THE DATASHEET OF

DC1091A

DEMO CIRCUIT 1091
QUICK START GUIDE

LT3480EMSE
2A, 38V Step-Down Switching Regulator with SYNC Function

DESCRIPTION

Demonstration circuit 1091 is a monolithic step-down DC/DC switching regulator featuring the LT3480. The operating frequency can be synchronized up to 2 MHz. The demo board is designed for 5V output from a 6.3V to 38V input with transients up to 60V. The wide input range of the LT3480 allows a variety of input sources. The typical sources are automotive batteries, wall adaptors and industrial supplies. The modes of operation (Burst Mode and fixed frequency) are jumper selectable. The Burst Mode operation increases the efficiency at light loads while fixed frequency mode maintains a constant switching frequency regardless of the load current.

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 LT3480'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. The soft start function reduces the input current surge during start-up.

The LT3480 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 1091.

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

Performance Summary for Step-Down Switching Regulator (T_A = 25°C)

PARAMETER FOR BUCK REGULATOR	CONDITION	VALUE
Minimum Input Voltage		6.3V
Maximum Input Voltage		38V
Output Voltage V_{OUT}		5V +/- 4%
Maximum Output Current		2A
Typical Switching Frequency		550kHz

QUICK START PROCEDURE

Demonstration circuit 1091 is easy to set up to evaluate the performance of the LT3480. 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. Apply a 5V square wave signal to the SYNC pin and make sure that the SYNC frequency is higher than the set switching frequency.

