PMP20850 Rev A

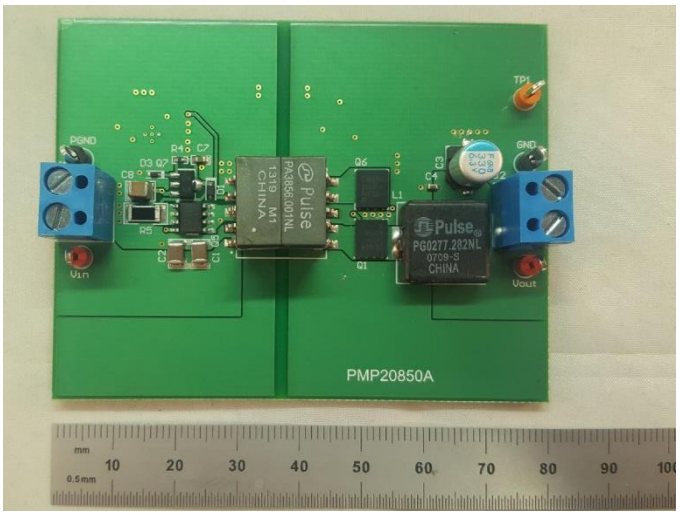
3.3V/15A Active Clamp Forward With Synchronous Rectifiers 36Vdc-72Vdc Input

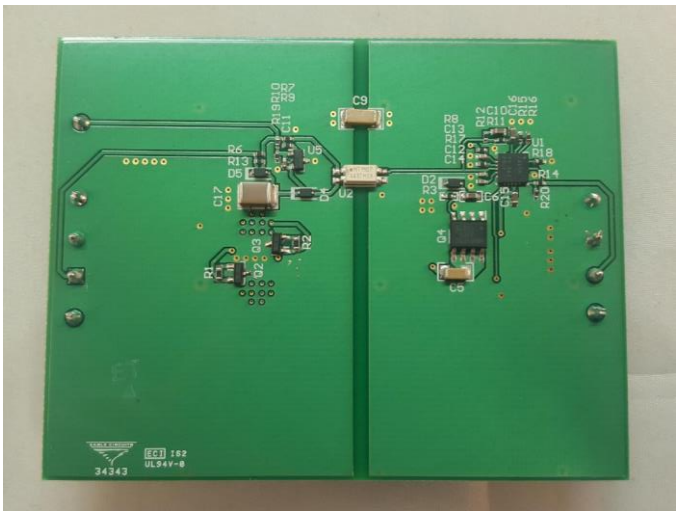
Test Results

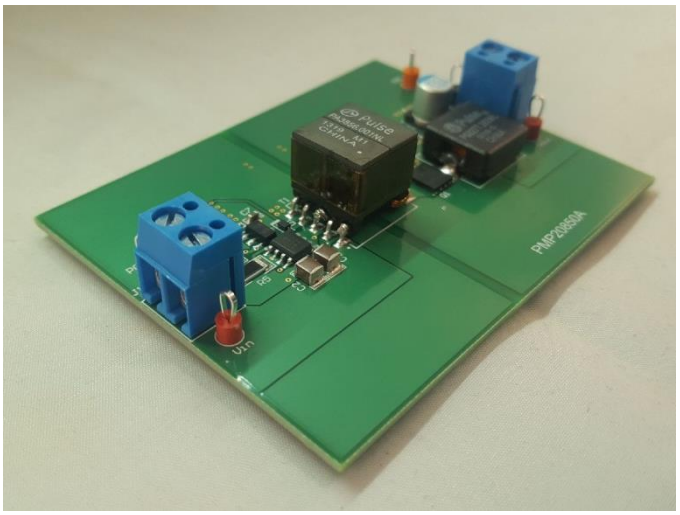
Contents

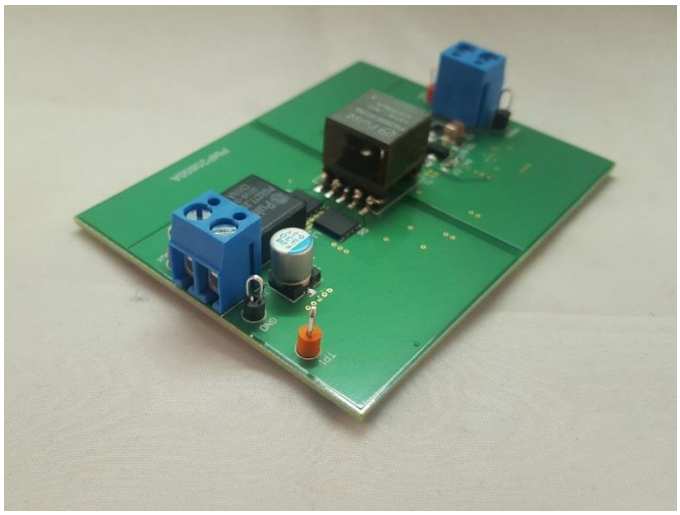
1 Photos

The photographs below show the PMP20850 Rev B prototype assembly. This circuit was built using a PMP20850PCB Rev A.



