



**PMP10000 TPS40428 + CSD95372 Project
6/11/14**

The tests performed were as follows:

- A. TPS40428 (x1) + CSD95372 (x2)
 - 1. PMBus Settings
 - 2. Turn-On (No Load)
 - 3. Switch Node (Full Load and No Load)
 - 4. Output Voltage Ripple (Full Load and No Load)
 - 5. Transient Response (90% Load Step)
 - 6. Efficiency
 - 7. Load Regulation
 - 8. Board Photo
 - 9. Thermal Images
 - 10. Loop Response

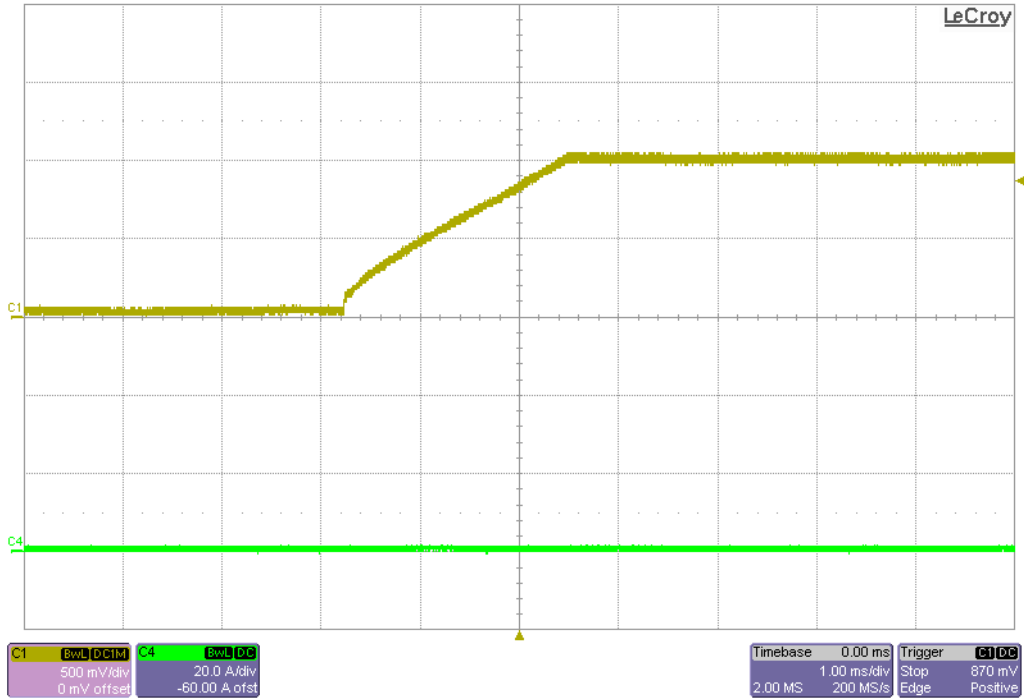
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1 Turn On – (TPS40428 – No Load)

The photo below shows the startup waveform. The input voltage is 12V, the output is not loaded. The time-base is set to 1ms/Division.

Channel 1 – Yellow : Output Voltage – (500mV/Division)



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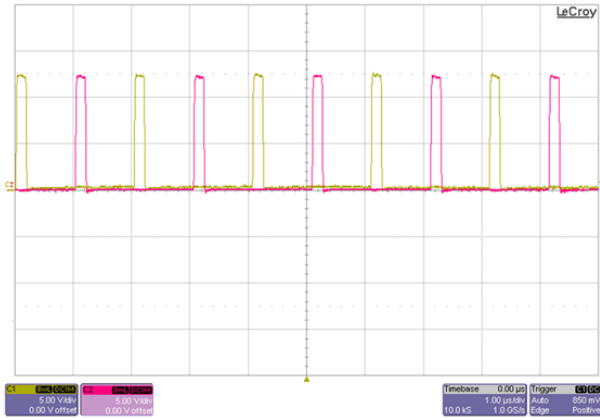


