

PMP5922 rev C is what TPS59610EVM-732 is based upon. Below are additional waveforms for each of the 5 switchers on the board. But first is shown a detailed thermal picture of the highest current switcher, the 1.8V at 5A.

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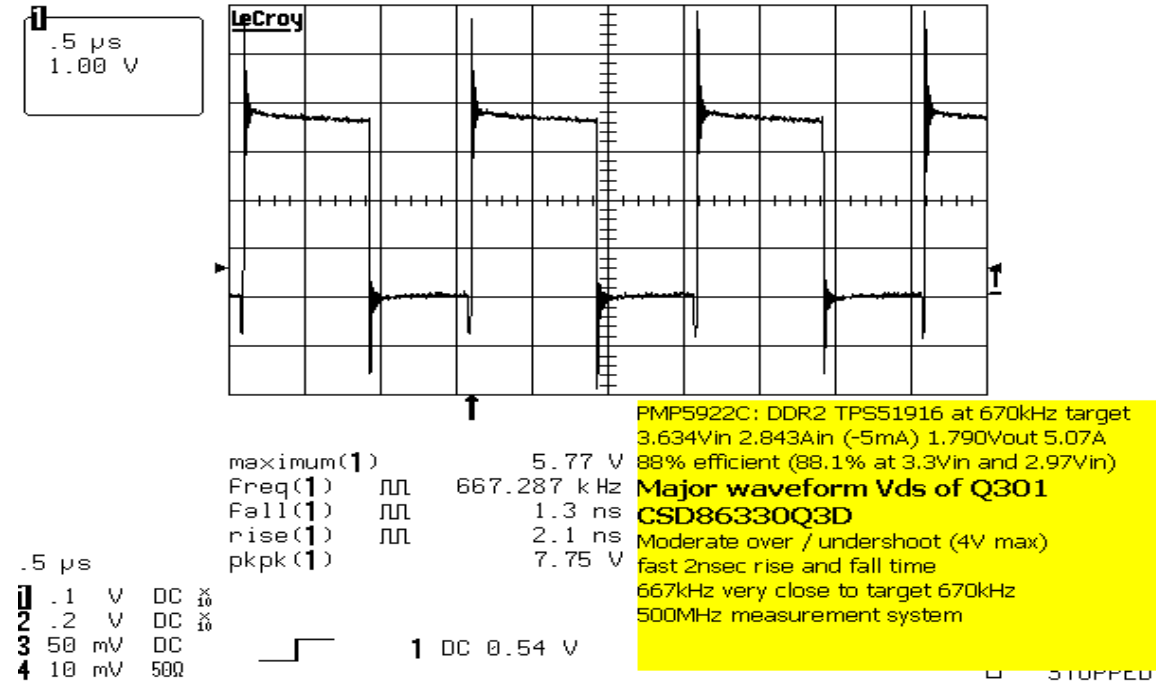
DDR2 channel 1.8V 5A TPS51916 & CSD86330Q3D off 3.3V

Full load switching Thermal image: 0.9V linear not loaded  
PMP5922C: TPS51916 DDR2 switcher only loaded 667kHz  
3.634Vin 2.843Iin 1.790Vout at 5.07A Chokes MPT420-R47 x2  
Chokes hottest at 61 & 58 degrees Celsius;  
dual switch CSD86330Q3D at 44 degrees C;  
ambient at 23-25 deg. C



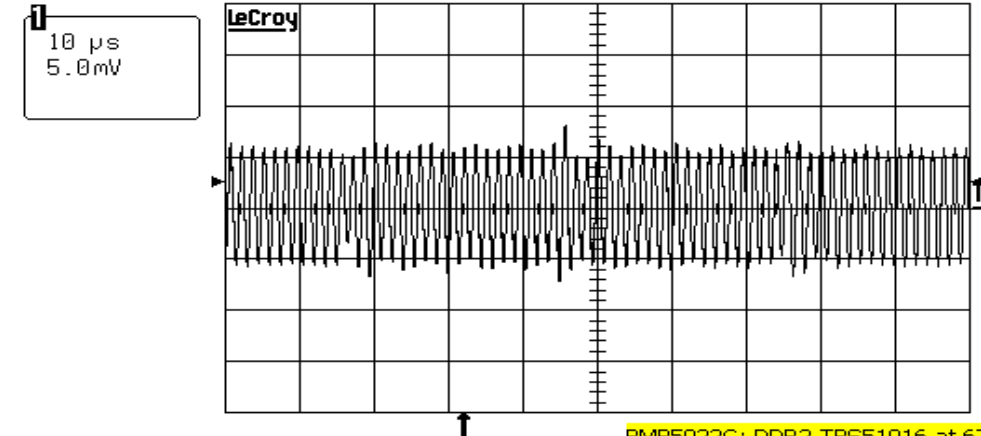
DDR2 channel continued: Major Waveform:

7-Jan-11  
16:44:11



Output ripple:

7-Jan-11  
16:50:52



10  $\mu$ s  
5.0mV

maximum(1) 8.12mV  
 Freq(1) 668.271 kHz  
 Fall(1) 415.7 ns  
 rise(1) 392.0 ns  
 pkpk(1) 15.31mV

