QUICK START GUIDE FOR DEMONSTRATION CIRCUIT 473
HIGH EFFICIENCY DUAL OUTPUT POWER SUPPLY
LTC1702A

DESCRIPTION

Demonstration circuit 473A is a high efficiency dual output synchronous buck converter using the constant frequency LTC1702A dual channel switching controller. It operates from a 3V to 7V input and generates 1.8V at 5A and 2.5V at 5A. The LTC1702A operates at 550kHz typical switching frequency and uses voltage mode control to switch a pair of N channel MOSFETs. MOSFET $R_{DS(ON)}$ is used for short circuit protection. For operation at 3.3V, the demo board uses sub-logic level power MOSFETs.

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

QUICK START PROCEDURE

Demonstration circuit 473 is easy to set up to evaluate the performance of the LTC1702A. 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 jumper JP1 in the CONT 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 the voltage will not exceed 7V at turn on.
4. Check for proper output voltages. Vout1 = 1.764V to 1.836V, Vout2 = 2.450V to 2.550V

   In case of no output, verify that the load is not set too high by temporarily disconnecting the load.
5. Once outputs are established at the proper voltages, adjust the loads within the operating range and observe the output voltage regulation, ripple voltage, efficiency and other parameters.

   See Figure 3 to Figure 7 for expected performance.

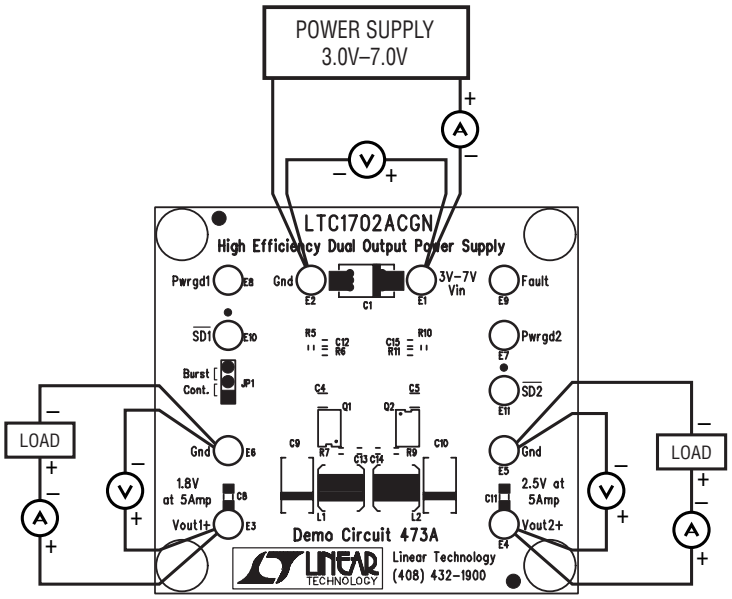

Figure 1. Proper Measurement Equipment Setup

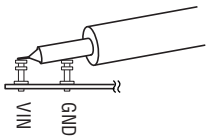

Figure 2. Scope Probe Placement for Measuring Input or Output Ripple

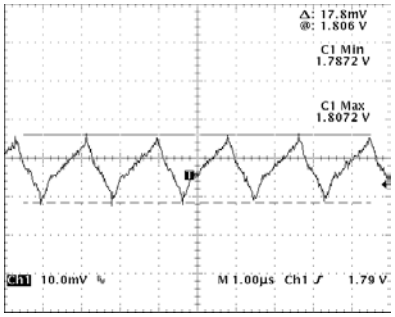

Figure 3. 1.8V Output Ripple (V_{IN} = 3.3V, I_{OUT} = 5A)

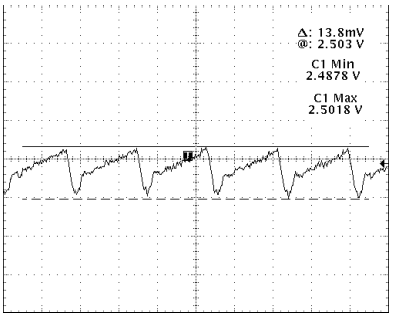

Figure 4. 2.5V Output Ripple (V_{IN} = 3.3V, I_{OUT} = 5A)

