

# QUICK START GUIDE FOR DEMONSTRATION CIRCUIT 392

## HIGH EFFICIENCY DUAL REGULATOR

### LTC1628 or LTC3728

## DESCRIPTION

Demonstration circuit 392 is a dual output, step-down, synchronous buck converter featuring either the 150kHz to 300kHz LTC1628EUH controller (DC392A-A), the 250kHz to 550kHz LTC3728EUH (DC392A-B) or 250kHz to 550kHz LTC3728LUH (DC392A-C). All three ICs come in a 5mm×5mm QFN package with an exposed pad for

low thermal impedance. The input voltage is from 7V up to 24V. Output 1 is 5V with loads up to 4A and output 2 is 3.3V with loads up to 5A.

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

**Table 1. Performance Summary**

PARAMETER	CONDITION	VALUE
Minimum Input Voltage		7V
Maximum Input Voltage		24V
V <sub>OUT1</sub>	V <sub>IN</sub> = 7V to 24V, I <sub>OUT1</sub> = 0A to 4A	5V ±1%
V <sub>OUT2</sub>	V <sub>IN</sub> = 7V to 24V, I <sub>OUT1</sub> = 0A to 5A	3.3V ±1%
Switching Frequency (LTC1628) Switching Frequency (LTC3728)	Jumper selectable Jumper selectable	150kHz–300kHz 250kHz–550kHz

## QUICK START PROCEDURE

Demonstration circuit 392 is easy to set up to evaluate the performance of the LTC1628 or LTC3728. Refer to Figure 1 for proper measurement equipment setup and follow the procedure below:

**NOTE:** The input voltage range should be 7V–24V instead of 5V–24V as shown on the board.

**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 the power off, place the jumpers as shown in Figure 1.

**NOTE:** The STBY and FLTCPL jumpers apply only to demo circuit 392A-A (featuring the LTC1628). These jumpers are not used for the DC392A-B or DC392A-C which feature the LTC3728.

2. Connect the loads at Vout1 and Vout2. The loads can be up to 4A for Vout1 and 5A for Vout2. Pre-set the loads to 0A.

3. Set Vin to 12V (recommended). The rated input voltage range is from 7V to 24V.

4. Remove the RUN1 jumper to switch on the Vout1 channel. The nominal output voltage of Vout1 should be 5V ±0.1V.

Increase load current on Vout1 to 4A. At 12V input voltage, the input current should be less than 2A. Slowly increase the input voltage to 24V. At 24V input, the input current should be less than 1.1A.

5. Decrease the load current of Vout1 to 0A. Reduce the input voltage to 12V.

6. Remove the RUN2 jumper to switch on the Vout2 channel. The output voltage of Vout2 should be 3.3V ±0.05V.

7. Increase load current on Vout2 to 5A. At 12V input voltage, the input current should be less than 1.8A. Slowly increase the input voltage to 24V. At 24V input, the input current should be less than 1.0A.

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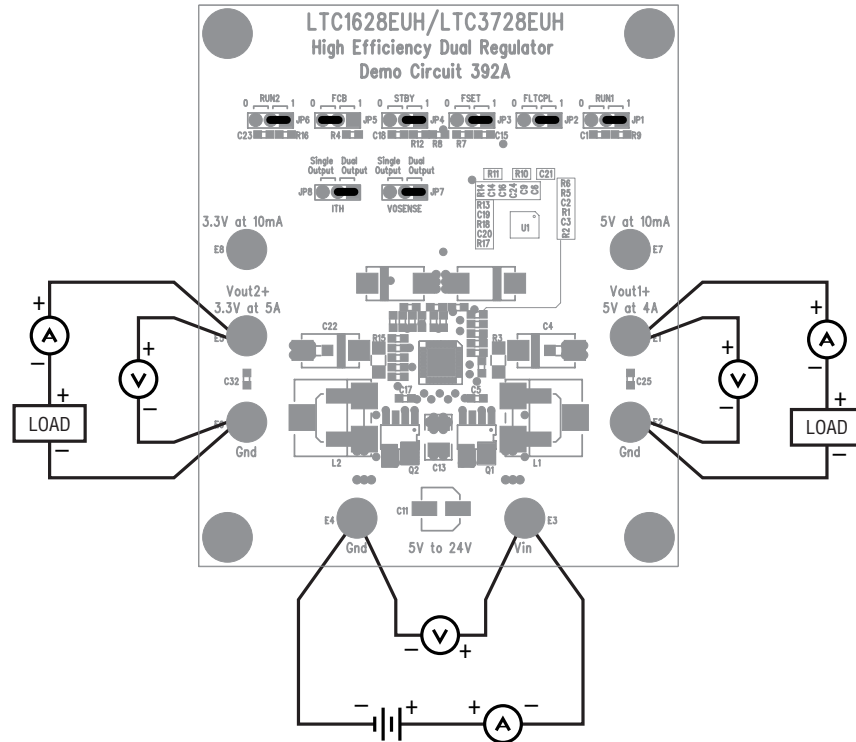


