

## DESCRIPTION

Demonstration circuit 1423 is a DC/DC Boost Converter for APD Bias featuring the LT3571 in 3mm x 3mm QFN package. This demo board is designed to convert a 5V-12V source to 50V at 2mA. The demo board includes a fast transient response test circuit on the back side. Remove C4 for fast transient evaluation. To control the output voltage via the CTRL pin, remove R6. The circuit is designed for 1MHz operation but can be easily programmed for any frequency between 250KHz and 2MHz.

The LT3571 features a 75V, 350mA switch, integrated diode, and high side current monitor which provides a current proportional to the APD current. Other features include Frequency Synchronization, Programmable Current Limit Protection, and Internal Soft-Start. The LT3571 datasheet gives a com-

plete description of the part, its operation and application information. The datasheet must be read in conjunction with this quick start guide for working on or modifying the demo circuit 1423.

For fast transient response demonstration: remove C4 and any other capacitance or test probes across APD node and carefully read **APD Current Monitor Transient Response** section in the datasheet.

This circuit is specifically designed for APD bias and is optimized for performance, solution size and profile. Typical applications include APD bias, PIN Diode bias, Optical Receivers and Modules, Fiber Optic Network Equipment etc.

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

## PERFORMANCE SUMMARY Specifications are at TA = 25°C

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
V <sub>IN</sub>	Input Supply Range		5		12	V
V <sub>OUT</sub>	Output Voltage Accuracy	V <sub>IN</sub> = 5V, I <sub>LOAD</sub> = 2mA	48	50	52	V
V <sub>OUT</sub>	Output Voltage Accuracy	V <sub>IN</sub> = 12V, I <sub>LOAD</sub> = 4mA	48	50	52	V
Ripple		V <sub>IN</sub> = 5V, I <sub>LOAD</sub> = 2mA		1mV		
F <sub>s</sub>	Switching Frequency			1		MHz

## QUICK START PROCEDURE

Demonstration circuit 1423 is easy to set up to evaluate the performance of the LT3571. Refer to Figure 1 for proper measurement equipment setup and follow the procedure below:

**NOTE.** When measuring the output voltage ripple, connect an X1 probe from the oscilloscope to the APD terminals or a BNC cable to J1. Set the oscilloscope amplitude to 2mV/div, and the coupling to AC. Make sure there are no other cables connected to the APD node.

1. Place jumper in the following positions:  
**JP1** Run
2. With power off, connect the input power supply to Vin and GND.
3. Turn on the power at the input.

**NOTE.** Make sure that the input voltage does not exceed 12V.

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4. Connect A 25K resistor from APD to ground and check for the proper output voltages.  $V_{out} = APD = 49V$  to  $51V$ .

**NOTE.** If there is no output, temporarily disconnect the load to make sure that the load is not set too high.

5. Once the proper output voltages are established, adjust the input voltage within the operating range and observe the output voltage regulation, ripple voltage, efficiency and other parameters.

