QUICK START GUIDE FOR DEMONSTRATION CIRCUIT 971
2-PHASE DUAL OUTPUT HIGH DENSITY POWER SUPPLY WITH TRACKING

LTC3811EUHF

DESCRIPTION

Demonstration circuit 971 is a high current density supply featuring the dual-output, 2-phase synchronous buck regulator LTC3811. The input voltage of the demo board is designed from 4.5V to 14V. The outputs are 2V/15A and 1.5V/15A. The output voltages can be programmed with different start-up tracking modes. All the critical power and controller IC circuits on the DC971 board are within a 1.45" x 0.9" "drop-in" PCB layout space. The outputs can be easily configured to have two separated output voltages or a single high current output voltage with two phases in paralleling.

The supply can also be synchronized by an external clock signal. The LTC3811 regulator IC is in a 38-lead 5 mm x 7 mm package with exposed thermal pad for low thermal impedance, with an integrated 6V bias linear regulator.

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

Table 1. Performance Summary (T_A = 25°C)

PARAMETER	CONDITION	VALUE
Input Voltage	Typical	4.5V-14V
Output Voltage V_{OUT1}	I_{OUT1} = 0A to 15A	2.0V ± 1.5%
Output Voltage V_{OUT2}	I_{OUT2} = 0A to 15A	1.5V ± 1.5%
Maximum Output Current	VIN = 4.5V-14V	15A Each Output
Typical switching frequency	5V-12Vin	470kHz
Full Load Efficiency	V_{IN} = 12V, V_{OUT1} = 2.0V, I_{OUT1} = 15A	89% Typical
	V_{IN} = 12V, V_{OUT2} = 1.5V, I_{OUT2} = 15A	87.5% Typical

QUICK START PROCEDURE

Demonstration circuit 971 is easy to set up to evaluate the performance of the LTC3811EUHF. 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. With power off, connect the input power supply to VIN and GND. Connect the load between VOUT1, VOUT2 and GND. Preset the load current at 0A (minimum). Refer to Figure 1 for correct test set up. The RUN1 and RUN2 jumpers should be at "on" position.

2. Turn on the input power.

   NOTE: Make sure that the input voltage does not exceed 14V.

3. Check for the proper output voltages:

	V_{OUT1}	V_{OUT2}
Vin = 4.5-14V, Io=0-15A	1.97V – 2.03V	1.477V – 1.52V

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

4. 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.

5. The LTC3811 output voltage can also be programmed with different start-up tracking modes. See the data sheet for details.

