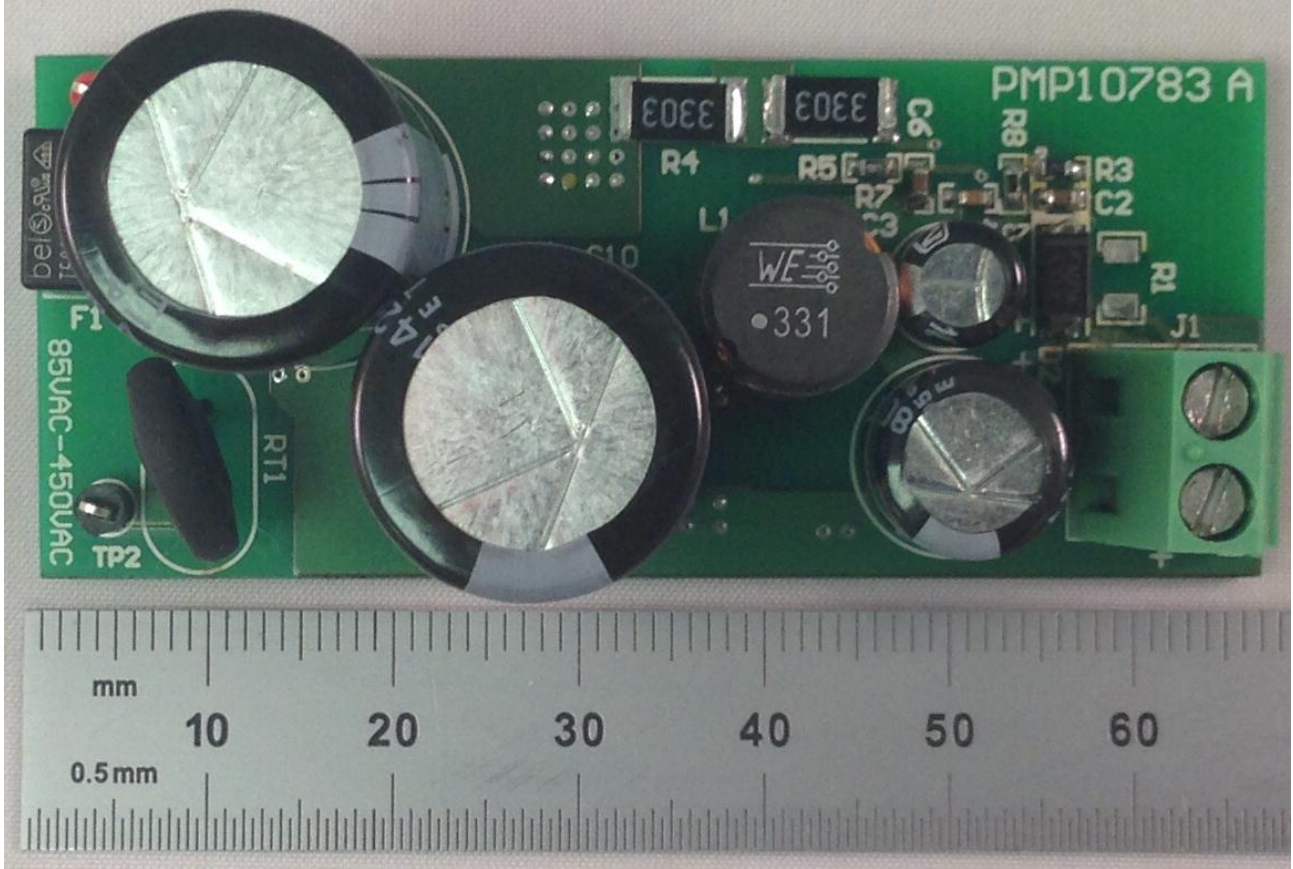


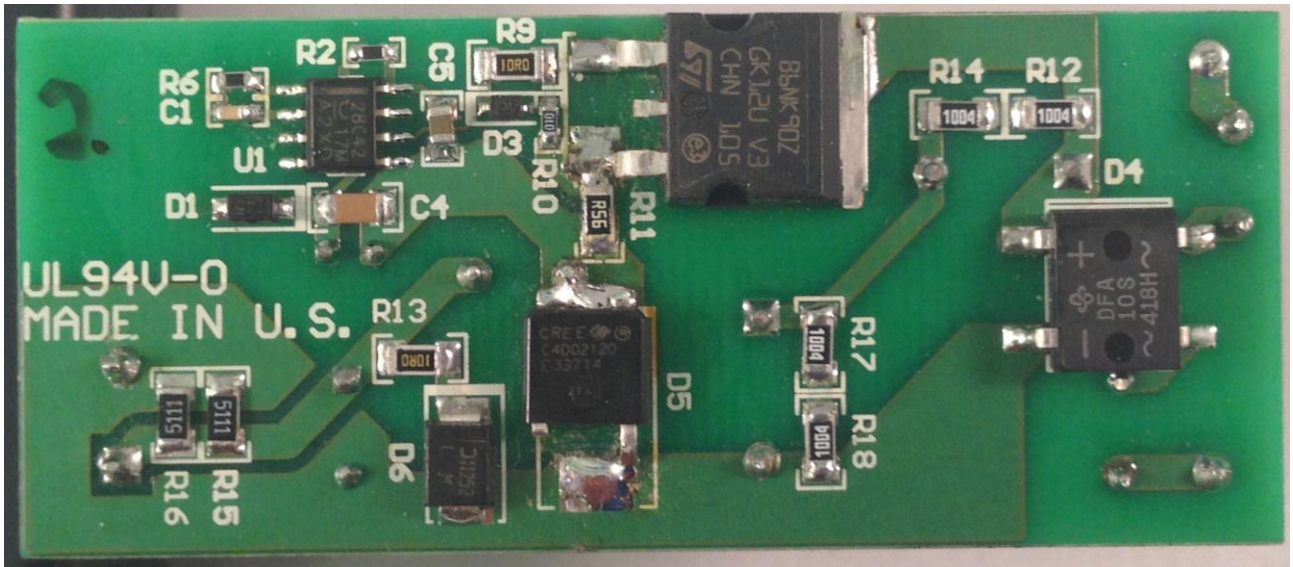
1 Photo

The photographs below show the PMP10783 Rev A assembly. This circuit was built on a PMP10783 Rev A PCB.

Top side

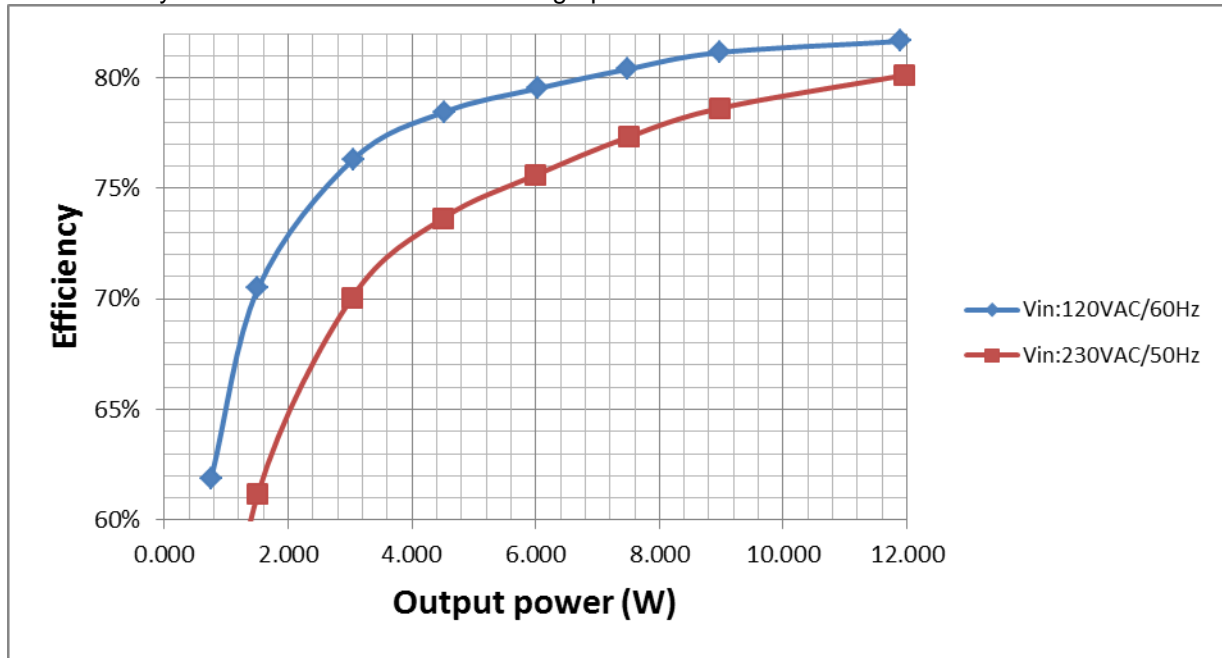


Bottom side



2 Converter Efficiency

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



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

V _{in} (ac)	I _{in} (A)	P _{in} (W)	V _{out} (V)	I _{out} (A)	P _{out} (W)	Eff. (%)
120.11	0.22390	14.577	14.880	0.80	11.904	81.66%
120.17	0.17568	11.061	14.960	0.60	8.976	81.15%
120.21	0.15089	9.310	15.000	0.50	7.485	80.40%
120.03	0.12568	7.584	15.040	0.40	6.031	79.52%
120.06	0.09898	5.773	15.100	0.30	4.530	78.47%
120.10	0.07179	3.993	15.160	0.20	3.047	76.31%
120.13	0.04185	2.146	15.280	0.10	1.513	70.49%
120.15	0.02550	1.219	15.390	0.05	0.754	61.86%
120.17	0.00761	0.313	15.610	0.00	0.000	0.00%

