DESCRIPTION

Demonstration circuit 897 is a monolithic step-down DC/DC switching regulator featuring the LT3493. The demo board is designed for 3.3V output from a 4.5V to 36V input. The wide input range of the LT3493 allows a variety of input sources. The typical sources are automotive batteries, wall adaptors and industrial supplies. The 750kHz 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 Vin to ensure saturation of the switch. A charge pump consisting of diode and a capacitor on the demo board performs the boost function. The $\overline{SHDN}$ pin can be used to set the part in micropower shutdown mode, reducing the supply current to less than 2uA. The $\overline{SHDN}$ pin can also be used to program soft start. In this mode, the $\overline{SHDN}$ 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 protection against shorted outputs.

The LT3493 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 897.

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

Performance Summary ($T_A = 25^oC$)

PARAMETER FOR LED DRIVER	CONDITION	VALUE
Minimum input voltage		4.5V
Maximum input voltage		36V
Output voltage V_{OUT}		3.3V +/- 4%
Maximum output current	V_{IN}=4.5V	950mA
Maximum output current	V_{IN}=8V	1.2A
Typical switching frequency		750kHz

QUICK START PROCEDURE

Demonstration circuit 897 is easy to set up to evaluate the performance of the LT3493. 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 Vin or Vout 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 Vin and GND.

3. Turn on the power at the input.

   NOTE. Make sure that the input 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.

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.
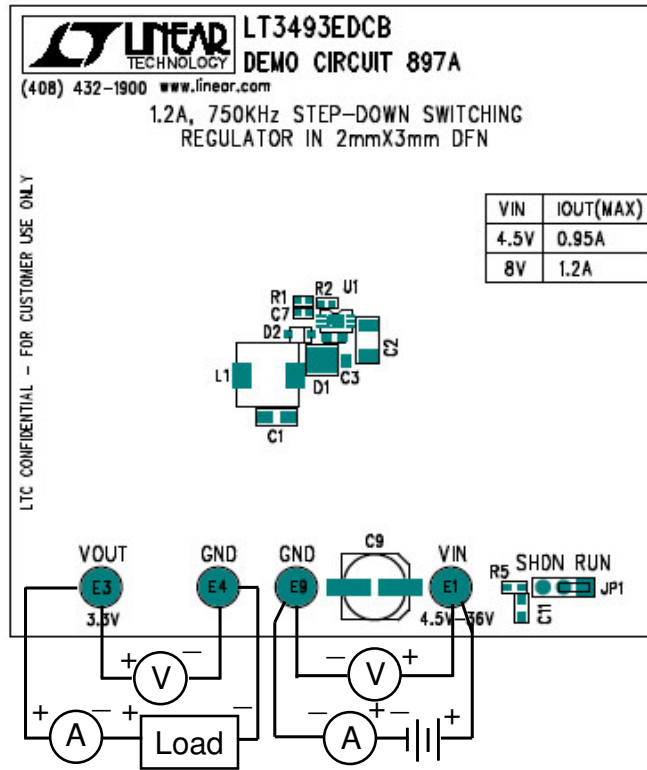

