

LT3048

Low Noise Bias Generator

DESCRIPTION

Demonstration circuit 2258A features the LT[®]3048, 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 20V output at 10mA to 25mA with low output ripple and noise. The LT3048 allows for the output to be programmed up to 23V. The LT3048 is programmed for 1MHz switching frequency.

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 DC2258A.

Design files for this circuit board are available at <http://www.linear.com/demo/DC2258A>

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PERFORMANCE SUMMARY

Specifications are at $T_A = 25^\circ\text{C}$

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
Input Supply Range		2.7		4.8	V
Output Voltage Range	$V_{IN} = 2.7\text{V}$, $I_{OUT} = 10\text{mA}$	19.5	20	20.5	V
Switching Frequency		0.7	1	1.3	MHz
Output Ripple	$V_{IN} = 4.8\text{V}$, Load = 25mA		1		mV

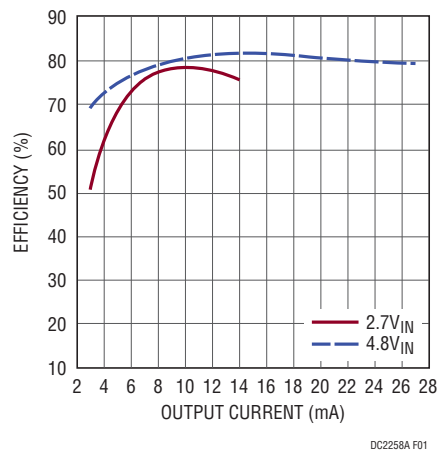


Figure 1. Efficiency Curve

QUICK START PROCEDURE

Demonstration circuit 2258A is easy to set up to evaluate the performance of the LT3048. Refer to 0 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: 1

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. $V_{OUT} = 19.5V$ to $20.5V$

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.

