

DESCRIPTION

Demonstration circuit DC1213 is a micropower dual Buck and Boost synchronous converter based on the LTC3522 monolithic regulator. The DC1213 has an input voltage range of 1.8V all the way up to 4.2V depending on the Vout1 settings. Since Vout1 is a boost converter, Vin must be below the Vout1 voltage at all times. The board is configured at the factory for Vout1 at 3.3V @ 200mA with Vin being limited to 1.8V to 3.2V. Vout2 is fixed at 1.2V @ 200mA. See the tables below for all of the Vin vs Vout 1 operating limits as well as the default settings. The converters can be set for Fixed Frequency (PWM) or Burst Mode, which provides high conversion efficiency over a wide range of load currents. Both VOUTs can be sequenced on

startup. Jumpers are provided for shutting down VOUT1 and VOUT2 independently, for Vout sequencing, Changing Switching modes Fixed PWM or burst and for choosing between 3.3V and 5V for VOUT1. The LTC3522 comes in a 16 lead 3x3 QFN package. These features make the DC1213 demo board an ideal circuit for use in Li-Ion battery-powered, hand-held applications such as PDAs, MP3 Players, and Personal Navigation Devices.

Design files for this circuit board are available. Call the LTC factory.

*	JP1 = 3.3V	VIN = 1.8V – 3.2V	VOUT1 = 3.3V @ 200mA
	JP1 = 5.0V	VIN = 2.7V – 4.2V	VOUT1 = 5V @ 200mA
	JP1 = 5.0V	VIN = 1.8V – 2.7V	VOUT1 = 5V @ 125mA

Jumper #	Function	Default Value
JP1	VOUT1 Voltage	3.3V
JP2	VOUT1 Shutdown	ON
JP3	Sequence VOUTs	YES
JP4	VOUT1 Shutdown	ON
JP5	Burst or Fixed PWM mode	Burst

QUICK START PROCEDURE

Refer to Figure 1 for proper measurement equipment setup and follow the procedure below:

1. Set Load1 between 0A → 200mA and Load2 between 0A → 200mA.
2. Set the Power Supply to ~ 3.0Vin
3. VIN can be adjusted between 1.8V and 3.2V for VOUT1 = 3.3V and VIN can be adjusted between

2.7V and 4.2V for VOUT1 = 3.3V (note: max output current for VOUT1 is lower than 400mA at VIN below 3.0V).

