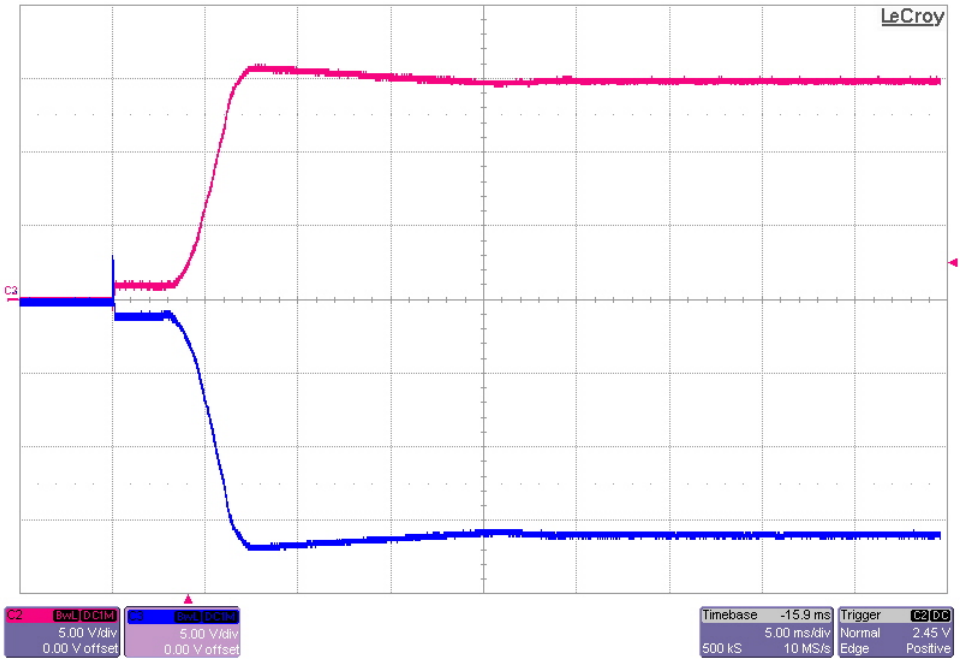
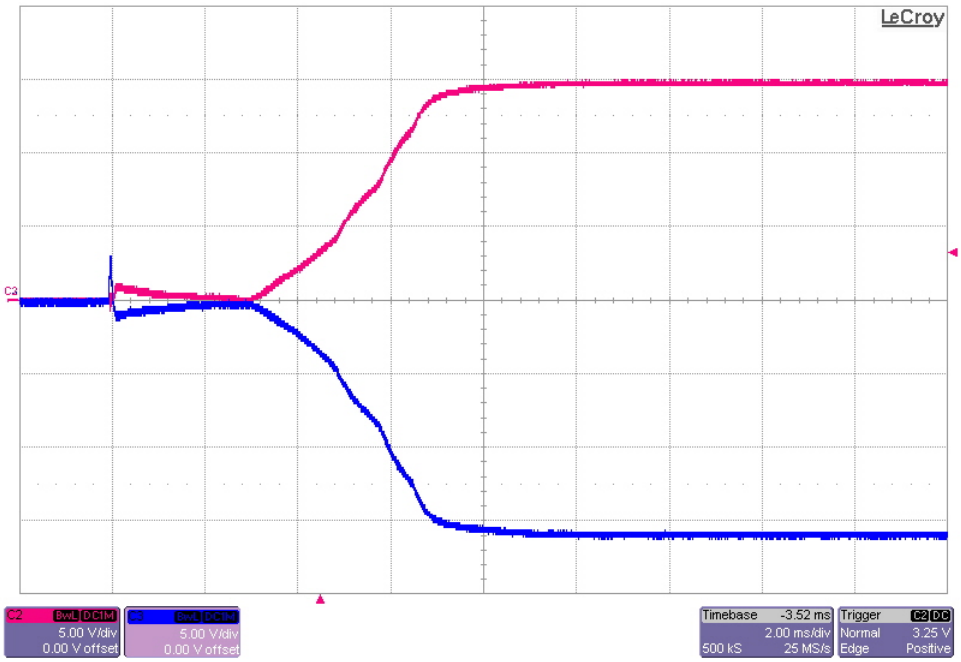
1 Startup

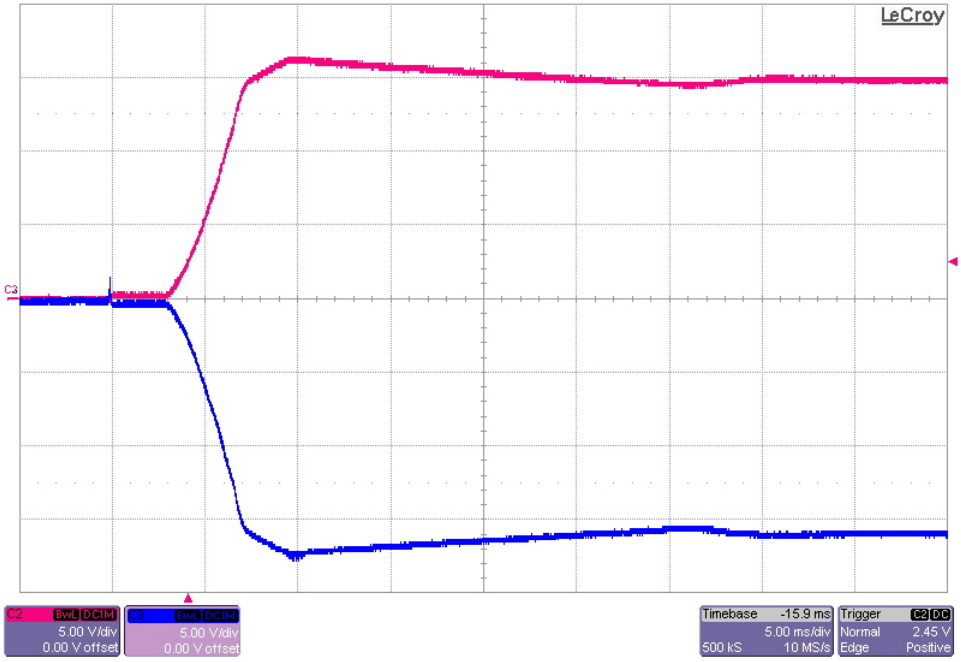
The photo below shows the +/-15V output voltage startup waveform after the application of 30Vdc. The outputs were loaded to 0A. (5V/DIV, 5mS/DIV)



