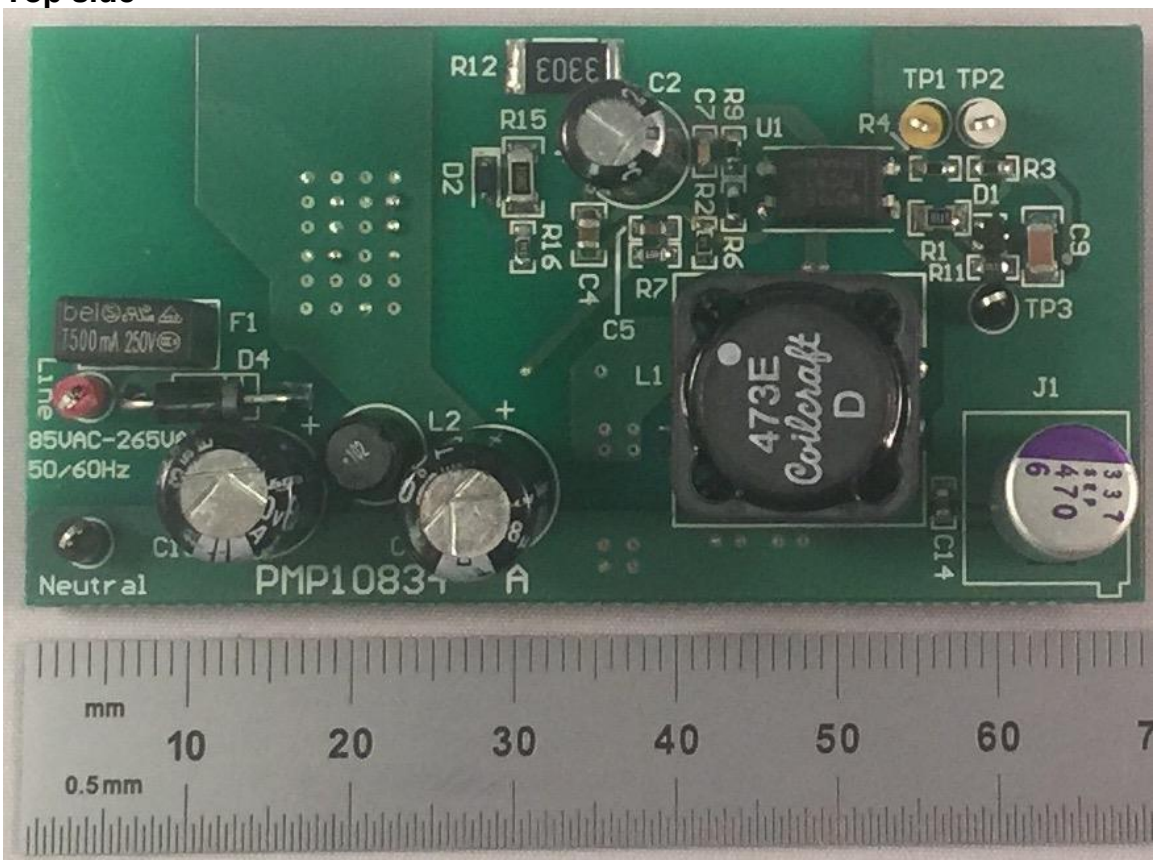
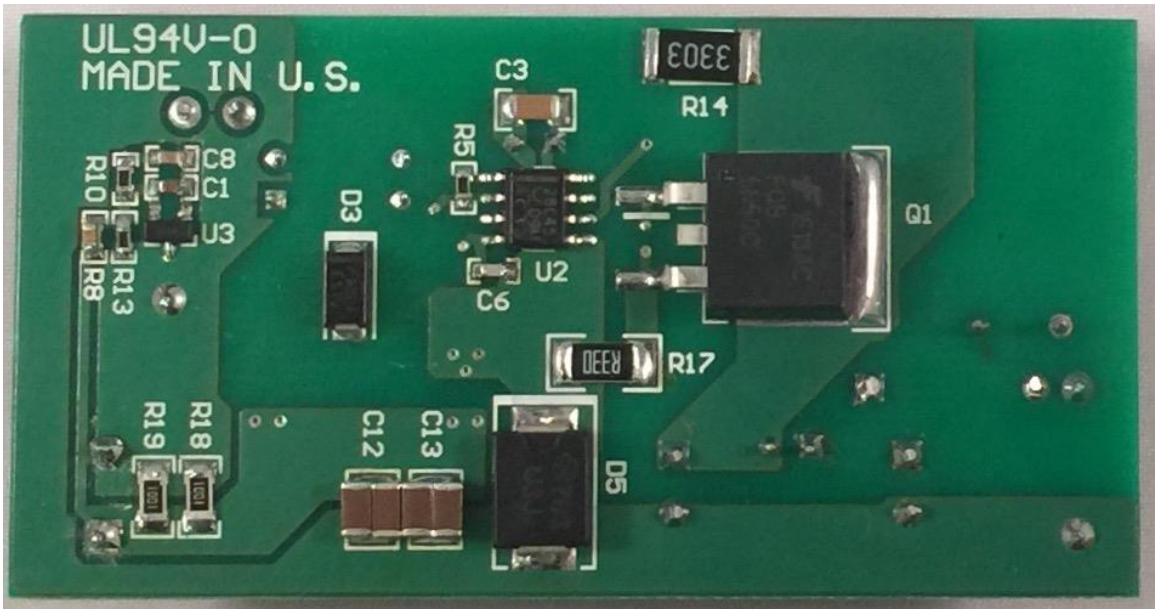
1 Photo

The photographs below show the PMP10834 Rev A assembly. This circuit was built on a PMP10834 Rev A PCB.

