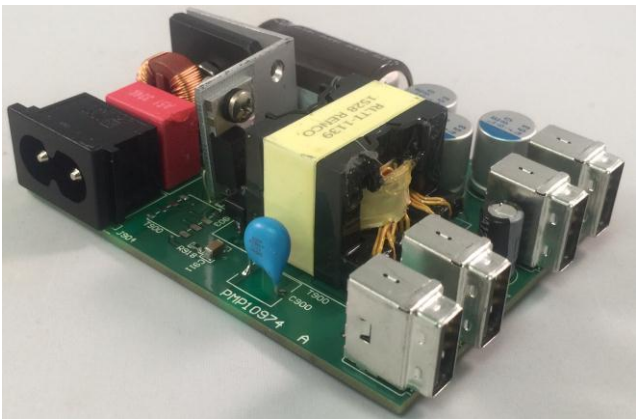
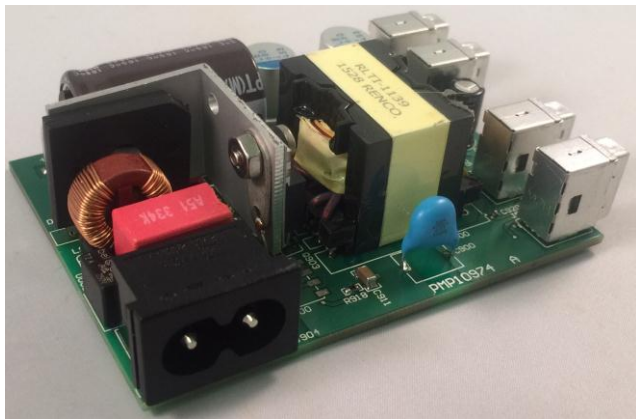
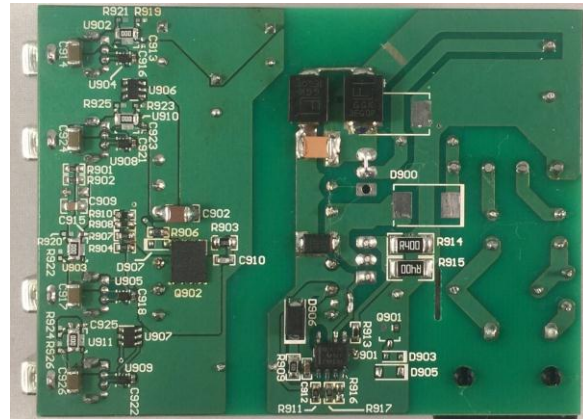
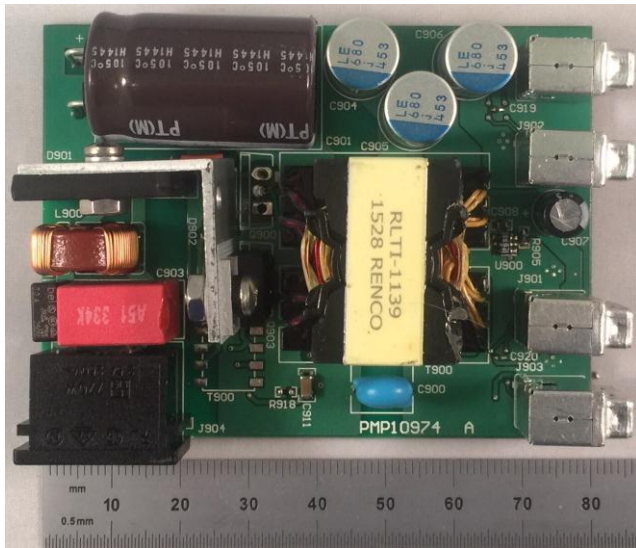


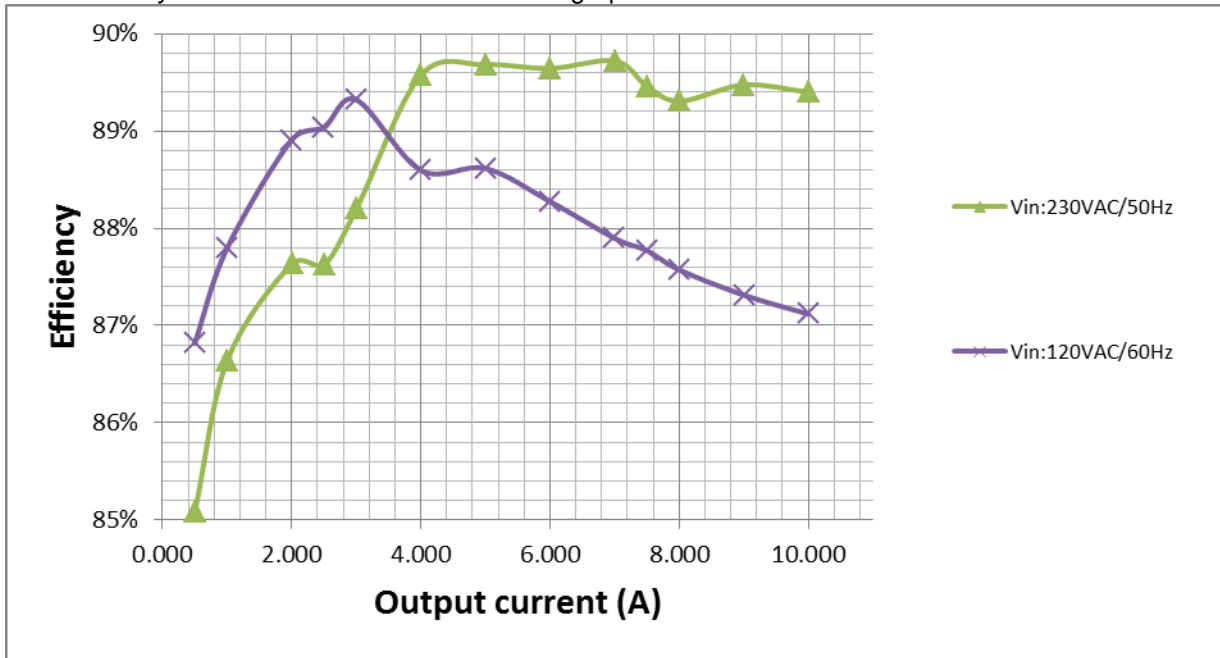
1 Photo

The photographs below show the PMP11281 Rev A assembly. This circuit was built on a PMP10974 Rev A PCB.



2 Converter Efficiency

The efficiency data are shown in the tables and graph below.