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

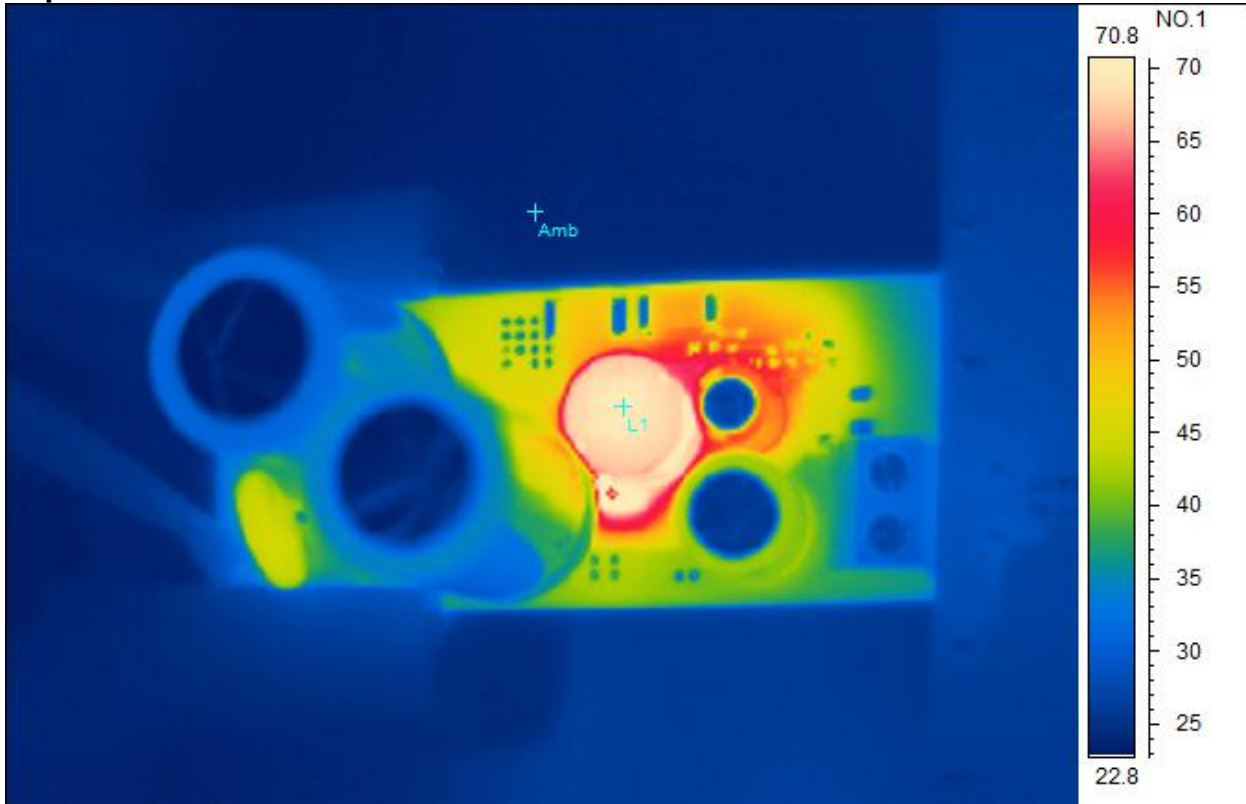
Vin(ac)	Iin(A)	Pin(W)	Vo1(V)	Io1(A)	Pout(W)	Eff. (%)
230.10	0.14146	14.920	14.850	0.81	11.954	80.12%
230.10	0.11222	11.412	14.930	0.60	8.973	78.63%
230.10	0.09743	9.699	14.970	0.50	7.500	77.33%
230.10	0.08176	7.927	15.020	0.40	5.993	75.60%
230.20	0.06526	6.117	15.070	0.30	4.506	73.66%
230.20	0.04821	4.325	15.150	0.20	3.030	70.06%
230.20	0.02957	2.469	15.260	0.10	1.511	61.19%
230.20	0.01936	1.533	15.360	0.05	0.753	49.10%
230.20	0.00663	0.472	15.880	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 20°C with no forced air flow. The output was at full load: 15V/0.8A.

