

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.

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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	V _{IN} = 4.5V-14V	15A Each Output
Typical switching frequency	5V-12V _{in}	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.

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2-PHASE DUAL OUTPUT HIGH DENSITY POWER SUPPLY WITH TRACKING

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}
$V_{in} = 4.5-14V$, $I_o=0-15A$	$1.97V - 2.03V$	$1.477V - 1.52V$

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.

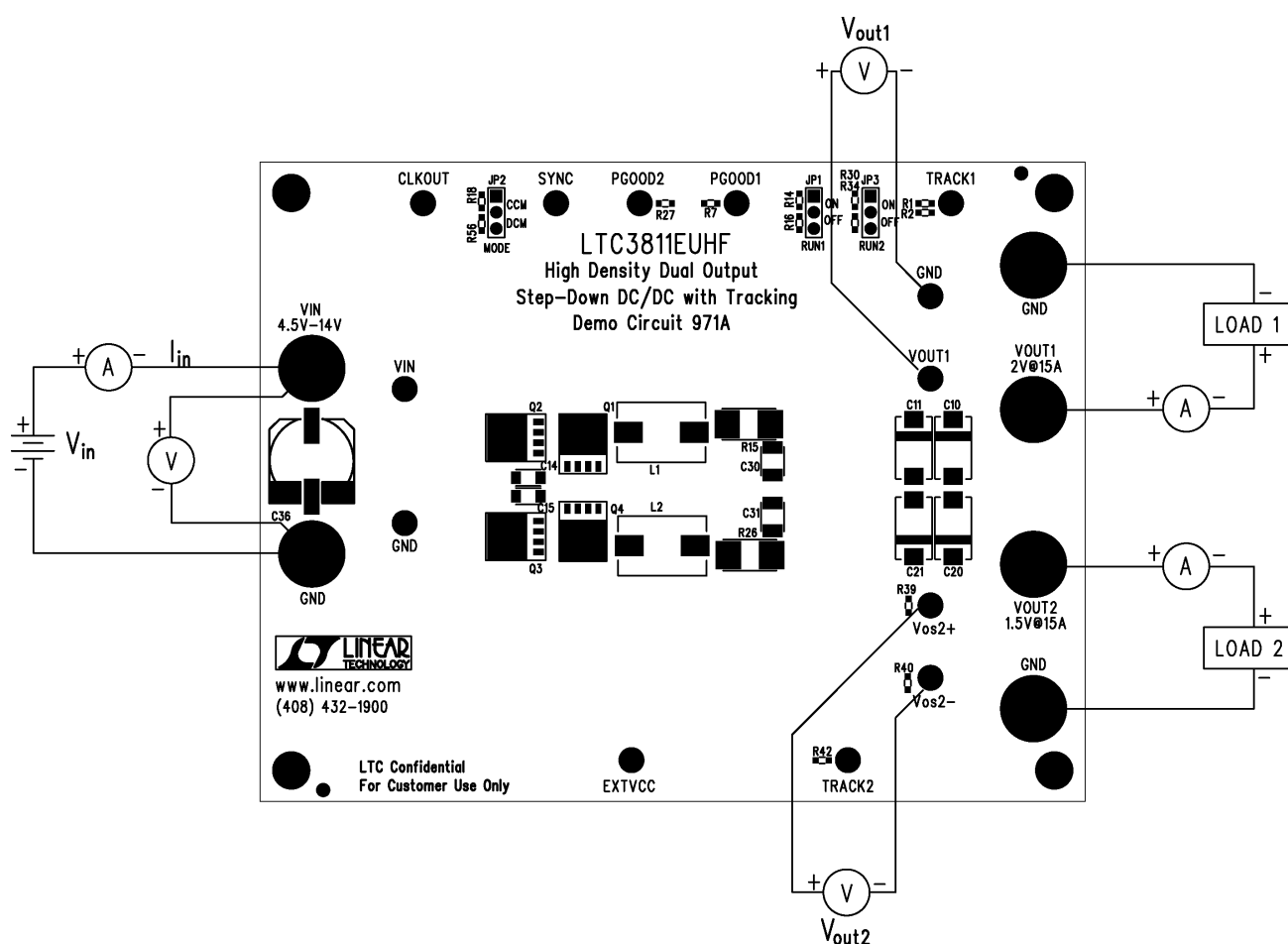


Figure 1. Proper Measurement Equipment Setup

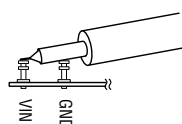


Figure 2. Measuring Input or Output Ripple

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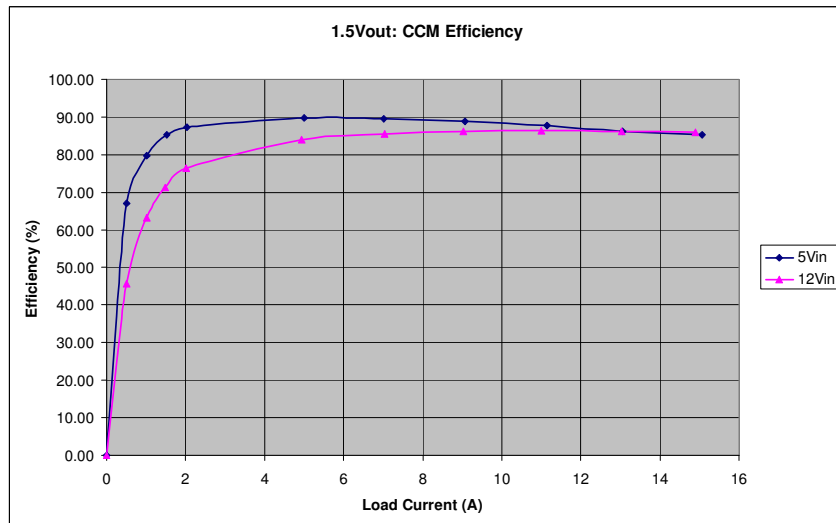
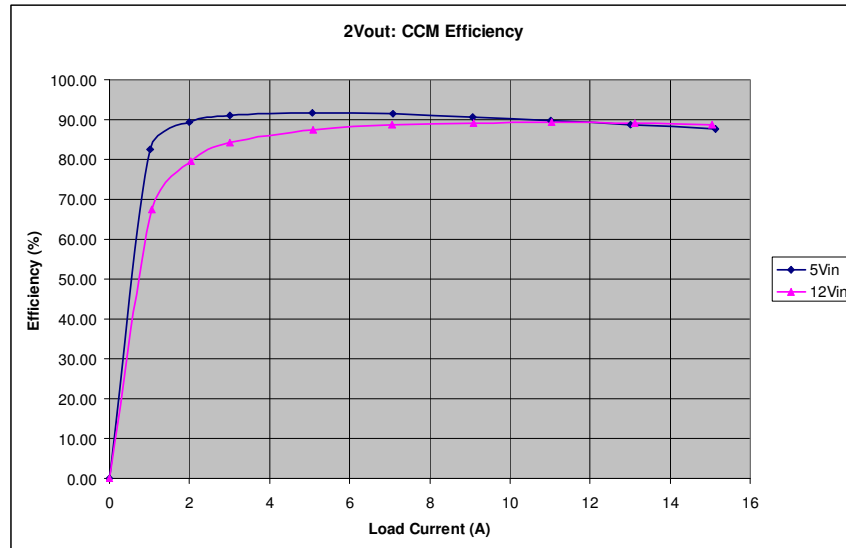
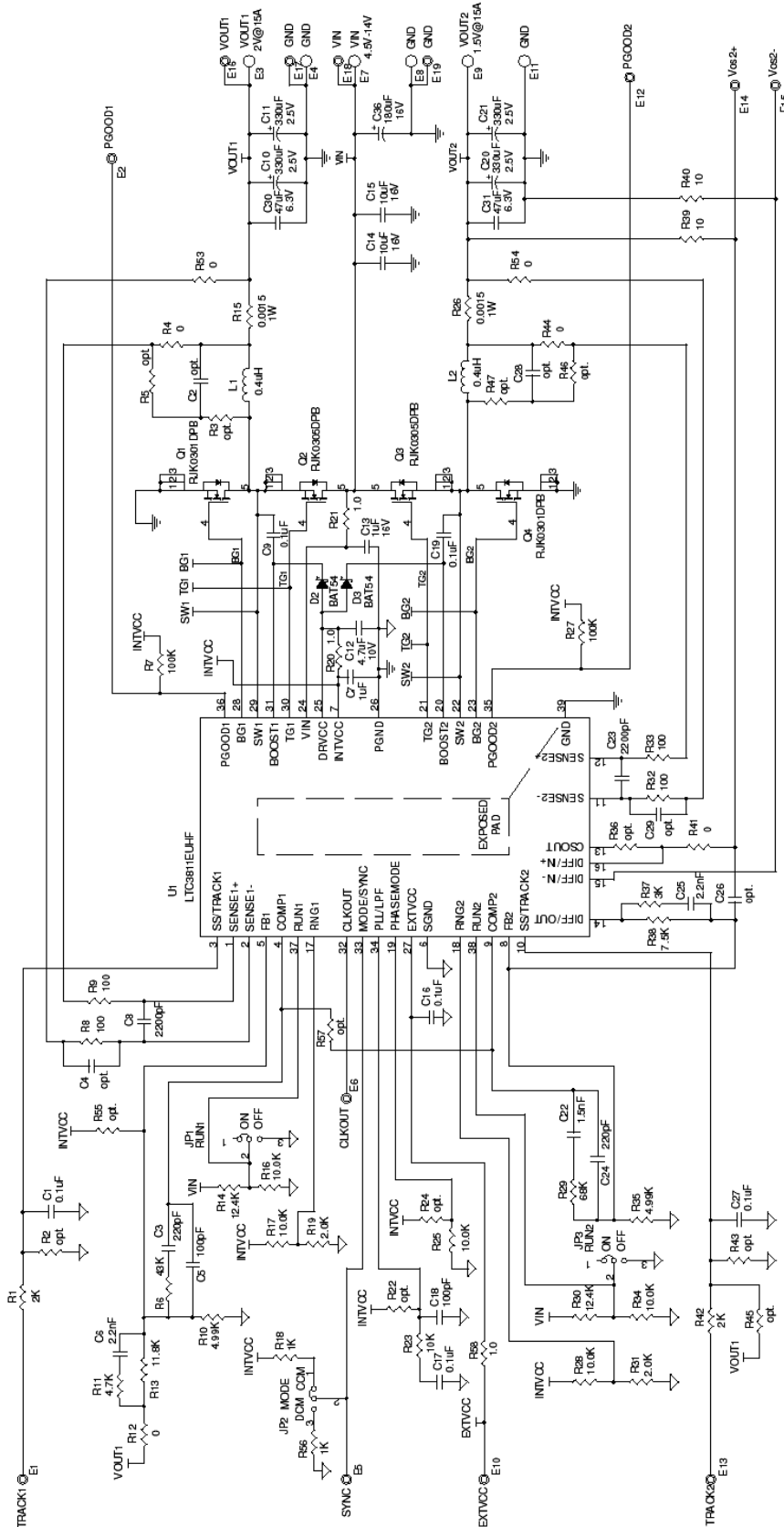


