LTC3882EUJ-1

Programming Board for Dual Output DC/DC Voltage Mode Controller with Digital Power System Management

DESCRIPTION

Demonstration circuit 2252A-B is a lab tool to program and verify the EEPROM inside the LTC®3882-1 IC. The DC2252A-B is shipped with a LTC3882-1 placed in the clamshell style programming socket. The EEPROM contains the factory default configuration. The LTpowerPlay™ .proj file that corresponds to the factory default can be found in the GUI.

In order to properly verify the contents of the EEPROM, download and install the LTpowerPlay software (GUI). The software can be downloaded from:

http://www.linear.com/ltpowerplay

You also need a Linear Technology USB to I^{2}C/SMBus/PMBus Controller, DC1613A.

DEMO SYSTEM REQUIRED HARDWARE
- Windows PC
- USB to I^{2}C/SMBus/PMBus Controller, DC1613A
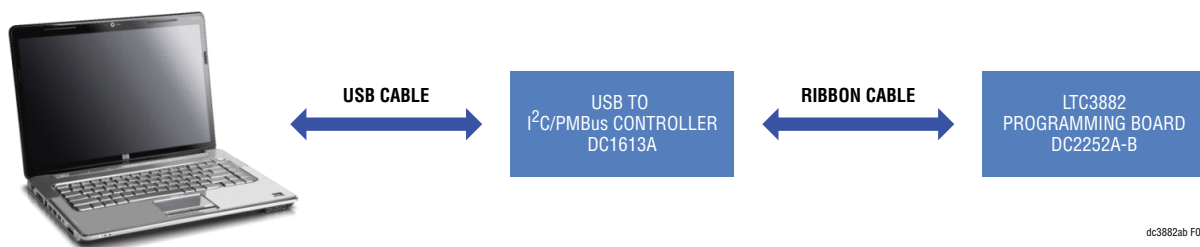- DC2252A-B

DEMO SYSTEM REQUIRED SOFTWARE
- LTpowerPlay

LTC3882-1 FEATURES
- PMBus/I^{2}C Compliant Serial Interface
- Monitor Voltage, Current, Temperature and Faults
- Digitally Programmable Voltage, Current Limit, Soft-Start/Stop, Sequencing, Margining, AVP and UV/OV Thresholds
- Programmable PWM Frequency or External Clock Synchronization from 250kHz to 1.25MHz
- ±0.5% Output Voltage Accuracy
- Internal EEPROM with Fault Logging
- Wide V_{IN} Range: 3V to 38V
- V_{OUT} Range: 0.5V to 5.25V
- Analog Leading-Edge Voltage Mode Control Loop
- Accurate PolyPhase® Current Sharing
- Dedicated Power Good Output Voltage Monitor
- Differential Voltage Sense on Both Outputs
- Available in a 40-Pin (6mm × 6mm) QFN Package

Design files for this circuit board are available at http://www.linear.com/demo/DC2252A-B

dc3882ab F01

Figure 1. LTC3882 Programming Setup Using DC2252A-B

QUICK START PROCEDURE

Demonstration circuit 2252A-B makes it easy to program and verify the EEPROM contents of the LTC3882.

1. Make sure jumpers are in the following positions:

JUMPER	POSITION	FUNCTION
JP1	DISABLE	No function on DC2252A-B
SW1	ON	Provide 3.3V to LTC3882 VDD33 Pin

2. Open the lid of the socket SKT1. Verify there is an IC inside and in the correct direction (White dot on IC matches with PIN 1 on PCB silkscreen). See Figure 2.

3. Close the lid. It will snap into place.

   NOTE. Removal and insertion of the IC should be done with either a tweezers or a vacuum suction device.

