

CAPTIVATE-ISO

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The CAPTIVATE-ISO is available if you need to isolate the programming and communication signals between the target MCU and a connected PC.

This chapter of the CapTlvate Technology Guide contains the following sections:

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To order a CAPTIVATE-ISO, visit the [tool folder](#).

Overview

The CAPTIVATE-ISO PCB provides isolated UART, I2C, IRQ, and Spy-by-Wire signals as well as isolated GND and +3.3V power planes. This may be required when developing battery powered applications or performing conducted noise testing. For additional information about noise immunity, refer to the [conducted noise testing](#) chapter.

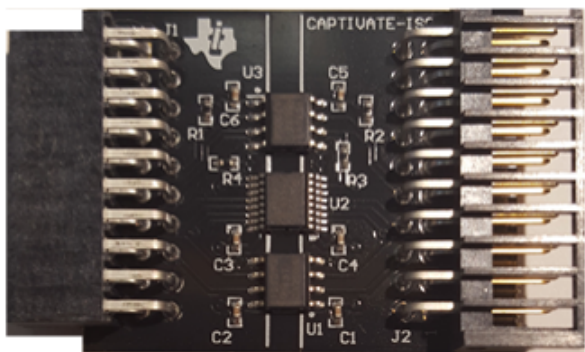


Fig. 339 CAPTIVATE-ISO PCB

Key Features

The CAPTIVATE-ISO has the following key features:

- Provides galvanic isolation for SBW programming/debug, I2C and UART communications
 - TI low power digital isolators
 - ISO1541 for Spy-by-Wire
 - ISO7131 for UART
 - ISO1540 for I2C

- No shared power or grounds
- Use when performing
 - Tuning battery powered applications
 - Conducted noise testing

What's Included

- 1 CAPTIVATE-ISO isolation board

Block Diagram

The functional block diagram for the CAPTIVATE-ISO is shown below.

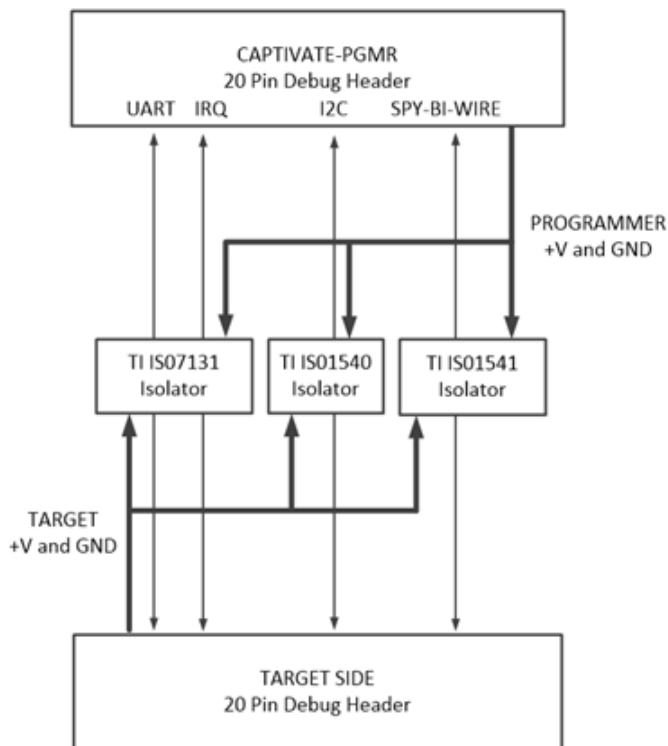


Fig. 340 Block Diagram

Hardware

The CAPTIVATE-ISO PCB provides isolated Spy-Bi-Wire programming and debugging. Due to the added delays in the SBW timing,, it is recommended to use the default medium JTAG/SBW speed or slower. JTAG/SBW speed = FAST is not supported at this time.

Typical Isolated Setup

The diagram below illustrates a typical setup using an isolated power supply or battery to power the CAPTIVATE-FR2633 MCU target PCB.