10  $\mu$ s BWL  
 1 5 mV AC  
 2 .2 V DC  $\times 10$   
 3 50 mV DC  
 4 10 mV 50 $\Omega$

1 DC 2.7mV

PMP5922C: DDR2 TPS51916 at 670kHz target  
 3.634Vin 2.843Ain (-5mA) 1.790Vout 5.07A  
 88% efficient (88.1% at 3.3Vin and 2.97Vin)  
**Output ripple at C314/C315**  
 Cout = 220uF plus 2x22uF plus 1x 10uF  
 15.3mV peak to peak ripple

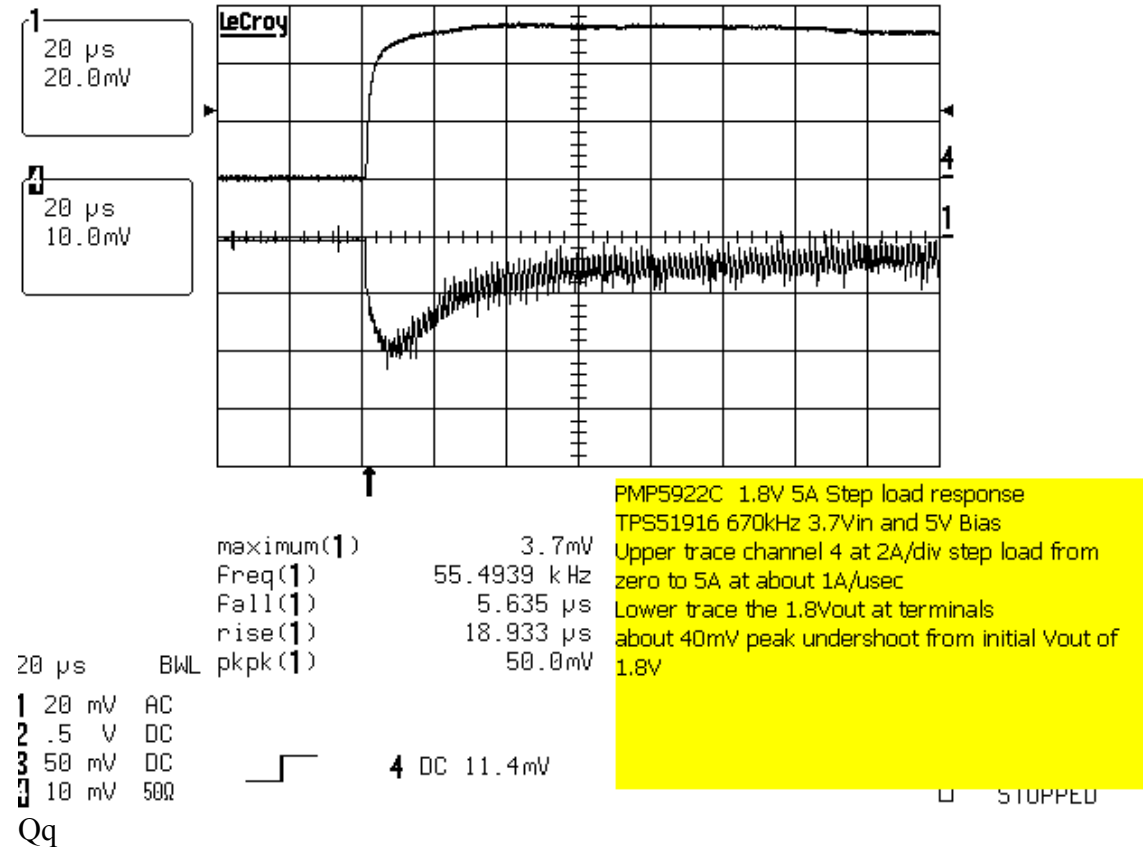
STOPPED

Qq  
 Efficiency calculations above ignore power from 5V used mostly for gate drive.

DDR2 continued:

Step load response:

