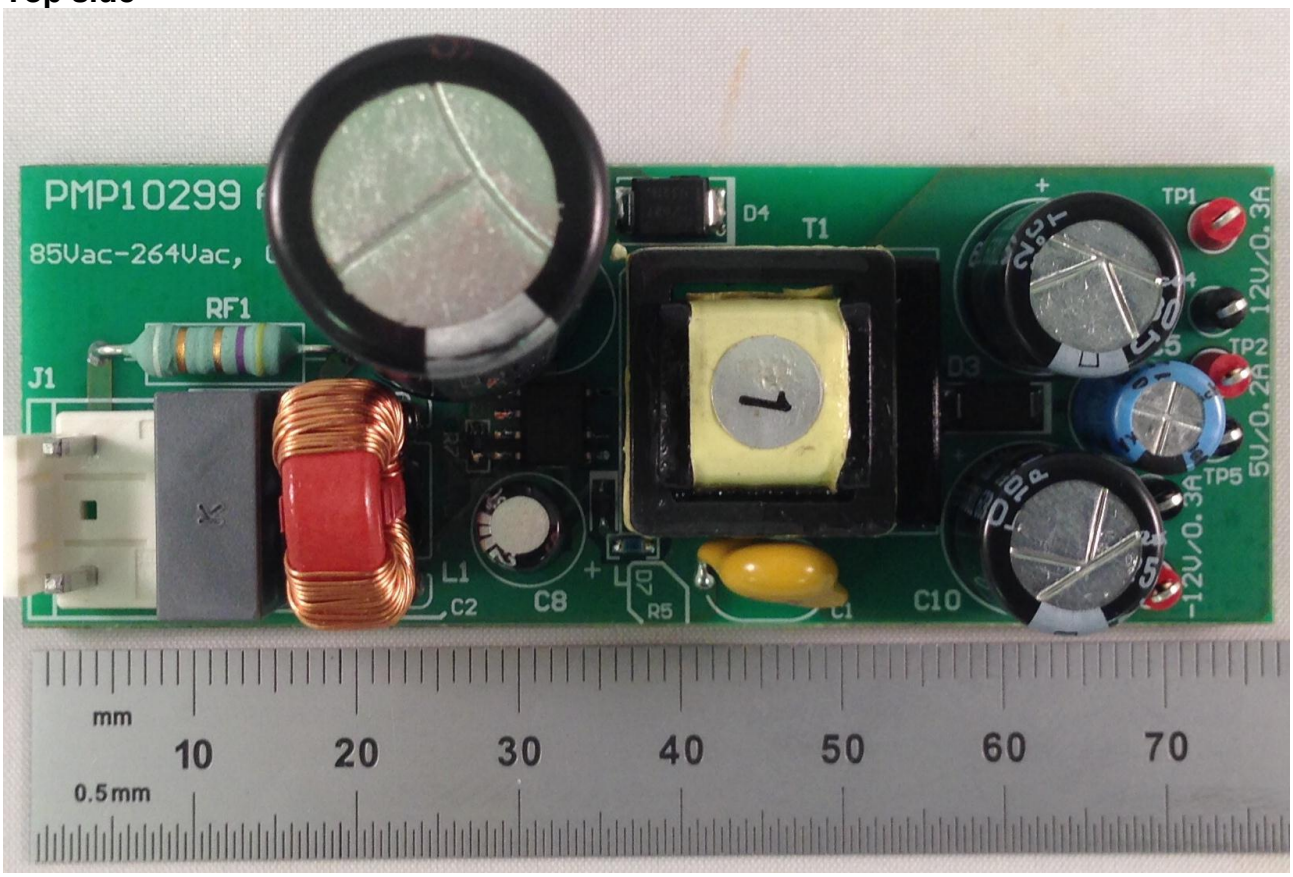
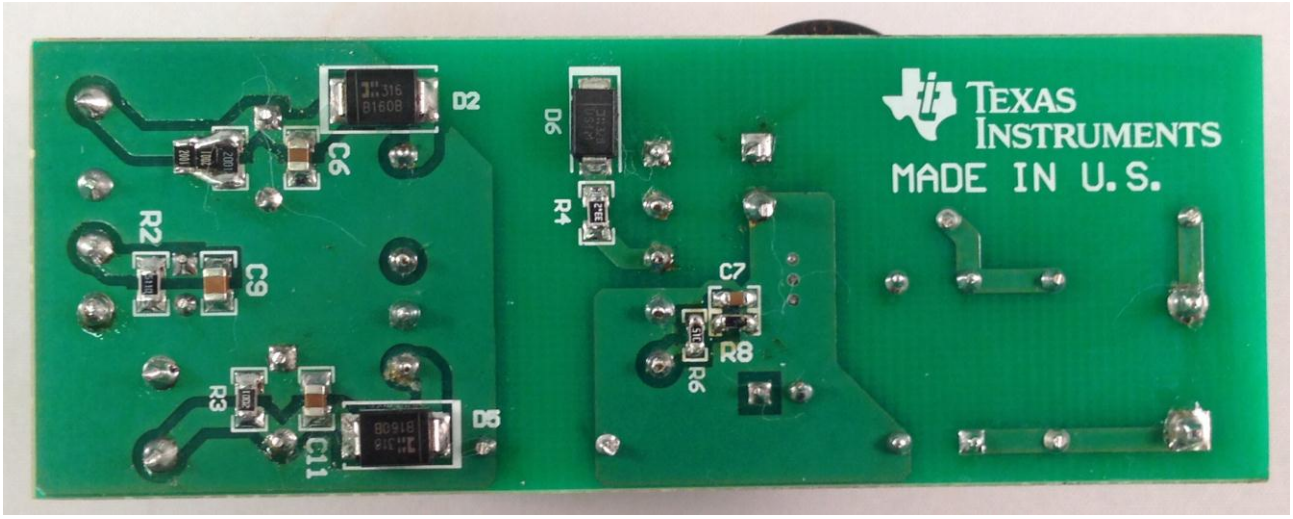
1 Photo