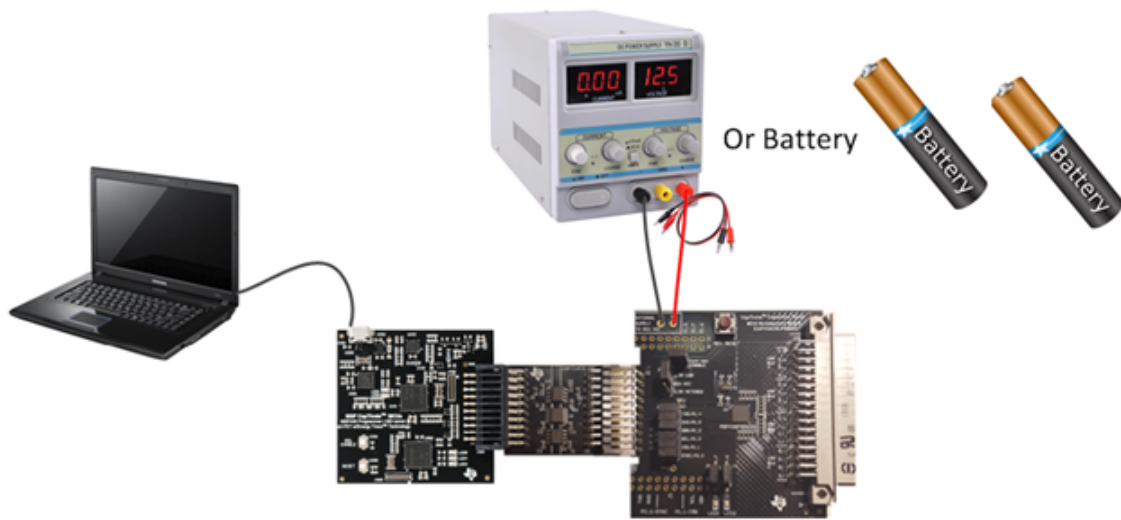


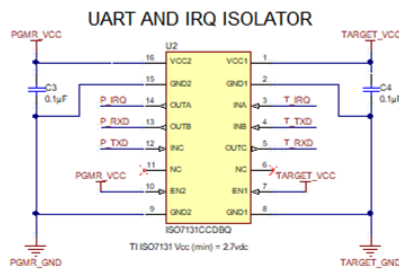
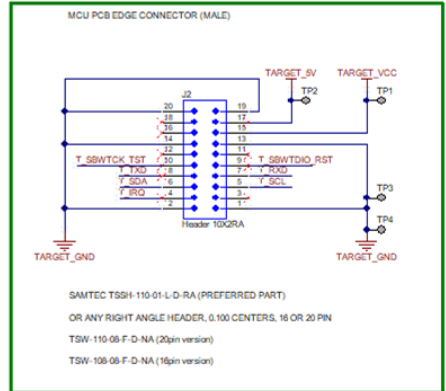
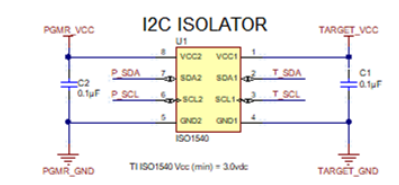
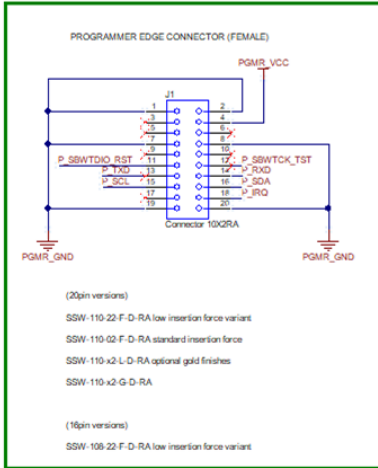
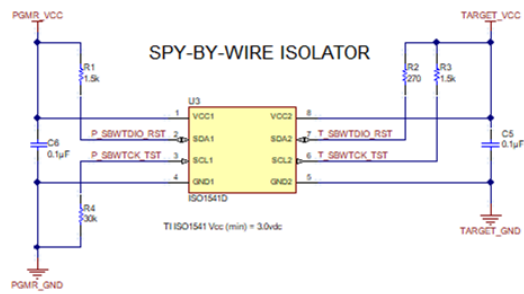
Fig. 341 Typical Setup