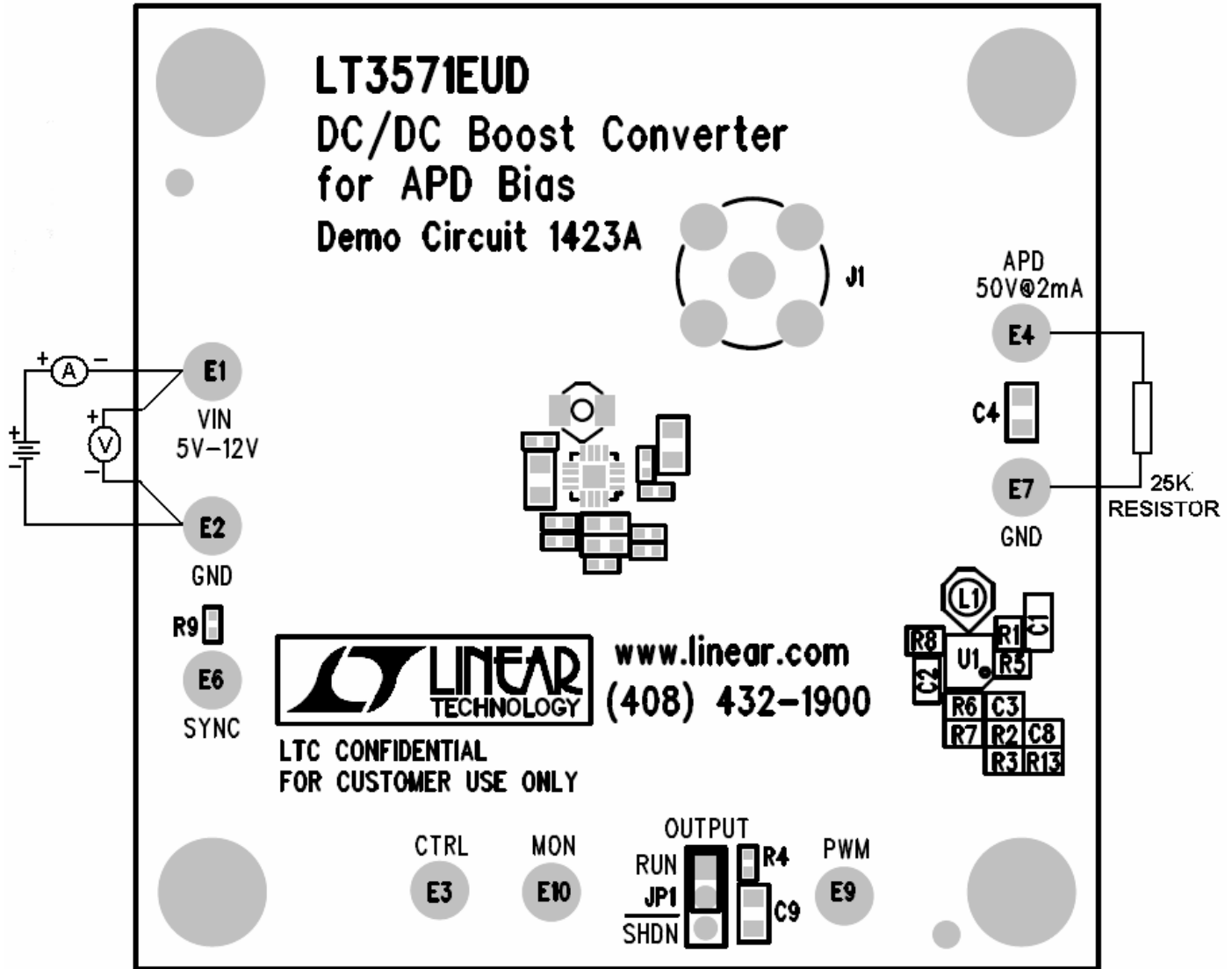


Figure 1. Proper Measurement Equipment Setup

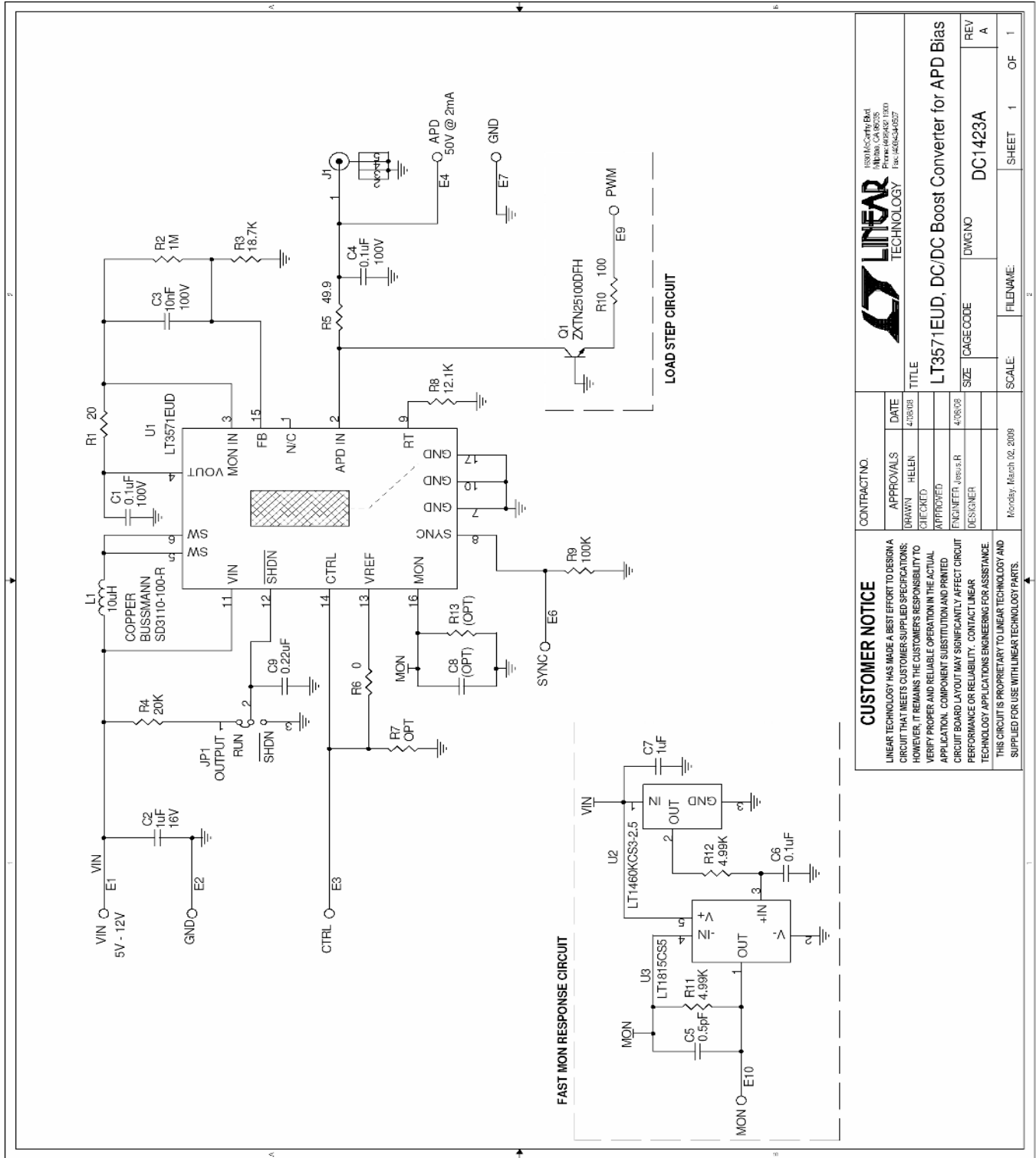


Figure 2. Schematic

<b>CUSTOMER NOTICE</b>		<b>CONTRACT NO.</b>	
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 MAY SIGNIFICANTLY AFFECT CIRCUIT PERFORMANCE OR RELIABILITY. CONTACT LINEAR TECHNOLOGY APPLICATIONS ENGINEERING FOR ASSISTANCE.			
APPROVALS		DATE	
DRAWN: HELEN		4/28/08	
CHECKED:			
ENGINEER: JESSE R		4/28/08	
DESIGNER:			
TITLE		FILENAME:	
LT3571EUD, DC/DC Boost Converter for APD Bias		Monday, March 02, 2009	
SIZE	DWG NO	SCALE	SHEET 1 OF 1
REV A	DC1423A		