Evaluation Board for the LTC2672 5-Channel, Low Dropout, 300mA, Current Source Output, 16-Bit SoftSpan DAC

FEATURES

- Full featured evaluation board for the LTC2672-16
- PC control in conjunction with the EVAL-SDP-CK1Z board

EVALUATION KIT CONTENTS

- EVAL-LTC2672-ARDZ

HARDWARE REQUIRED

- EVAL-SDP-CK1Z (SDP-K1) board (purchased separately)
- USB-C cable
- Programmable bench DC power supply (with 1.8V to 5.5V, 1.5A ratings)

GENERAL DESCRIPTION

This user guide explains the operation of the EVAL-LTC2672-ARDZ for the LTC2672 16-bit, 5-channel, current output DAC, enabling quick prototyping and reduced design time. The device features per-channel SoftSpan™ configuration of 3.125mA to 300mA, a separate supply for each output, and an internal switch to allow any output pin to be connected to V−. The LTC2672 operates on 2.1V to 5.5V VDD supplies and includes a 1.25V internal low noise reference. Refer to the LTC2672 data sheet for complete details when using the EVAL-LTC2672-ARDZ.

The evaluation board connects to a PC via a SDP-K1 board or directly to microcontrollers via a peripheral module interface (PMOD) connection (requiring SDP-K1 disconnection).

EVALUATION BOARD PHOTOGRAPH

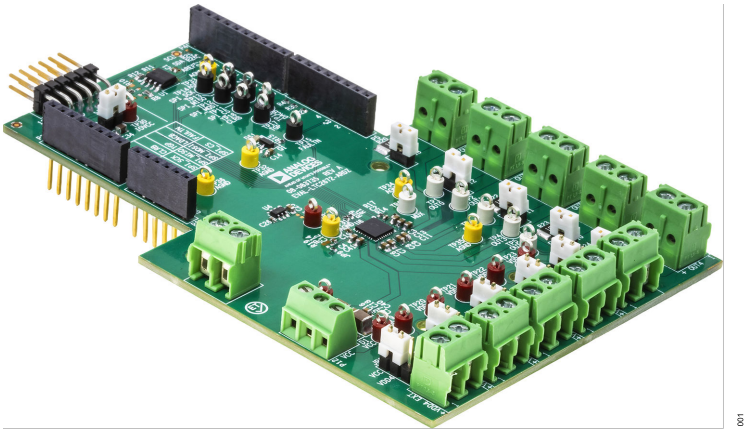

Figure 1. EVAL-LTC2672-ARDZ Evaluation Board

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REVISION HISTORY

10/2025—Revision 0: Initial Version

EVALUATION BOARD HARDWARE

UNBOXING HARDWARE AND QUICK SETUP

For a quick evaluation of the board, complete the following steps:

1. Check that the jumpers are in correct positions as shown in Table 1 and Table 2.
2. Plug the EVAL-LTC2672-ARDZ into the EVAL-SDP-CK1Z.
3. Connect a dual power supply cable (+5V, −2V) from the bench top supply to the screw terminal P12 on the EVAL-LTC2672-ARDZ and enable the supply source.
4. Connect a USB-C from the PC to the EVAL-SDP-CK1Z.

POWER SUPPLIES

User should connect +5V, 1.5A, and −2V, 0.5A to the VCC and V− of the screw terminal P12 on the evaluation board from an external bench top dual supply. See the On-Board Connectors section for connecting external supplies on VCC and VDDx.

LINK OPTIONS

Follow the link connections in Table 1 for supply and output configurations. Refer to Table 2 for full link options.

Table 1. Quick Start Link Configuration

Link No.	On-Board Power Solution	External Supply
JP4, JP5, JP6, JP7, JP8	A	B
P13	Inserted	Removed
JP3, JP10, JP11, JP12, JP13	Inserted	Inserted

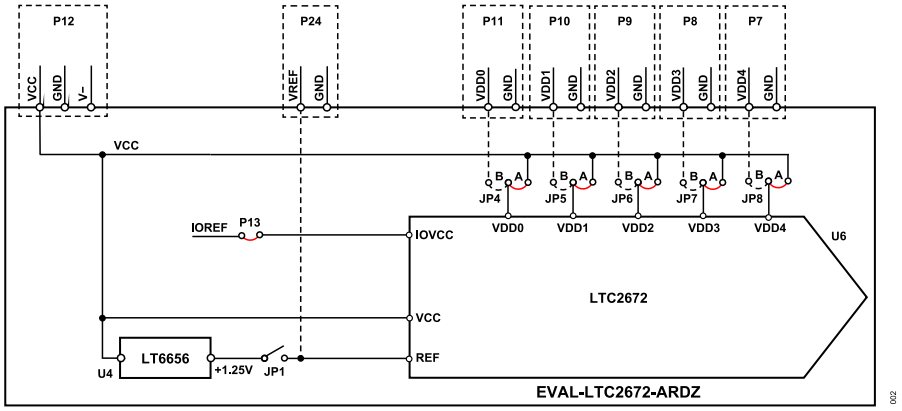

Figure 2. Powering the EVAL-LTC2672-ARDZ Evaluation Board

Table 2. Link Options

Link No.	Description	Positions
JP4, JP5, JP6, JP7, JP8	Selects the connection between the V+ supply or the VDDx screw connector.	A (default): Source the LTC2672 VDDx from VCC of screw terminal P12. B: Source the LTC2672 VDDx from terminals P11, P10, P9, P8, and P7, respectively.
JP3, JP10, JP11, JP12, JP13	Selects the connection between on board load of 10Ω or the external load for the IDAC outputs.	Inserted (default): On board loads used (R24, R23, R22, R21, and R20, respectively). Removed: External loads to be used through screw terminals (P22, P21, P20, P19, and P18, respectively).
JP1	Connect or disconnect the reference on the board.	Inserted: On board reference U5 used. Removed (default): Internal reference used.
P13	Selects the connection between IOREF or VCC to power the IOVCC pin of the LTC2672.	Inserted (default): Source IOVCC from IOREF of Arduino shield connector P2. Removed: Source from PMOD connector P6 or from VCC of the LTC2672 (install 0Ω on R30).