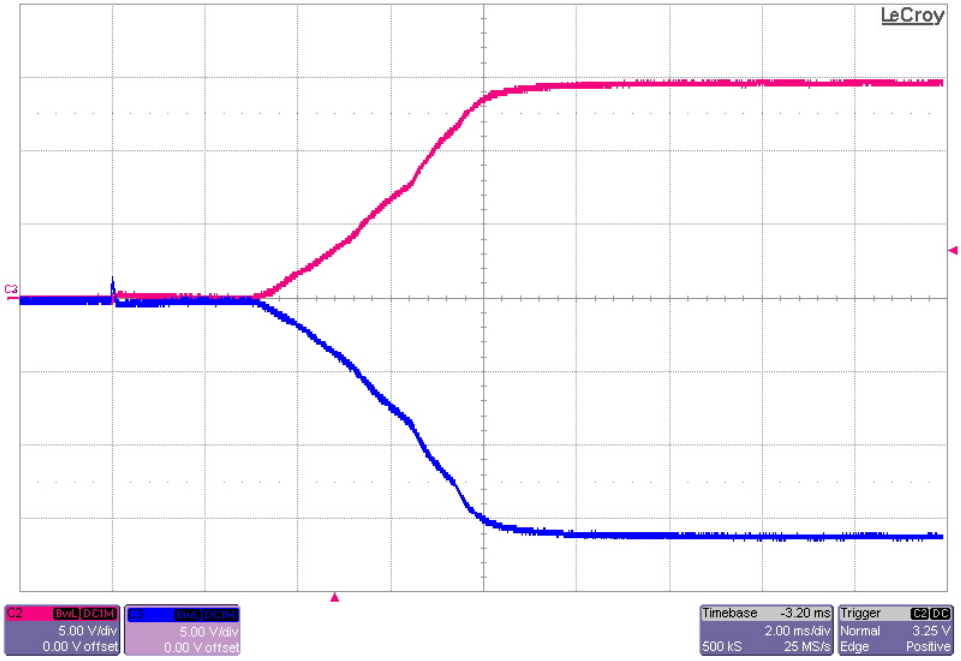
The photo below shows the +/-15V output voltage startup waveform after the application of 30Vdc. The outputs were loaded to 200A each. (5V/DIV, 2mS/DIV)



The photo below shows the +/-15V output voltage startup waveform after the application of 12Vdc. The outputs were loaded to 0A. (5V/DIV, 5mS/DIV)

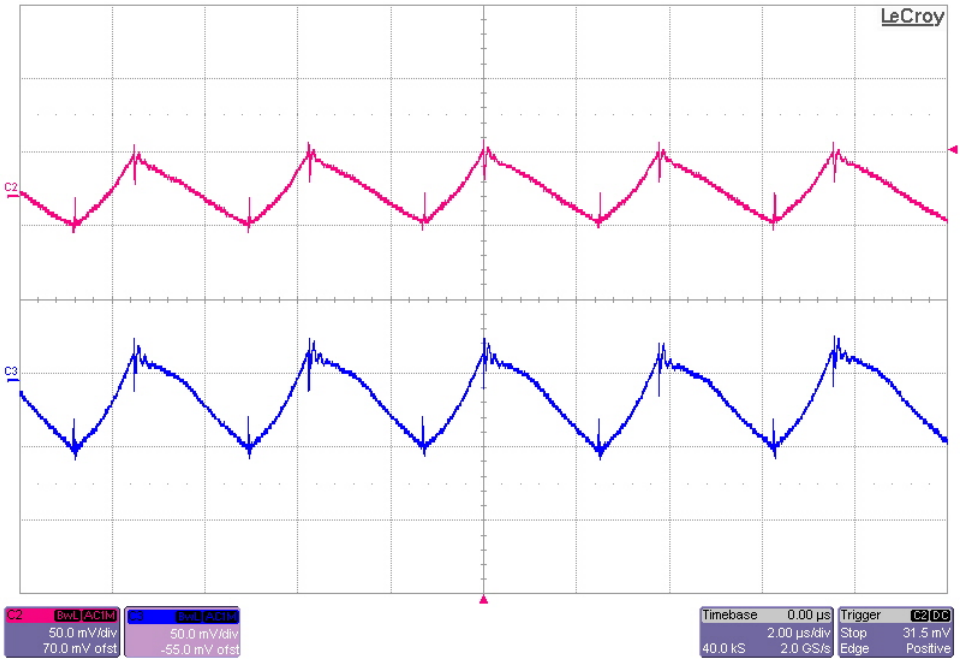


The photo below shows the +/-15V output voltage startup waveform after the application of 12Vdc. The outputs were loaded to 200A each. (5V/DIV, 2mS/DIV)

