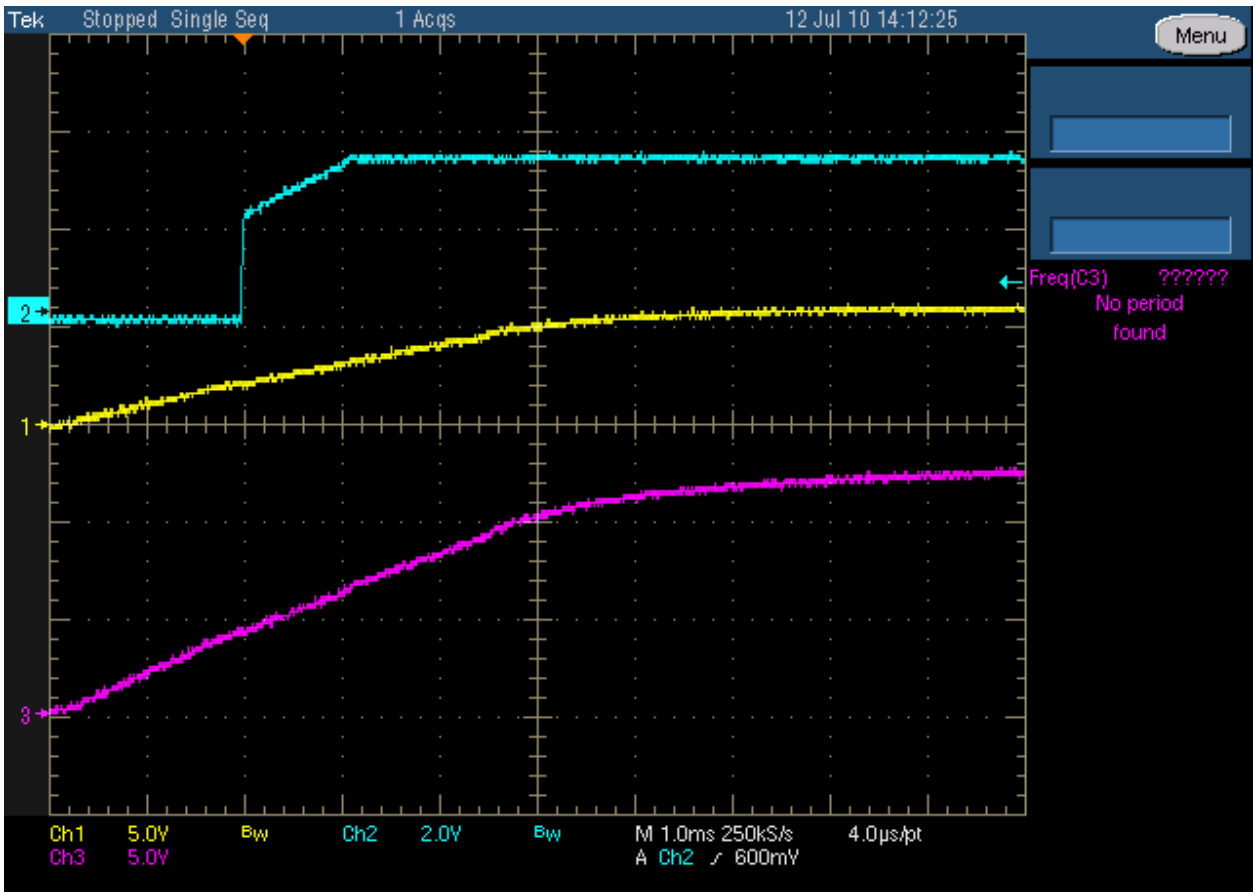
1. Startup

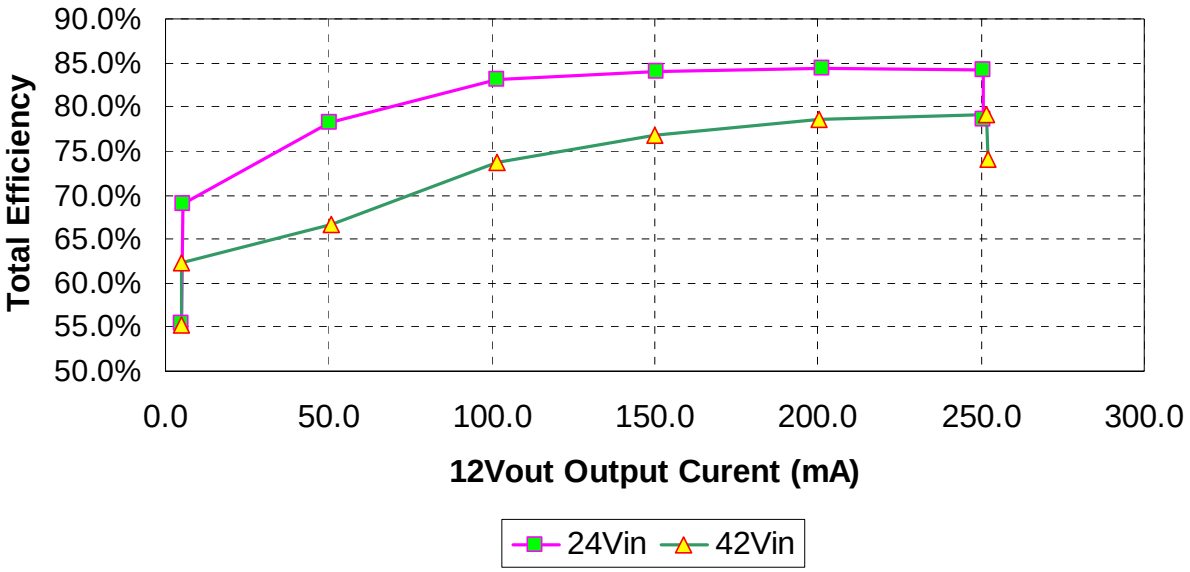
The output voltage at startup is shown in the image below. Input voltage was set to 30V. All outputs were loaded with their nominal loads.

Channel 1: 6V output (5 V/div, 1msec/div).
Channel 2: 3.3V output (2V/div).
Channel 3: 12V output (5V/div).



2. Efficiency

The efficiency data is shown in the tables and graph below.
The measurements were taken at 24Vin and 42Vin and the load for the three outputs was switched on and off accordingly to the different load conditions.