Figure 3. Typical Supply Efficiency vs Load Current of DC971

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2-PHASE DUAL OUTPUT HIGH DENSITY POWER SUPPLY WITH TRACKING



CUSTOMER NOTICE

THIS CIRCUIT IS PROVIDED AS A REFERENCE ONLY. IT IS NOT INTENDED TO BE USED IN A FINAL PRODUCT. THE CIRCUIT IS NOT GUARANTEED TO MEET THE SPECIFICATIONS OF THE IC. IT IS THE CUSTOMER'S RESPONSIBILITY TO VERIFY PROPER AND RELIABLE OPERATION OF THE ACTUAL CIRCUIT. THE CIRCUIT IS NOT GUARANTEED TO MEET THE SPECIFICATIONS OF THE IC. IT IS THE CUSTOMER'S RESPONSIBILITY TO VERIFY PROPER AND RELIABLE OPERATION OF THE ACTUAL CIRCUIT. THE CIRCUIT IS NOT GUARANTEED TO MEET THE SPECIFICATIONS OF THE IC. IT IS THE CUSTOMER'S RESPONSIBILITY TO VERIFY PROPER AND RELIABLE OPERATION OF THE ACTUAL CIRCUIT.

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CHECKED BY
ENGINEER
DESIGNER

LINEAR TECHNOLOGY

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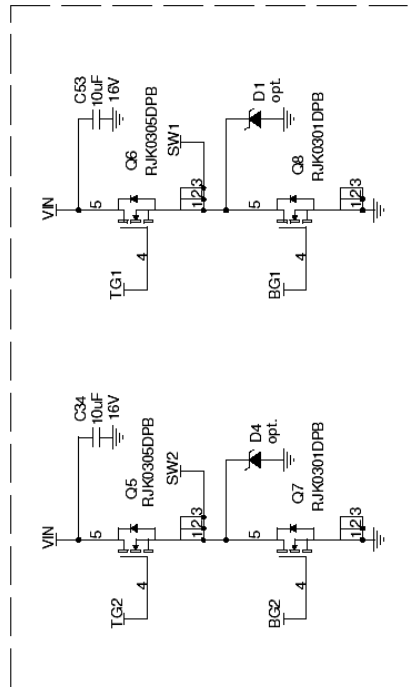
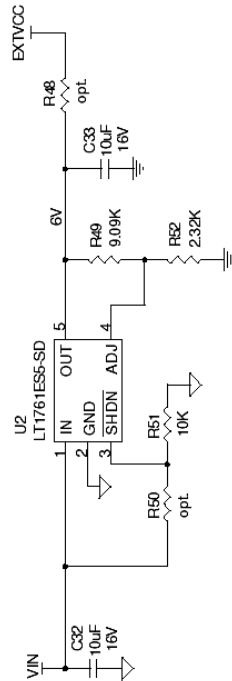
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2-PHASE DUAL OUTPUT HIGH DENSITY POWER SUPPLY WITH TRACKING

OPTIONAL EXTVC CIRCUIT



OPTIONAL POWER COMPONENTS

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 THE DESIGN AND OPERATION IN THE ACTUAL APPLICATION. COMPONENT SUBSTITUTION IN THE ACTUAL CIRCUIT FOR ANY REASON MAY 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.	CONTRACT NO.		DATE				
	APPROVALS		DATE				
	DRAWN		DATE				
	CHECKED		DATE				
	APPROVED		DATE				
LINEAR TECHNOLOGY 3500 MACARTHUR BLVD. FOLSOM, CA 95630 Tel: (916) 444-0000 Fax: (916) 444-0000	TITLE		REV				
	LTC3811EUHF		REV				
	High Density Dual Output Step-Down DC/DC with Tracking		REV				
	SIZE		REV				
	DWG NO		DC971A				
SCALE:		FLENVME:		SHEET	2	OF	2
		Tuesday, August 21, 2007					