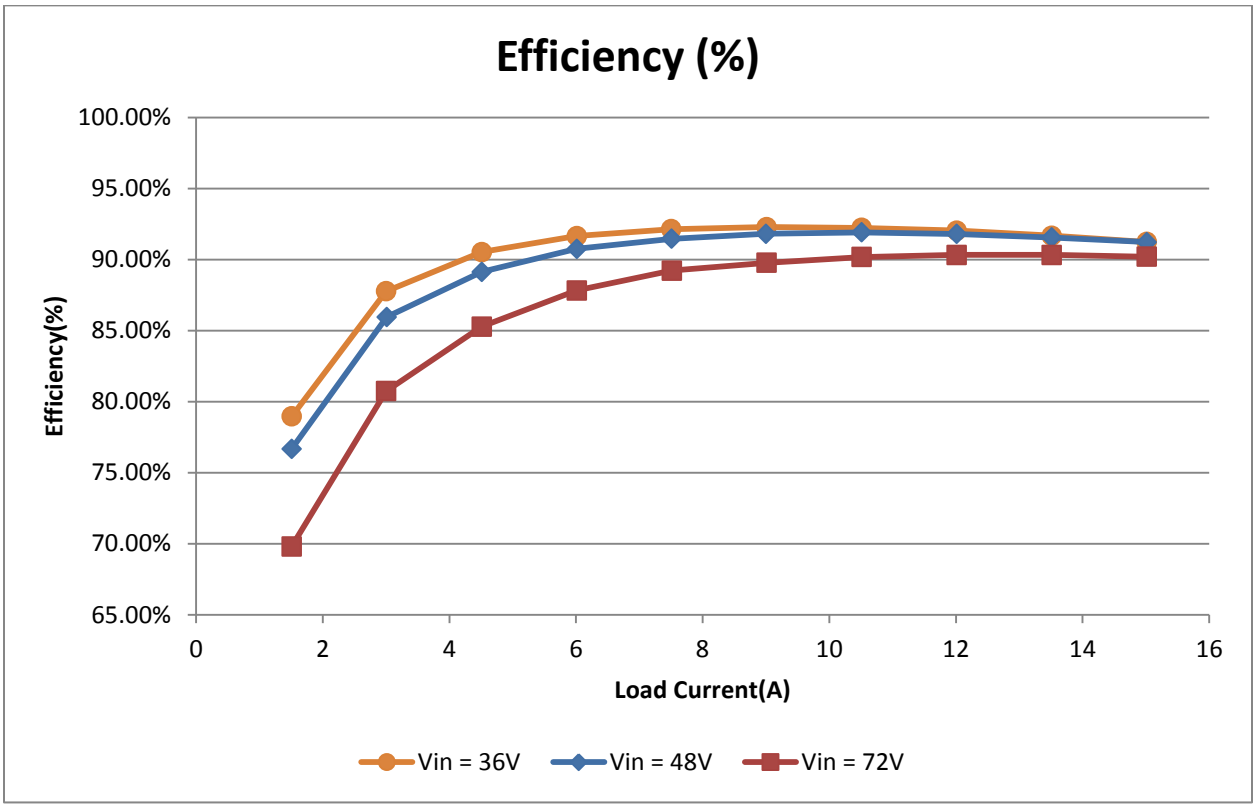




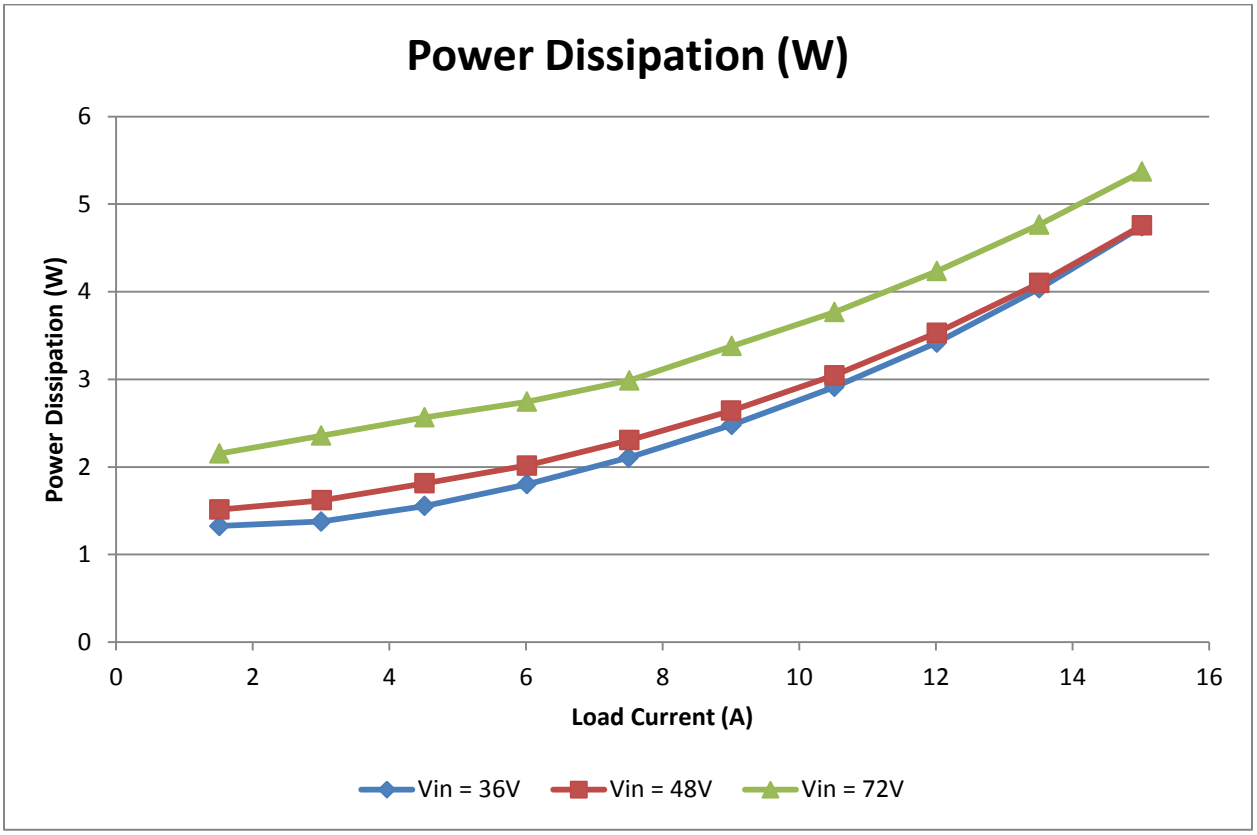


2 Efficiency

2.1 Efficiency Chart



2.2 Power Loss Chart



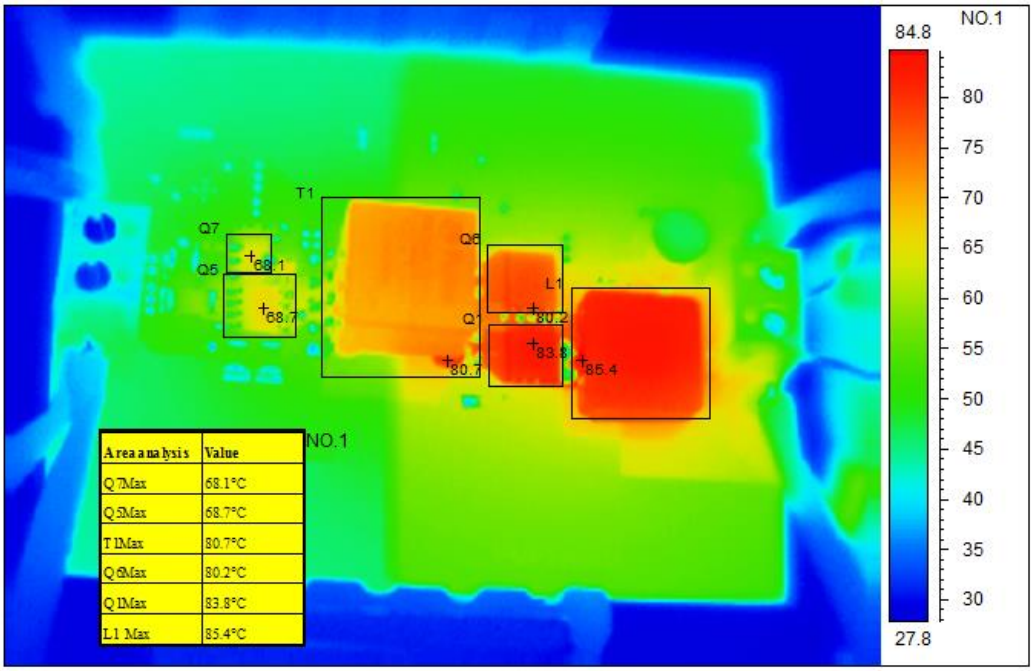
2.3 Raw Data

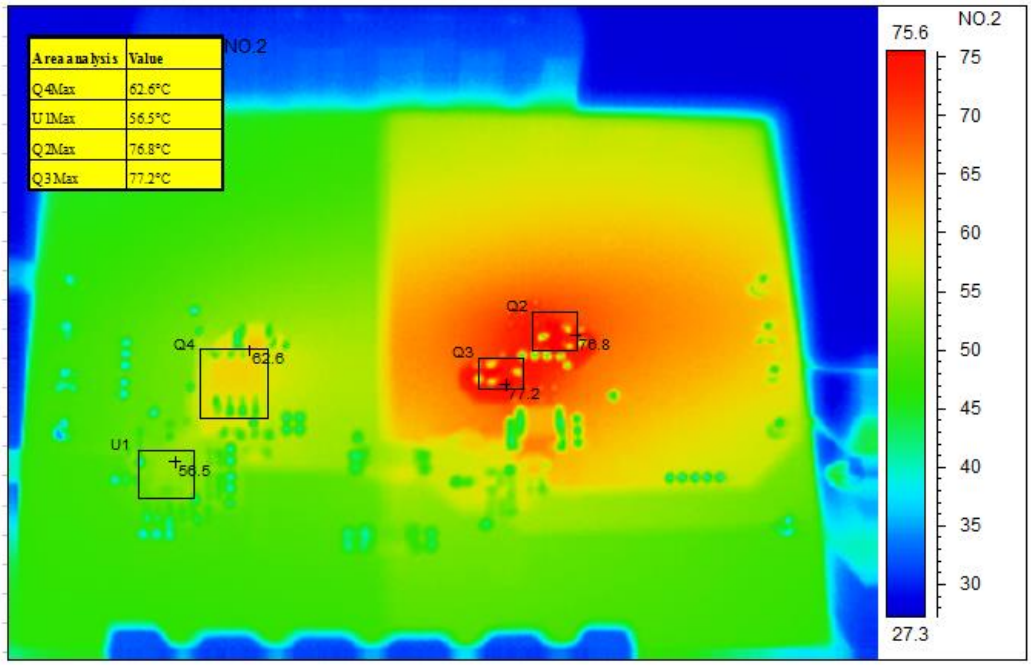
Vin	Iin	Vout	Iout	Pin	Pout	Efficiency(%)	Power Dissipation (W)
26.03	0.036	3.289	0	0.93708	0	0	0.93708
36.01	0.175	3.289	1.513	6.30175	4.976257	0.789662713	1.325493
36.07	0.312	3.289	3.003	11.25384	9.876867	0.877644164	1.376973
36.05	0.455	3.289	4.515	16.40275	14.84984	0.905325936	1.552915
36.03	0.599	3.289	6.014	21.58197	19.78005	0.9165079	1.801924
36.01	0.744	3.289	7.505	26.79144	24.68395	0.921337002	2.107495
36.06	0.891	3.289	9.015	32.12946	29.65034	0.922839506	2.479125
36.02	1.041	3.289	10.515	37.49682	34.58384	0.922313812	2.912985
36	1.193	3.29	12.015	42.948	39.52935	0.920400251	3.41865
36.01	1.347	3.29	13.516	48.50547	44.46764	0.916755162	4.03783
36.03	1.503	3.29	15.017	54.15309	49.40593	0.912338151	4.74716

Vin	Iin	Vout	Iout	Pin	Pout	Efficiency (%)	Power Dissipation (W)
48.08	0.03	3.29	0	1.4424	0	0	1.4424
48.06	0.135	3.29	1.512	6.4881	4.97448	0.766708281	1.51362
48.05	0.24	3.29	3.013	11.532	9.91277	0.859588103	1.61923
