



PMP6807 TPS51216 Test Report

7/20/2011

The following test report is for the PMP6807 TPS51216:

$V_{in} = 3.0$ to $4.2V$
 $V_{DDQ} = 1.35V @ 4A$
 $V_{TT} = 0.675 @ 0.5A$

The tests performed were as follows:

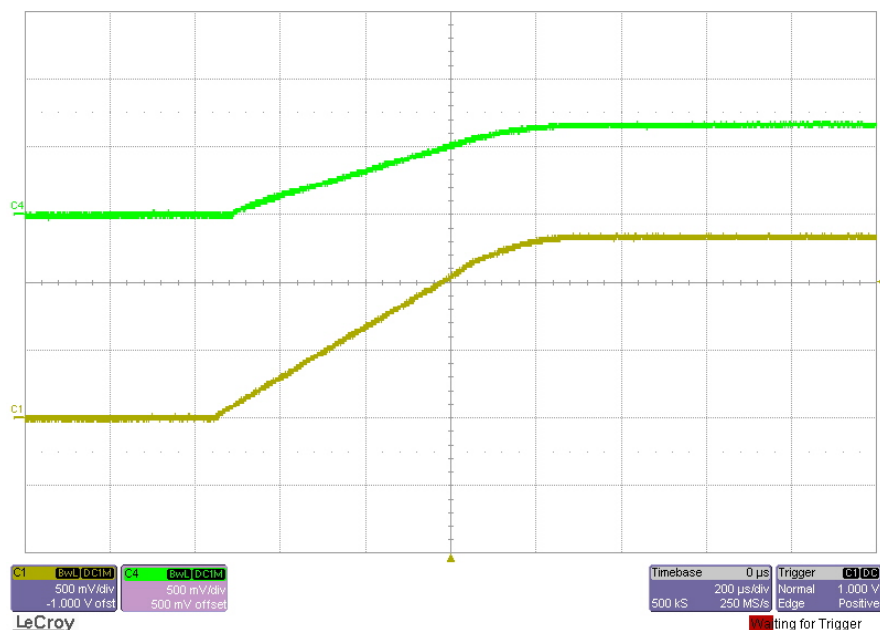
1. Startup (No load)
2. Powerdown:
 - i. V_{DDQ} (1A load)
 - ii. V_{TT} (0.5A load)
3. Output Voltage Ripple – V_{DDQ} (full load – 4A & no load)
4. Output Voltage Ripple – V_{TT}
5. Load Transient – V_{DDQ}
6. Load Transient – V_{TT}
7. Load Regulation – V_{DDQ}
8. Load Regulation – V_{TT}
9. Efficiency – V_{DDQ}
10. Switch Node (full load – 6A, no load)
11. Thermal Profile
12. EVM Photo

1 Startup

The picture below shows the startup waveform. The input voltage is 4.2V, the output is not loaded. The time-base is set to 200 μ s/division.

Channel 1 (yellow): 1.35V VDDQ Output (500mV/div)

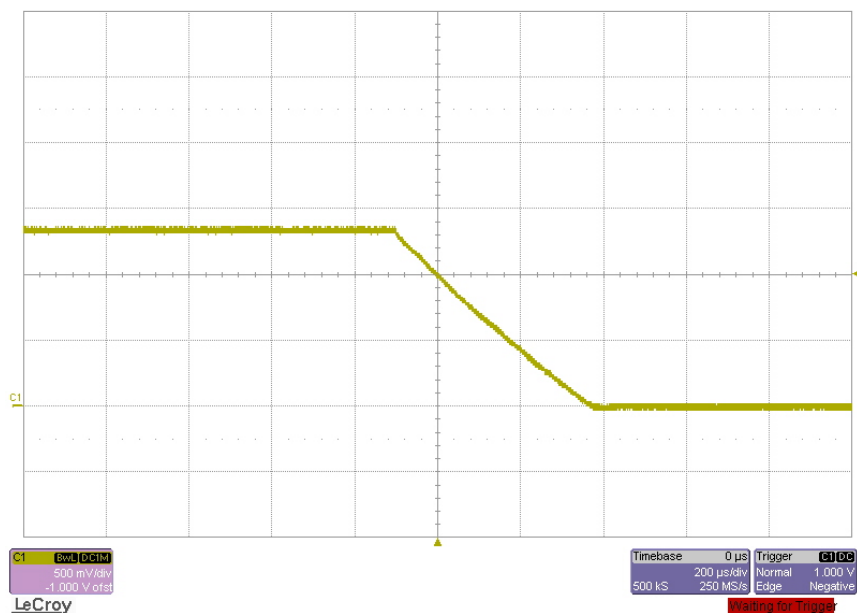
Channel 4 (green): 0.675V VTT Output (500mV/div)



