

1.2A, 2.2MHz Step-Down Switching Regulator in 2mm×3mm DFN

DESCRIPTION

Demonstration circuit 1050 is a monolithic step-down DC/DC switching regulator featuring LT3503. The demo board is designed for 3.3V output from a 4.5V to 20V input. The wide input range of the LT3503 allows a variety of input sources. The typical sources are automotive batteries, wall adaptors and industrial supplies. The 2.2MHz switching frequency allows the use of small, low cost inductor and ceramic capacitors, resulting in low, predictable output ripple. The current mode control scheme creates fast transient response and good loop stability. The internal compensation reduces the component count and solution size. 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. A charge pump consisting of a diode and capacitor on the demo board performs the boost function. The $SHDN$ pin can be used to set the part in micropower shutdown mode, reducing

the supply current to less than 2uA. The $SHDN$ pin can also be used to program soft start. In this mode, the $SHDN$ 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. Cycle by cycle current limit, frequency foldback and thermal shutdown provide the protection against shorted outputs.

The LT3503 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 1050.

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

PARAMETER FOR STEP-DOWN CONVERTER	CONDITION	VALUE
Minimum input voltage		4.5V
Maximum input voltage		20V
Output voltage V_{out}		3.3V +/- 4%
Maximum output current	$V_{in} = 5.5\text{V}$	1A
Maximum output current	$V_{in} = 8.5\text{V}$	1.2A
Typical switching frequency		2.2MHz

QUICK START PROCEDURE

Demonstration circuit 1050 is easy to set up to evaluate the performance of the LT3503. 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 in the RUN position:
2. With power off, connect the input power supply to V_{in} and GND.
3. Turn on power at the input.
NOTE . Make sure that the input voltage does not exceed 20V.
4. Check for proper output voltages.

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

LT3503

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

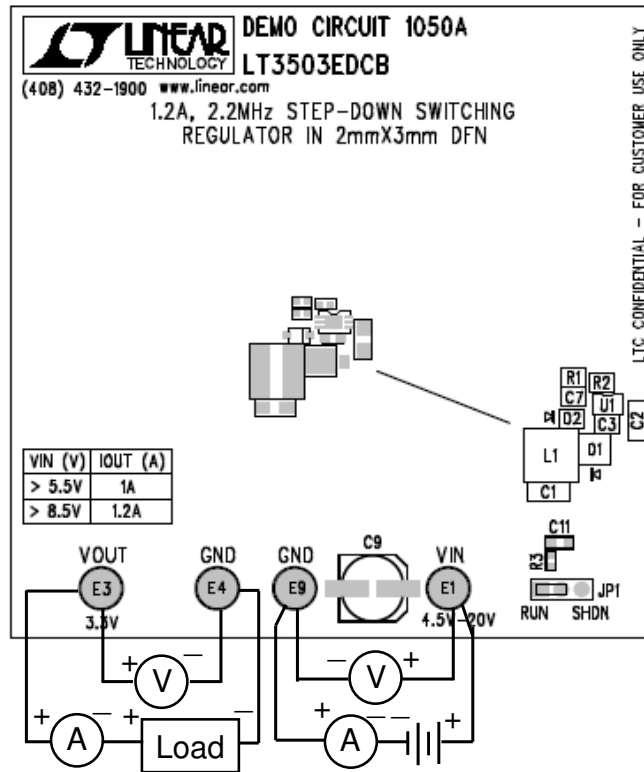


Figure 1. Proper Measurement Equipment Setup

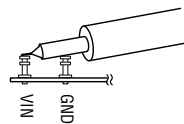
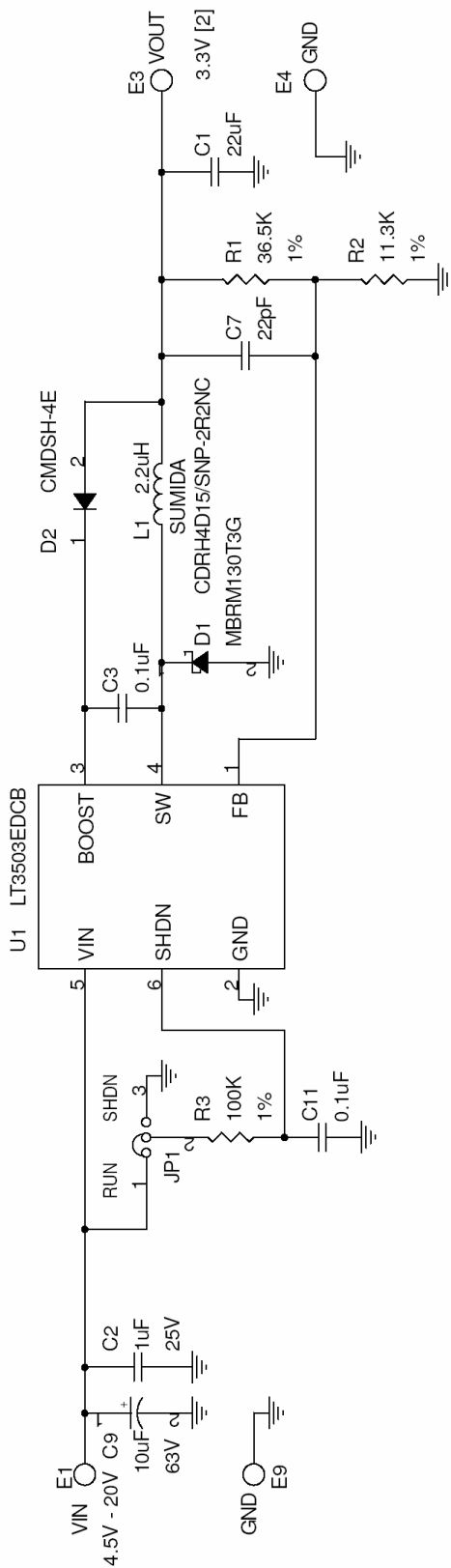


Figure 2. Measuring Input or Output Ripple

This circuit is proprietary to Linear Technology and supplied for use with Linear Technology parts.
Customer Notice: Linear Technology has made a best effort to design a circuit that meets customer-supplied specifications; however, it remains the customers 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 Applications Engineering for assistance.



NOTES: UNLESS OTHERWISE SPECIFIED,
 [1] DO NOT STUFF.

VIN (V)	IOUT (A)
5.5V	1A
8.5V	1.2A

CONTRACT NO.				1630 McCarthy Blvd. Milpitas, CA 95035 Phone: (408)432-1900 Fax: (408)434-0507	
APPROVALS		DATE	TITLE SCH, LT3503EDCB, 1.2A, 2.2MHz STEP-DOWN SWITCHING REGULATOR IN 2mmX3mm DFN		
DRAWN MEI		01/23/06			
CHECKED					
APPROVED					
ENGINEER					
DESIGNER					
		SIZE	CAGE CODE	DWG NO	REV
				DC1050A	2
Friday, September 29, 2006		SCALE:	FILENAME: 1050A-2.DSN		SHEET 1 OF 2



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

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