DEMO CIRCUIT 1313
QUICK START GUIDE

LT1912EDD

2A,36V, 500kHz Step-down Switching Regulator

DESCRIPTION

Demonstration circuit 1313 is a monolithic step-down DC/DC switching regulator featuring LT1912. The demo board is designed for 5V output from a 6.3V to 36V input. The wide input range of the LT1912 allows a variety of input sources. The typical sources are automotive batteries, wall adaptors and industrial supplies.

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 Vin to ensure saturation of the switch. The LT1912's integrated boost diode reduces the parts count. The RUN/SS pin can be used to set the part in micropower shutdown 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 LT1912 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 1313.

Note: It is best to ground the SYNC pin if the SYNC function is not being used.

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

Performance Summary for Step-down Switching Regulator ($T_A = 25^oC$)

PARAMETER FOR BUCK REGULATOR	CONDITION	VALUE
Minimum Input Voltage		6.3V
Maximum Input Voltage		36V
Output Voltage V_{OUT}		5V +/- 4%
Maximum Output Current		2A
Typical Switching Frequency		500kHz

QUICK START PROCEDURE

Demonstration circuit 1313 is easy to set up to evaluate the performance of the LT1912. 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.

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.

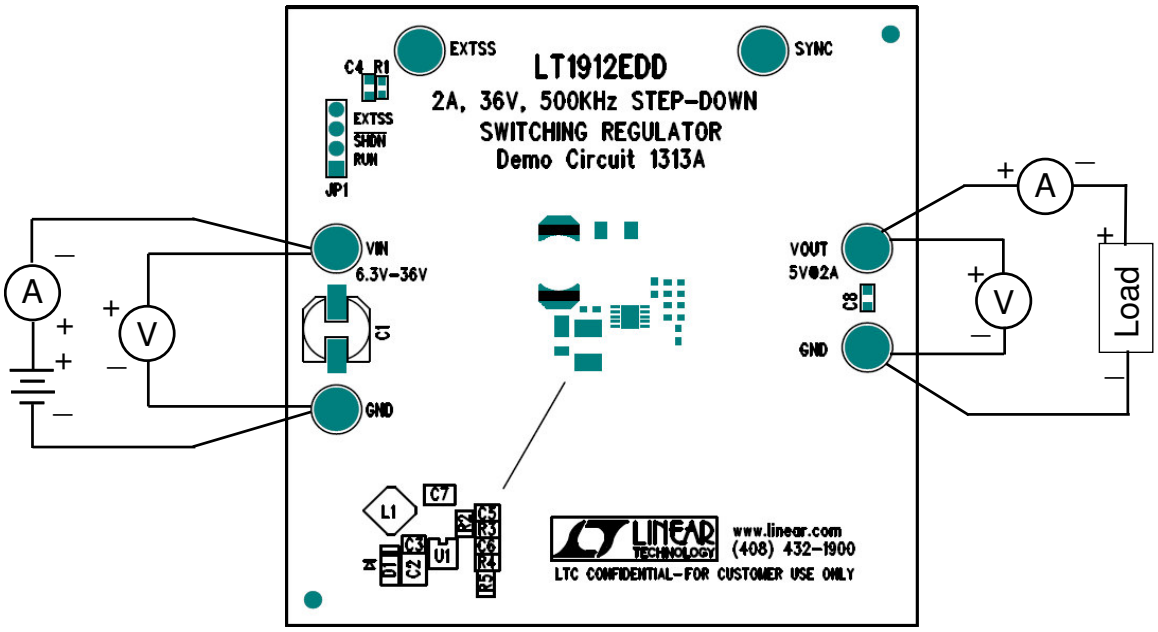


Figure 1. Proper Measurement Equipment Setup

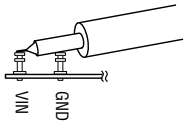
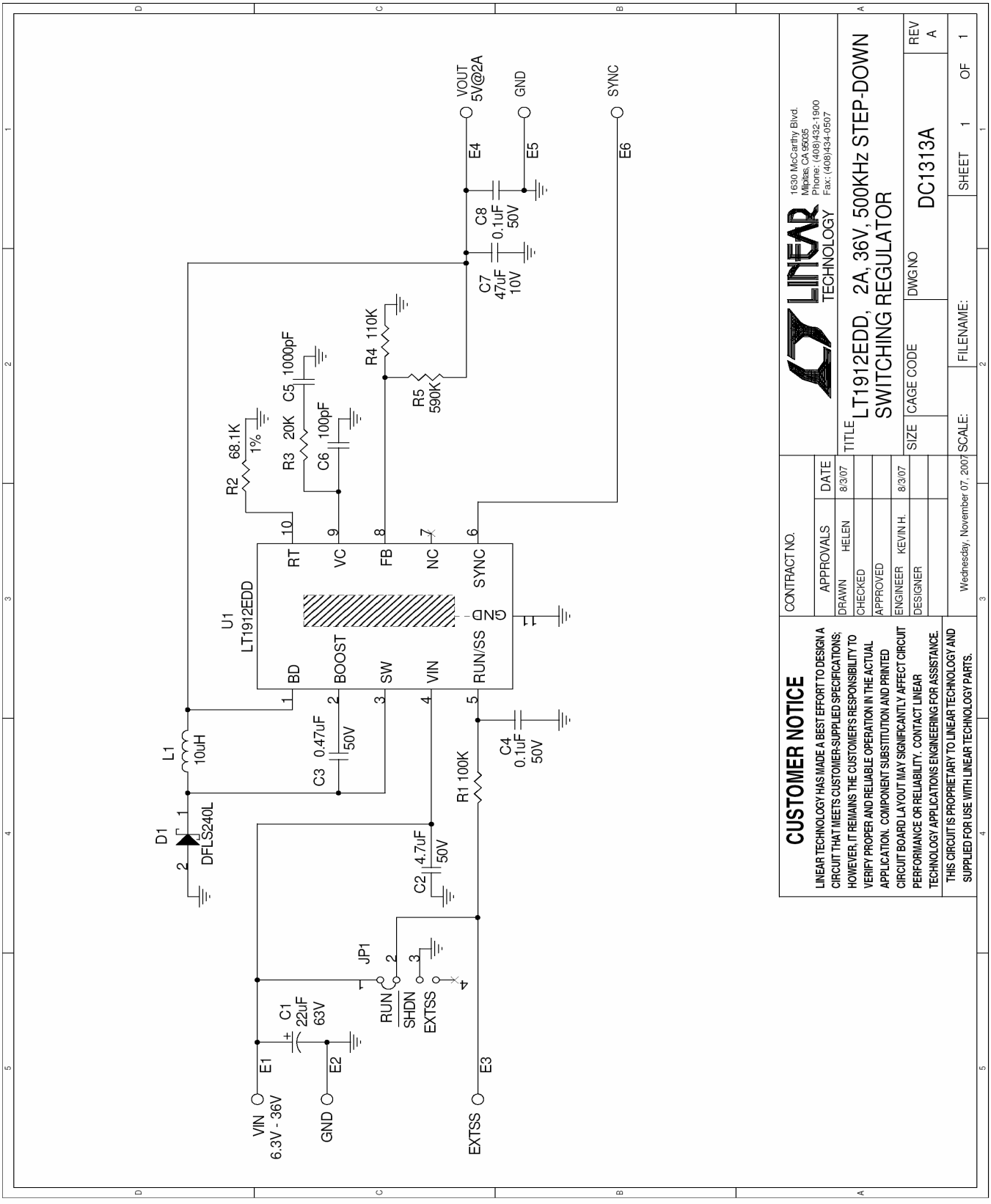


Figure 2. Measuring Input or Output Ripple


VIN
6.3V - 36V
GND
EXTSS
VOUT
5V@2A
GND
SYNC
E1
E2
E3
E4
E5
E6
C1
22uF
63V
JP1
RUN
SHDN
EXTSS
C2
4.7uF
50V
D1
DFLS240L
L1
10uH
C3
0.47uF
50V
U1
LT1912EDD
BD
BOOST
SW
VIN
RUN/SS
GND
RT
VC
FB
NC
SYNC
R1 100K
C4
0.1uF
50V
R2
68.1K
1%
R3
20K
C5
1000pF
C6
100pF
R4
110K
R5
590K
C7
47uF
10V
C8
0.1uF
50V
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THIS CIRCUIT IS PROPRIETARY TO LINEAR TECHNOLOGY AND SUPPLIED FOR USE WITH LINEAR TECHNOLOGY PARTS.
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TITLE
LT1912EDD, 2A, 36V, 500KHz STEP-DOWN SWITCHING REGULATOR
SIZE
CAGE CODE
DWG NO
DC1313A
REV
A
Wednesday, November 07, 2007
SCALE:
FILENAME:
SHEET 1 OF 1

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