48.03	0.347	3.29	4.515	16.66641	14.85435	0.891274726	1.81206
48.02	0.454	3.29	6.014	21.80108	19.78606	0.907572469	2.01502
48	0.563	3.29	7.513	27.024	24.71777	0.914659932	2.30623
48.02	0.672	3.29	9.005	32.26944	29.62645	0.918096193	2.64299
48.01	0.784	3.29	10.515	37.63984	34.59435	0.919088657	3.04549
48.06	0.896	3.29	12.015	43.06176	39.52935	0.91796875	3.53241
48.04	1.011	3.29	13.516	48.56844	44.46764	0.91556657	4.1008
48.03	1.128	3.291	15.017	54.17784	49.42095	0.912198548	4.756893

Vin	Iin	Vout	Iout	Pin	Pout	Efficiency (%)	Power Dissipation (W)
72	0.029	3.292	0	2.088	0	0	2.088
72	0.099	3.291	1.512	7.128	4.975992	0.698090909	2.152008
72	0.17	3.291	3.003	12.24	9.882873	0.807424265	2.357127
72	0.242	3.291	4.515	17.424	14.85887	0.852781508	2.565135
72	0.313	3.291	6.014	22.536	19.79207	0.878242545	2.743926
72	0.385	3.291	7.515	27.72	24.73187	0.892202922	2.988135
72	0.459	3.291	9.015	33.048	29.66837	0.897735566	3.379635
72	0.533	3.291	10.516	38.376	34.60816	0.901817699	3.767844
72	0.608	3.291	12.015	43.776	39.54137	0.903265831	4.234635
72	0.684	3.291	13.516	49.248	44.48116	0.903207359	4.766844
72	0.761	3.291	15.017	54.792	49.42095	0.901973774	5.371053