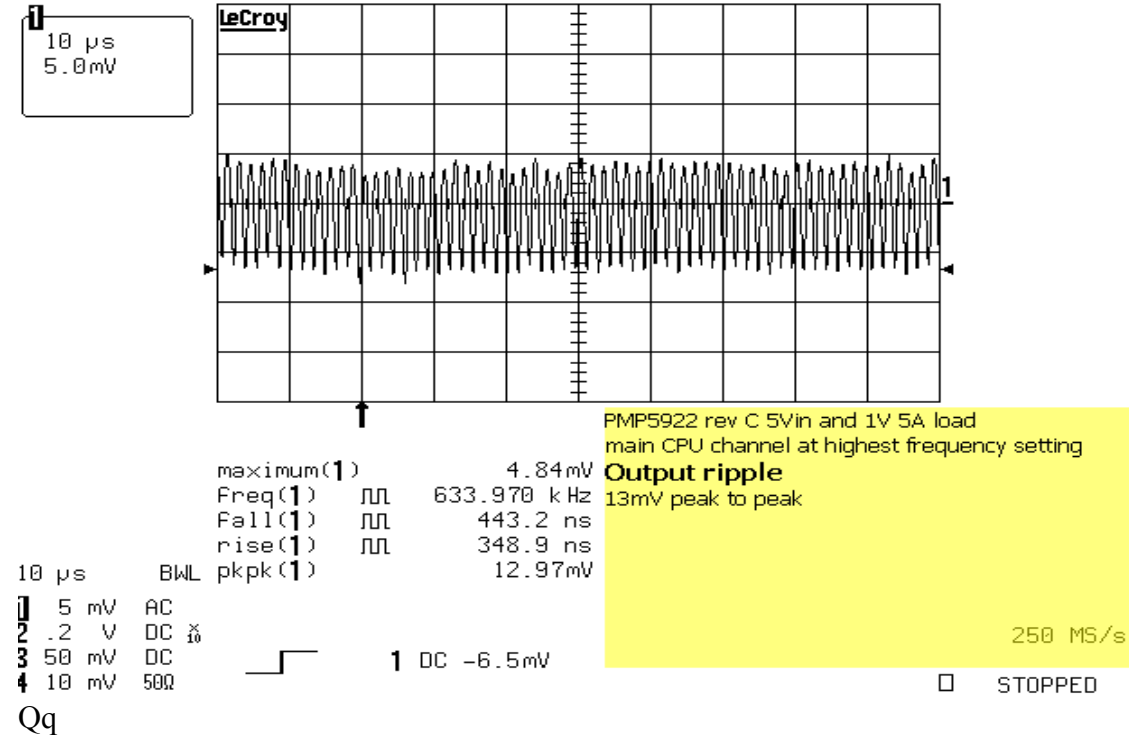
17-Jan-11 Reading Floppy Disk Drive  
20:16:34



CPU Channel waveforms:

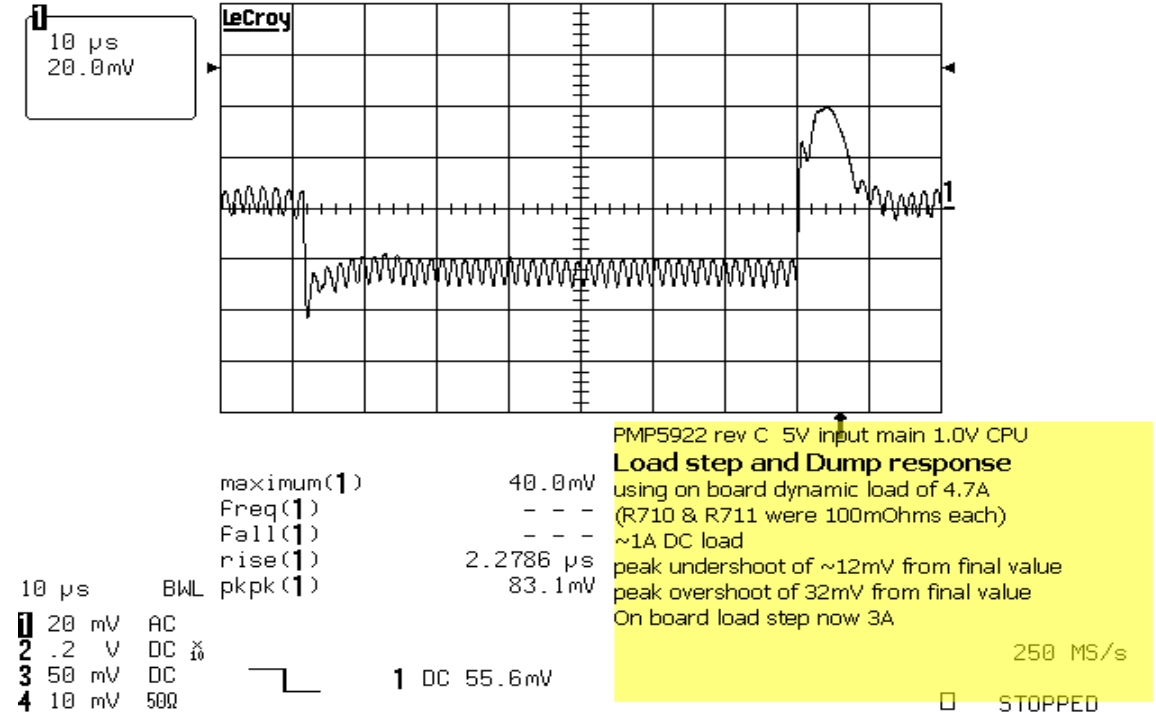
Full Load Ripple:

14-Jan-11 Reading Floppy Disk Drive  
13:37:39



Load step & dump:

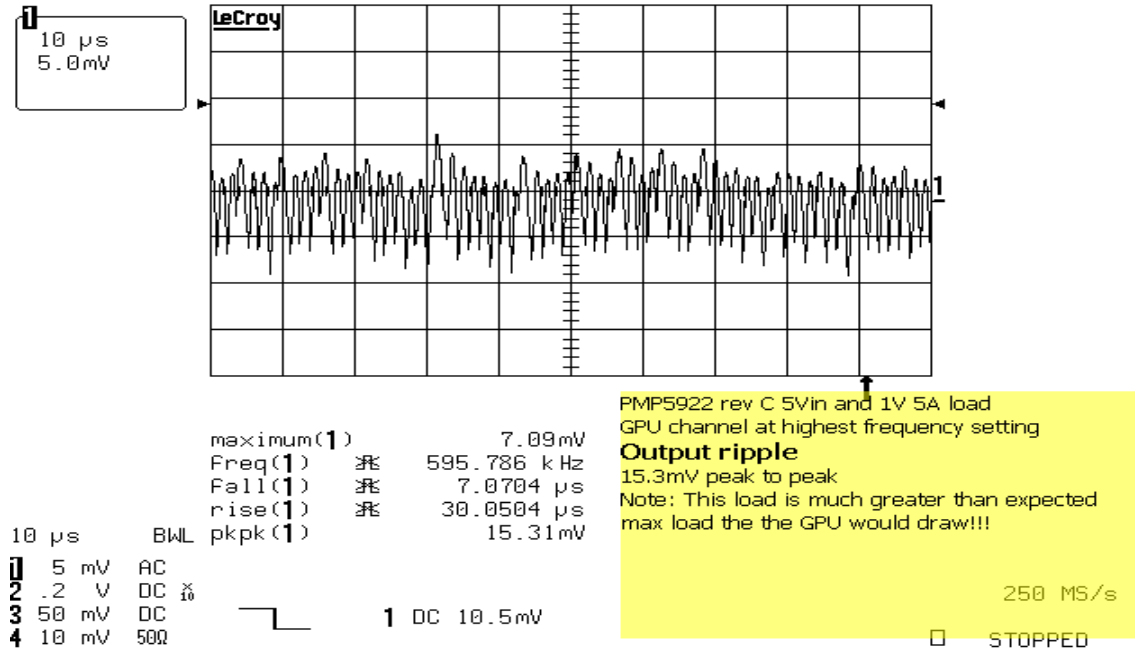
14-Jan-11  
13:46:55



GPU Channel waveforms:  
Beyond Full Load Ripple:



14-Jan-11  
14:12:49

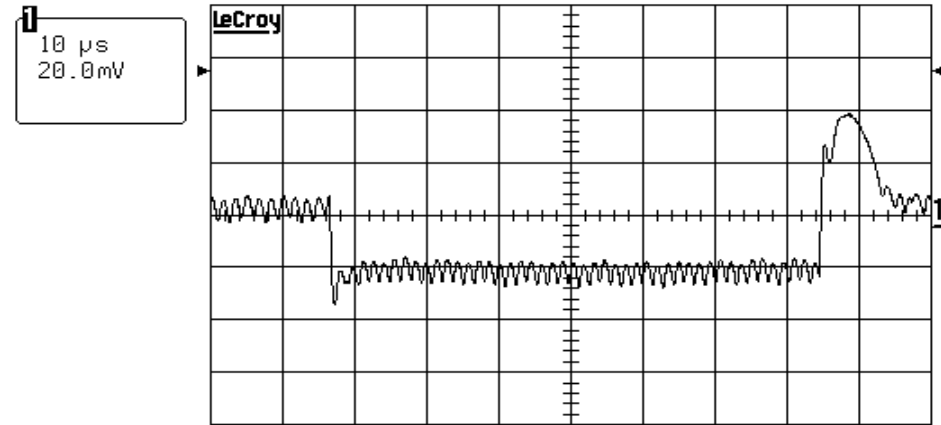


PMP5922 rev C 5Vin and 1V 5A load  
GPU channel at highest frequency setting  
**Output ripple**  
15.3mV peak to peak  
Note: This load is much greater than expected  
max load the the GPU would draw!!!

Qq

Dynamic load: Note: Step and dump well above max expected application load

14-Jan-11  
14:05:31



10 µs	BWL	pkpk(1)	73.1 mV
1	20 mV	AC	
2	.2 V	DC	59.6 mV
3	50 mV	DC	
4	10 mV	50Ω	

maximum(1)	42.7 mV
Freq(1)	- - -
Fall(1)	215.6 ns
rise(1)	207.6 ns
pkpk(1)	73.1 mV