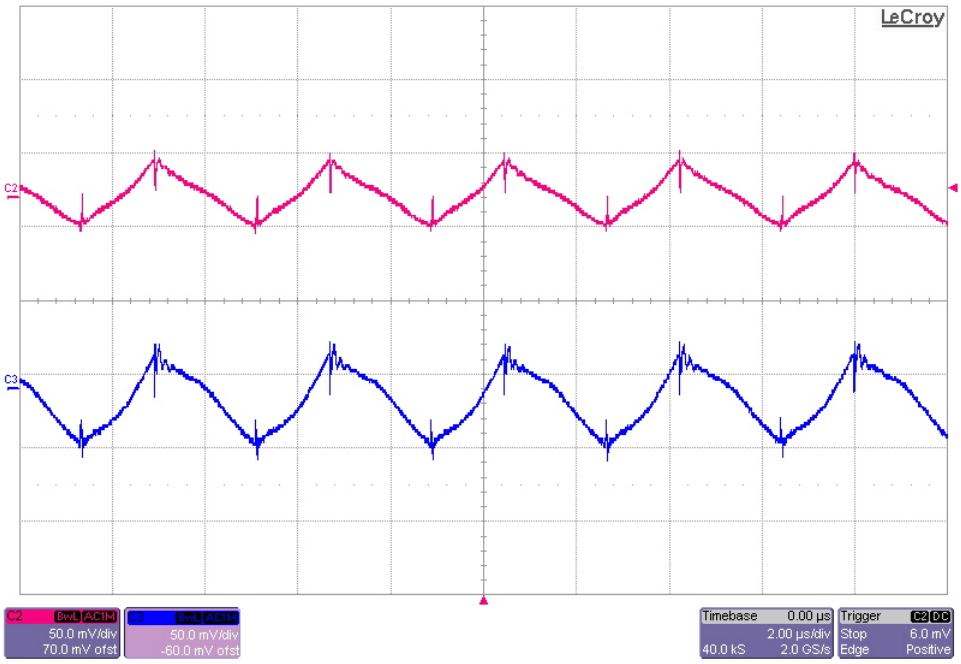


2 Output Ripple Voltage

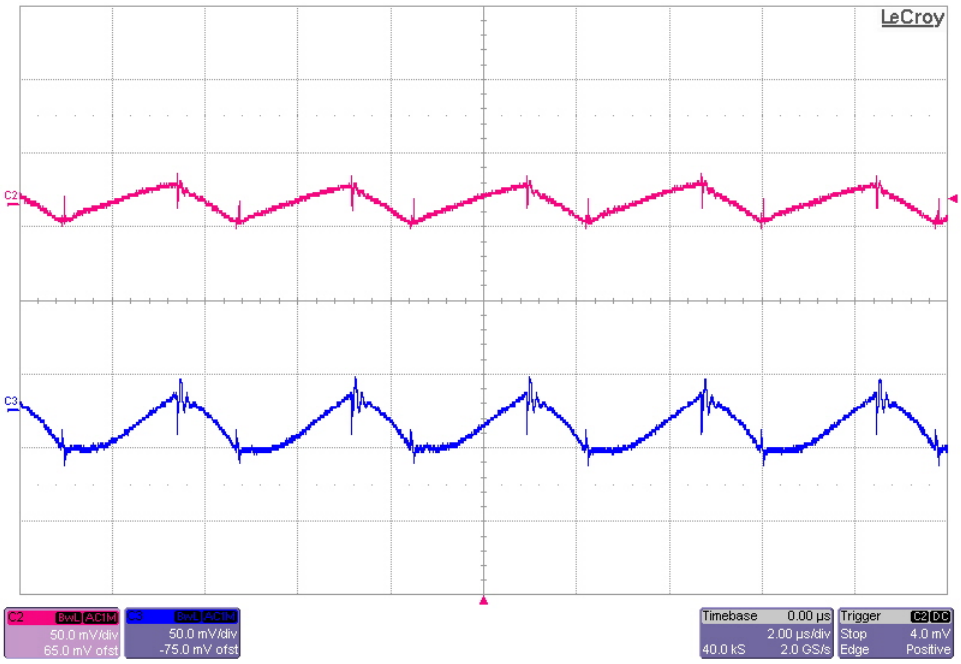
The +/-15V output ripple voltage is shown in the figure below (+15V on top, -15V on bottom). The image was taken with the output loaded to 200mA each and the input voltage set to 9Vdc. (50mV/DIV, 2uS/DIV)



The +/-15V output ripple voltage is shown in the figure below (+15V on top, -15V on bottom). The image was taken with the output loaded to 200mA each and the input voltage set to 12Vdc. (50mV/DIV, 2uS/DIV)