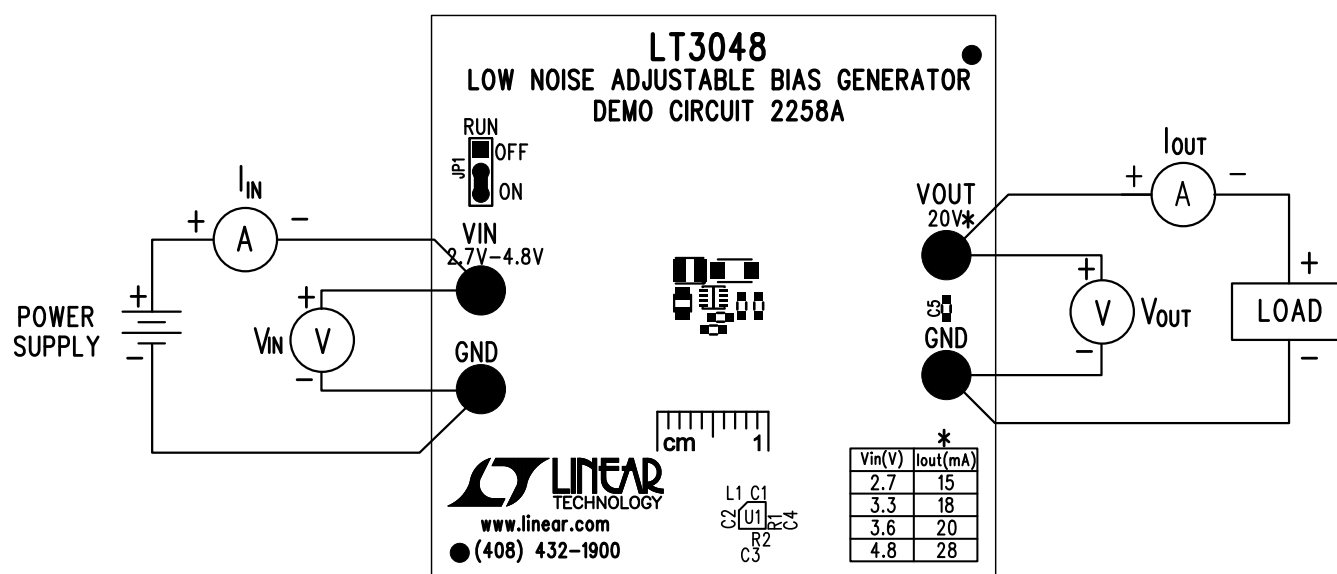


Figure 2. Proper Measurement Equipment Setup

QUICK START PROCEDURE



Figure 3. Output Ripple Measurement Technique

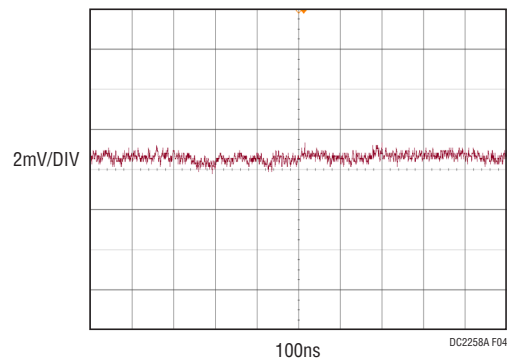


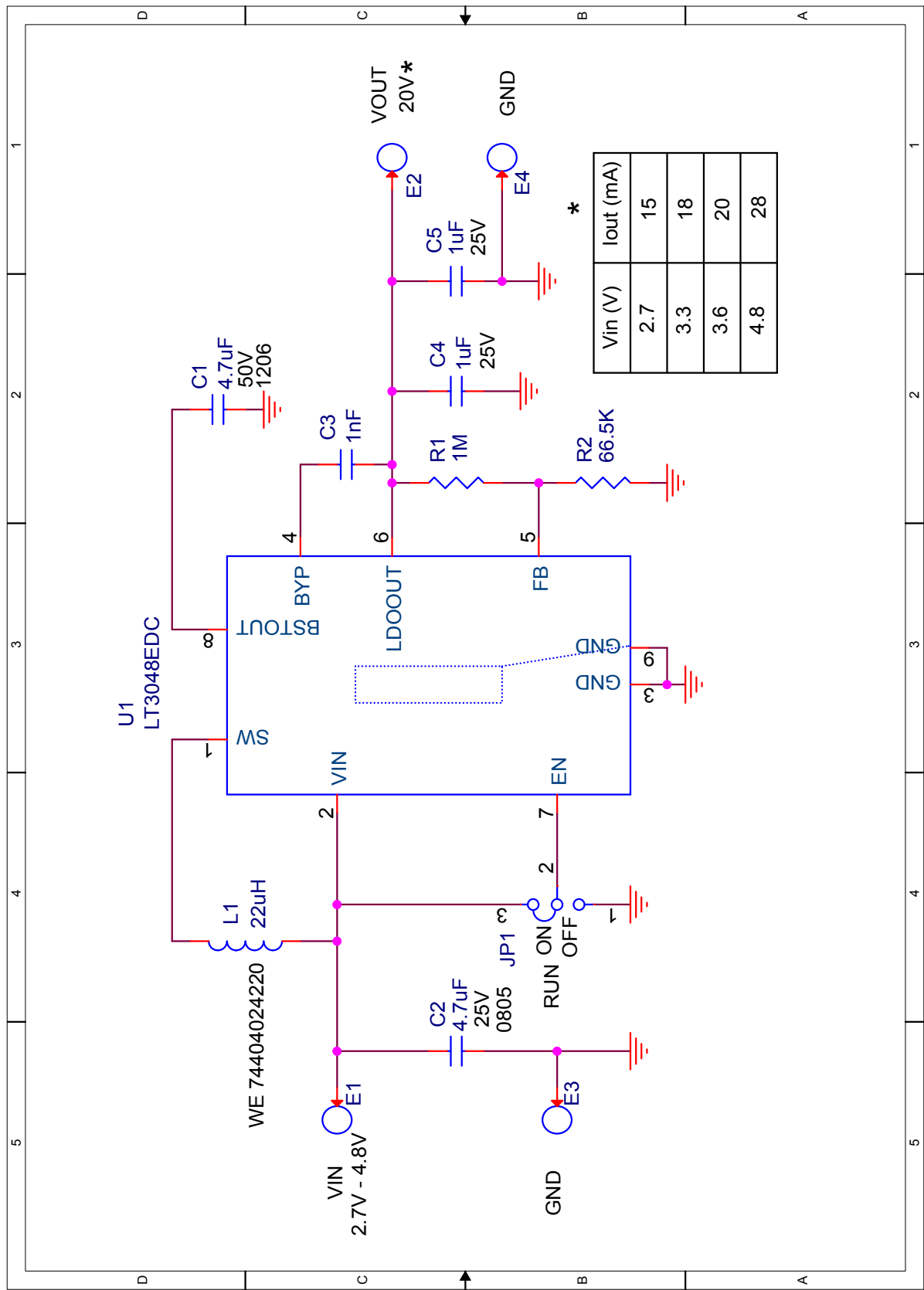
Figure 4. Output Voltage Ripple

DEMO MANUAL DC2258A

PARTS LIST

ITEM	QTY	REFERENCE	PART DESCRIPTION	MANUFACTURER/PART NUMBER
Required Circuit Components				
1	1	C1	CAP., 4.7 μ F, X7R, 50V, 10%, 1206	MURATA, GRM31CR71H475KA12L
2	1	C2	CAP., 4.7 μ F, X7R, 25V, 10%, 0805	TDK, C2012X7R1E475K125AB
3	1	C3	CAP., 1000pF, C0G, 25V, 5%, 0603	MURATA, GRM1885C1E102JA01D
4	1	C4	CAP., 1 μ F, X7R, 25V, 10%, 0603	TDK, C1608X7R1E105K080AB
8	1	L1	IND., 22 μ H, PWR, WE-LQS, 20%	WURTH ELEKTRONIK, 74404024220
9	1	R1	RES., 1M Ω , 1%, 1/10W, 0603	VISHAY, CRCW06031M00FKEA
10	1	R2	RES., 66.5k Ω , 1%, 1/10W, 0603	VISHAY, CRCW060366K5FKEA
11	1	U1	I.C., DFN-2 $\times$ 2, 8-LEAD	LINEAR TECH., LT3048EDC#PBF
12	1		PCB, DC2258A	DEMO CIRCUIT 2258A
Additional Demo Board Circuit Components				
4	1	C5	CAP., 1 μ F, X7R, 25V, 10%, 0603	TDK, C1608X7R1E105K080AB
Hardware: For Demo Board Only				
5	4	E1, E2, E3, E4	TEST POINT, TURRET, .094", THT	MILL-MAX, 2501-2-00-80-00-00-07-0
6	1	JP1	CONN., HEADER, 1 $\times$ 3, 2mm	SULLINS, NRPN031PAEN-RC
7	1	XJP1	SHUNT, 2mm	SAMTEC, 2SN-BK-G

SCHEMATIC DIAGRAM



dc2258af

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This notice contains important safety information about temperatures and voltages. For further safety concerns, please contact a LTC application engineer.

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