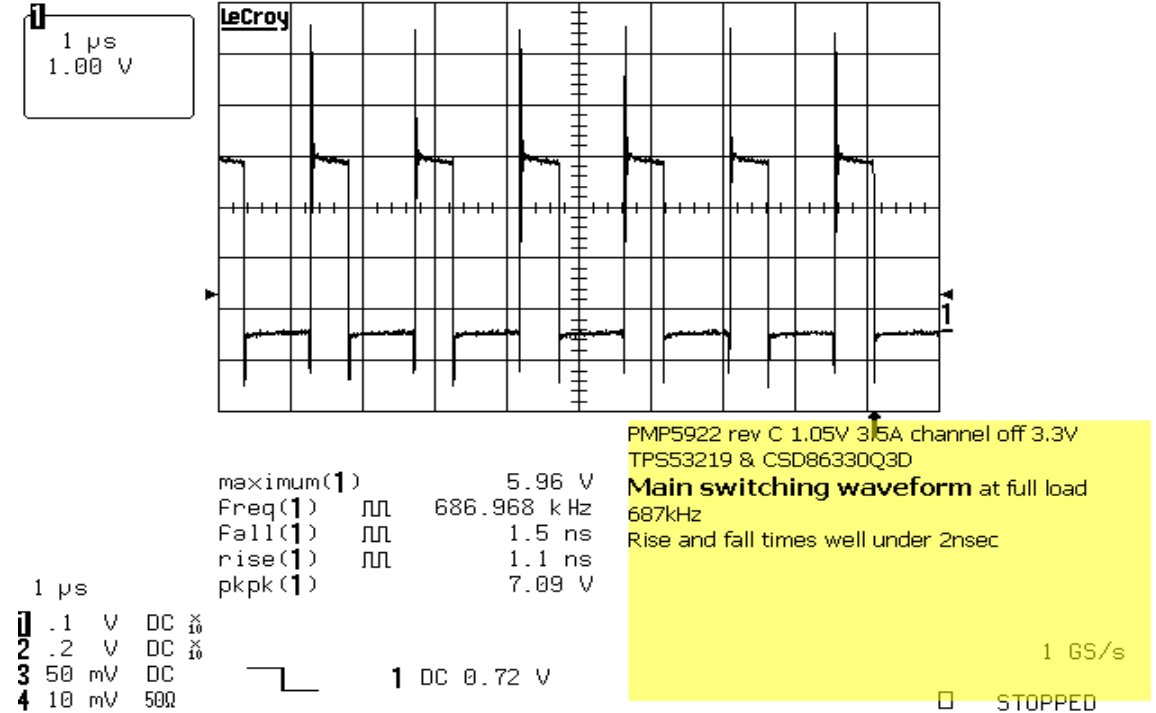
  

PMP5922 rev C 5V input main 1.0V GPU  
**Load step and Dump response**  
 using on board dynamic load of 4.3A  
 (R712 & R713 were 100mOhms each)  
 ~1A DC load  
 peak undershoot of ~10mV from final value  
 peak overshoot of 34mV from final value  
 On board load step now 1.5A

250 MS/s  
SLOW TRIGGER  
NORMAL

Qq  
1.05V 3.5A off 3.3V TPS53219 & CSD86330Q3D  
Main waveform:

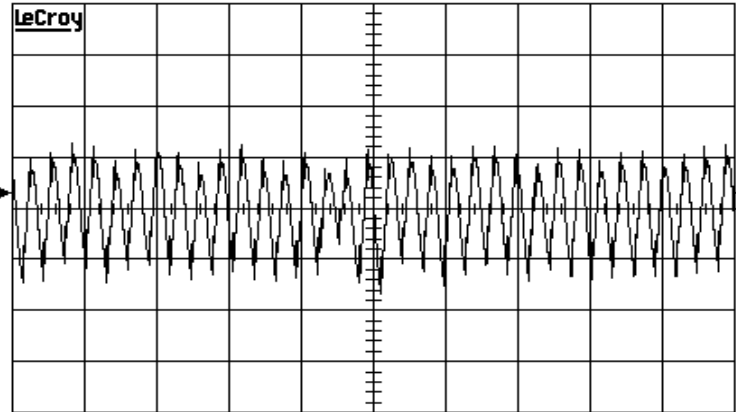
14-Jan-11  
16:10:06



Output ripple:

14-Jan-11  
16:11:40

5  $\mu$ s  
5.0mV



PMP5922 rev C 1.05V 3.5A channel off 3.3V  
 TPS53219 & CSD86330Q3D  
**Output ripple at full load**  
 687kHz  
 15mV peak to peak

maximum(1) 6.72mV  
 Freq(1) 666.953 kHz  
 Fall(1) 2.7717  $\mu$ s  
 rise(1) 423.0 ns  
 pkpk(1) 15.16mV

5  $\mu$ s

BWL

pkpk(1)

