LT3048-15
Low Noise Bias Generator

DESCRIPTION

Demonstration circuit 2120A features the LT3048-15, a Boost DC/DC Converter with integrated Schottky diode and LDO in a 2mm × 2mm DFN package. This demo board is designed to convert a 2.7V to 4.8V input to a 15V output at 19mA to 35mA with low output ripple and noise. The LT3048-15 is programmed for 2MHz switching frequency.

This demonstration board can be used to evaluate other fixed output voltage versions of the LT3048.

The LT3048 data sheet gives a complete description of the part, operation, and application information. The data sheet must be read in conjunction with this Quick Start Guide for the demo circuit DC2120A.

Design files for this circuit board are available at http://www.linear.com/demo/DC2120A

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PERFORMANCE SUMMARY

Specifications are at T_A = 25°C

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
Input Supply Range		2.7		4.8	V
Output Voltage Range	V_{IN} = 2.7V, I_{OUT} = 19mA	14.625	15	15.375	V
Switching Frequency		1.7	2.2	2.7	MHz
Output Ripple	V_{IN} = 4.8V, Load = 37mA		1		mV

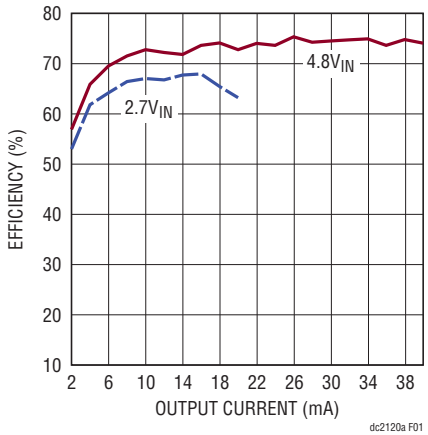


Figure 1. DC2120A Efficiency

QUICK START PROCEDURE

Demonstration circuit 2120A is easy to set up to evaluate the performance of the LT3048. Refer to Figure 2 for proper measurement equipment setup and follow the procedure below:

NOTE. When measuring the output voltage ripple, connect a X1 oscilloscope probe as shown in Figure 3.

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

   NOTE. Make sure that the input voltage does not exceed 4.8V.
4. Connect a 20mA load from V_{OUT} to GND and check for the proper output voltage. V_{OUT} = 14.625V to 15.375V

   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 and load within the operating range and observe the output voltage regulation, ripple voltage, efficiency and other parameters.

