

LT3081
**1.5A Single Resistor Rugged
 Linear Regulator with Monitors**
DESCRIPTION

DC1870A is a 1.5A low dropout linear regulator featuring **LT[®]3081**. The device is designed for rugged industrial applications and can be paralleled for higher output current or heat spreading. Besides paralleling, the LT3081 also presents other features including adjustability to zero V_{OUT} , reverse protection for input and output-to-input voltages, temperature monitor, output current monitor, etc.

A key feature of the LT3081 is the extended safe operating area (SOA). With the precision zero TC 50 μ A reference current source, a single resistor programs the output voltage to any level between zero and 34.5V.

Internal protection circuitry includes reverse-battery and reverse-current protection, current limiting and thermal limiting.

The LT3081 is offered in the packages of 16-lead TSSOP, 7-lead TO-220, 7-lead DD-Pak, and a 12-lead 4mm \times 4mm DFN.

The LT3081 data sheet gives a complete description of the device, operation and application information. The data sheet should be read in conjunction with this quick start guide for working on or modifying the DC1870A.

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

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 $T_A = 25^\circ\text{C}$

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
V_{IN}	Input Supply Range	$V_{OUT} = 1.2\text{V}$, $I_{OUT1} = 1\text{mA}$	2.8		36	V
V_{OUT}	Output Voltage	Shunt at 1, 2 for JP1	1.164	1.2	1.248	V
		Shunt at 3, 4 for JP1	1.455	1.5	1.56	V
		Shunt at 5, 6 for JP1	1.746	1.8	1.872	V
		Shunt at 7, 8 for JP1	2.425	2.5	2.6	V
		Shunt at 9, 10 for JP1	3.201	3.3	3.432	V
		Shunt at 11, 12 for JP1	4.85	5	5.2	V
		Shunt at 13, 14 for JP1 and R7 Stuffed as 243k Ω	11.64	12	12.48	V

QUICK START PROCEDURE

DC1870A is easy to set up to evaluate the performance of the LT3081. Refer to Figure 1 for proper measurement equipment setup and follow the procedure below:

NOTE: When measuring the input or output voltage ripple, care must be taken to avoid a long ground lead on the oscilloscope probe. Measure the input or output voltage ripple by touching the probe tip directly across the terminals of the input or output capacitors. See Figure 2 for proper scope probe technique.

1. Use JP1 to set the desired output voltage.
2. With power off, connect the input power supply to V_{IN} and GND.

3. Turn on the power at the V_{IN} .

NOTE: Make sure that the V_{IN} voltage does not exceed 36V.

4. Check for the proper output voltages:

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

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

NOTE: Make sure that the power dissipation is limited below the thermal limit.