V_{IN}=120V_{AC}/60Hz

V _{in} (AC)	I _{in} (A)	P _{in} (W)	V _{out} (V)	I _{out} (A)	P _{out} (W)	Losses	Eff. (%)
119.89	0.855	59.230	5.16	10.000	51.600	7.630	87.12%
119.98	0.771	52.970	5.133	9.010	46.248	6.722	87.31%
120.1	0.687	46.690	5.111	8.000	40.888	5.802	87.57%
120.13	0.644	43.580	5.100	7.500	38.250	5.330	87.77%
120.2	0.602	40.520	5.088	7.000	35.616	4.904	87.90%
120.31	0.519	34.440	5.067	6.000	30.402	4.038	88.28%
120.39	0.437	28.460	5.044	5.000	25.220	3.240	88.62%
120.01	0.357	22.660	5.019	4.000	20.076	2.584	88.60%
120.09	0.273	16.800	5.002	3.000	15.006	1.794	89.32%
120.13	0.232	14.000	4.99	2.498	12.465	1.535	89.04%
120.2	0.191	11.197	4.98	1.999	9.955	1.242	88.91%
120.32	0.105	5.662	4.971	1.000	4.971	0.691	87.80%
120.45	0.059	2.864	4.973	0.500	2.487	0.378	86.82%
120.12	0.015	0.035	4.987	0.000	0.000	0.035	0.00%

V_{IN}=230V_{AC}/50Hz

Vin(AC)	Iin(A)	Pin(W)	Vo1(V)	Io1(A)	Pout(W)	Losses	Eff. (%)
230.0	0.520	58.570	5.162	10.020	51.723	6.847	88.31%
230.1	0.469	52.250	5.136	9.000	46.224	6.026	88.47%
230.1	0.421	46.260	5.113	8.000	40.904	5.356	88.42%
229.9	0.397	43.230	5.098	7.500	38.235	4.995	88.45%
230.0	0.372	40.150	5.089	7.000	35.623	4.527	88.72%
230.0	0.324	34.300	5.067	6.000	30.402	3.898	88.64%
230.1	0.274	28.330	5.044	4.990	25.170	3.160	88.84%
230.1	0.224	22.600	5.021	4.000	20.084	2.516	88.87%
230.2	0.174	16.904	5.002	3.000	15.006	1.898	88.77%
230.2	0.149	14.101	4.989	2.500	12.473	1.629	88.45%
230.0	0.123	11.295	4.979	2.000	9.958	1.337	88.16%
230.1	0.077	6.403	4.993	1.000	4.993	1.410	77.98%
230.1	0.048	3.279	4.994	0.500	2.497	0.782	76.15%
230.2	0.025	0.034	4.991	0.000	0.000	0.034	0.00%

Average Efficiency

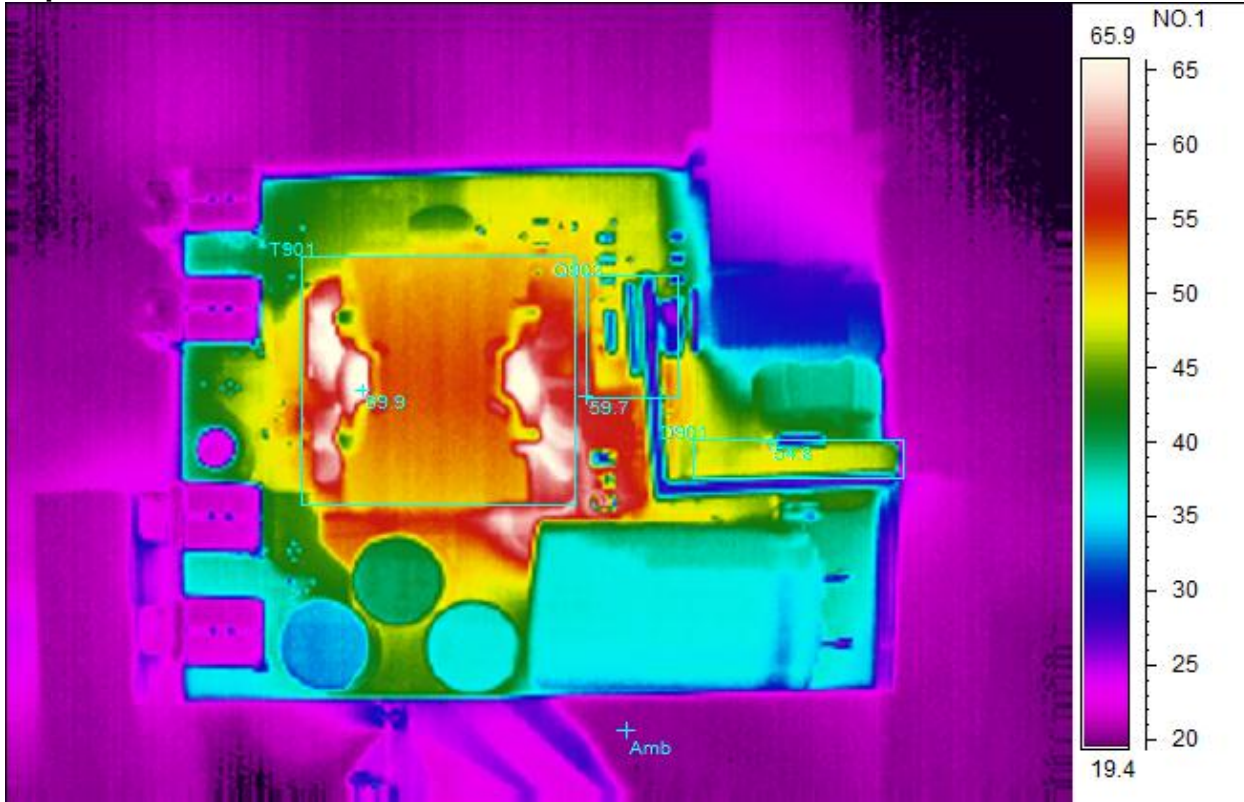
Vin	Pin(W)	Vout(V)	Iout(A)	Load	Avg Eff.
120VAC/60Hz	14.000	4.99	2.498	25%	88.13%
	28.460	5.044	5.000	50%	
	43.580	5.100	7.500	75%	
	59.230	5.16	10.000	100%	
230VAC/50Hz	14.101	4.989	2.500	25%	88.51%
	28.330	5.044	4.990	50%	
	43.230	5.098	7.500	75%	
	58.570	5.162	10.020	100%	

3 Thermal Images

The thermal images below show a top view and bottom view of the board. The ambient temperature was 20°C with no forced air flow. The output was at 5V/50W full load.

