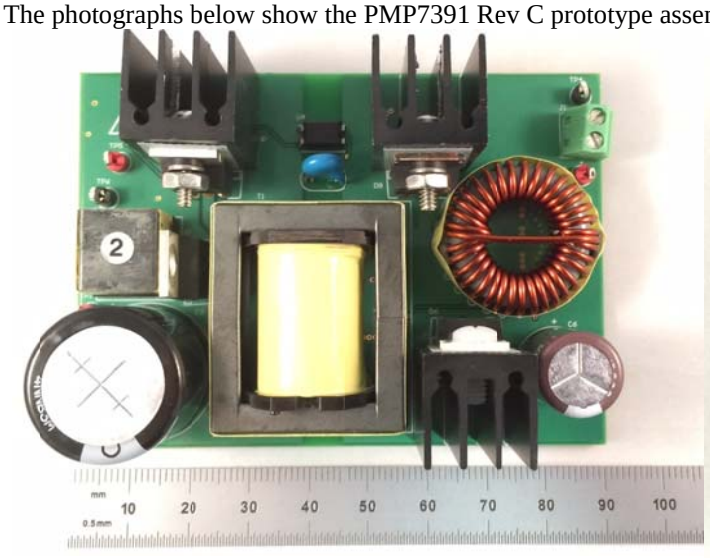
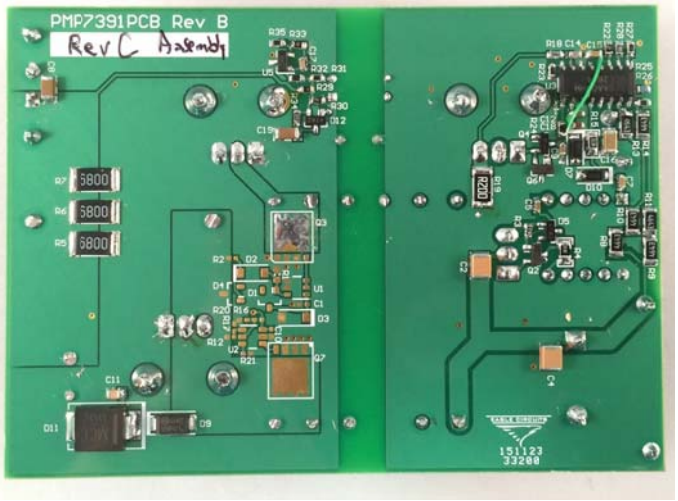
1 Photos

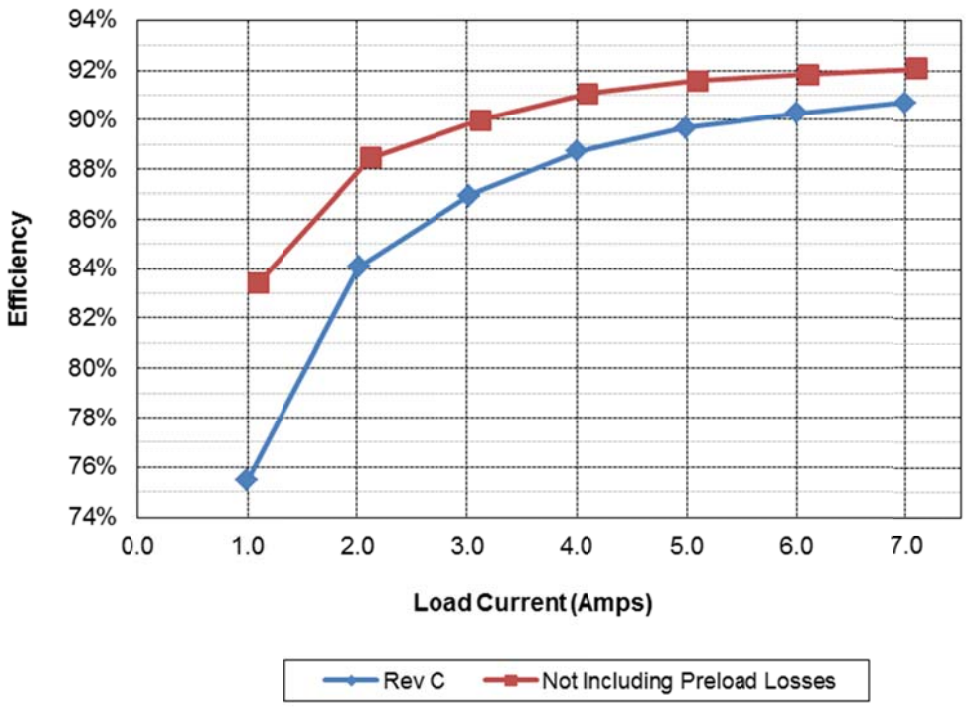
The photographs below show the PMP7391 Rev C prototype assembly. This circuit was built using a PMP7391 Rev B PCB.





