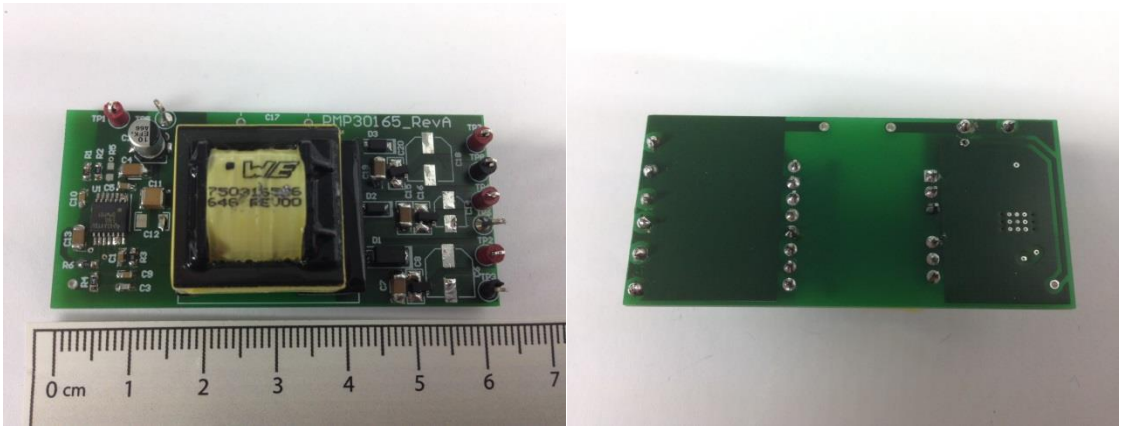
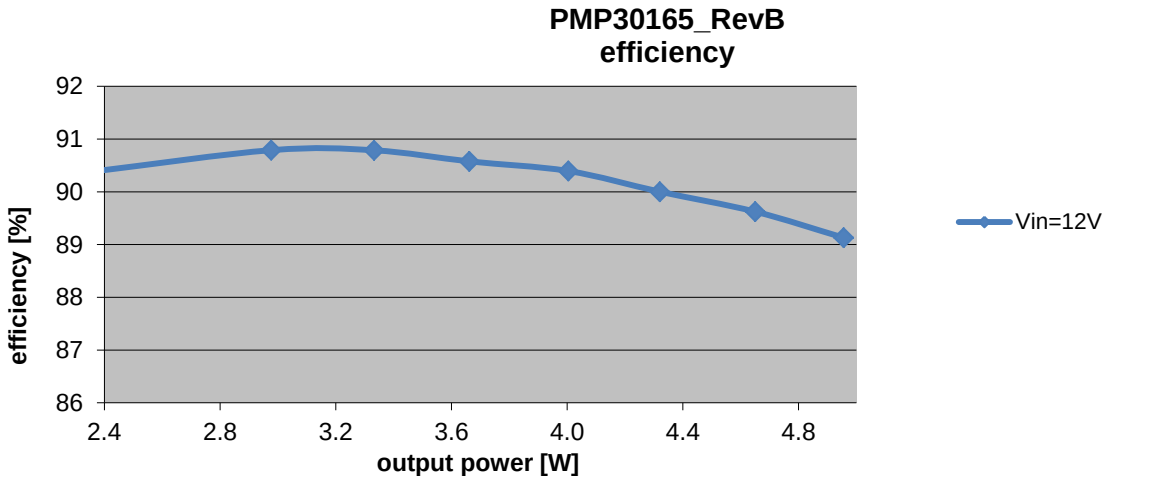
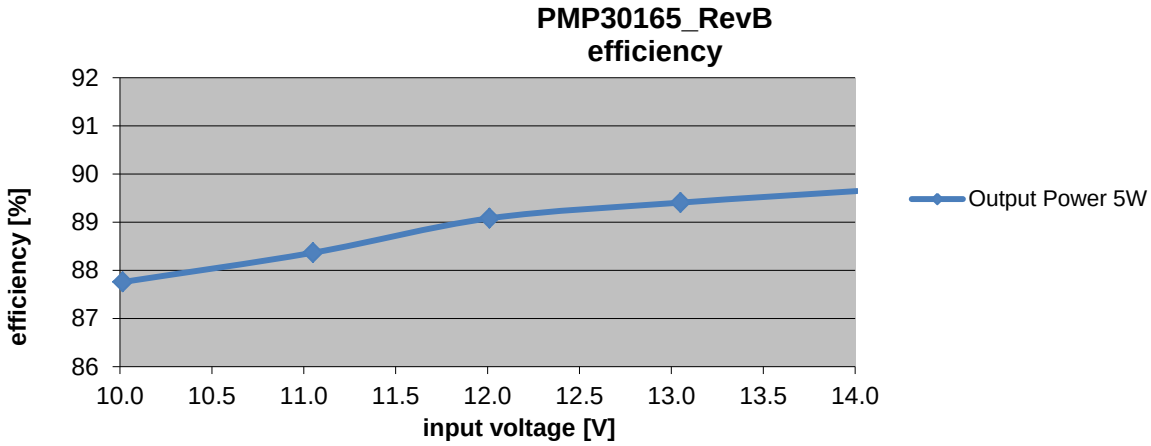


