

LTM8023
2A, 36V DC/DC
μModule
DESCRIPTION

Demonstration circuit 1195 features LTM8023 in a 600kHz step-down converter circuit, designed for 3.3V output from a 5V to 36V input. The wide input range of the LTM8023 allows a variety of input sources. The typical sources are automotive batteries, wall adaptors and industrial supplies. The LTM8023 is a step down converter, so a minimum amount of headroom is required to keep the output in regulation. In addition, the input voltage required to turn on is higher than that required to run (see "Minimum Input Voltage" section in the datasheet for detail). The current mode control scheme creates fast transient response and good loop sta-

bility. The low ripple Burst Mode Operation of LTM8023 not only allows the circuit to have high efficiency over a broad current range but also provides the low output ripple at light load conditions.

The LTM8023 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 1195.

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

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

Performance Summary for 600kHz Buck Regulator ($T_A = 25^{\circ}\text{C}$)

PARAMETER	CONDITION	VALUE
Minimum Input Voltage		5V (Note 1)
Maximum Input Voltage		36V
Output Voltage V_{OUT}		3.3V $\pm 3\%$
Maximum Output Current		2A
Typical Switching Frequency		600kHz

Note 1: The circuit requires more than 5V to run at full load. See Figure 1 and the datasheet for detail.

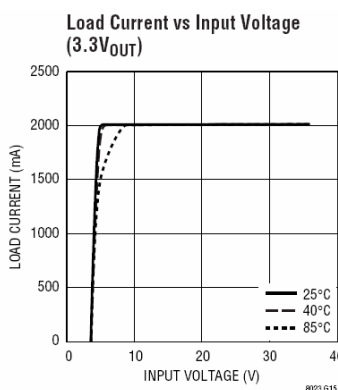


Figure 1. Load Current vs Input Voltage (3.3V_{OUT})

QUICK START PROCEDURE

Demonstration circuit 1195 is easy to set up to evaluate the performance of the LTM8023. Refer to Figure 2 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 3 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 the maximum input voltage.

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.

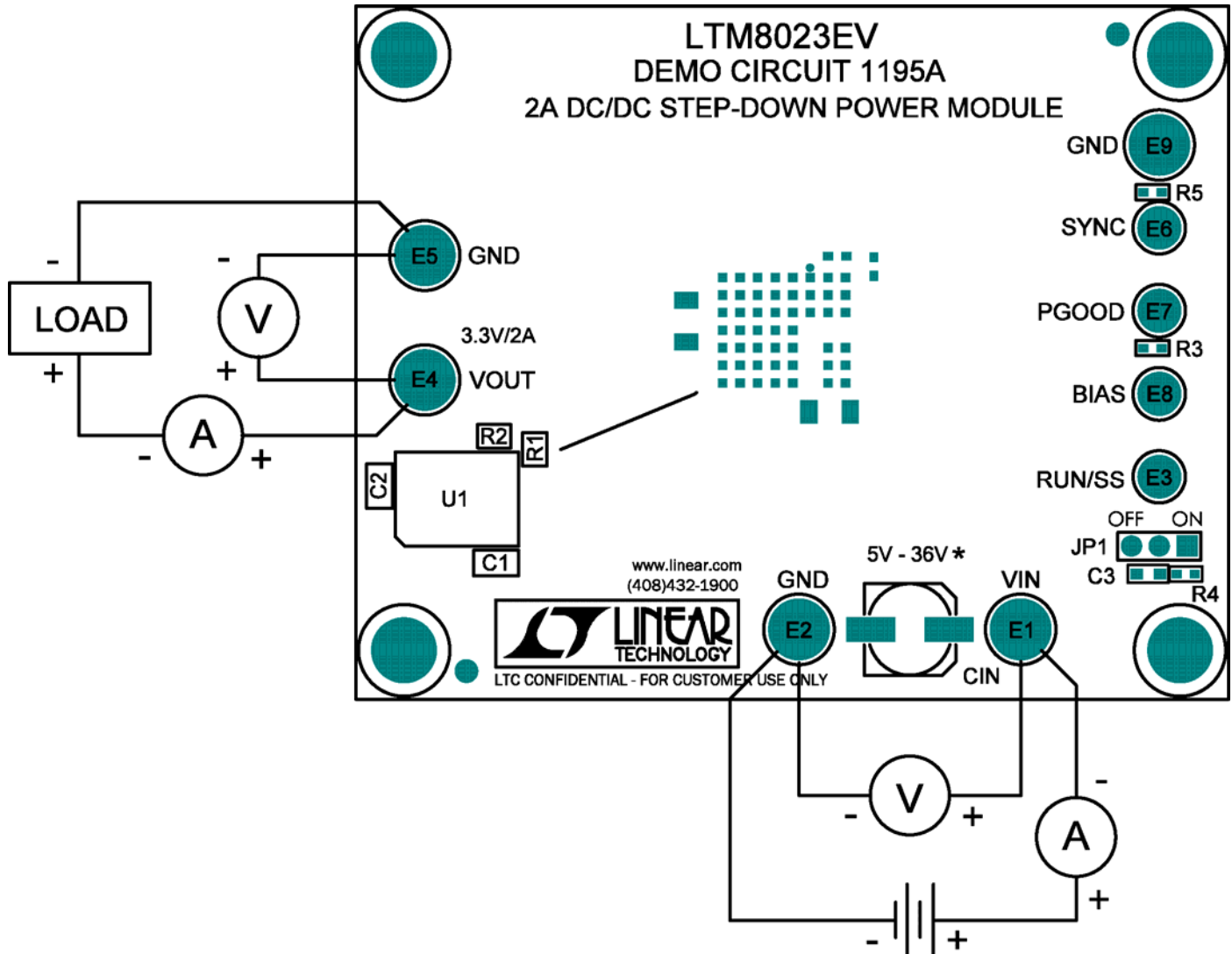


Figure 2. Proper Measurement Equipment Setup

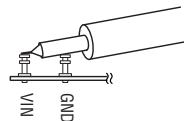


Figure 3. Measuring Input or Output Ripple