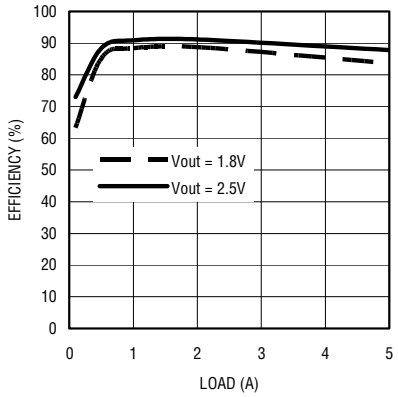

Figure 5. Efficiency

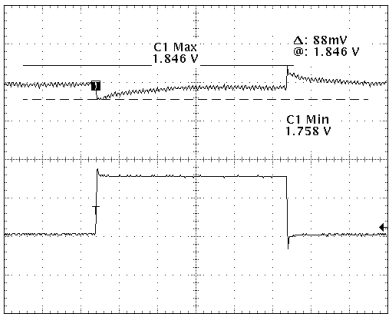

Figure 6. 1.8V Load Transient Response

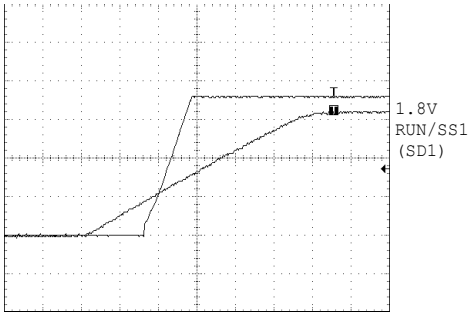

Figure 7. 1.8V Output Voltage Start-up

Table 1. Performance Summary

PARAMETER	CONDITION	VALUE
Minimum Input Voltage		3V
Maximum Input Voltage		7V
V_{OUT1}	V_{IN} = 3V to 7V, I_{OUT1} = 0A to 5A	1.8V ±2%
V_{OUT2}	V_{IN} = 3V to 7V, I_{OUT1} = 0A to 5A	2.5V ±2%
Typical Output Ripple V_{OUT1}	V_{IN} = 3.3V, I_{OUT1} = 5A	$15mV_{P-P}$
Typical Output Ripple V_{OUT2}	V_{IN} = 3.3V, I_{OUT2} = 5A	$20mV_{P-P}$
Nominal Switching Frequency		550kHz

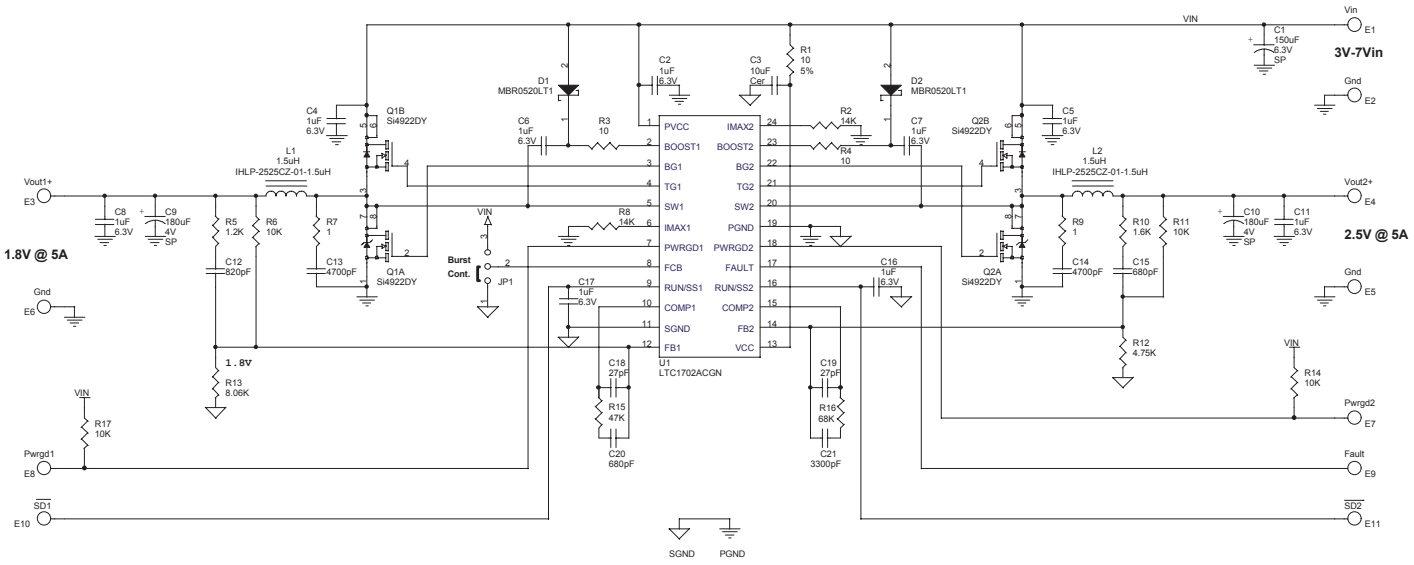

Figure 8. Demo Circuit Schematic