1 Efficiency

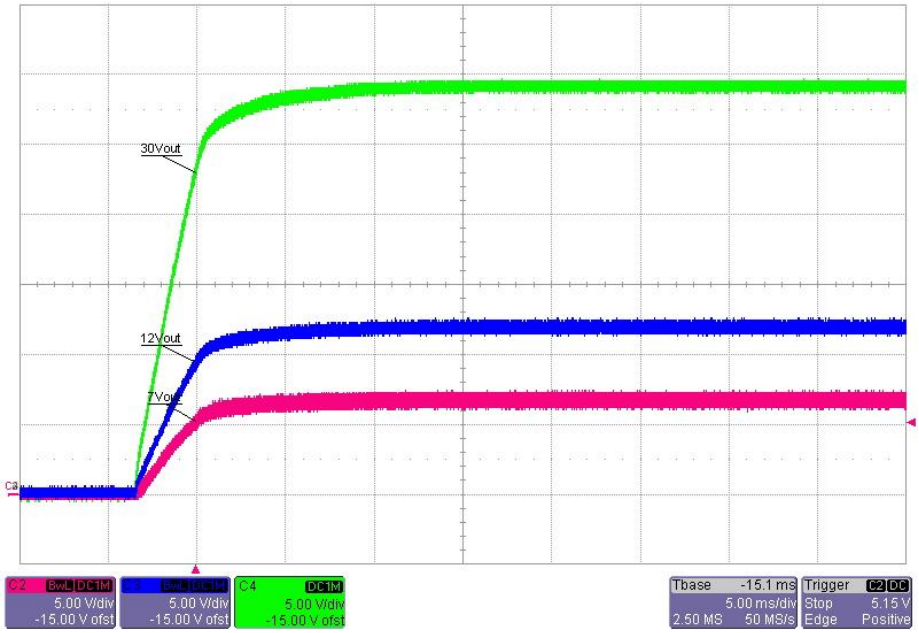




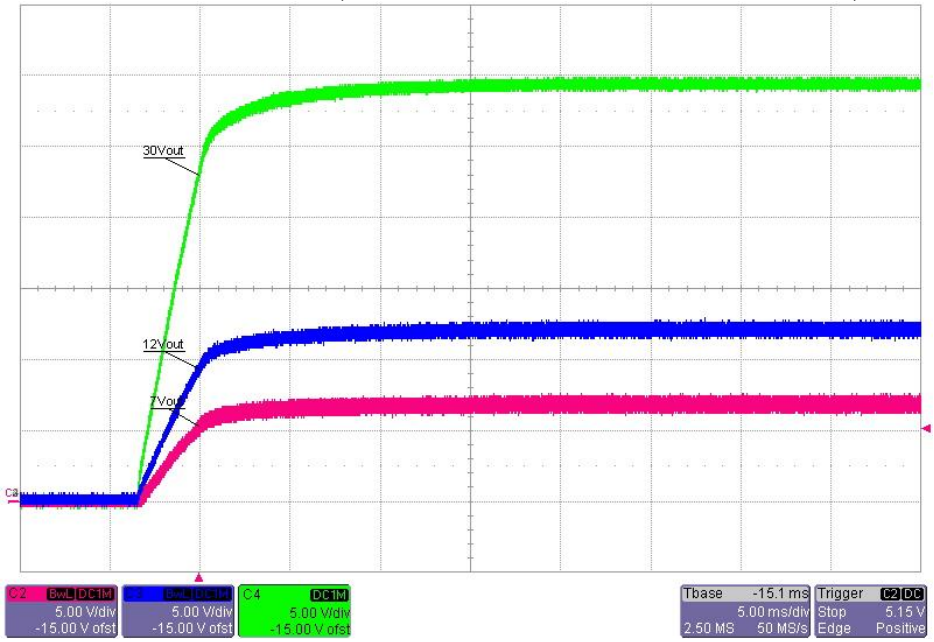
INPUT		OUTPUT						
voltage [V]	current [A]	7Vout [V]	I_7Vout [A]	12Vout [V]	I_12Vout [A]	30Vout [V]	I_30Vout [A]	[eff]
10.09	0.026	7.390	0.006	0.00	0.000	0.00	0.000	17.1
12.02	0.024	7.408	0.006	13.07	0.000	35.47	0.000	15.5
12.02	0.054	7.166	0.057	13.03	0.000	35.33	0.000	63.3
12.02	0.083	7.102	0.106	13.00	0.000	35.24	0.000	75.5
12.01	0.114	7.044	0.157	12.99	0.000	35.21	0.000	80.7
12.01	0.145	6.995	0.206	13.00	0.000	35.25	0.000	82.6
12.00	0.179	6.948	0.257	13.02	0.000	35.37	0.000	83.4
12.02	0.024	7.408	0.006	0.00	0.000	0.00	0.000	15.5
12.02	0.076	7.251	0.006	12.28	0.053	0.00	0.000	76.5
12.02	0.216	7.292	0.006	0.00	0.000	29.77	0.077	90.4
12.02	0.273	7.241	0.006	12.19	0.053	29.69	0.077	90.8
12.02	0.305	7.114	0.057	12.16	0.053	29.66	0.077	90.8
12.02	0.336	7.049	0.106	12.13	0.053	29.61	0.077	90.6
12.01	0.369	6.986	0.157	12.10	0.052	29.57	0.077	90.4
12.01	0.400	6.929	0.206	12.06	0.052	29.52	0.077	90.0
12.00	0.432	6.869	0.257	12.03	0.052	29.47	0.077	89.6
12.00	0.463	6.813	0.306	12.00	0.052	29.42	0.076	89.1
10.02	0.554	6.720	0.306	11.86	0.051	29.14	0.076	87.8
11.05	0.504	6.774	0.306	11.94	0.052	29.29	0.076	88.4
12.01	0.463	6.814	0.306	12.00	0.052	29.42	0.076	89.1
13.05	0.428	6.849	0.306	12.05	0.052	29.52	0.077	89.4
14.01	0.399	6.875	0.306	12.08	0.052	29.60	0.077	89.6