2 Efficiency

2.1 Chart



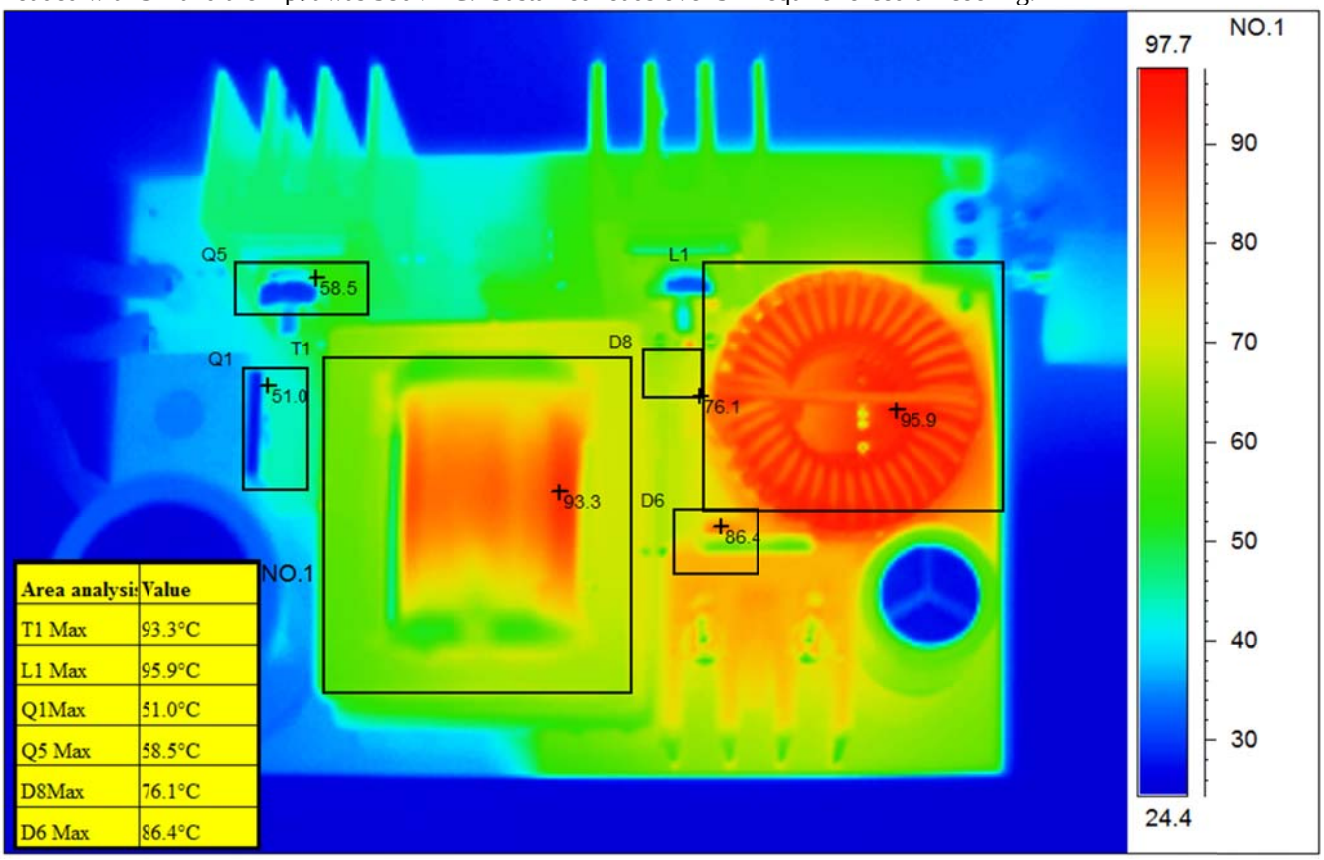
2.2 Raw Data

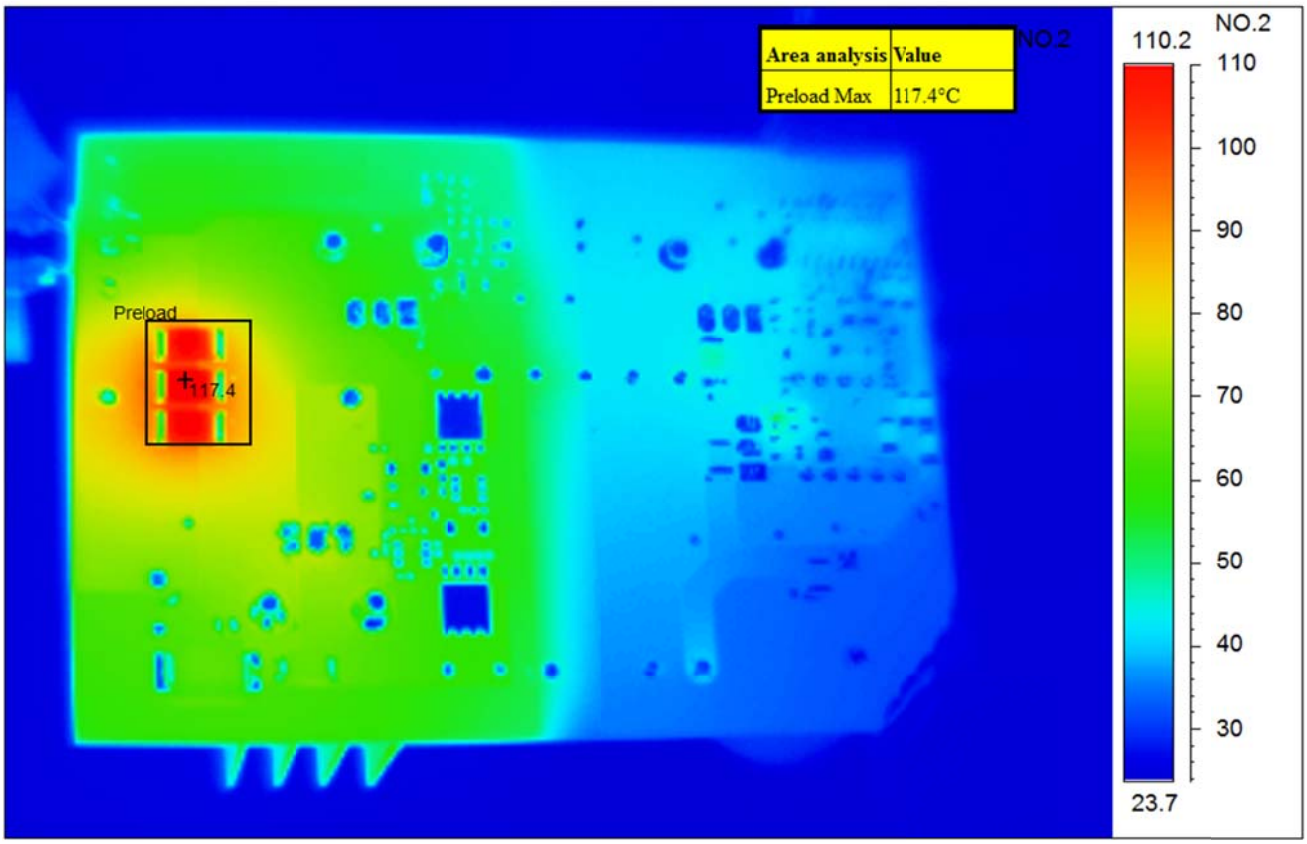
Rev C							
Iout	Vout	Vin	Iin	Pin	Pout	Losses	Efficiency
0.000	23.81	379.5	0.0161	6.11	0.00	6.11	0.0%
0.996	23.80	379.4	0.0828	31.41	23.70	7.71	75.5%
2.013	23.80	379.4	0.150	56.99	47.91	9.08	84.1%
3.020	23.80	379.4	0.218	82.67	71.88	10.80	86.9%
4.00	23.79	379.4	0.283	107.26	95.16	12.10	88.7%
4.99	23.79	379.3	0.349	132.38	118.71	13.66	89.7%
6.01	23.78	379.3	0.418	158.36	142.92	15.44	90.2%
7.00	23.78	379.3	0.484	183.51	166.46	17.05	90.7%