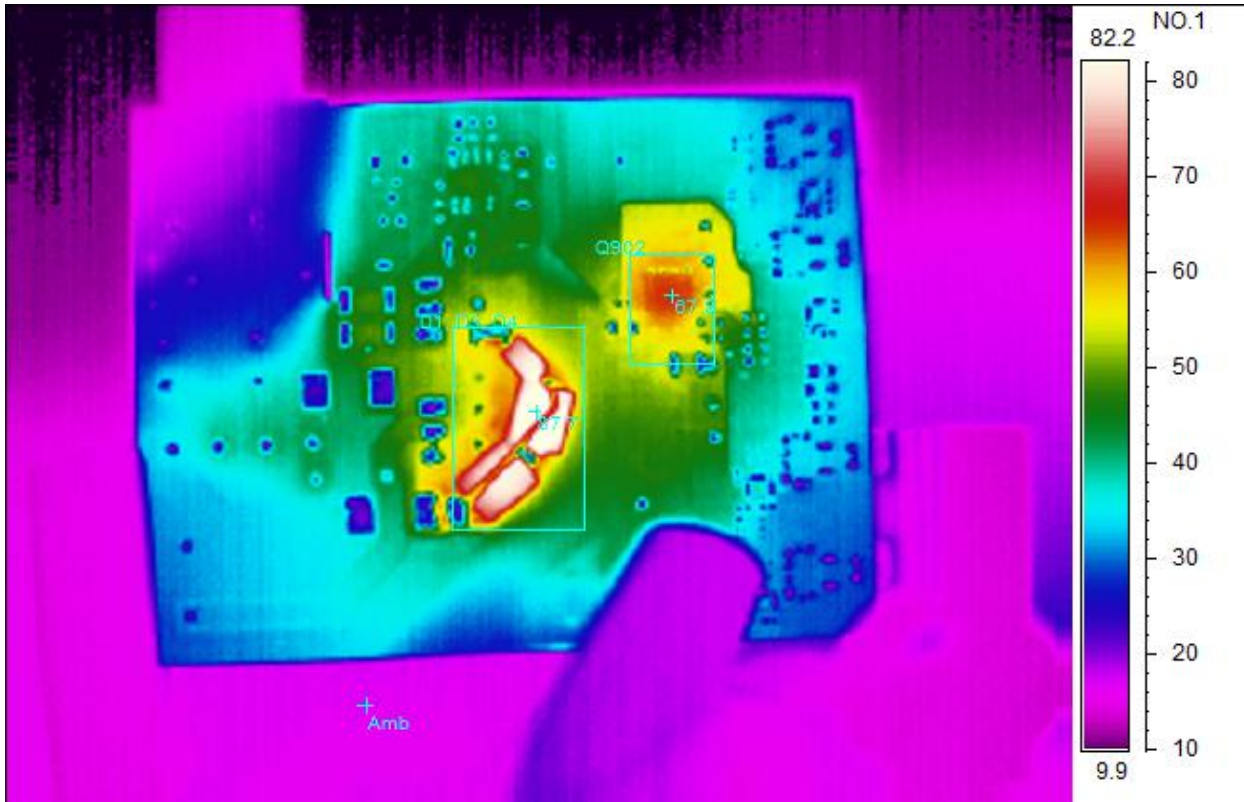
120V_{AC}/60Hz

Top Side



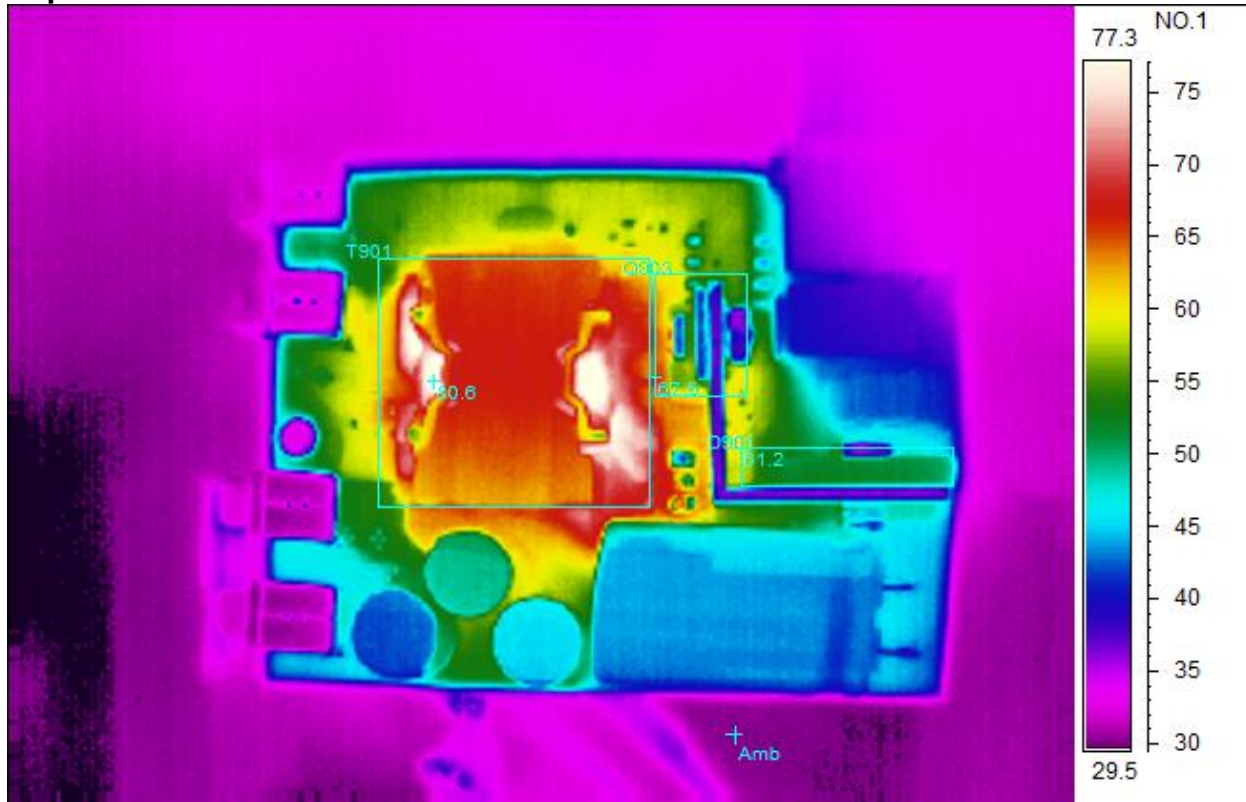
Spot analysis	Value
Amb Temperature	20.7°C
Area analysis	Value
T901Max	69.9°C
Q903Max	59.7°C
D901Max	54.8°C

120V_{AC}/60Hz Bottom Side



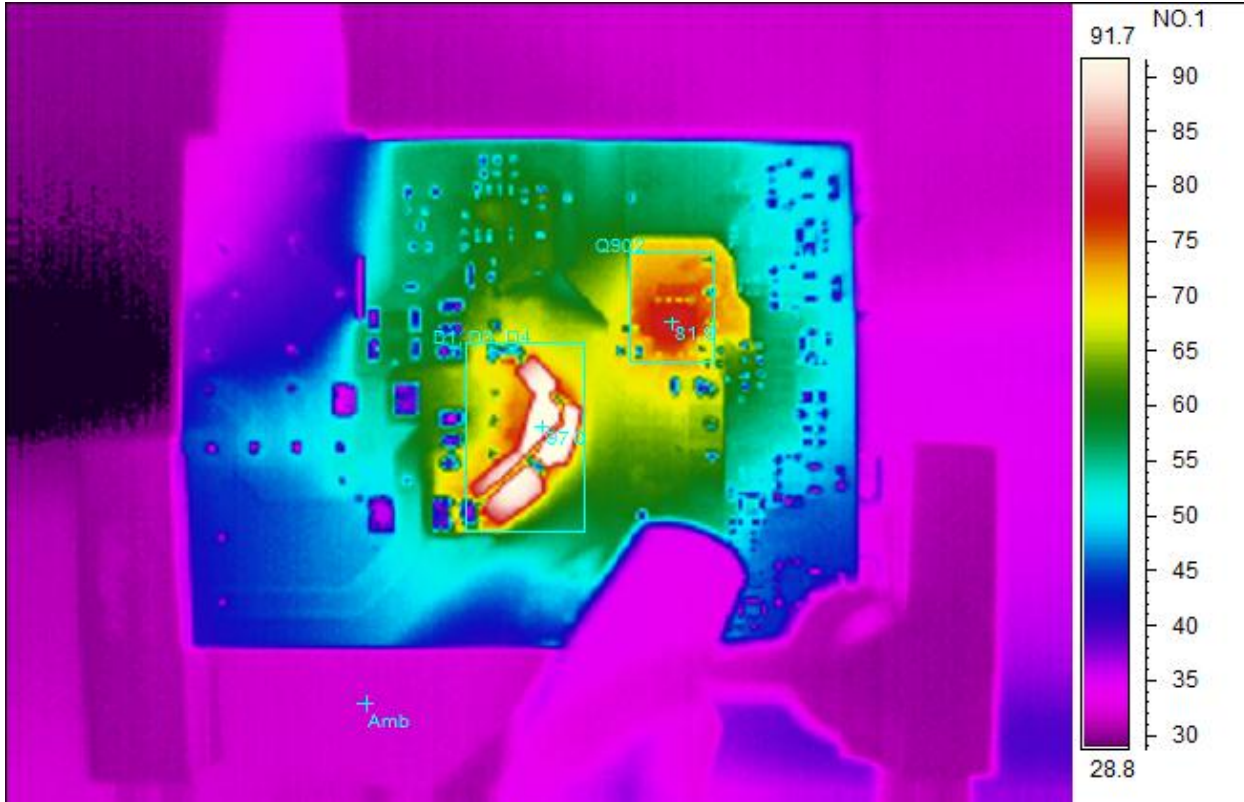
Spot analysis	Value
Amb Temperature	17.7°C
Area analysis	Value
D1, D3, D4Max	87.7°C
Q902Max	67.9°C