2 Startup

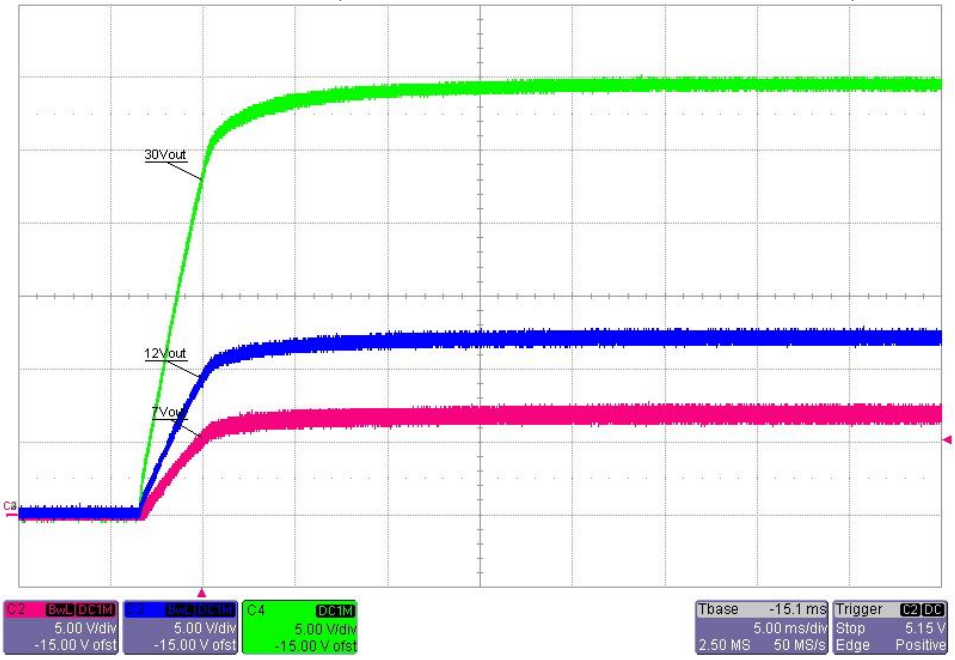
Input voltage = 10V
Load current = full load (7V@0.3A; 12V@0.05A; 30V@0.075A)



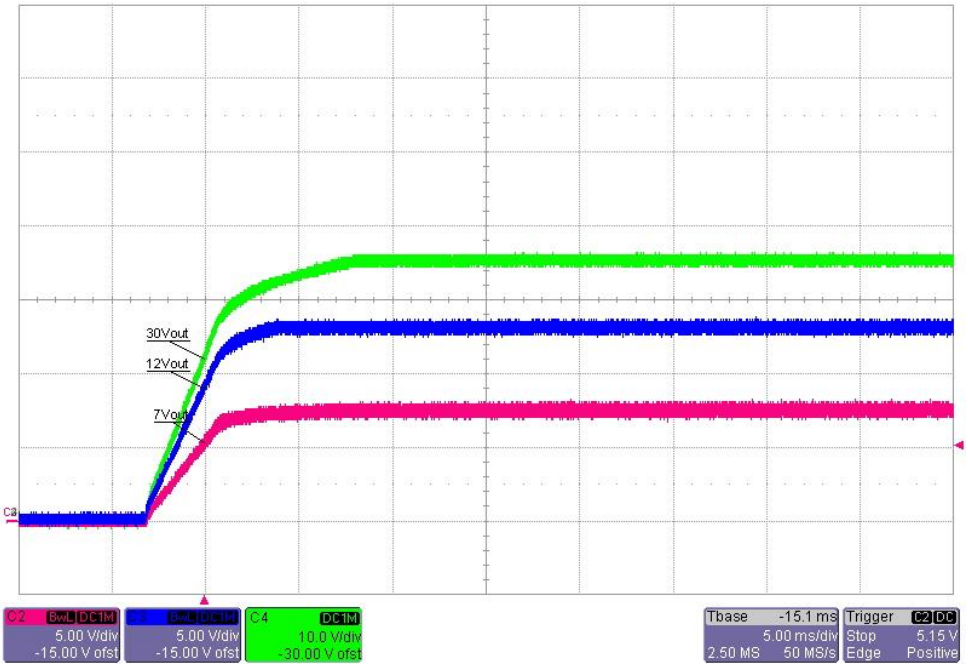
Input voltage = 12V
Load current = full load (7V@0.3A; 12V@0.05A; 30V@0.075A)