The photographs below show the PMP10299 Rev A assembly. This circuit was built on a PMP10299 Rev A PCB.

Top side

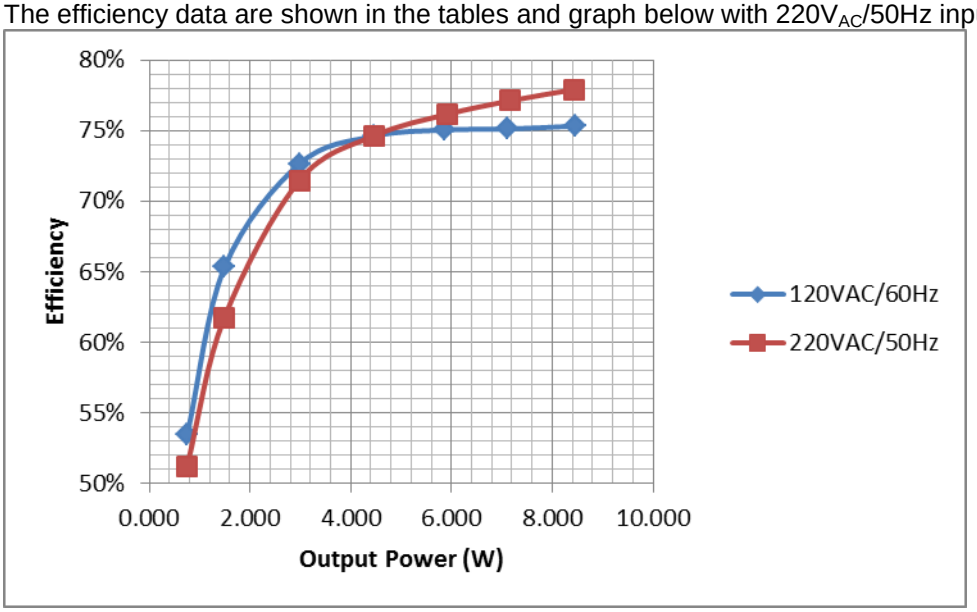


Bottom side



2 Converter Efficiency

The efficiency data are shown in the tables and graph below with $220V_{AC}$/50Hz input.