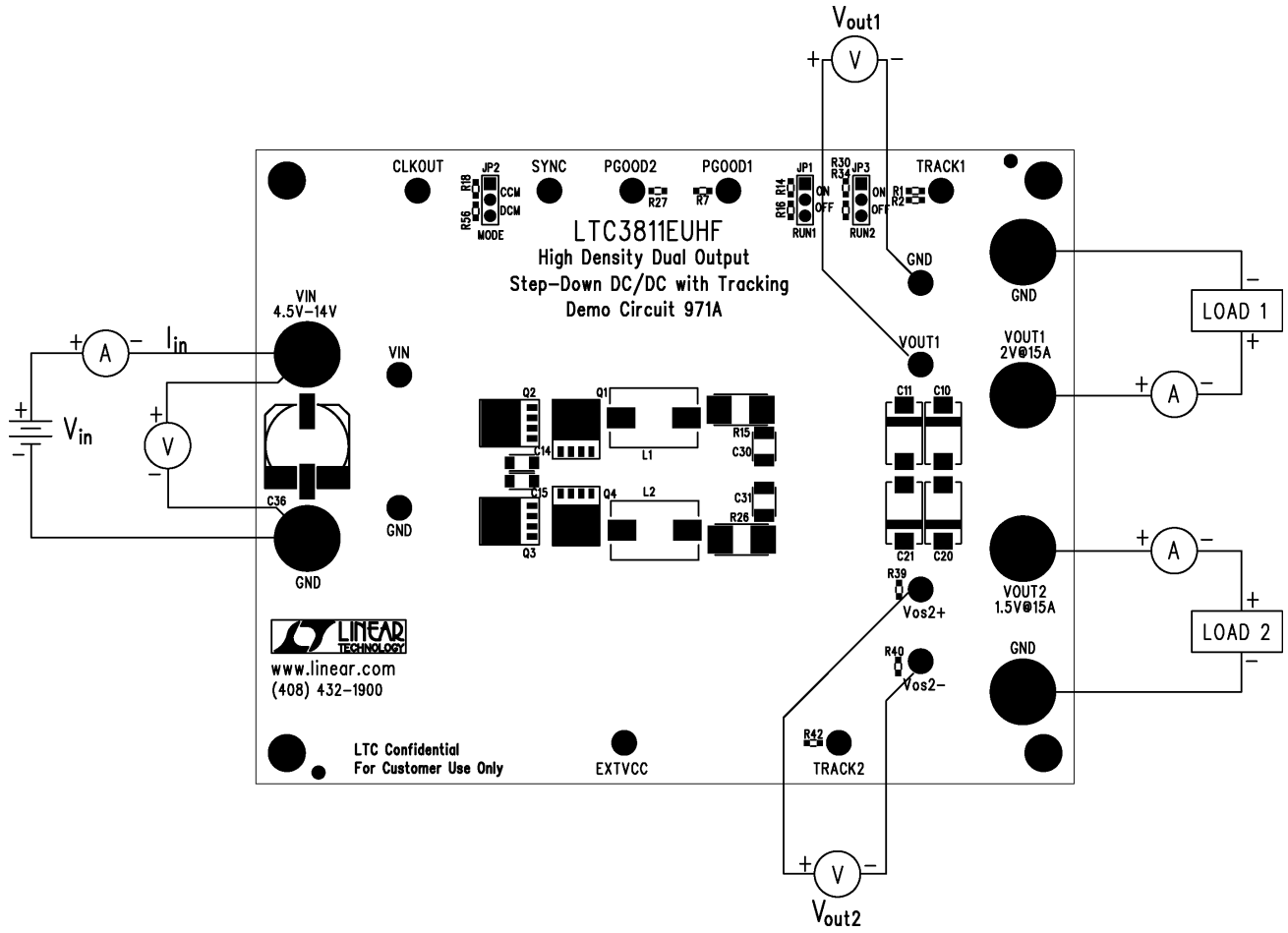


Figure 1. Proper Measurement Equipment Setup

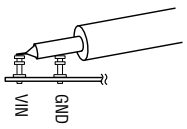
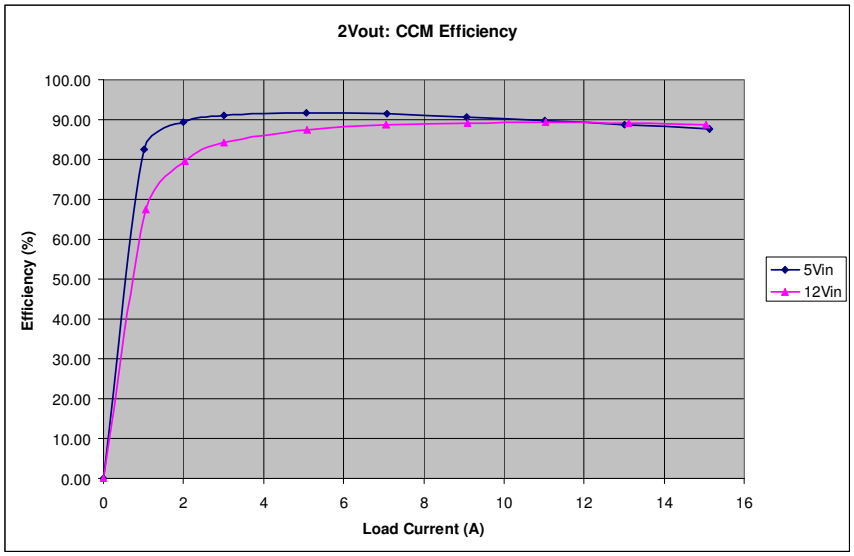