Input voltage = 14V
Load current = full load (7V@0.3A; 12V@0.05A; 30V@0.075A)

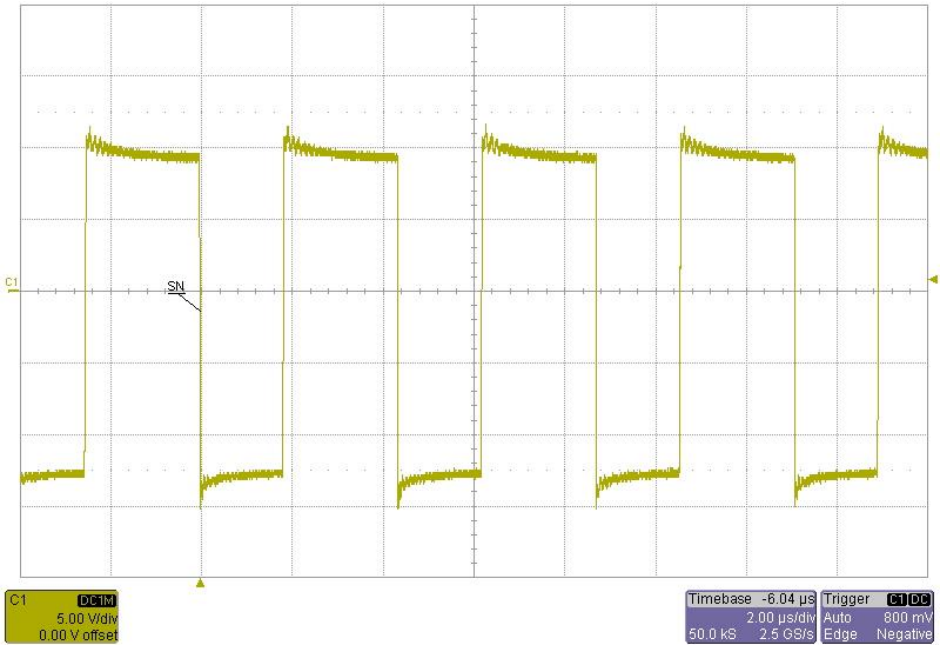


Input voltage = 12V
Load current = no load

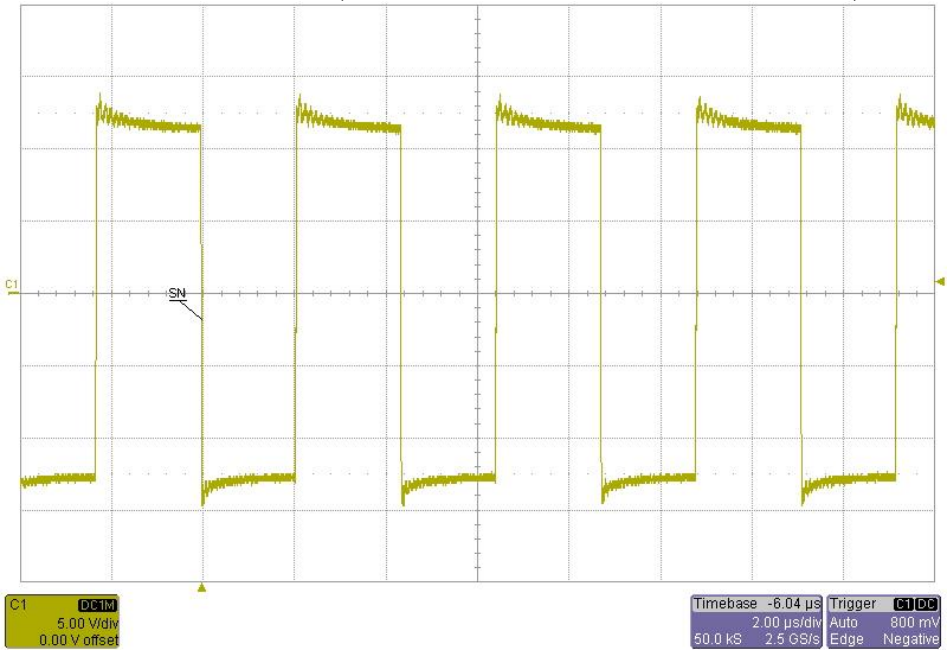


3 Switch Node

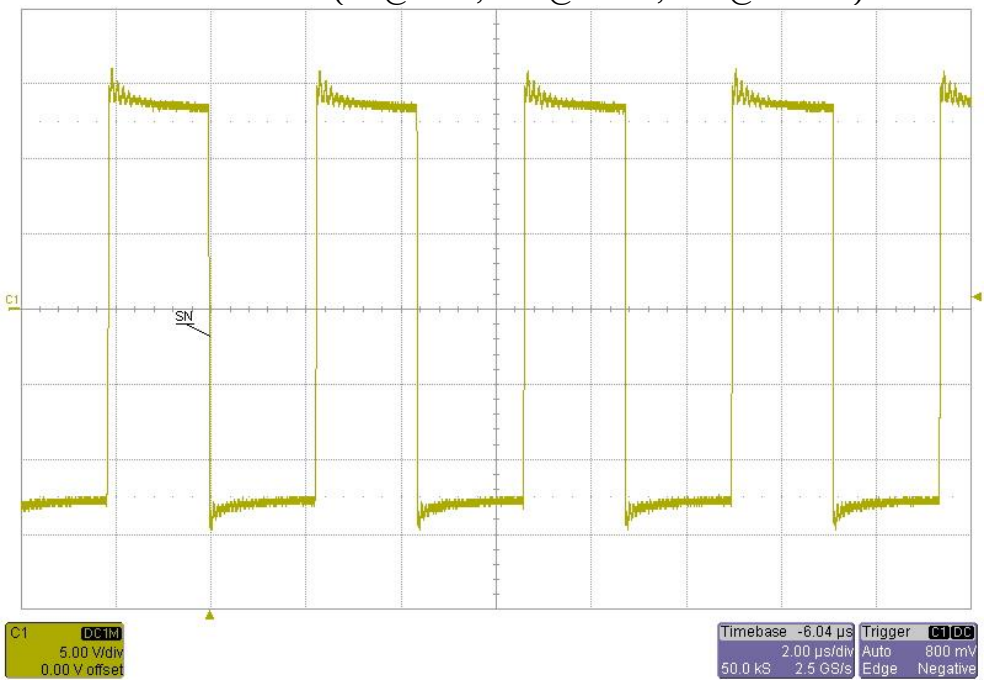