Top side

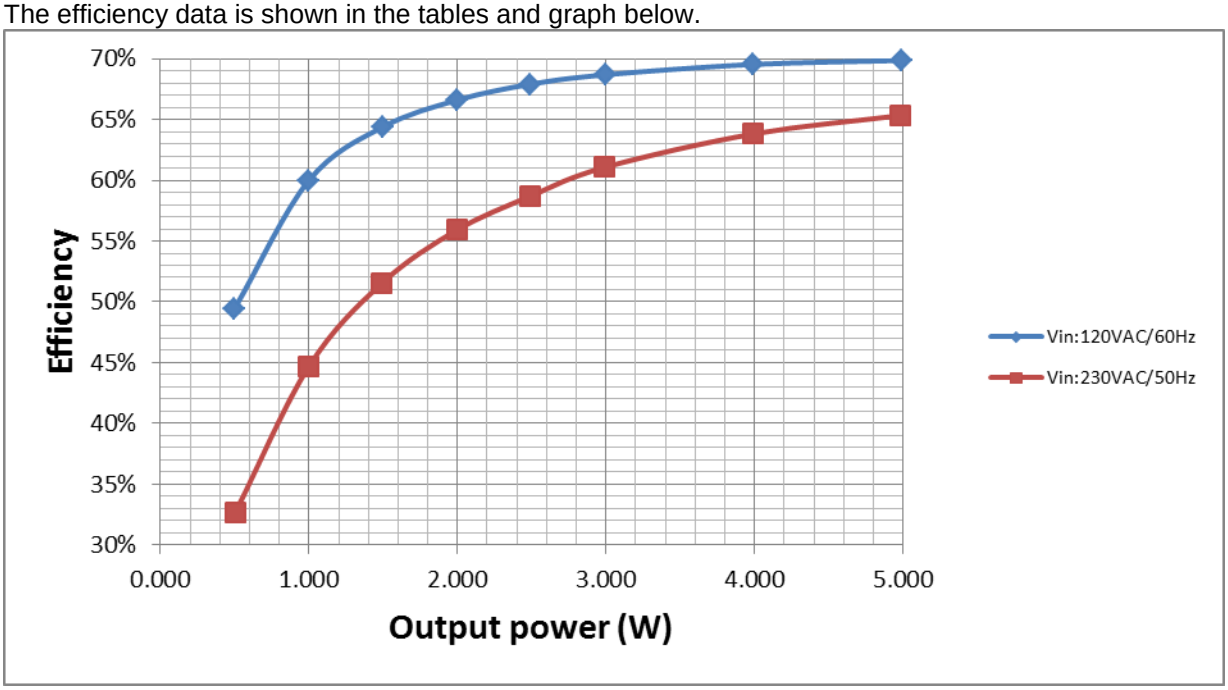


Bottom side



2 Converter Efficiency

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



V_{in}=120V_{AC}/60HZ

Vin(ac)	Iin(A)	Pin(W)	Vout(V)	Iout(A)	Pout(W)	Eff. (%)
120.13	0.15404	7.143	4.990	1.00	4.990	69.86%
120.20	0.12794	5.741	4.990	0.80	3.992	69.53%
120.01	0.10192	4.366	4.990	0.60	2.999	68.69%
120.03	0.08838	3.667	4.990	0.50	2.490	67.90%
120.04	0.07562	3.004	4.990	0.40	2.001	66.61%
120.06	0.06258	2.325	4.990	0.30	1.497	64.39%
120.07	0.04858	1.664	4.990	0.20	0.998	59.98%
120.08	0.03089	1.009	4.990	0.10	0.499	49.45%
120.09	0.02117	0.666	4.990	0.05	0.235	35.21%
120.09	0.01003	0.286	4.990	0.00	0.000	0.00%