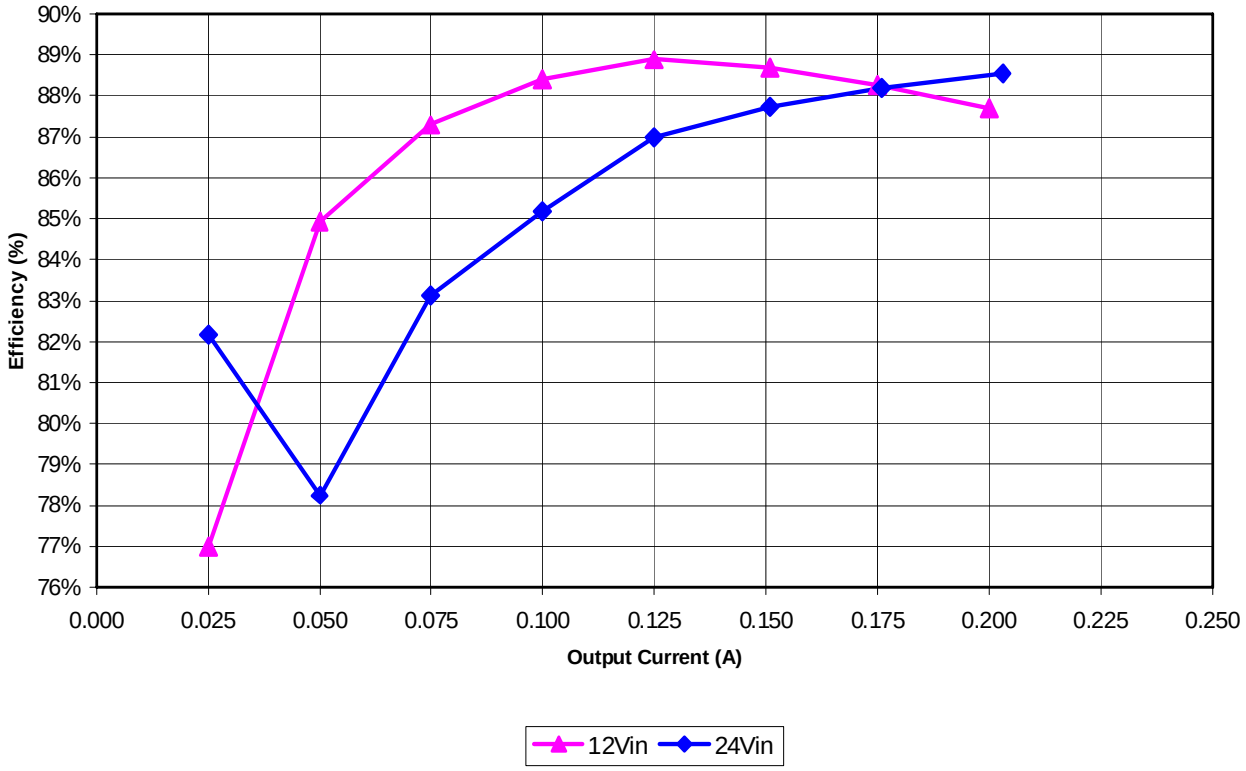


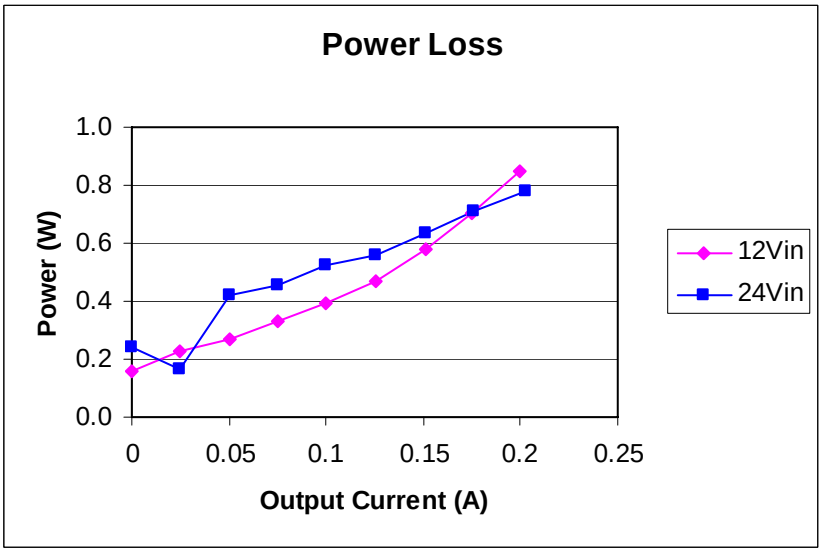
The +/-15V output ripple voltage is shown in the figure below (+15V on top, -15V on bottom). The image was taken with the output loaded to 200mA each and the input voltage set to 30Vdc. (50mV/DIV, 2uS/DIV)



3 Efficiency

The converter efficiency is shown in the figure below. The outputs were loaded equally. The converter is operating in DCM for Vin = 24V and 25mA out.





4 Cross Regulation

The output voltage regulation is shown in the table below for balanced load.