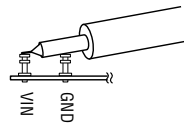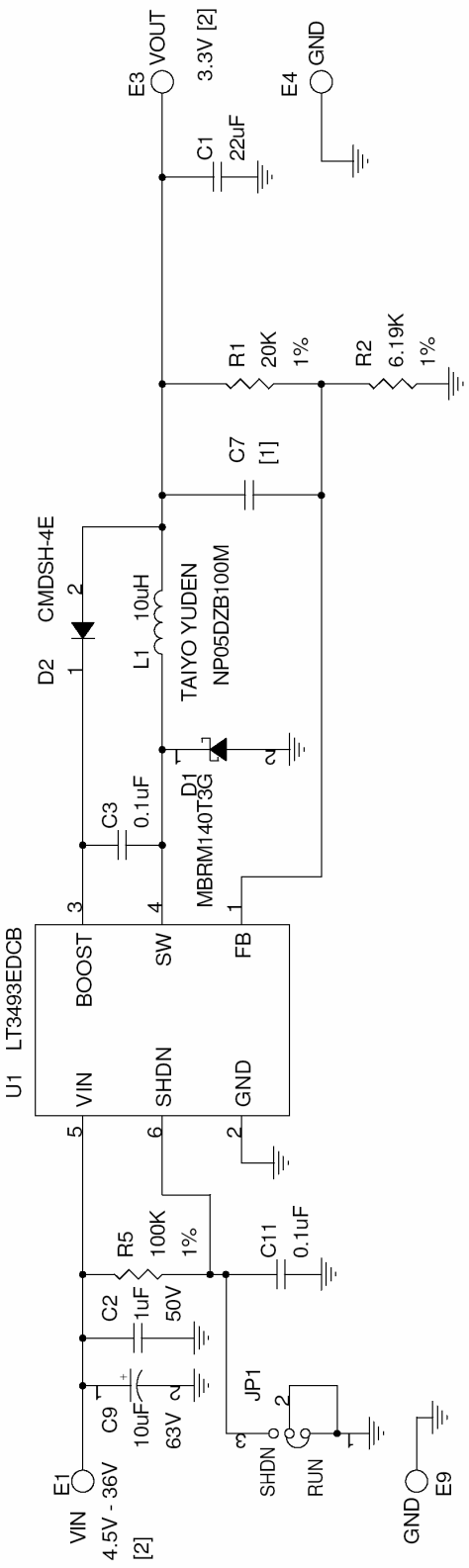**Figure 1. Proper Measurement Equipment Setup**

Figure 2. Measuring Input or Output Ripple

LT3493

REVISION HISTORY

ECO	REV	DESCRIPTION	DATE	APPROVED
	3	PROD	02/06/05	

VIN 4.5V - 36V [2]

E1 VIN

C9 10uF 63V

C2 1uF 50V

R5 100K 1%

C11 0.1uF

JP1

SHDN
RUN

GND E9

U1 LT3493EDCB

VIN 5
SHDN 6
GND 2

BOOST 3
SW 4
FB 1

C3 0.1uF

D1 MBRM140T3G

D2 CMDSH-4E

L1 10uH
TAIYO YUDEN NP05DZB100M

C7 [1]

R1 20K 1%

R2 6.19K 1%

C1 22uF

E3 VOUT 3.3V [2]

E4 GND

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

[2]	VIN	IOUT (MAX)
	4.5V	0.95A
	8V	1.2A

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for Power Management IC Development Tools *category:*

Click to view products by Analog Devices *manufacturer:*

Other Similar products are found below :

EVAL-ADM1168LQEBZ EVB-EP5348UI MIC23451-AAAYFL EV MIC5281YMME EV DA9063-EVAL ADP122-3.3-EVALZ ADP130-0.8-EVALZ ADP130-1.2-EVALZ ADP130-1.5-EVALZ ADP130-1.8-EVALZ ADP1714-3.3-EVALZ ADP1716-2.5-EVALZ ADP1740-1.5-EVALZ ADP1752-1.5-EVALZ ADP1828LC-EVALZ ADP1870-0.3-EVALZ ADP1871-0.6-EVALZ ADP1873-0.6-EVALZ ADP1874-0.3-EVALZ ADP1882-1.0-EVALZ ADP199CB-EVALZ ADP2102-1.25-EVALZ ADP2102-1.875EVALZ ADP2102-1.8-EVALZ ADP2102-2-EVALZ ADP2102-3-EVALZ ADP2102-4-EVALZ ADP2106-1.8-EVALZ ADP2147CB-110EVALZ AS3606-DB BQ24010EVM BQ24075TEVM BQ24155EVM BQ24157EVM-697 BQ24160EVM-742 BQ24296MEVM-655 BQ25010EVM BQ3055EVM NCV891330PD50GEVB ISLUSBI2CKIT1Z LM2744EVAL LM2854EVAL LM3658SD-AEV/NOPB LM3658SDEV/NOPB LM3691TL-1.8EV/NOPB LM4510SDEV/NOPB LM5033SD-EVAL LP38512TS-1.8EV EVAL-ADM1186-1MBZ EVAL-ADM1186-2MBZ