

1 Startup

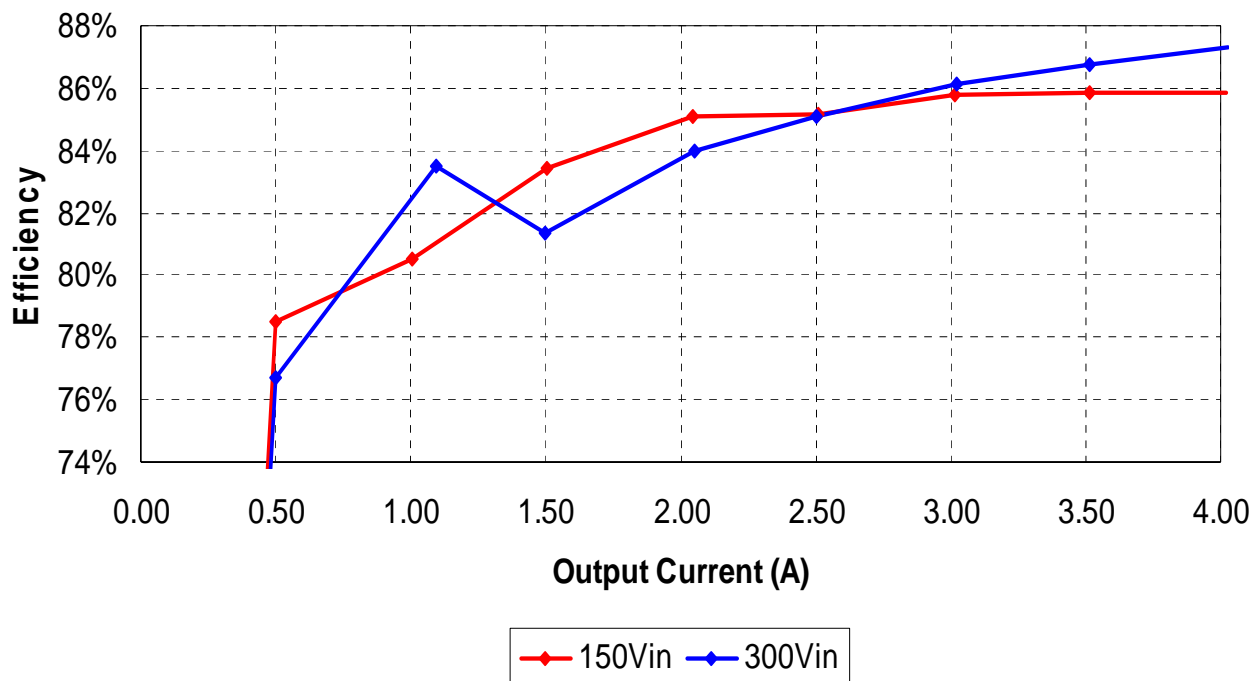
The output voltage at startup is shown in the image below. Input voltage is 150Vdc. The output was unloaded.

Channel 3 shows the 15V output (5 V/div, 4ms/div).



2 Efficiency

The efficiency data is shown in the tables and graph below. For simplicity and accuracy of measurements, the data was measured using a DC input. The input power was measured on TP1 and TP2, and losses in the diode (D2) are included in measured results.