2 Powerdown

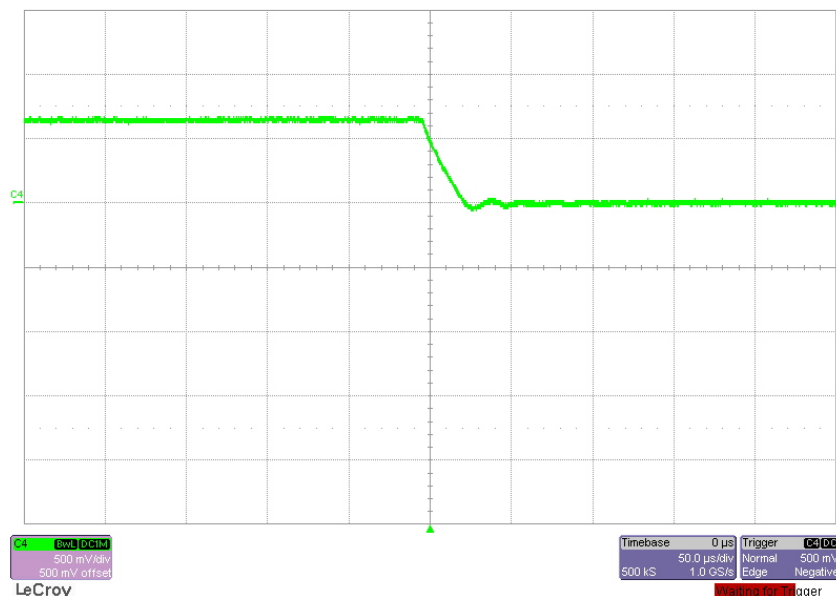
The picture below shows the powerdown waveform. The input voltage is 4.2V, VDDQ output is loaded to 1A. The time-base is set to 200 μ s/division.

Channel 1 (yellow): 1.35V VDDQ Output (500mV/div)



The picture below shows the powerdown waveform of VTT. The input voltage is 4.2V, VTT output is loaded to 0.5A. The time-base is set to 50 μ s/division.

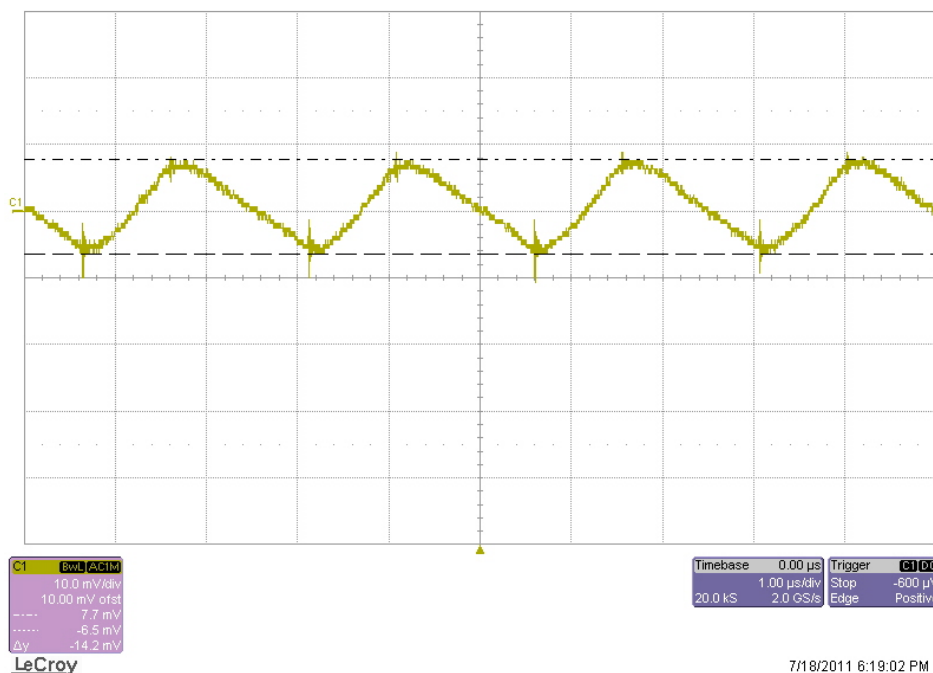
Channel 4 (green): 0.675V VTT Output (500mV/div)



3 Output Voltage Ripple – VDDQ

The output voltage ripple for VDDQ is shown in the figure below. The input is 4.2V with a 5V bias. The output is fully loaded to 4.0A.