7. Observe the switching frequency as the SYNC frequency varies.

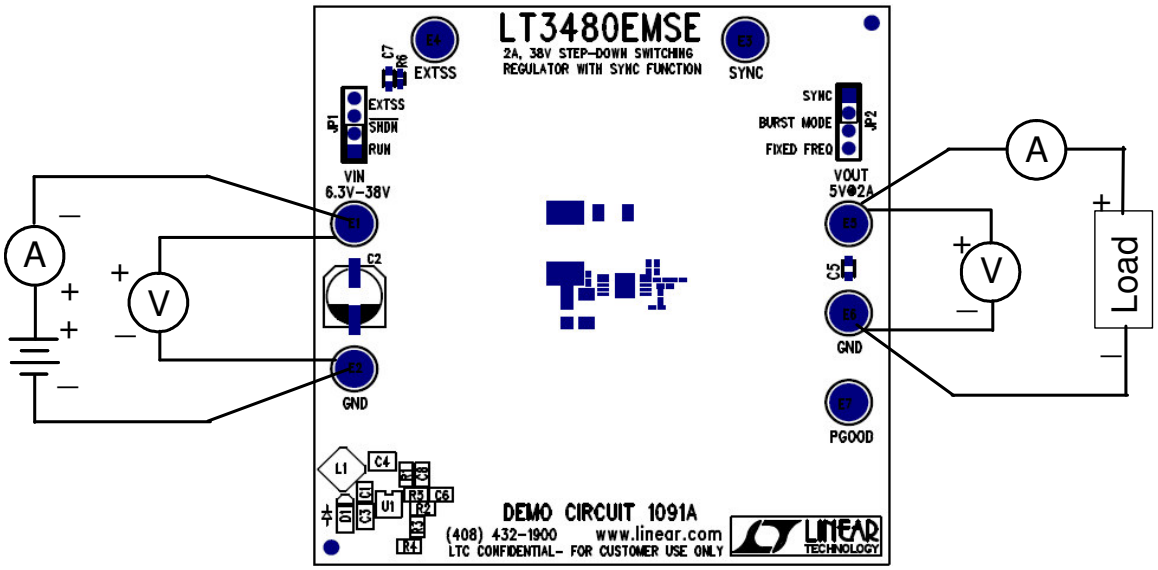


Figure 1. Proper Measurement Equipment Setup

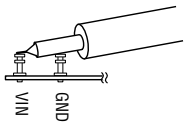
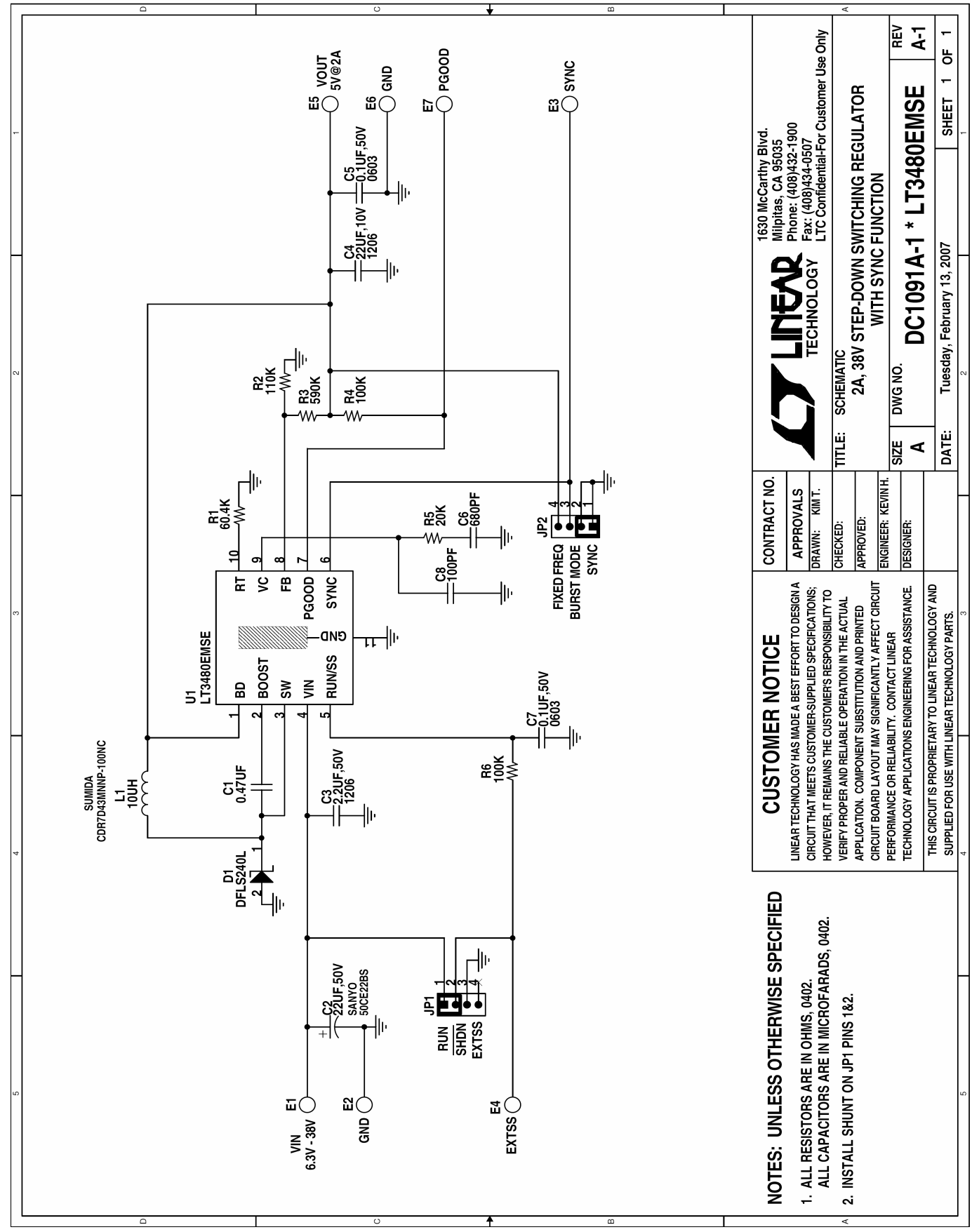


Figure 2. Measuring Input or Output Ripple


NOTES: UNLESS OTHERWISE SPECIFIED
1. ALL RESISTORS ARE IN OHMS, 0402.
ALL CAPACITORS ARE IN MICROFARADS, 0402.
2. INSTALL SHUNT ON JP1 PINS 1&2.
CUSTOMER NOTICE
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LTC Confidential-For Customer Use Only
TITLE: SCHEMATIC
2A, 38V STEP-DOWN SWITCHING REGULATOR
WITH SYNC FUNCTION
SIZE A
DWG NO. DC1091A-1 * LT3480EMSE
REV A-1
DATE: Tuesday, February 13, 2007
SHEET 1 OF 1
U1 LT3480EMSE
BD BOOST SW VIN RUN/SS GND RT VC FB PGOOD SYNC
L1 10UH SUMIDA CDR7D43MNNP-100NC
D1 DFLS240L
C1 0.47UF
C2 22UF,50V SANYO 50CE22BS
C3 2.2UF,50V 1206
C4 22UF,10V 1206
C5 0.1UF,50V 0603
C6 680PF
C7 0.1UF,50V 0603
C8 100PF
R1 60.4K
R2 110K
R3 590K
R4 100K
R5 20K
R6 100K
JP1 RUN SHDN EXTSS
JP2 FIXED FREQ BURST MODE SYNC
E1 VIN 6.3V - 38V
E2 GND
E3 SYNC
E4 EXTSS
E5 VOUT 5V@2A
E6 GND
E7 PGOOD

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