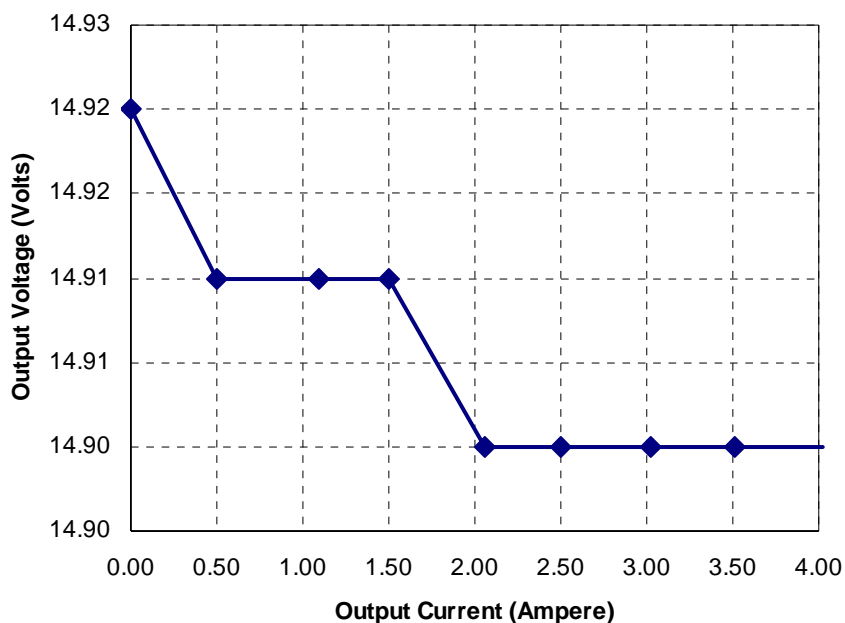


Iout (A)	Vout (V)	Pout (W)	Iin (mA)	Vin (V)	Pin (W)	Ploss (W)	Eff
0.000	14.92	0.00	0.92	299.6	0.27563	0.2756	0
0.501	14.91	7.47	32.53	299.5	9.74	2.27	76.7%
1.093	14.91	16.30	65.0	300.4	19.53	3.23	83.5%
1.497	14.91	22.32	91.4	300.3	27.45	5.13	81.3%
2.054	14.90	30.60	121.4	300.3	36.46	5.85	83.9%
2.502	14.90	37.28	146.0	300.2	43.83	6.55	85.1%
3.023	14.90	45.04	174.3	300.1	52.31	7.26	86.1%
3.515	14.90	52.37	201.2	300.1	60.38	8.01	86.7%
4.026	14.90	59.99	229.0	300.0	68.70	8.71	87.3%

Iout (A)	Vout (V)	Pout (W)	Iin (mA)	Vin (V)	Pin (W)	Ploss (W)	Eff
0.000	14.93	0.00	1.38	150.6	0.20783	0.2078	0
0.502	14.92	7.48	63.30	150.6	9.53	2.05	78.5%
1.005	14.92	14.99	123.7	150.5	18.62	3.62	80.5%
1.502	14.91	22.39	178.5	150.4	26.85	4.45	83.4%
2.042	14.91	30.45	238.1	150.3	35.79	5.34	85.1%
2.512	14.91	37.45	292.0	150.6	43.98	6.52	85.2%
3.016	14.91	44.97	348.0	150.6	52.41	7.44	85.8%
3.513	14.91	52.38	405.0	150.6	60.99	8.61	85.9%
4.023	14.91	59.98	464.0	150.6	69.88	9.90	85.8%

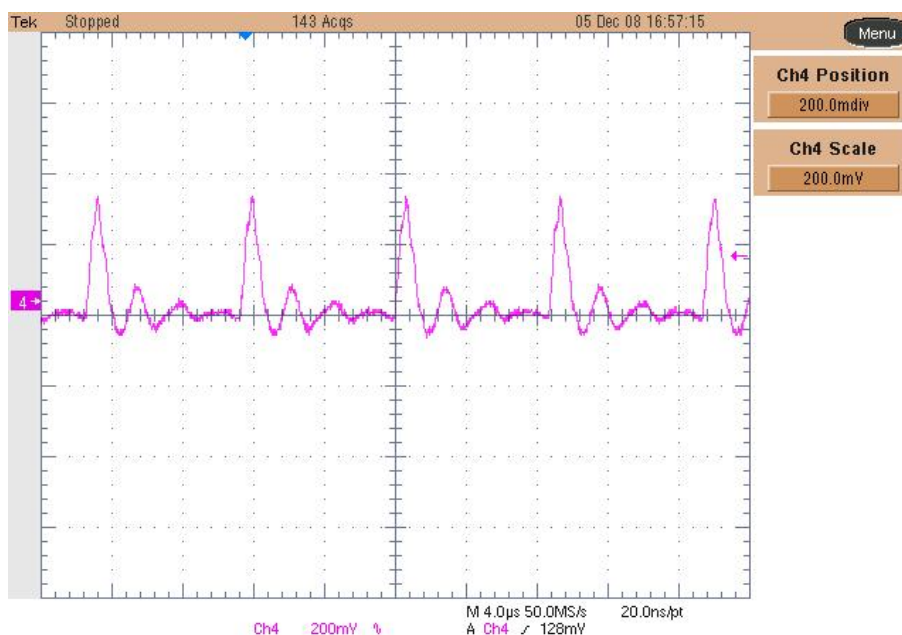
3 Output Voltage Regulation

The output voltage versus load current is plotted below.
The input voltage was set to 300Vdc.