**230V_{AC}/50Hz
Top Side**



Spot analysis	Value
Amb Temperature	30.1°C
Area analysis	Value
T901Max	80.6°C
Q903Max	67.5°C
D901Max	61.2°C

230V_{AC}/50Hz Bottom Side

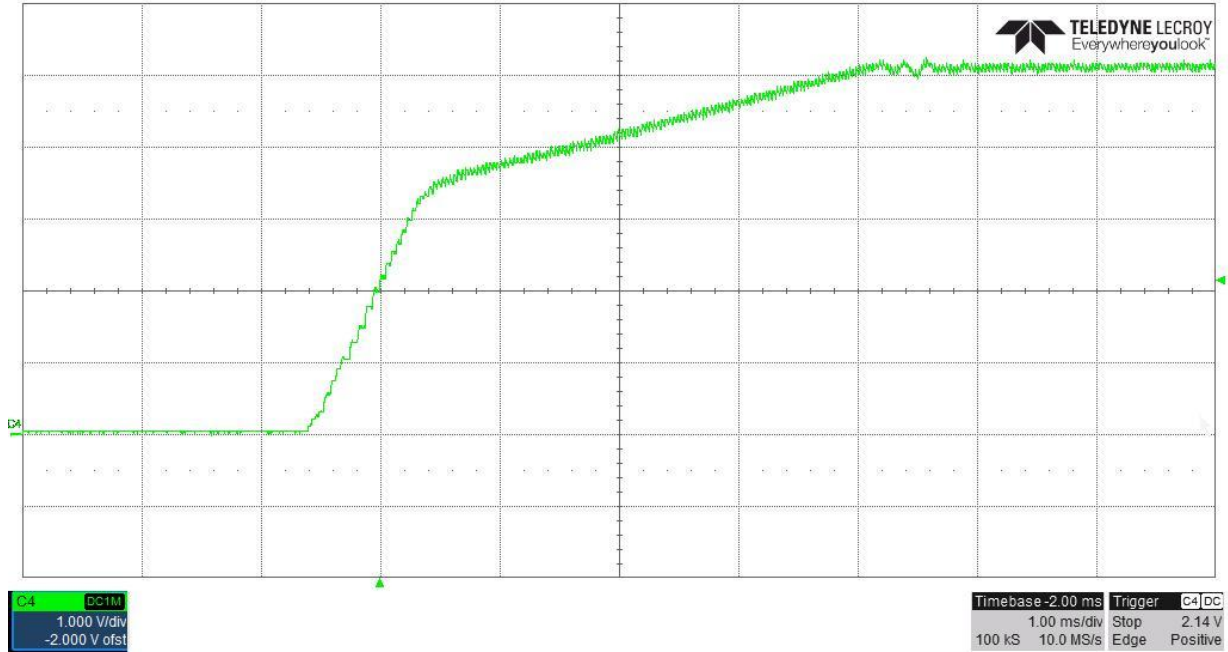


Spot analysis	Value
Amb Temperature	32.9°C
Area analysis	Value
D1, D3, D4Max	97.0°C
Q902Max	81.9°C