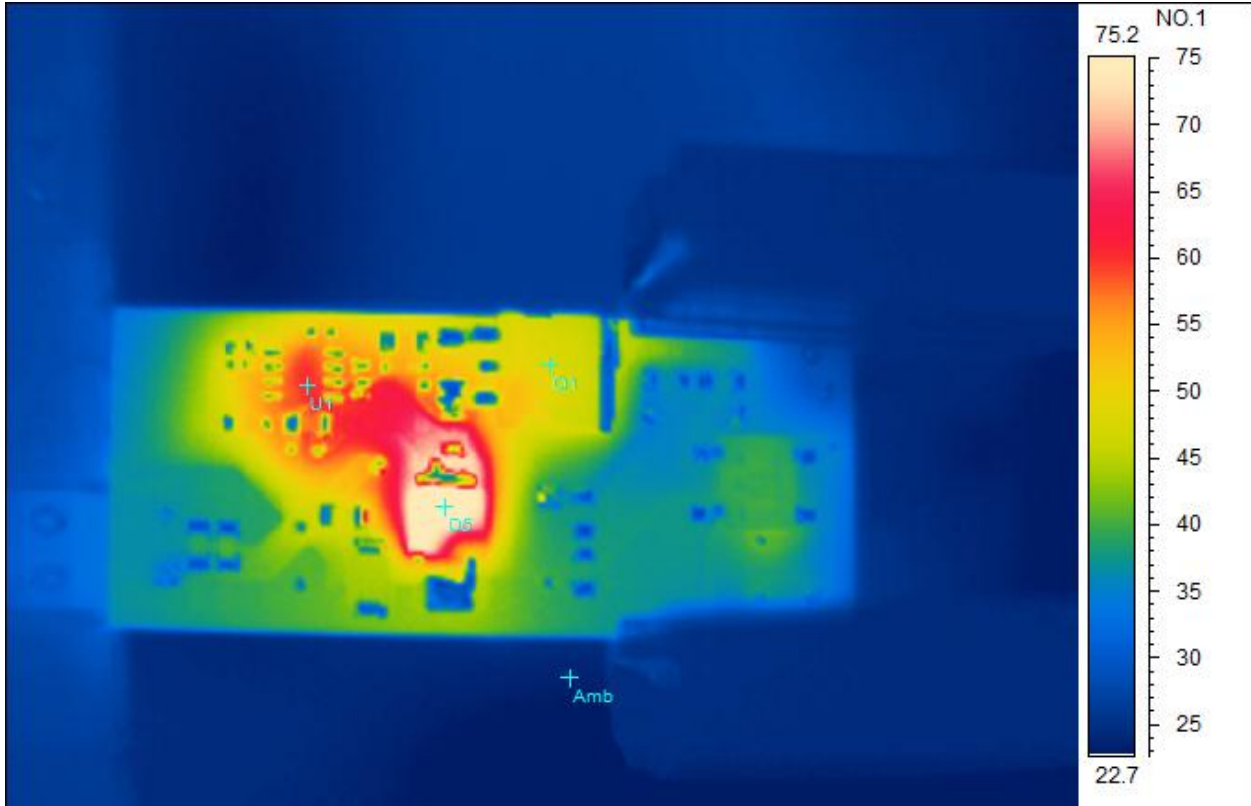
V_{in}=120V_{AC}/60Hz

Top Side



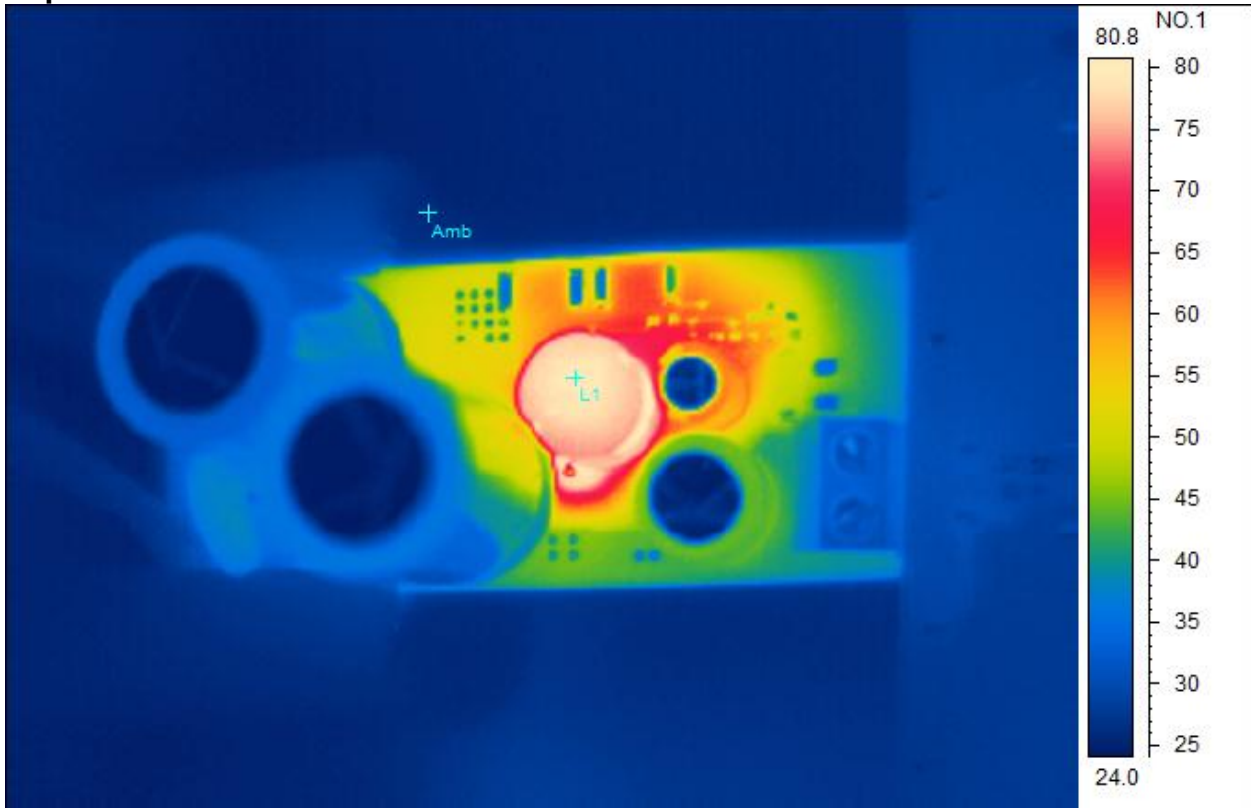
Spot analysis	Value
L1 Temperature	70.1°C
Amb Temperature	24.0°C