Not Including Preload Losses				
Iout	Pin	Pout	Losses	Efficiency
0.105	6.11	2.50	6.11	40.9%
1.101	31.41	26.20	7.71	83.4%
2.118	56.99	50.41	9.08	88.5%
3.125	82.67	74.38	10.80	90.0%
4.105	107.26	97.66	12.10	91.1%
5.095	132.38	121.21	13.66	91.6%
6.115	158.36	145.42	15.44	91.8%
7.105	183.51	168.96	17.05	92.1%

3 Thermal Images

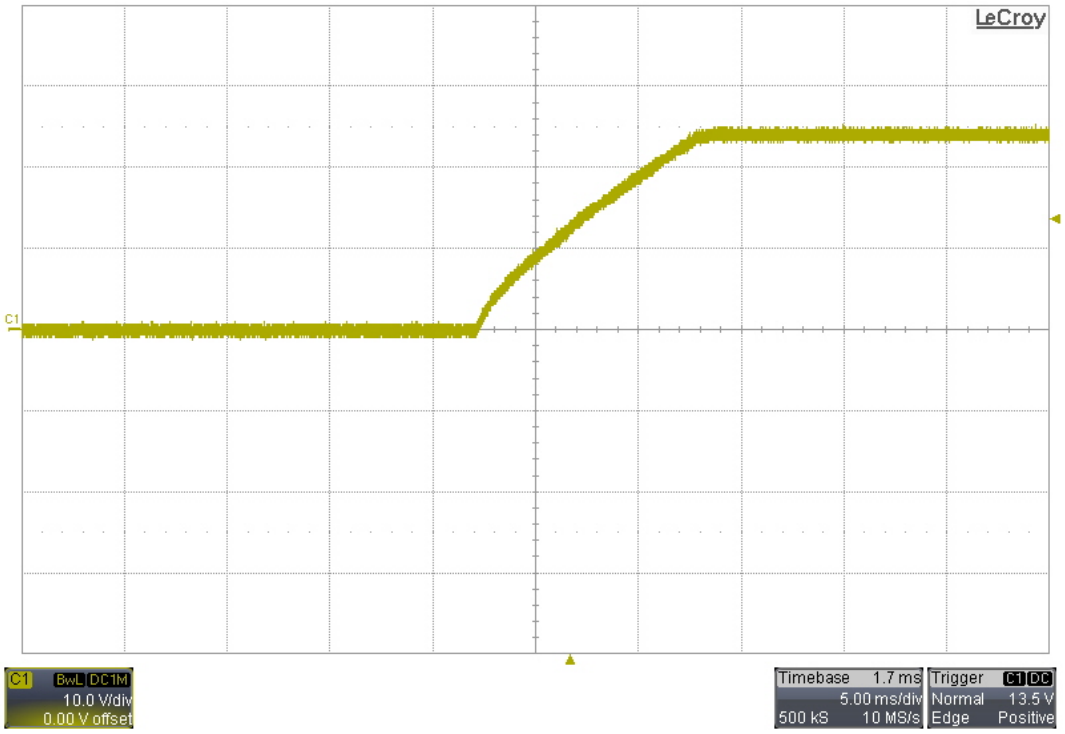
The thermal images below show a top view of the board. The ambient temperature was 25C with no forced air flow. The output was loaded with 5A and the input was 380VDC. Sustained loads over 5A require forced air cooling.



