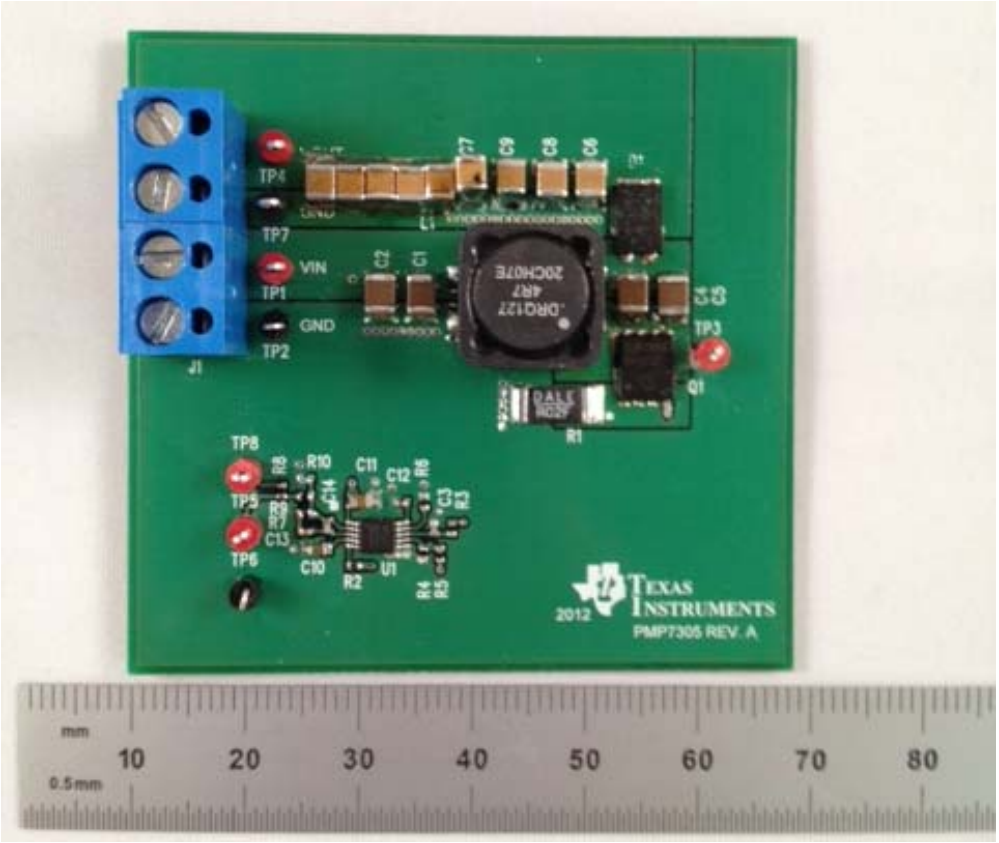
LM5022 Project
PMP7338_REVA
2/10/12

The tests performed were as follows:

A. LM5022 – 12V@4A
   1. Board Photo
   2. Thermal Image
   3. Turn-On (No Load)
   4. Switching Waveform
   5. Output Voltage Ripple (No Load and Full Load)
   6. Transient Response
   7. Efficiency
   8. Load Regulation
   9. Bode Plot

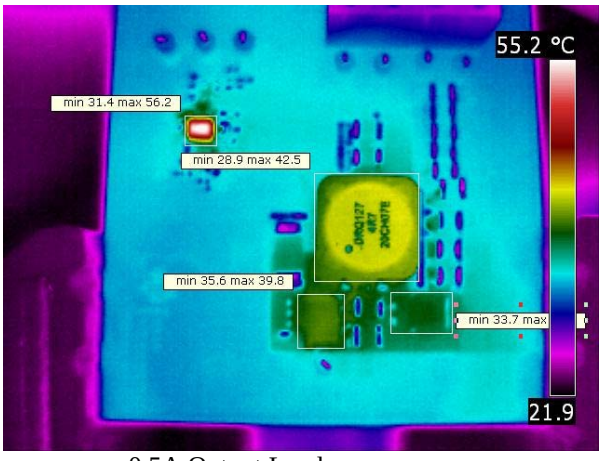
1 Board Photo – (LM5022 : 12V@4A)

The photo below shows the PMP7305_REVA PCB.



