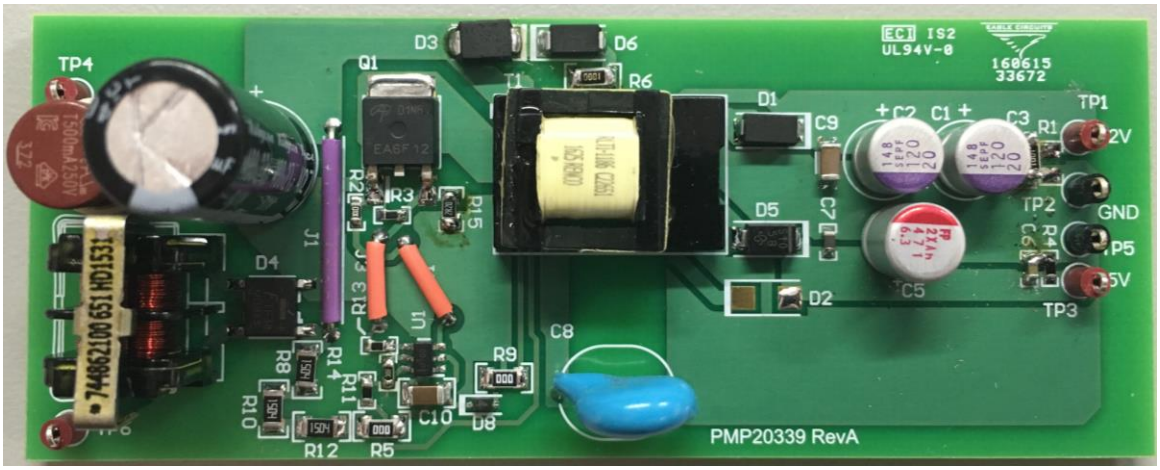
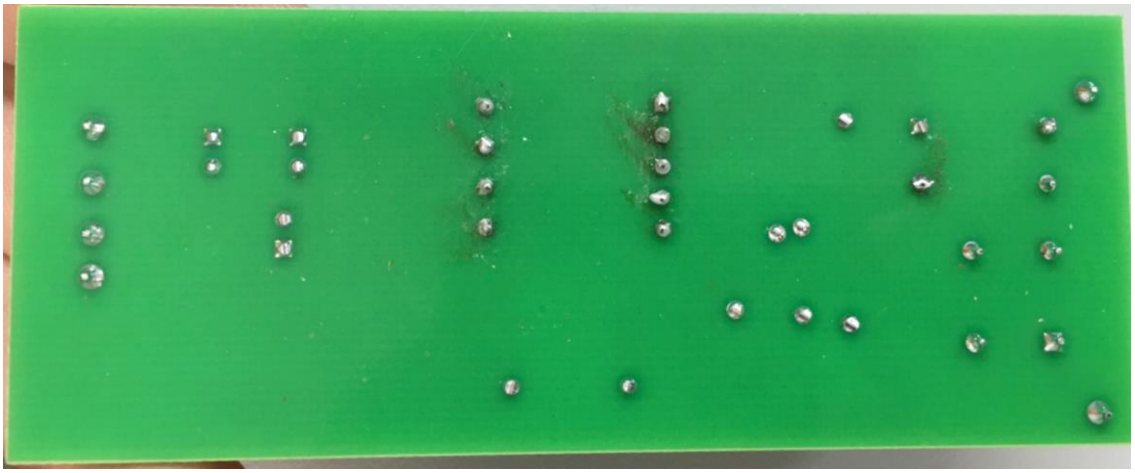
1 Photo

The photographs below show the PMP20339 Rev A assembly. This circuit was built on a PMP20339 Rev A PCB.

Top side



Bottom side



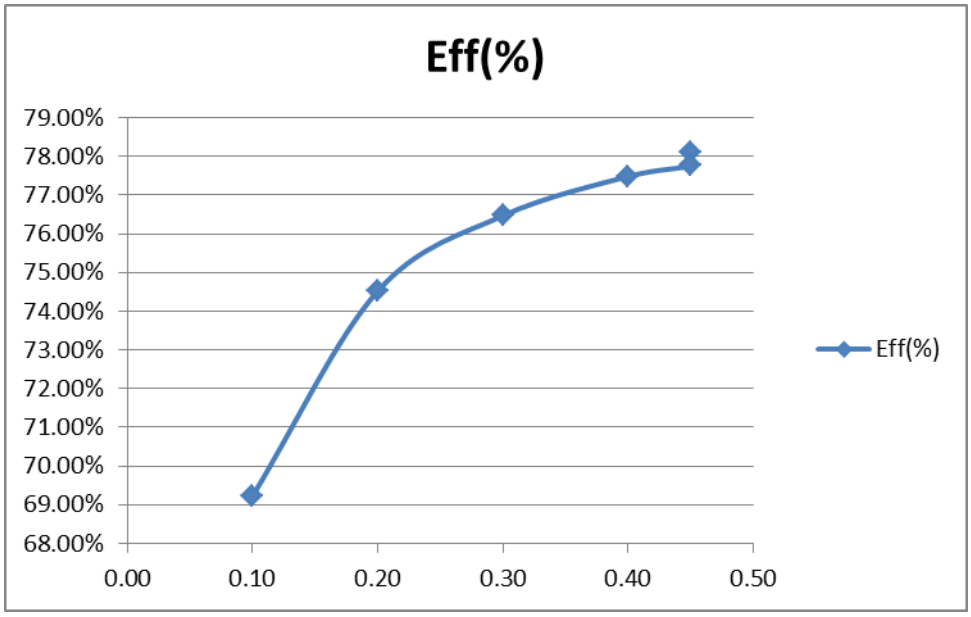
2 Cross Regulations

Vin(V)	Pin(W)	Vout1(V)	Iout1(A)	Vout2(V)	Iou2(A)
115	7.04	11.70	0.45	4.49	0.05
115	6.78	11.70	0.45	4.64	0.00
115	0.62	11.80	0.00	3.98	0.05
115	0.16	11.80	0.00	4.39	0.00
230	7.12	11.70	0.45	4.50	0.05
230	6.88	11.70	0.45	4.63	0.00
230	0.59	11.80	0.00	3.94	0.05
230	0.34	11.80	0.00	4.38	0.00

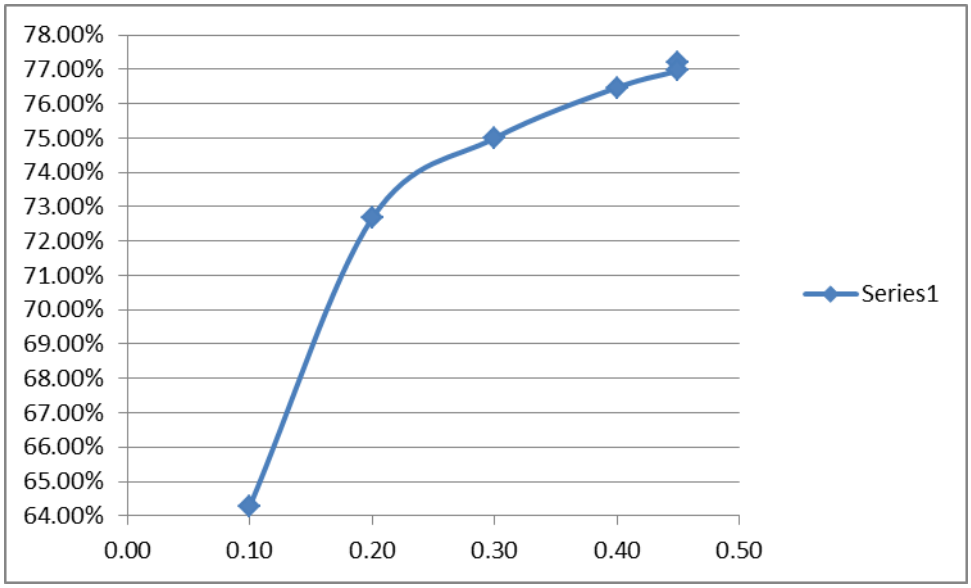
3 Converter efficiency

The efficiency data is shown in the table and graph below

Vin(V)	Pin(W)	Vout1(V)	Iout1(A)	Vout2(V)	Iout2(A)	Pout(W)	Eff(%)
115	7.03	11.70	0.45	4.49	0.05	5.49	78.09%
115	6.77	11.70	0.45	4.63	0	5.27	77.77%
115	6.04	11.70	0.40	4.62	0	4.68	77.48%
115	4.59	11.70	0.30	4.59	0	3.51	76.47%
115	3.14	11.70	0.20	4.56	0	2.34	74.52%
115	1.69	11.70	0.10	4.53	0	1.17	69.23%
115	0.27	11.80	0.00	4.39	0	0.00	



Vin(V)	Pin(W)	Vout1(V)	Iout1(A)	Vout2(V)	Iout2(A)	Pout(W)	Eff(%)
230	7.11	11.70	0.45	4.5	0.05	5.49	77.22%
230	6.84	11.70	0.45	4.63	0	5.27	76.97%
230	6.12	11.70	0.40	4.61	0	4.68	76.47%
230	4.68	11.70	0.30	4.58	0	3.51	75.00%
230	3.22	11.70	0.20	4.55	0	2.34	72.67%
230	1.82	11.70	0.10	4.52	0	1.17	64.29%
230	0.34	11.80	0.00	4.37	0	0.00	

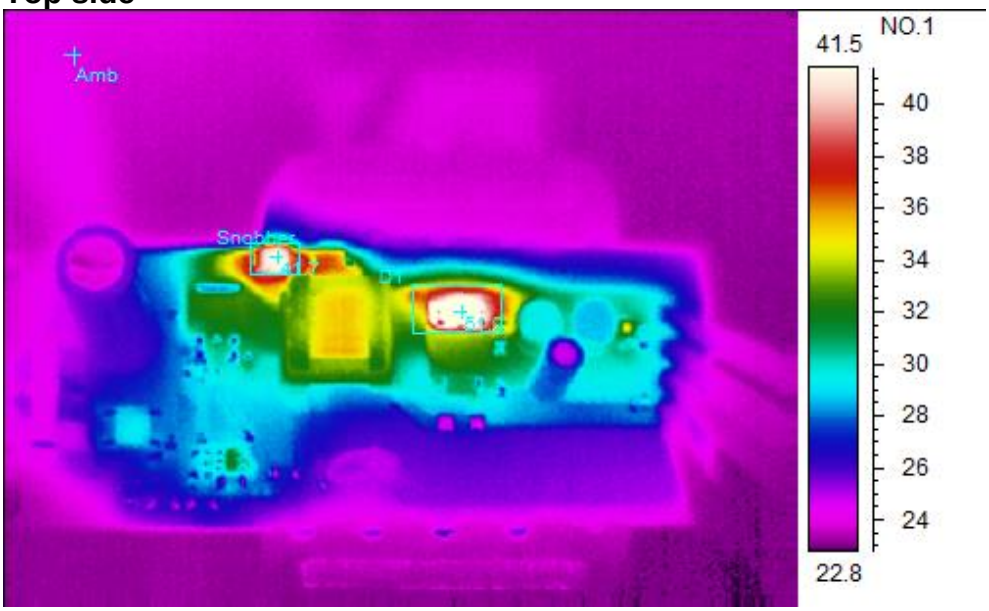


4 Thermal Images

The thermal images below show a top view and bottom view of the board. The ambient temperature was 20ºC with no forced air flow. The outputs were at 12V/0.45A; 5V/0.05A loads.

