

## DESCRIPTION

Demonstration circuit 1062 is a micropower synchronous buck-boost + buck converter based on the LTC3520. The DC1062 has an input voltage range of 2.2 V to 5.5V and three output voltages: 3.3V @ up to 1A, 1.8V @ 600mA and 1.5V @ 200mA. The 1.5Vout is an LDO regulator derived from either the 3.3Vout or the 1.8Vout. The Buck-Boost + Buck converters can operate in either low-power burst mode or low-noise fixed-frequency PWM mode. The switching frequency is programmed using a single resistor and each of the

output voltages can be independently shutdown. The LTC3520 comes in a 24 pin 4x4 QFN package. These features make the DC1062 demo board an ideal circuit for use in Li-Ion battery-powered, hand-held applications.

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

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LTC is a trademark of Linear Technology Corporation

## QUICK START PROCEDURE

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

1. Start with Loads 1, 2 and 3 set to 0A.
2. Set Power Supply anywhere between 2.2V to 5.5V.
3. Loads 1, 2 and 3 can be set from 0 – 500mA, 0 – 600mA and 0 – 200mA respectively. Load 1 can be set up to 1A for  $V_{in} > 3V$ .

# QUICK START GUIDE FOR DEMONSTRATION CIRCUIT 1062 DUAL BUCK-BOOST + BUCK SYNCHRONOUS CONVERTERS

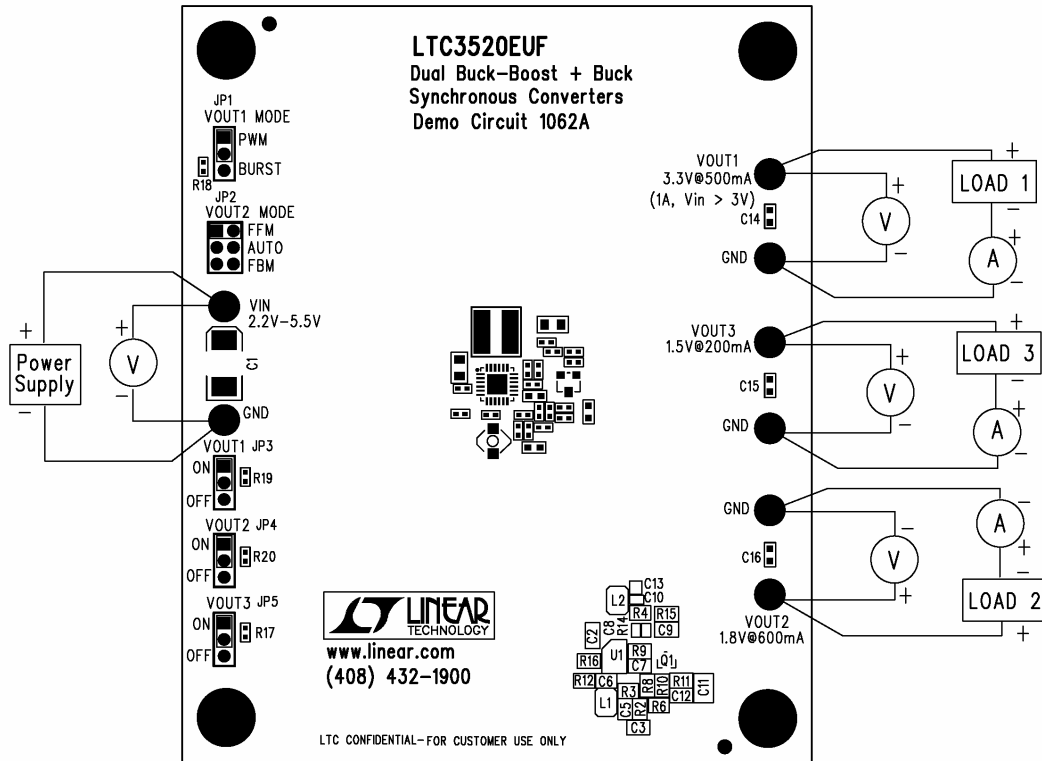
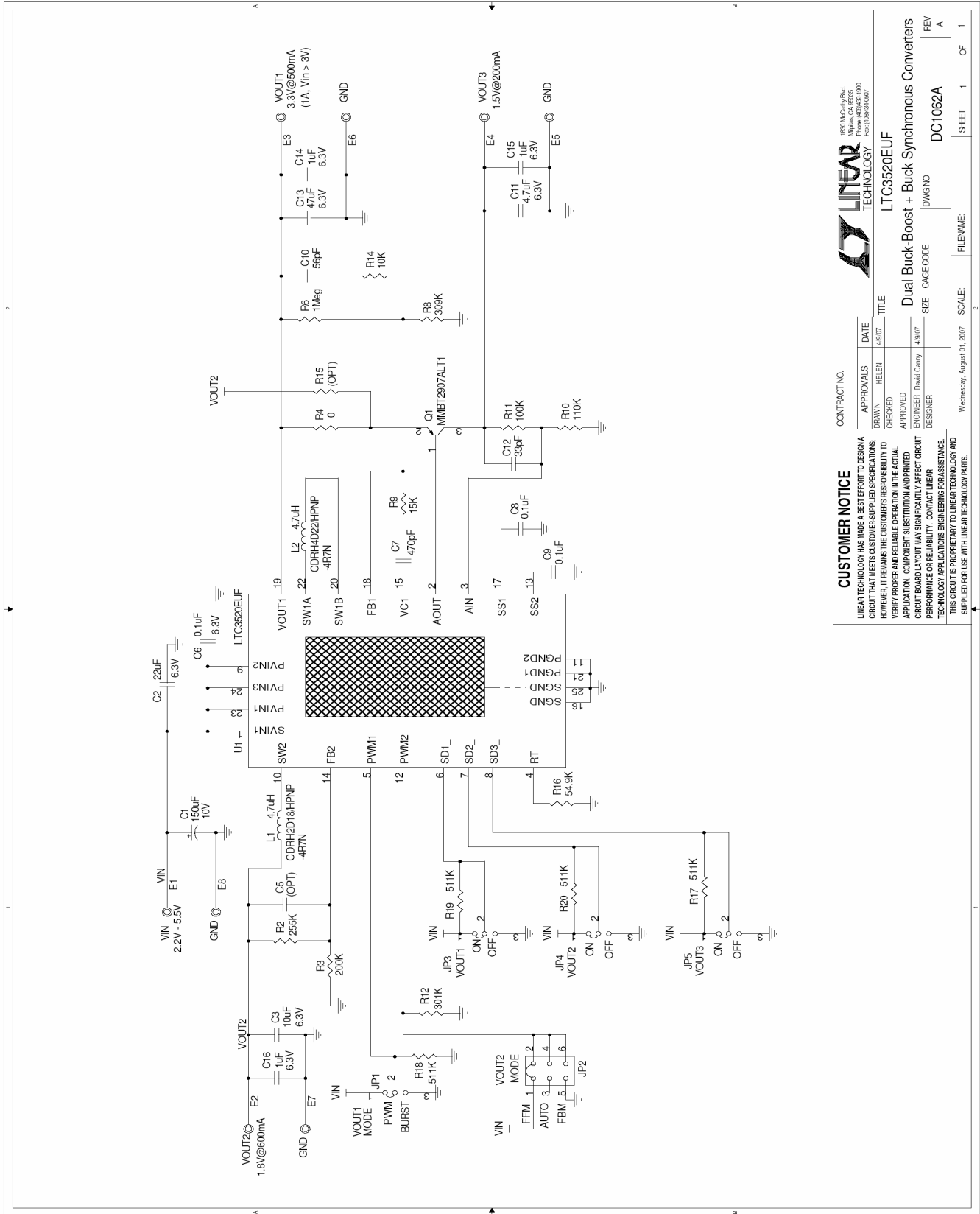


Figure 1.:Proper Measurement Equipment Setup

# QUICK START GUIDE FOR DEMONSTRATION CIRCUIT 1062

## DUAL BUCK-BOOST + BUCK SYNCHRONOUS CONVERTERS



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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 AND RELIABLE OPERATION IN THE ACTUAL APPLICATION. COMPONENT SUBSTITUTION AND PRINTED CIRCUIT BOARD LAYOUT THAT DEPART FROM LINEAR TECHNOLOGY'S ORIGINAL DESIGN REQUIREMENTS MAY AFFECT PERFORMANCE AND RELIABILITY OF THE CIRCUIT. LINEAR TECHNOLOGY AND ITS SUPPLIERS MAKE NO WARRANTY FOR USE WITH LINEAR TECHNOLOGY PARTS.		APPROVALS	
		DRAWN	DATE
		HELEN	4/9/07
		CHECKED	
		APPROVED	
		ENGINEER	David Camry
		DESIGNER	
		DATE	4/9/07
		SCALE:	Wednesday, August 01, 2007
		FILENAME	
		DWG NO	DC-1062A
		REV	A
		SHEET	1 OF 1