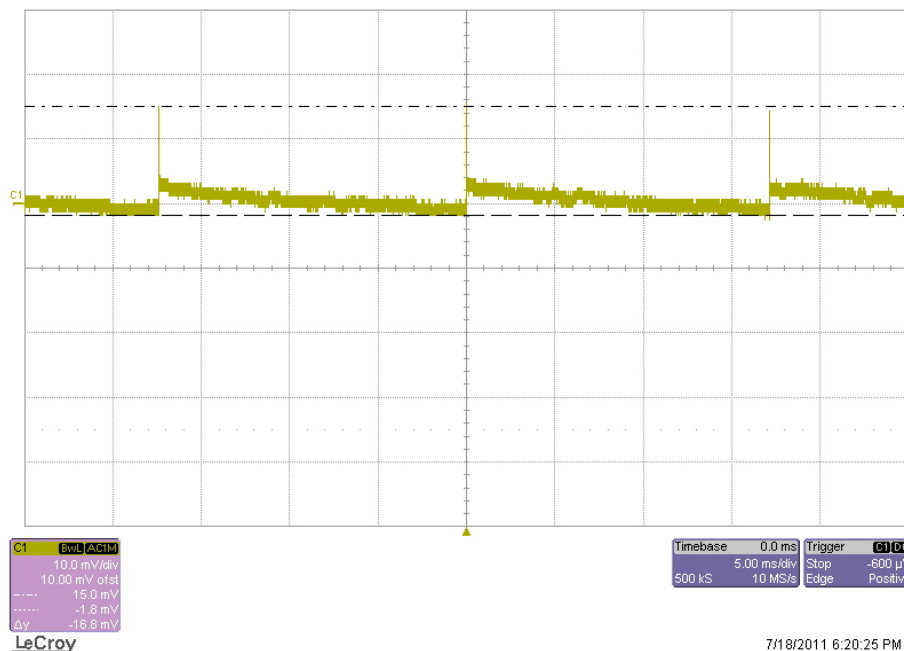
Output voltage ripple = 14.2mV



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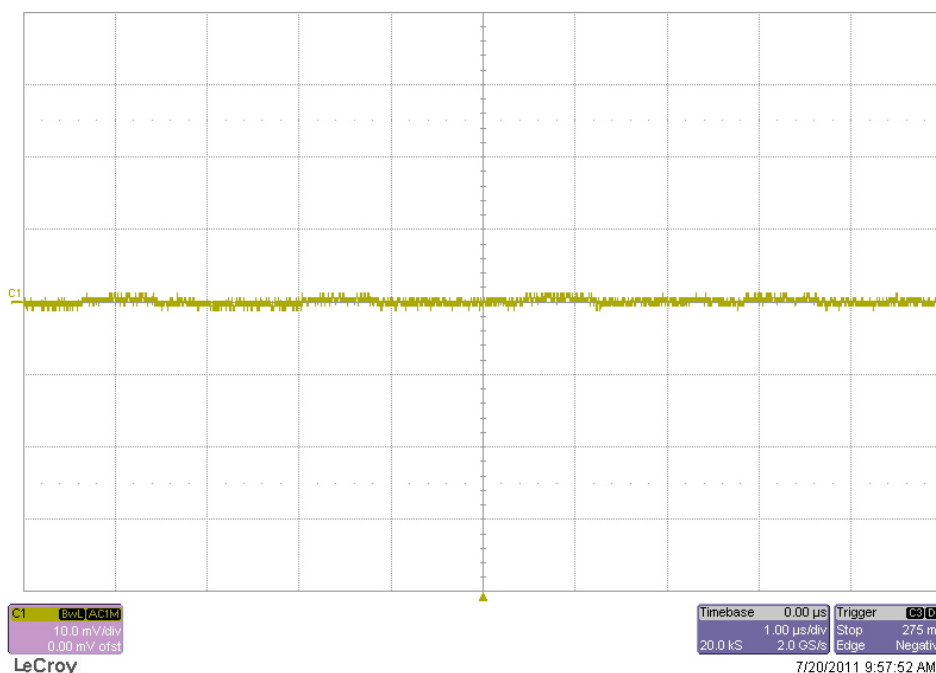
The output voltage ripple for VDDQ without a load is shown below, with $V_{in} = 4.2V$.

Output voltage ripple = 16.8mV

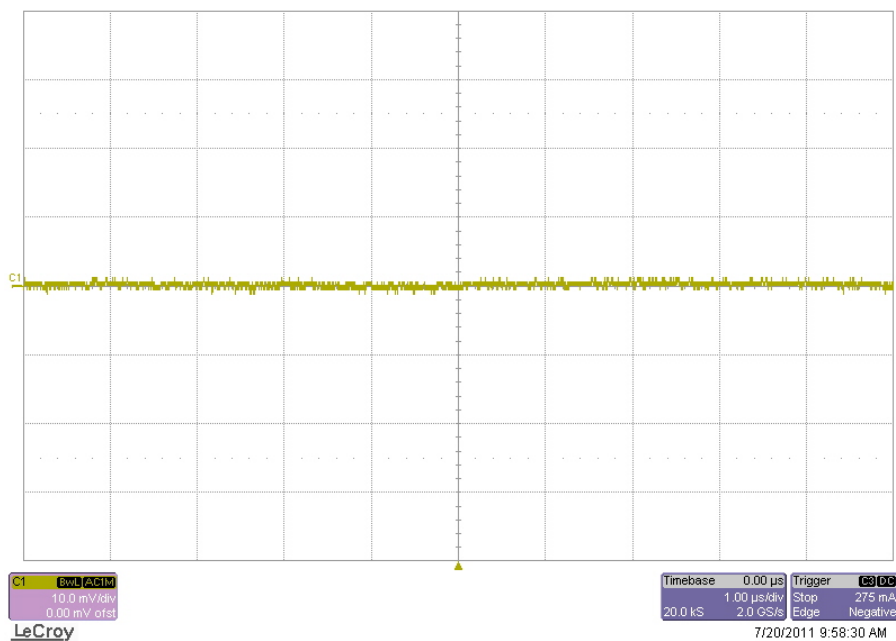


4 Output Voltage Ripple – VTT

The output voltage ripple for VTT is shown in the figure below. The input is 4.2V with a 5V bias. The output is fully loaded to 0.5A.



The output voltage ripple for VTT without a load is shown below, with $V_{in} = 4.2V$.