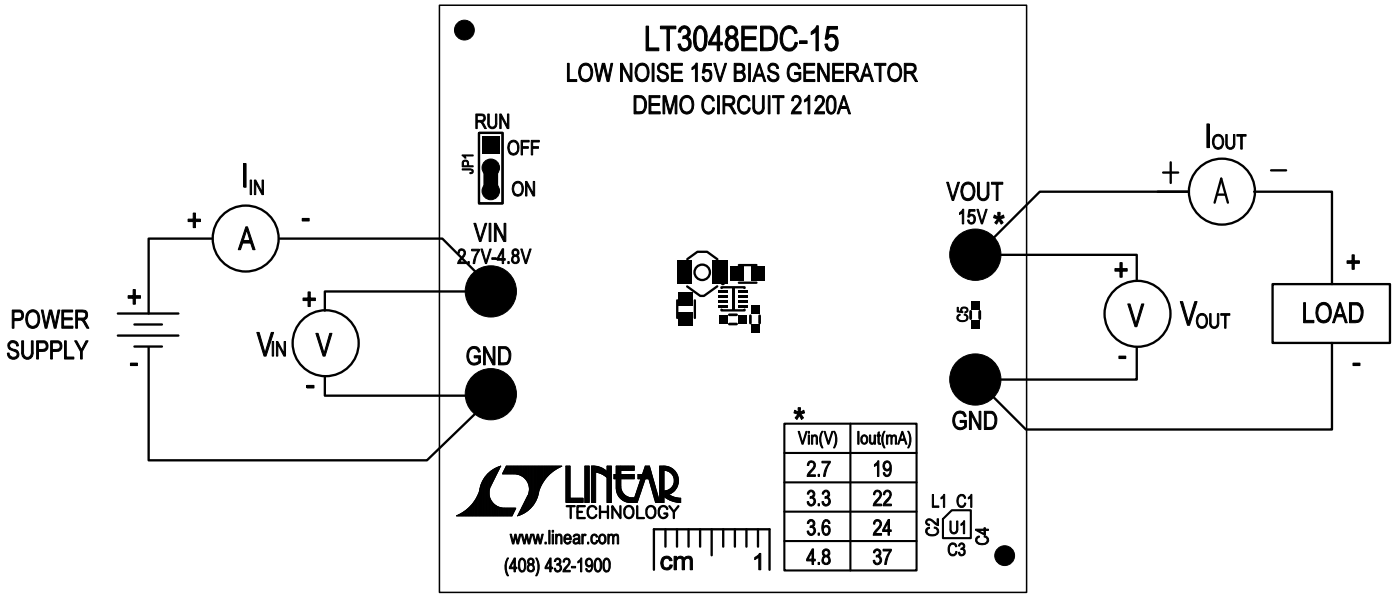


Figure 2. Proper Measurement Equipment Setup

QUICK START PROCEDURE

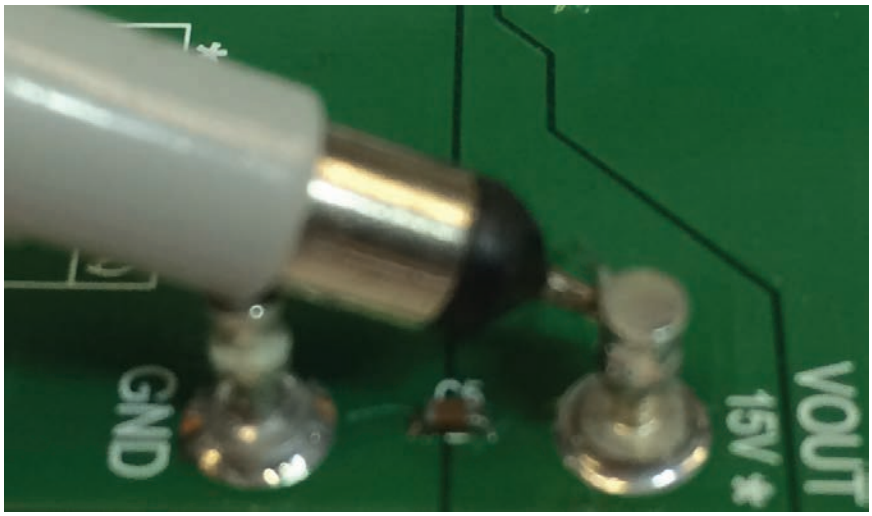


Figure 3. Output Ripple Measurement Technique

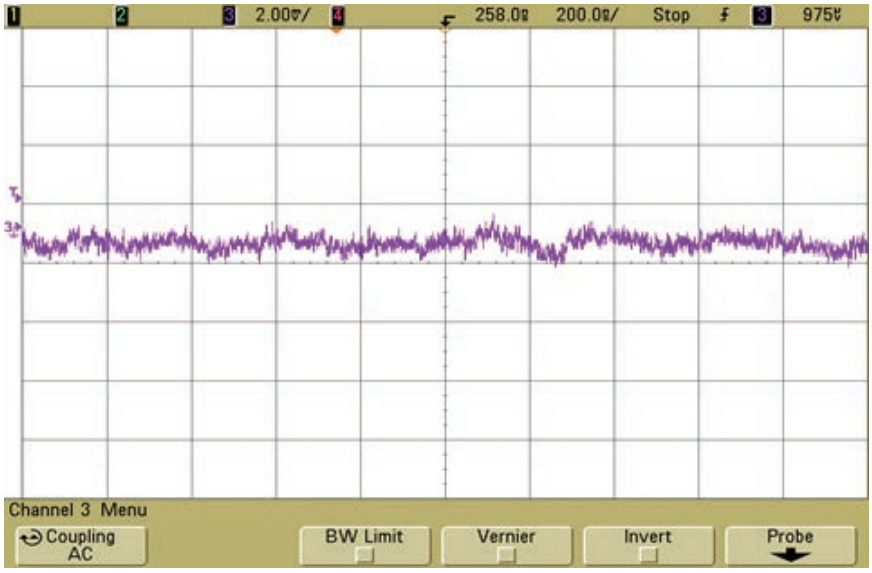
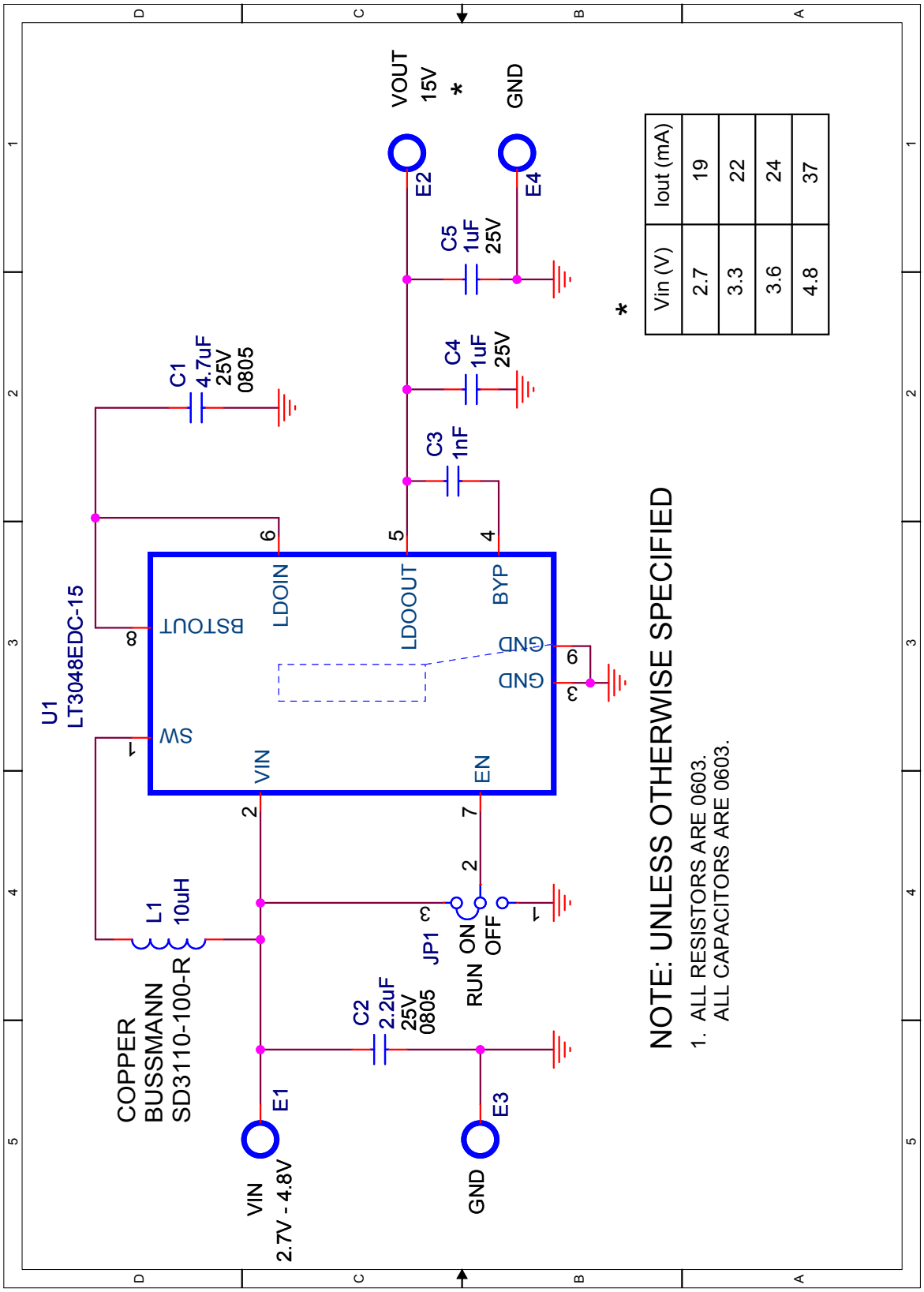


Figure 4. Output Voltage Ripple

PARTS LIST

ITEM	QTY	REFERENCE	PART DESCRIPTION	MANUFACTURER/PART NUMBER
Required Circuit Components				
1	1	C1	CAP., X7R, 4.7µF, 25V, 10%, 0805	TDK, C2012X7R1E475K
2	1	C2	CAP., X7R, 2.2µF, 25V, 10%, 0805	TDK, C2012X7R1E225K
3	1	C4	CAP., X7R, 1µF, 25V, 10%, 0603	TDK, C1608X7R1E105K
4	1	C3	CAP., C0G, 1nF, 25V, 5%, 0603	MURATA GRM1885C1E102JA01D
5	1	L1	INDUCTOR, 10µH	COOPER Bussmann, SD3110-100-R
6	1	U1	IC., LT3048EDC-15#PBF, DFN-2X2, 8 LEAD	LINEAR TECH., LT3048EDC-15#PBF
7	1		FAB, PRINTED CIRCUIT BOARD	DEMO BOARD 2120A
Additional Demo Board Circuit Components				
1	1	C5	CAP., X7R, 1µF, 25V, 10%, 0603	TDK, C1608X7R1E105K
Hardware: For Demo Board Only				
1	4	E1-E4	TESTPOINT, TURRET, 0.094"	MILL-MAX, 2501-2-00-80-00-00-07-0
2	1	JP1	3 PIN 0.079" SINGLE ROW HEADER	SULLINS, NRPN031PAEN-RC
3	1	XJP1	SHUNT, 0.079" CENTER	SAMTEC, 2SN-BK-G
4	1		STENCIL	STENCIL DC2120A

SCHEMATIC DIAGRAM



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