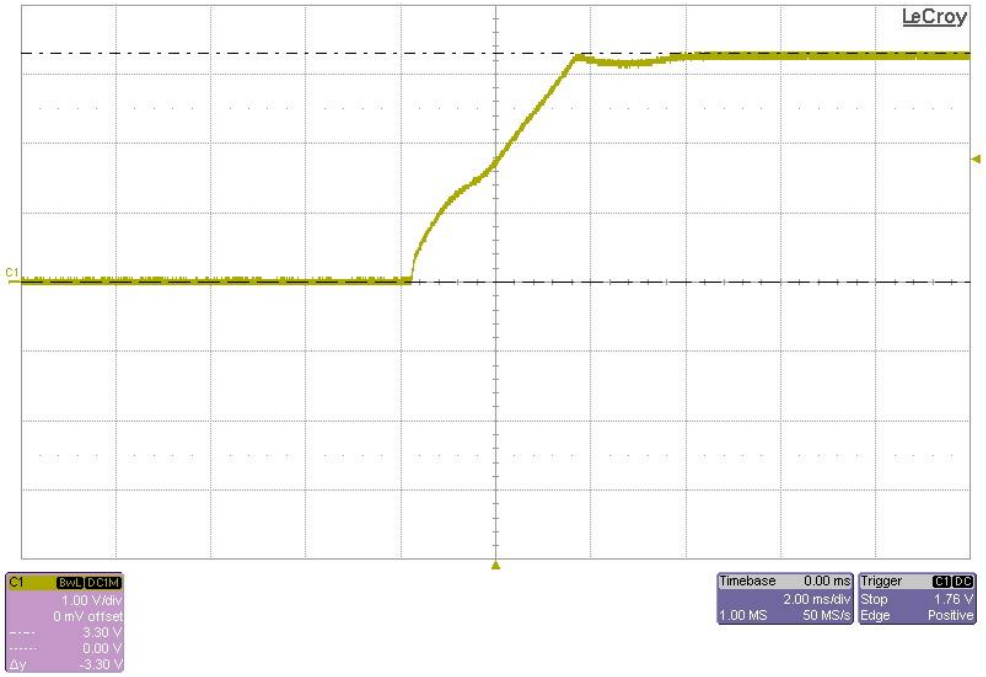
3 Thermal Images



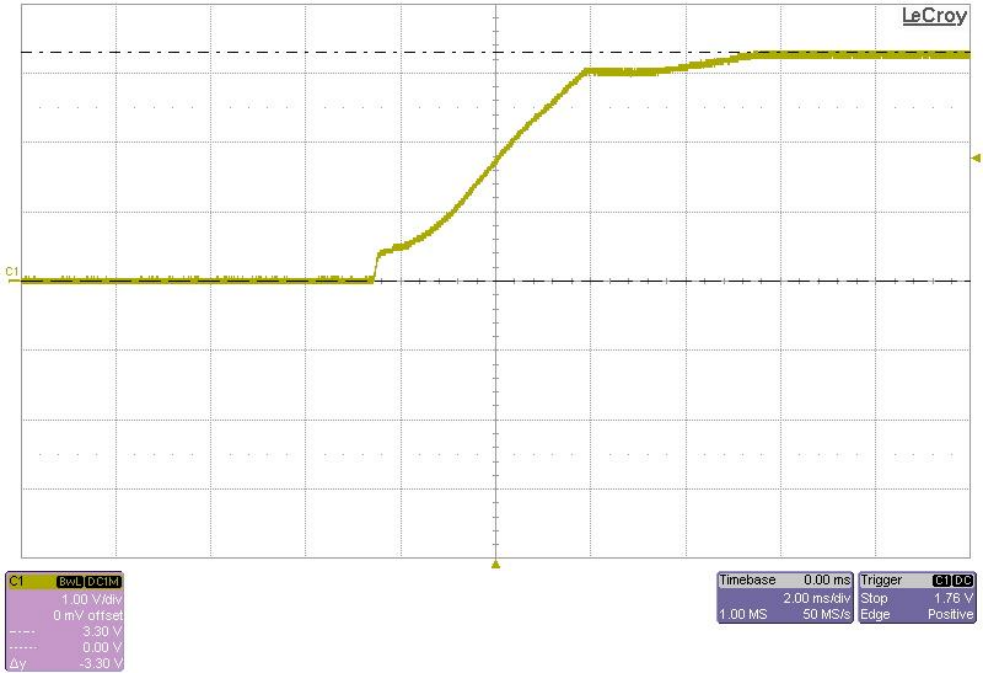


4 Startup

4.1 Startup – 48Vin, No Load



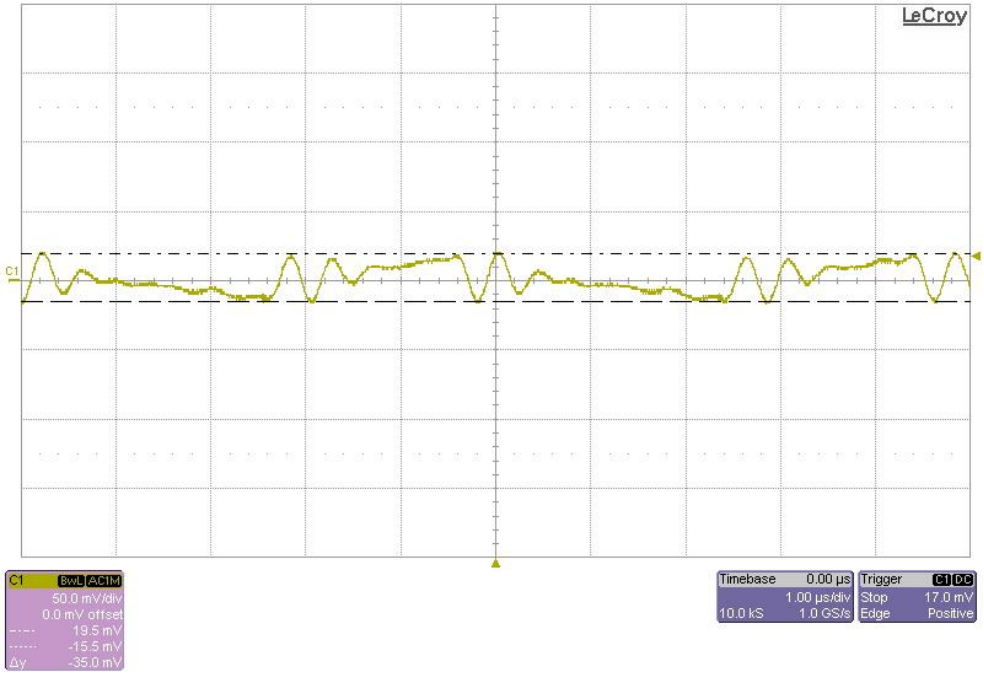
4.2 Startup – 48Vin, 0.5Ω Load



5 Output Ripple Voltage

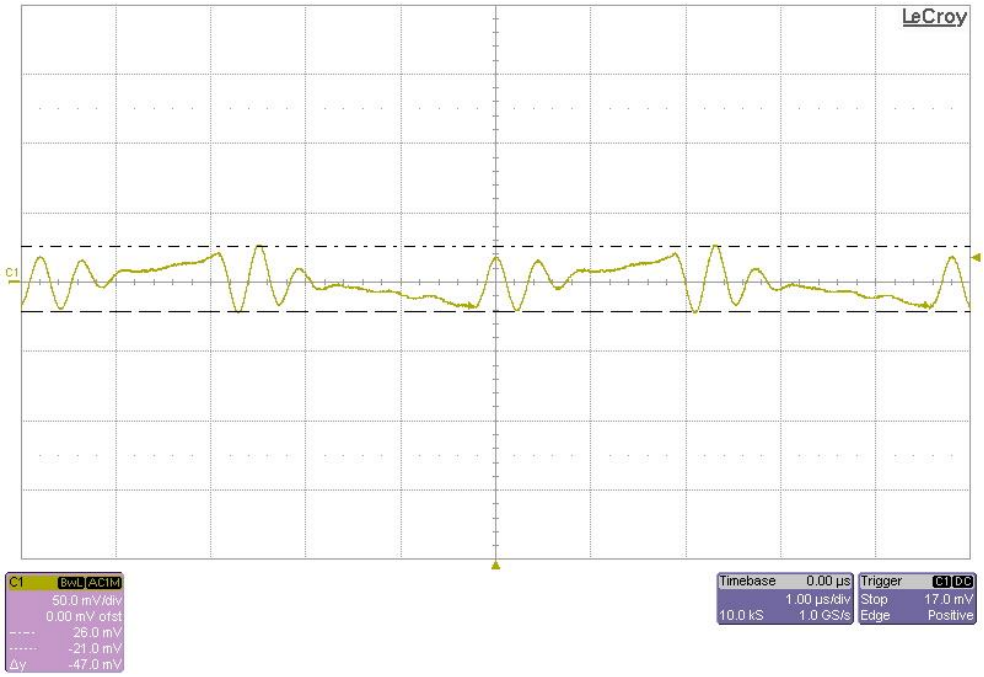
5.1 48V Input, No Load