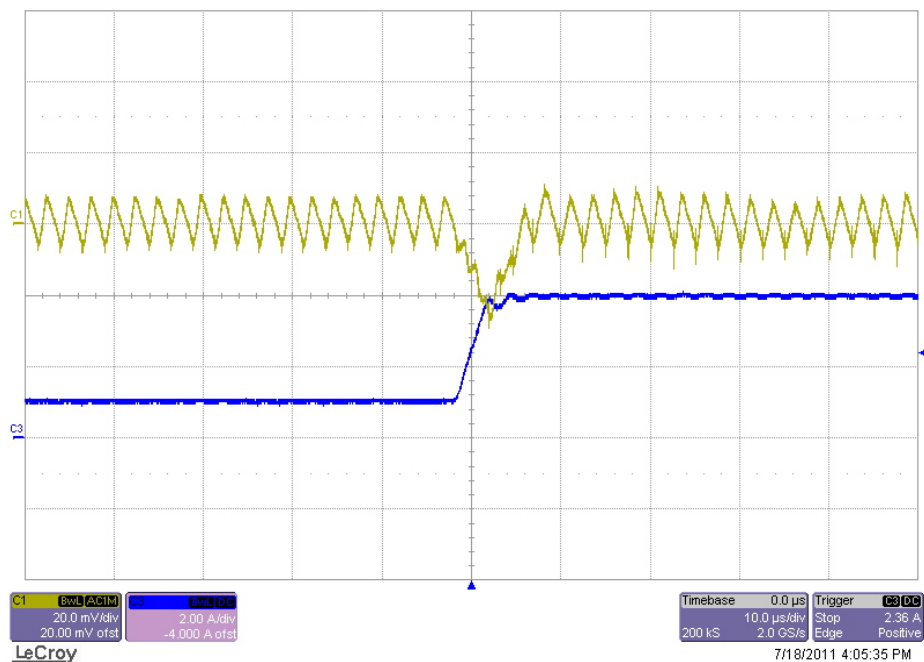


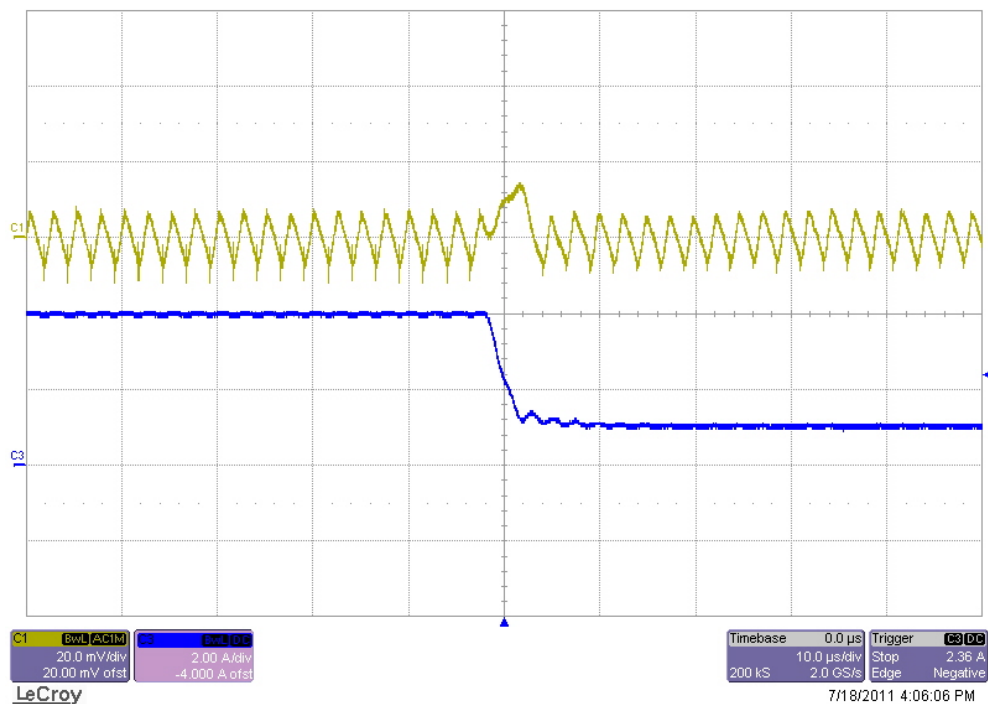
5 Load Transient – VDDQ

The transient response is shown in the figure below. The input voltage is 4.2V. The current is pulsed from 1A to 4A.

Channel 1 (yellow): VDDQ output (20mV/div)

Channel 3 (green): Output Current (2A/div)



