

QUICK START GUIDE FOR DEMONSTRATION CIRCUIT 492

SOURCE AND SINK VOLTAGE REGULATOR FOR DDR/QDR MEMORY TERMINATION

LTC3413

DESCRIPTION

Demonstration circuit 492 is a high efficiency, high frequency step-down converter, capable of sourcing and sinking current. The DC492 incorporates the LTC3413 monolithic synchronous regulator. It operates from an input voltage range of 2.25V to 5.5V and generates an output voltage that is one-half the reference voltage (V_{REF}). The reference voltage is either externally supplied by the user, or supplied by the input voltage. The operating frequency range of the DC492 is set with an external

resistor, with a range between 300kHz and 2MHz. The DC492 can either source or sink up to 3A of output current, due to the high current power switches (85m Ω of on-state resistance) of the LTC3413. These features make the circuit ideal for DDR memory termination applications.

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

Table 1. Performance Summary

PARAMETER	CONDITION	VALUE
Minimum Input Voltage		2.25V
Maximum Input Voltage		5.5V
$V_{OUTSOURCE}$	$V_{IN} = 2.25V$ to $5.5V$, $I_{OUT} = 0A$ to $3A$	$1/2V_{REF} \pm 3.5\%$
$V_{OUTSINK}$	$V_{IN} = 2.25V$ to $5.5V$, $I_{OUT} = 0A$ to $-3A$	$1/2V_{REF} \pm 3.5\%$
Typical Output Ripple $V_{OUTSOURCE}$	$V_{IN} = 3.3V$, $I_{OUT} = +3A$	20mV _{p-p}
Typical Output Ripple $V_{OUTSINK}$	$V_{IN} = 3.3V$, $I_{OUT} = -3A$	20mV _{p-p}
Nominal Switching Frequency	$R_T = 309k$	1MHz

QUICK START PROCEDURE

Demonstration circuit 492 is easy to set up to evaluate the performance of the LTC3413. 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 V_{in} or V_{out} and GND terminals. See Figure 2 for proper scope probe technique.

1. Set the V_{ref} Sel jumper: choose whether the output voltage is half of the input voltage or half of an external reference voltage.

2. Connect the input power supply.

NOTE: Do not hot-plug V_{in} or increase V_{in} over the rated maximum supply voltage of 5.5V, or the part may be damaged.

3. Connect the loads as shown in Figure 1.
4. Turn on the circuit by moving the Run/SS jumper to the ON position.

To shut down the circuit, move the Run/SS jumper to the OFF position.

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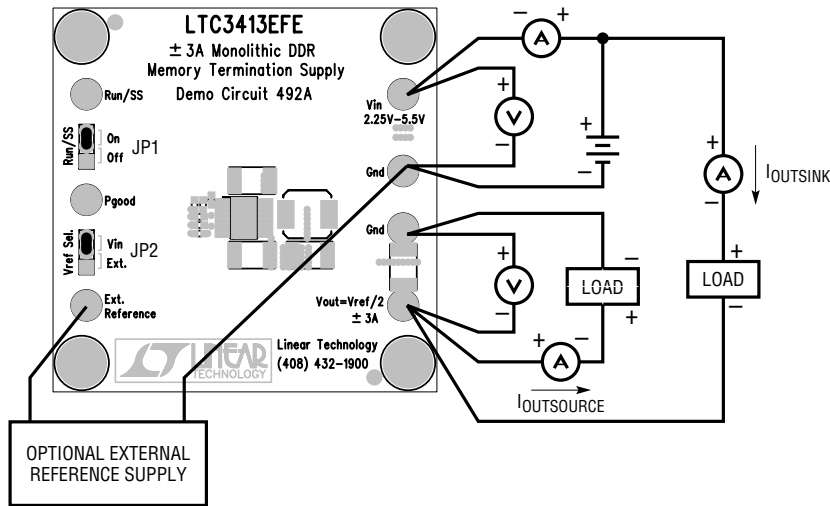