2 Thermal Image – (LM5022 : 12V@4A)

The image below shows the thermal performance of the PMP7338 design. The input voltage is 12V.



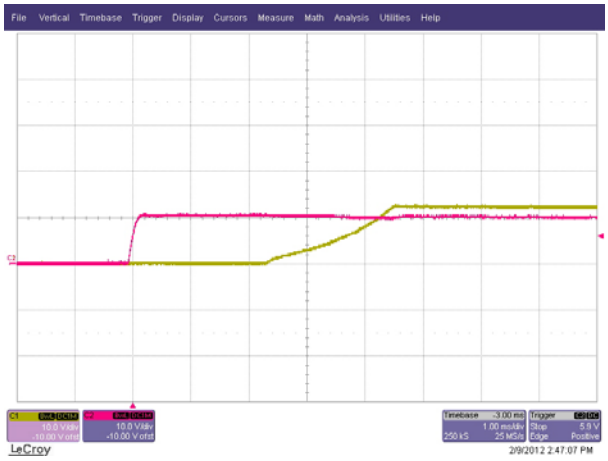
0.5A Output Load

4A Output Load

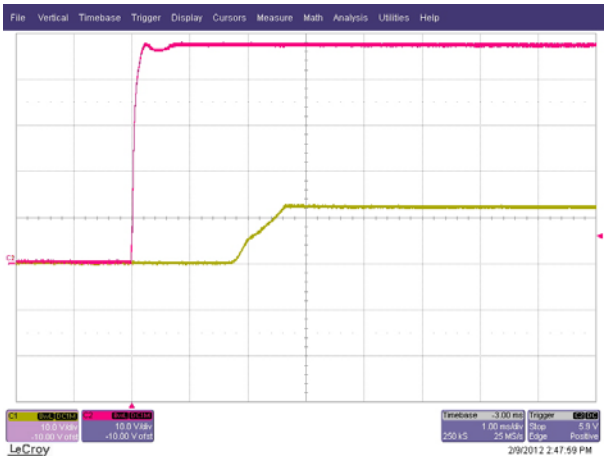
3 Turn-On – (LM5022 : 12V@0A)

The photo below shows the startup waveforms. The output is not loaded. The timebase is set to 1ms/Division.

Channel 1 – Yellow : 12V Output – (10V/Division)
Channel 2 – Pink : Input Voltage – (10V/Division)



Input Voltage = 10V

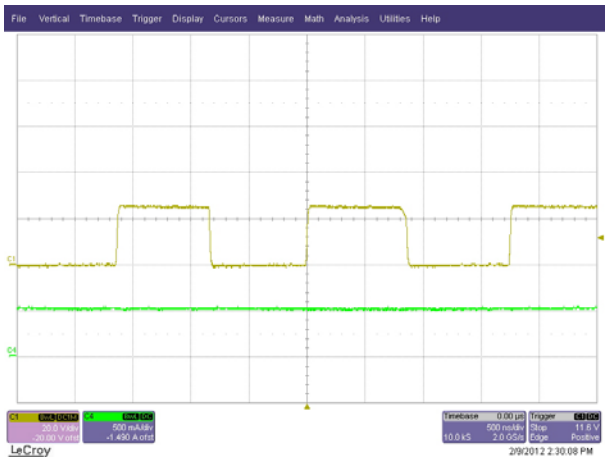


Input Voltage = 48V

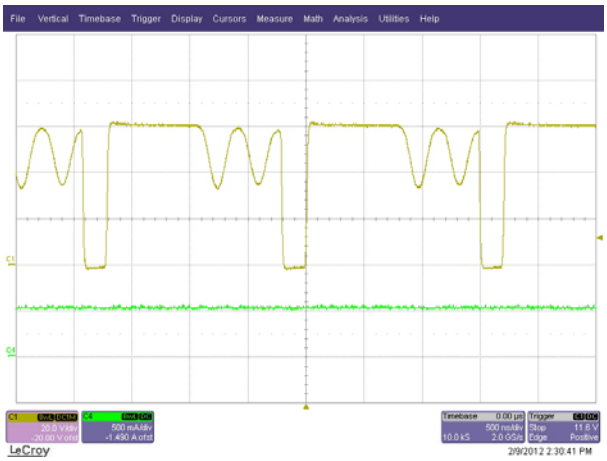
4 Switching Waveforms – (LM5022 : 12V@0.5A)

The images below show the switching performance. The timebase is set to 500ns/division.