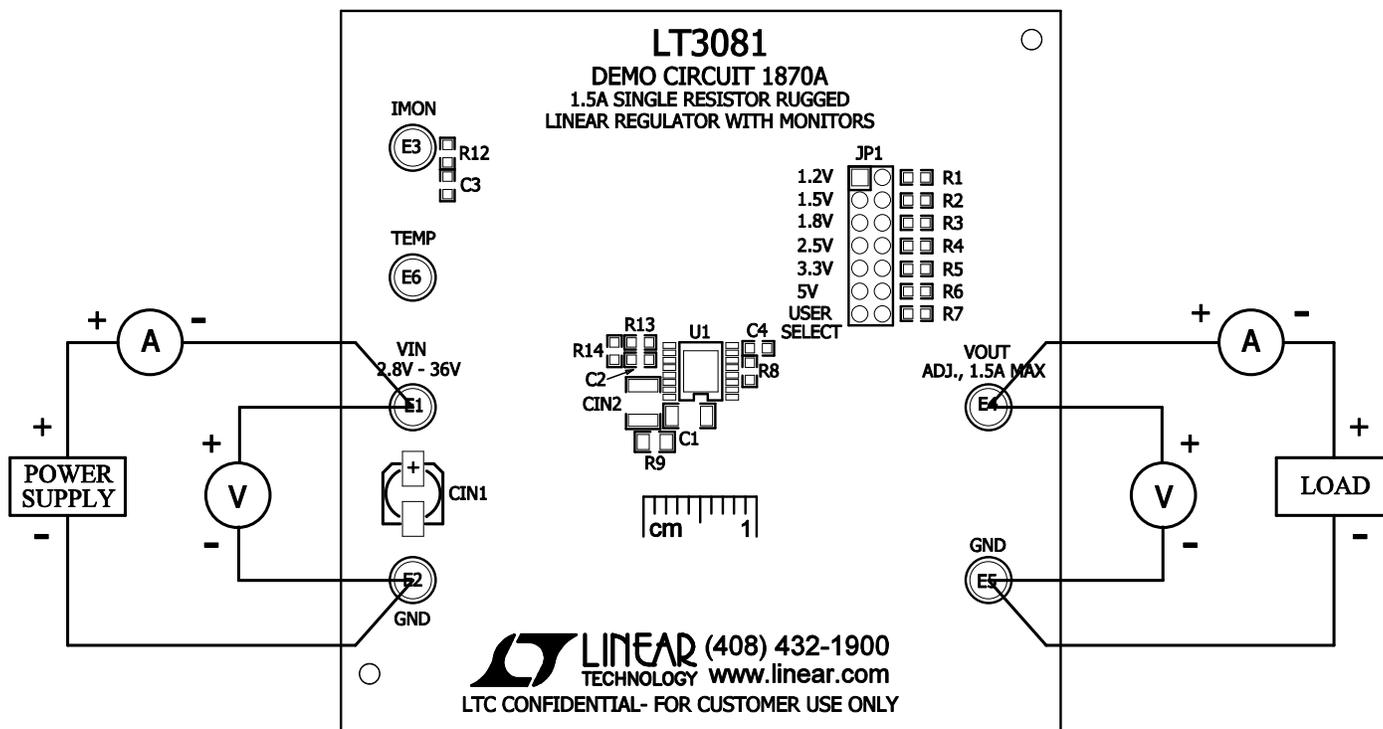


Figure 1. DC1870A Proper Equipment Setup

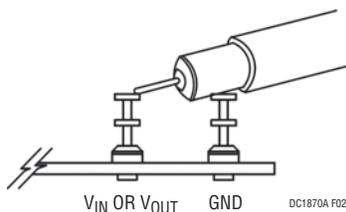


Figure 2. Measuring Input or Output Ripple

THERMAL IMAGE

An example thermal image shows the temperature distribution on the PC board. The test is done in still air at room temperature with 2.3W power dissipation in the LT3081

IC. This gives an IC junction-to-ambient thermal resistance of $\theta_{JA} = 16^{\circ}\text{C}/\text{W}$ on the demo board.