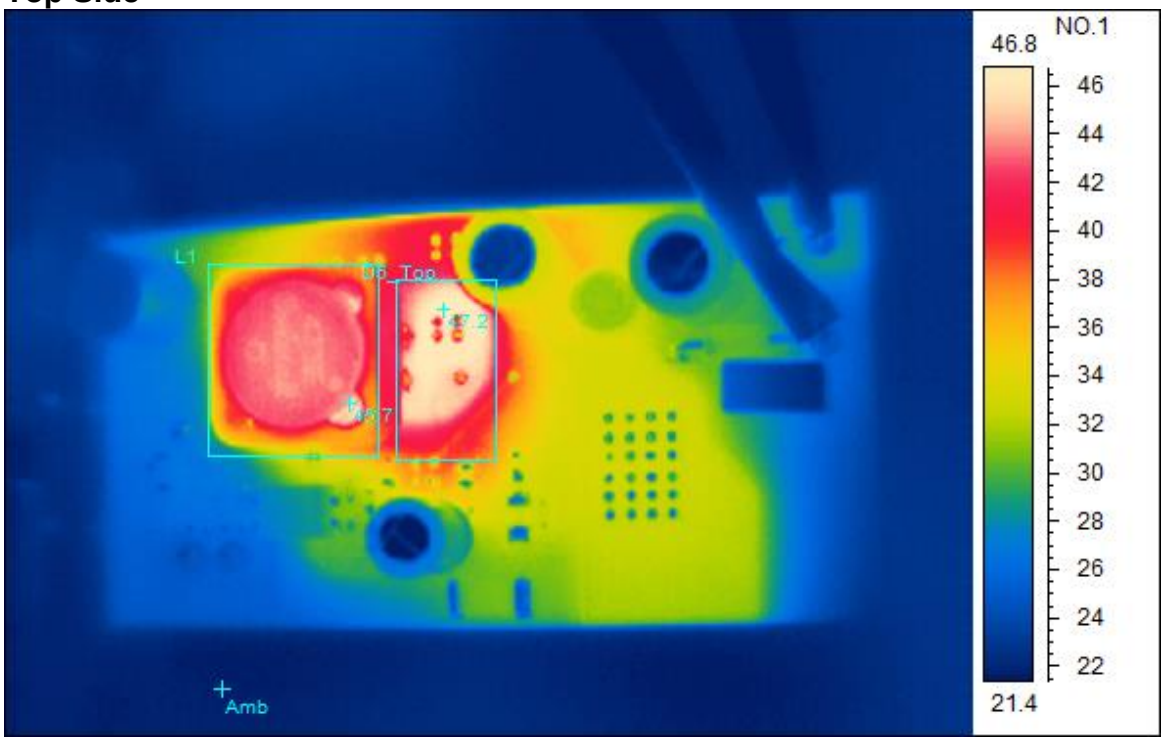
V_{in}=230V_{AC}/50Hz

Vin(ac)	Iin(A)	Pin(W)	Vo1(V)	Io1(A)	Pout(W)	Eff. (%)
230.00	0.10347	7.630	4.980	1.00	4.985	65.33%
230.00	0.08907	6.255	4.990	0.80	3.992	63.82%
230.00	0.07421	4.895	4.990	0.60	2.989	61.06%
230.00	0.06681	4.242	4.990	0.50	2.490	58.70%
230.10	0.05829	3.570	4.990	0.40	1.996	55.91%
230.10	0.04841	2.894	4.990	0.30	1.492	51.56%
230.10	0.03831	2.234	4.990	0.20	0.998	44.67%
230.10	0.02757	1.542	4.990	0.10	0.504	32.68%
230.10	0.01839	0.999	4.990	0.05	0.254	25.47%
230.10	0.00845	0.401	4.990	0.00	0.000	0.00%

3 Thermal Images

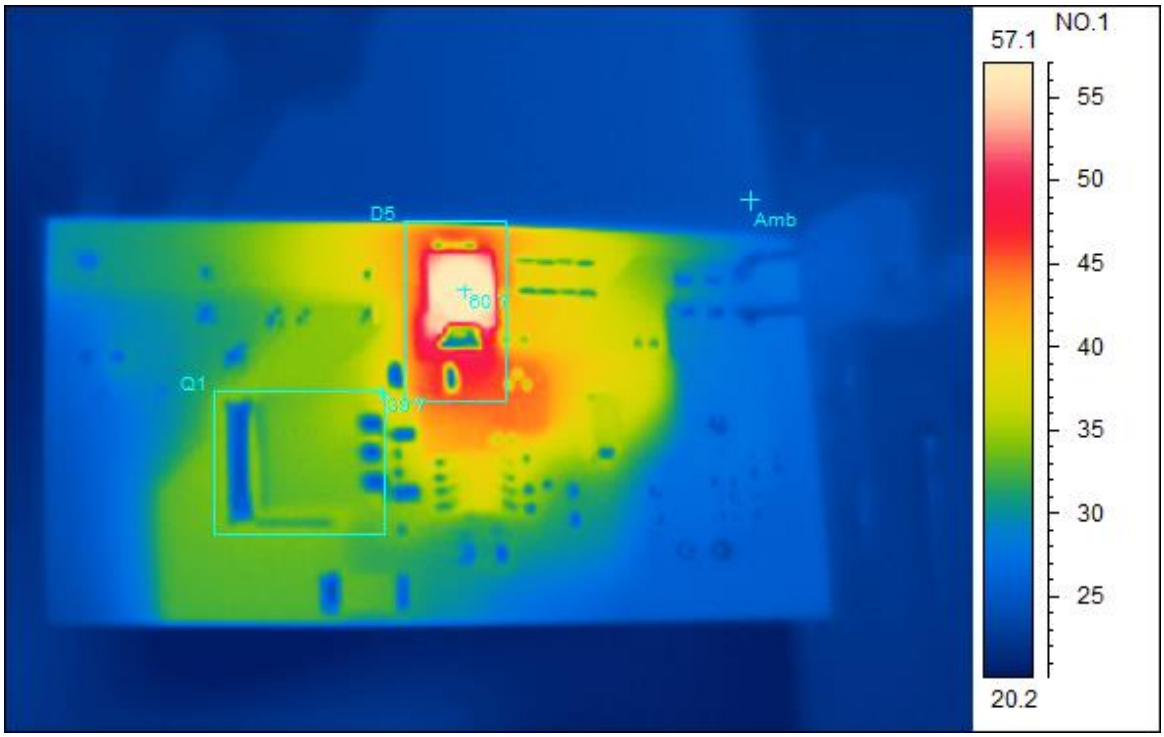
The thermal images below show a top view and bottom view of the board under 120V_{AC}/60Hz and 230V_{AC}/50Hz input conditions. The ambient temperature was 20ºC with no forced air flow.