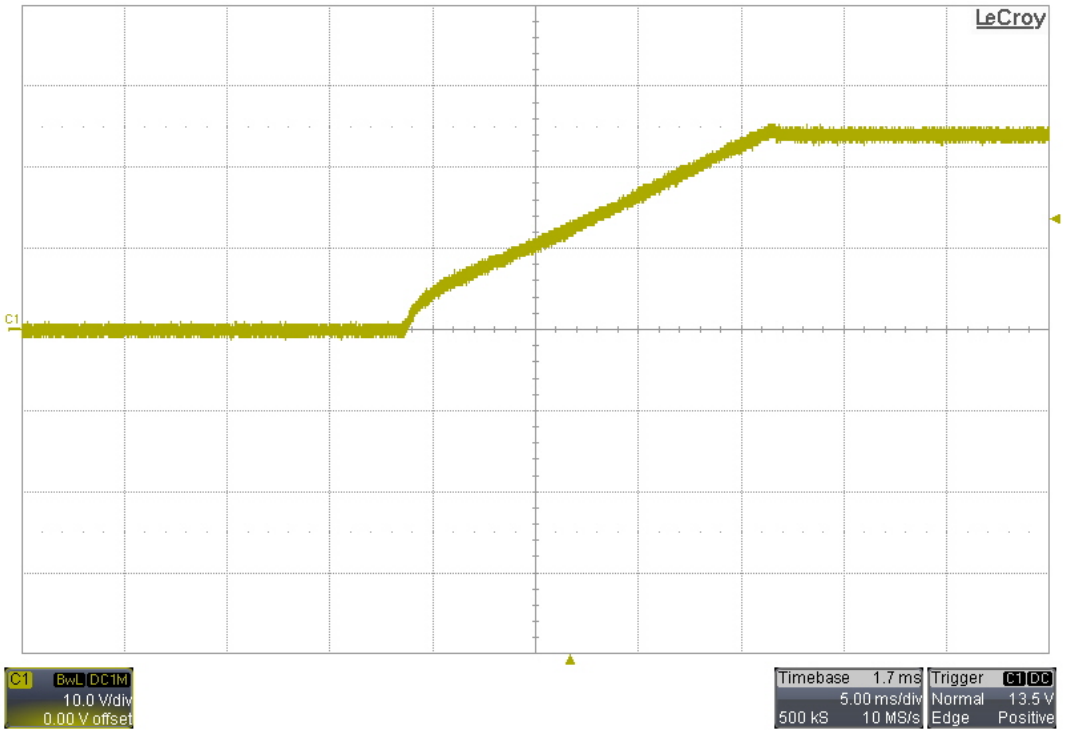

Area analysis Value
Preload Max 117.4°C
NO.2
Preload
117.4
110.2
NO.2
110
100
90
80
70
60
50
40
30
23.7