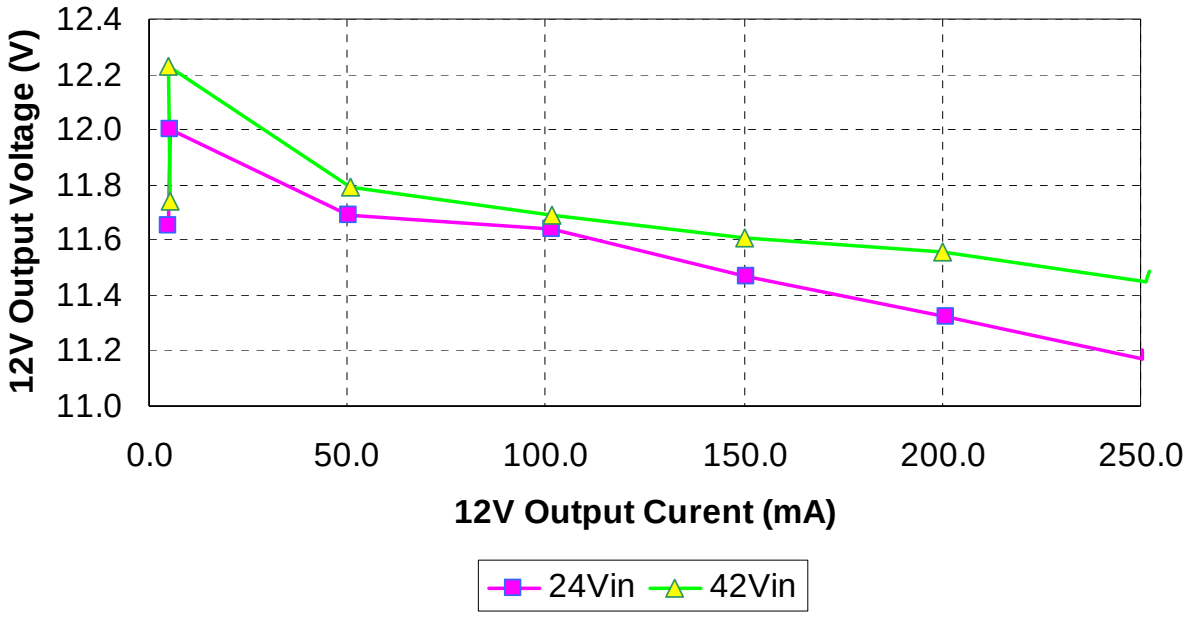


Iout 3.3V (mA)	Iout 6V (mA)	Iout 12V (mA)	Vout 3.3V (V)	Vout 6V (V)	Vout 12V (V)	Pout (mW)	Iin (mA)	Vin (V)	Pin (mW)	Ploss (mW)	Eff. (%)
0.0	0.0	5.00	3.357	6.01	11.65	58.25	4.38	24.01	105.2	46.91	55.4%
0.0	50.1	5.34	3.357	6.00	12.00	364.7	21.92	24.11	528.5	163.8	69.0%
0.0	50.1	50.3	3.357	6.00	11.69	888.6	47.3	24.02	1136	247.5	78.2%
0.0	50.2	101.4	3.357	6.03	11.64	1483	74.5	23.94	1784	300.5	83.1%
0.0	50.2	150.4	3.357	6.00	11.47	2026	100.4	24.00	2410	383.3	84.1%
0.0	50.2	201.1	3.357	6.00	11.32	2578	127.3	24.00	3055	477.5	84.4%
0.0	50.2	250.5	3.357	6.00	11.17	3099	153.3	24.00	3679	579.9	84.2%
99.7	50.2	250.5	3.299	6.00	11.20	3436	182.2	24.00	4373	937.1	78.6%

Iout 3.3V (mA)	Iout 6V (mA)	Iout 12V (mA)	Vout 3.3V (V)	Vout 6V (V)	Vout 12V (V)	Pout (mW)	Iin (mA)	Vin (V)	Pin (mW)	Ploss (mW)	Eff. (%)
0.0	0.0	5.13	3.357	6.01	11.74	60.23	2.58	42.2	108.9	48.65	55.3%
0.0	50.1	4.94	3.357	6.01	12.23	361.5	13.75	42.2	580.3	218.7	62.3%
0.0	50.1	50.8	3.357	6.01	11.79	900.0	32.1	42.1	1351	451.0	66.6%
0.0	50.1	101.6	3.357	6.00	11.69	1488	48.0	42.1	2021	532.5	73.6%
0.0	50.1	150.0	3.357	6.00	11.61	2042	63.2	42.1	2661	618.6	76.7%
0.0	50.2	200.2	3.357	6.00	11.56	2616	79.3	42.0	3331	715.1	78.5%
0.0	50.2	251.4	3.357	6.00	11.45	3180	95.6	42.0	4015	835.5	79.2%
99.7	50.1	252.0	3.299	6.00	11.49	3525	113.6	41.9	4760	1234.8	74.1%

3. Output Voltage Regulation

The output voltage regulation of the 12V versus output load, at the same conditions of the above tables, is shown below.
The 6Vout as well as the 3.3Vout did not show any significant change with the 12V load variation.