V_{in}=120V_{AC}/60Hz, V_{out}=5V/1A
Top Side



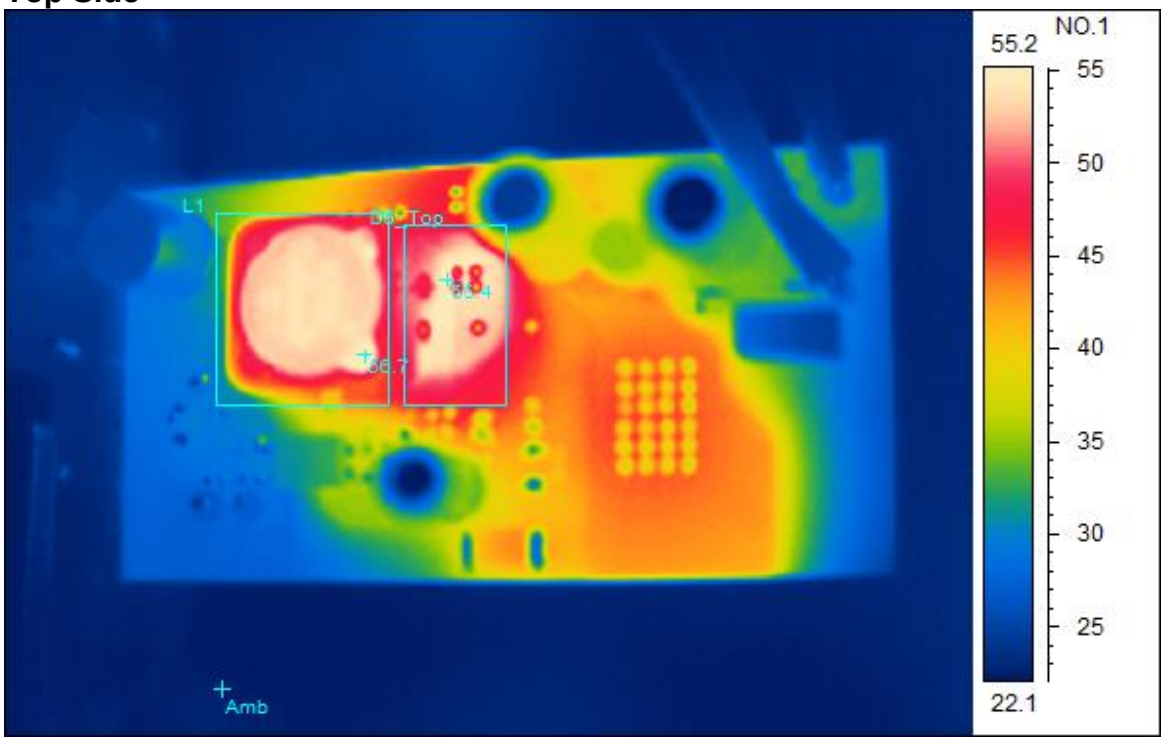
Spot analysis	Value
Amb Temperature	21.6°C
Area analysis	**Value**
L1 Max	45.7°C
D5_TopMax	47.2°C