4 Output Ripple Voltage

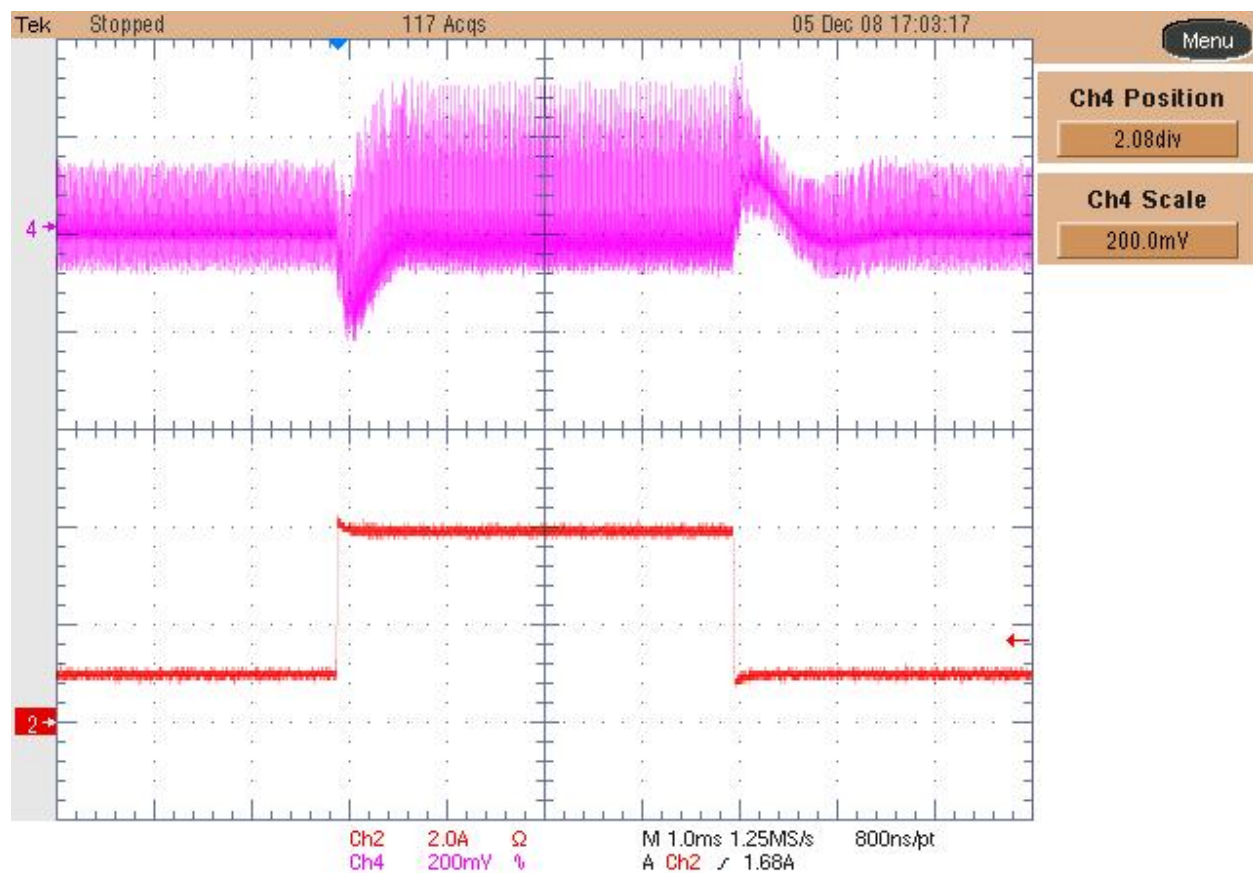
The output ripple voltage is shown in the plots below. The top image shows the ripple during burst mode operation where the input was set to 300Vdc and the load was set to 0.15A. The bottom image shows the ripple during quasi-resonant mode operation where the input voltage was unchanged and the load was 4A.