2 Switch Node – (TPS40428 – 1V @ 60A)

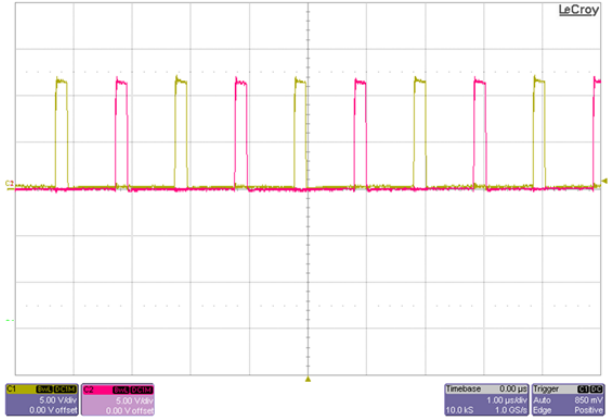
The pictures below show the switching waveform for the converter. The input voltage is 12V.

Channel 1 – Yellow : Switch Node #1 – (5V/Division)

Channel 2 – Pink : Switch Node #2 – (5V/Division)



No Load

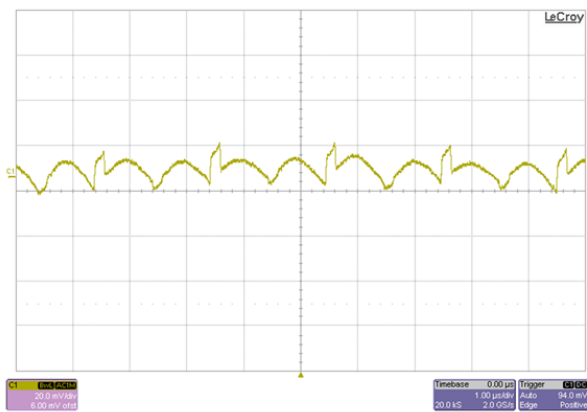


100A Load

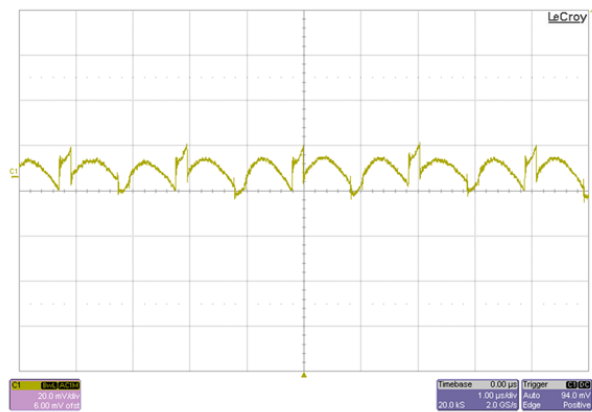
3 Output Voltage Ripple – (TPS40428 – 1V @ 60A)

The output voltage ripple of the converter is shown in the figures below. The input voltage is 12V.

Channel 2 – Yellow : Output Voltage (20mV/Division; AC Coupled)