$120V_{AC}$/60Hz

Vin(ac)	Iin(A)	Pin(W)	Vo1(V)	Io1(A)	Vo2(V)	Io2(A)	Vo3(V)	Io3(A)	Pout(W)	Eff. (%)
120.05	0.24	11.222	12.31	0.306	-12.47	0.301	4.66	0.202	8.452	75.32%
120.05	0.21	9.459	12.31	0.249	-12.47	0.251	4.59	0.199	7.105	75.12%
120.05	0.17	7.817	12.33	0.201	-12.50	0.200	4.53	0.197	5.866	75.05%
120.05	0.14	5.971	12.36	0.152	-12.54	0.150	4.57	0.152	4.455	74.60%
120.05	0.10	4.103	12.37	0.101	-12.54	0.101	4.63	0.100	2.981	72.64%
120.06	0.06	2.285	12.36	0.050	-12.55	0.051	4.70	0.050	1.492	65.31%
120.06	0.04	1.407	12.38	0.025	-12.58	0.026	4.78	0.025	0.752	53.44%

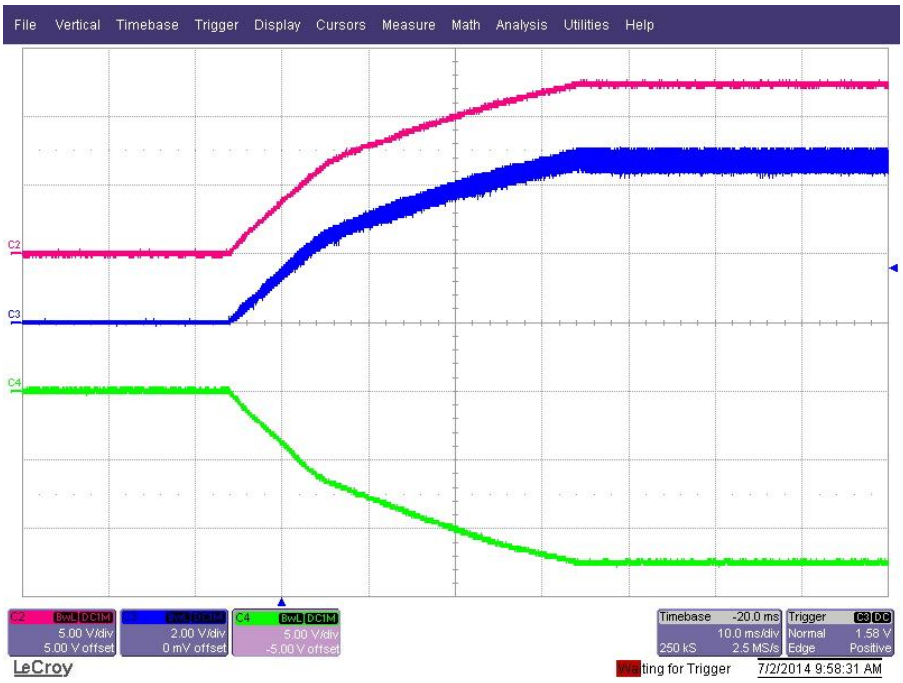
$220V_{AC}$/50Hz

Vin(ac)	Iin(A)	Pin(W)	Vo1(V)	Io1(A)	Vo2(V)	Io2(A)	Vo3(V)	Io3(A)	Pout(W)	Eff. (%)
220.3	0.15	10.830	12.39	0.301	-12.54	0.300	4.67	0.202	8.438	77.92%
220.3	0.13	9.284	12.38	0.251	-12.54	0.250	4.60	0.198	7.159	77.11%
220.3	0.12	7.761	12.38	0.202	-12.55	0.201	4.55	0.197	5.911	76.16%
220.3	0.09	5.984	12.37	0.152	-12.55	0.151	4.58	0.152	4.466	74.64%
220.3	0.07	4.168	12.37	0.101	-12.54	0.100	4.63	0.100	2.978	71.46%
220.3	0.04	2.406	12.37	0.050	-12.55	0.050	4.71	0.049	1.485	61.71%
220.3	0.03	1.461	12.39	0.025	-12.57	0.025	4.77	0.025	0.748	51.22%

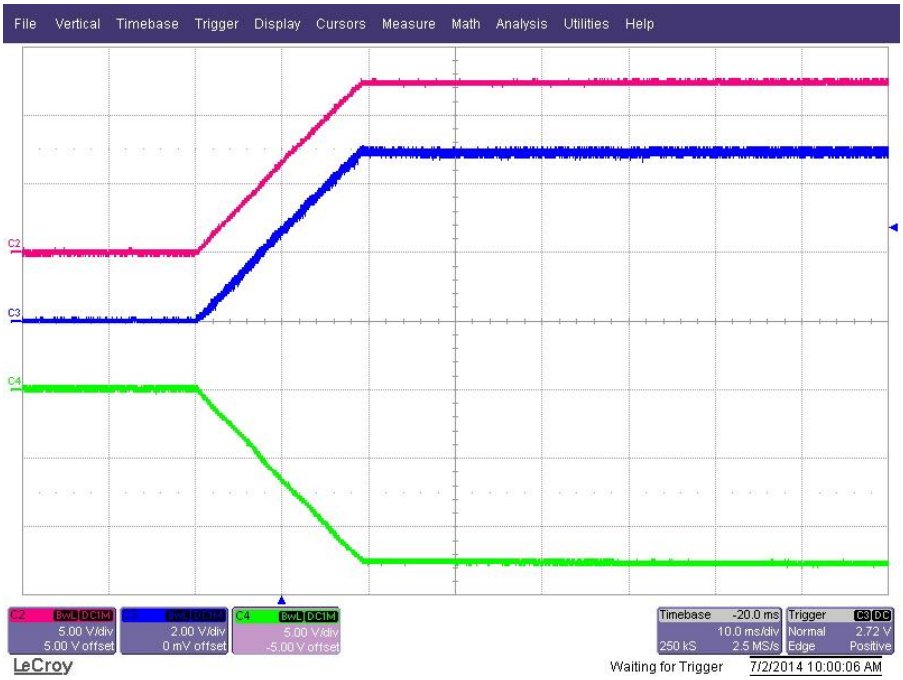
3 Startup

The output voltages at startup are shown in the images below.