Vin	Iin	Vout1	Iout1	Vout2	Iout2	Po
12.1185	0.013	15.03	0.000	-15.04	0.000	0.000
12.0540	0.081	15.01	0.025	-15.06	0.025	0.752
12.0404	0.147	14.95	0.050	-15.12	0.050	1.504
12.0764	0.214	14.97	0.075	-15.11	0.075	2.256
12.0606	0.282	14.97	0.100	-15.10	0.100	3.007
12.0477	0.351	14.95	0.125	-15.12	0.125	3.759
12.0325	0.424	14.90	0.151	-15.17	0.150	4.525
12.0657	0.497	14.85	0.175	-15.22	0.177	5.293
12.0509	0.572	14.79	0.200	-15.28	0.202	6.045

Vin	Iin	Vout1	Iout1	Vout2	Iout2	Po
24.0890	0.010	15.04	0.000	-15.04	0.000	0.000
24.0829	0.038	15.00	0.025	-15.08	0.025	0.752
24.0261	0.080	15.01	0.050	-15.07	0.050	1.504
24.0191	0.113	14.98	0.075	-15.10	0.075	2.256
24.0116	0.147	14.95	0.100	-15.12	0.100	3.007
24.0044	0.180	14.95	0.125	-15.12	0.125	3.759
24.0963	0.214	14.96	0.151	-15.10	0.150	4.524
24.0889	0.249	14.97	0.176	-15.09	0.176	5.291
24.0822	0.284	14.97	0.203	-15.09	0.200	6.057

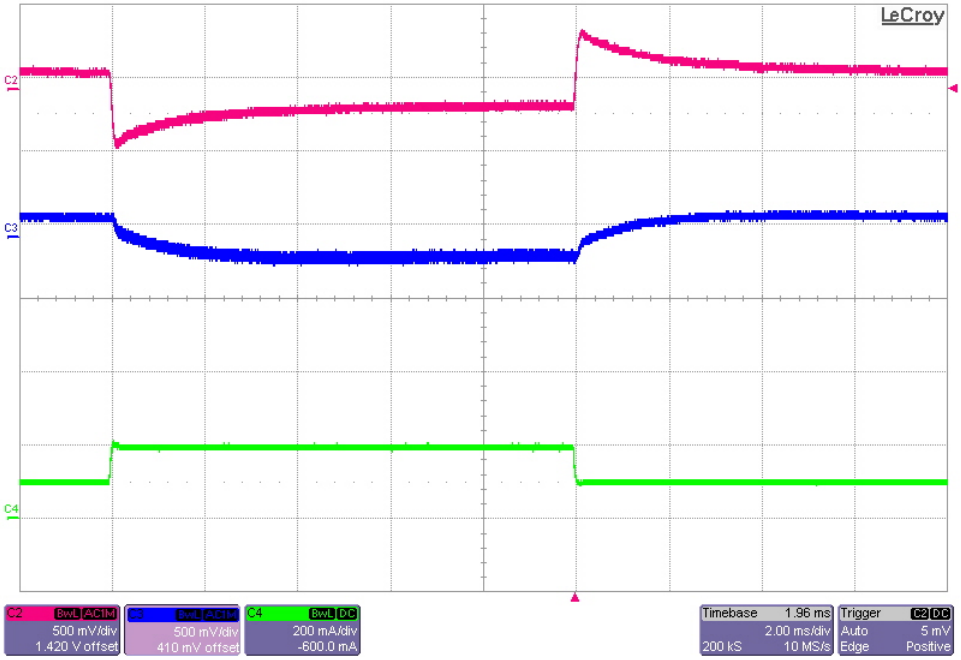
Cross Reg Data

Vin	Iin	Vout1	Iout1	Vout2	Iout2	Po	12Vin Eff	Pin	12Vin Ploss
12.0953	0.351	14.67	0.202	-15.40	0.050	3.733	0.879	4.245	0.512
12.1034	0.311	14.54	0.200	-15.53	0.025	3.296	0.876	3.764	0.468
12.1082	0.288	14.27	0.202	-15.80	0.010	3.041	0.872	3.487	0.447
12.1147	0.257	13.27	0.202	-16.80	0.000	2.681	0.861	3.113	0.433

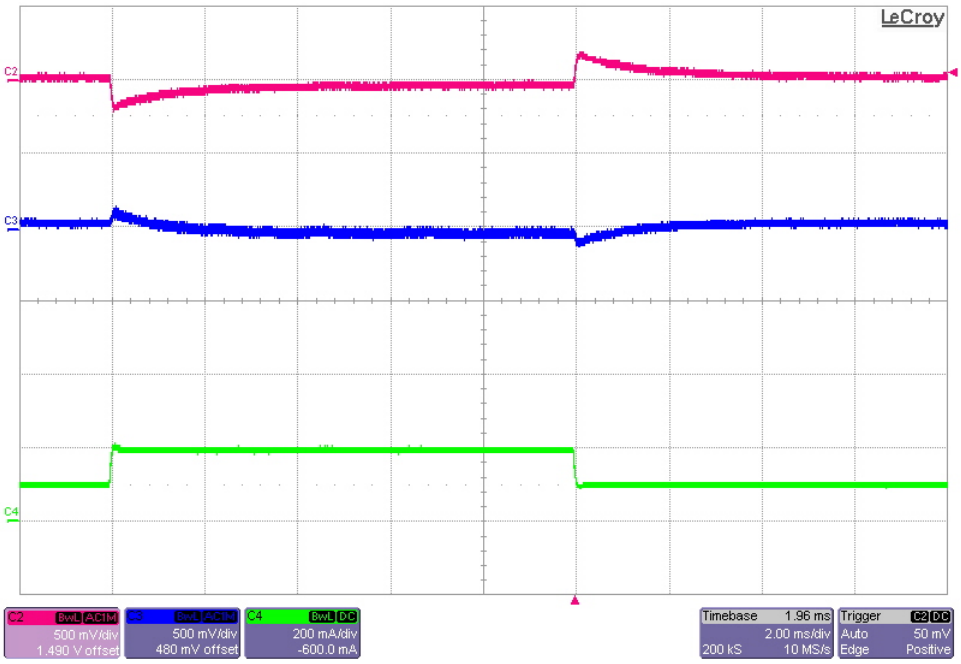
Vin	Iin	Vout1	Iout1	Vout2	Iout2	Po	24Vin Eff	Pin	24Vin Ploss
24.1027	0.178	14.74	0.200	-15.33	0.050	3.715	0.866	4.290	0.576
24.1068	0.160	14.53	0.200	-15.54	0.025	3.295	0.854	3.857	0.563
24.1096	0.146	14.13	0.200	-15.94	0.010	2.985	0.848	3.520	0.535
24.1147	0.121	12.15	0.200	-17.92	0.000	2.430	0.833	2.918	0.488