Figure 1. Proper Measurement Equipment Setup

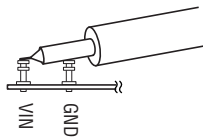
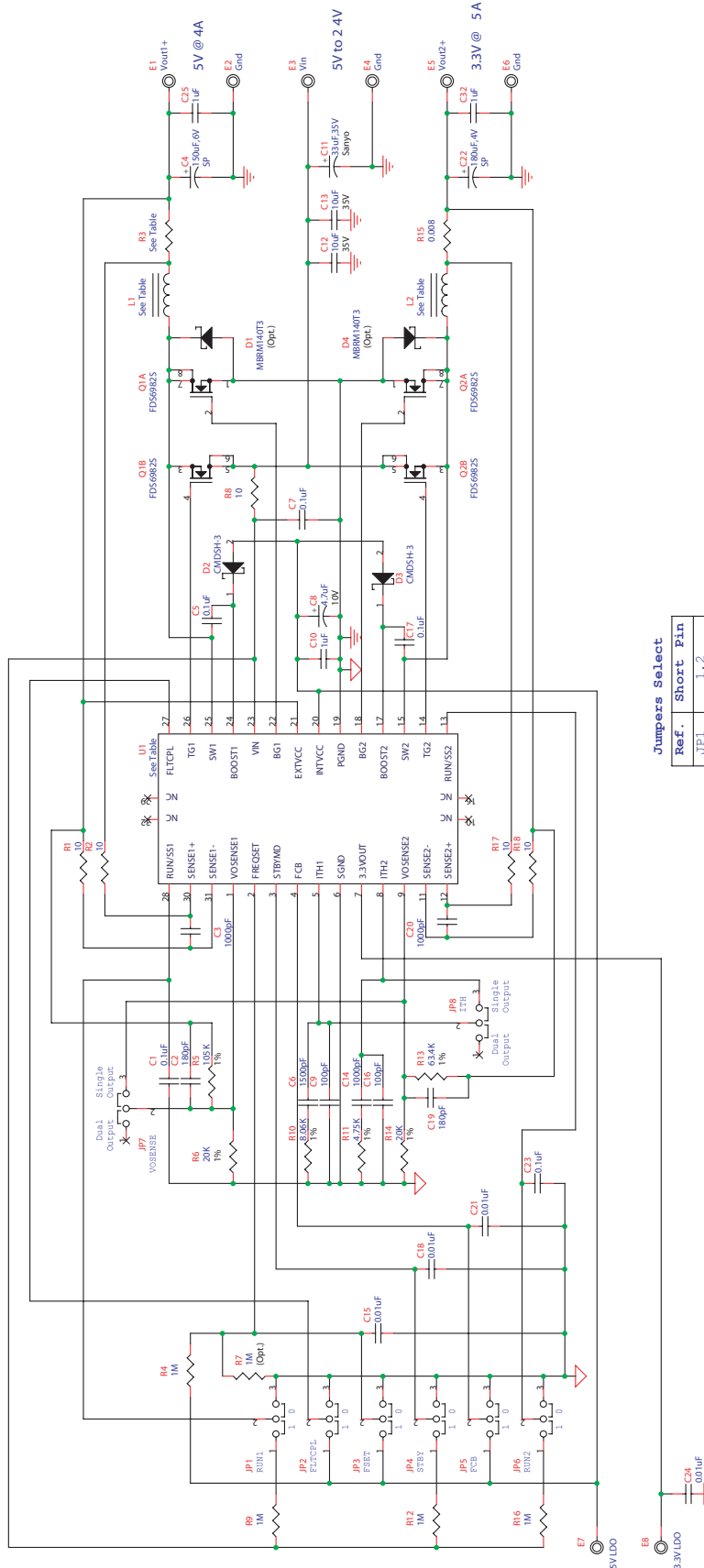


Figure 2. Scope Probe Placement for Measuring Input or Output Ripple

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**Jumpers Select**

Ref.	Short Pin
JP1	1, 2
JP2	2, 3
JP3	1, 2
JP4	1, 2
JP5	1, 2
JP6	1, 2

**Jumpers Select**

Ref.	Single Output	Dual Output
JP7	Short Pin 2, 3	Short Pin 1, 2
JP8	Short Pin 2, 3	Short Pin 1, 2

Table:

ASSEMBLY	U1	L1	L2	R3
392A-A	LTC1628E0H	CDEP105-4R3MC-88	CDEP105-4R3MC-88	0.008 ohm
392A-B	LTC3728BUH	IHLP-2525CZ-01-2.2uH	IHLP-2525CZ-01-2.2uH	0.006 ohm
392A-C	LTC3728LUH	IHLP-2525CZ-01-2.2uH	IHLP-2525CZ-01-2.2uH	0.006 ohm