Vin : 115Vac

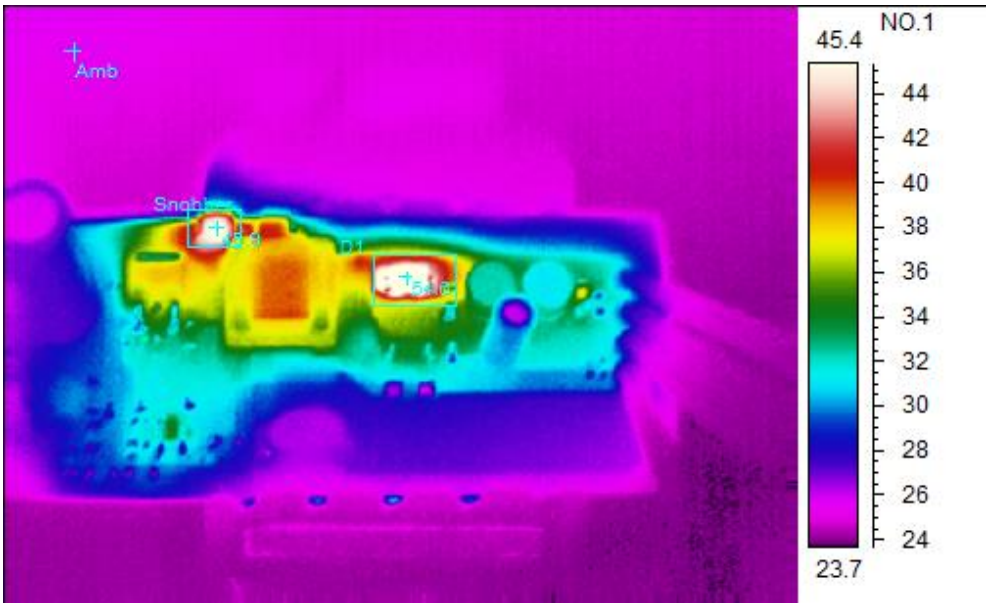
- **Top side**



Spot analysis	Value
Amb Temperature	24.1°C
Area analysis	**Value**
D1Max	51.2°C
SnubberMax	41.7°C

Vin : 230Vac

- **Top side**



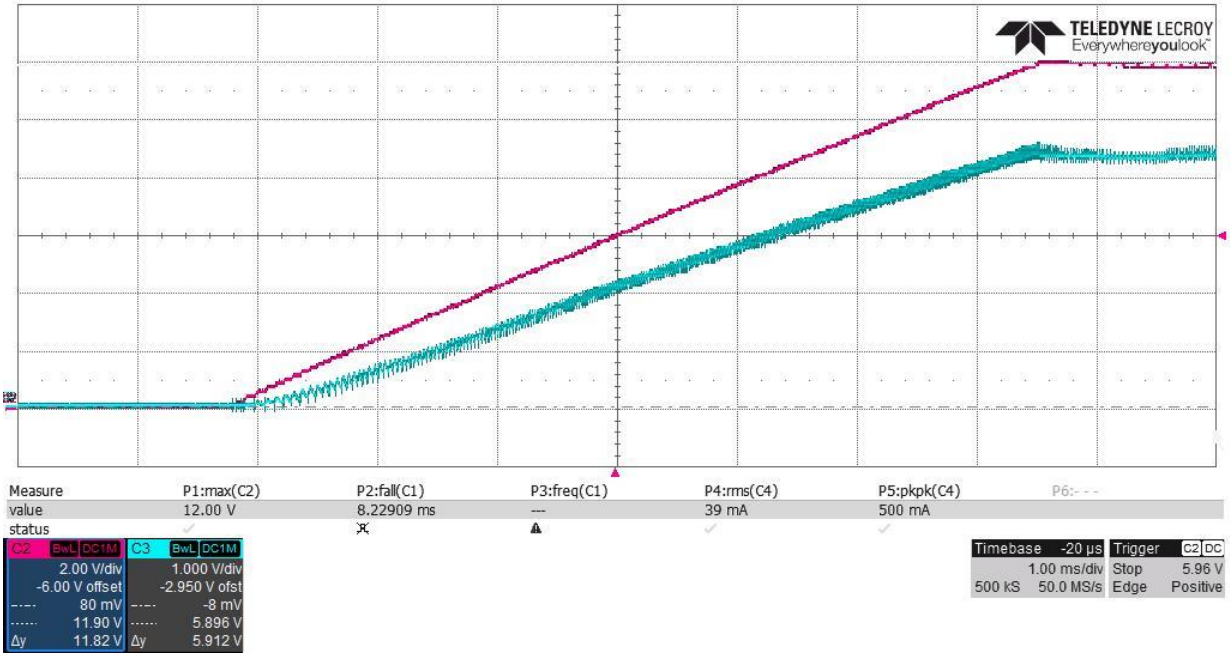
Spot analysis	Value
Amb Temperature	25.4°C
Area analysis	**Value**
D1Max	54.6°C
SnubberMax	45.9°C

5 Startup

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

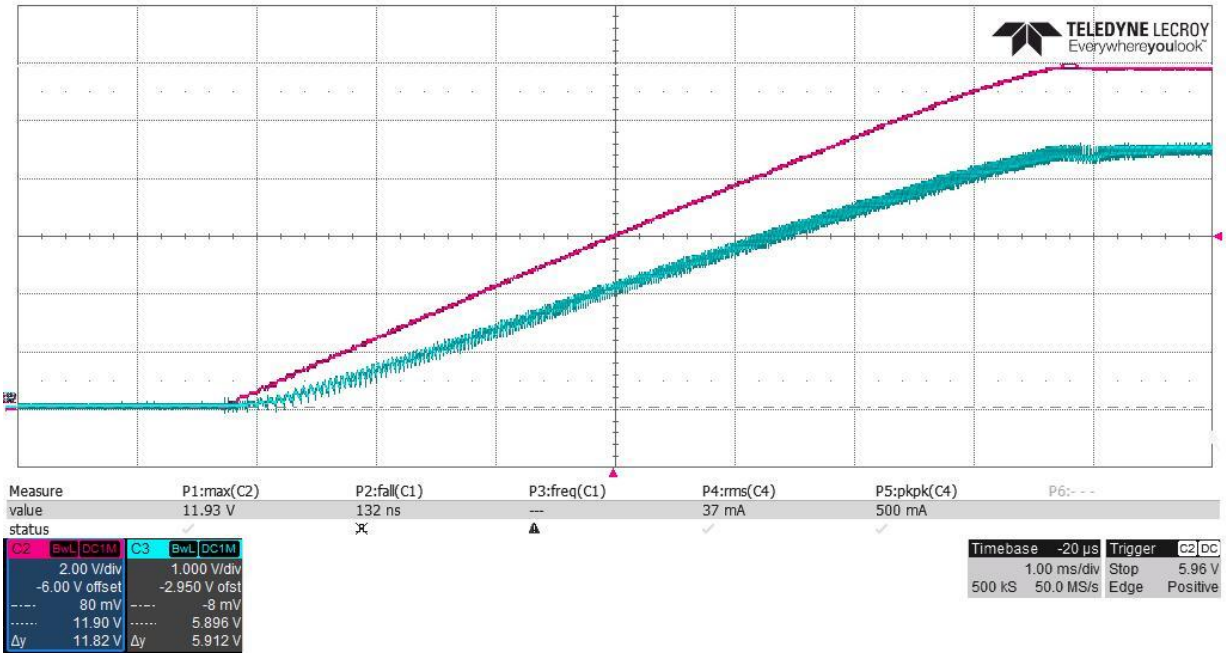
5.1.1 Start Up @ 90V_{AC}: 12V/0A; 5V/0A

Channel 2: 12V ; Channel 3 : 5V



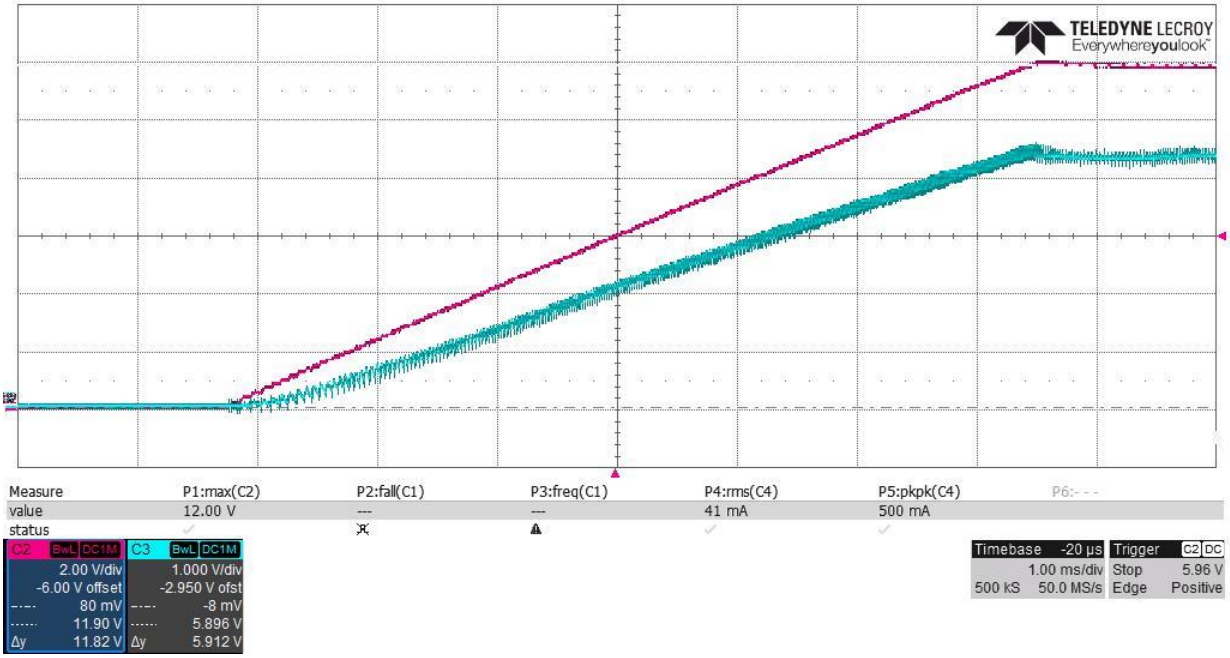
5.1.2 Start Up @ 90V_{AC}: 12V/0.45A; 5V/0.05A