No Load



100A Load

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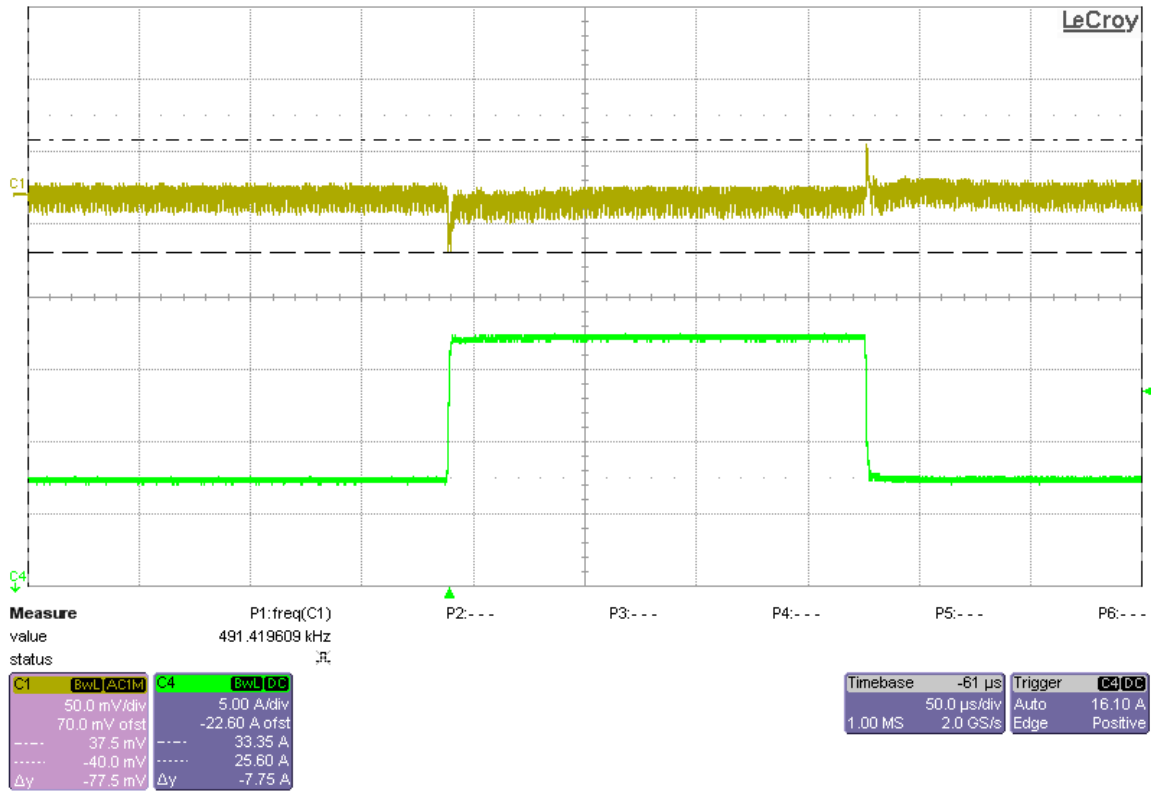


4 Transient Response – (TPS40428 – 1V @ 60A)

The transient response of the converter is shown in the figures below. The input voltage is 12V. The slew rate of the load step is 20A/us. The time base of the images is 10us/division.

Channel 2 – Pink : Output Voltage : (50mV/Division; AC Coupled)

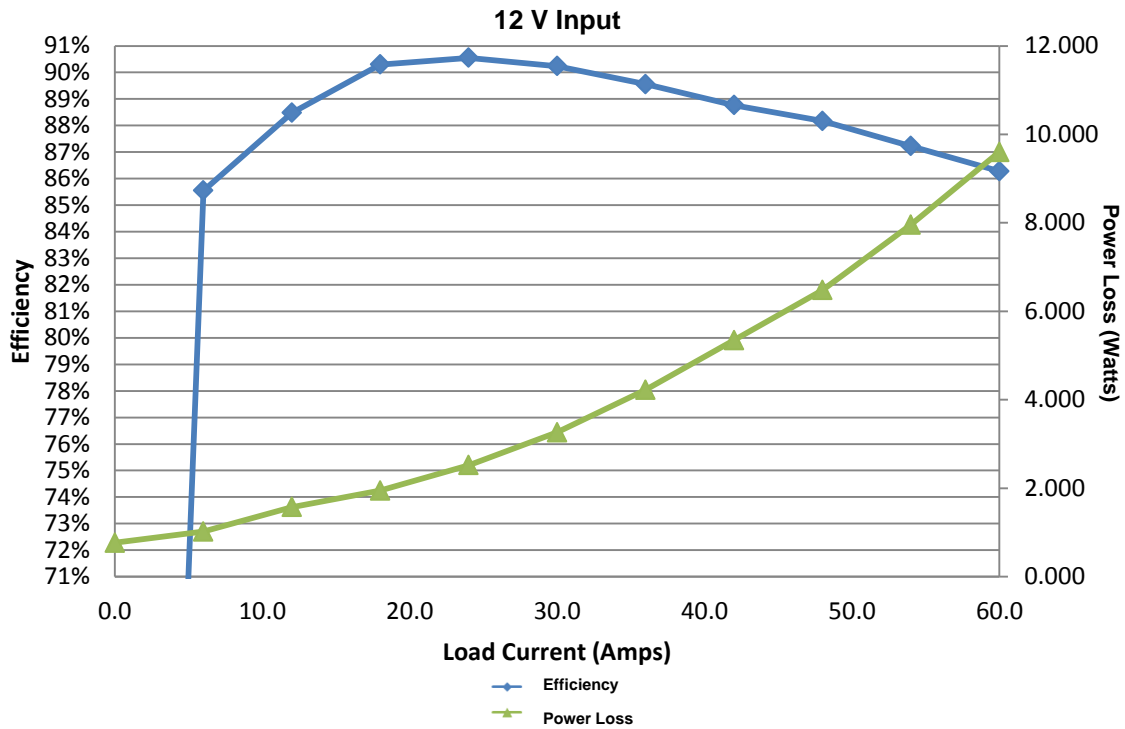
Channel 4 – Green : Output Current – (5A/Division)