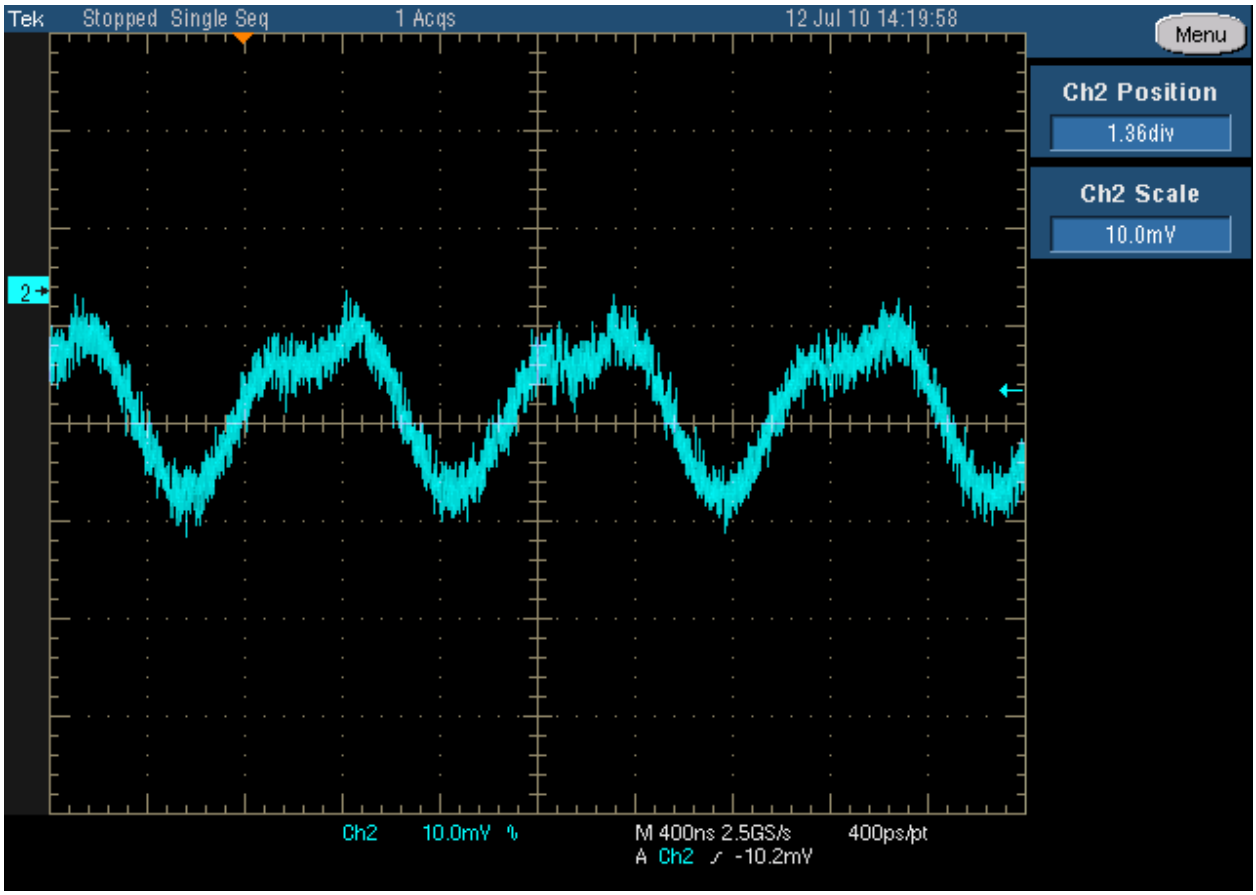


4. Output Ripple Voltage

The ripple voltage waveform measured at the terminal blocks of each output is shown in the plots below. The input was set to 30V while every output was loaded with the nominal load.