$V_{in}=120V_{AC}/60Hz$
Bottom Side



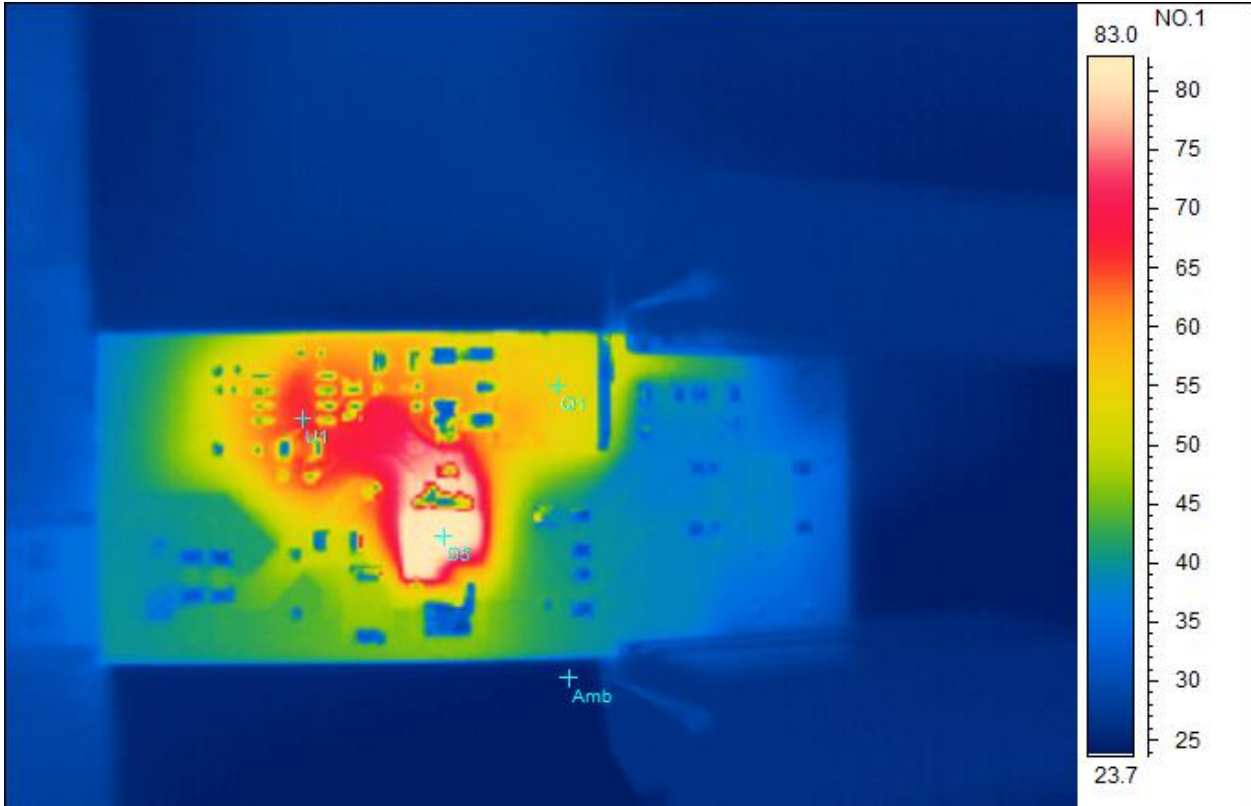
Spot analysis	Value
D5Temperature	76.5°C
Q1Temperature	50.1°C
U1Temperature	61.6°C
Amb Temperature	23.7°C

$V_{in}=230V_{AC}/50Hz$
Top Side



Spot analysis	Value
L1 Temperature	79.8°C
Amb Temperature	26.7°C

$V_{in}=230V_{AC}/50Hz$
Bottom Side

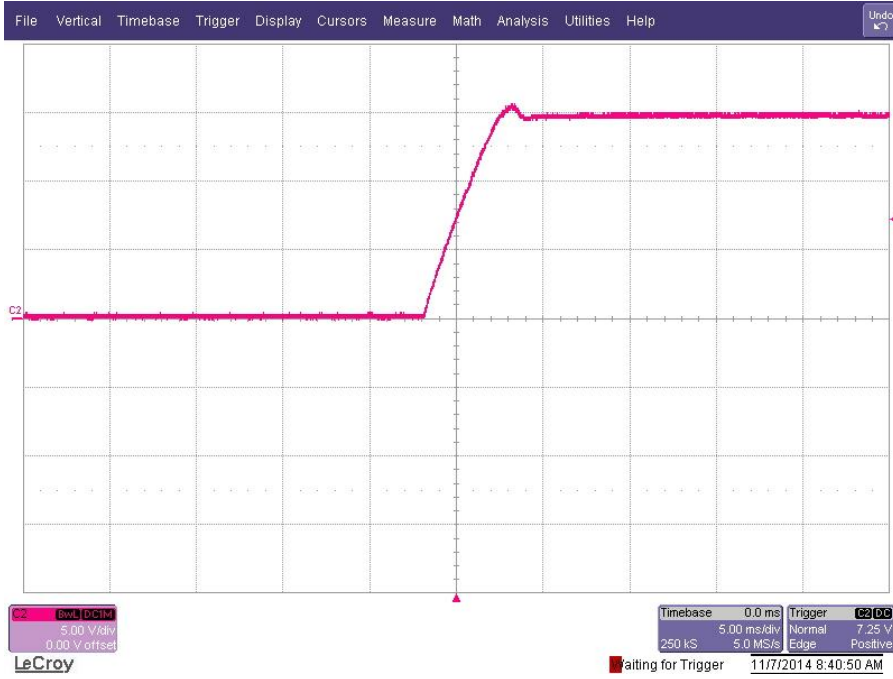


Spot analysis	Value
D5Temperature	83.6°C
Q1Temperature	58.4°C
U1Temperature	68.4°C
Amb Temperature	24.5°C

