

# LT3048

## Low Noise Bias Generator

### DESCRIPTION

Demonstration circuit 2258A features the LT<sup>®</sup>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>**

LT, LT, LTC, LTM, Linear Technology and the Linear logo are registered trademarks of Linear Technology Corporation. All other trademarks are the property of their respective owners.

### 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

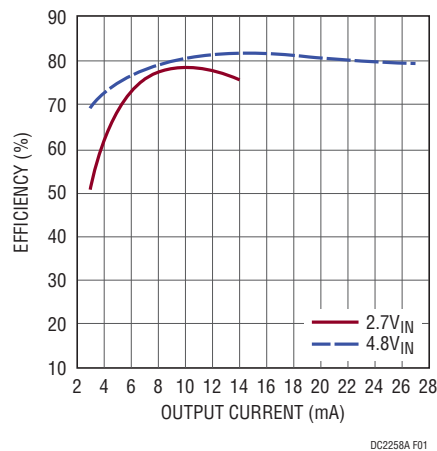


Figure 1. Efficiency Curve

## 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.

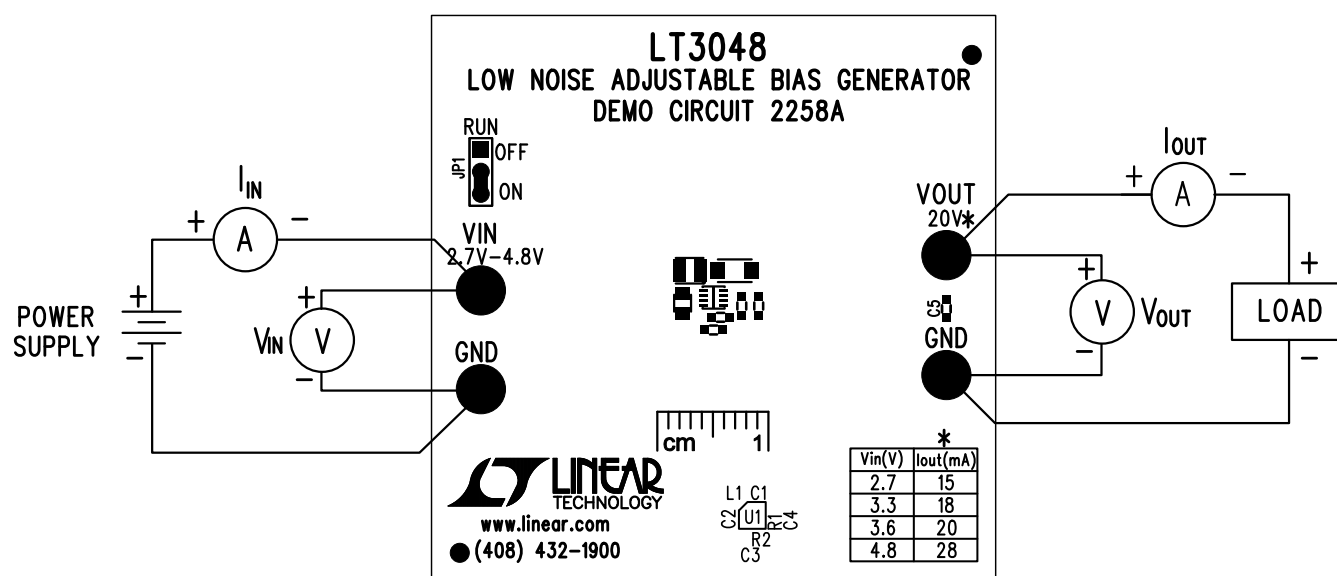


Figure 2. Proper Measurement Equipment Setup

## QUICK START PROCEDURE



Figure 3. Output Ripple Measurement Technique

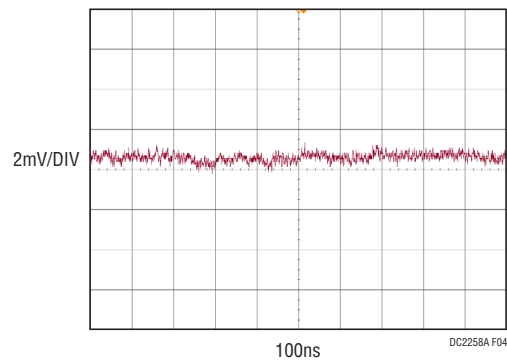


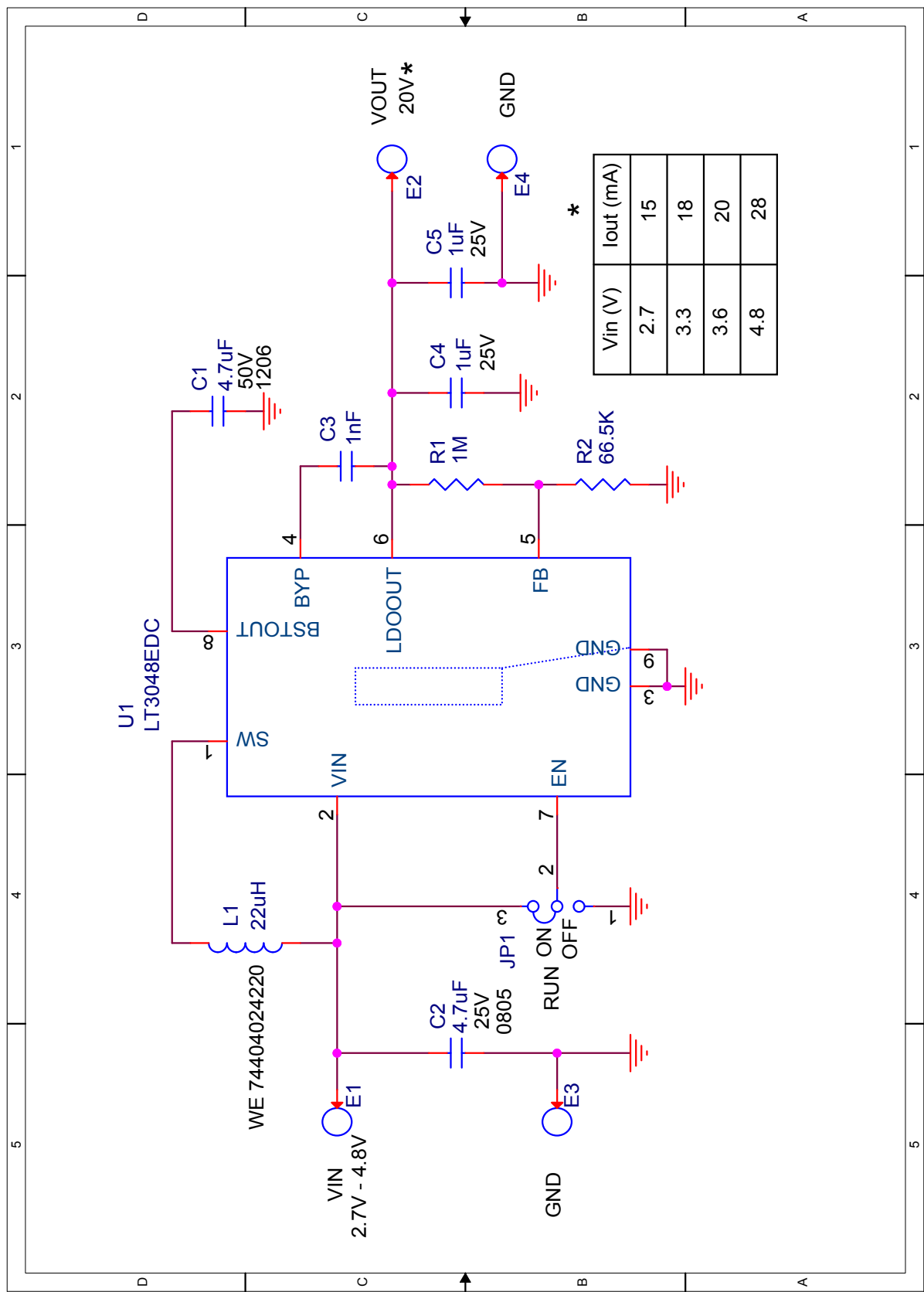
Figure 4. Output Voltage Ripple

# DEMO MANUAL DC2258A

## PARTS LIST

ITEM	QTY	REFERENCE	PART DESCRIPTION	MANUFACTURER/PART NUMBER
<b>Required Circuit Components</b>				
1	1	C1	CAP., 4.7 $\mu$ F, X7R, 50V, 10%, 1206	MURATA, GRM31CR71H475KA12L
2	1	C2	CAP., 4.7 $\mu$ F, X7R, 25V, 10%, 0805	TDK, C2012X7R1E475K125AB
3	1	C3	CAP., 1000pF, C0G, 25V, 5%, 0603	MURATA, GRM1885C1E102JA01D
4	1	C4	CAP., 1 $\mu$ F, X7R, 25V, 10%, 0603	TDK, C1608X7R1E105K080AB
8	1	L1	IND., 22 $\mu$ H, PWR, WE-LQS, 20%	WURTH ELEKTRONIK, 74404024220
9	1	R1	RES., 1M $\Omega$ , 1%, 1/10W, 0603	VISHAY, CRCW06031M00FKEA
10	1	R2	RES., 66.5k $\Omega$ , 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
<b>Additional Demo Board Circuit Components</b>				