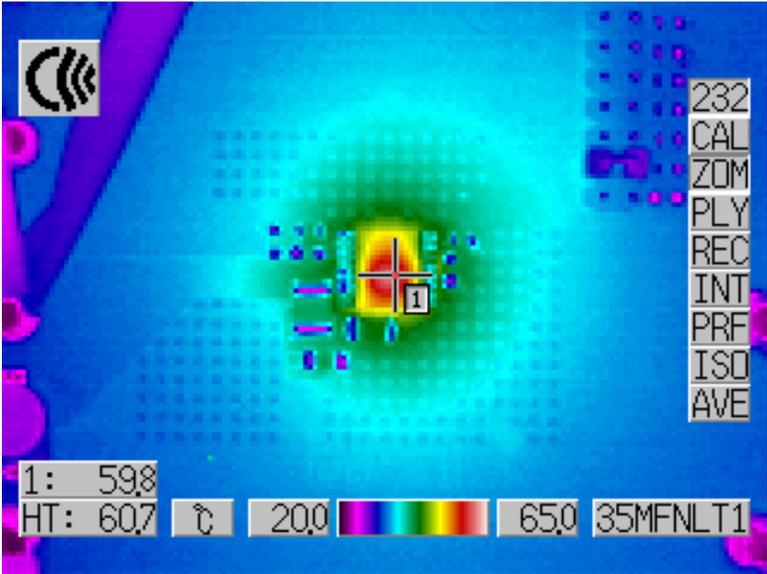


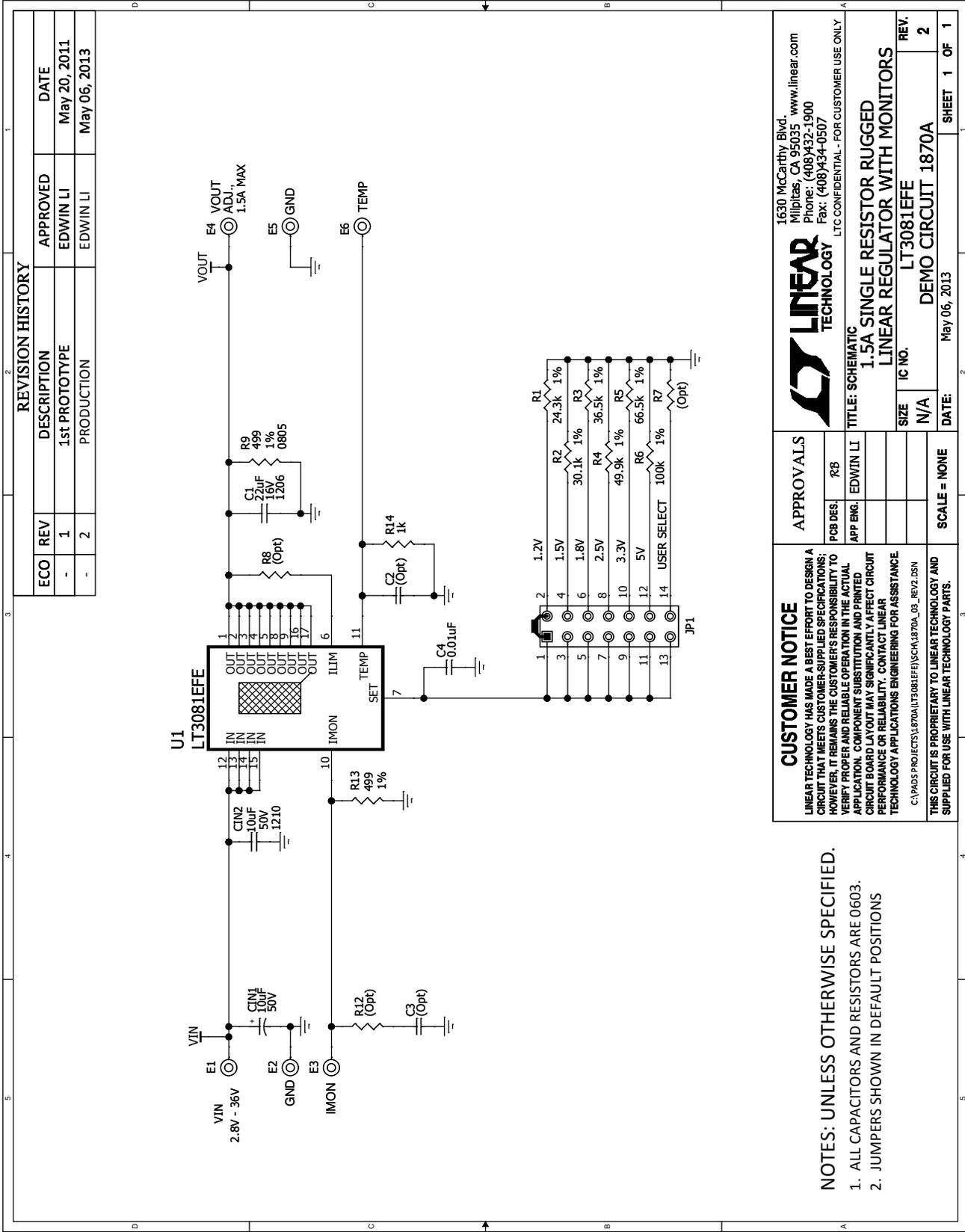
Figure 3. Temperature Rise at 2.3W Dissipation