Channel 2: 12V ; Channel 3 : 5V



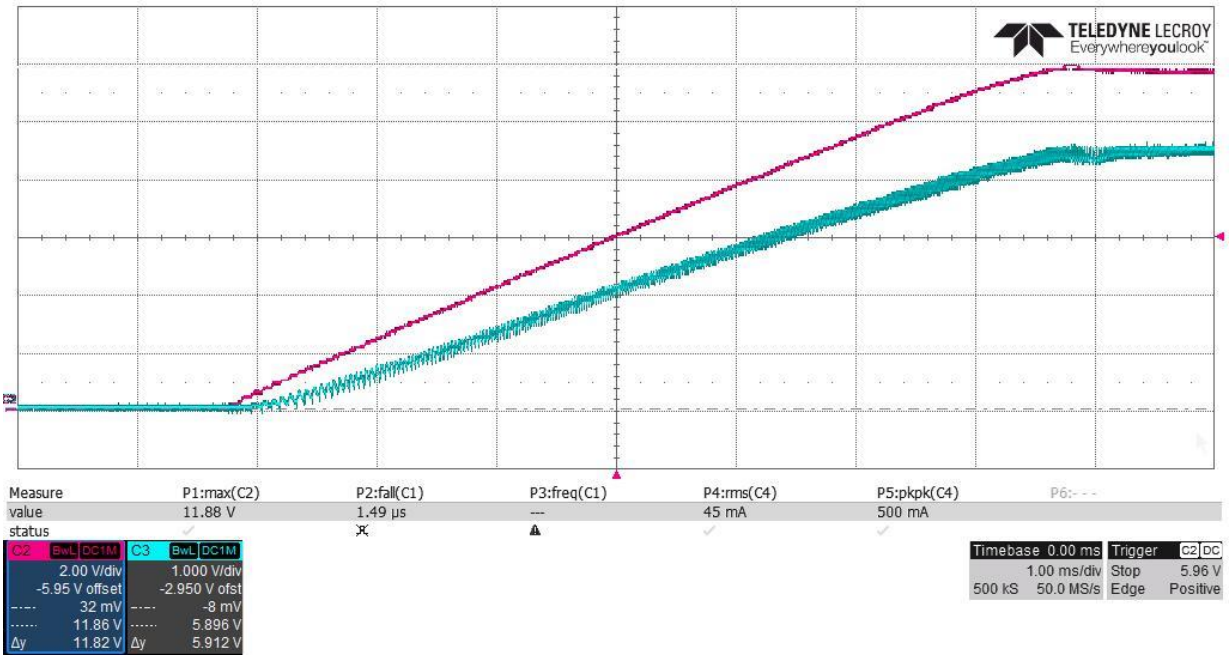
5.1.3 Start Up @ 115V_{AC}: 12V/0A; 5V/0A

Channel 2: 12V ; Channel 3 : 5V



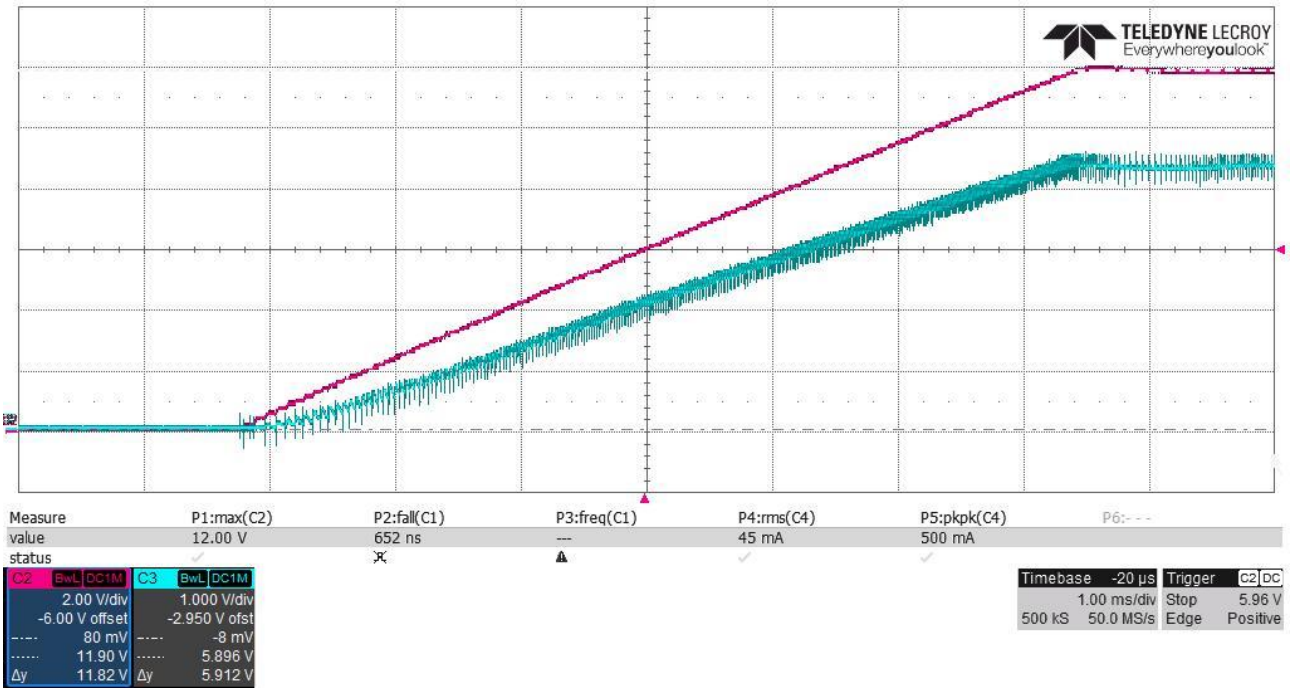
5.1.4 Start Up @ 115V_{AC}: 12V/0.45A; 5V/0.05A

Channel 2: 12V; Channel 3 : 5V



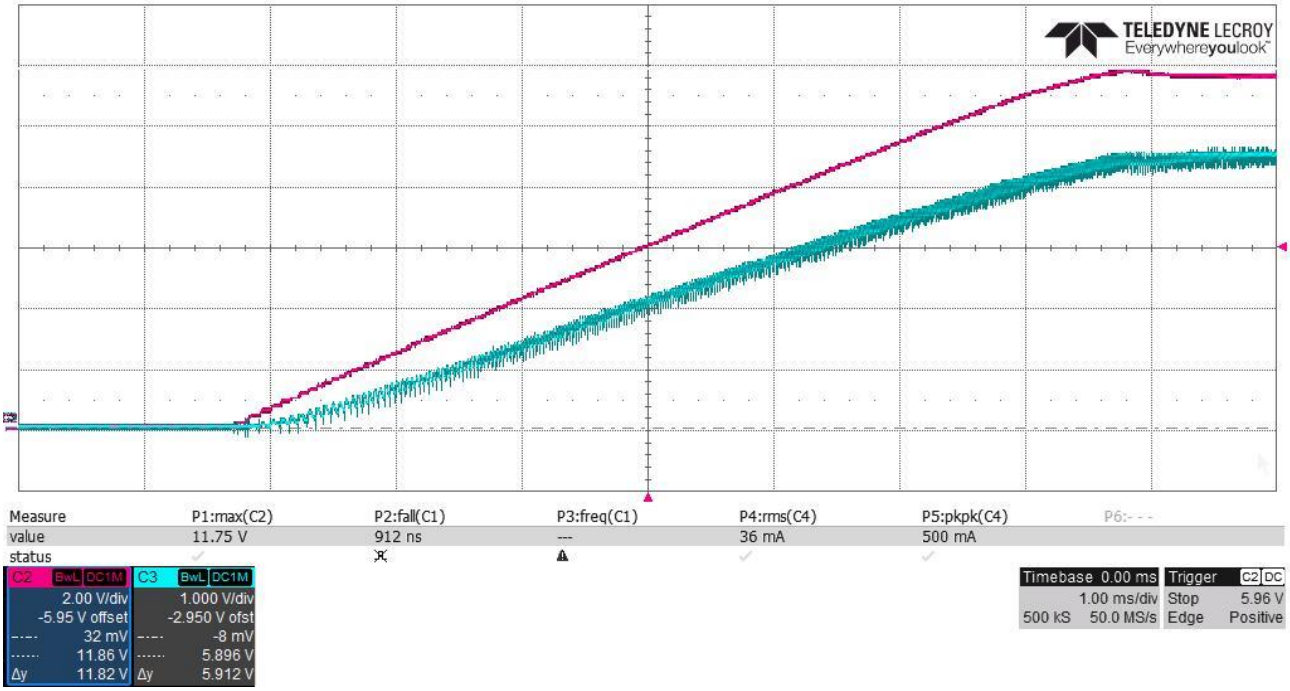
5.1.5 Start Up @ 230V_{AC}: 12V/0A; 5V/0A

Channel 2: 12V ; Channel 3 : 5V



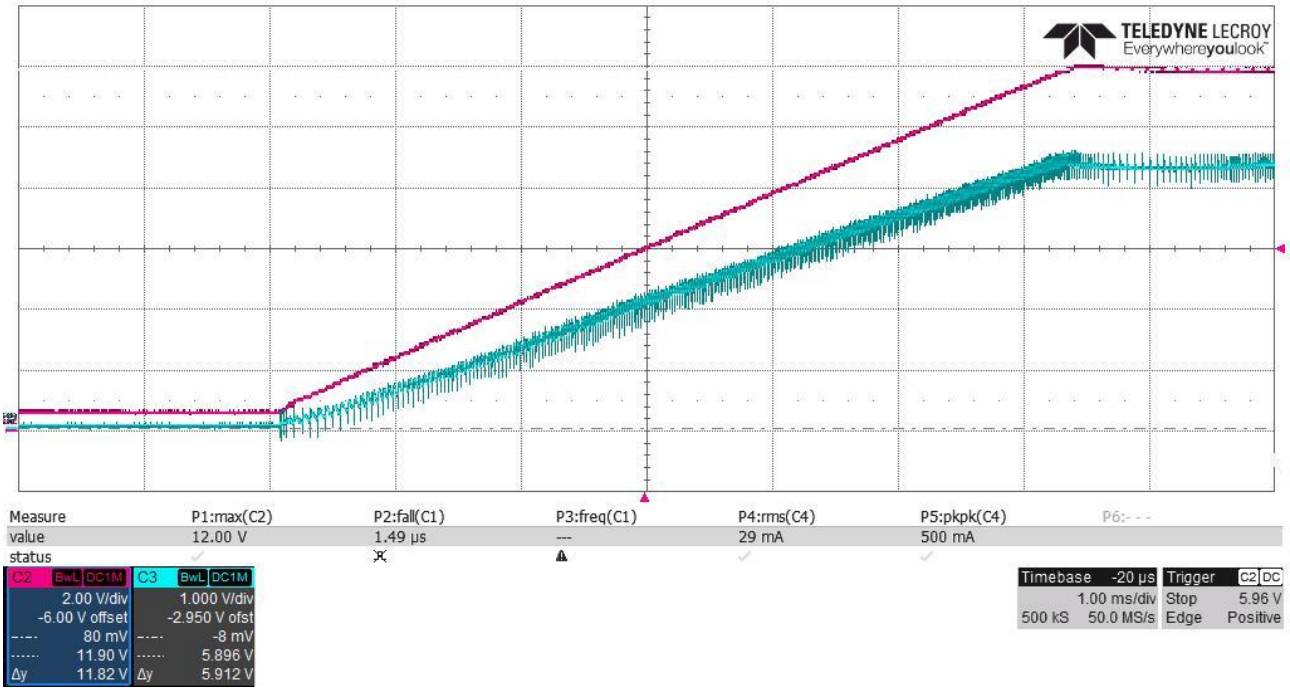
5.1.6 Start Up @ 230V_{AC}: 12V/0.45A; 5V/0.05A