Minimum Operating Voltages

Isolator	Min Operating VCC
TI ISO1540	3.0
TI ISO1541	3.0
TI ISO7131	2.7

Important: To guarantee proper operation, power the “Target” side of the CAPTIVATE-ISO PCB with an external power source that meets the VCC minimum operating voltages shown in the table below. These values are provided for convenience only. Please consult the isolator’s [datasheet](#) for additional information. The maximum “Target” side voltage should not exceed the MSP430FR2633 VCC maximum operating voltage 3.6 VDC.

Schematics



PGMR_VCC is +3.3V from Programming PCB T_VCC is VCC from target PCB
 P_GND is GND from Programming PCB T_GND is GND from target PCB

Fig. 342 CAPTIVATE- Schematic

Layout

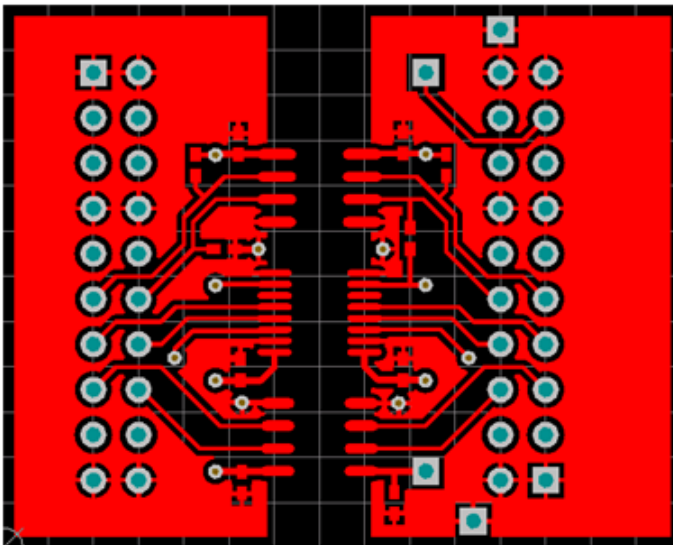


Fig. 343 CAPTIVATE-ISO Top Layer

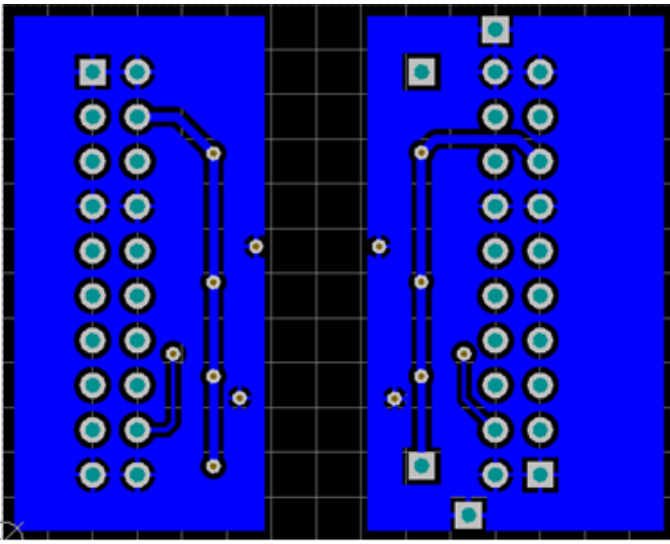


Fig. 344 CAPTIVATE-ISO Bottom Layer