

## DESCRIPTION

Demonstration Circuit 960 is a high voltage, current-mode DC/DC step-down converter featuring the LTC3824 in a small 10-pin MSOP package.

The board operates from a  $V_{in}$  range of 5.5V – 60V and outputs 5V<sub>out</sub> @ 2A. The Converter uses a P-Ch MOSFET for the main switch resulting in a low parts count design. Operating frequency is set to 200kHz with the option to accept a synchronized external clock. A soft-start feature controls the output voltage slew rate at start-up, reducing current surges and voltage overshoots. Burst Mode operation that improves the effi-

ciency at light loads can be enabled with a jumper. The demonstration board has been laid out with the option for adding a second switching MOSFET to facilitate higher output currents.

This board is suitable for a wide range of Industrial control systems and particularly suitable for 12V/42V Automotive applications and 48V Telecom power supplies.

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

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## QUICK START PROCEDURE

DC960 is easy to set up to evaluate the performance of the LTC3824. Refer to Figure 1 for proper measurement equipment setup and follow the procedure below:

1. Use a 65V/8A or better Bench Power Supply.
2. Set the Power supply voltage to somewhere between 5V and 60V.
3. Set the Load to somewhere between 0 – 2A.
4. Make sure the SHDN/RUN jumper is in the RUN position.

# QUICK START GUIDE FOR DEMONSTRATION CIRCUIT 960 HIGH VOLTAGE, P-CH MOSFET STEP-DOWN CONTROLLER

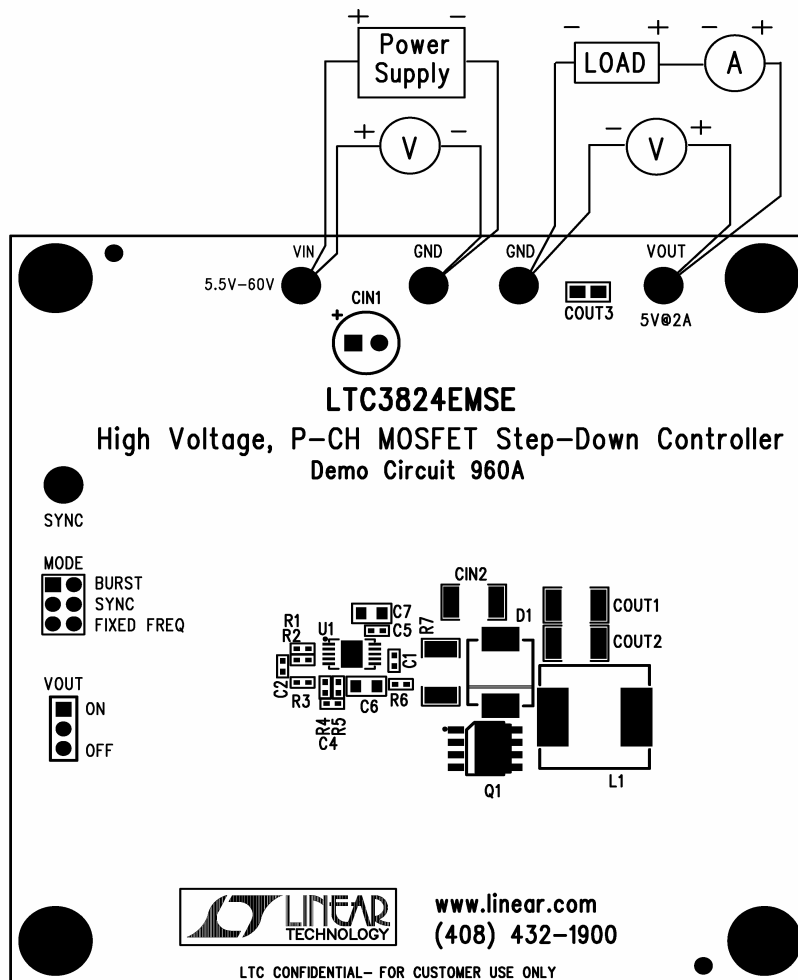


Figure 1. Proper Measurement Equipment Setup



QUICK START GUIDE FOR DEMONSTRATION CIRCUIT 960  
HIGH VOLTAGE, P-CH MOSFET STEP-DOWN CONTROLLER

Item	Qty	Reference	Part Description	Manufacturer / Part #
<b>REQUIRED CIRCUIT COMPONENTS:</b>				
1	1	CIN1	Cap., Alum, 33uF, 63V, 20% (thru hole)	SANYO, 63ME33AX+TS
2	1	CIN2	Cap., X7R, 2.2uF, 100V, 20%, 1812	TDK, C4532X7R2A225M
3	2	COUT1, COUT2	CAP., X5R, 100uF, 6.3V, 20%, 1812	TDK, C4532X5R0J107M
4	1	COUT3	CAP., X5R, 1uF, 6.3V, 10%, 0603	AVX, 06036D105KAT
5	2	C1, C4	Cap., COG, 100pF, 50V, 10%, 0402	AVX, 04025A101KAT
6	1	C2	Cap., X7R, 3.3nF, 50V, 10%, 0402	AVX, 04025C332KAT
7	1	C5,	Cap., X7R, 0.1uF, 16V, 10%, 0402	TDK, C1005X7R1C104K
8	2	C6, C7	Cap., X7R, 0.1uF, 100V, 10%, 0805	TDK, C2012X7R2A104K
9	1	D1	SCHOTTKY DIODE 90V	VISHAY, SS3H9-E3
10	2	L1	INDUCTOR, 22uH	TOKO, #919AS-220M=P3
11	1	Q1	P-CHANNEL MOSFET, SO-8 POWERPAK	VISHAY, Si7465DP-T1-E3
12	0	R1	RES., CHIP, 392K, 1/16W, 1%, 0402	AAC, CR05-3923FM
13	1	R2	RES., CHIP, 10K, 1/16W, 1%, 0402	AAC, CR05-1002FM
14	1	R3	RES., CHIP, 80.6K, 1/16W, 1%, 0402	AAC, CR05-8062FM
15	1	R4	RES., CHIP, 51, 1/16W, 5%, 0402	AAC, CR05-510JM
16	1	R5	RES., CHIP, 422K, 1/16W, 1%, 0402	AAC, CR05-4223FM
17	1	R6	RES., CHIP, 0, 1/16W, 0402	VISHAY, CRCW0402000Z0ED
18	1	R7	RES., CHIP, 0.025, 0.5W, 1%, 2010	VISHAY, WSL2010R0250FEA
19	4	U1	I.C, LTC3824EMSE#PBF, 10PIN MSOP	LINEAR TECH., LTC3824EMSE#PBF
<b>ADDITIONAL DEMO BOARD CIRCUIT COMPONENTS:</b>				
1	1	Q2(OPT)	P-CHANNEL MOSFET, D-PAK	FAIRCHILD SEMICONDUCTOR, FQD17P06
<b>HARDWARE-FOR DEMO BOARD ONLY:</b>				
1	1	JP1	0.079 SINGLE ROW HEADER, 3 PIN	SAMTEC, TMM-103-02-L-S
2	1	JP2	0.079 DOUBLE ROW HEADER, 6 PIN	SAMTEC, TMM-103-02-L-D
3	1	JP1, JP2	SHUNT,	SAMTEC, 2SN-BK-G
4	5	E1-E5	TESTPOINT, TURRET, .095"	MILL-MAX, 2501-2-00-80-00-00-07-0
5	4	(STAND-OFF)	STAND-OFF, NYLON 0.25" tall	KEYSTONE, 8831(SNAP ON)