Channel 1 – Yellow : Switch Node – (5V/Division)
Channel 4 – Green : Output Current – (1A/Division)



Input Voltage = 10V

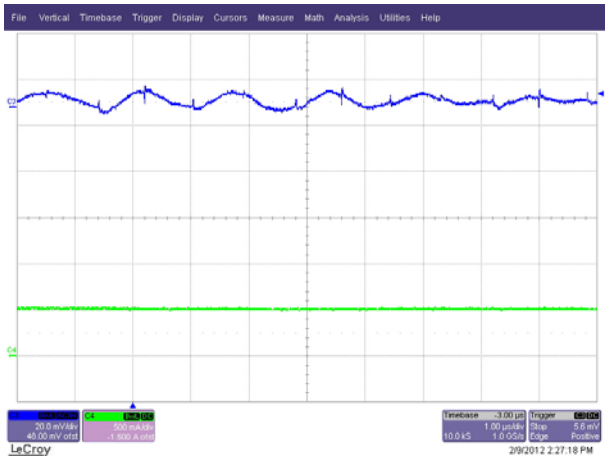


Input Voltage = 48V

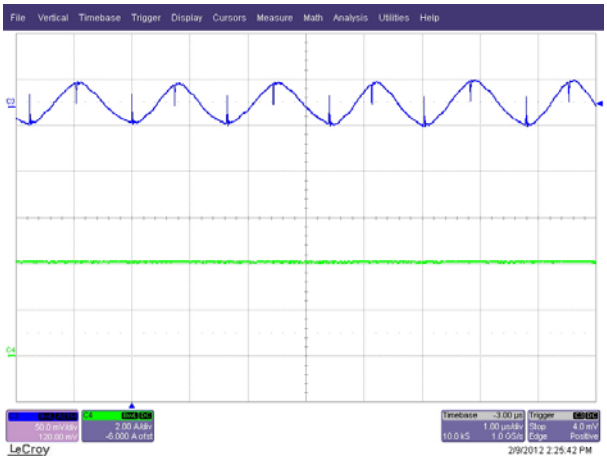
5 Output Voltage Ripple – (LM5022 : 12V@4A)

The photo below shows the output voltage ripple and output current. The input voltage is 12V. The timebase is set to 1us/division.

Channel 3 – Blue : Output Voltage – (20mV/Division; AC Coupled)
Channel 4 – Green : Output Current – (2A/Division)