Input voltage = 10V
Load current = full load (7V@0.3A; 12V@0.05A; 30V@0.075A)



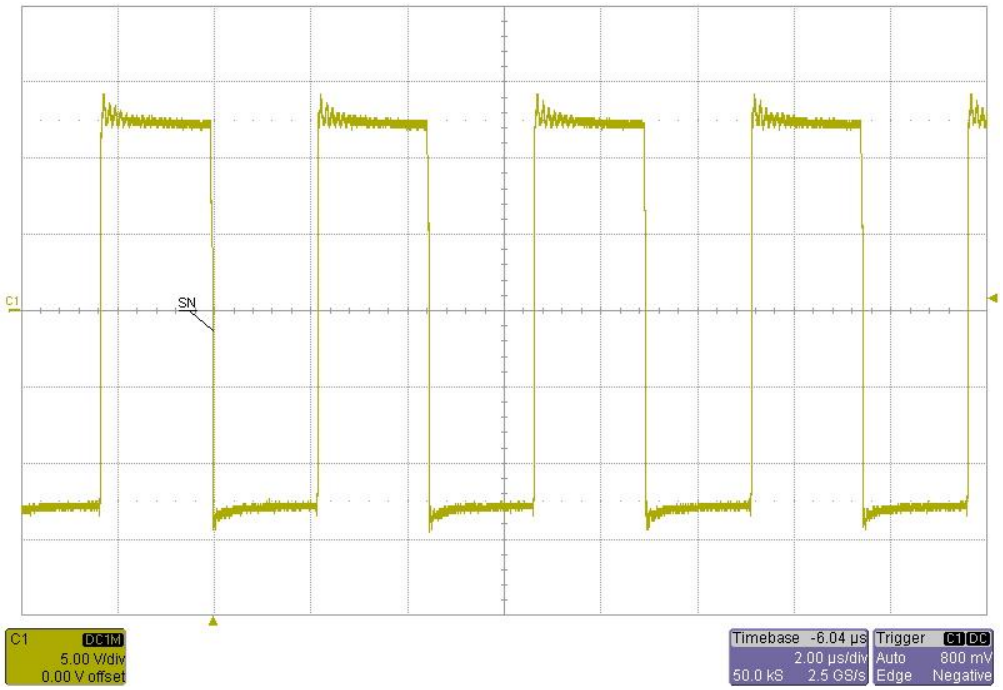
Input voltage = 12V
Load current = full load (7V@0.3A; 12V@0.05A; 30V@0.075A)



Input voltage = 14V
Load current = full load (7V@0.3A; 12V@0.05A; 30V@0.075A)