Channel 2: 12V; Channel 3: 5V



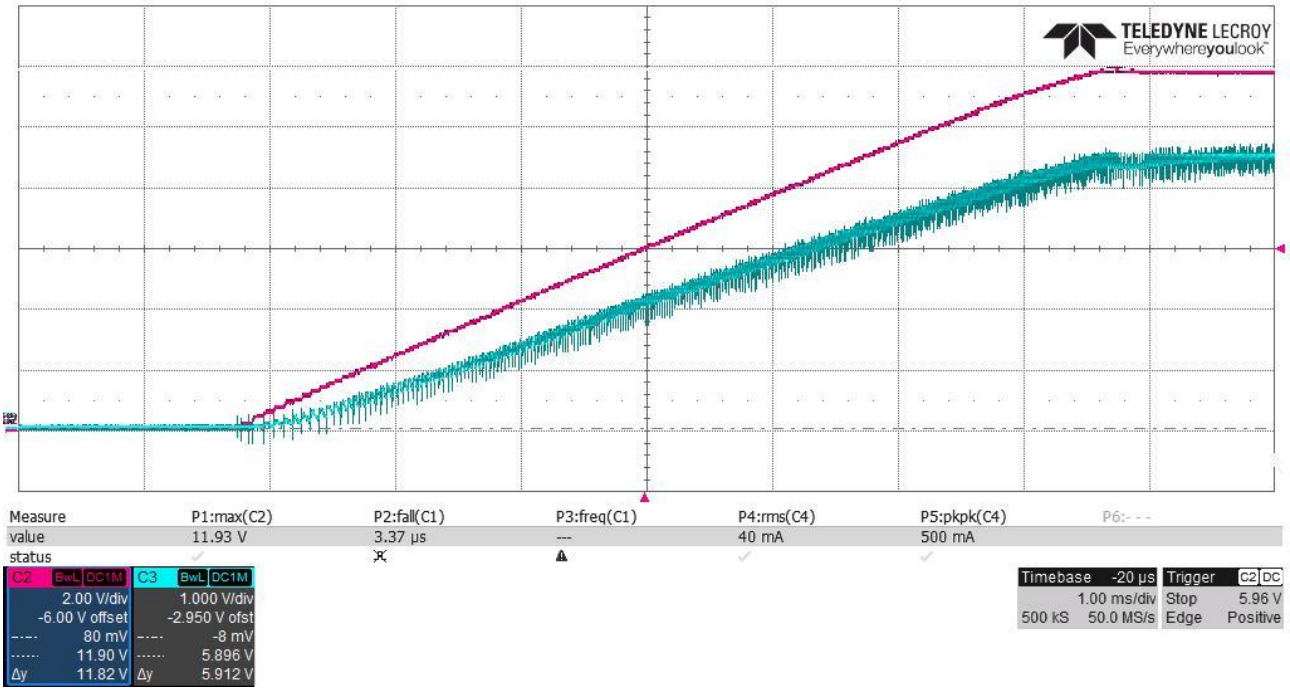
5.1.7 Start Up @ 264V_{AC}: 12V/0A; 5V/0A

