Evaluating the ADBMS6822 Dual isoSPI® Adapter

FEATURES

▸ Full-featured evaluation board for the ADBMS6822
▸ Demonstrates SPI to isoSPI 2-wire datalinks
▸ Includes two isoSPI ports for reversible isoSPI support
▸ Configurable powering options for LPCM support isoSPI connections through simple DuraClik® connectors
▸ Compatible boards EVAL-ADBMS68xx, battery monitor boards EVAL-SDP-CK1Z, controller board
▸ PC software for control and data analysis when used with the Analog Devices, Inc., SDP-K1 microcontroller

EVALUATION KIT CONTENTS

▸ EVAL-ADBMS6822 dual isoSPI adapter board isoSPI DuraClik™ cable

EQUIPMENT NEEDED

▸ EVAL-SDP-CK1Z controller board
▸ EVAL-ADBMS68xx isoSPI boards

DOCUMENTS NEEDED

▸ ADBMS6821/ADBMS6822 data sheet

SOFTWARE NEEDED

▸ Evaluation software for the ADBMS6822:
  ▸ BMS browser PC-based graphical user interface (GUI) program
  ▸ Request through ADI Software Request Form

GENERAL DESCRIPTION

The EVAL-ADBMS6822 evaluation board is a dual SPI to 2-wire isolated serial-port interface (isoSPI) adapter featuring the ADBMS6822. Multiple ADBMS68xx battery monitors can be linked through daisy-chain interconnections. The EVAL-ADBMS6822 evaluation board also features reversible isoSPI, which enables a redundant communication path to the peripheral units. The PCB, components, and DuraClik™ connectors are optimized for low electromagnetic interference (EMI) susceptibility and emissions.

The EVAL-ADBMS6822 evaluation board can communicate to a PC by connecting together with EVAL-SDP-CK1Z. The EVAL-ADBMS6822 evaluation board provides a standard SPI, which can be translated to isoSPI and then onward to a peripheral device or daisy chain as applicable.

The EVAL-ADBMS6822 evaluation board can also be used to evaluate the ADBMS6821. Note that, for the ADBMS6821, there is only one SPI port; therefore, ignore the second SPI port and auxiliary isoSPI port when using the ADBMS6821.

Full specifications on the ADBMS6822 dual isoSPI adapter are available in the ADBMS6821/ADBMS6822 data sheet available from Analog Devices, Inc., and must be consulted with this user guide when using the EVAL-ADBMS6822 evaluation board.

Design files for this circuit board are available at Design Center.

PLEASE SEE THE LAST PAGE FOR AN IMPORTANT WARNING AND LEGAL TERMS AND CONDITIONS.

Rev. 0 | 1 of 7

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REVISION HISTORY

1/2024—Revision 0: Initial Version

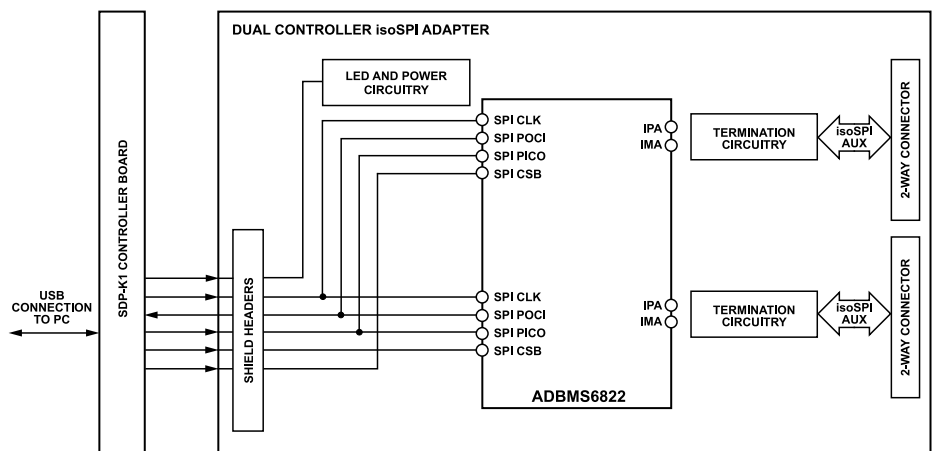## FUNCTIONAL BLOCK DIAGRAM AND EVALUATION BOARD LAYOUT

Figure 1. Overview of EVAL-ADBMS6822 Dual isoSPI Controller Adapter and EVAL-SDP-CK1Z Interface Board (Both are Sold Separately)
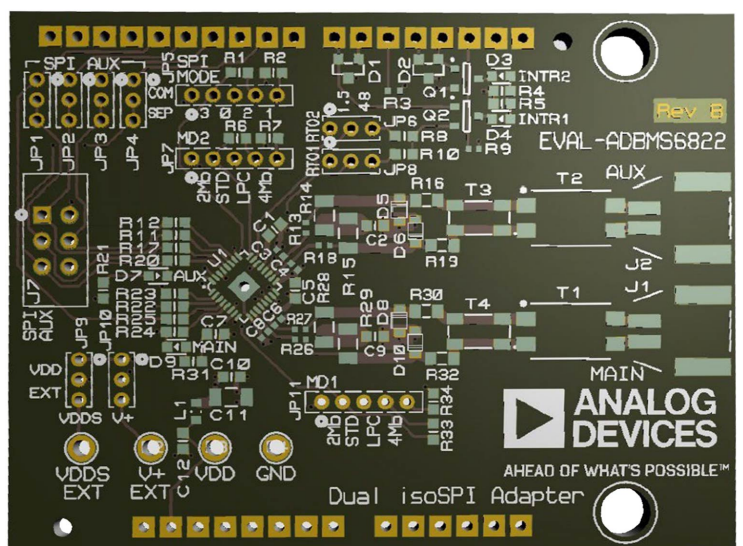