QUICK START GUIDE FOR DEMONSTRATION CIRCUIT 1213

DUAL MICROPOWER SYNCHRONOUS BUCK AND BOOST CONVERTER

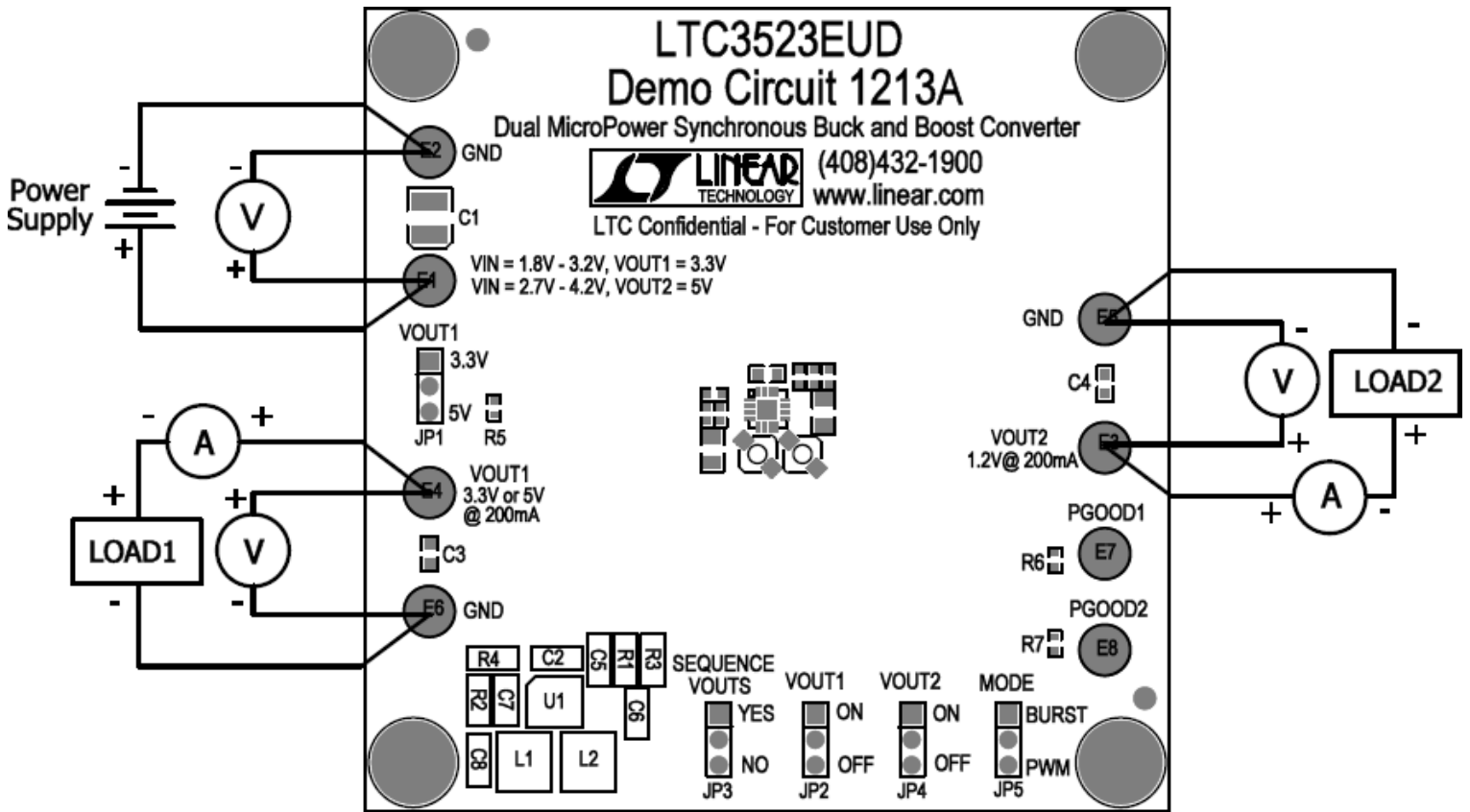
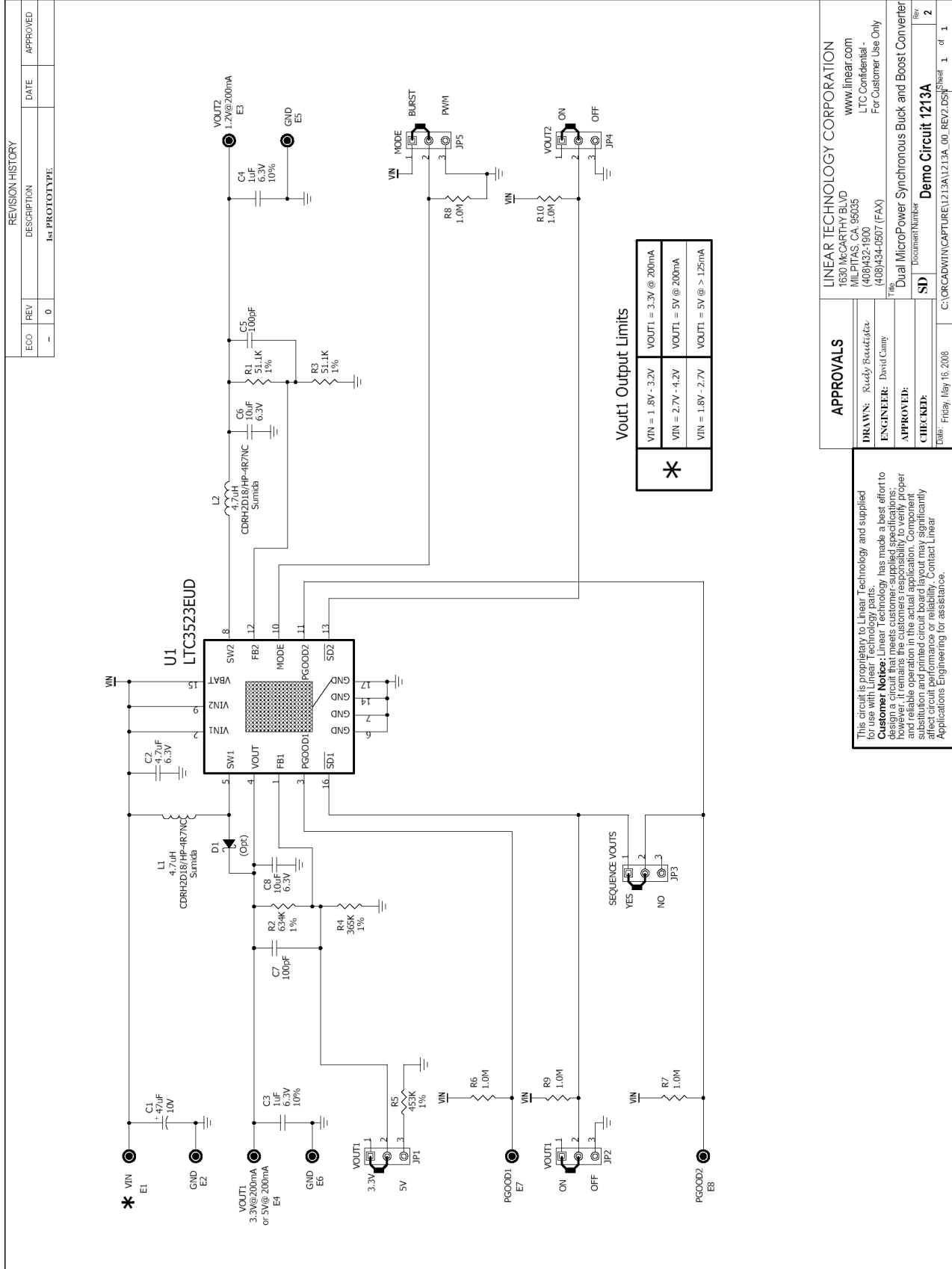