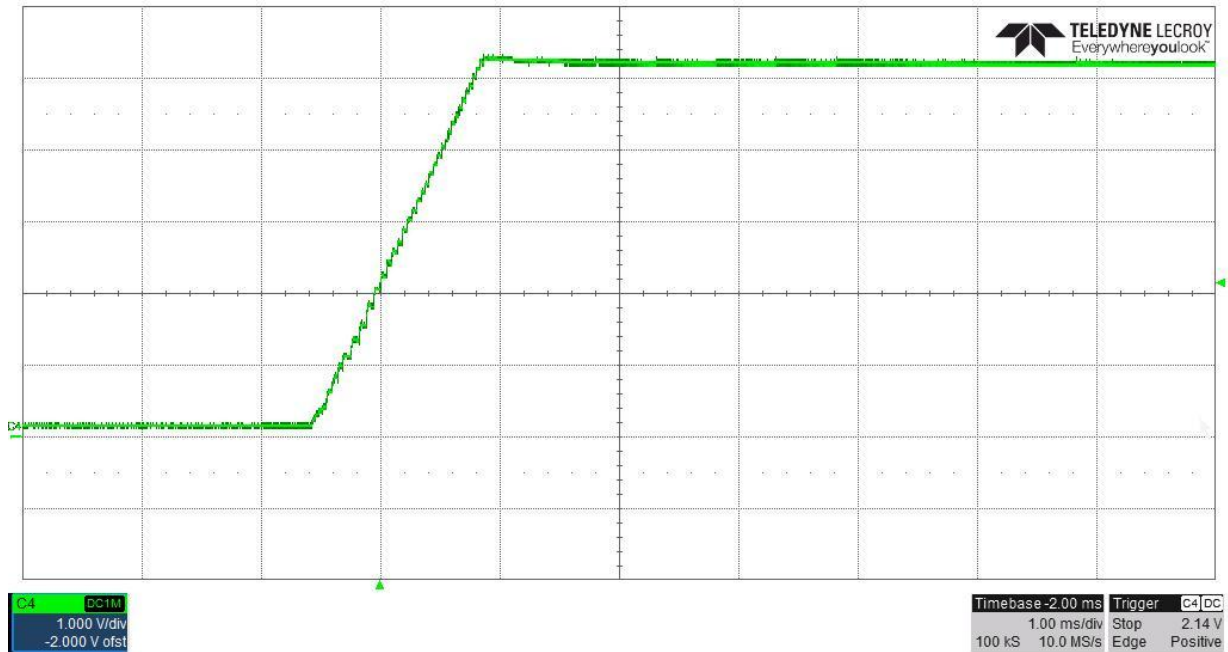
4 Startup

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

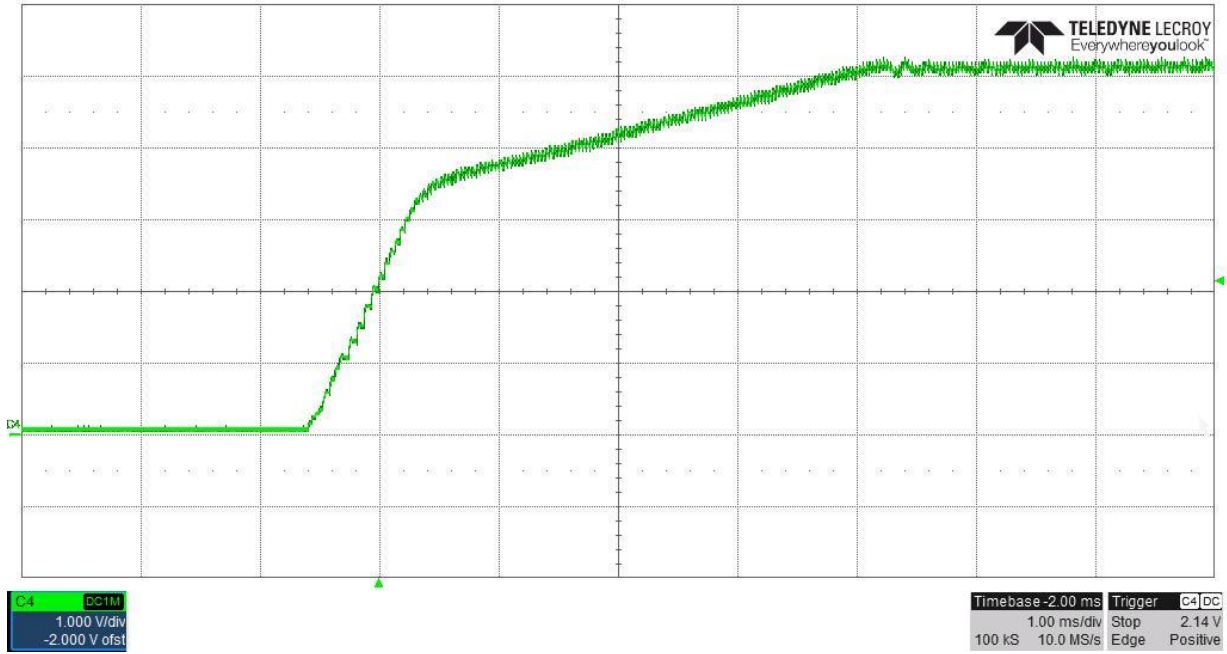
4.1 Startup @ 120V_{AC}/60Hz: 5V/10A at C907.



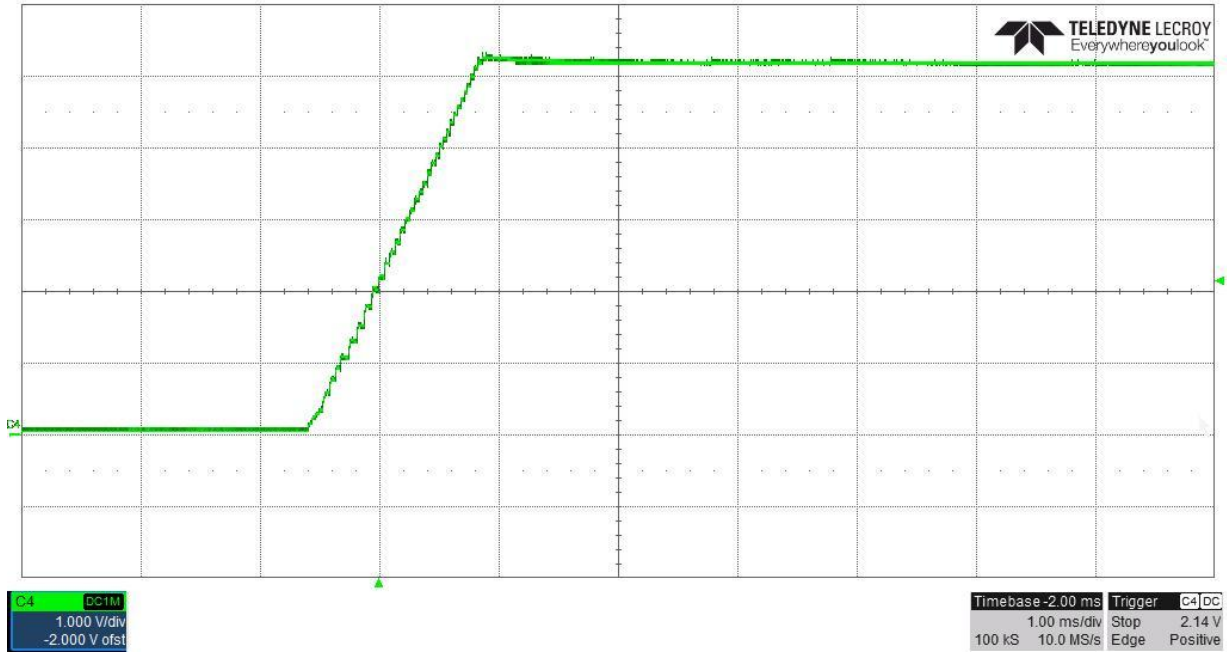
4.2 Startup @ 120V_{AC}/60Hz: no load.



4.3 Startup @ 230V_{AC}/50Hz: 5V/10A at C907.

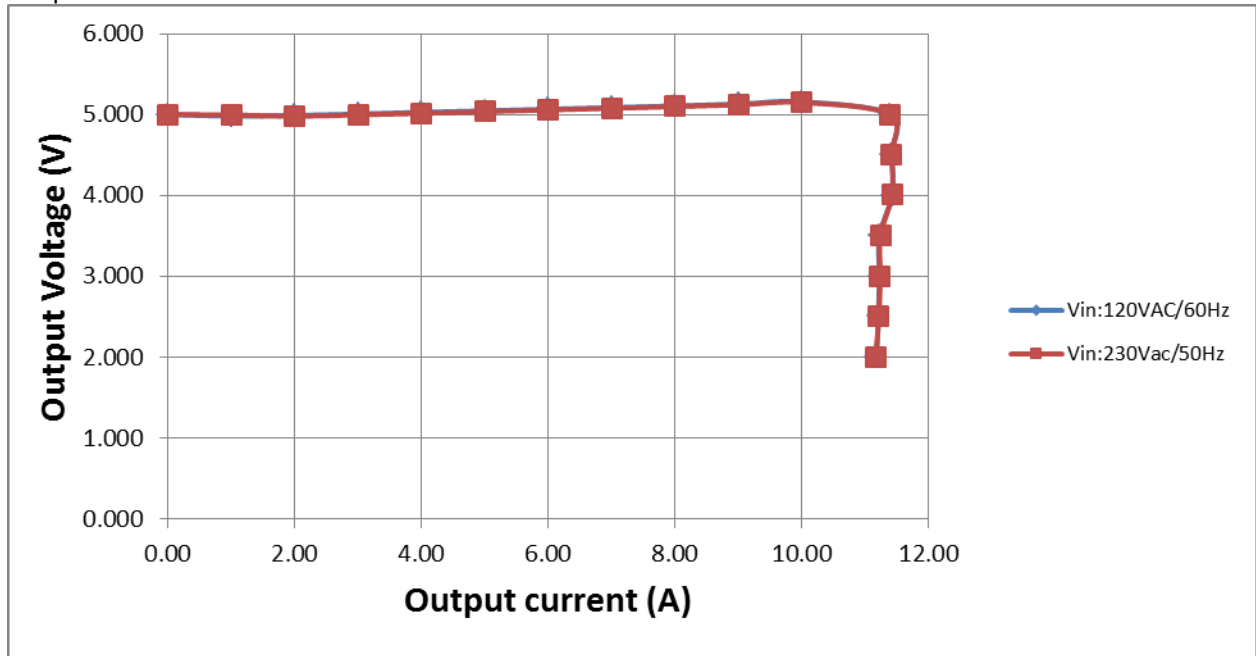


4.4 Startup @ 230V_{AC}/50Hz: no load.



5 Constant Current/ Constant Voltage

The plots and table below show the CC/CV curves of this board.