50us/Division

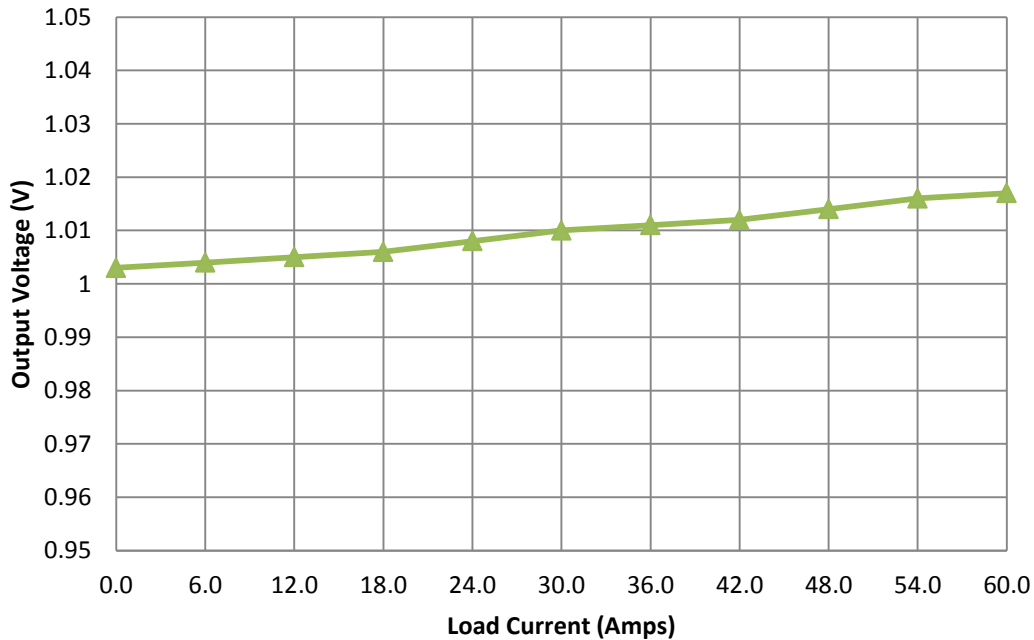
5 Efficiency – (TPS40428 – 1V @ 60A)

The efficiency and power loss of the converter is shown in the picture below.