4 Startup

4.1 380VDC – No load

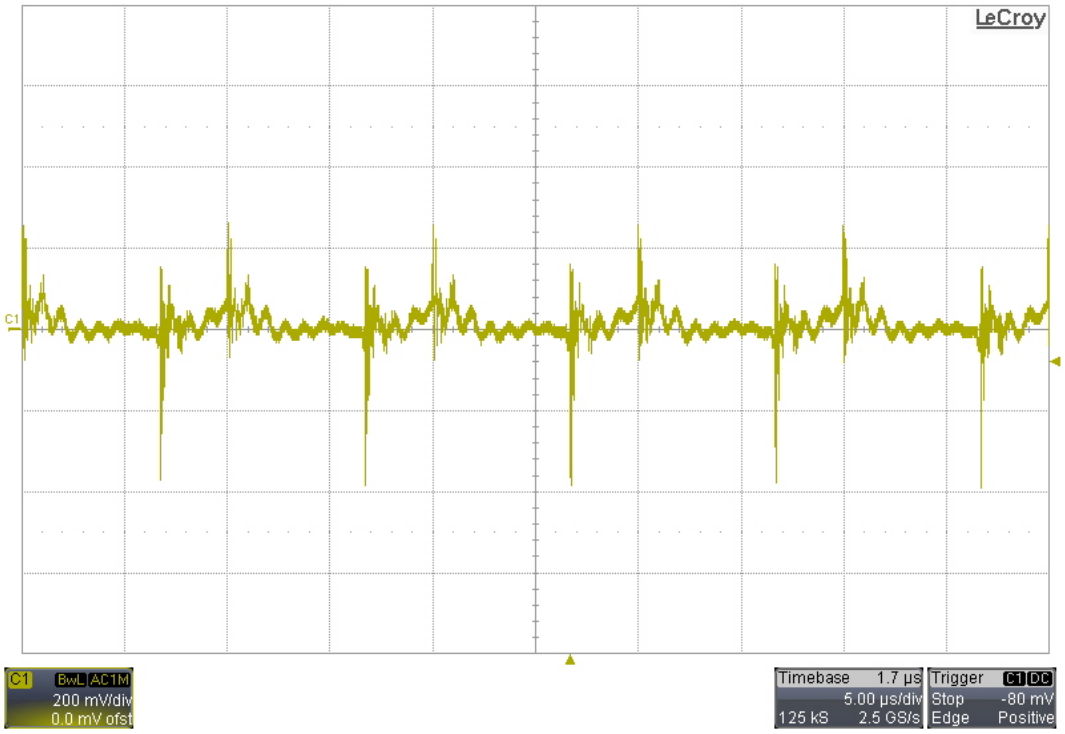


4.2 380VDC – 4Ω Load



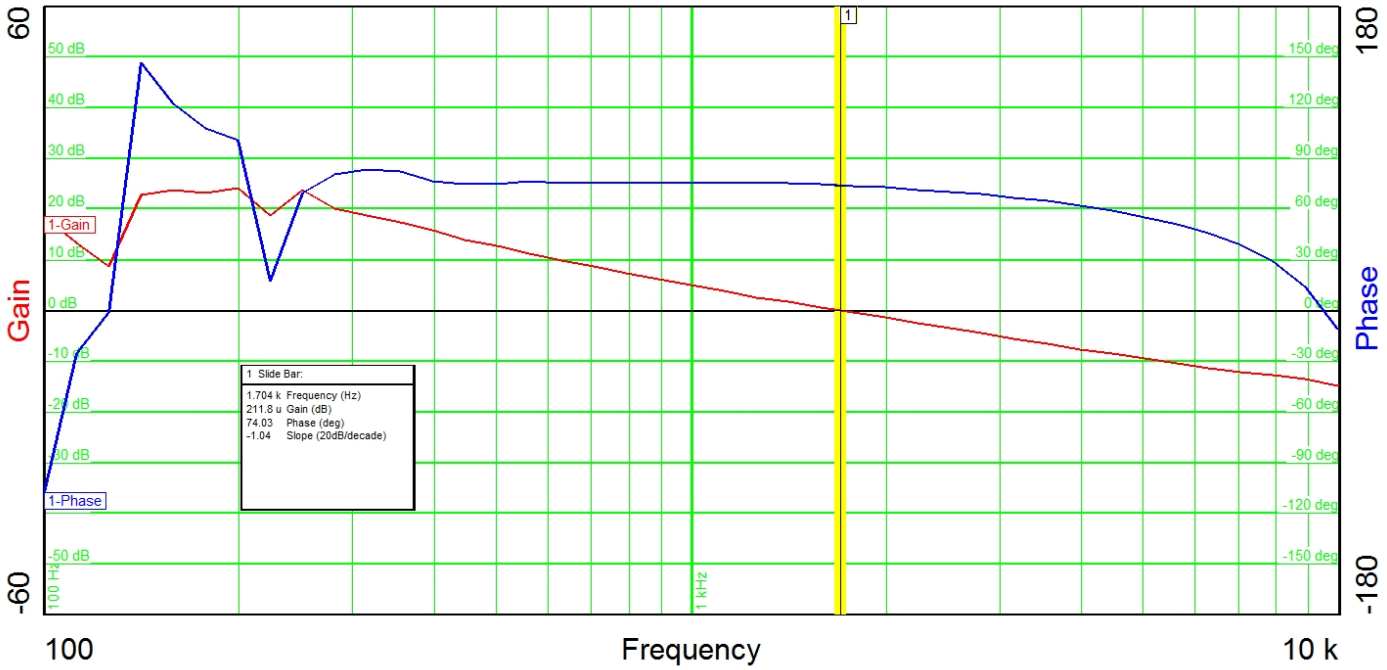
5 Output Ripple Voltage