4	1	C5	CAP., 1 $\mu$ F, X7R, 25V, 10%, 0603	TDK, C1608X7R1E105K080AB
<b>Hardware: For Demo Board Only</b>				
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

# DEMO MANUAL DC2258A

---

## DEMONSTRATION BOARD IMPORTANT NOTICE

Linear Technology Corporation (LTC) provides the enclosed product(s) under the following **AS IS** conditions:

This demonstration board (DEMO BOARD) kit being sold or provided by Linear Technology is intended for use for **ENGINEERING DEVELOPMENT OR EVALUATION PURPOSES ONLY** and is not provided by LTC for commercial use. As such, the DEMO BOARD herein may not be complete in terms of required design-, marketing-, and/or manufacturing-related protective considerations, including but not limited to product safety measures typically found in finished commercial goods. As a prototype, this product does not fall within the scope of the European Union directive on electromagnetic compatibility and therefore may or may not meet the technical requirements of the directive, or other regulations.

If this evaluation kit does not meet the specifications recited in the DEMO BOARD manual the kit may be returned within 30 days from the date of delivery for a full refund. THE FOREGOING WARRANTY IS THE EXCLUSIVE WARRANTY MADE BY THE SELLER TO BUYER AND IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED, IMPLIED, OR STATUTORY, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE. EXCEPT TO THE EXTENT OF THIS INDEMNITY, NEITHER PARTY SHALL BE LIABLE TO THE OTHER FOR ANY INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES.

The user assumes all responsibility and liability for proper and safe handling of the goods. Further, the user releases LTC from all claims arising from the handling or use of the goods. Due to the open construction of the product, it is the user's responsibility to take any and all appropriate precautions with regard to electrostatic discharge. Also be aware that the products herein may not be regulatory compliant or agency certified (FCC, UL, CE, etc.).

No License is granted under any patent right or other intellectual property whatsoever. **LTC assumes no liability for applications assistance, customer product design, software performance, or infringement of patents or any other intellectual property rights of any kind.**

LTC currently services a variety of customers for products around the world, and therefore this transaction **is not exclusive**.

**Please read the DEMO BOARD manual prior to handling the product.** Persons handling this product must have electronics training and observe good laboratory practice standards. **Common sense is encouraged.**

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

Mailing Address:

Linear Technology  
1630 McCarthy Blvd.  
Milpitas, CA 95035

Copyright © 2004, Linear Technology Corporation

dc2258af



Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



#### Как с нами связаться

**Телефон:** 8 (812) 309 58 32 (многоканальный)

**Факс:** 8 (812) 320-02-42

**Электронная почта:** [org@eplast1.ru](mailto:org@eplast1.ru)

**Адрес:** 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.