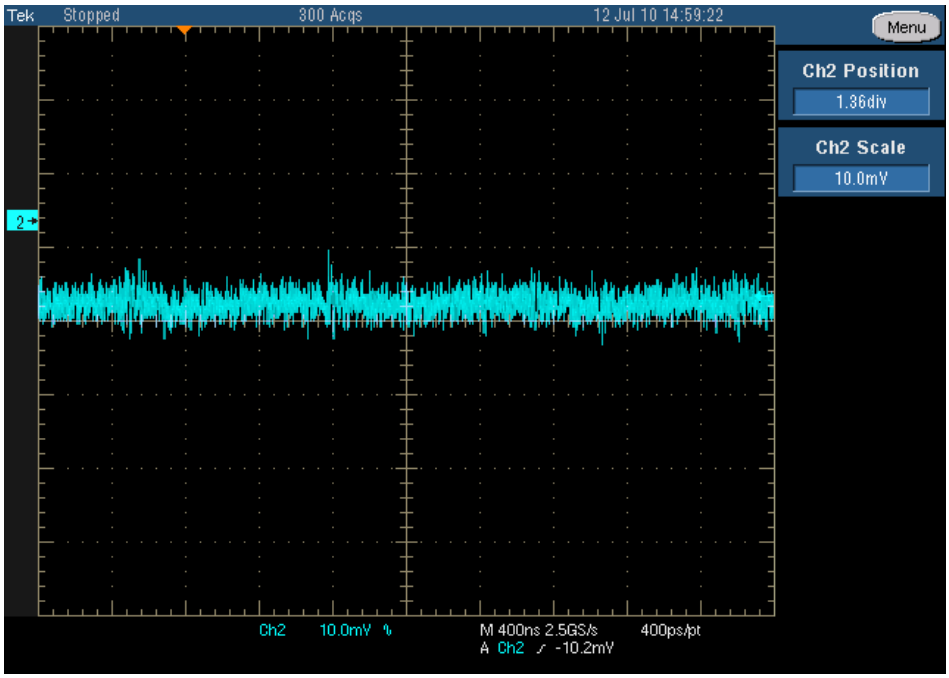
12Vout:

Channel 2: 12V Output voltage (10 mV/div, 400nsec/div, AC coupled, No BW limit).



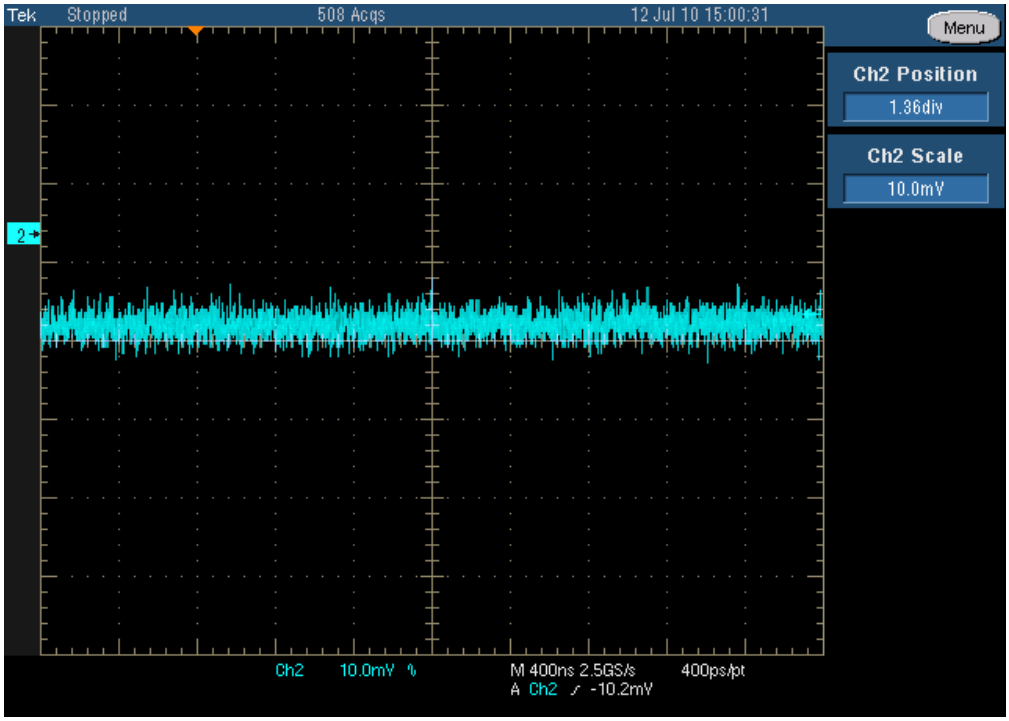
6Vout:

Channel 2: 6V Output voltage (10 mV/div, 400nsec/div, AC coupled, No BW limit).