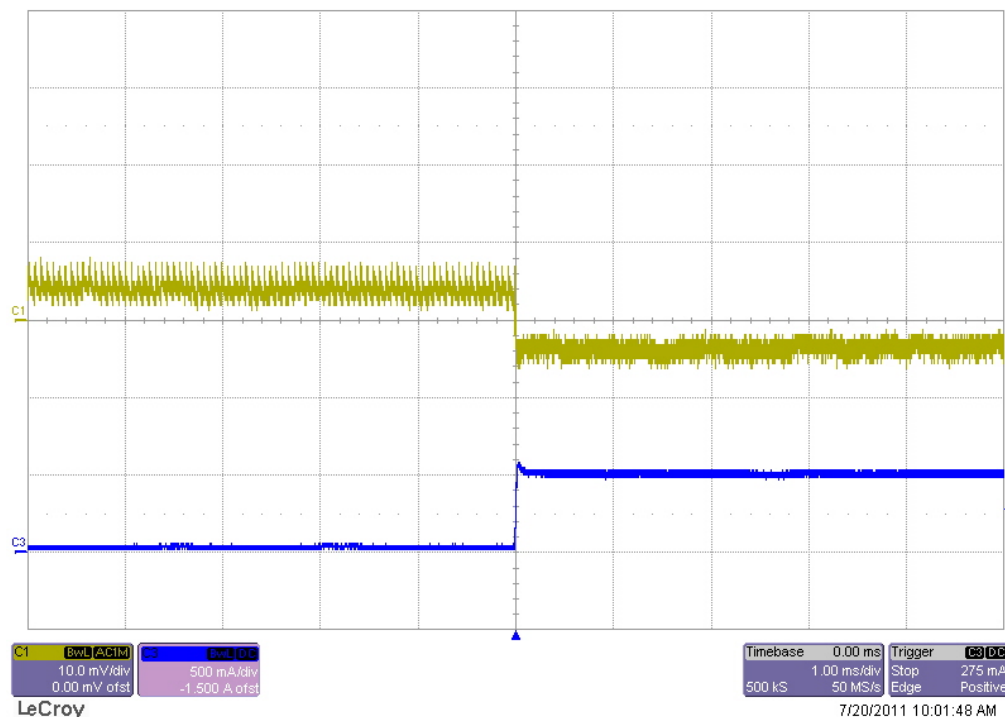


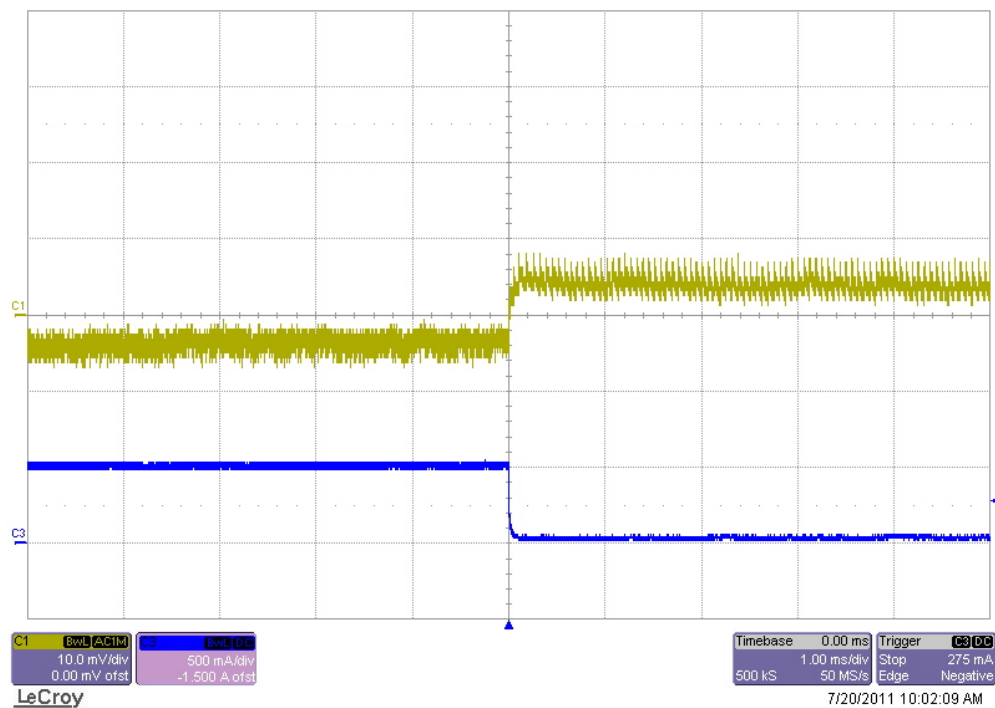
6 Load Transient – VTT

The transient response is shown in the figure below. The input voltage is 4.2V. The current is pulsed from 0A to 0.5A.

Channel 1 (yellow): VDDQ output (20mV/div)

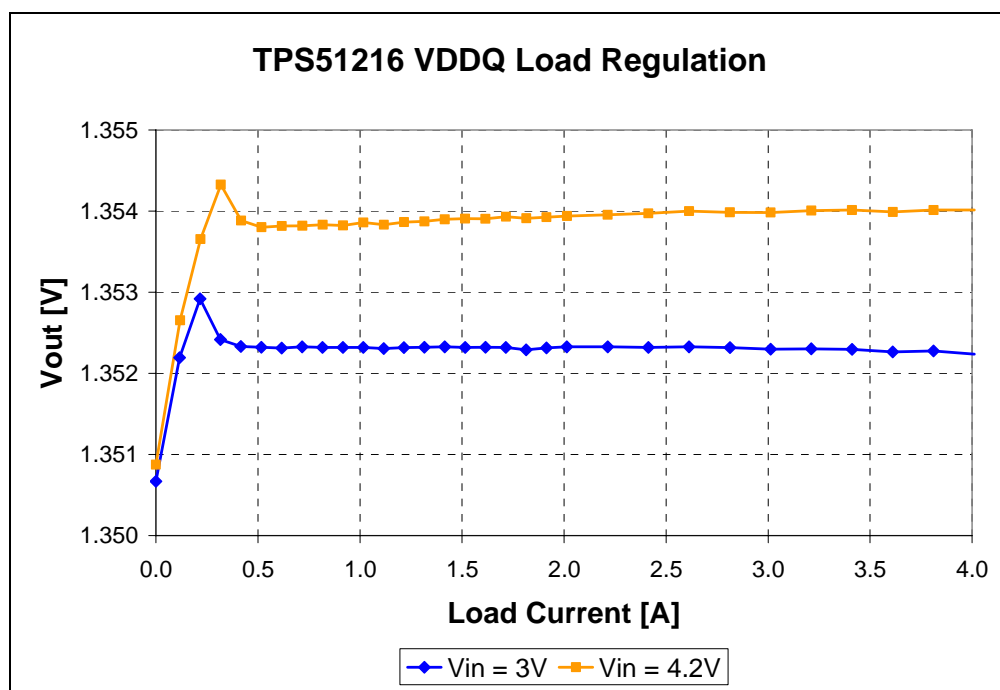
Channel 3 (green): Output Current (2A/div)