3.1 Start Up @ 120V_{AC}: 12V/0.3A, -12V/0.3A, 5V/0.2A.



3.2 Start Up @ 120V_{AC}: no load.



4 Cross regulation

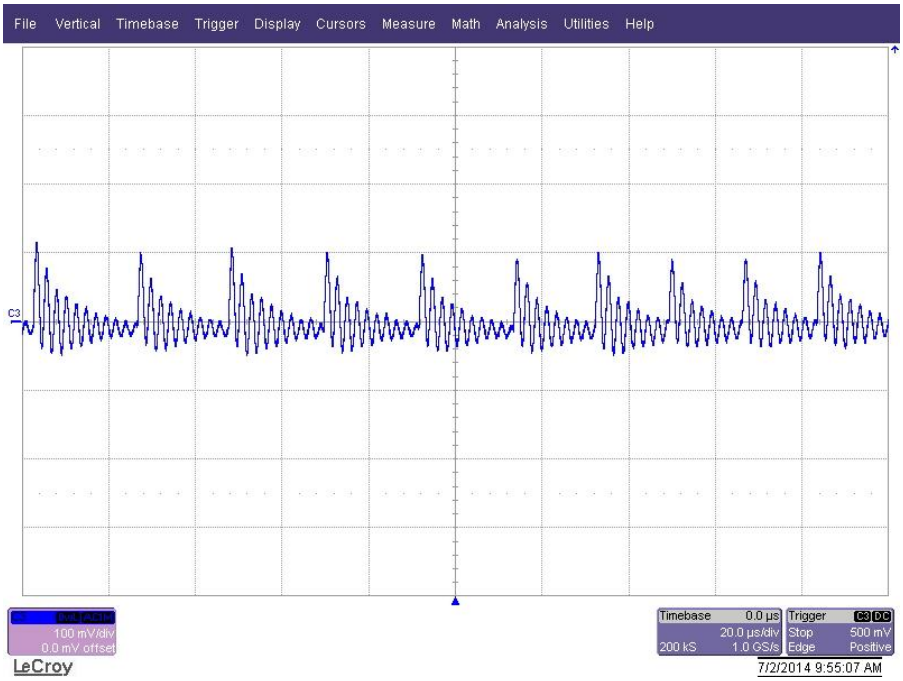
Output voltage cross regulation is tested at $220V_{AC}$/50Hz input.

I_{12V}(A)	I_{-12V}(A)	I_{5V}(A)	V_{12V}(V)	V_{-12V}(V)	V_{5V}(V)
0.3021	0.3008	0.1989	12.17	-12.32	4.591
0.3037	0.3008	0	12.23	-12.35	5.036
0.3094	0	0	12.46	-14.47	5.138
0.3091	0	0.196	12.45	-14.68	4.519
0	0	0.2012	12.59	-13.37	2.242
0	0.3008	0.1977	14.43	-12.51	4.562
0	0.3008	0	14.45	-12.51	5.421
0	0	0	12.48	-12.84	4.891
V_{out_max}			14.45	-12.32	5.421
V_{out_min}			12.23	-14.68	2.242
ΔV			2.22	2.36	3.179