3.3Vout:

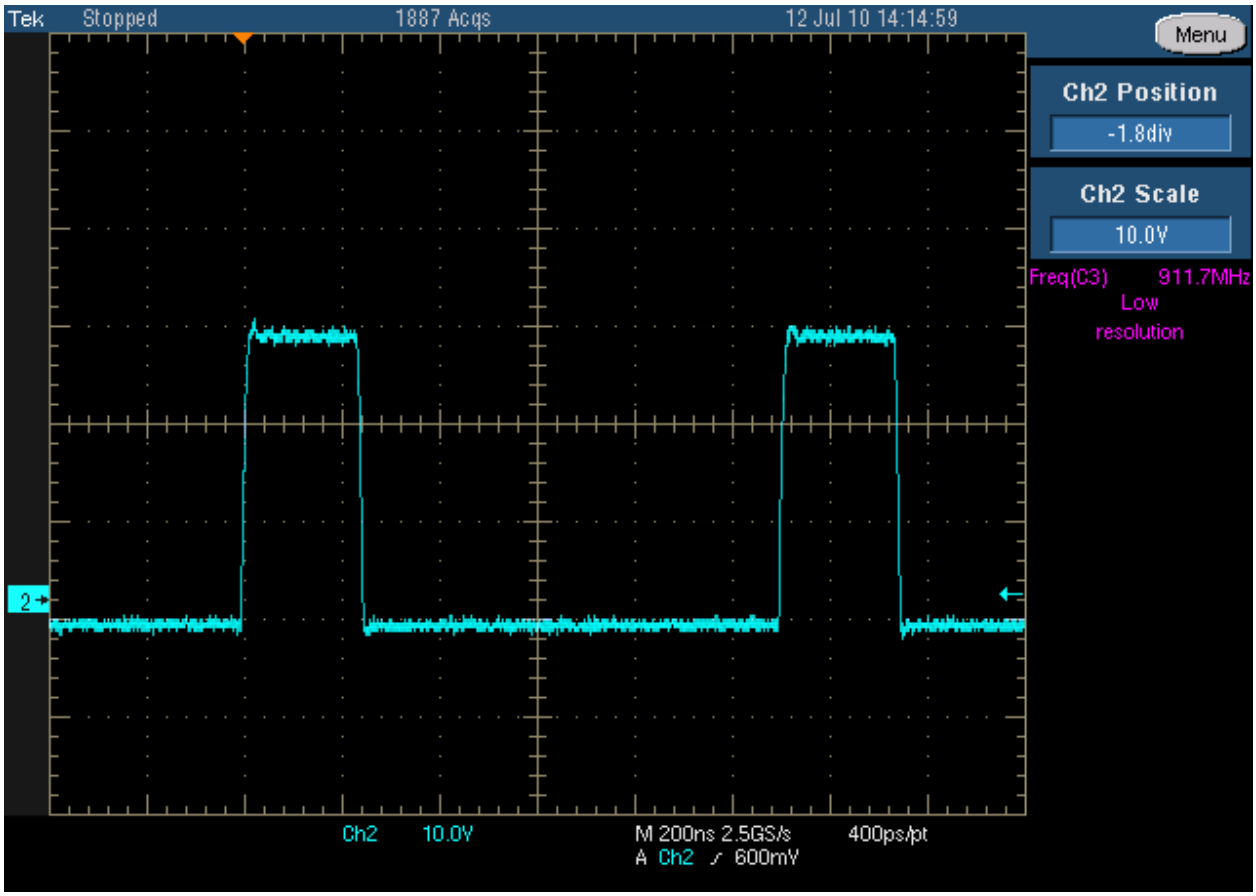
Channel 2: 3.3V Output voltage (10 mV/div, 400nsec/div, AC coupled, No BW limit).