4. Plug one end of the USB cable to your PC. Plug other end of USB cable into the I^{2}C/SMBus/PMBus controller.

5. Plug the ribbon cable of DC1613A into J2. See Figure 3.

6. On your PC, launch LTpowerPlay. LTpowerPlay will identify the DC2252A-B and launch the appropriate GUI. See Figure 4.

   NOTE. You will see an Under Temperature (UT) Fault. This is normal since the temperature sensing pin is floating. Ignore this fault at the moment.

7. Change the GUI parameters according to your system requirements. Or, you can click 📂 button to open an existing project file.

8. After you finish the design, click 💾 to save the project file.
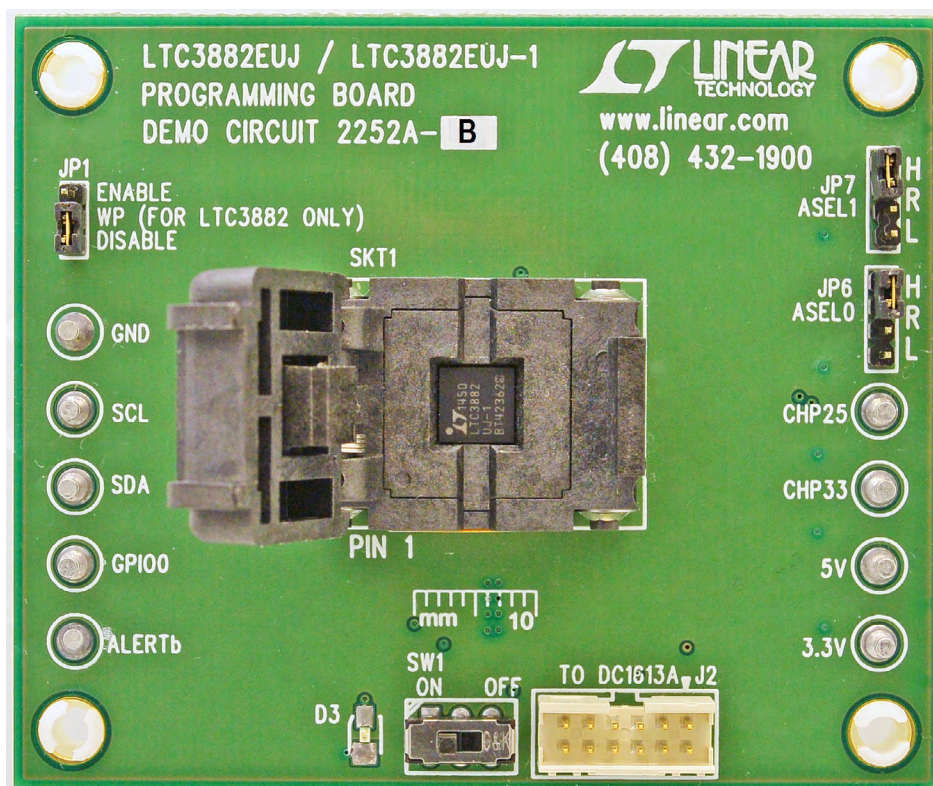

Figure 2. Open Shell. Verify IC Installed

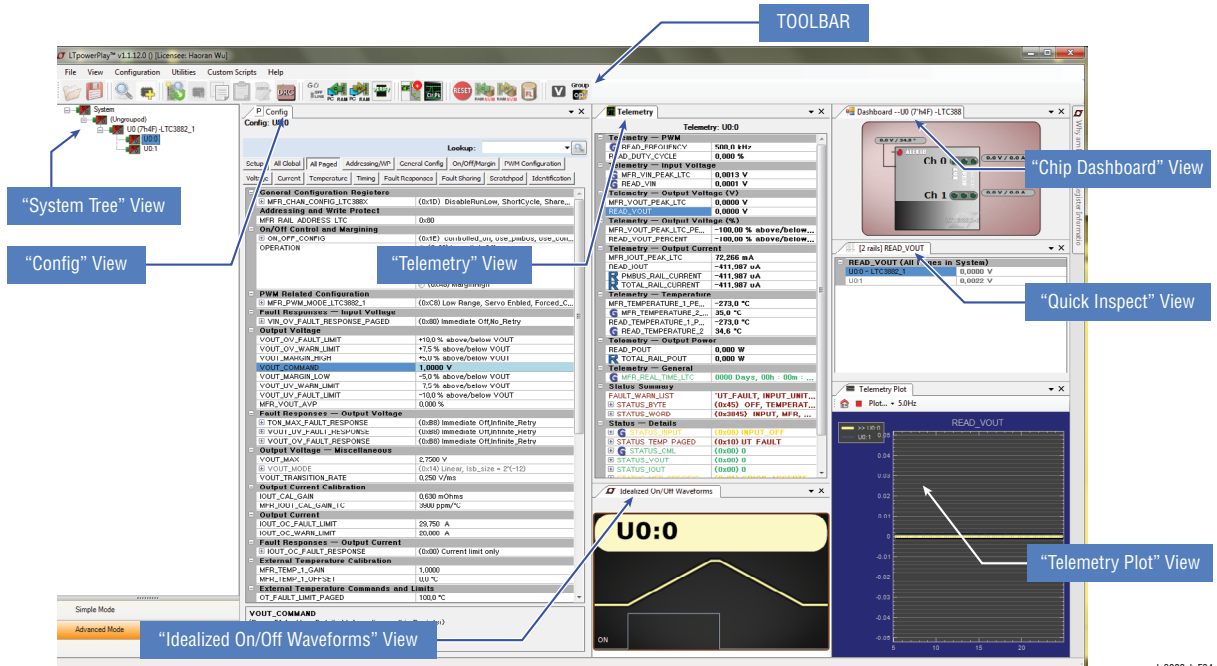# QUICK START PROCEDURE

Figure 3. DC1613A Ribbon Cable Installation

Figure 4. LTpowerPlay Interface of Programming the LTC3882-1

QUICK START PROCEDURE

POWERING DOWN THE BOARD BETWEEN PROGRAMMING OPERATIONS

Disconnect the USB cable from the DC1613A before removing or inserting a LTC3882-1 into the programming socket.

WHAT YOU CAN DO WITH THE DC2252A-B

1. Compare the contents of the EEPROM in the LTC3882-1 against your Project or Hex file.

2. Reprogram the contents of the EEPROM in the LTC3882-1 using your project or Hex File.

3. Verify the EEPROM within the DC2252A-B contains the factory defaults.

   a. From the LTpowerPlay, load the factory defaults project file. This file is located at:

      C:\Program Files\Linear Technology\LTpowerPlay\ project files\democircuits\DC2252A

   b. Click the Verify button.