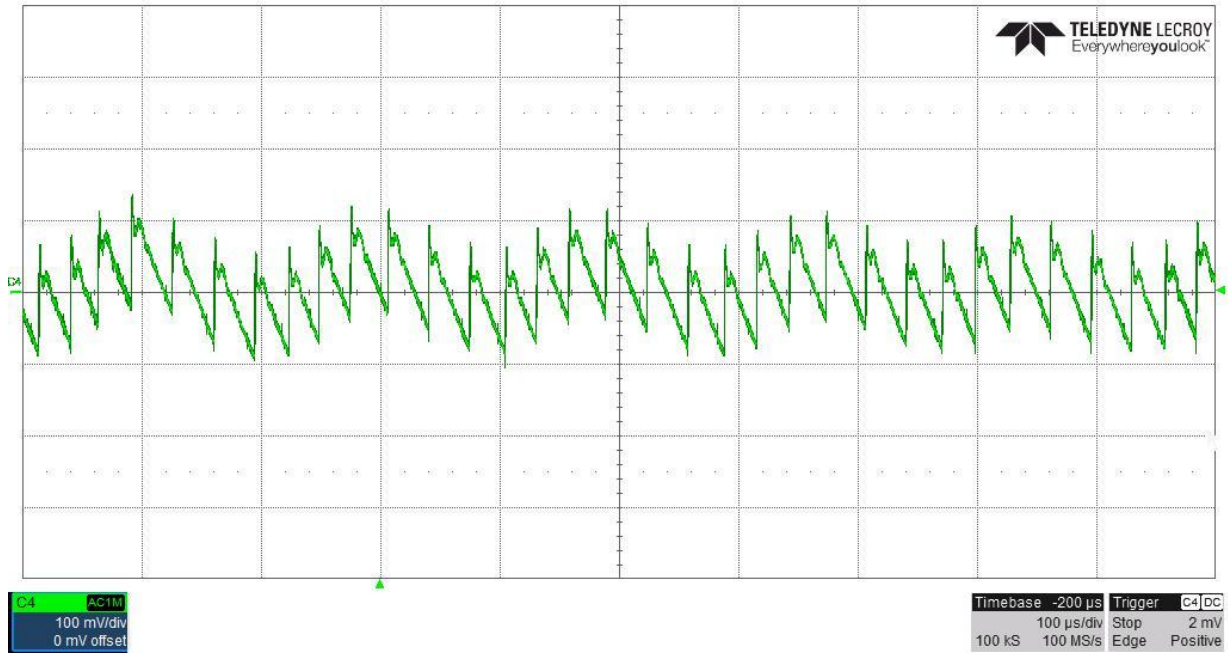


120VAC/60Hz		230VAC/50Hz	
Vout	Iout	Vout	Iout
5.000	0.000	5.002	0.000
4.981	1.000	4.996	1.002
4.990	2.000	4.979	2.000
5.007	3.000	4.997	3.000
5.028	4.002	5.015	4.000
5.046	5.000	5.036	5.000
5.066	6.000	5.057	5.998
5.086	7.000	5.078	7.000
5.107	8.000	5.099	8.000
5.130	9.000	5.121	9.000
5.159	10.000	5.149	10.000
5.001	11.394	5.001	11.390
4.500	11.416	4.503	11.414
4.001	11.422	4.004	11.418
3.500	11.222	3.503	11.236
3.000	11.220	3.003	11.234
2.500	11.206	2.500	11.212
2.000	11.174	2.000	11.160

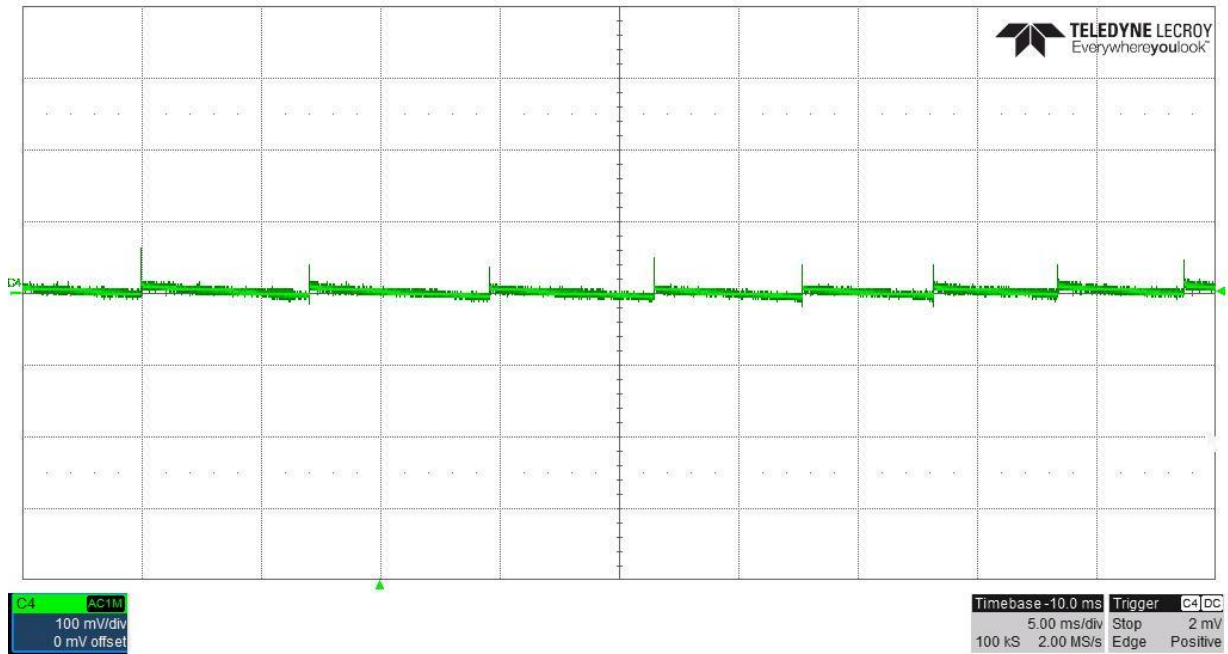
6 Output Ripple Voltages

The output ripple voltage is shown in the plots below.

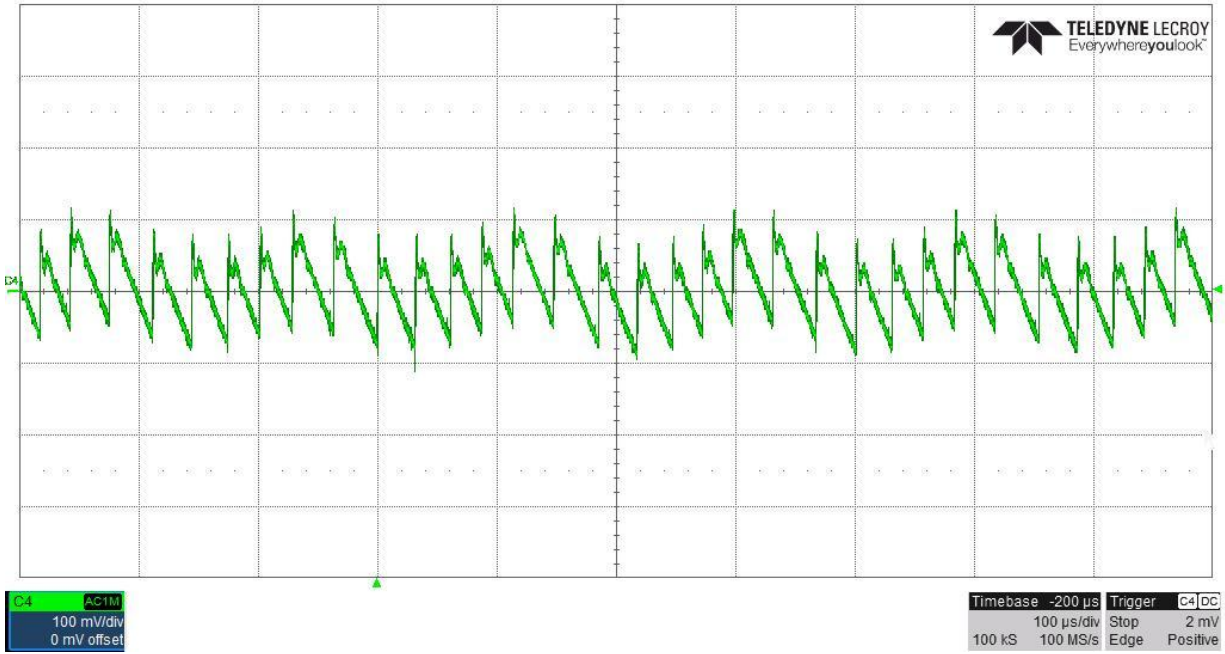
6.1 120V_{AC}/60Hz: 5V/10A at C907.