NOTE: Output rippled measured across 0.1uF capacitor on probe leads



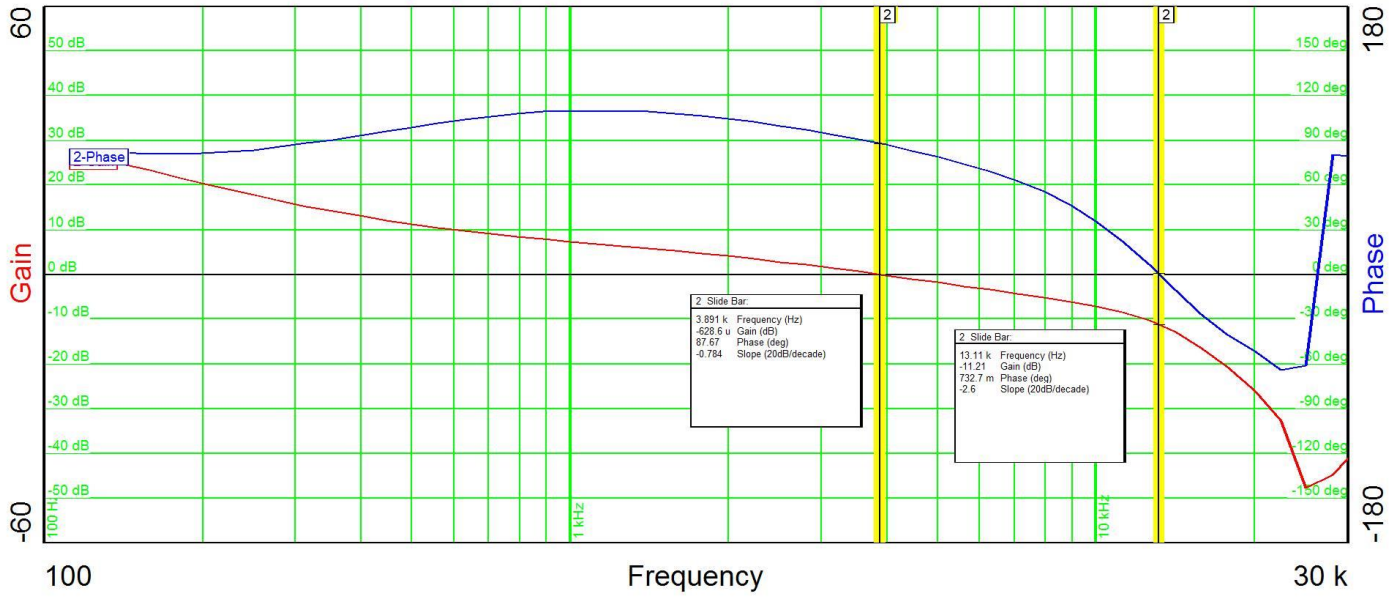
5.2 48V Input, 15A Load

NOTE: Output rippled measured across 0.1uF capacitor on probe leads

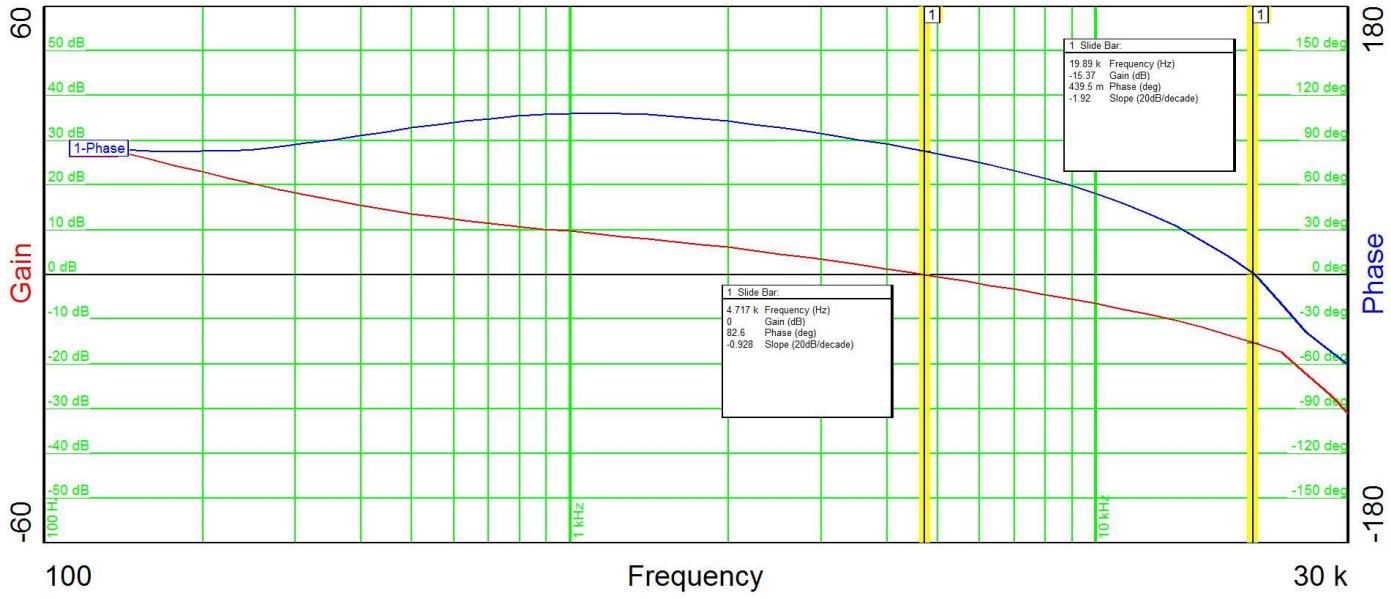


6 Loop Response

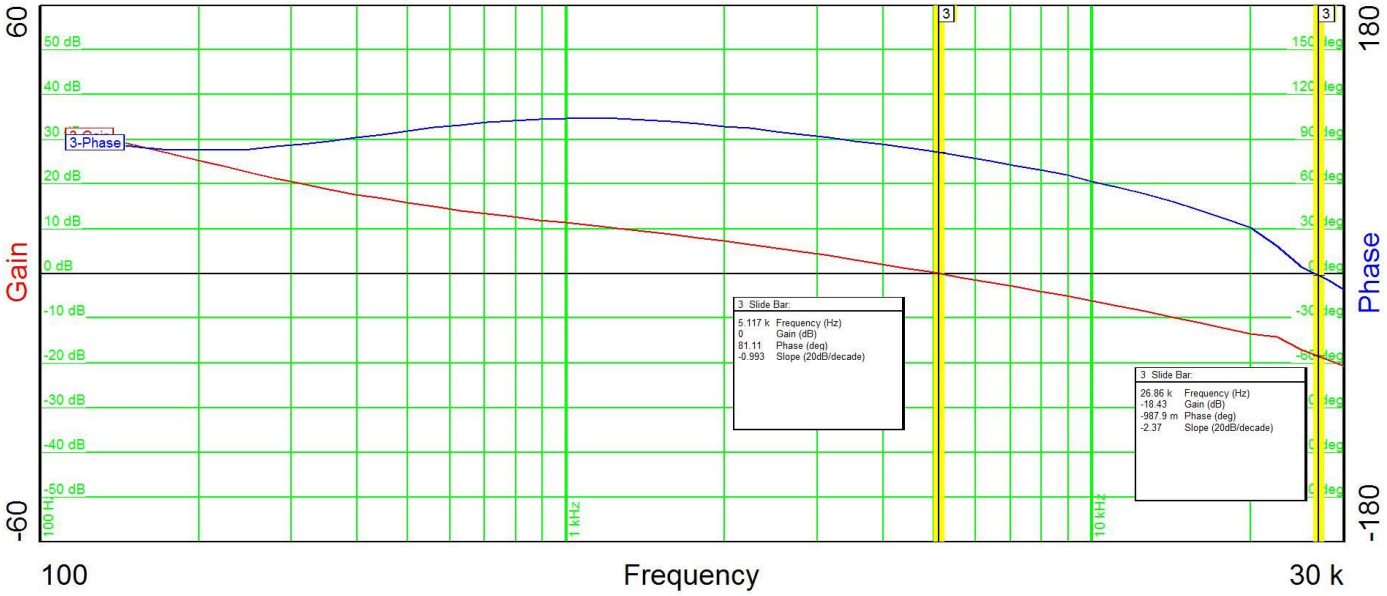
6.1 36V Input, 15A Load