V_{in}=120V_{AC}/60Hz, V_{out}=5V/1A
Bottom Side



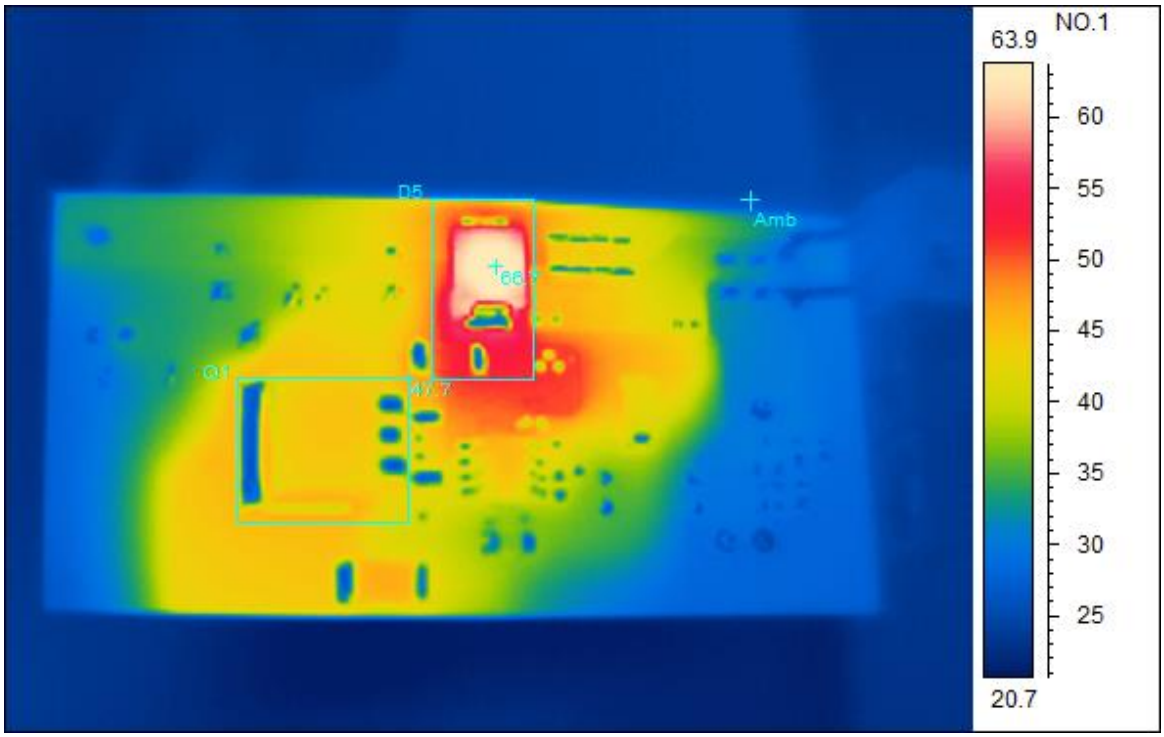
Spot analysis	Value
Amb Temperature	24.7°C
Area analysis	**Value**
Q1Max	39.7°C
D5 Max	60.7°C

V_{in}=230V_{AC}/50Hz, V_{out}=5V/1A
Top Side



Spot analysis	Value
Amb Temperature	22.7°C
Area analysis	**Value**
L1 Max	56.7°C
D5_TopMax	55.4°C

V_{in}=230V_{AC}/50Hz, V_{out}=5V/1A
Bottom Side

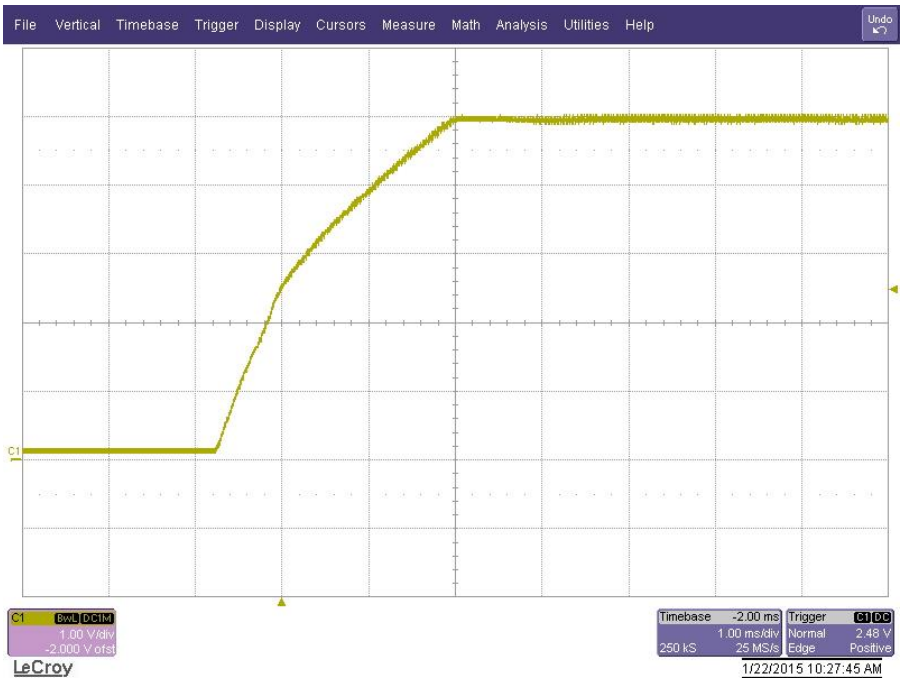


Spot analysis	Value
Amb Temperature	26.3°C
Area analysis	**Value**
Q1Max	47.7°C
D5 Max	66.7°C