5 Load Transients

The photo below shows the +/-15V output voltage (AC coupled) when the +15V load current is pulsed between 100mA and 200mA each. (+15V on top, -15V in middle) Vin = 12Vdc. (500mV/DIV, 200mA/DIV, 2mS/DIV)

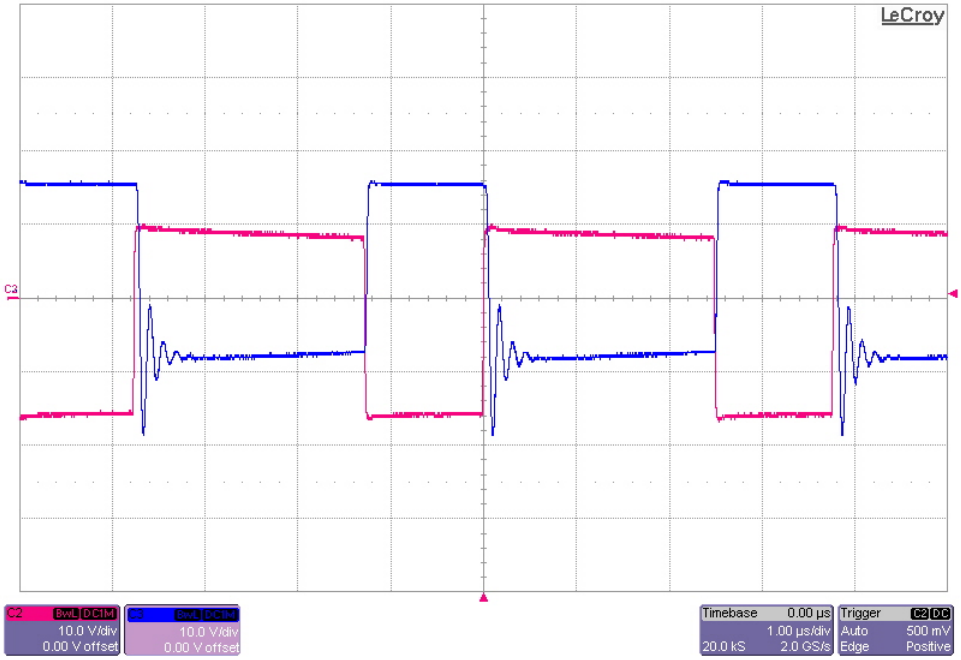


The photo below shows the +/-15V output voltage (AC coupled) when the +15V load current is pulsed between 100mA and 200mA each. (+15V on top, -15V in middle) Vin = 30Vdc. (500mV/DIV, 200mA/DIV, 2mS/DIV)