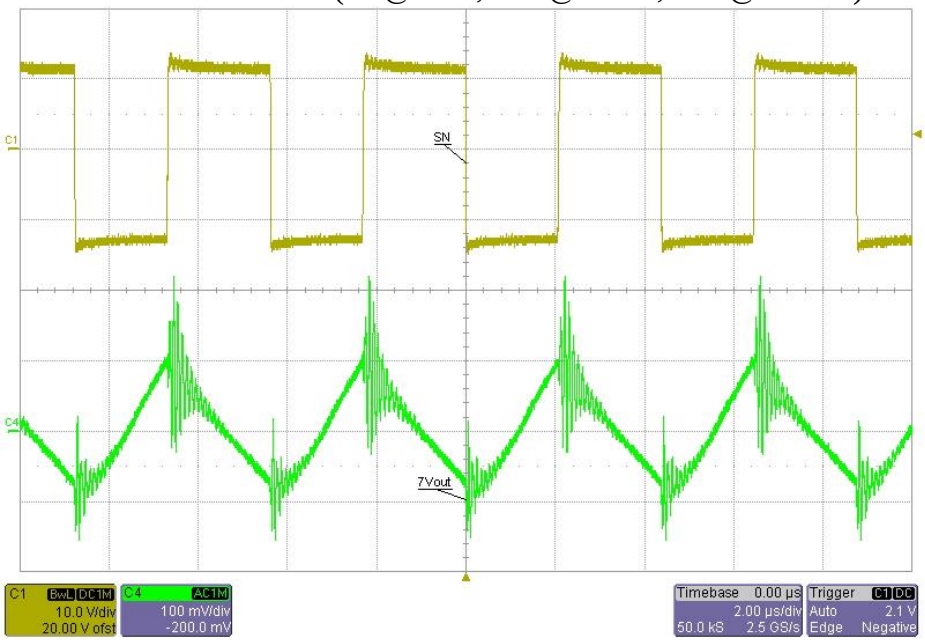
Input voltage = 12V
Load current = no load



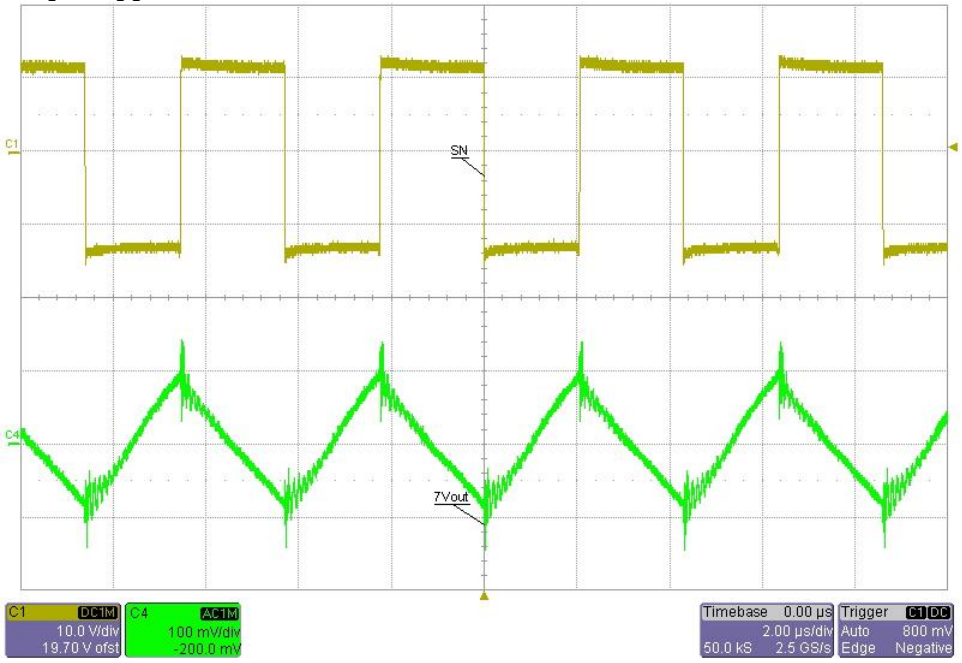
4 Output Ripple

4.1 7Vout:

Input voltage = 12V
Load current = full load (7V@0.3A; 12V@0.05A; 30V@0.075A)