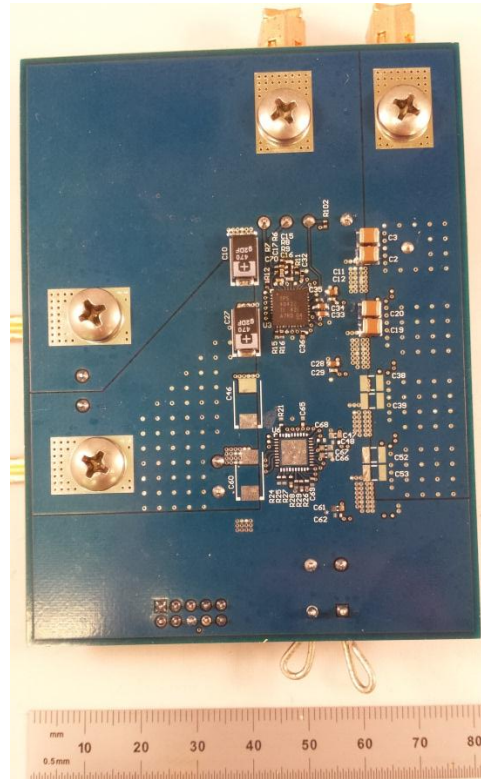
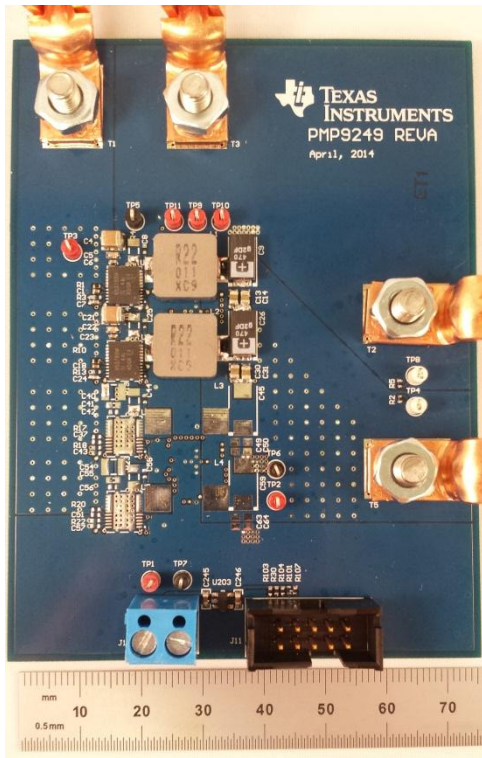
6 Load Regulation – (TPS40428 – 1V @ 60A)

The load regulation is shown in the figure below.



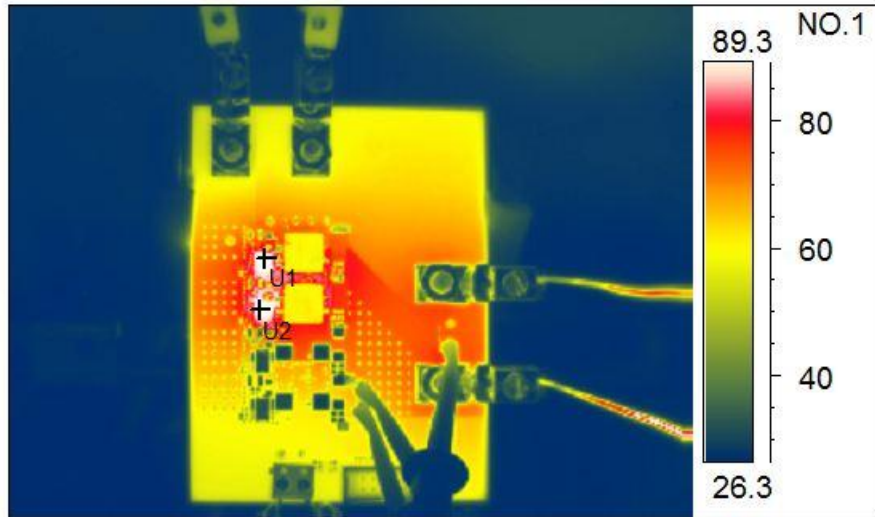
7 Board Photo

The photo below shows the PMP10000 board that is used



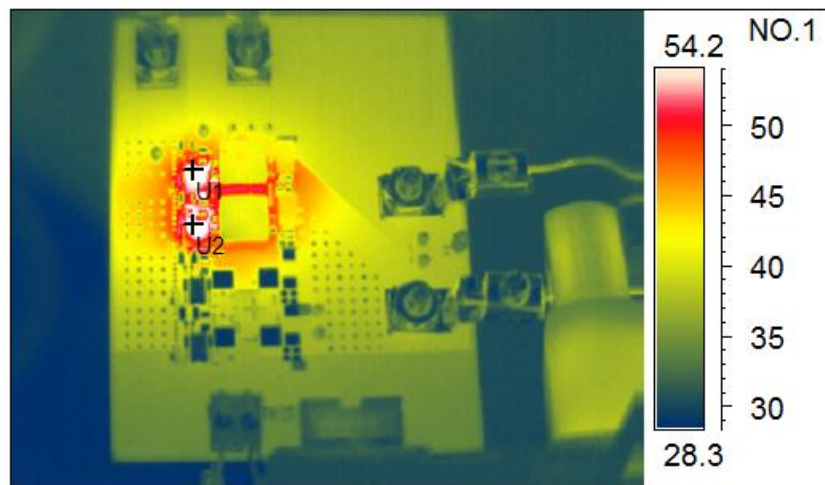
8 Thermal Images – (TPS40428 – 1V @ 60A)