Output Current = 0.5A

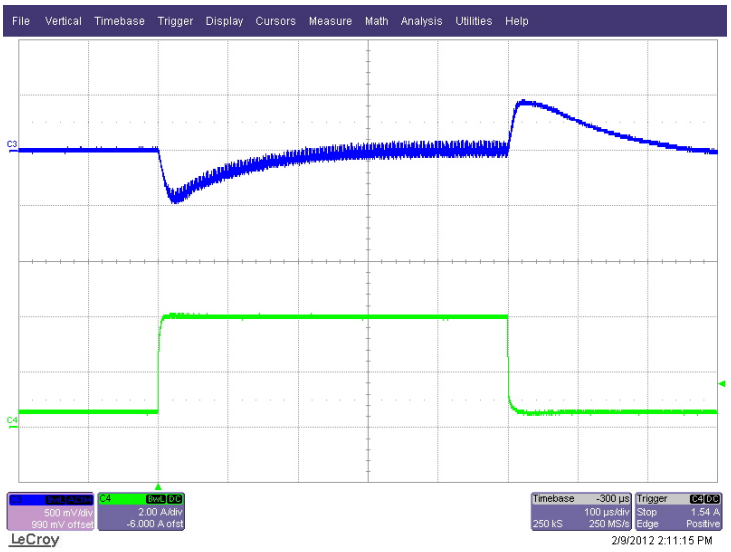


Output Current = 4A

6 Transient Response – (LM5022 : 12V@4A)

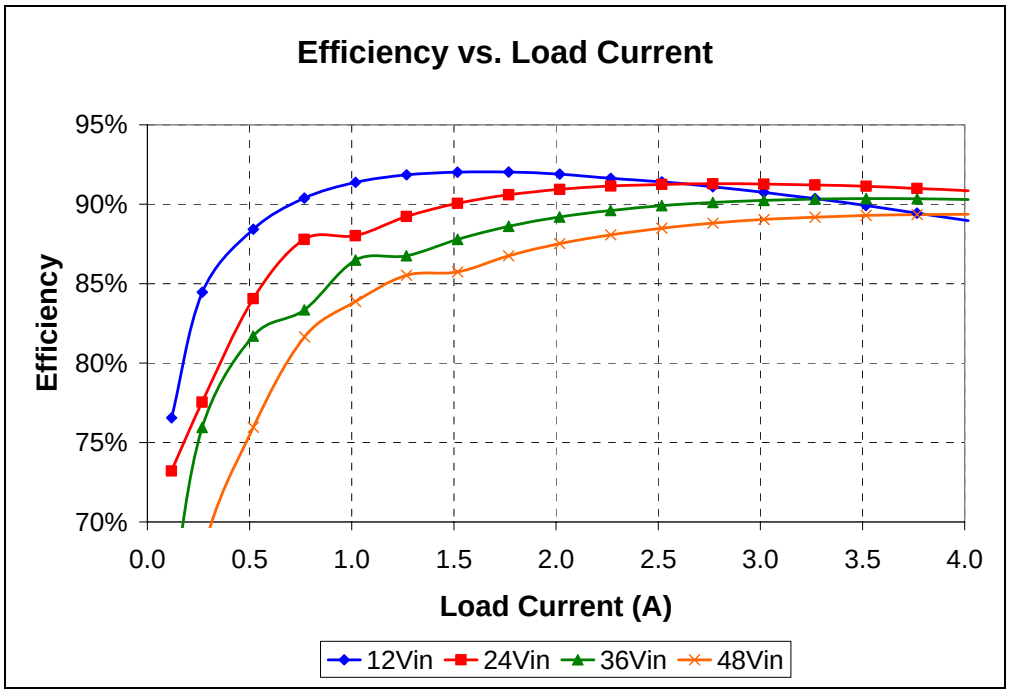
The transient response of the converter is shown in the figure below. The input voltage is 12V. The current is pulsed 3.5A from 0.5A to 4A. The timebase is set to 200us/Division.

Channel 3 – Blue : Output Voltage – (500mV/Division; AC Coupled)
Channel 4 – Green : Output Current – (2A/Division)



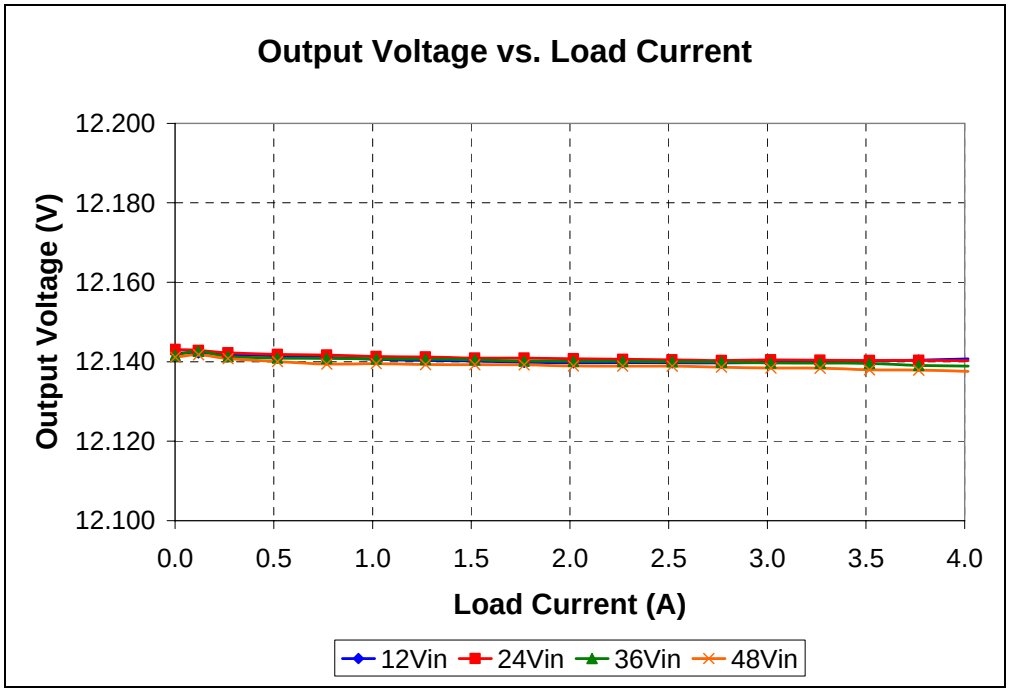
7 Efficiency – (LM5022 : 12V@4A)

The efficiency of the converter is shown in the figure below.