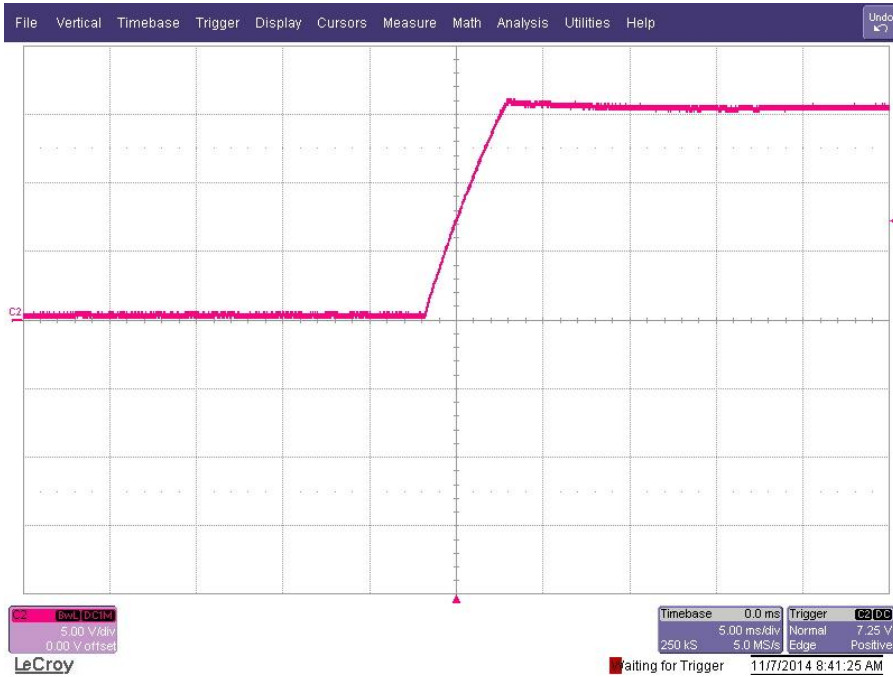
4 Startup Waveforms

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

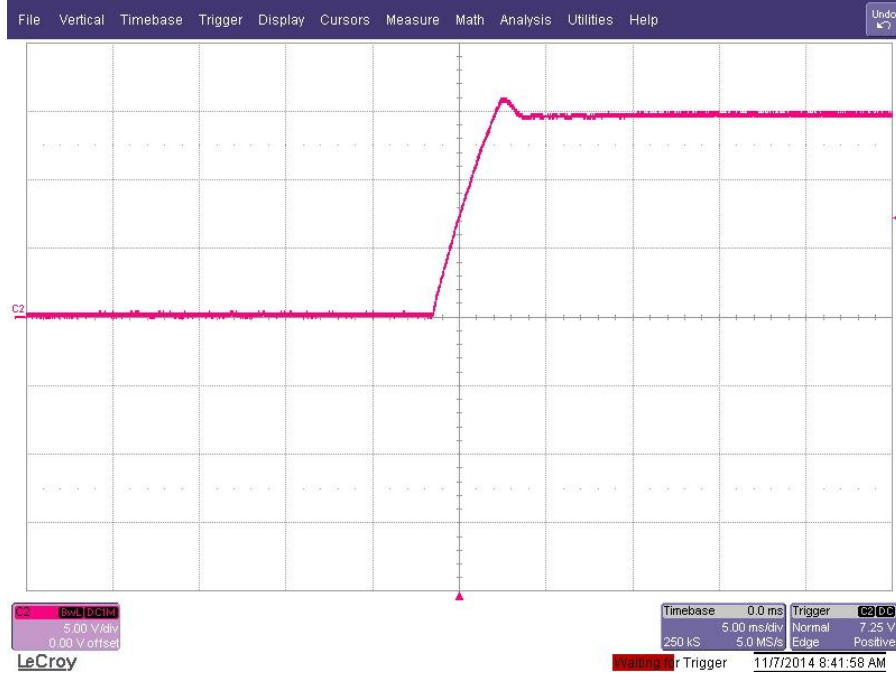
4.1 Start Up @ 85V_{AC}/60Hz:15V/0.8A.