The images below show the thermal performance of the design. It is important to note that thermal performance is directly proportional to power loss and board size. Different sized and shaped boards will perform differently. The input voltage is 12V, the output current is 60A. Thermal images are taken for 60A with airflow and 60A without airflow.



Spot analysis	Value
U2 Temperature	93.0°C
U1 Temperature	93.1°C

60A Load No Air Flow



Spot analysis	Value
U1 Temperature	58.1°C
U2 Temperature	57.2°C

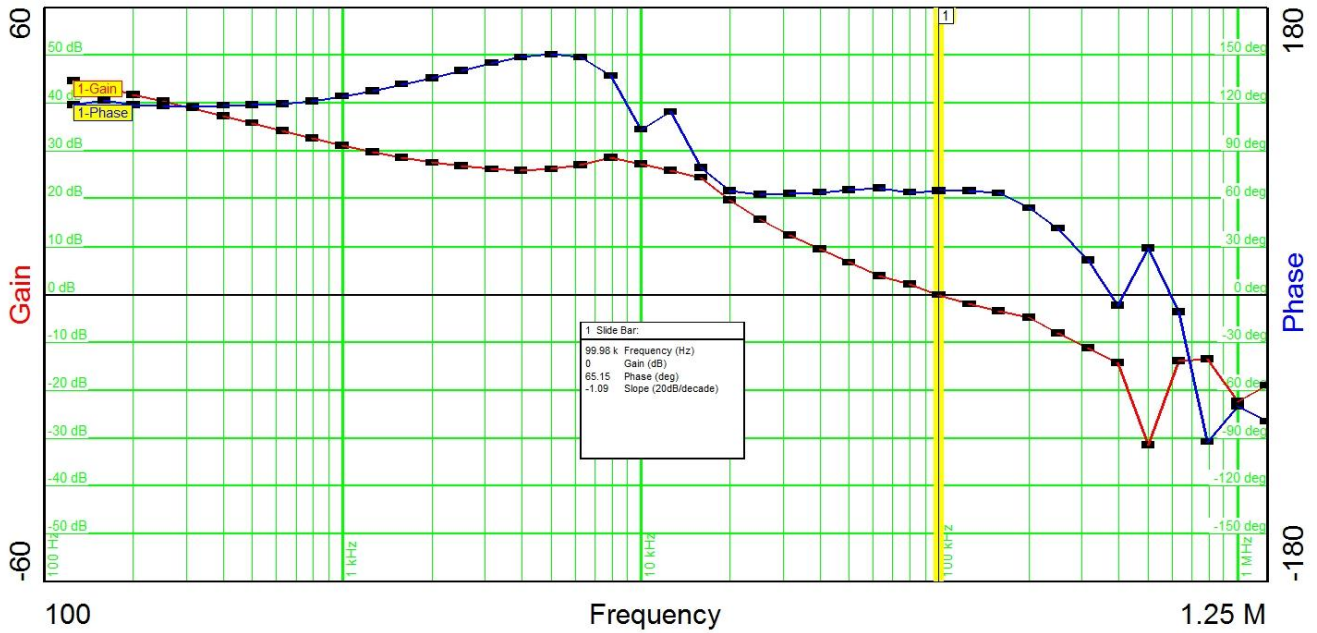
60A load with Air Flow

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Loop Response – (TPS40428 – 1V @ 60A)

The image below shows the loop response of the PMP10000 design.



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