6.2 48V Input, 15A Load

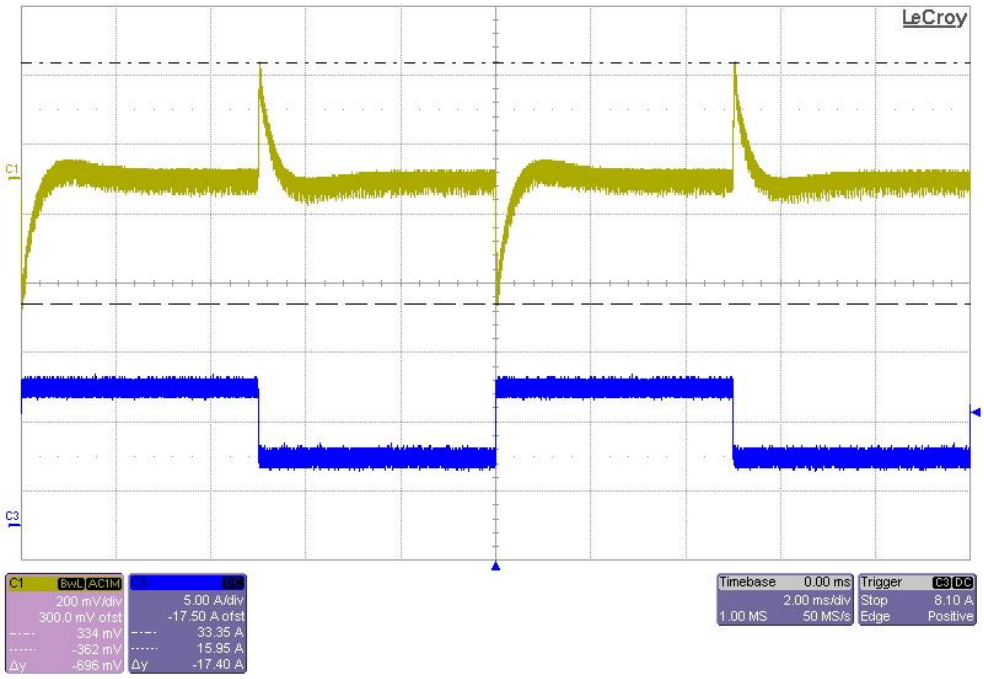


6.3 72V Input, 15A Load



7 Load Transients

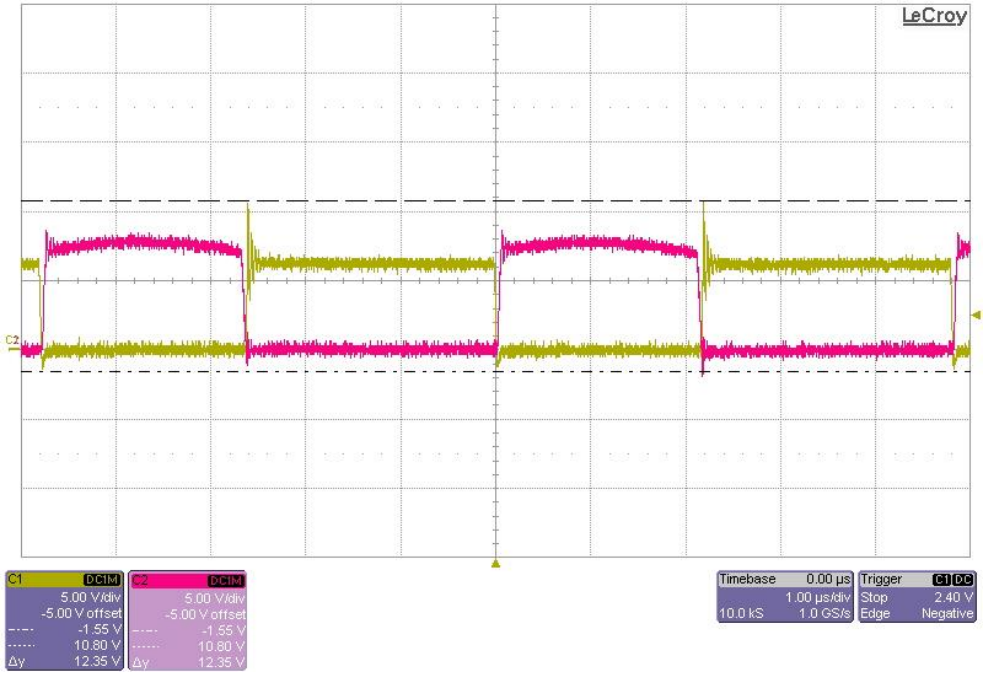
7.1 48Vin, 5A to 10A



8 Switching Waveforms

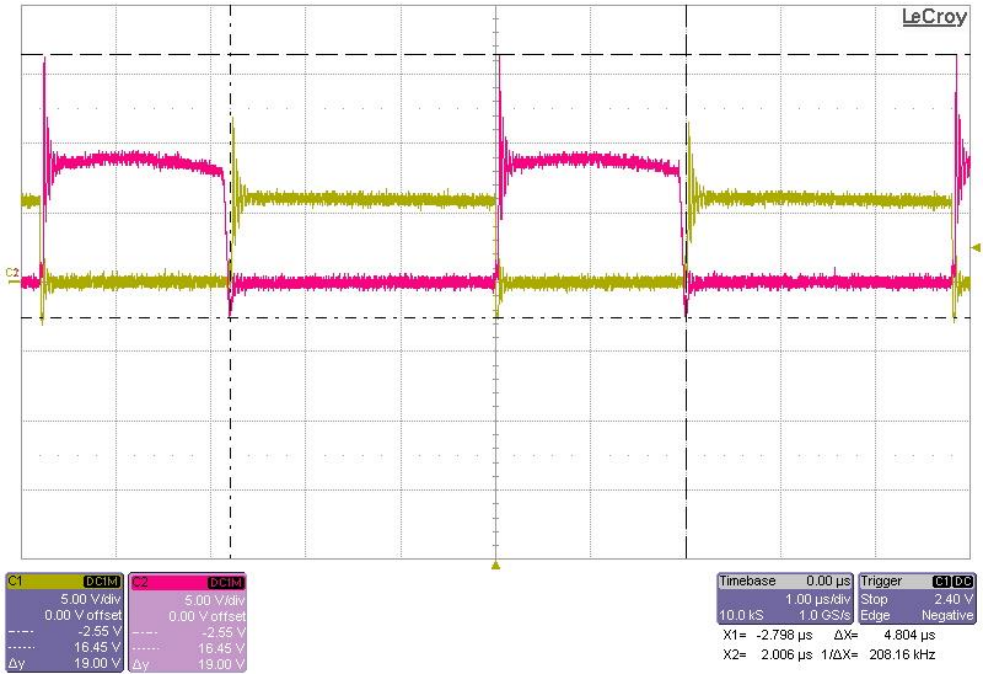
8.1 Secondary – 36V Input, No Load

CH1: Q1 CH2: Q6



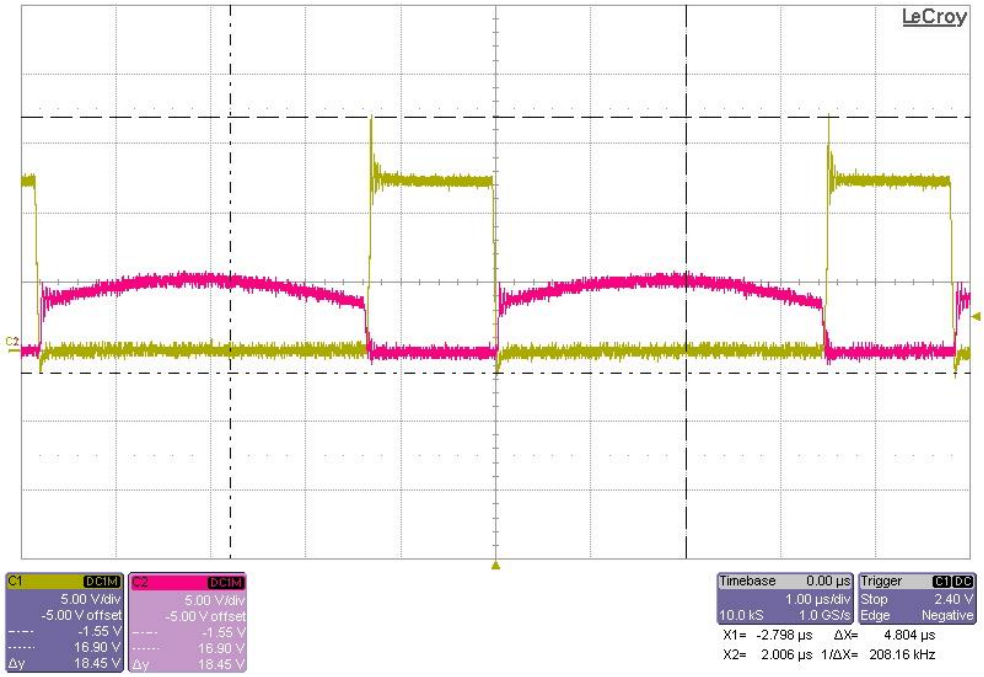