5. Switch-node

The image below shows the switch-node waveform. The conditions were the same as the previous point.

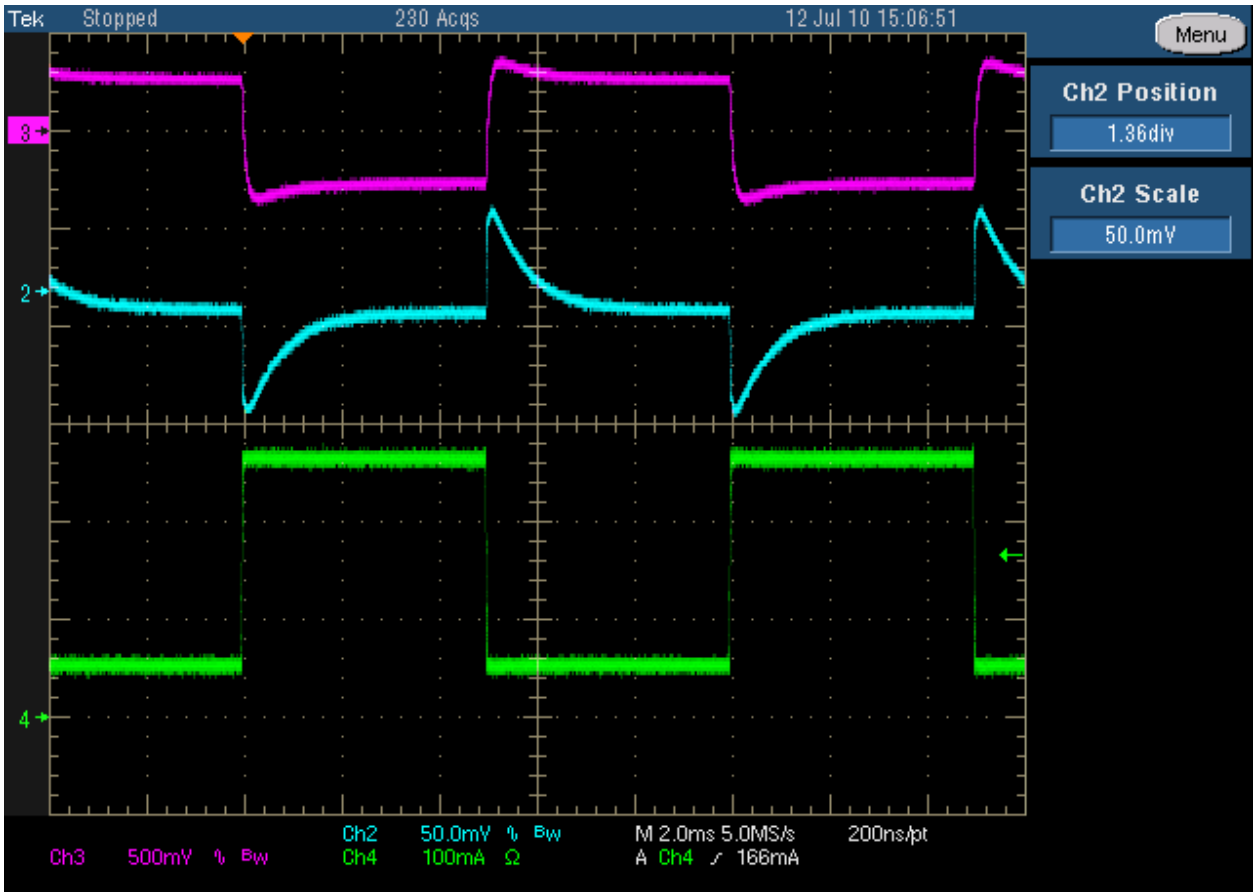
Channel 2: “PH” pin, (10V/div, 200nsec/div), no bandwidth reduction.