15.16mV

- 1 5 mV AC
- 2 .2 V DC  $\times$
- 3 50 mV DC
- 4 10 mV 50 $\Omega$



1 DC 1.7mV

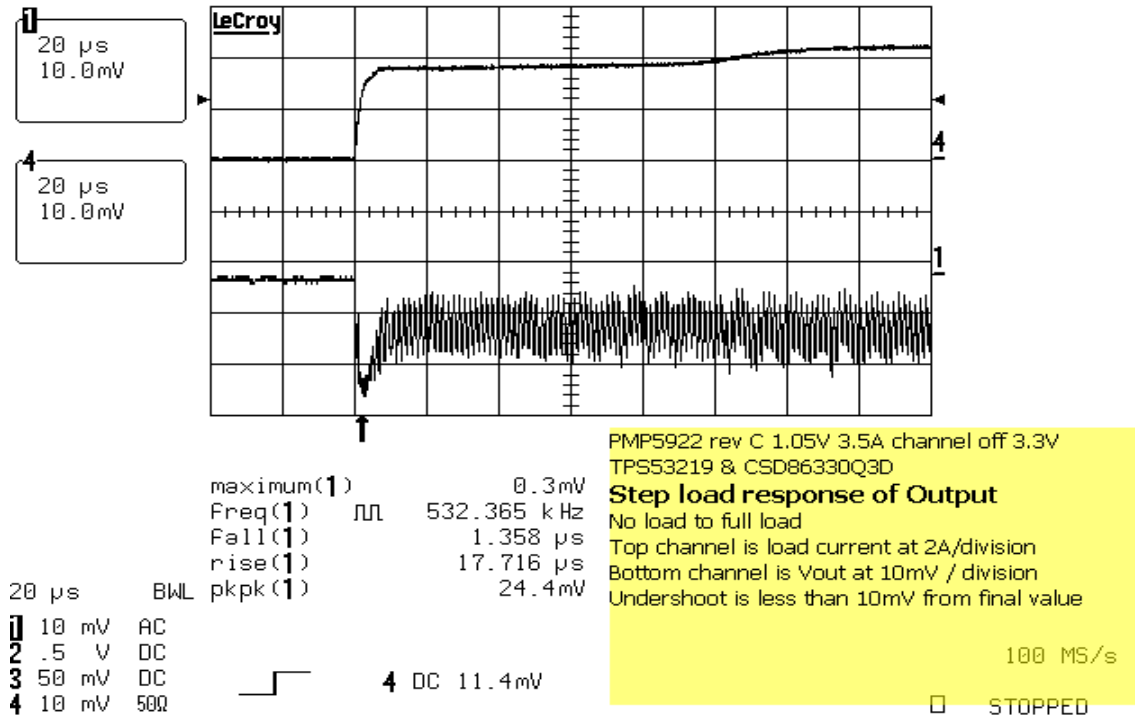
500 MS/s

STOPPED

1.05V 3.5A off 3.3V TPS53219 & CSD86330Q3D continued:  
Step load response:

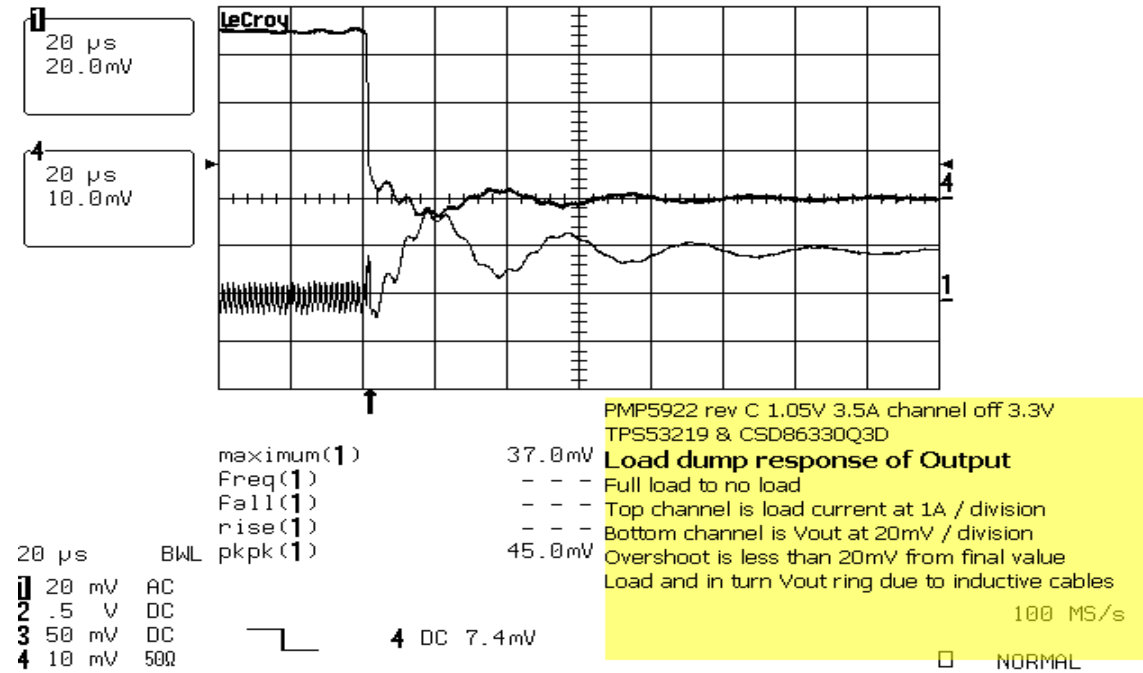
18-Jan-11  
13:26:44

Reading Floppy Disk Drive



Load dump response:

18-Jan-11  
13:38:11

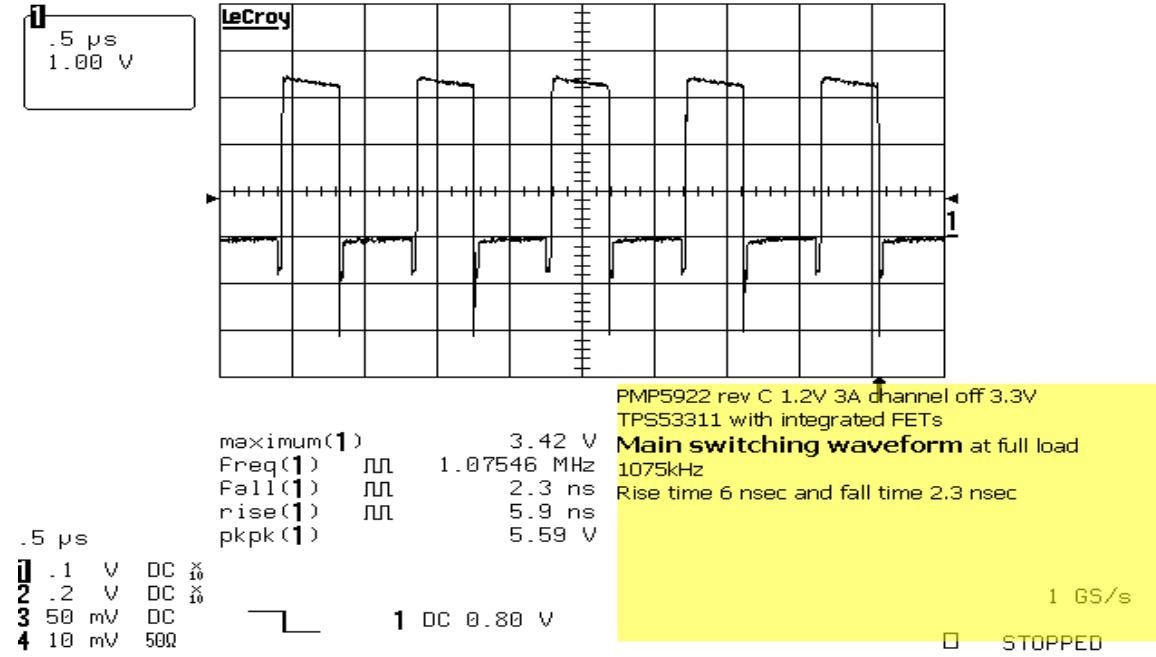


Qq

1.2V Channel: TPS53311 with integrated FETs

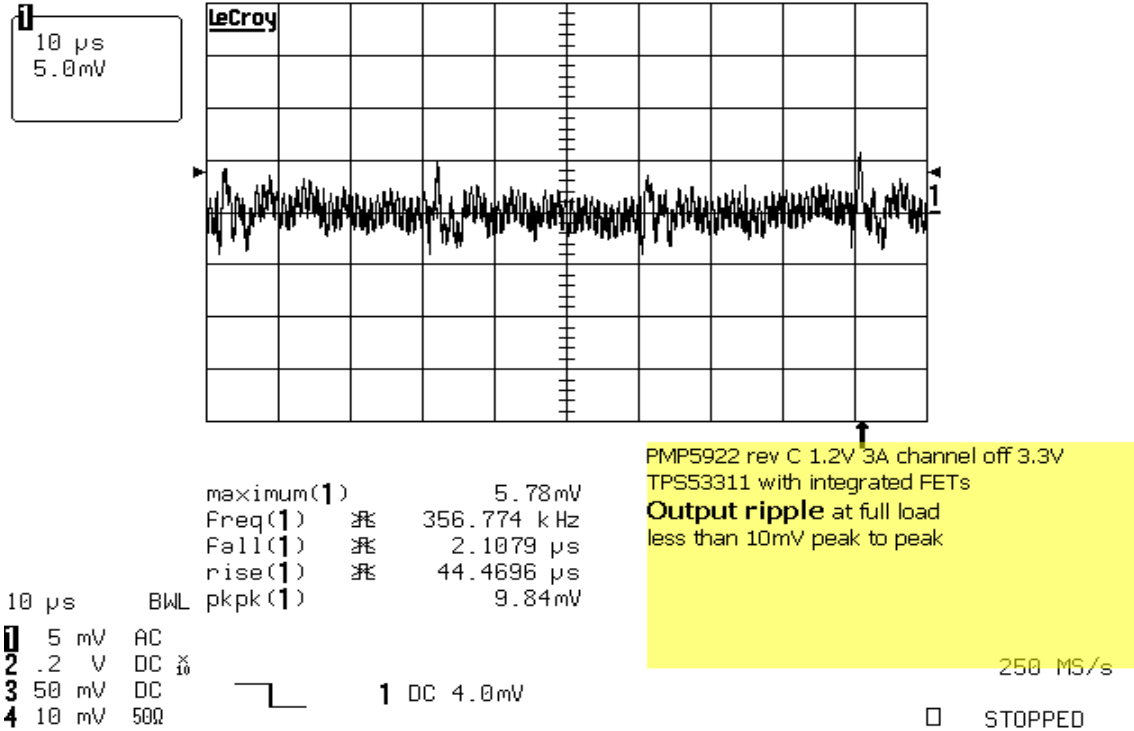
Main waveform:

14-Jan-11  
16:29:25



Output ripple:

14-Jan-11  
16:32:19



10 μs

1 5 mV AC  
2 .2 V DC  
3 50 mV DC  
4 10 mV 50Ω

maximum(1) 5.78mV  
Freq(1) 356.774 kHz  
Fall(1) 2.1079 μs  
rise(1) 44.4696 μs  
pkpk(1) 9.84mV