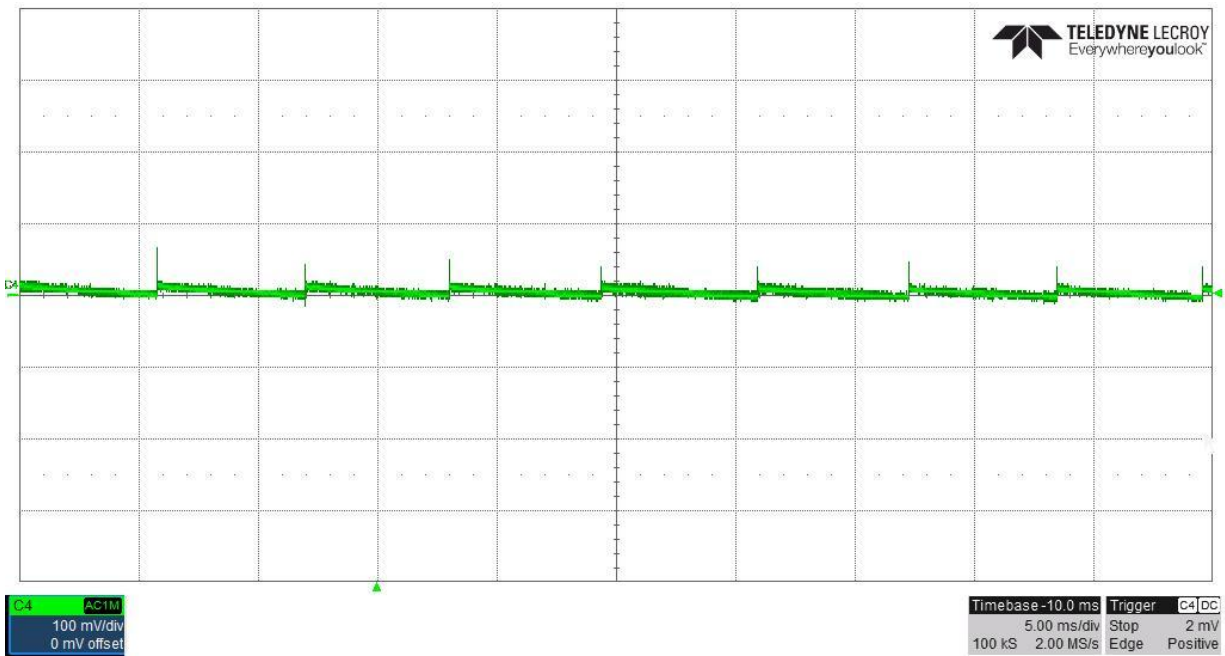
6.2 120V_{AC}/60Hz: no Load.



6.3 230V_{AC}/50Hz: 5V/10A at C907



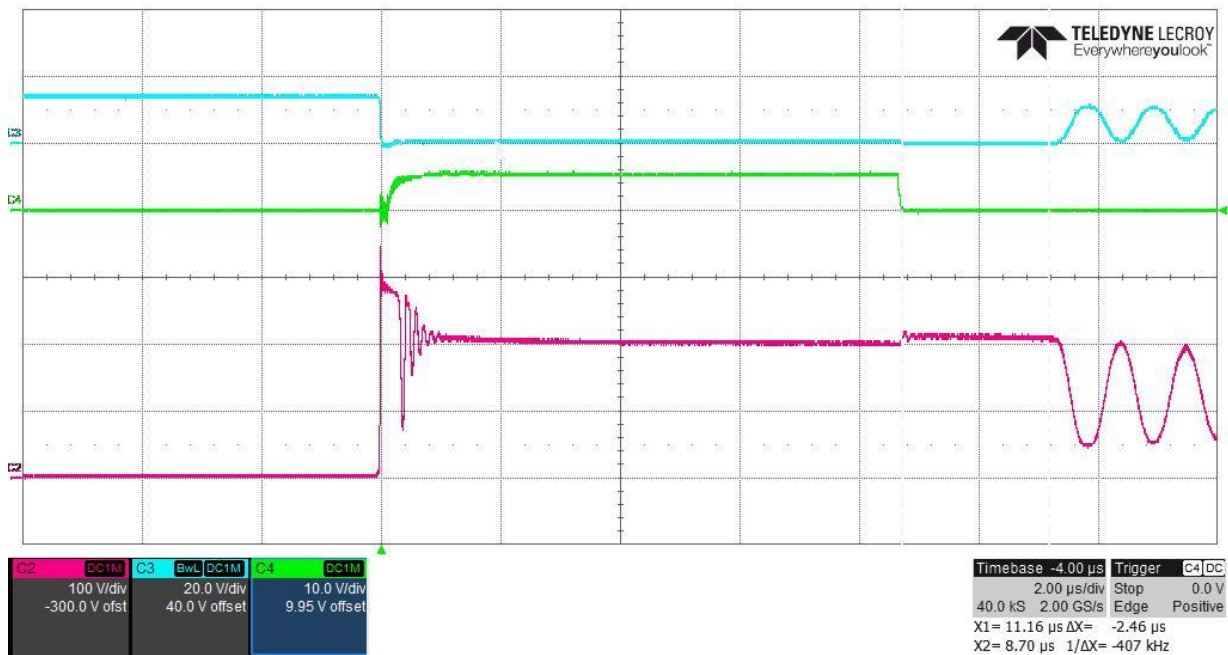
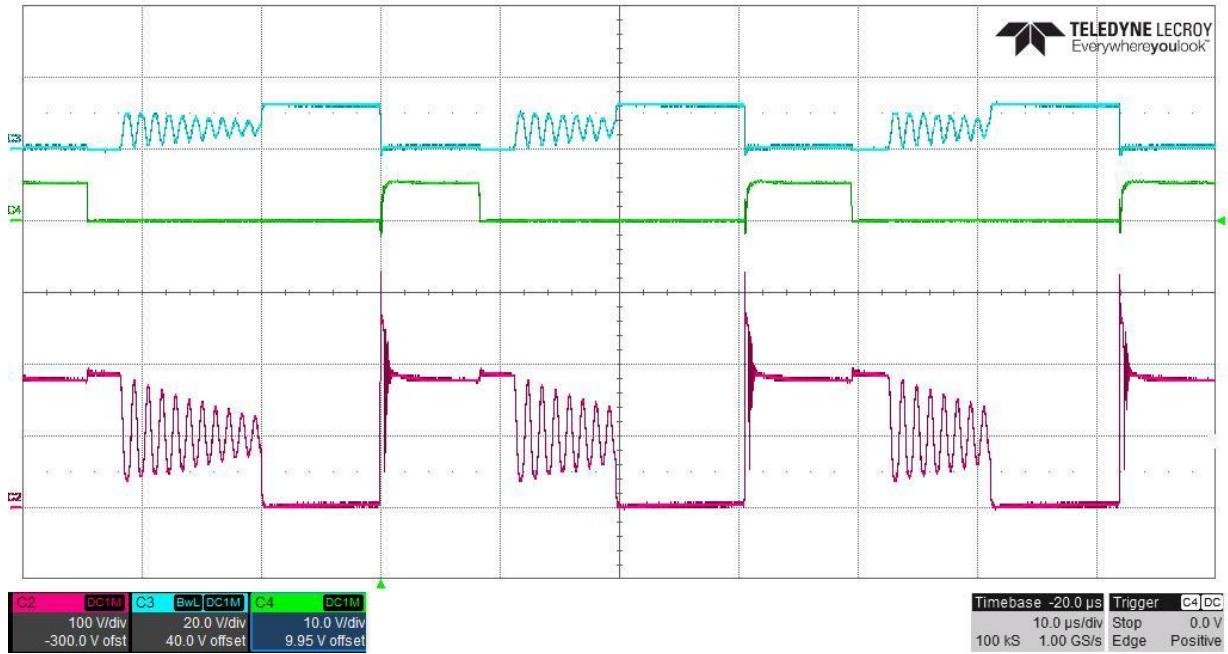
6.4 230V_{AC}/50Hz: no Load.