EVALUATION BOARD HARDWARE

ON-BOARD CONNECTORS

A number of connectors are incorporated on the EVAL-LTC2672-ARDZ. The functions of these connectors are described in Table 3.

Table 3. On-Board Connectors

Connector Label	Voltage Supplies Description
P12	External dual power supplies to the VCC and V− pins of the LTC2672.
P7, P8, P9, P10, P11	External power supplies direct to the VDDx pins of the LTC2672 through the terminals. Use when the VCC supply from the terminal P12 is not to be used.
P6	Digital interface pin header connector (PMOD).
P18, P19, P20, P21, P22	External connection to OUTx outputs.
P24	External VREF, 1.25V.

ON-BOARD REFERENCE

Following are the three options to drive the reference of the LTC2672.

- Internal reference: by default, the internal reference is enabled, with the resistor jumpers JP1 and JP14 being not installed.
- On-board reference: LT6656BCS6-1.25 (U4) can be used as the external reference. Do install 0Ω on JP1 and JP14.
- External source: a precision DC source can be sourced through the screw terminal P24 to drive the REF pin of the LTC2672. Do install 0Ω on JP14.

MULTIPLEXER INPUT AND OUTPUT

The LTC2672 diagnostic feature allows for monitoring IOUTx output voltages, IOUTx output currents, supply rail voltages, VREF, and the internal die temperature of the device at the MUX pin through the test point TP6.

ON-BOARD LOADS

The evaluation board presents one resistive load of 10Ω for each OUTx output.

External loads can also be connected via the connectors P18, P19, P20, P21, and P22. Refer to Table 3 and Figure 3 for all the connectors on the board. Remove JP3, JP10, JP11, JP12, and JP13 if the loads on the board are not to be used.

There are pads for the capacitors C20, C21, C22, C23, and C24 on the bottom layer of the board. Capacitors can be installed on these pads for output noise filtering.

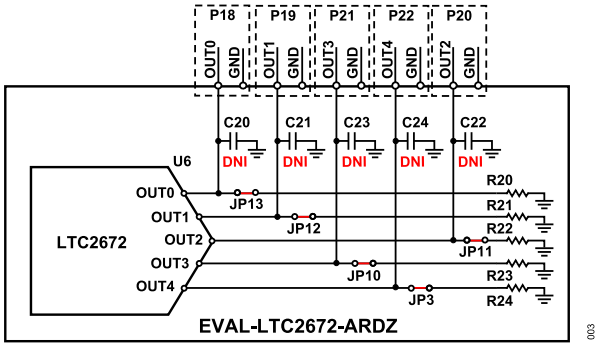

Figure 3. OUTx Connections

SPI PMOD CONNECTOR P6

Figure 4 shows both a PMOD and connections for digital lines that serve as inputs and outputs to and from the external digital controller. Refer to Table 4 for descriptions of each pin number (digital line).

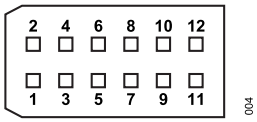

Figure 4. PMOD Connector P6 Pin Configuration

Table 4. PMOD Connector P6 Pin Descriptions

Pin No.	Mnemonic
1	SPI_CS
3	SPI_MOSI
5	SPI_MISO
7	SPI_SCK
9	GND
11	IOVCC
2	FAULTN
4	LDACB
6	TGP
8	CLRB
10	GND
12	IOVCC

EVALUATION BOARD HARDWARE

ARDUINO CONNECTOR

Table 5 details the digital signal names, functions, and digital header pin assignments mainly used for the EVAL-LTC2672-ARDZ.

Table 5. Arduino Header Connections

Signal Name	Function	Header Pin	Pull-Up
SPI_CS	Serial peripheral interface (SPI) chip-select.	P4 Pin 3	49.9kΩ (R5)
SPI_MOSI	SPI serial data in (MOSI).	P4 Pin 4	
SPI_MISO	SPI serial data out (MISO).	P4 Pin 5	49.9kΩ (R29)
SPI_SCK	SPI serial clock.	P4 Pin 6	
SDA	Inter-IC bus (I^2C) serial data. Used to read board ID data from the electrically erasable programmable read-only memory (EEPROM).	P4 Pin 9	2.7kΩ (R26)
SCL	I^2C serial clock. Used to read board ID data from the EEPROM.	P4 Pin 10	2.7kΩ (R25)
LDACB	Active-low asynchronous DAC update pin.	P5 Pin 7	49.9kΩ (R3)
CLRB	Active-low asynchronous clear input.	P5 Pin 8	49.9kΩ (R4)
TGP	Asynchronous toggle pin.	P5 Pin 6	49.9kΩ (R2)
FAULTN	Active-low fault detection pin.	P5 Pin 4	4.99kΩ (R17)

ORDERING INFORMATION

EVALUATION BOARD

Model[1]	Description
EVAL-LTC2672-ARDZ	Evaluation Board

[1] Z = RoHS Compliant Part.

ESD Caution
ESD (electrostatic discharge) sensitive device. Charged devices and circuit boards can discharge without detection. Although this product features patented or proprietary protection circuitry, damage may occur on devices subjected to high energy ESD. Therefore, proper ESD precautions should be taken to avoid performance degradation or loss of functionality.