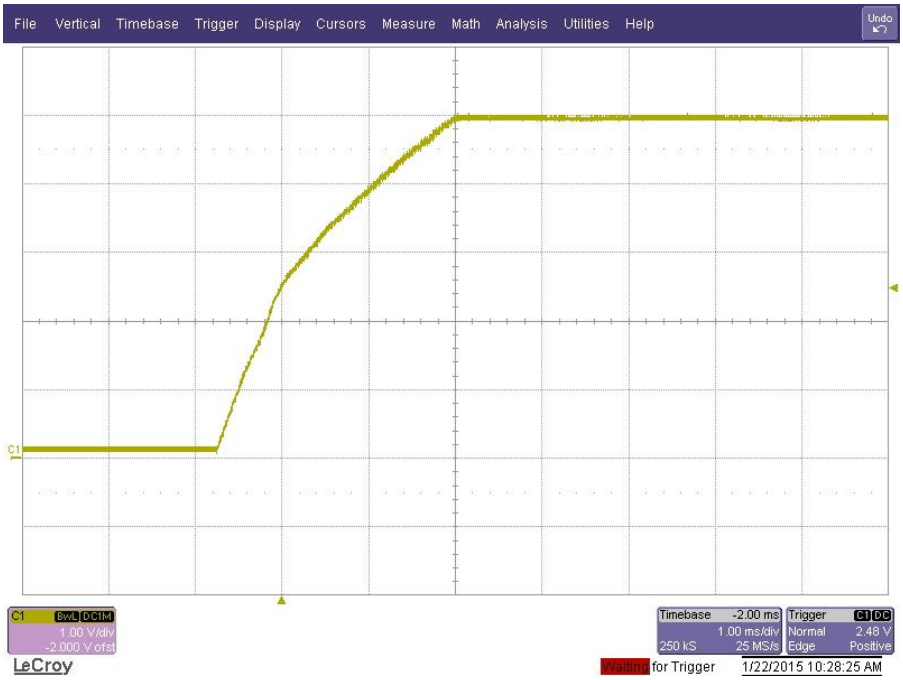
4 Startup Waveforms

The output voltages at startup with constant current load are shown in the images below.

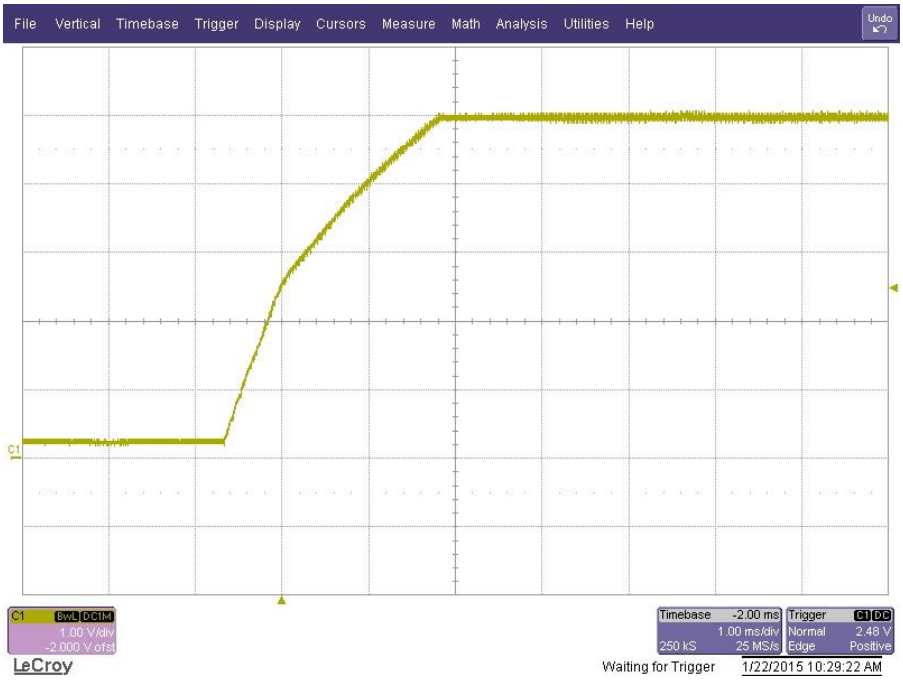
4.1 Start Up @ 120V_{AC}/60Hz: 5V/1A.



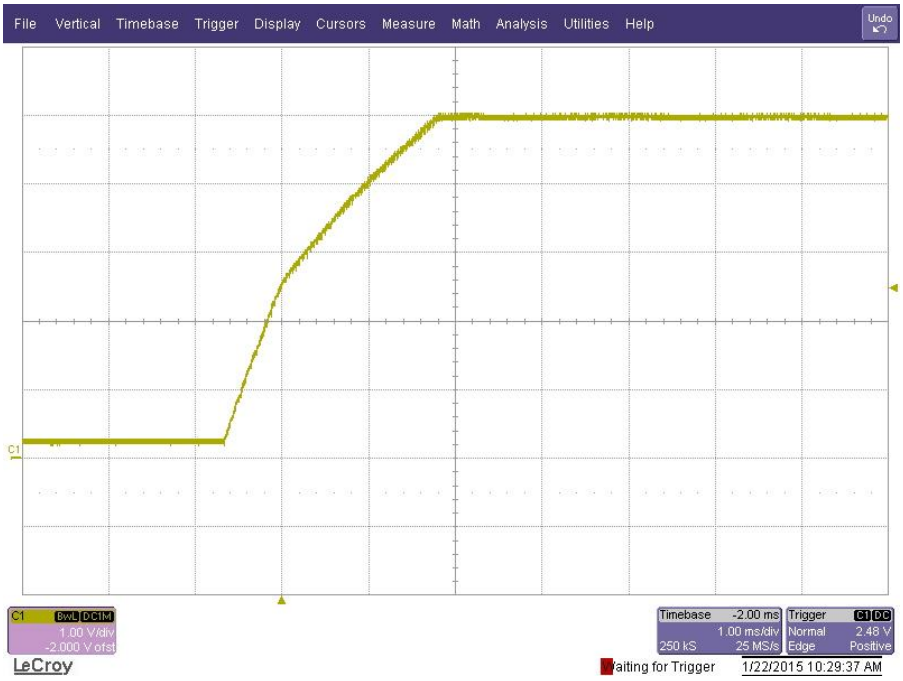
4.2 Start Up @ 120V_{AC}/60Hz: no load.