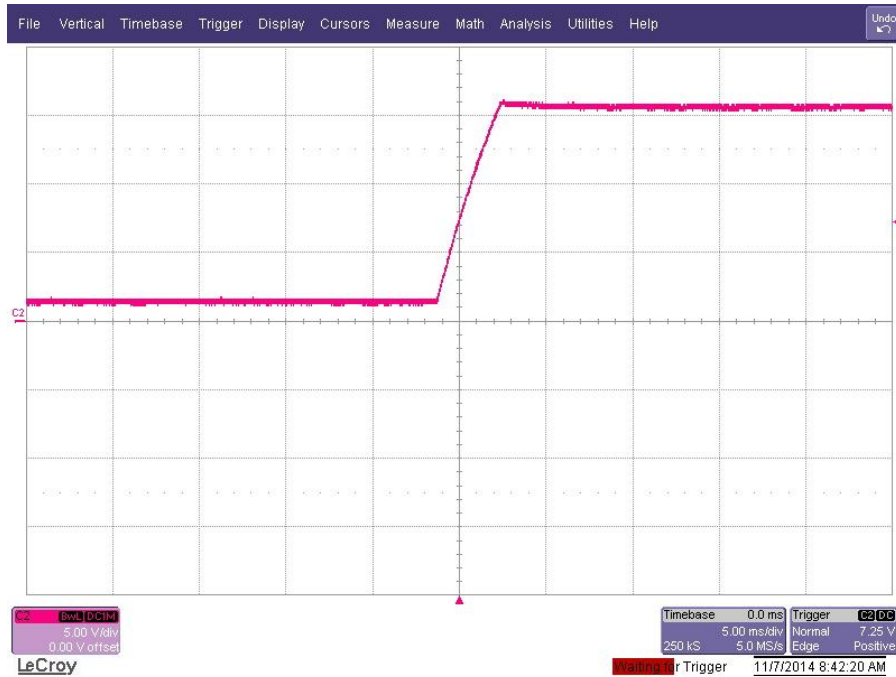
4.2 Start Up @ 85V_{AC}/60Hz: no load.



4.3 Start Up @ 288V_{AC}/50Hz: 15V/0.8A.



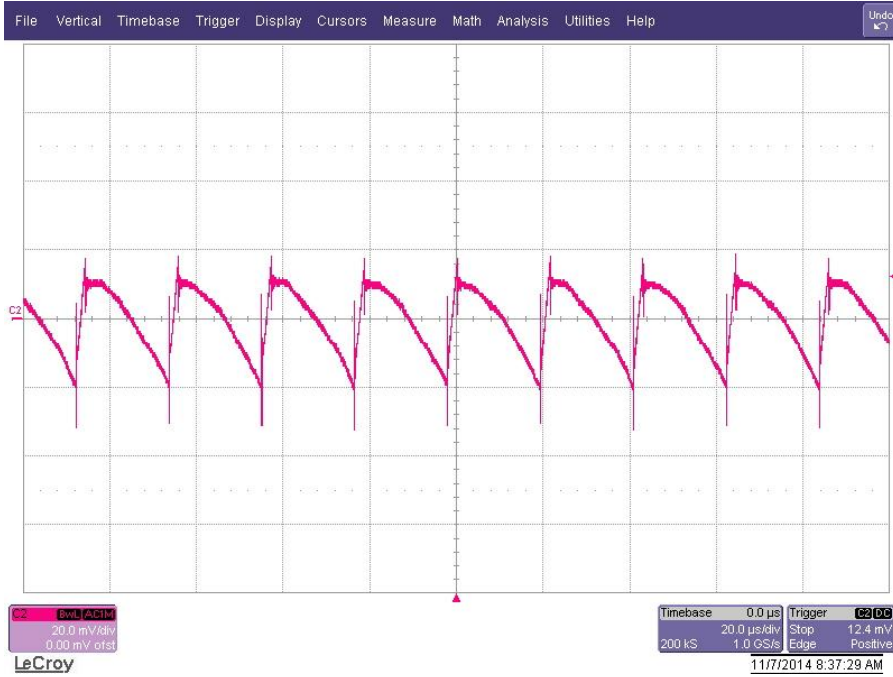
4.4 Start Up @ 288V_{AC}/50Hz: no load.



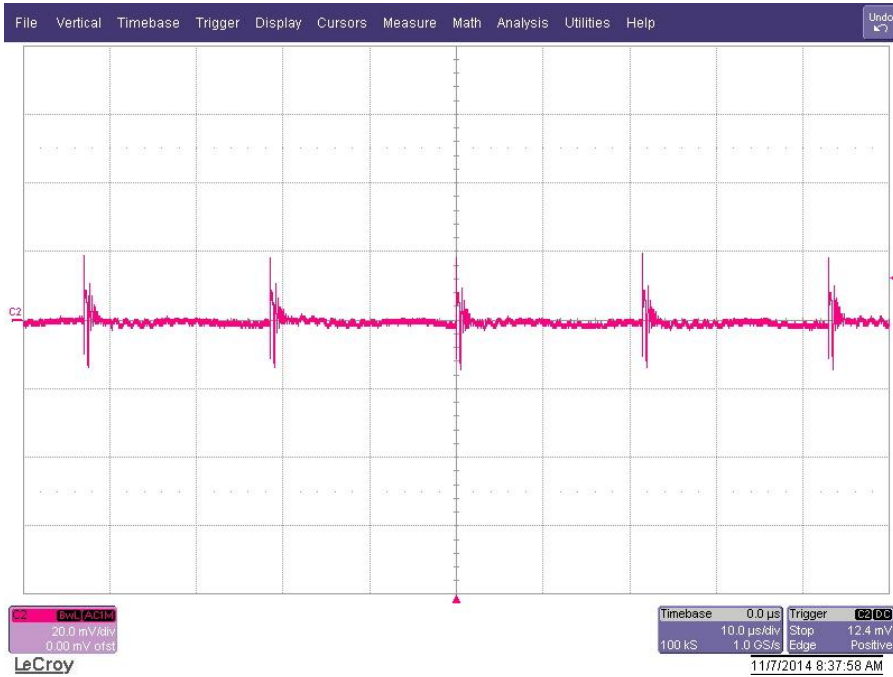
5 Output Ripple Voltages

The output ripple voltages are shown in the plots below.