Channel 2: 12V; Channel 3: 5V



5.1.8 Start Up @ 264V_{AC}: 12V/0.45A; 5V/0.05A

Channel 2: 12V; Channel 3 : 5V

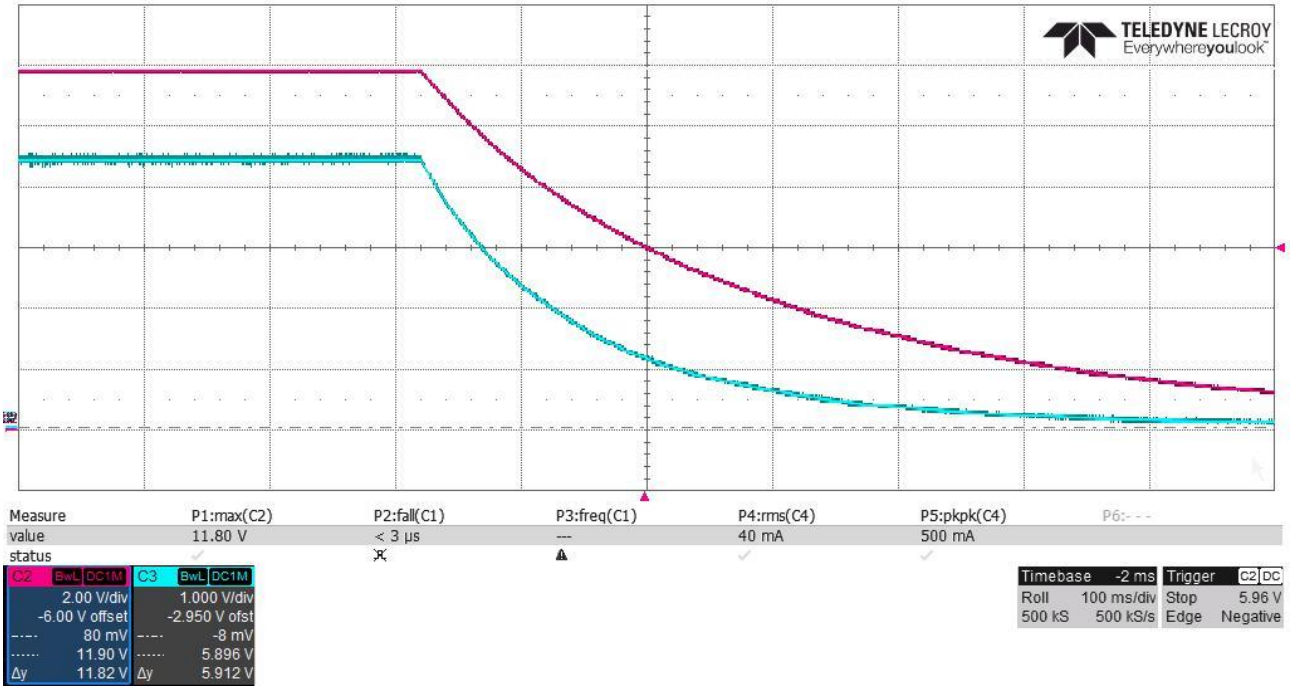


6 Turnoff

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

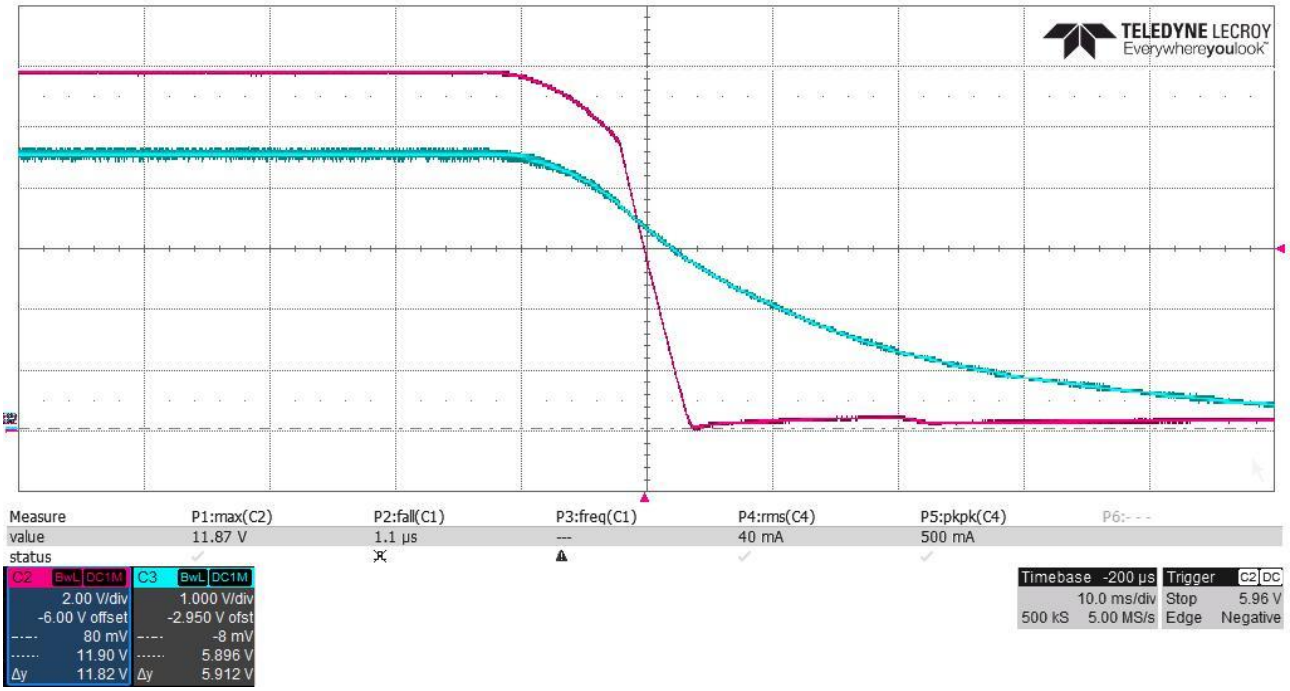
6.1.1 Turnoff @ 90V_{AC}: 12V/0A; 5V/0A

Channel 2: 12V; Channel 3: 5V



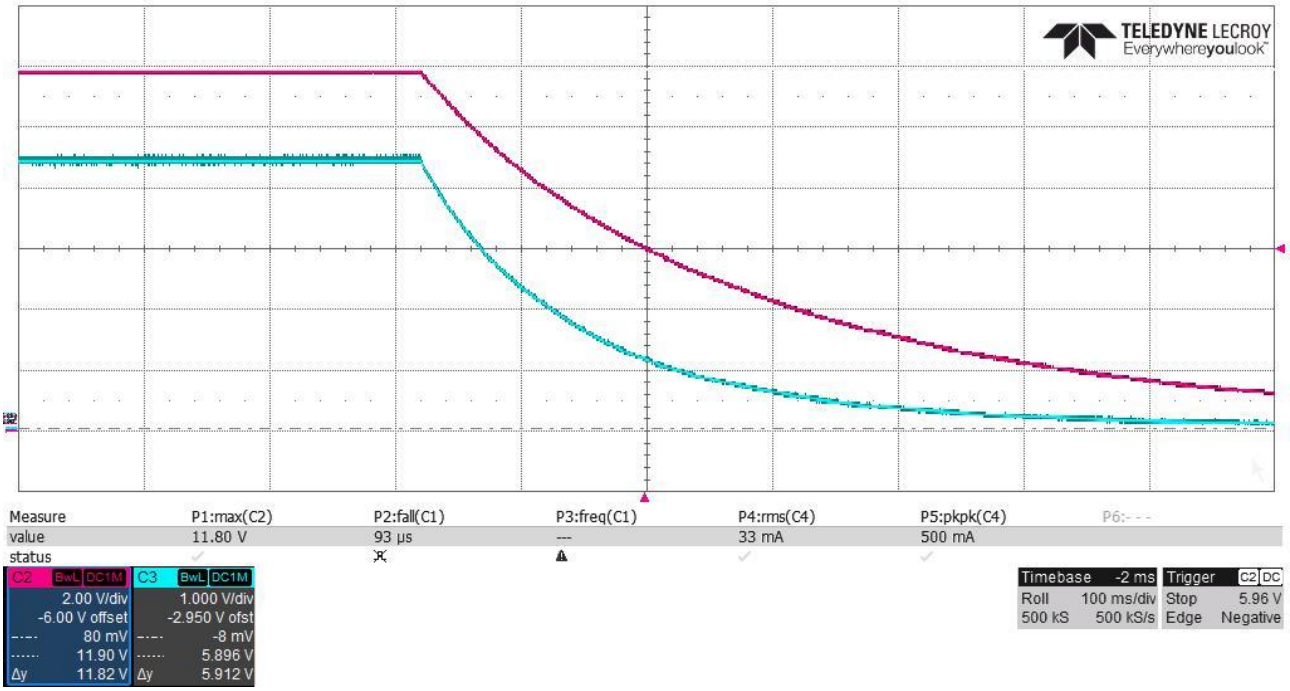
6.1.2 Turnoff @ 90V_{AC}: 12V/0.45A; 5V/0.05A

Channel 2: 12V; Channel 3: 5V



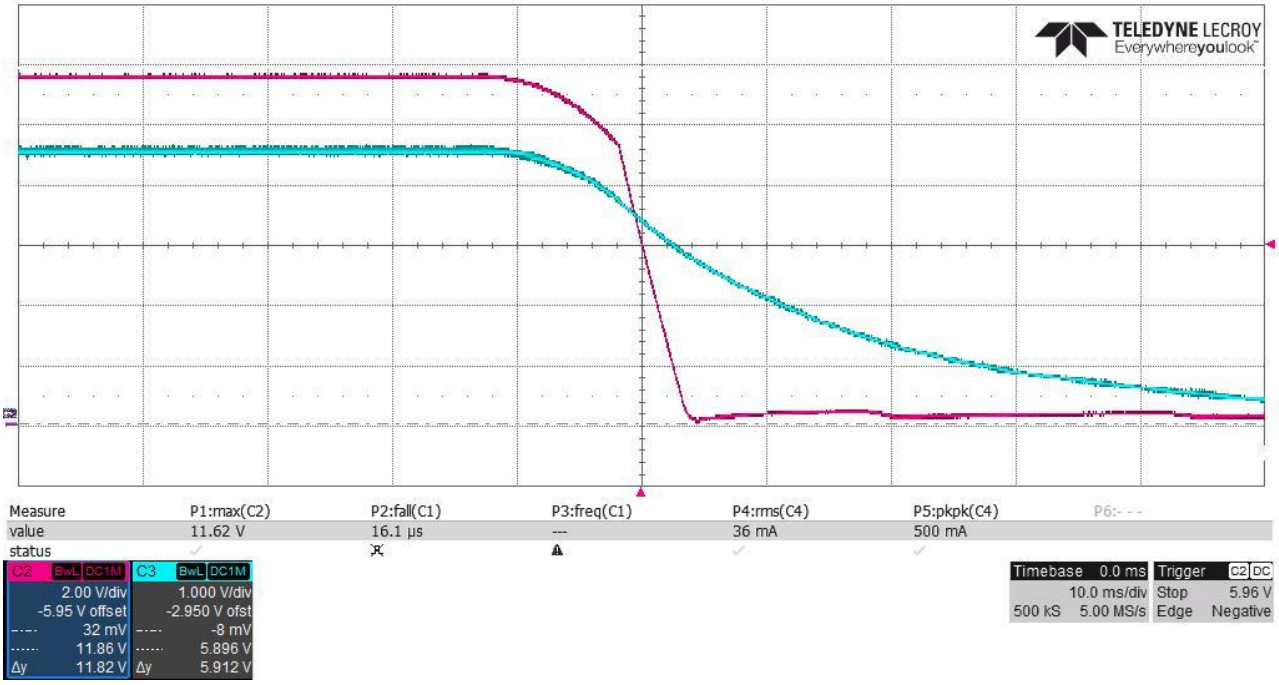
6.1.3 Turnoff @ 115V_{AC}: 12V/0A; 5V/0A

Channel 2: 12V; Channel 3: 5V



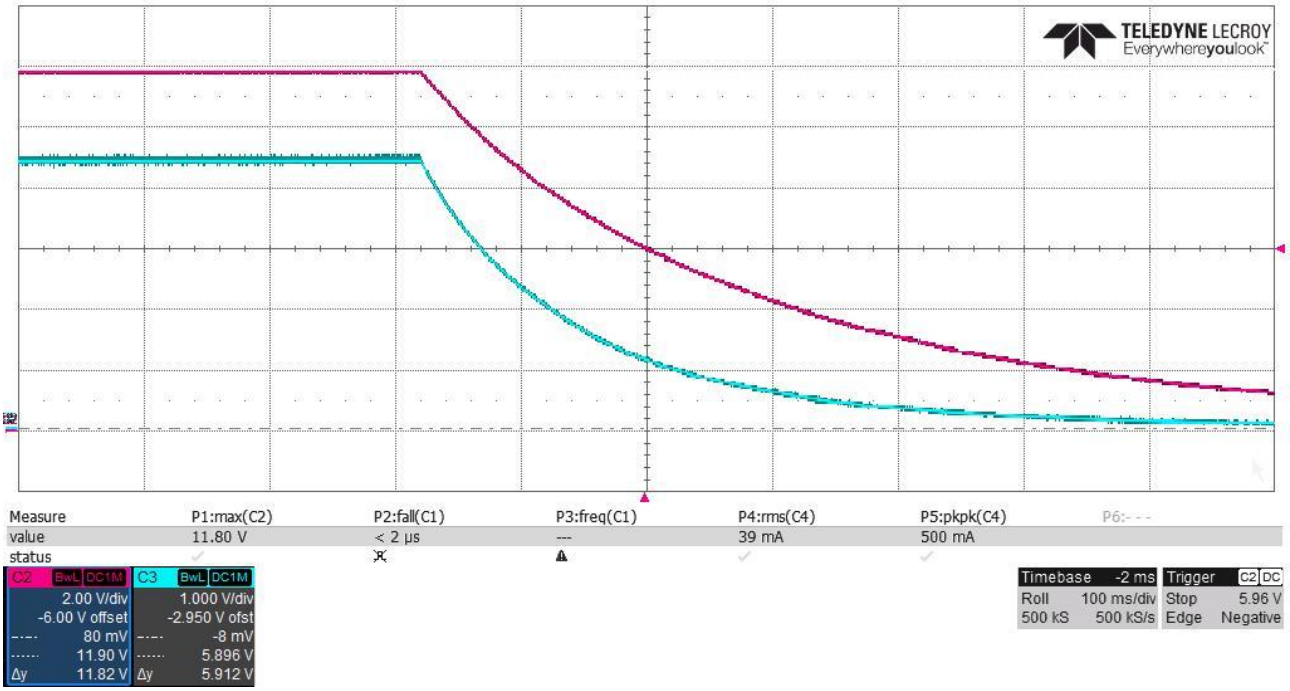
6.1.4 Turnoff @ 115V_{AC}: 12V/0.45A; 5V/0.05A

Channel 2: 12V; Channel 3: 5V



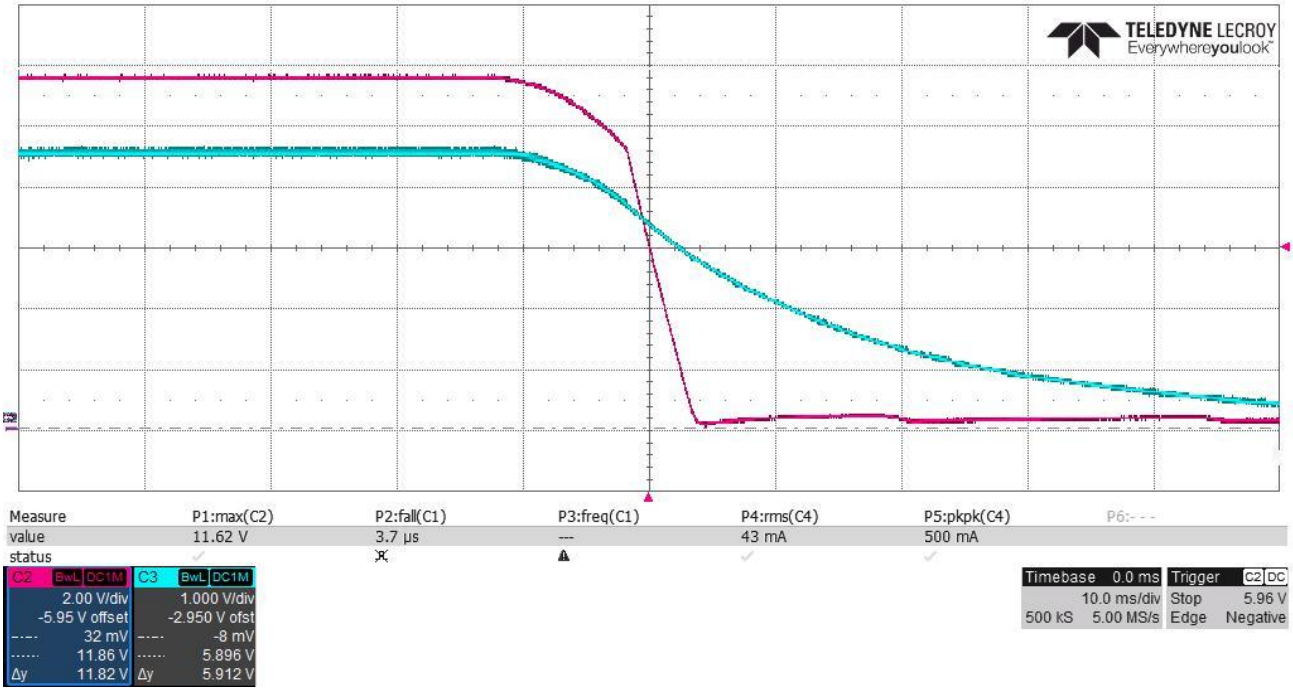
6.1.5 Turnoff @ 230V_{AC}: 12V/0A; 5V/0A