DEMO MANUAL DC1870A

PARTS LIST

ITEM	QTY	REFERENCE	PART DESCRIPTION	MANUFACTURER/PART NUMBER
Required Circuit Components				
1	1	CIN2	Cap., X5R 10 μ F 50V 20% 1210	Taiyo Yuden UMK325BJ106MM-T
2	1	C1	Cap., X5R 22 μ F 16V 20% 1206	Taiyo Yuden EMK316BJ226ML-T
3	1	C4	Cap., X7R 0.01 μ F 25V 10% 0603	AVX 06033C103KAT2A
4	1	R1	Res., Chip 24.3k 0.1W 1% 0603	Vishay CRCW060324K3FKEA
5	1	R2	Res., Chip 30.1k 0.1W 1% 0603	Vishay CRCW060330K1FKEA
6	1	R3	Res., Chip 36.5k 0.1W 1% 0603	Vishay CRCW060336K5FKEA
7	1	R4	Res., Chip 49.9k 0.1W 1% 0603	Vishay CRCW060349K9FKEA
8	1	R5	Res., Chip 66.5k 0.1W 1% 0603	Vishay CRCW060366K5FKEA
9	1	R6	Res., Chip 100k 0.1W 1% 0603	Vishay CRCW0603100KFKEA
10	1	R9	Res., Chip 499 Ω 0.125W 1% 0805	Vishay CRCW0805499RFKEA
11	1	R13	Res., Chip 499 Ω 0.1W 1% 0603	Vishay CRCW0603499RFKEA
12	1	R14	Res., Chip 1k 0.1W 5% 0603	Vishay CRCW06031K00JNEA
13	1	U1	I.C., Linear Regulator TSSOP16-FE/TSSOP16-BB	Linear Technology Corporation LT3081EFE#PBF
Additional Demo Board Circuit Components				
1	1	CIN1	Cap., Aluminum 10 μ F 50V 10% OSCON-CE-5	Sun Electronics 50CE10BSS
2	0	C2, C3 (Opt)	Cap., 0603	
3	0	R7, R8, R12 (Opt)	Res., 0603	
Hardware: For Demo Board Only				
1	6	E1, E2, E3, E4, E5, E6	Turret, Testpoint	Mill Max 2501-2-00-80-00-00-07-0
2	1	JP1	Headers, 2 \times 7 (2mm Ctrs.)	Samtec TMM-107-02-L-D
3	1	XJP1	Shunt, 2mm Ctrs.	Samtec 2SN-BK-G

SCHEMATIC DIAGRAM



Information furnished by Linear Technology Corporation is believed to be accurate and reliable. However, no responsibility is assumed for its use. Linear Technology Corporation makes no representation that the interconnection of its circuits as described herein will not infringe on existing patent rights.

DEMO MANUAL DC1870A

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

Компания «Life Electronics» занимается поставками электронных компонентов импортного и отечественного производства от производителей и со складов крупных дистрибьюторов Европы, Америки и Азии.

С конца 2013 года компания активно расширяет линейку поставок компонентов по направлению коаксиальный кабель, кварцевые генераторы и конденсаторы (керамические, пленочные, электролитические), за счёт заключения дистрибьюторских договоров

Мы предлагаем:

- Конкуренеспособные цены и скидки постоянным клиентам.
- Специальные условия для постоянных клиентов.
- Подбор аналогов.
- Поставку компонентов в любых объемах, удовлетворяющих вашим потребностям.
- Приемлемые сроки поставки, возможна ускоренная поставка.
- Доставку товара в любую точку России и стран СНГ.
- Комплексную поставку.
- Работу по проектам и поставку образцов.
- Формирование склада под заказчика.
- Сертификаты соответствия на поставляемую продукцию (по желанию клиента).
- Тестирование поставляемой продукции.
- Поставку компонентов, требующих военную и космическую приемку.
- Входной контроль качества.
- Наличие сертификата ISO.

В составе нашей компании организован Конструкторский отдел, призванный помогать разработчикам, и инженерам.

Конструкторский отдел помогает осуществить:

- Регистрацию проекта у производителя компонентов.
- Техническую поддержку проекта.
- Защиту от снятия компонента с производства.
- Оценку стоимости проекта по компонентам.
- Изготовление тестовой платы монтаж и пусконаладочные работы.



Тел: +7 (812) 336 43 04 (многоканальный)

Email: org@lifeelectronics.ru

www.lifeelectronics.ru