Figure 2. Measuring Input or Output Ripple



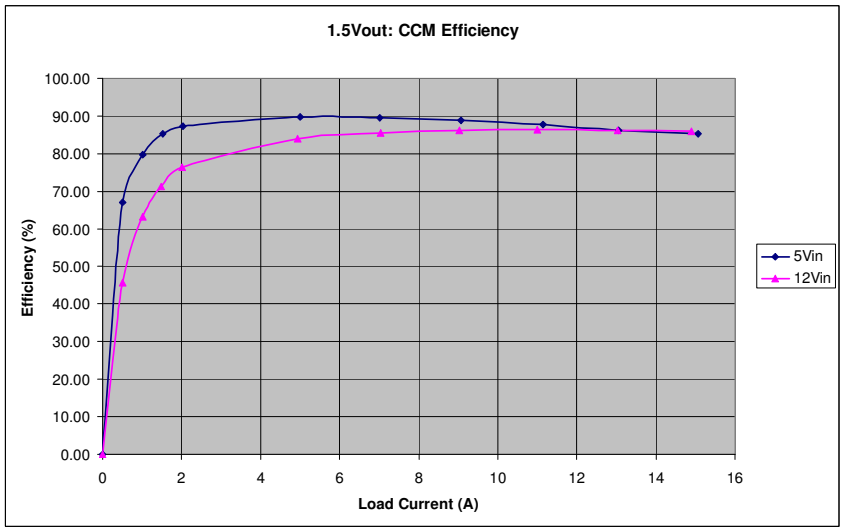
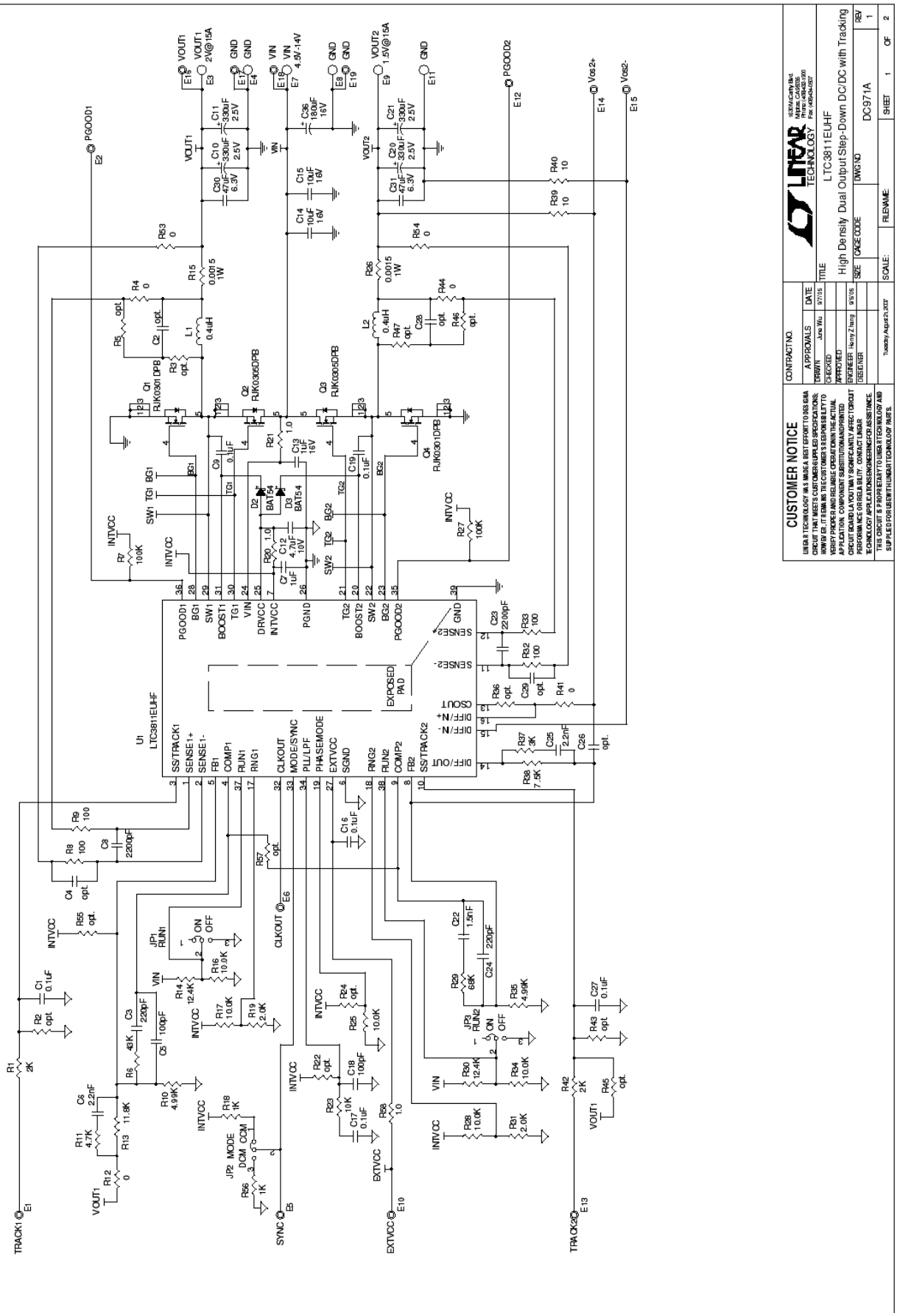
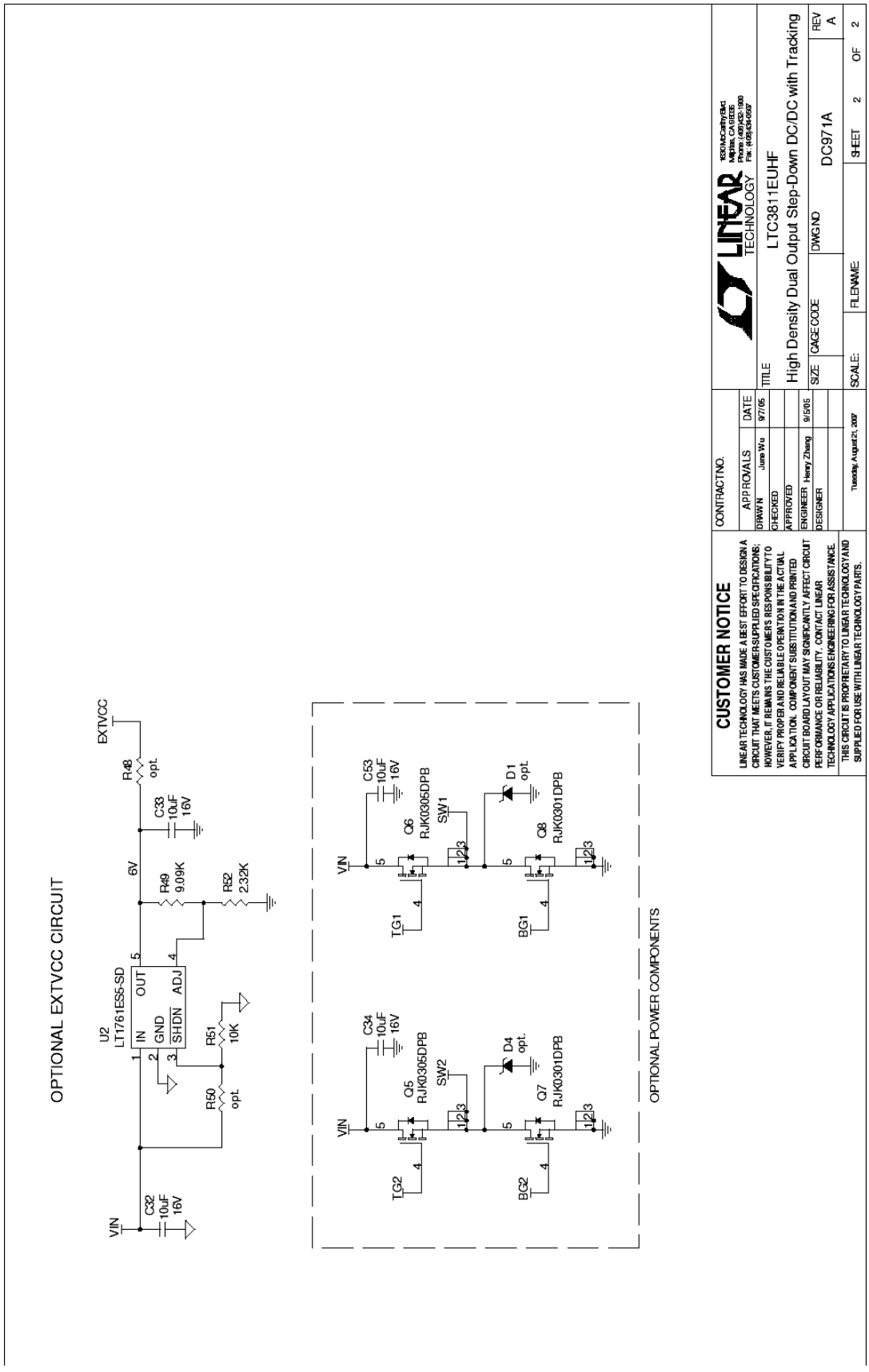