Channel 2: 12V; Channel 3: 5V



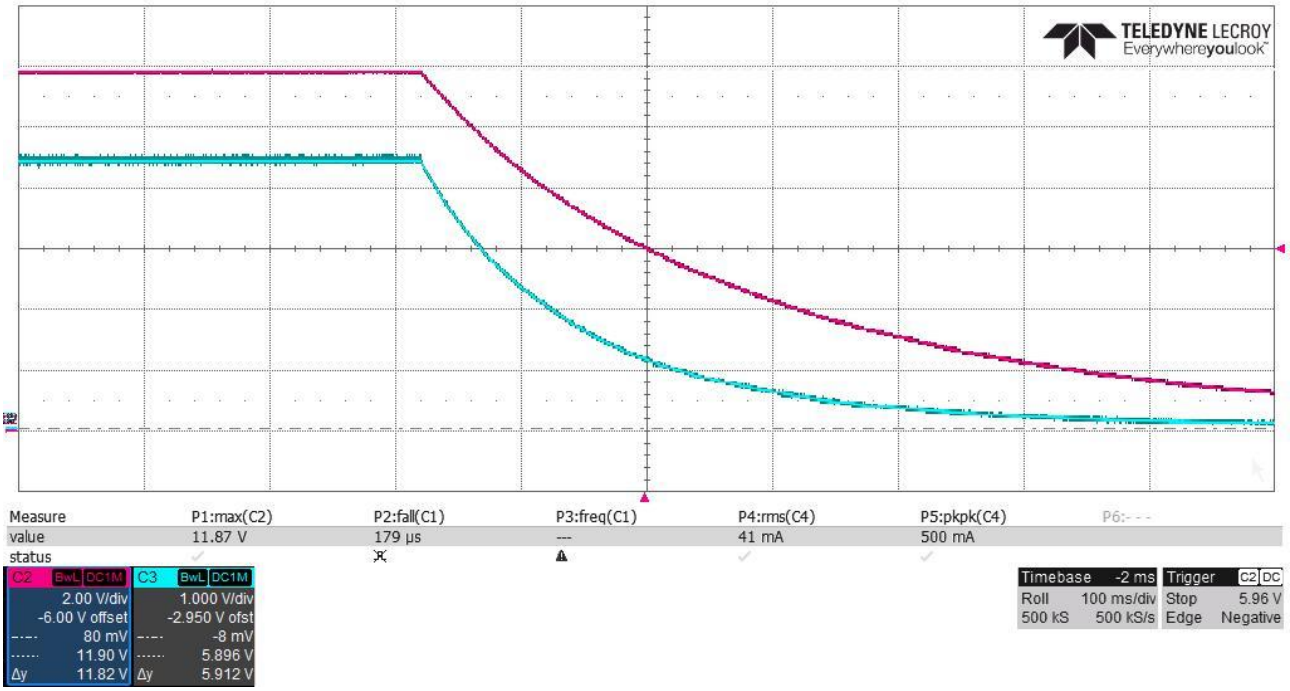
6.1.6 Turnoff @ 230V_{AC}: 12V/0.45A; 5V/0.05A

Channel 2: 12V; Channel 3: 5V



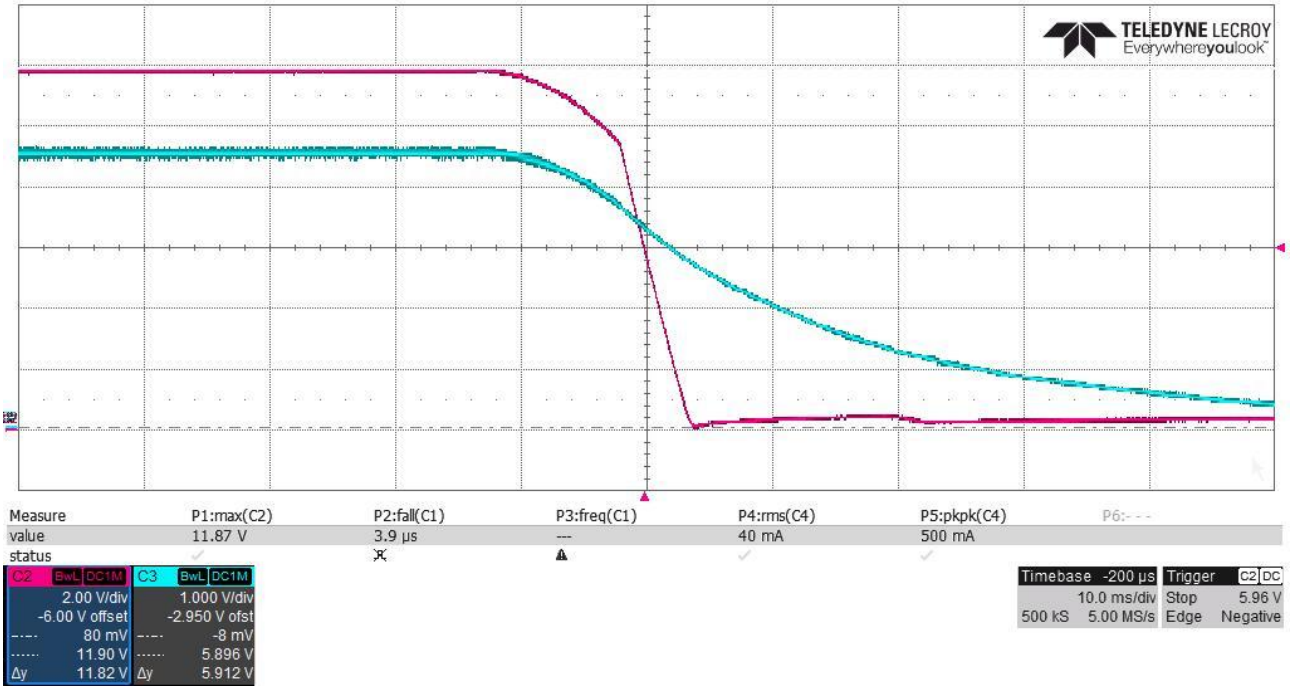
6.1.7 Turnoff @ 264V_{AC}: 12V/0A; 5V/0A

Channel 2: 12V; Channel 3: 5V



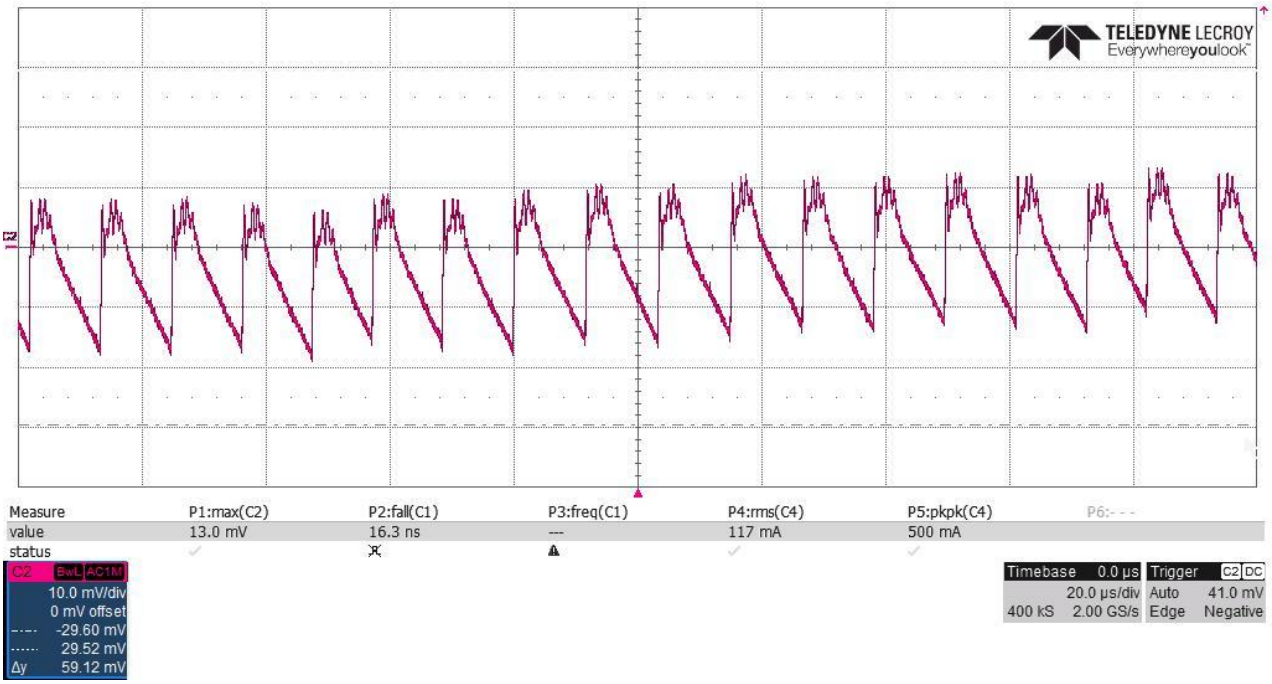
6.1.8 Turnoff @ 264V_{AC}: 12V/0.45A; 5V/0.05A