4.3 Start Up @ 230V_{AC}/50Hz: 5V/1A.



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



5 Output Ripple Voltages

The output ripple voltages are shown in the plots below.

5.1 V_{in}=120V_{AC}/60Hz: 5V/1A.

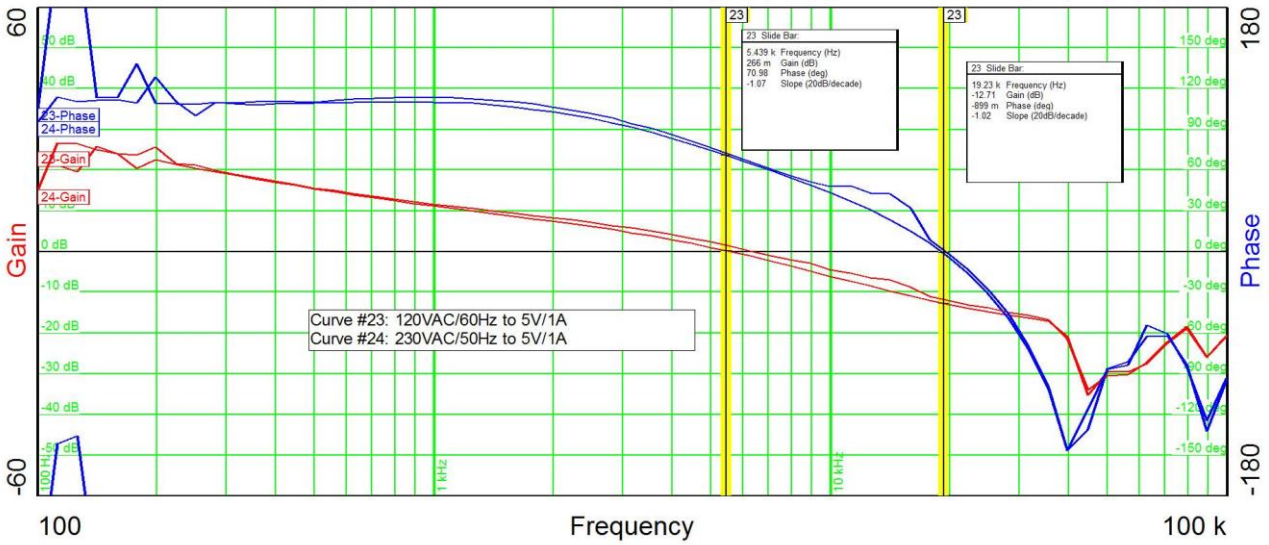
5.2 V_{in}=120V_{AC}/60Hz: No load.

5.3 V_{in}=230V_{AC}/50Hz: 5V/1A.

5.4 V_{in}=230V_{AC}/50Hz: No load.

6 Frequency response

The frequency response is measured with 5V/1A output.

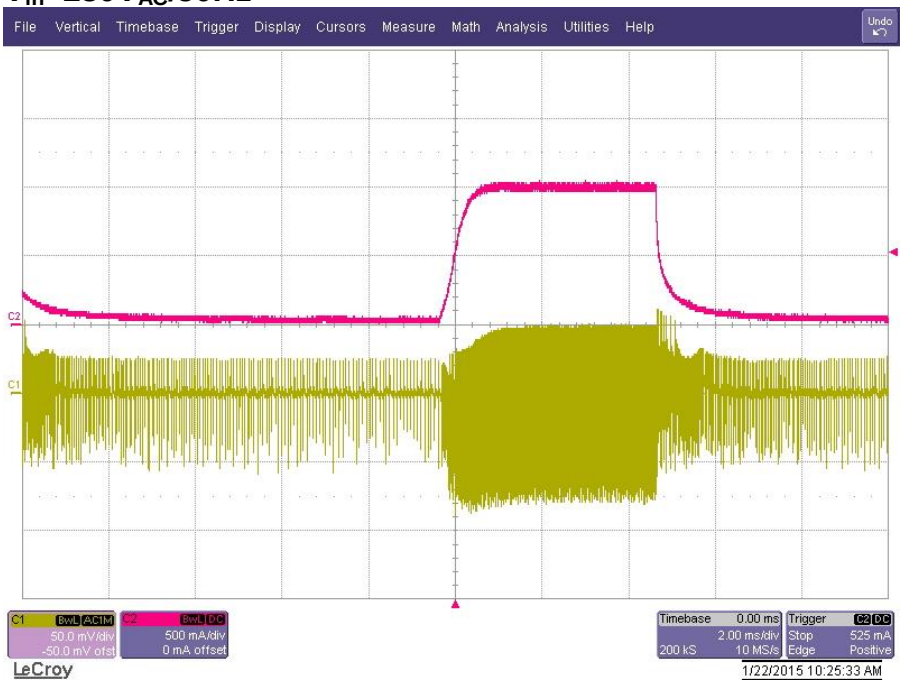


7 Load dynamic response

The load dynamic response is measured with 5V/1A output. Load step from 0.015A to 1A