5 Load Transient

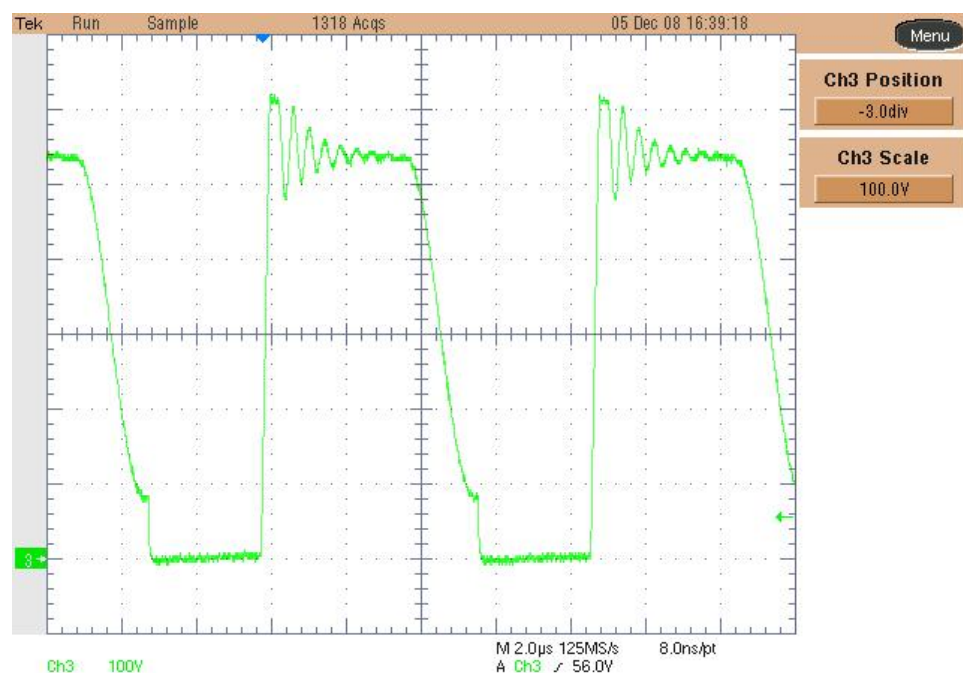
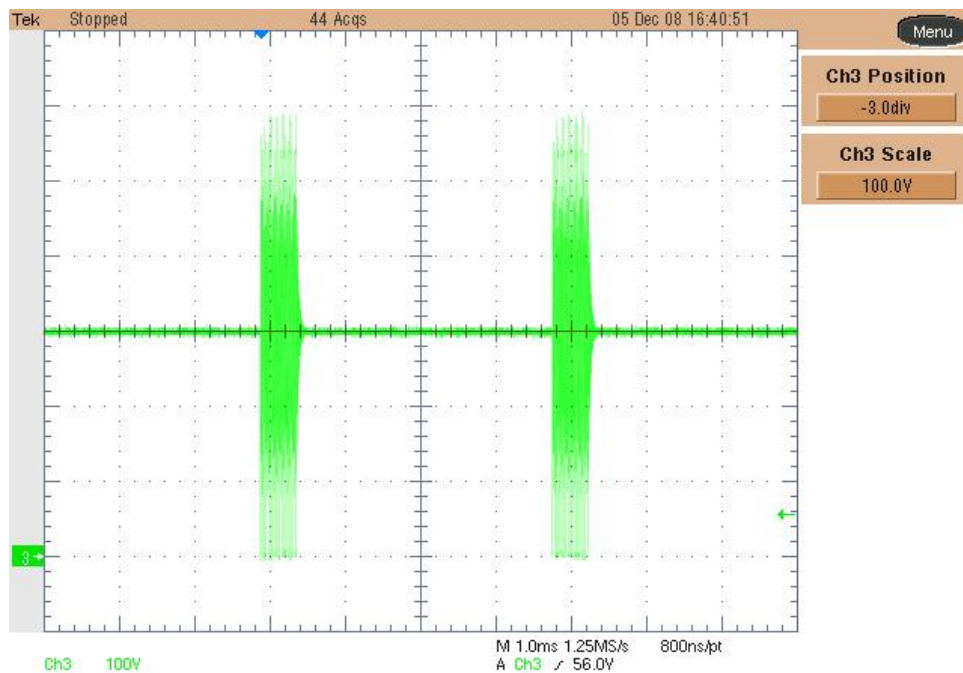
The image below shows the response to 1A to 4A load transient on the output voltage. The input voltage was set to the 300Vdc.