PARTS LIST

| ITEM	QTY	REFERENCE	PART DESCRIPTION	MANUFACTURER/PART NUMBER
Required Circuit Components				
1	1	SKT1	SOCKET, 6X6 QFN BGA FLAT LEAD LIDDED, THRU-HOLE	PLASTRONICS, 40QN50S16060-B
2	2	C14, C16	CAP., 0.10µF, X7R, 16V, 10%, 0603	AVX, 0603YC104KAT2A
3	2	C20, C21	CAP., 1µF, X7R, 16V, 10%, 0603	AVX, 0603YC105KAT2A
4	2	C15, C17	CAP., 4.7µF, X5R, 16V, 10%, 1206	TDK, C3216X5R1C475K115AA
5	1	D3	LED, GREEN, WATER CLEAR, 571nm @ 5mA, 4.5~28mcd @ 5 mA, 0603	LITE ON, LTST-C193KGKT-5A
6	1	R19	RES., 200Ω, 1/8W, 1%, 0805	VISHAY, CRCW0805200RFKEA
7	4	R29, R31, R32, R33	RES., 10k, 1/8W, 1%, 0805	VISHAY, CRCW080510K0FKEA
8	2	R36, R37	RES., 4.99k, 1/8W, 1%, 0805	VISHAY, CRCW08054K99FKEA
9	1	R38	RES., 1k, 1/8W, 1%, 0805	VISHAY, CRCW08051K00FKEA
10	0	R41, R45, R47, R49, R50, R51, R52, R54 (OPT)	RES., OPTIONAL, 0805	OPT.
12	4	R44, R46, R53, R55	RES., 0Ω, 1/8W, 0805	VISHAY, CRCW08050000Z0EA
13	1	U2	I.C., EEPROM, I2C, 2kbit, 400kHz, 8-SOIC	MICROCHIP, 24LC025-I/SN
14	1	JP1	CONN., HEADER, 1X3, 2mm	SAMTEC, TMM-103-02-L-S
15	2	JP6, JP7	CONN., HEADER, 1X4, 2mm	SAMTEC, TMM-104-02-L-S
16	1	J2	CONN., HEADER, SHROUDED, 2X6, 2mm	FCI, 98414-G06-12ULF
17	1	SW1	SWITCH, SUB-MINIATURE SLIDE, DPDT, 6VDC, 0.3A, Thru-Hole	C&K COMPONENTS, JS202011CQN
18	9	TP1, TP4, TP5, TP7, TP8, TP9, TP10, TP11, TP13	TEST POINT, TURRET, 0.064" MTG. HOLE	MILL-MAX, 2308-2-00-80-00-00-07-0
19	4	MH1, MH2, MH3, MH4	STANDOFF, NYLON, SNAP-ON, 0.250"	KEYSTONE, 8831
20	3	JP1, JP6, JP7	SHUNT, 2mm	SAMTEC, 2SN-BK-G
21	0	U1 TO BE INSTALLED DURING TEST	I.C., DUAL OUTPUT POLYPHASE STEP-DOWN DC/DC VOLTAGE MODE CONTROLLER WITH DIGITAL POWER SYSTEM MANAGEMENT, QFN40-UJ, 6mm x 6mm	LINEAR TECH, LTC3882EUJ-1#PBF
22	1		PCB, DC2252A	DEMO CIRCUIT 2252A
23	1		STENCIL, DC2252A (BOTTOM)	STENCIL DC2252A