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

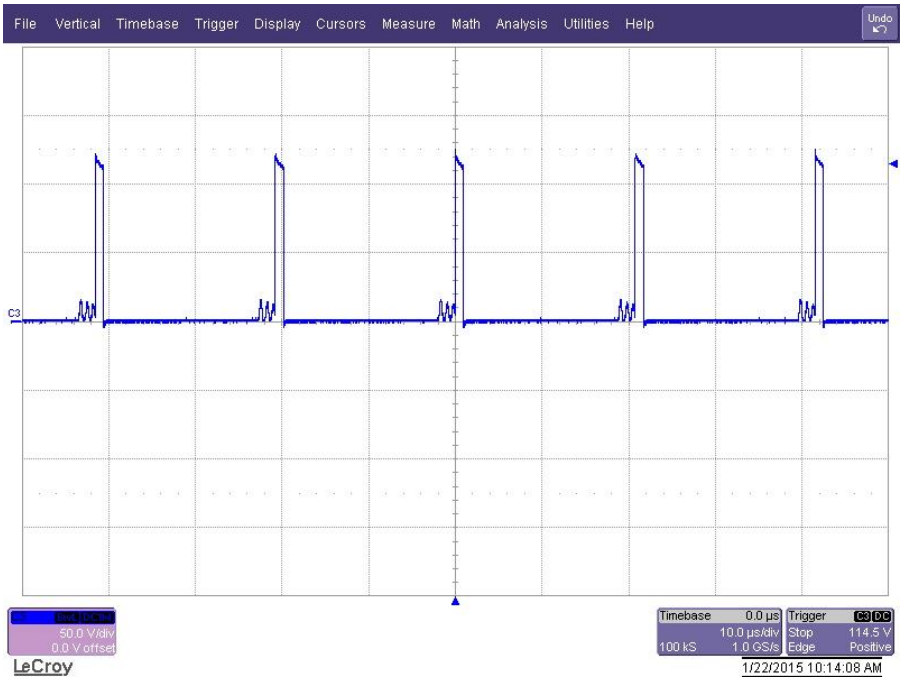
V_{in}=230V_{AC}/50Hz



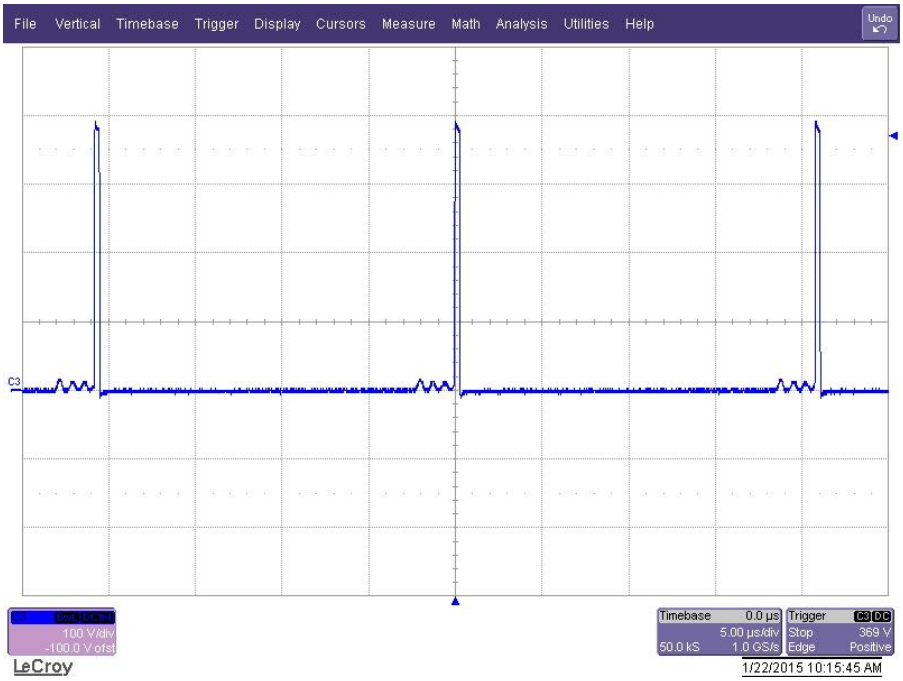
8 Switching Waveforms

The images below show key switching waveforms of PMP10834RevA. The waveforms are measured with 1A full load.

8.1 V_{in}= 90V_{AC}/60Hz:



8.2 V_{in}=264V_{AC}/50Hz:



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