5.1 $V_{in}=120V_{AC}/60Hz$: 15V/0.8A.



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



5.3 $V_{in}=230V_{AC}/50Hz$: 15V/0.8A.



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



6 Load dynamic response

The load dynamic response is measured with 15V/0.8A output. Load step from 0.4A to 0.8A

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



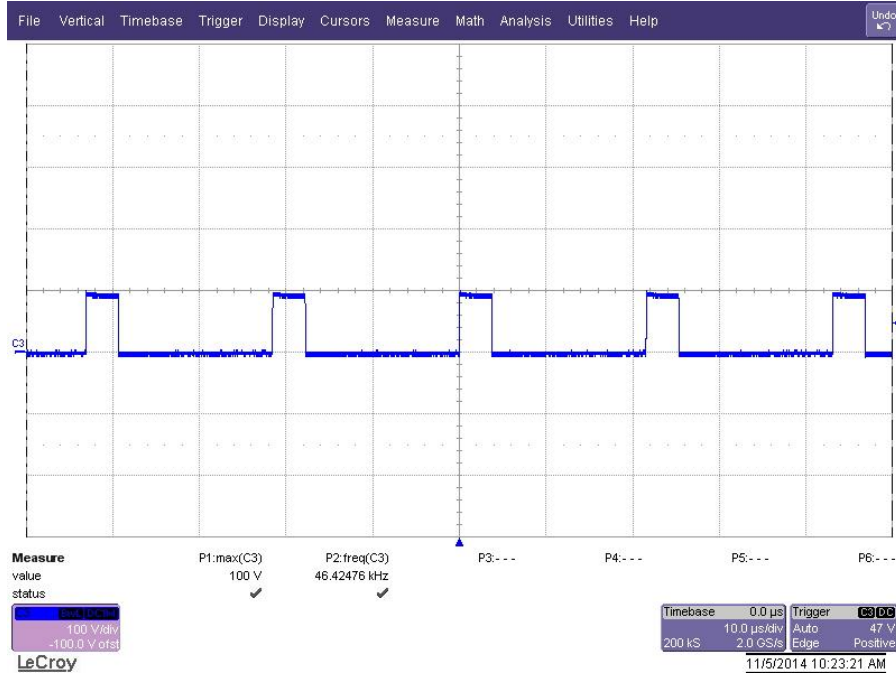
$V_{in}=230V_{AC}/50Hz$



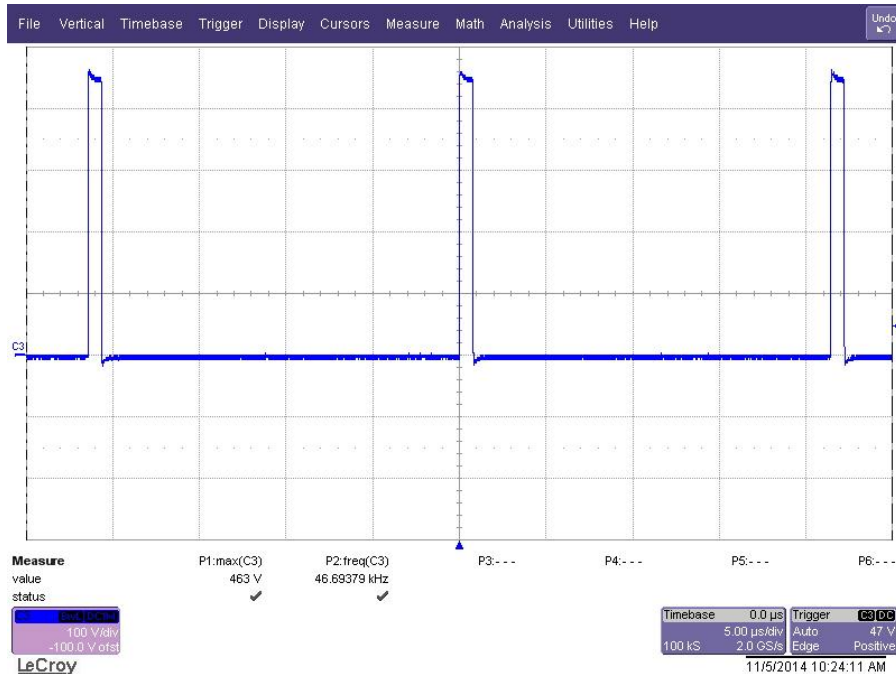
7 Switching Waveforms

The images below show key switching waveforms of PMP10783RevA. The waveforms are measured with 0.8A full load.

7.1 Diode D5 @ 100V_{DC} (Voltage doubler is applied at power supply input to provide the 100V_{in}):



7.2 Diode D5 @ 450V_{DC} (Voltage doubler is applied at power supply input to provide the 450V_{in}):



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