Channel 4: Vout (ac coupled) 200mV/div, Channel 2: Iout 2A/div., 1ms/div



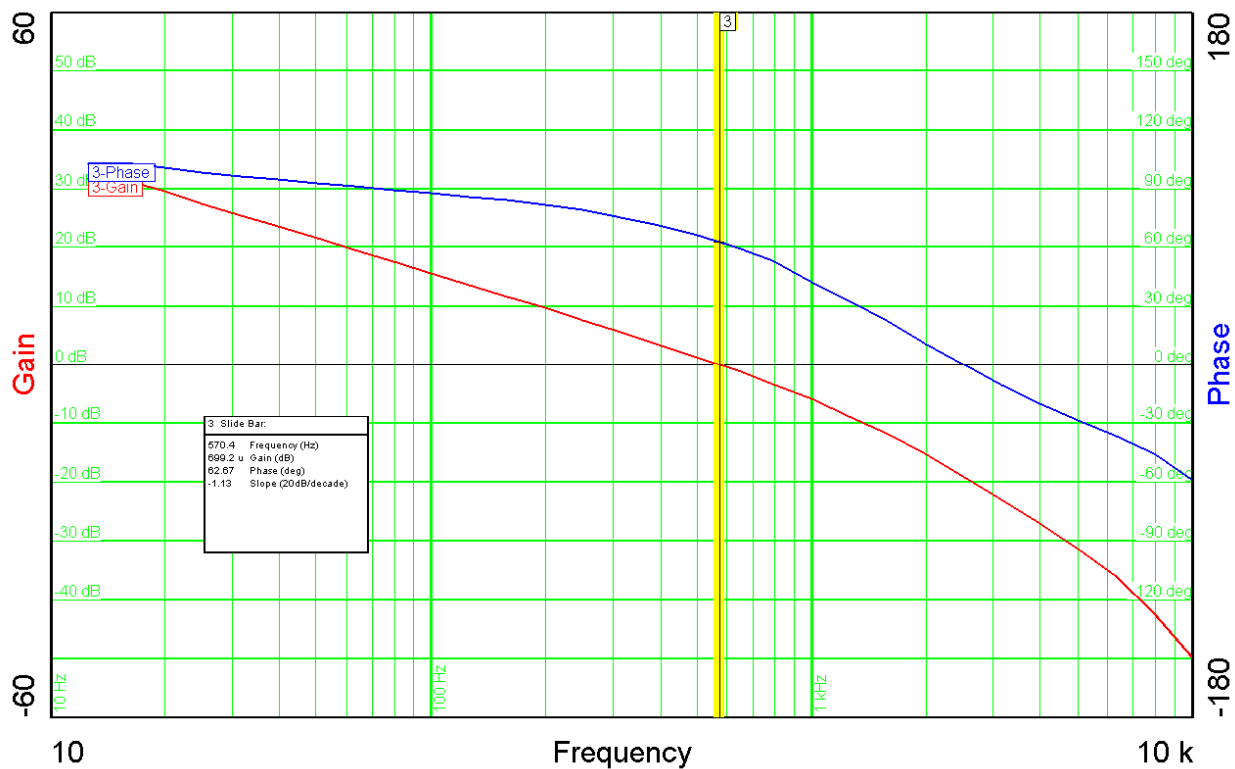
6 Drain Waveforms

The images below show the drain to source voltage on Q1. The top image shows burst mode operation, and was taken at 300Vdc input, and 0.15A load. The bottom image shows QR mode operation and was taken with the same input voltage and 4A load.



7 Loop Response

The image below shows the loop response of the converter measured with a 300Vdc input, and a full load. Phase margin is 62.67 deg., crossover frequency is 570.4Hz and gain margin 19.1dB.



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