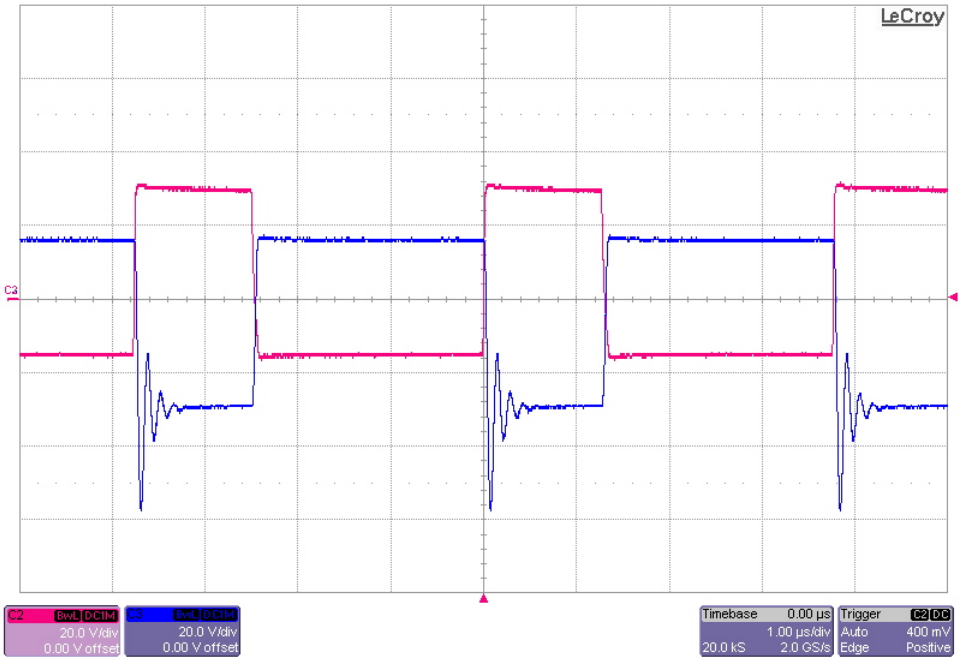


6 Waveforms

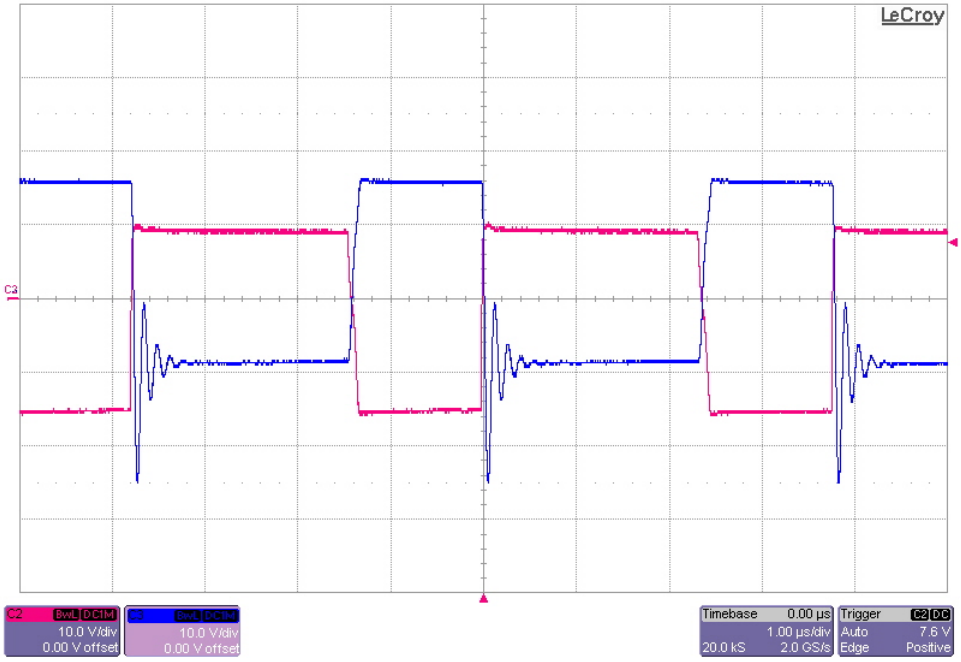
The photo below shows the switching waveform on each output rectifier diode. The input voltage is 9Vand the output is loaded to 200mA each. (10V/DIV, 1uS/DIV)



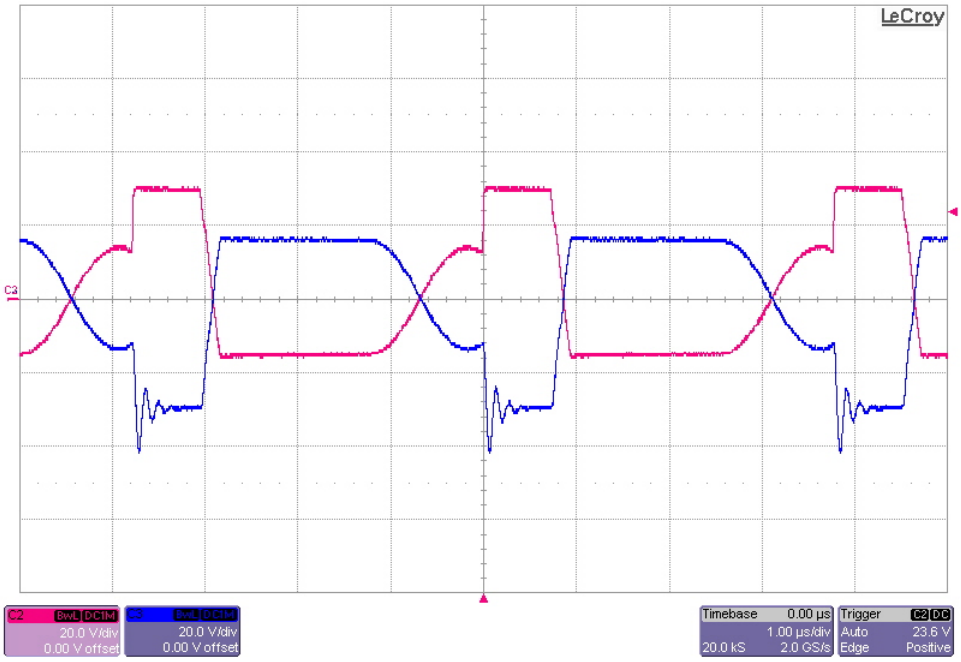
The photo below shows the switching waveform on each output rectifier diode. The input voltage is 30Vand the output is loaded to 200mA each. (20V/DIV, 1uS/DIV)



The photo below shows the switching waveform on each output rectifier diode. The input voltage is 9Vand the output is loaded to 25mA each. (10V/DIV, 1uS/DIV)