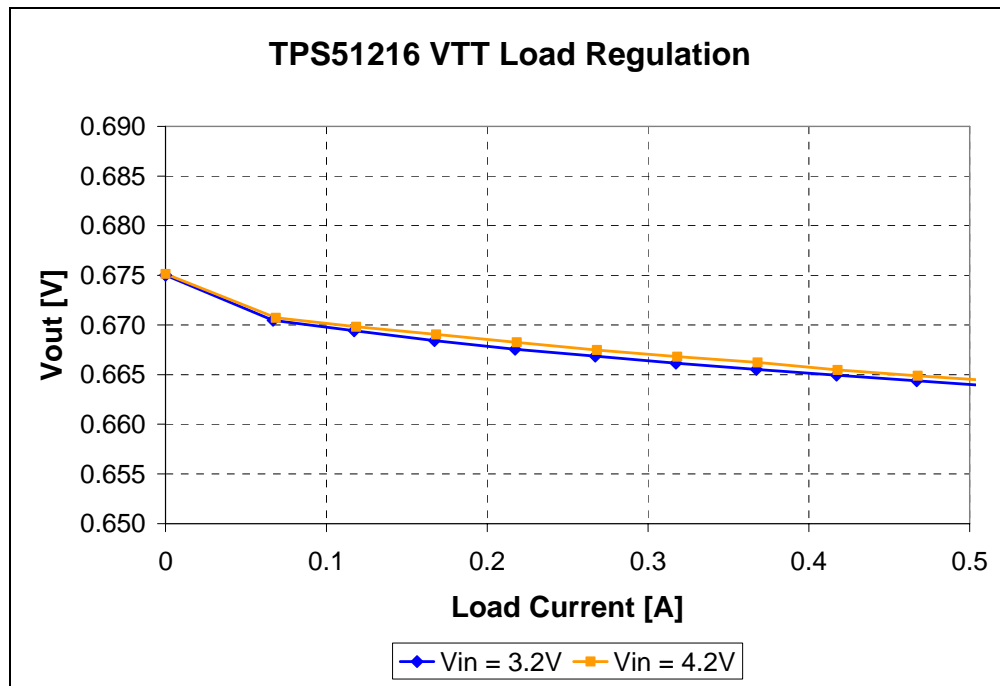
7 Load Regulation – VDDQ

A plot of the load regulation at VDDQ is shown in the figure below. The load regulation is plotted vs load current for two different V_{in} values: 3.0V and 4.2V.



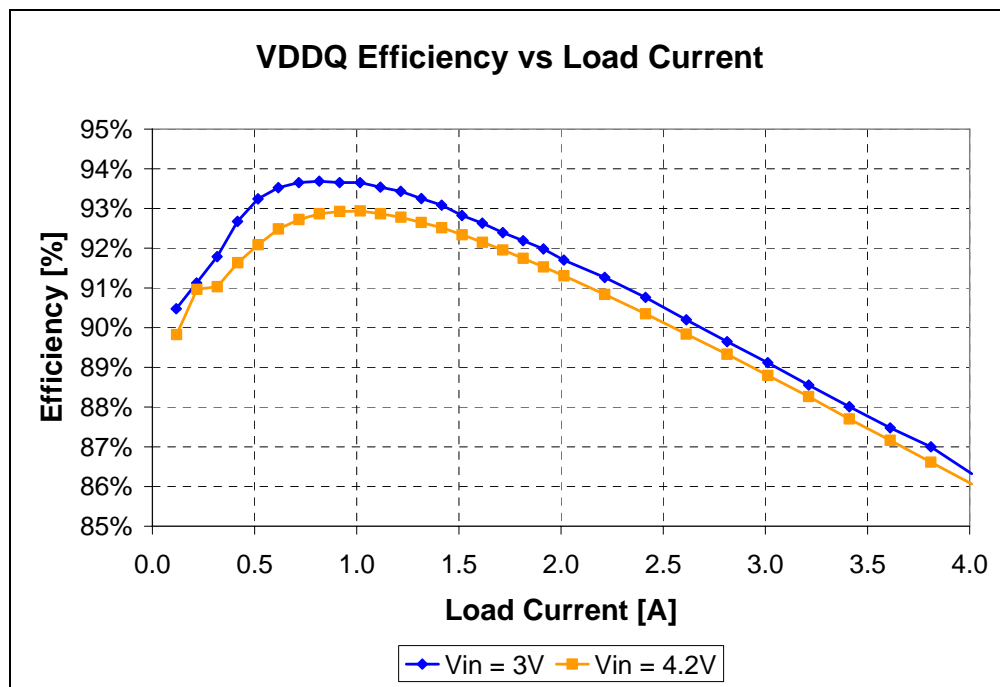
8 Load Regulation – VTT

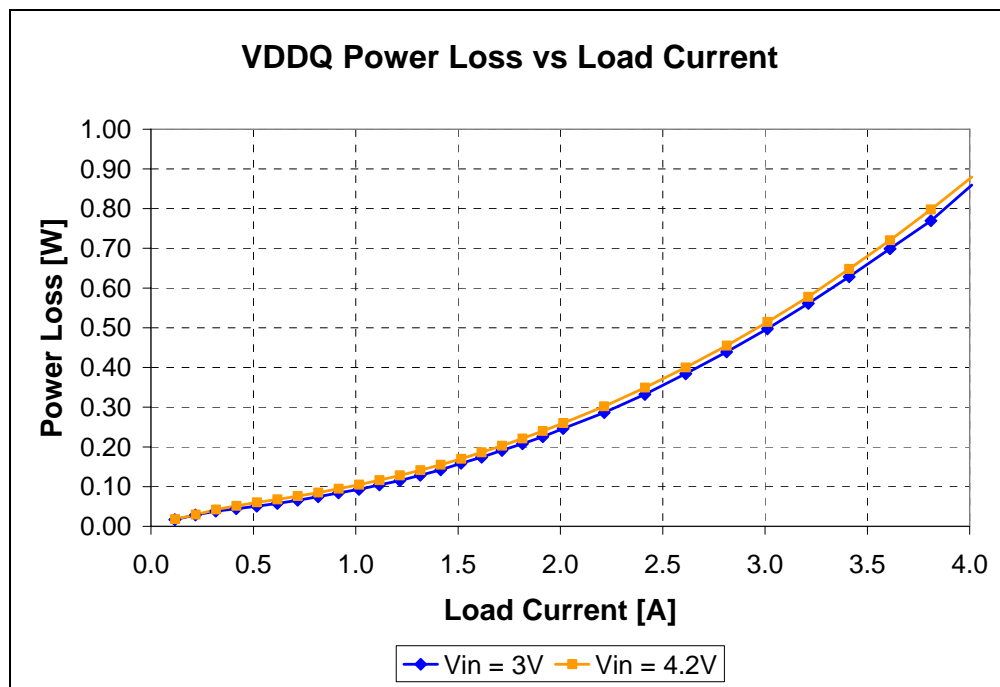
A plot of the load regulation at VTT is shown in the figure below. The load regulation is plotted vs load current for two different V_{in} values: 3.0V and 4.2V.