1630 McCarthy Blvd.  
Folsom, CA 95625  
Tel: 916/444-0000  
Fax: 916/444-0070

LTC3520EUF

Dual Buck-Boost + Buck Synchronous Converters

QUICK START GUIDE FOR DEMONSTRATION CIRCUIT 1062  
DUAL BUCK-BOOST + BUCK SYNCHRONOUS CONVERTERS

Item Qty	Reference	Part Description	Manufacturer / Part #
<b>REQUIRED CIRCUIT COMPONENTS:</b>			
1	C1	CAP., TANT, 150uF, 10V, 20%, 7343	AVX, TPSD157M010R0100
2	C2	CAP., X5R, 22uF, 6.3V, 10%, 0805	Taiyo Yuden, JMK212BJ226KG-T
3	C11	CAP., X5R, 4.7uF, 6.3V, 10%, 0603	AVX, 06036D475KAT2A
4	C13	CAP., X5R, 47uF, 6.3V, 20%, 0805	Taiyo Yuden, JMK212BJ476MG-T
5	C3	CAP., X5R, 10uF, 6.3V, 20%, 0603	Taiyo Yuden, JMK107BJ106MA-T
6	C6,C8,C9	CAP., X5R, 0.1uF, 10V, 10%, 0402	Taiyo Yuden, LMK105BJ104KV-F
7	C7	CAP., C0G, 470pF, 6.3V, 5%, 0603	AVX, 06036A471JAT2A
8	C10	CAP., C0G, 56pF, 16V, 5%, 0402	AVX, 0402YA560JAT2A
9	C12	CAP., C0G, 33pF, 16V, 10%, 0402	AVX, 0402YA330KAT2A
10	C14,C15,C16	CAP., X5R, 1uF, 6.3V, 10%, 0603	Taiyo Yuden, JMK107BJ105KA-T
11	L1	INDUCTOR., 4.7uH	Sumida, CDRH2D18/HPNP-4R7NC
12	L2	INDUCTOR., 4.7uH	Sumida, CDRH4D22HPNP-4R7NC
13	Q1	PNP TRANSISTERS, SOT23	ON Semiconductor, MMBT2907ALT1G
14	R2	RES., CHIP, 255K, 1/16W, 1%, 0402	VISHAY, CRCW0402255KFKED
15	R3	RES., CHIP, 200K, 1/16W, 1%, 0402	VISHAY, CRCW0402200KFKED
16	R4	RES., CHIP, 0, 1/16W, 0402	VISHAY, CRCW0402000Z0ED
17	R17-R20	RES., CHIP, 511K, 1/16W, 1%, 0402	VISHAY, CRCW0402511KFKED
18	R6	RES., CHIP, 1Meg, 1/16W, 1%, 0402	VISHAY, CRCW04021M00FKED
19	R8	RES., CHIP, 309K, 1/16W, 1%, 0402	VISHAY, CRCW0402309KFKED
20	R9	RES., CHIP, 15K, 1/16W, 1%, 0402	VISHAY, CRCW040215K0FKED
21	R10	RES., CHIP, 110K, 1/16W, 1%, 0402	VISHAY, CRCW0402110KFKED
22	R14	RES., CHIP, 10K, 1/16W, 1%, 0402	VISHAY, CRCW040210K0FKED
23	R11	RES., CHIP, 100K, 1/16W, 1%, 0402	VISHAY, CRCW0402100KFKED
24	R12	RES., CHIP, 301K, 1/16W, 1%, 0402	VISHAY, CRCW0402301KFKED
25	R16	RES., CHIP, 54.9K, 1/16W, 1%, 0402	VISHAY, CRCW040254K9FKED
26	U1	I.C, LTC3520EUF#PBF, 4X4mm QFN	LINEAR TECH., LTC3520EUF#PBF
<b>ADDITIONAL DEMO BOARD CIRCUIT COMPONENTS:</b>			
1	0	R15(OPT)	RES., CHIP, 0402
2	0	C5(OPT)	CAP., 0402
<b>HARDWARE-FOR DEMO BOARD ONLY:</b>			
1	8	E1-E8	TESTPOINT, TURRET, .095"
2	1	JP2	2MM DOUBLE ROW HEADER 2x3
3	4	JP1,JP3-JP5	0.079 SINGLE ROW HEADER, 3 PIN
4	5	JP1-JP5	SHUNT,
5	4	STAND-OFF	STAND-OFF, NYLON 0.50" tall
			MILL-MAX, 2501-2-00-80-00-00-07-0
			SAMTEC, TMM-103-02-L-D
			SAMTEC, TMM-103-02-L-S
			SAMTEC,2SN-BK-G
			KEYSTONE, 8833(SNAP ON)