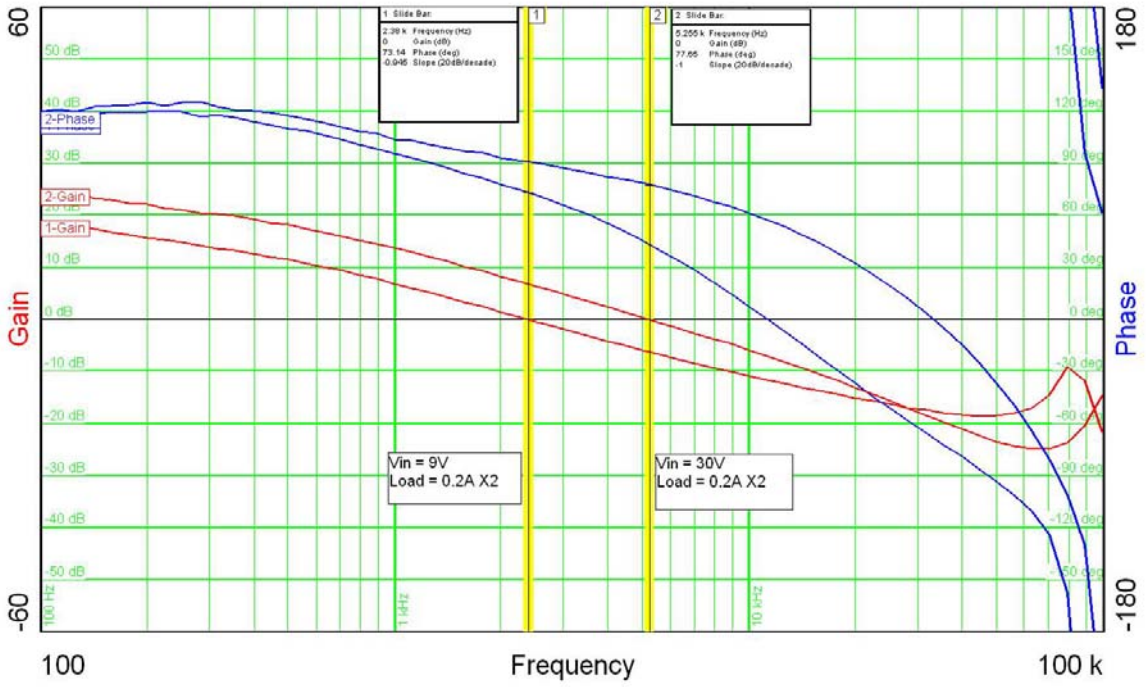
The photo below shows the switching waveform on each output rectifier diode. The input voltage is 30Vand the output is loaded to 25mA each. (20V/DIV, 1uS/DIV)



7 Loop Gain

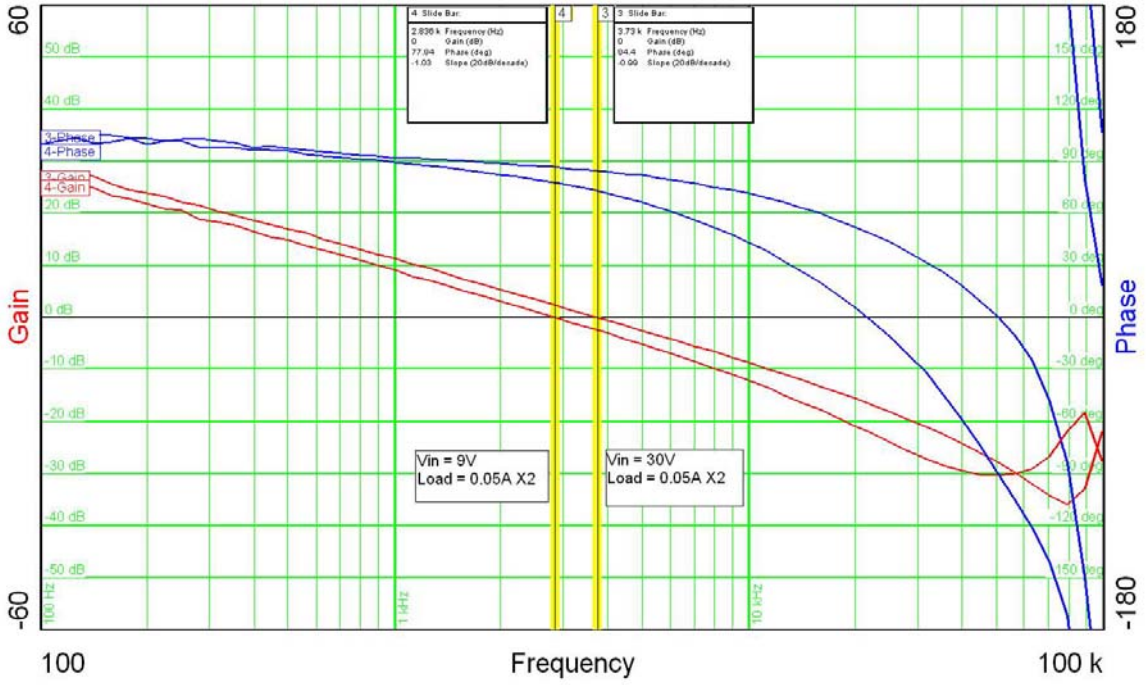
The plot below shows the loop gain with 9V and 30V input voltages. The outputs are loaded to 200mA each.

Loop Gain (9Vin)	BW: 2.4KHz	PM: 73 degrees
Loop Gain (30Vin)	BW: 5.3KHz	PM: 78 degrees



The plot below shows the loop gain with 9V and 30V input voltages. The outputs are loaded to 50mA each.

Loop Gain (9Vin) BW: 2.8KHz PM: 78 degrees
Loop Gain (30Vin) BW: 3.7KHz PM: 84 degrees



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