SCHEMATIC DIAGRAM
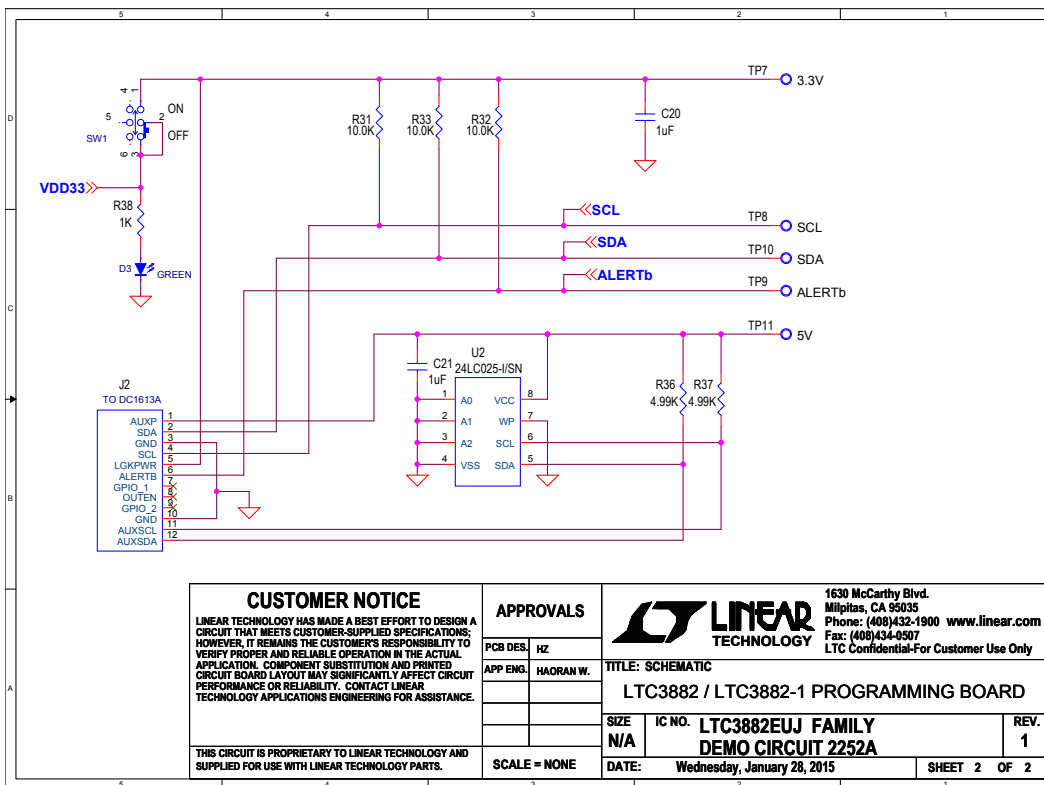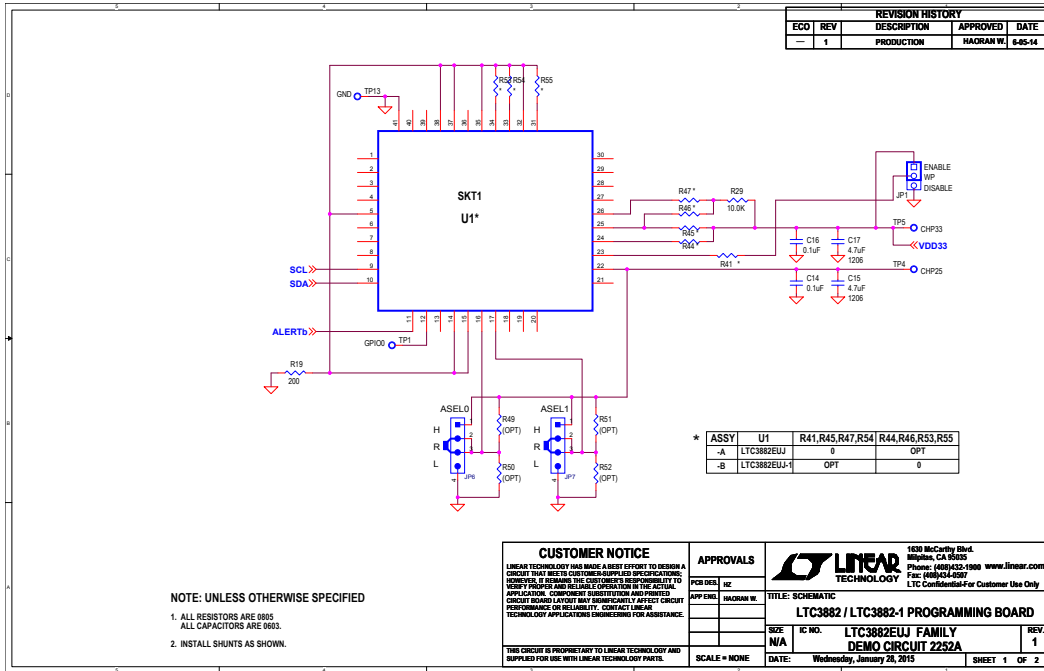
Figure 5. DC2252A-B Demo Circuit Schematic

DEMONSTRATION BOARD IMPORTANT NOTICE

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Please read the DEMO BOARD manual prior to handling the product. Persons handling this product must have electronics training and observe good laboratory practice standards. **Common sense is encouraged**.

This notice contains important safety information about temperatures and voltages. For further safety concerns, please contact a LTC application engineer.

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