8.2 Secondary – 36V Input, 15A Load

CH1: Q1 CH2: Q6



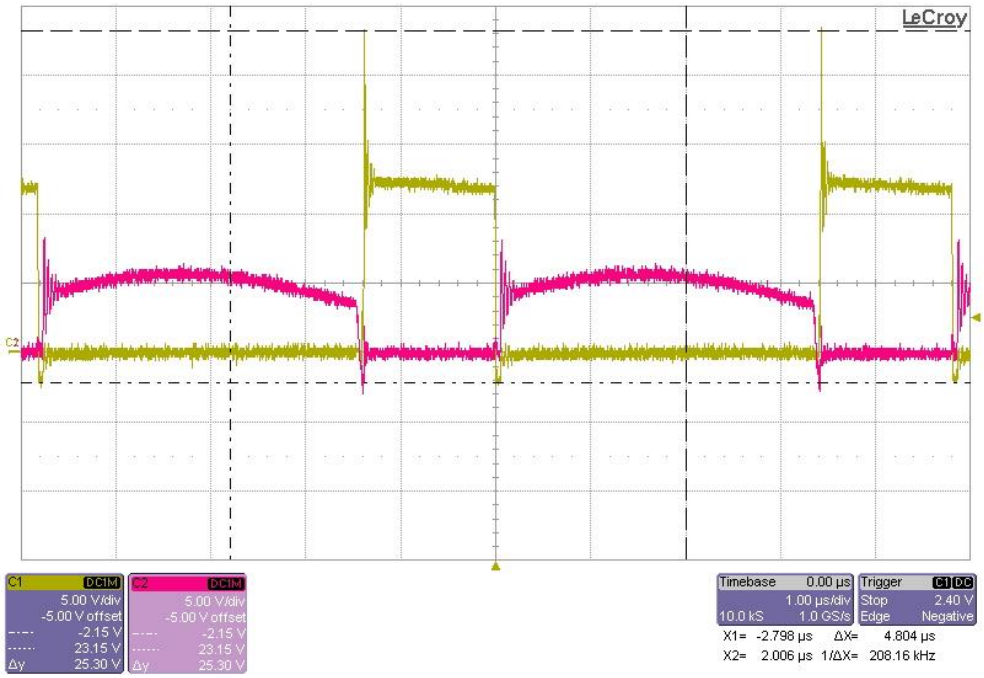
8.3 Secondary – 72V Input, No Load

CH1: Q1 CH2: Q6



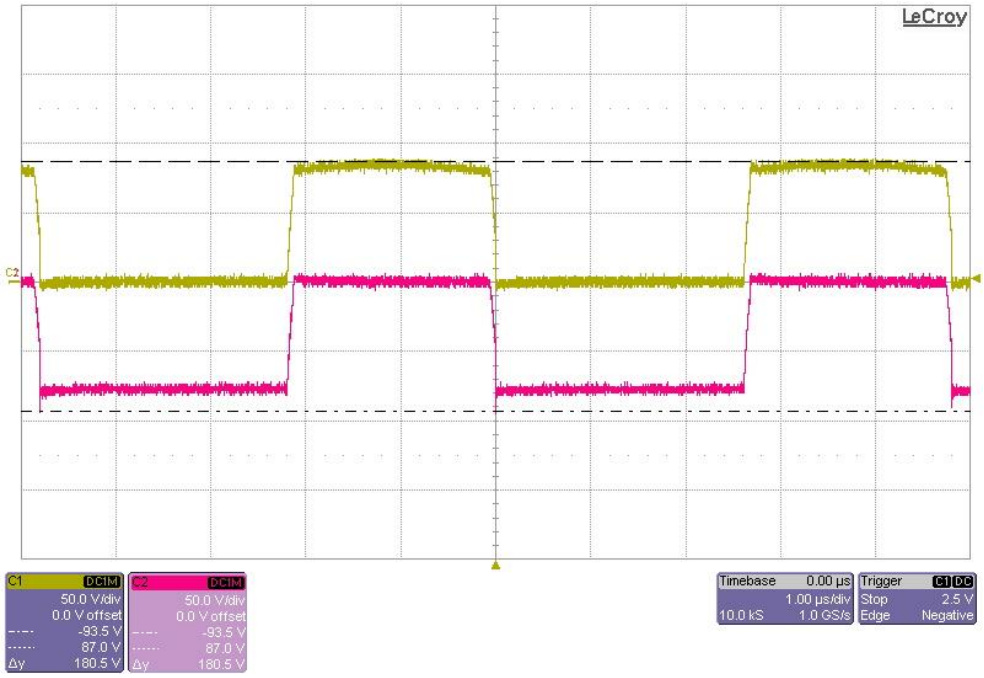
8.4 Secondary – 72V Input, 15A Load

CH1: Q1 CH2: Q6



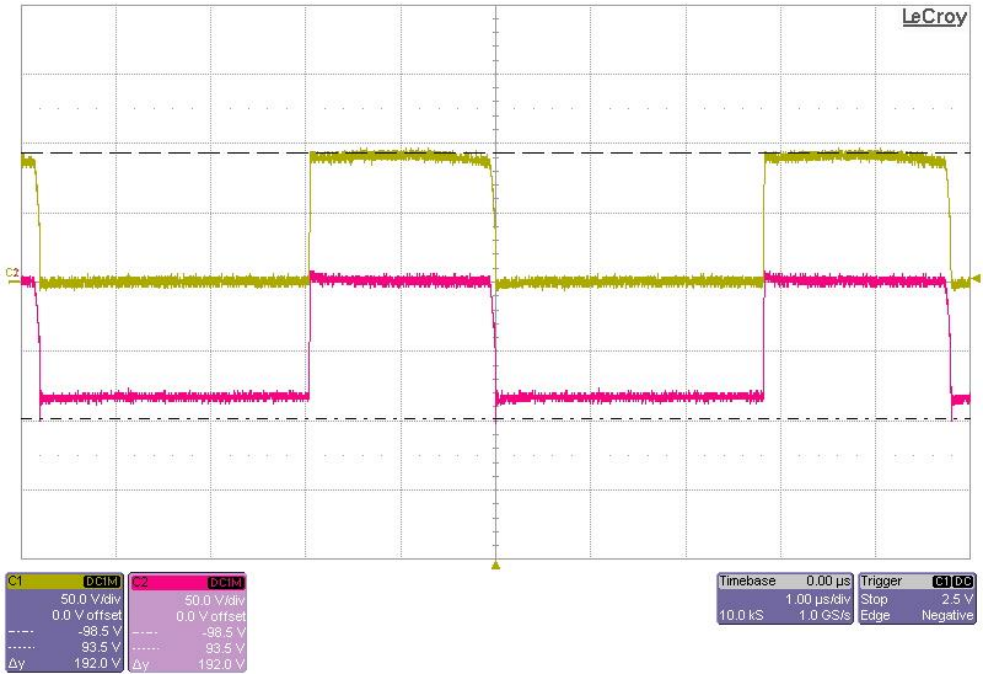
8.5 Primary – 36V Input, No Load