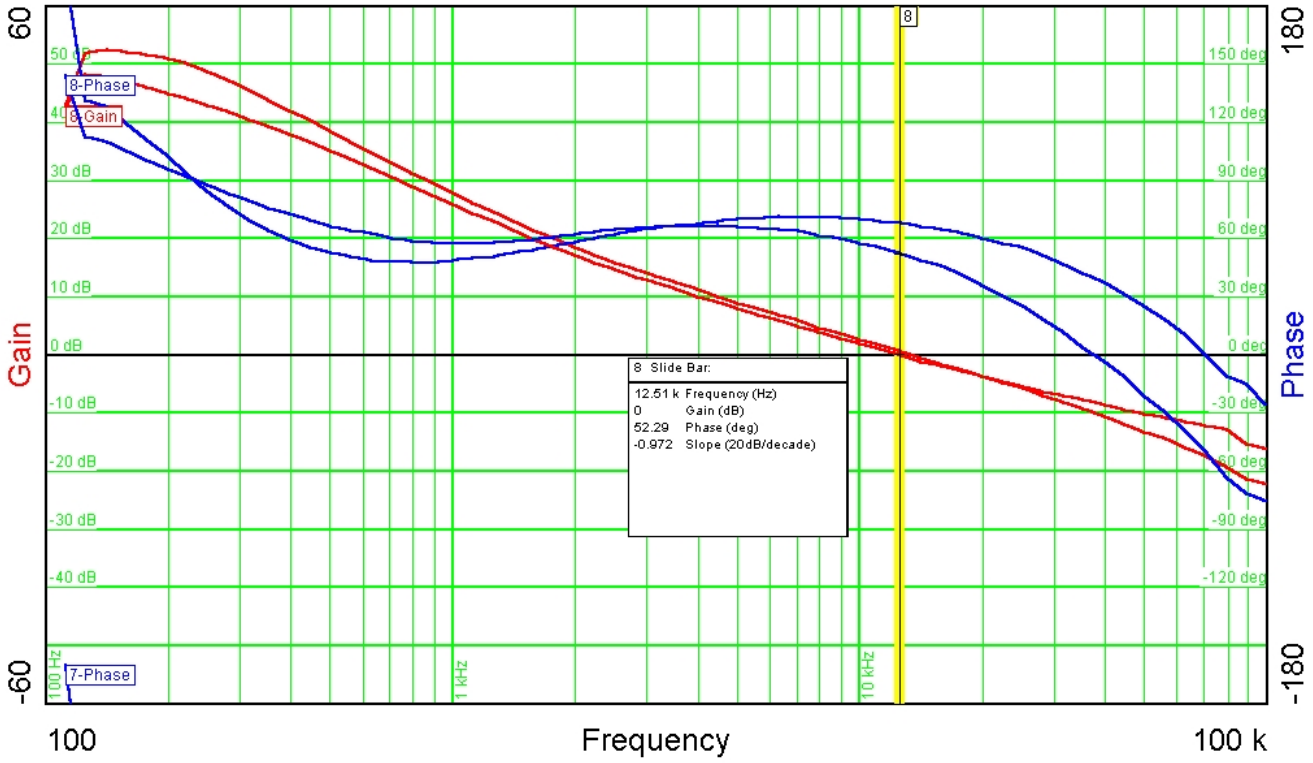
8 Load Regulation – (LM5022 : 12V@4A)

The load regulation of the converter is shown in the figure below.



9 Loop Response – (LM5022 : 12V@4A)

The loop response of the converter is shown in the figure below. The input voltage is 12V. Two curves are shown, 0.5A load and 4A load. The higher current output has lower phase margin.



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