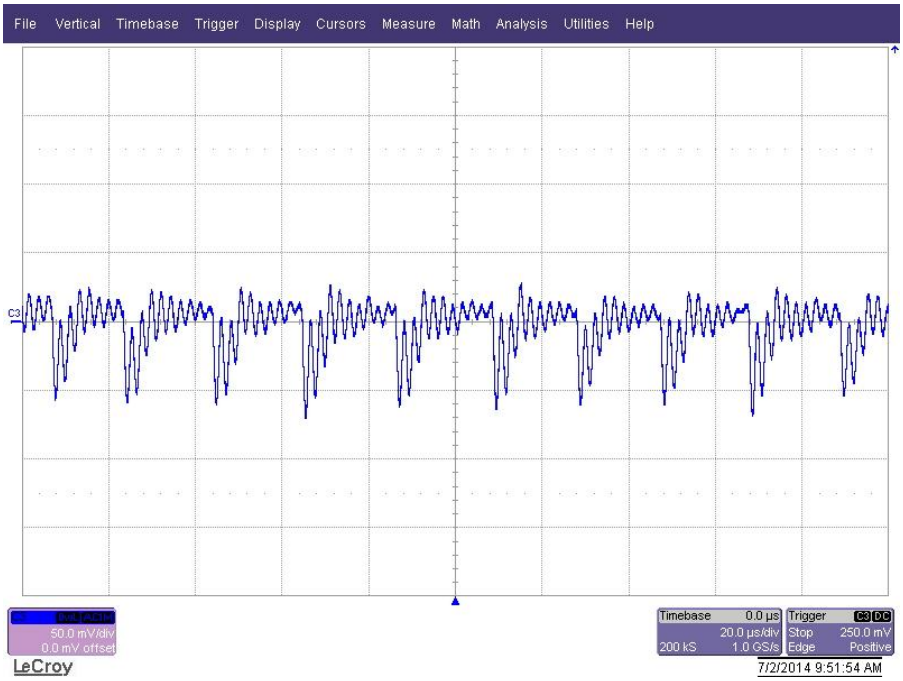
5 Output Ripple Voltages

The output ripple voltages are shown in the plots below at full load (12V/0.3A, -12V/0.3A and 5V/0.2A) with $120V_{AC}$/60Hz.

