

DEMO MANUAL DC2120A

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 |

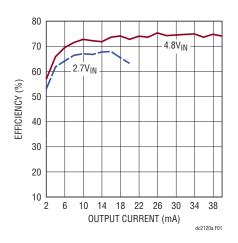


Figure 1. DC2120A Efficiency



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.

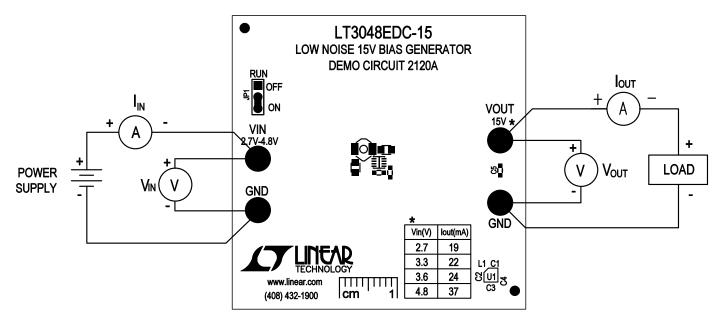


Figure 2. Proper Measurement Equipment Setup

QUICK START PROCEDURE



Figure 3. Output Ripple Measurement Technique

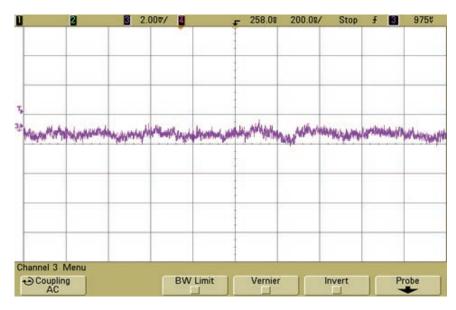


Figure 4. Output Voltage Ripple

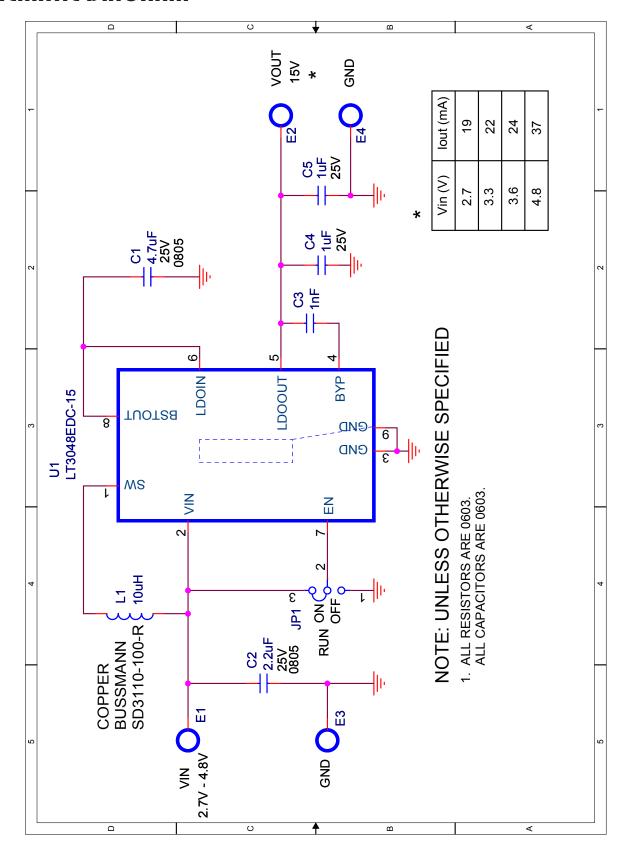


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PARTS LIST

| ITEM | QTY | REFERENCE | PART DESCRIPTION | MANUFACTURER/PART NUMBER | |
|---------|----------|----------------------------|--|-----------------------------------|--|
| Require | d Circui | t 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., COG, 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 | |
| ddition | al Dem | o Board Circuit Components | | | |
| 1 | 1 | C5 | CAP., X7R, 1µF, 25V, 10%, 0603 | TDK, C1608X7R1E105K | |
| lardwa | e: For D | 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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многоканальный

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