CH1: Q5 CH2: Q4



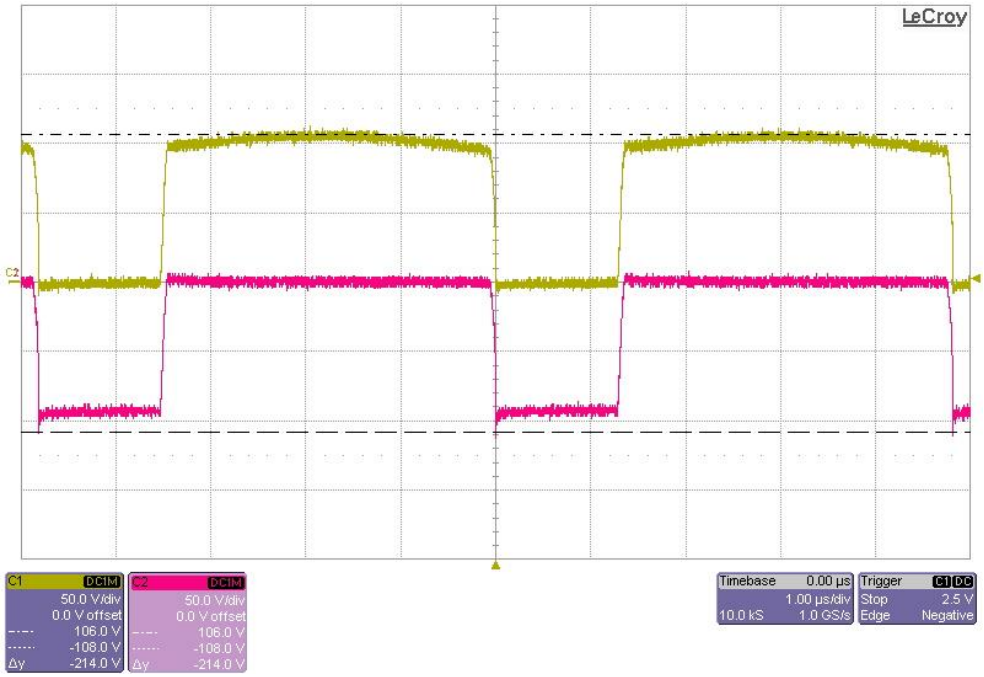
8.6 Primary – 36V Input, 15A Load

CH1: Q5 CH2: Q4



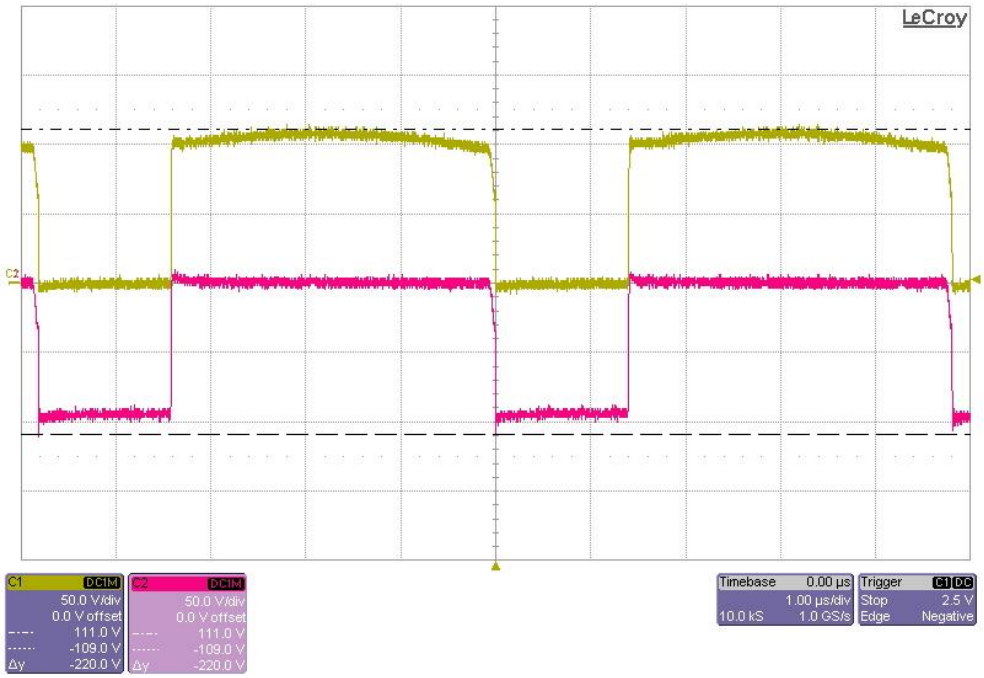
8.7 Primary – 72V Input, No Load

CH1: Q5 CH2: Q4



8.8 Primary – 72V Input, 15A Load

CH1: Q5 CH2: Q4



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