Channel 2: 12V; Channel 3: 5V

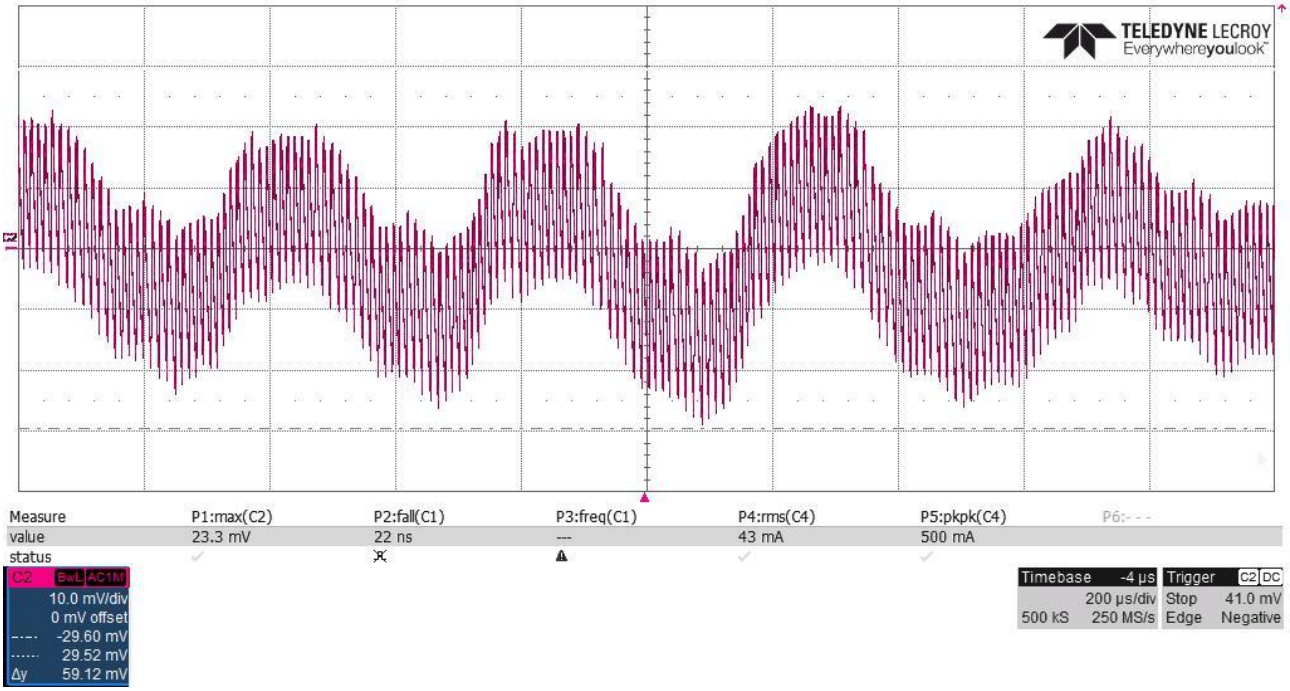


7 Output Ripple Voltage

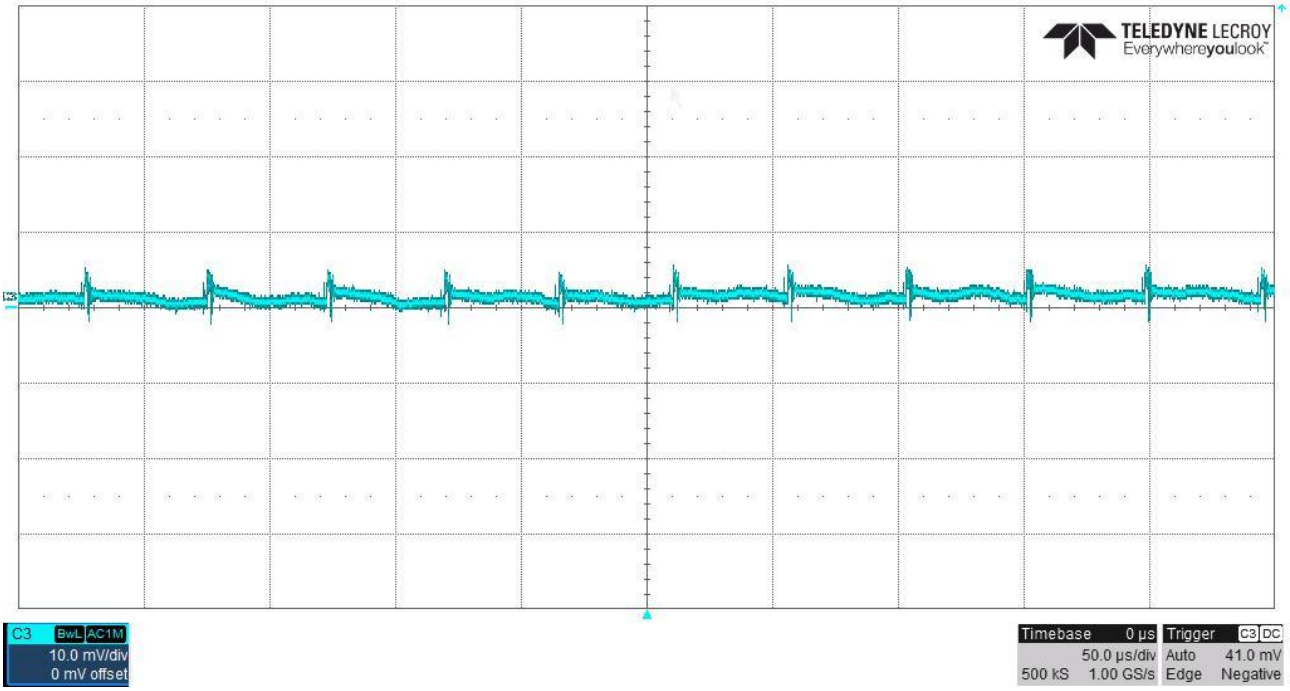
7.1.1 Output Ripple 12V @ 115V_{AC}: 12V/0.45A; 5V/0.05A



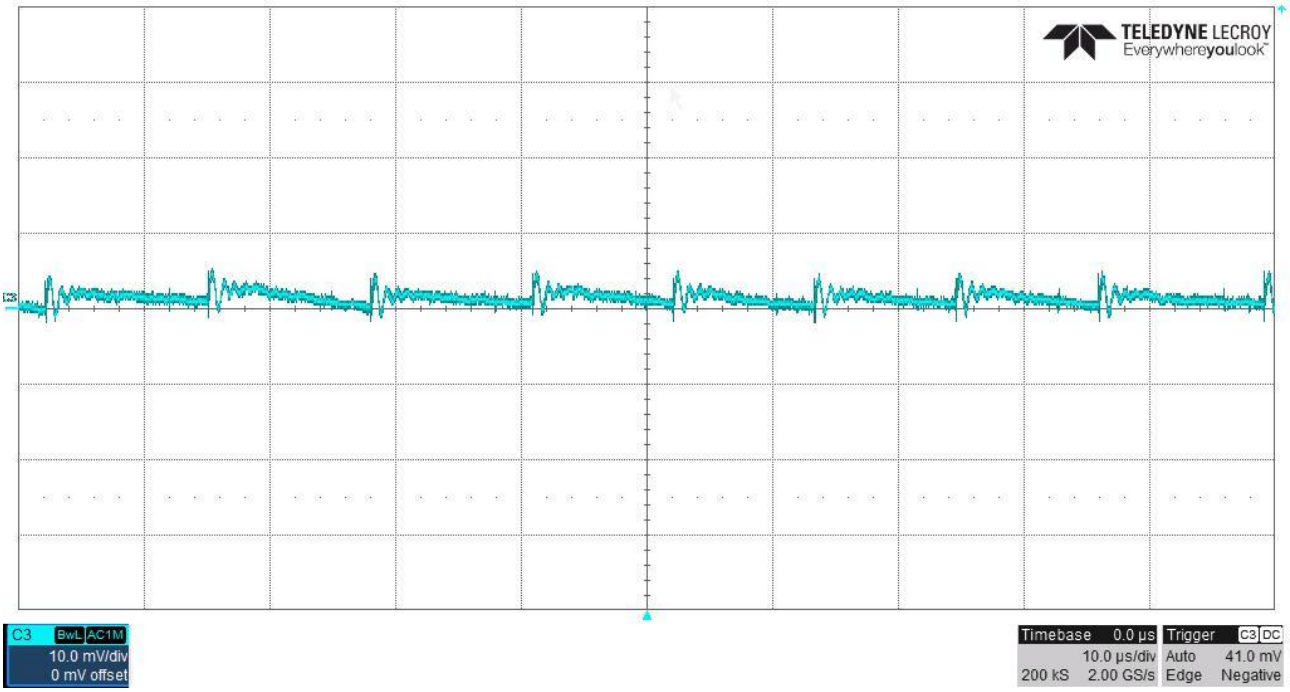
7.1.2 Output Ripple 12V @ 230V_{AC}: 12V/0.45A; 5V/0.05A 259



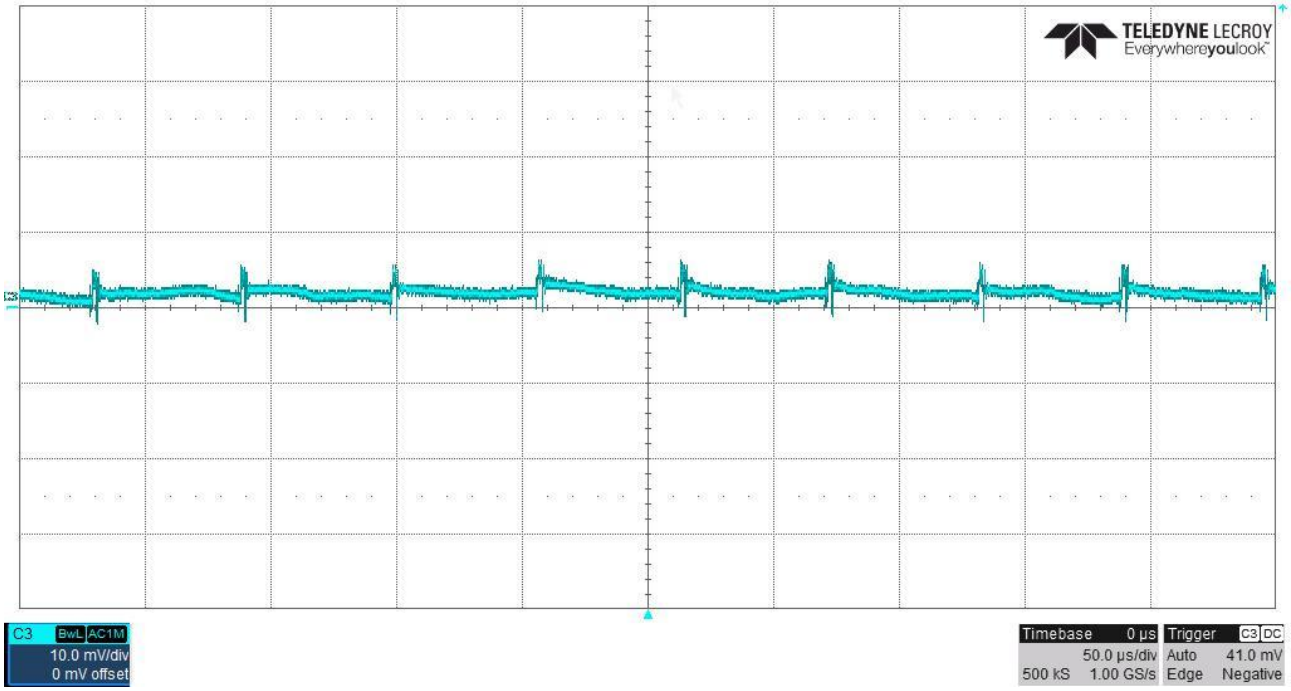
7.1.3 Output Ripple 5V @ 115V_{AC}: 12V/0A ; 5V/0A