9 Efficiency – VDDQ

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

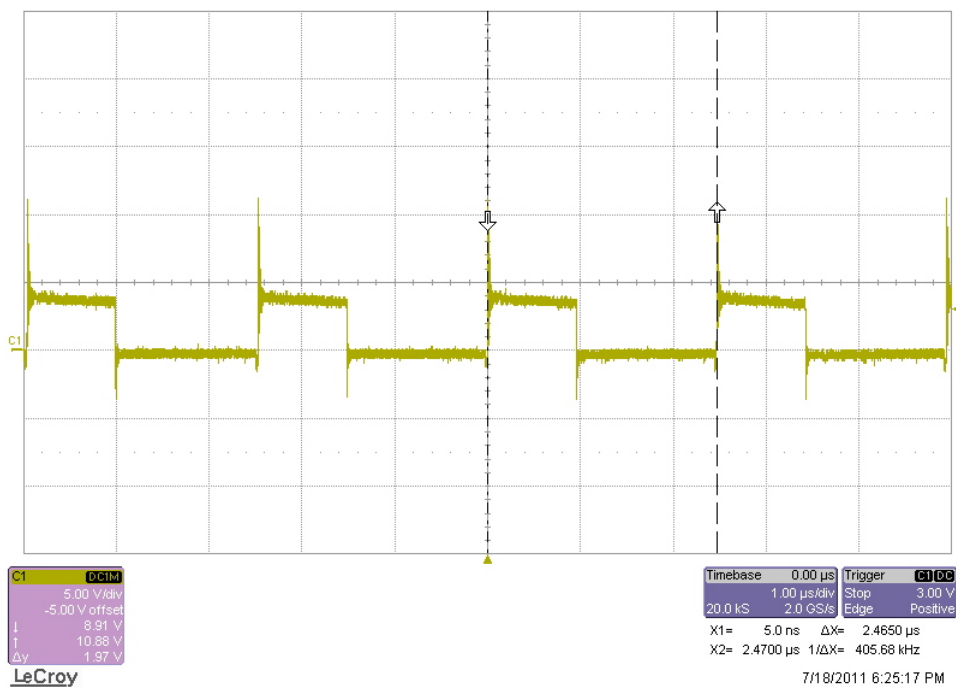




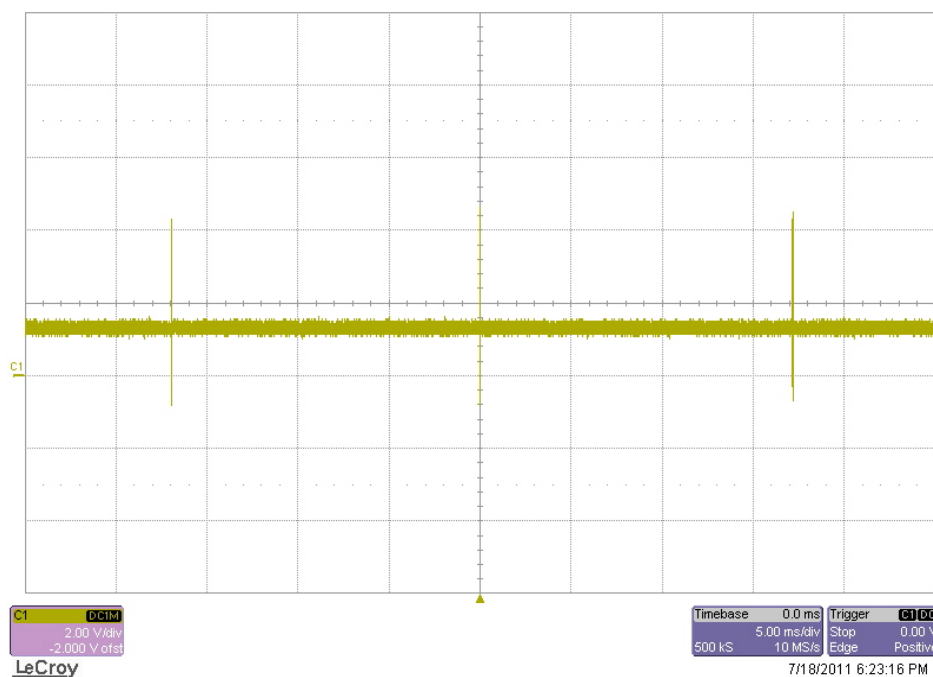
10 Switching Waveforms

The waveform below shows the switch node. The input is 4.2V. The output is fully loaded to 4A (VDDQ).