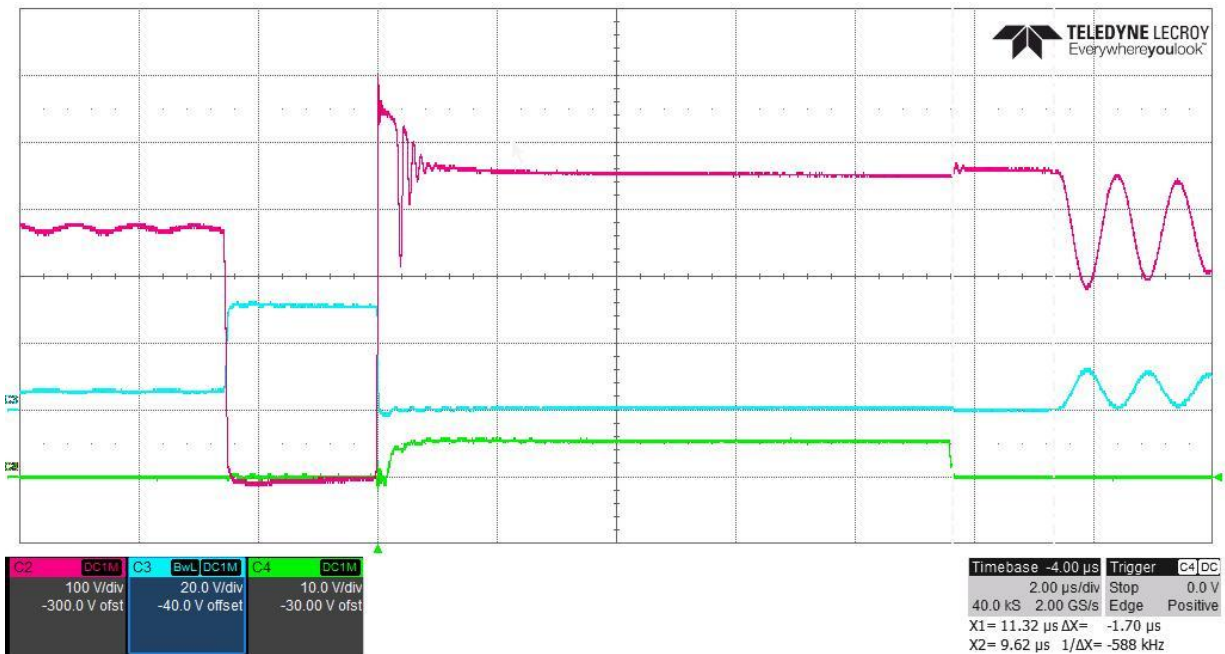
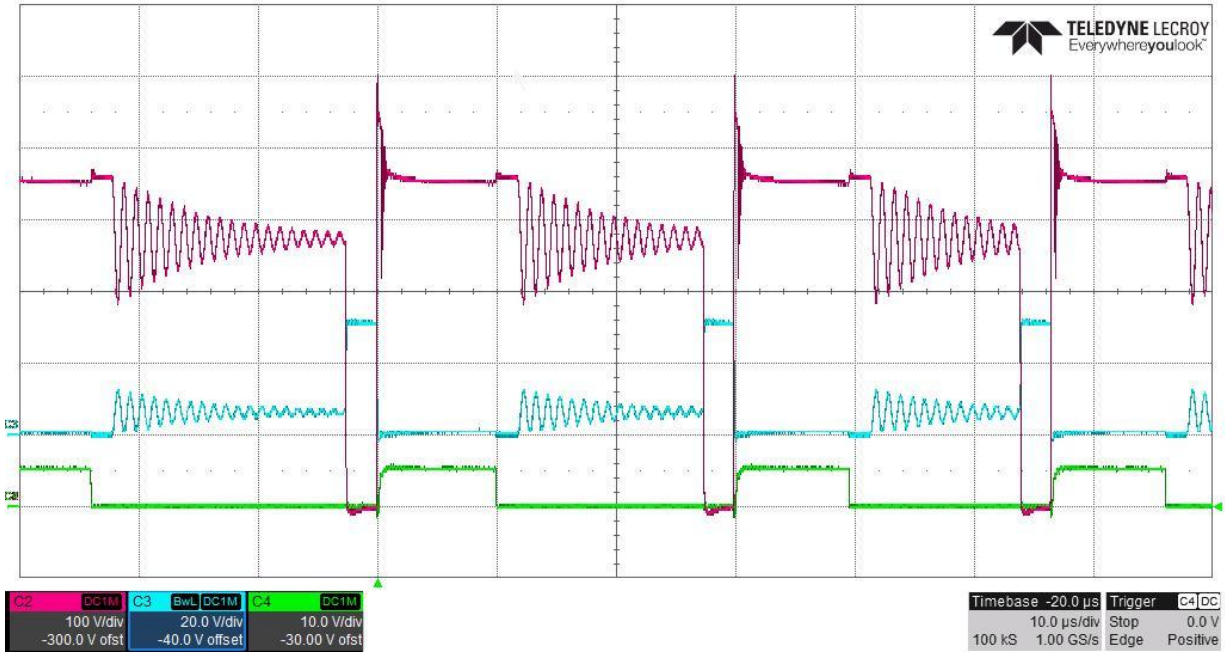
7 Switching Waveforms

The images below show key switching waveforms of this board. The waveforms are measured with 5V/50W full load. CH2: V_D to GND (Q903), CH3: V_{DS} (Q902).

7.1 85V_{AC}/60Hz



7.2 264V_{AC}/50Hz



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