

3.5A, 36V Step-down Switching Regulator with SYNC Function

DESCRIPTION

Demonstration circuit 1149 is a monolithic step-down DC/DC switching regulator featuring LT3680. The LT3680 can be synchronized over a 250 KHz to 2 MHz range. The demo board is designed for 5V output from a 6.3V to 36V input. The wide input range of the LT3680 allows a variety of input sources. The typical sources are automotive batteries, wall adaptors and industrial supplies. The modes of operation (Burst Mode or synchronization) are jumper selectable. The Burst Mode operation increases the efficiency at light loads.

The current mode control scheme creates fast transient response and good loop stability. The gate drive of the internal switch is boosted to a voltage that is higher than the V_{in} to ensure saturation of the switch. The LT3680's integrated boost diode reduces the parts count. The RUN/SS pin

can be used to set the part in micropower shut-down mode, reducing the supply current to less than 1uA. The RUN/SS pin can also be used to program soft start. In this mode, the RUN/SS pin is driven through an external RC filter to create a voltage ramp on this pin. The soft start function reduces the input current surge during start-up.

The LT3680 datasheet gives a complete description of the part, operation and application information. The datasheet must be read in conjunction with this quick start guide for Demo circuit 1149.

Design files for this circuit board are available. Call the LTC factory.

 , LTC and LT are registered trademarks of Linear Technology Corporation. ThinSOT and PowerPath are trademarks of Linear Technology Corporation.

Performance Summary for Step-down Switching Regulator ($T_A = 25^\circ\text{C}$)

PARAMETER FOR BUCK REGULATOR	CONDITION	VALUE
Minimum Input Voltage		6.3V
Maximum Input Voltage		36V
Output Voltage V_{OUT}		5V +/- 5%
Maximum Output Current		3.5A
Typical Switching Frequency		600kHz

QUICK START PROCEDURE

Demonstration circuit 1149 is easy to set up to evaluate the performance of the LT3680. 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 V_{in} or V_{out} and GND terminals. See Figure 2 for proper scope probe technique.

1. Place JP1 on the RUN position.
2. With power off, connect the input power supply to V_{in} and GND.
3. Turn on the power at the input.
4. Check for the proper output voltage.

NOTE. 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 voltage is established, adjust the load within the operating range and observe the output voltage regulation, ripple voltage, efficiency and other parameters.
6. An external clock can be added to the SYNC pin when SYNC function is used. See synchronization section in the datasheet for details.