Figure 1. Proper Measurement Equipment Setup

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DUAL MICROPOWER SYNCHRONOUS BUCK AND BOOST CONVERTER



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This circuit is proprietary to Linear Technology and supplied for use with Linear Technology parts.
Customer Notice: Linear Technology has made a best effort to design a circuit that meets customer-supplied specifications; however, it remains the customer's responsibility to verify proper operation. Customer's use of this circuit at other than the substitution and printed circuit board layout may significantly affect circuit performance or reliability. Contact Linear Applications Engineering for assistance.

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DUAL MICROPOWER SYNCHRONOUS BUCK AND BOOST CONVERTER

Item	Quantity	Reference	Part Description	Manufacturer / Part #
REQUIRED CIRCUIT COMPONENTS				
1	1	C1	Cap., Tant. 47uF 10V 20%	AVX TAJB476M010
2	1	C2	Cap., X5R 4.7uF 6.3V 20%	Taiyo Yuden JMK107BJ475MA-T
3	2	C3,C4	Cap., X5R 1uF 6.3V 10%	Taiyo Yuden JMK107BJ105KA-T
4	2	C7,C5	Cap., NPO 100pF 25V 10%	AVX 04023A101KAT2A
5	2	C6,C8	Cap., X5R 10uF 6.3V 20%	Taiyo Yuden JMK107BJ106MA-T
6	2	L1,L2	Inductor, 4.7uH	Sumida CDRH2D18/HP-4R7NC
7	2	R3,R1	Res., Chip 51.1K 1/16W 1%	AAC CR05-5112FM
8	1	R2	Res., Chip 634K 1/16W 1%	AAC CR05-6343FM
9	1	R4	Res., Chip 365K 1/16W 5%	AAC CR05-364JM
10	1	R5	Res., Chip 453K 0.06W 1%	Vishay CRCW0402453KFKED
11	5	R6,R7,R8,R9,R10	Res., Chip 1.0M 1/16W 5%	AAC CR05-105JM
12	1	U1	I.C., DC/DC CONVERTER	Linear Tech. Corp. LTC3523EUD
ADDITIONAL DEMO BOARD CIRCUIT COMPONENTS				
1	0	D1 (Opt)	Schottky Diode, 30V/200mA	Central Semi. CMDSH2-3