6. Transient Response

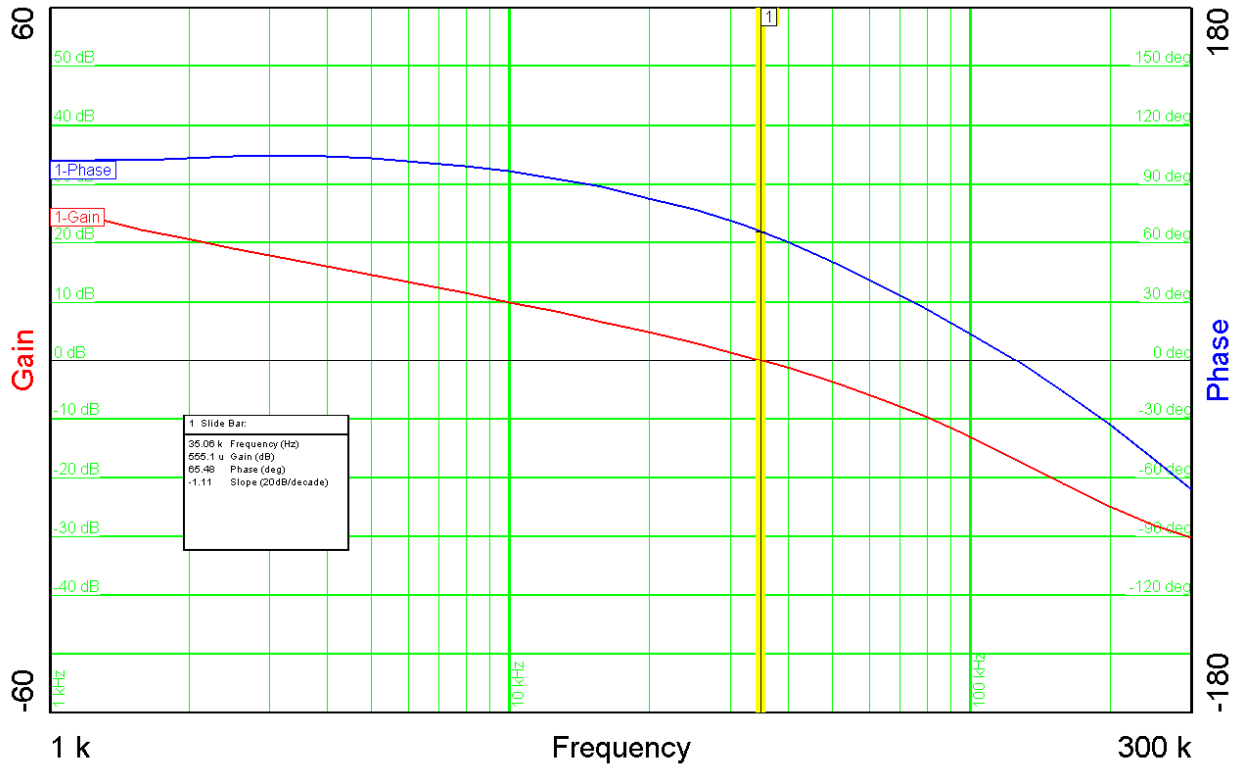
The image below shows the transient response behavior. The input voltage was set to 30V and the load on the 12Vout switched from 50mA to 250mA, while the 6V was loaded with a fixed load of 50mA and the 3.3V with 100mA.

Channel 2: 6V Output Voltage (50mV/div, AC coupled, 2msec/div, 20MHz bandwidth)
Channel 3: 12V Output Voltage (500mV/div, AC coupled, 20MHz bandwidth)
Channel 4: Switched current on the 12V output (100mA/div, DC coupled)



7. Loop Analysis

The graph below shows the loop measurement at 30Vin, full load on all outputs.
The crossover frequency was 35 KHz, the phase margin 65.5 deg. and the gain margin 17dB.



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