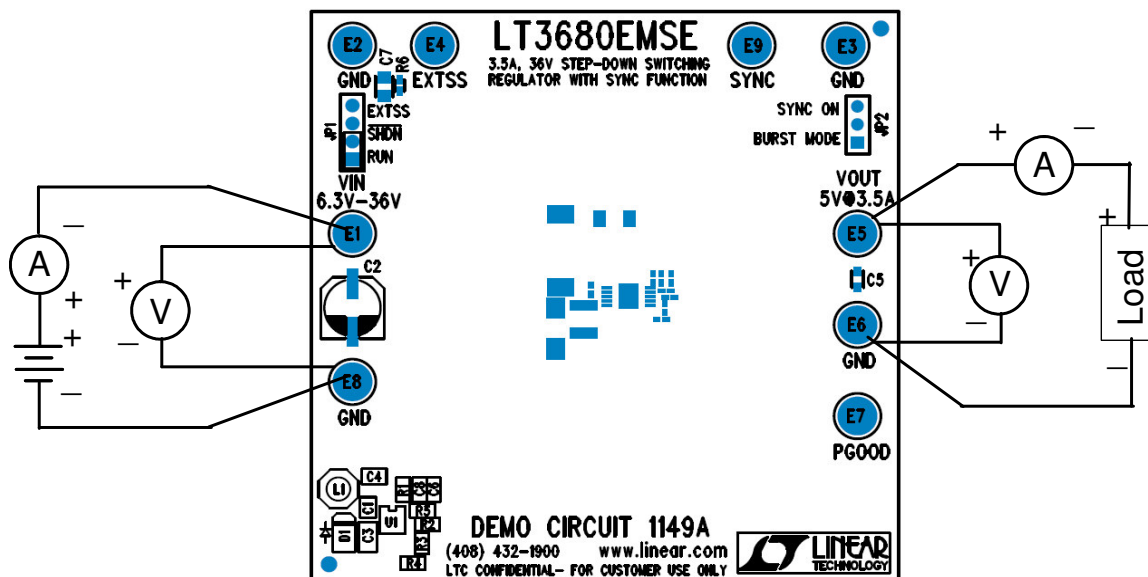


Figure 1. Proper Measurement Equipment Setup

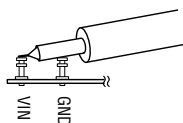
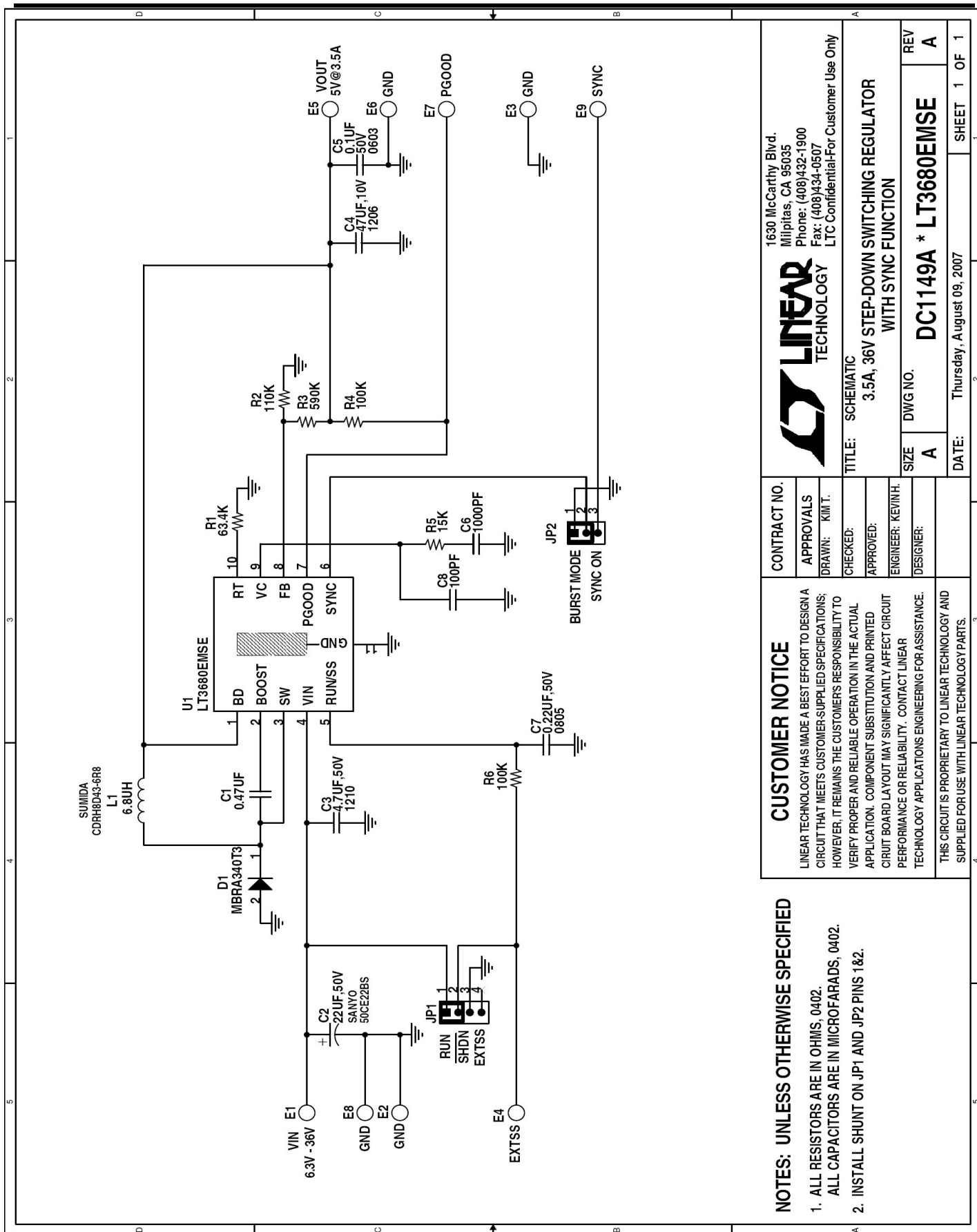


Figure 2. Measuring Input or Output Ripple



CUSTOMER NOTICE LINEAR TECHNOLOGY HAS MADE A BEST EFFORT TO DESIGN A CIRCUIT THAT MEETS CUSTOMER-SUPPLIED SPECIFICATIONS; HOWEVER, IT REMAINS THE CUSTOMER'S RESPONSIBILITY TO VERIFY PROPER AND RELIABLE OPERATION IN THE ACTUAL APPLICATION. COMPONENT SUBSTITUTION AND PRINTED CIRCUIT BOARD LAYOUT MAY SIGNIFICANTLY AFFECT CIRCUIT PERFORMANCE OR RELIABILITY. CONTACT LINEAR TECHNOLOGY APPLICATIONS ENGINEERING FOR ASSISTANCE.		CONTRACT NO. APPROVALS DRAWN: KIM T. CHECKED: APPROVED: ENGINEER: KEVINH. DESIGNER:		1630 McCarthy Blvd. Milpitas, CA 95035 Phone: (408)432-1900 Fax: (408)434-0507 LTC Confidential-For Customer Use Only	
DC1149A * LT3680EMSE		3.5A, 36V STEP-DOWN SWITCHING REGULATOR WITH SYNC FUNCTION		LT3680	
SIZE A		DWG NO.		REV A	
DATE: Thursday, August 09, 2007		SHEET 1 OF 1		1	

Данный компонент на территории Российской Федерации

Вы можете приобрести в компании MosChip.

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

<http://moschip.ru/get-element>

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: info@moschip.ru

Skype отдела продаж:

moschip.ru

moschip.ru_4

moschip.ru_6

moschip.ru_9