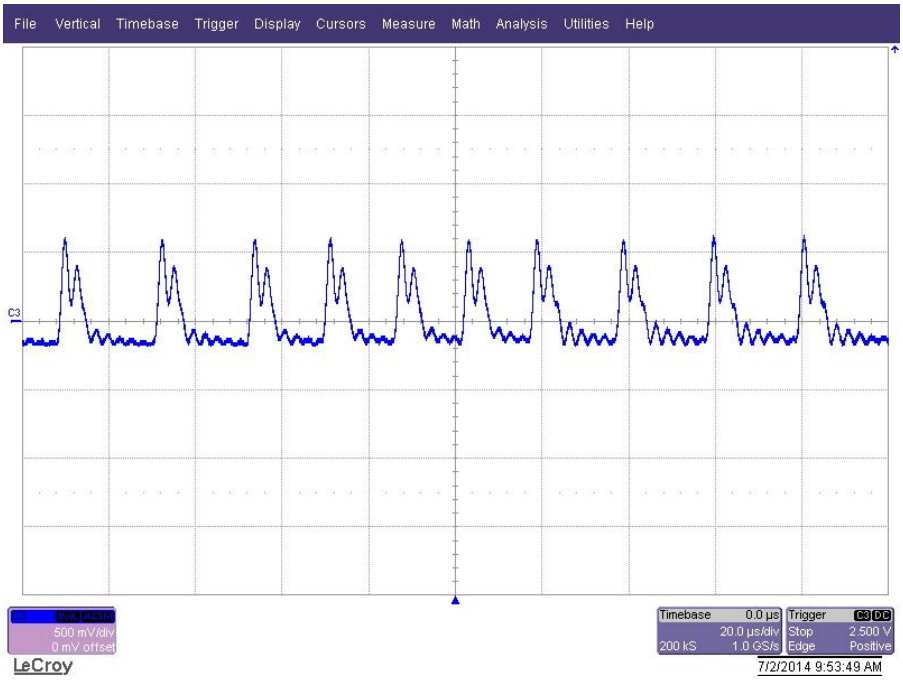
5.1 $12V_{ripple}$



5.2 $-12V_{ripple}$



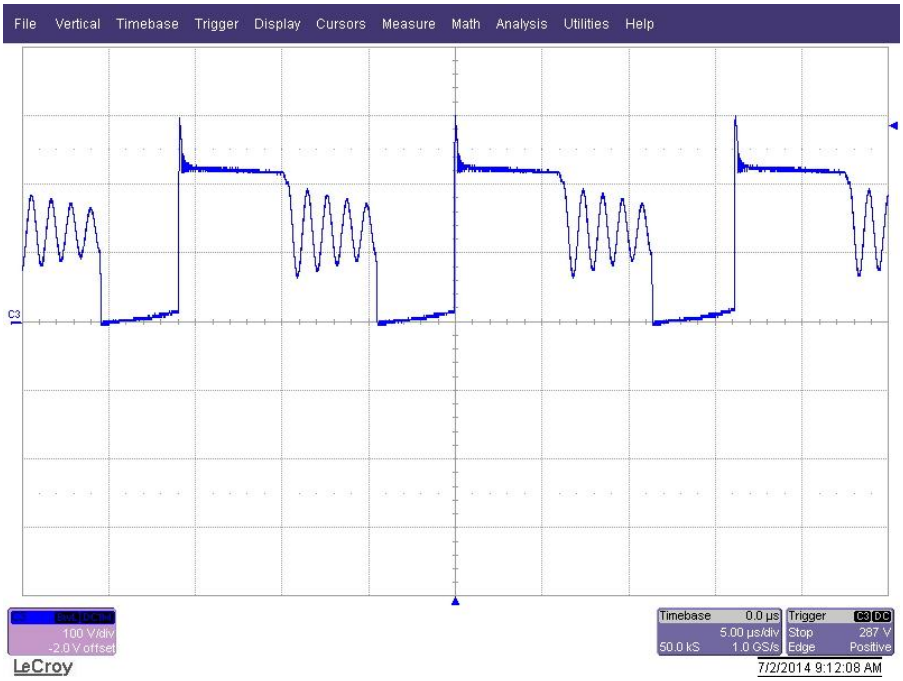
5.3 $5V_{ripple}$


File Vertical Timebase Trigger Display Cursors Measure Math Analysis Utilities Help
C3
500 mV/div
0 mV offset
Timebase 0.0 µs
20.0 µs/div
200 kS 1.0 GS/s
Trigger
Stop 2.500 V
Edge Positive
LeCroy
7/2/2014 9:53:49 AM

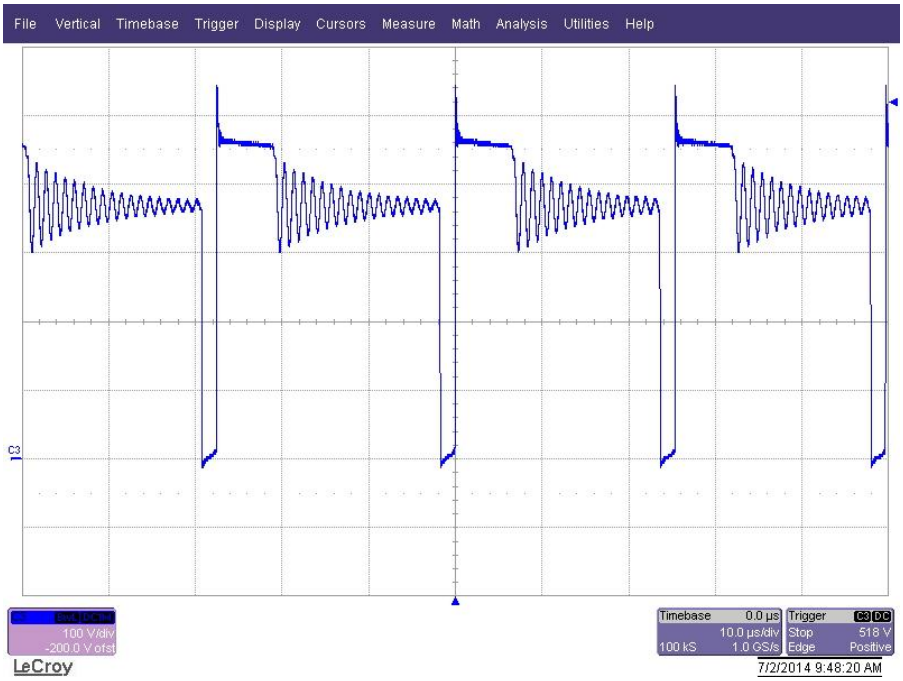
6 Switching Waveforms

The images below show key switching waveforms of PMP10299RevA. The waveforms are measured with 12V/0.3A, -12V/0.3A and 5V/0.2A full load.

6.1 Voltage at U1 pin 8 @ 100V_{ac}/60Hz



6.2 Voltage at U1 pin 8 @ 265V_{ac}/50Hz



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Mailing Address: Texas Instruments, Post Office Box 655303, Dallas, Texas 75265