Figure 1. Proper Measurement Equipment Setup

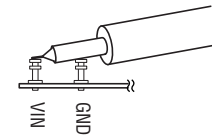
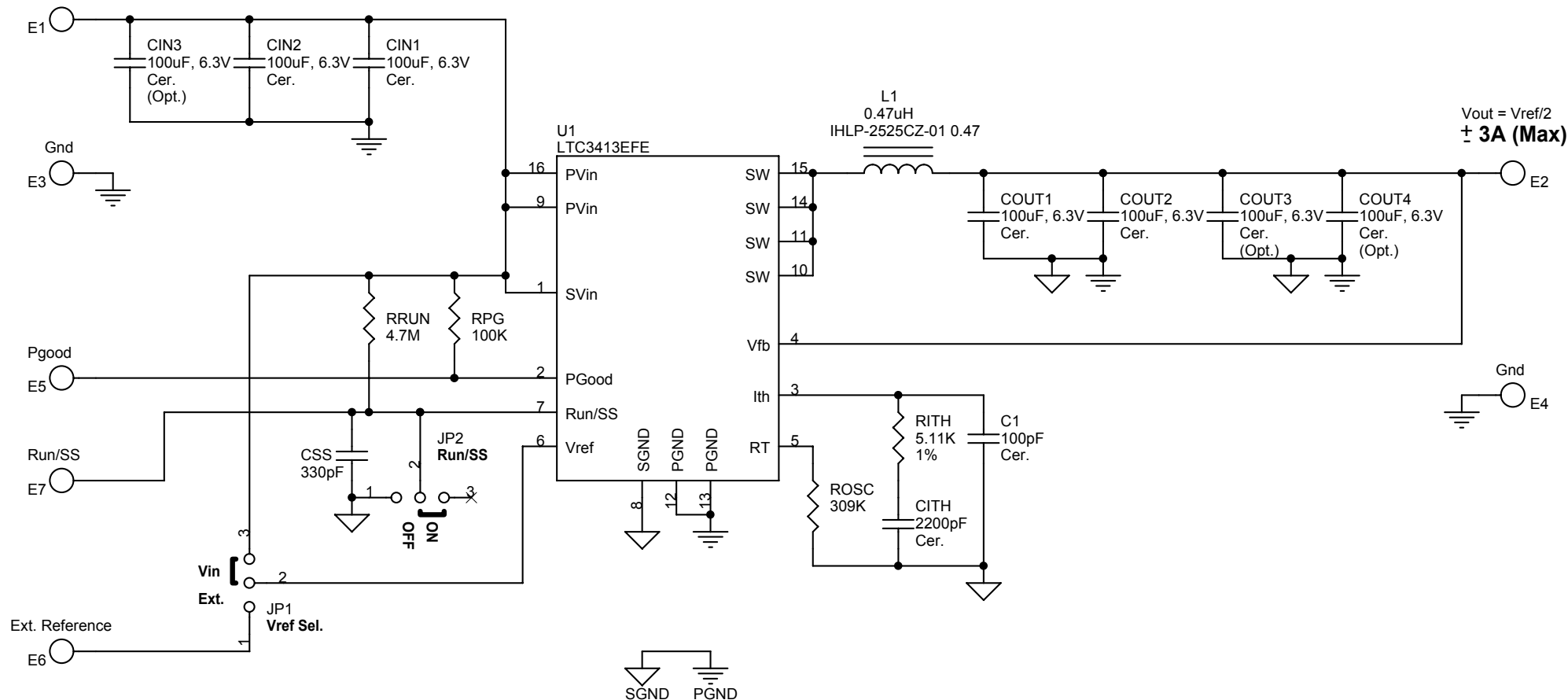


Figure 2. Measuring Input or Output Ripple

Vin
2.25V - 5.5V



NOTES: UNLESS OTHERWISE SPECIFIED

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Title			± 3A Monolithic DDR Memory Termination Supply		
Size	Document Number				Rev
	DEMO 492A				LTC3413EFE
Date:	Thursday, May 23, 2002				Sheet 1 of 1