Figure 3. Typical Supply Efficiency vs Load Current of DC971


LTC3811EUHF
High Density Dual Output Step-Down DC/DC with Tracking
DC971A
CUSTOMER NOTICE


OPTIONAL EXTVCC CIRCUIT
EXTVCC
R48
opt
C33
10uF
16V
6V
R49
9.09K
R52
2.32K
U2
LT1761ES5-SD
IN
GND
SHDN
OUT
ADJ
R51
10K
R50
opt
VIN
C32
10uF
16V
OPTIONAL POWER COMPONENTS
C53
10uF
16V
Q6
RJK0305DPB
SW1
D1
opt
Q8
RJK0301DPB
C34
10uF
16V
Q5
RJK0305DPB
SW2
D4
opt
Q7
RJK0301DPB
TG1
BG1
TG2
BG2
CUSTOMER NOTICE
LINEAR TECHNOLOGY HAS MADE A BEST EFFORT TO DESIGN A CIRCUIT THAT MEETS CUSTOMER-SUPPLIED SPECIFICATIONS; HOWEVER, IT REMAINS THE CUSTOMER'S 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 TECHNOLOGY APPLICATIONS ENGINEERING FOR ASSISTANCE.
THIS CIRCUIT IS PROPRIETARY TO LINEAR TECHNOLOGY AND SUPPLIED FOR USE WITH LINEAR TECHNOLOGY PARTS.
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TITLE
LTC3811EUHF
High Density Dual Output Step-Down DC/DC with Tracking
SIZE
CAGE CODE
DWG NO
DC971A
REV
A
SCALE:
FILENAME:
SHEET 2 OF 2