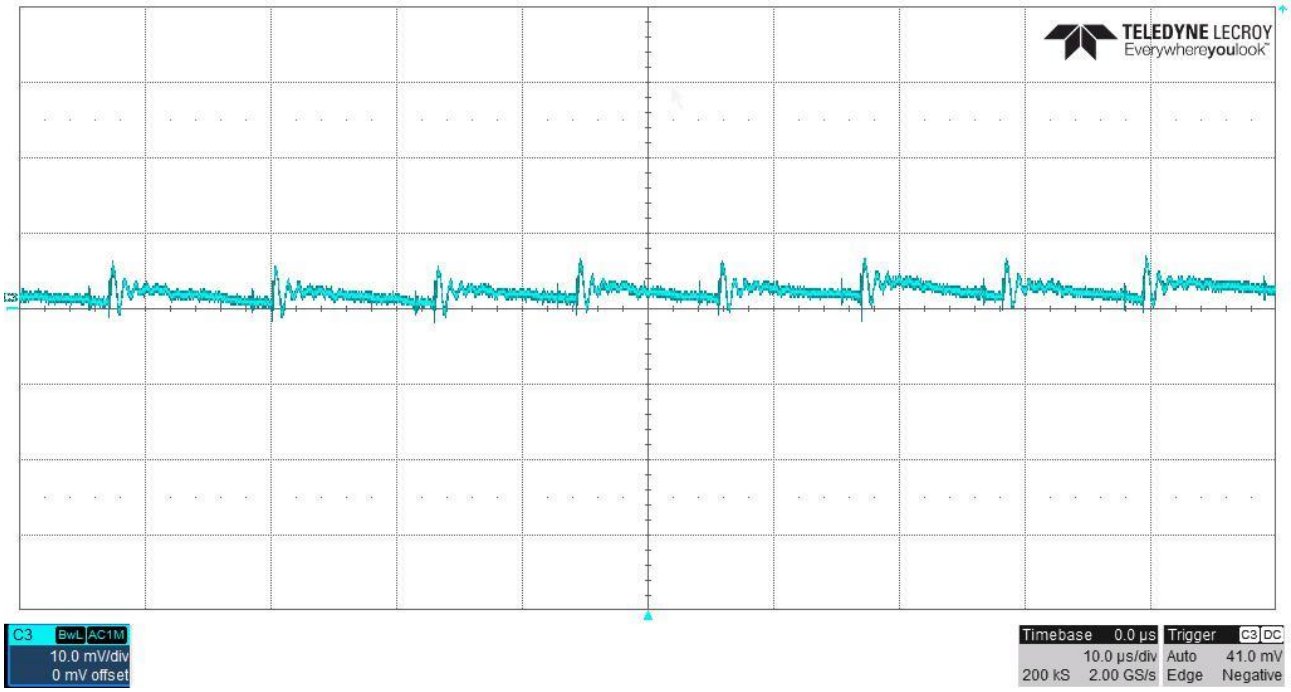
7.1.4 Output Ripple 5V @ 115V_{AC}; 12V/0.45A; 5V/0.05A



7.1.5 Output Ripple 5V @ 230V_{AC}: 12V/0A; 5V/0A

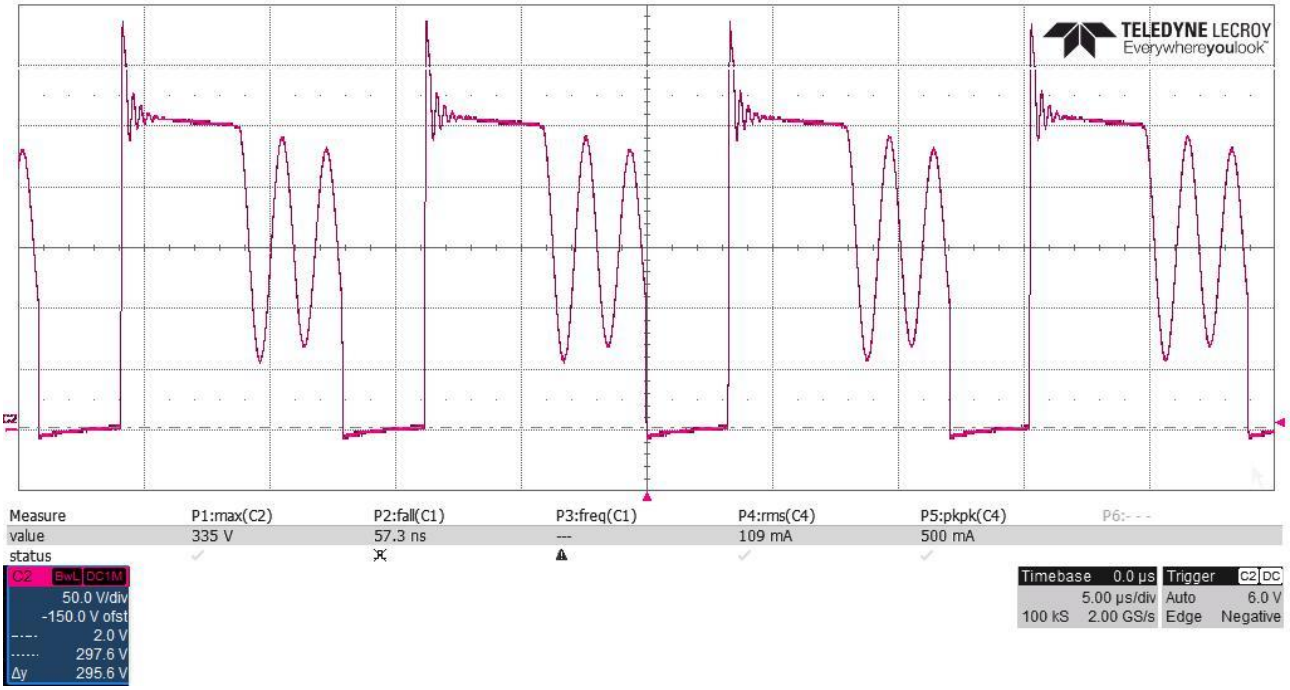


7.1.6 Output Ripple 5V @ 230V_{AC}: 12V/0.45A; 5V/0.05A

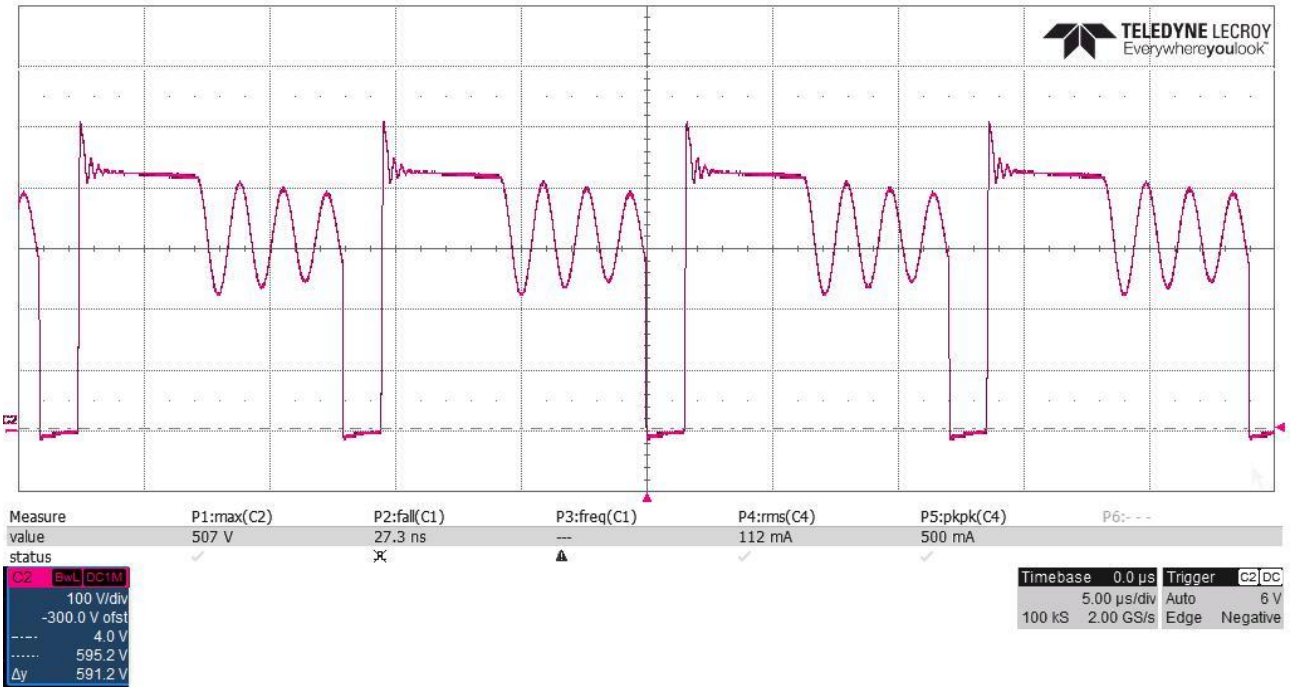


8 Switching Waveforms

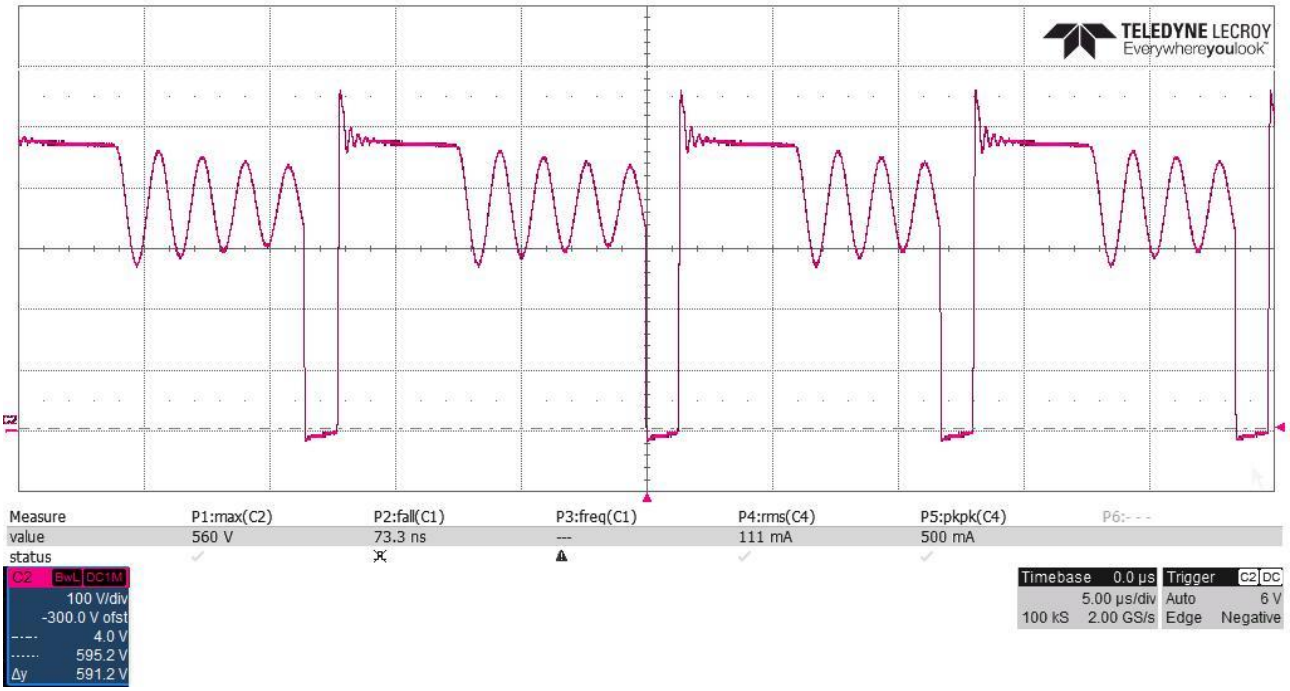
8.1.1 Switching Waveform @ 115V_{AC}: 12V/0.45A; 5V/0.05A



8.1.2 Switching Waveform @ 230V_{AC}: 12V/0.45A; 5V/0.05A



8.1.3 Switching Waveform @ 264V_{AC}: 12V/0.45A; 5V/0.05A



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