Switching frequency ~ 400kHz

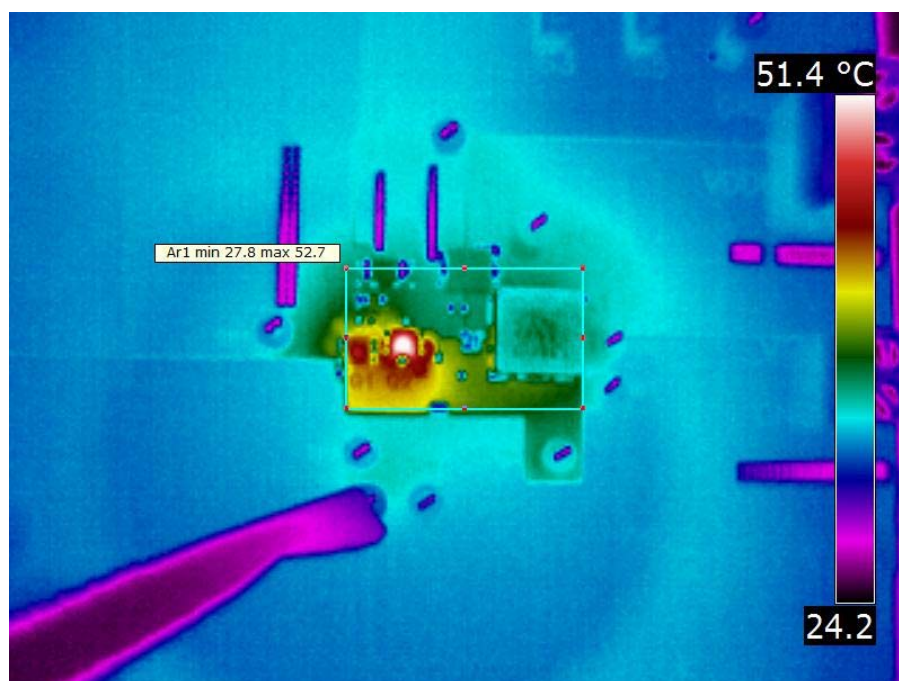


The waveform below shows the switch node with no load at VDDQ. The input is 4.2V.



11 Thermal Profile

The figures below show the thermal profile of the EVM at max VDDQ and VTT load (4A and 0.5A respectively).

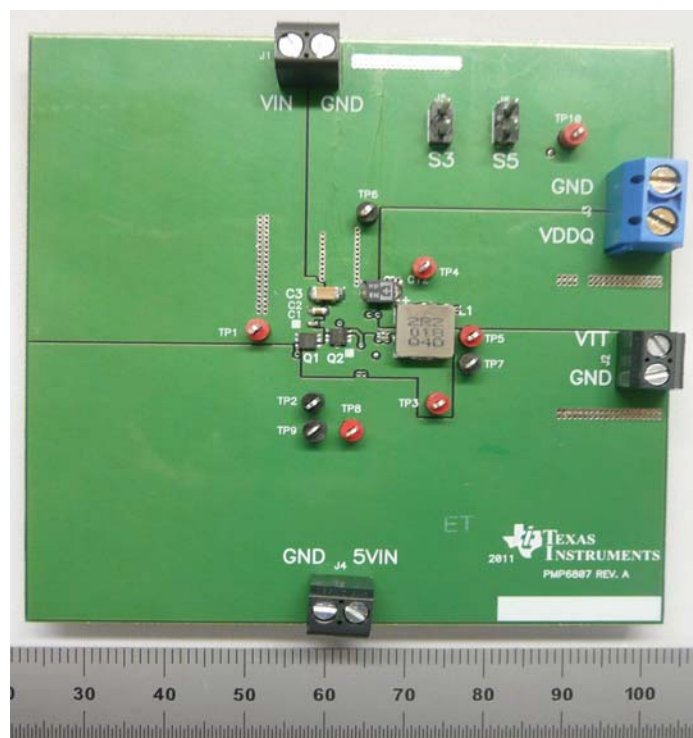


Front Side of EVM – Max Temp = 52.7°C

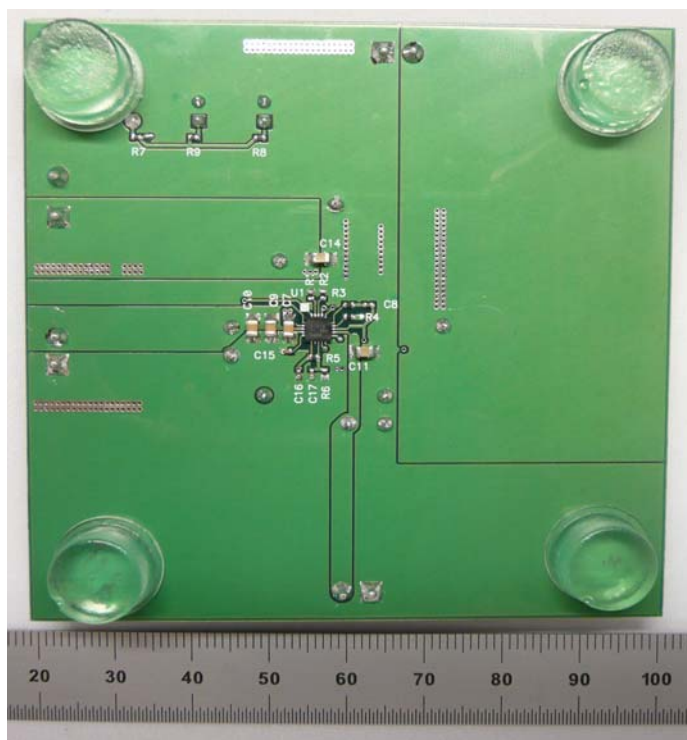


Back Side of EVM – Max Temp = 42.4°C

12 EVM Photo



Front Side of EVM



Back Side of EVM

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