5.1 380VDC –7A Load



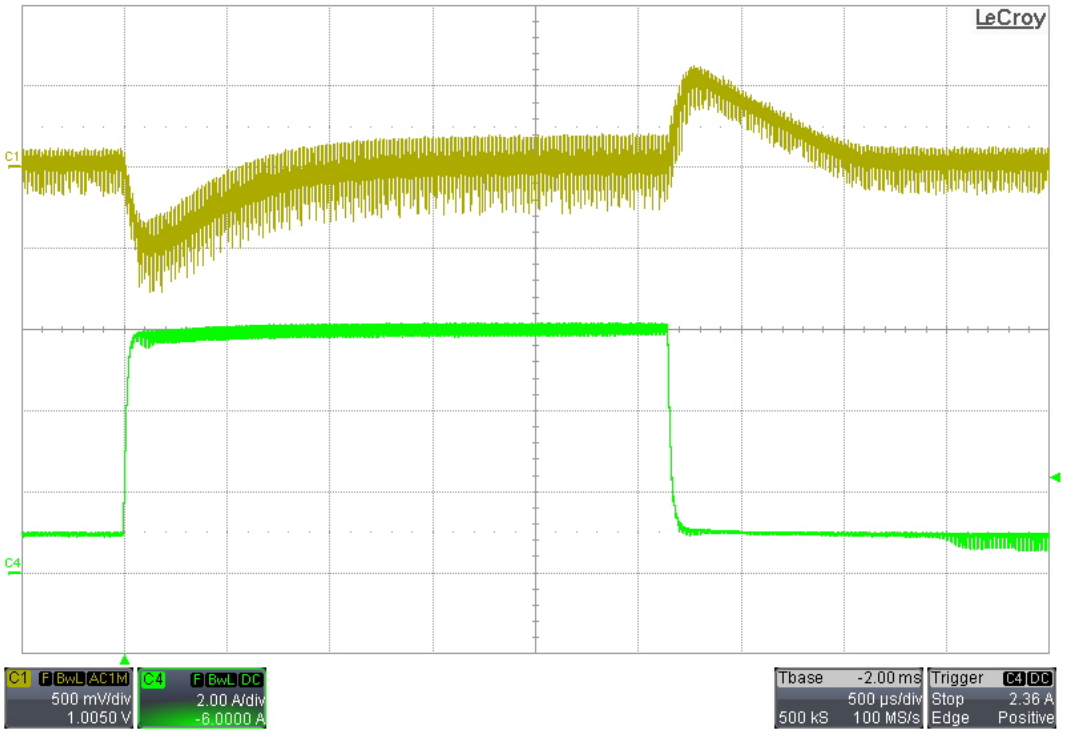
6 Loop Stability

The bode plot below shows the loops stability for the 380VDC input when fully loaded to 7A.