Figure 2. Overview of the EVAL-ADBMS6822 Evaluation Board Layout

PERFORMANCE SUMMARY

Table 1. Specifications are at T_A = 25°C

Parameter	Min	Typ	Max	Unit
V_{DD} Supply Voltage	3.0		5.5	V
V_{DDS} Supply Voltage	1.7		5.5	V
V+ Supply Voltage	3		30	V
V+ Supply Voltage (LPCM)	6		30	V
V_{IH} Input Range	$0.7 \times V_{DDS}$			V
V_{IL} Input Range			$0.3 \times V_{DDS}$	V

EVALUATION BOARD FEATURES

HARDWARE SETUP

Shield-Mount Board Connection

The primary EVAL-ADBMS6822 evaluation board connection is accomplished by plugging the board directly onto an EVAL-SDP-CK1Z controller board (SDP-K1) as shown in Figure 3. The pins on the backside of the EVAL-ADBMS6822 evaluation board connect directly with sockets on the SDP-K1 board. The shield connections provide all the default data and power connections. Note that the SDP-K1 interface voltage must be set at P14 to 3.3 V.
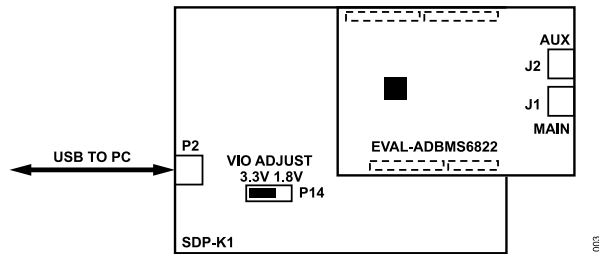
Figure 3. Direct Installation of the EVAL-ADBMS6822

EVAL-ADBMS6822 isoSPI Connections

J1 is the MAIN isoSPI port. The applications that only use one port use this connection to make daisy-chain connections to peripheral isoSPI devices. **J2** is an auxiliary port that is used as a redundant controller in a reversible isoSPI daisy-chain network, and as another independent isoSPI interface.

JUMPERS

Several features or optional connections are configured with jumpers on the latest version of the EVAL-ADBMS6822 evaluation board.

EVAL-ADBMS6822 OPTIONAL CONNECTIONS

SPI AUX Optional Header J7

This double row of through-holes (hole field) can be used to connect a fully independent AUX SPI channel. A connector or discrete wires can be soldered to this array.

JP1-JP4: These are set as a group to either configure the AUX port SPI traffic as being common (COM) with the MAIN SPI, or completely separate (SEP). The common connection (COM) shares the POCI, PICO, SCK from the SDP-K1 controller, along with dedicated CS lines to provide multiplexing. The separate setting (SEP) connects the AUX SPI signals to J7 exclusively.

JP5: Sets the SPI mode for both channels of the ADBMS6822. Mode 0 is used in most applications.

JP6: Two settings are provided for setting the low-power cell monitoring (LPCM) response interval of the AUX channel: either 1.5 seconds or 48 seconds. Other intervals can be achieved with resistor value changes to the board.

JP7, JP11: Configures the operating modes of the AUX and MAIN channels, respectively. Positions of the jumper correspond to the following options:

- ▸ **2 MB**: 2 MB peripheral with 1-bit latency
- ▸ **STD**: Standard bidirectional isoSPI
- ▸ **LPC**: Standard bidirectional isoSPI with LPCM timeout monitor support
- ▸ **4 MB**: 4 Mbps unidirectional

JP8: Two options are provided for setting the LPCM response interval of the MAIN channel: either 1.5 seconds or 48 seconds. Other intervals can be achieved with resistor value changes to the board.

JP9: Configures the VDDS supply pins to either the VDD potential or an externally furnished voltage at turret VDDS EXT.

JP10: Configures the V+ supply pins to either the VDD potential or an externally furnished voltage at turret V+ EXT.

Table 2. Pin Designations for the J7 SPI AUX Connector

Number	Pin	Description
1	POCI2	SPI Controller Inputs (Controller Mode) or Peripheral Outputs (Peripheral Mode).
2	VDDS	SPI Power-Supply Inputs (1.7 V to 5.5 V).
3	SCK2	SPI Clock Inputs (Controller) or Outputs (Peripheral).
4	PICO2	SPI Controller Outputs (Controller Mode) or Peripheral Inputs (Peripheral Mode).
5	CS2	Chip-Select
6	GND	Ground

EVALUATION BOARD SOFTWARE

WHERE TO GET ADBMS68XX_GUI SOFTWARE?

Request the GUI software with the **ADI Software Request Form** from the following link:

▶ https://form.analog.com/form_pages/softwaremodules/SRF.aspx.
▶ Or search for **Software Request Form** at www.analog.com.

NOTES

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

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[EVAL-ADBMS6822](#)