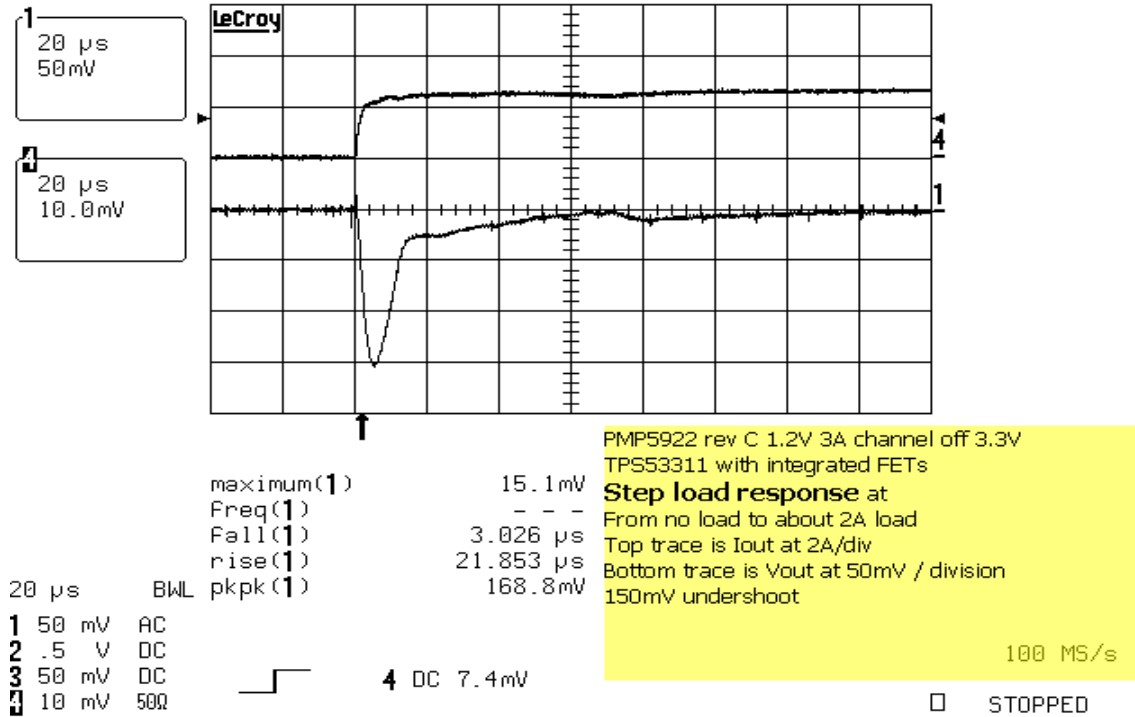
PMP5922 rev C 1.2V 3A channel off 3.3V  
TPS53311 with integrated FETs  
**Output ripple** at full load  
less than 10mV peak to peak

Qq

1.2V Channel: TPS53311 with integrated FETs continued:  
Step load response:

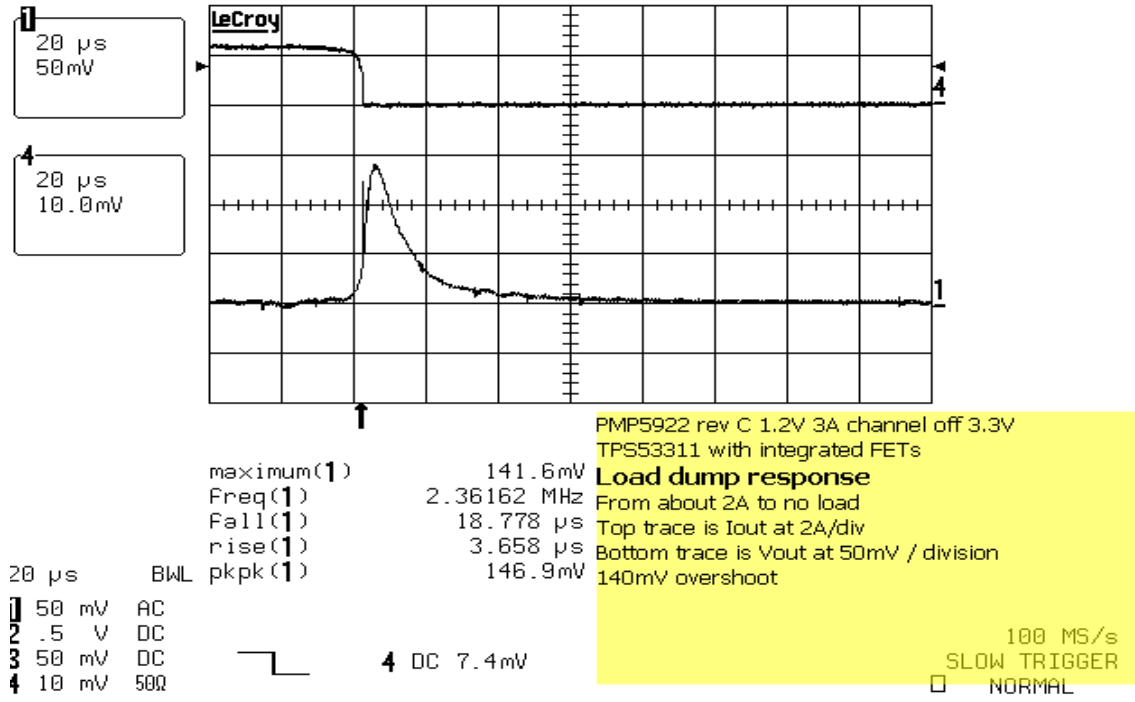


18-Jan-11  
13:57:01



Load dump response:

18-Jan-11  
13:59:51



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