7 Load Transients

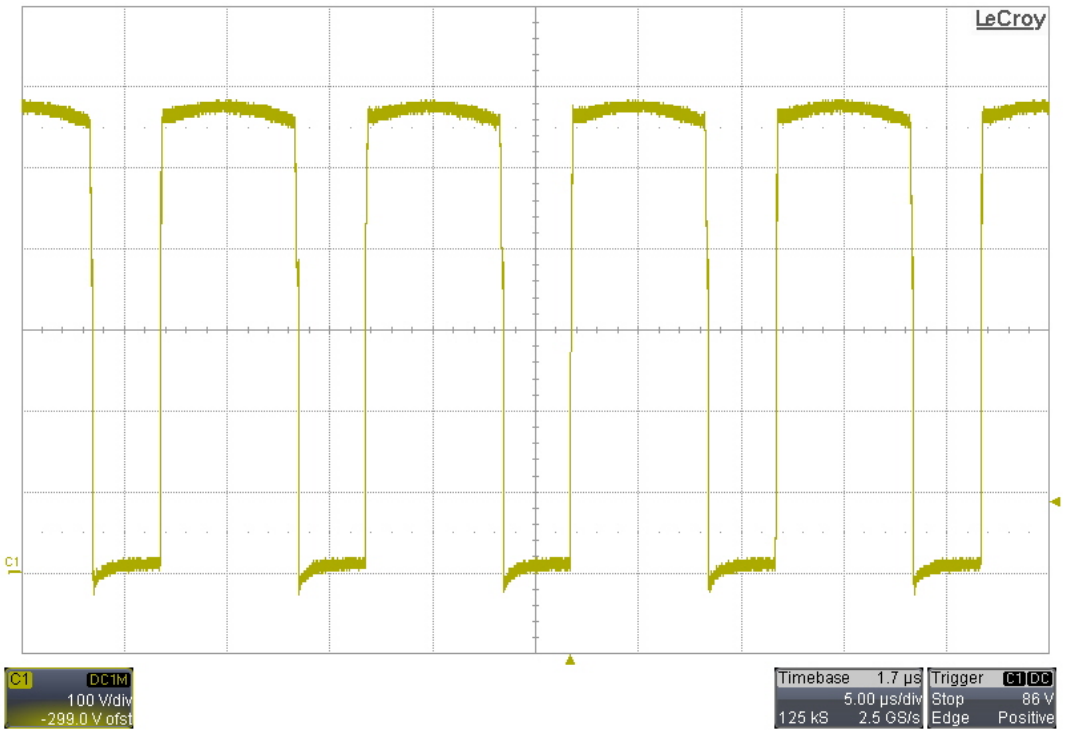
7.1 1A to 6A Transient; 380VDC Input



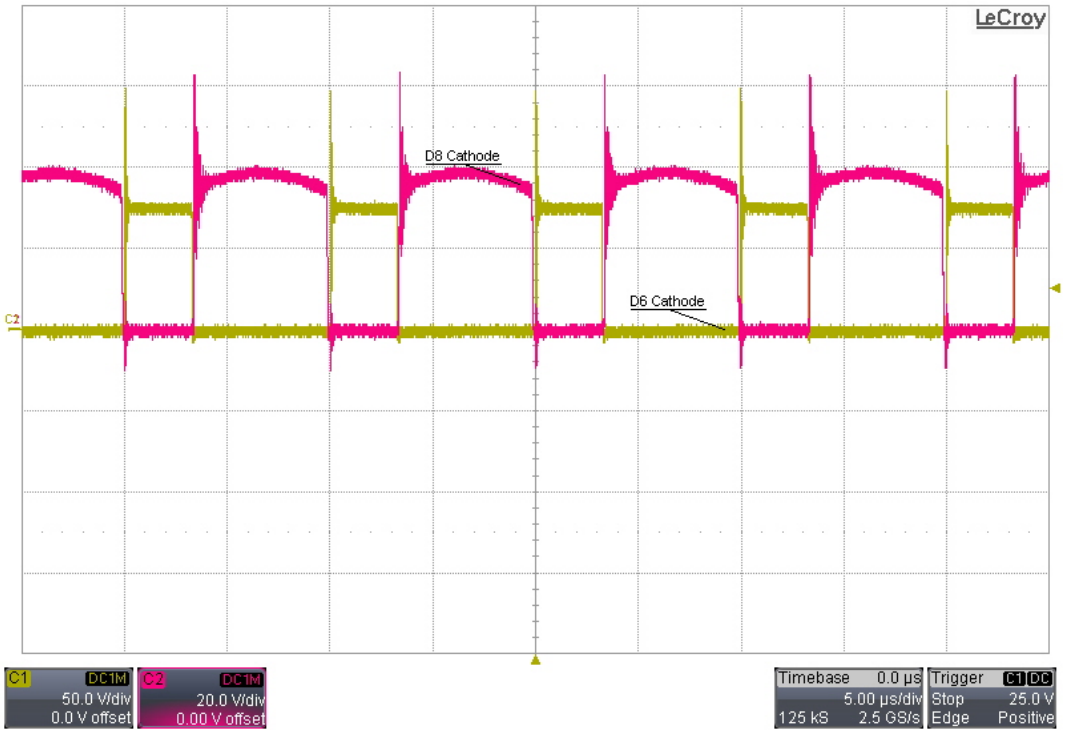
8 Switching Waveforms

The input was 380VDC, and the output was loaded with 7A.

8.1 Drain of Primary FET – Q5



8.2 Secondary Waveforms



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