs and ordering information, can be found at http://www.cypress.com/go/cy8ckit-044.

Also, the example project requires CY8CKIT-017 CAN/LIN Expansion Board kit. A full description of the kit, along with more example programs and ordering information, can be found at http://www.cypress.com/?rID=40215.

To use a CY8CKIT-017 CAN/LIN Expansion Board kit with a CY8CKIT-044/CY8CKIT-046 kit the following connection has to be done:

1. Connect the GND and V5_0 pins of the CY8CKIT-017 kit to appropriate GND and V5.0 pins on header J1 of CY8CKIT-044/CY8CKIT-046 kit.
2. Connect the C_RX and C_TX pins of the CY8CKIT-017 kit to pin P0[0] and pin P0[1] appropriately on header J2 of the CY8CKIT-044 kit or on J18 header of CY8CKIT-046 kit.

The CY8CKIT-017 CAN/LIN Expansion Board kit should be used with the following installed jumpers: JP2 (CAN Termination Resistor), CANEXTPWR and JP6 set to Vdd-V5_0 (the default setting for 5V operation). Any jumper on the board not mentioned above should have no jumper installed.

1. Build the project and program the hex file into the target device.
2. Set 3.3V position on header J9.
3. Connect the precise external clock source (with accuracy ±0.2%) to P0[6].
4. Power cycle the device and observe the results using a USB-UART bridge.
5. A CAN – USB analyzer can be used to analyze the data traffic.

The project requires configuration settings changes to run on other kits from Cypress Semiconductor. Table 1 is the list of the supported kits. To switch from CY8CKIT-044 to any other kit, change the project's device with the help of Device Selector called from the project's context menu.

Table 1. Development Kits vs Parts

Development Kit	Device
CY8CKIT-044	CY8C4245AXI-483
CY8CKIT-046	CY8C4248BZI-L489

The pin assignments for the supported kits are in Table 2.

Table 2. Pin Assignment

Pin Name	Development Kit	
	CY8CKIT-044	CY8CKIT-046
RX	P0[0]	P0[0]
TX	P0[1]	P0[1]
UART:rx	P7[0]	P3[0]
UART:tx	P7[1]	P3[1]

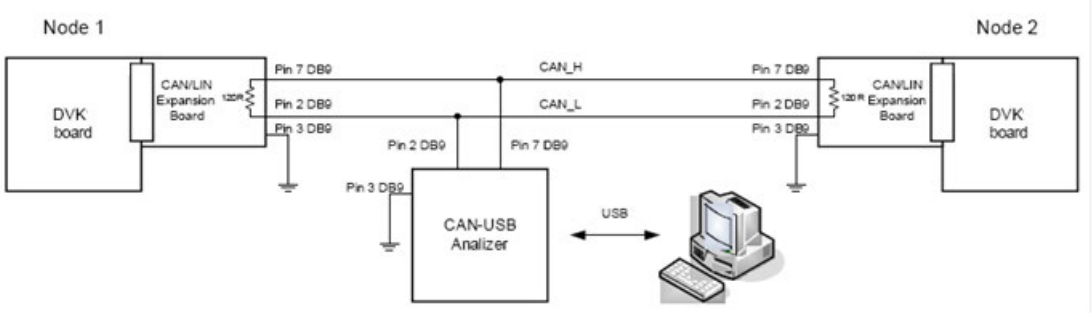
Project Configuration

The example project consists of the CAN and SCB (UART mode) components.

CAN received and transmitted data can be verified using a USB-UART bridge. To ensure proper functioning of the examples projects, you should create a mini network from at least two CAN nodes as shown in Figure 1. The network as shown in Figure 1 also includes the CAN-USB analyzer to analyze the data traffic.

Note that P0[6] is shared pin for an external clock source and the RGB LED for the CY8CKIT-044 kit. If you want disable the LED then please remove R16 resistor.

Figure 1. Test CAN Network Topology



Project Description

This example illustrates how to transmit and receive messages using the CAN component.

The CAN component is configured to receive the following messages from the remote node:

Message 1 - Status of Switch1.

Message 2 - ADC data.

The component is also configured to transmit data to control the PWM pulse width in the remote node. The transmitted data (pulse width value) increments at a switch press.

Both transmitted and received data can be verified using a USB-UART bridge.

Every 100ms ADC data measures by remote node receives over the CAN bus and sends over the UART.

When the node receives Message 1 (with status of Switch1) it sends this status over the UART and increments value of PWM pulse width by ten and sends back to the remote node updated PWM pulse width value along with sends over the UART. Please note that PWM pulse width isn't being sent before first button connected to Switch1 press.

All transmitted and received data sends over the UART for both nodes.

Expected Results

Program the device with the project and observe the ADC data, PWM pulse width, and status of Switch1 (pressed or released), using a USB-UART bridge.

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