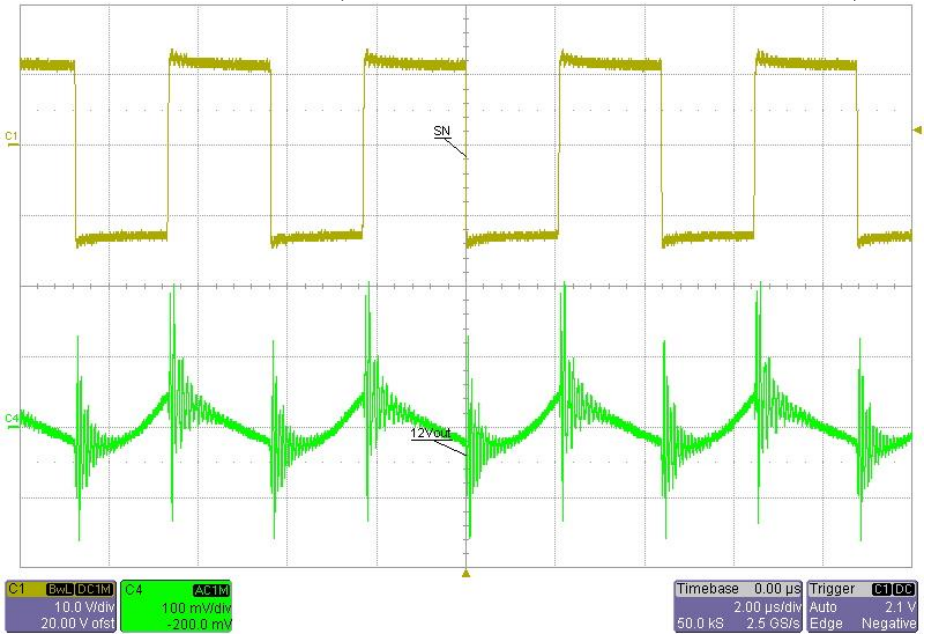


Output ripple with an RC snubber added across diode D1:

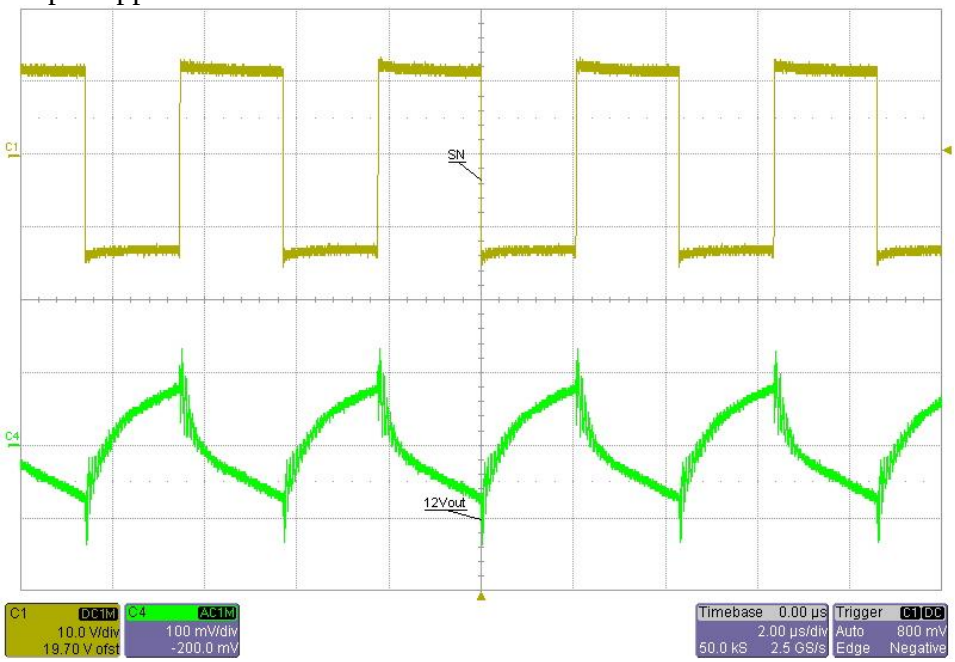


4.2 12Vout:

Input voltage = 12V
Load current = full load (7V@0.3A; 12V@0.05A; 30V@0.075A)

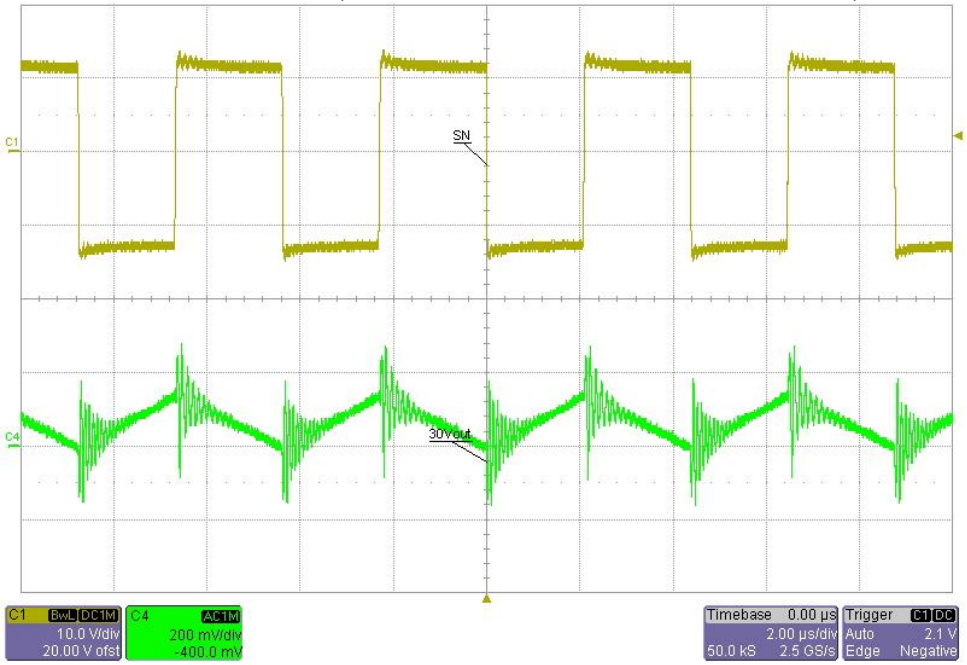


Output ripple with an RC snubber added across diode D2:

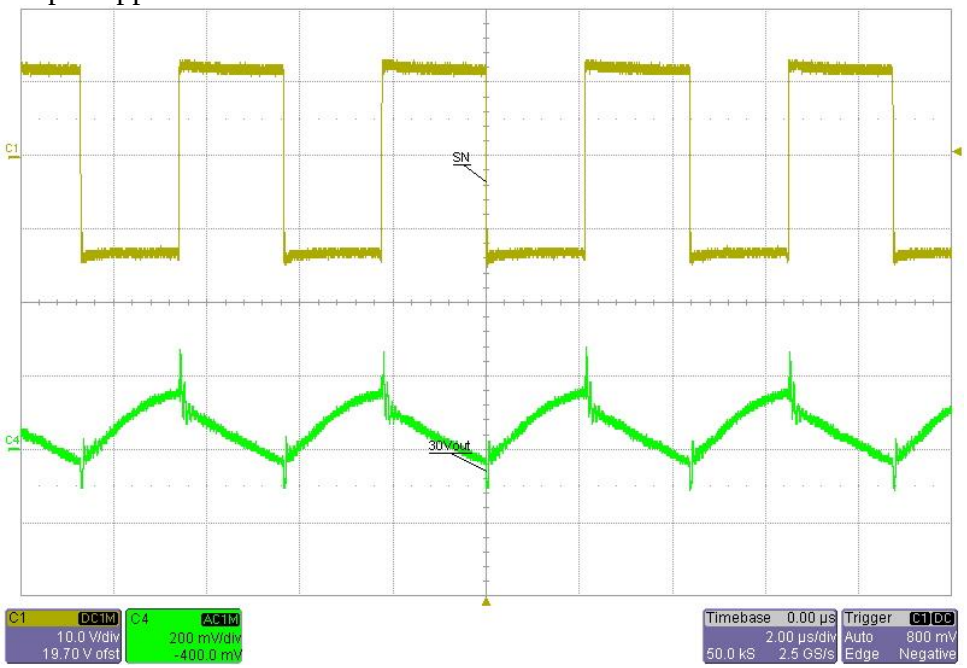


4.3 30Vout:

Input voltage = 12V
Load current = full load (7V@0.3A; 12V@0.05A; 30V@0.075A)



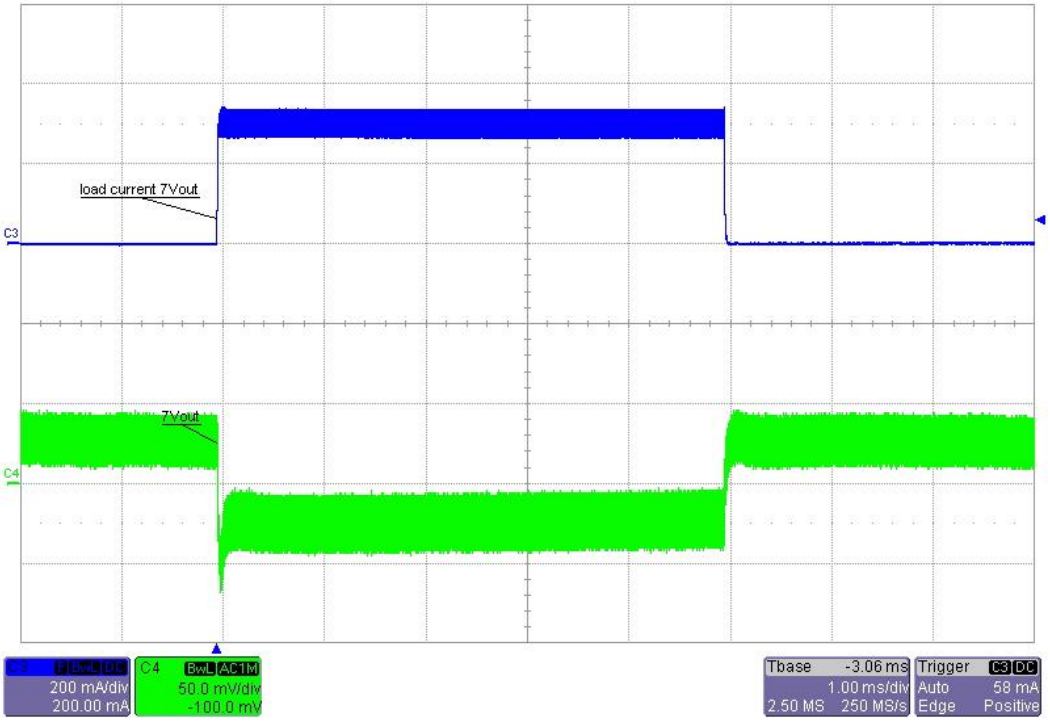
Output ripple with an RC snubber added across diode D3:



5 Load step

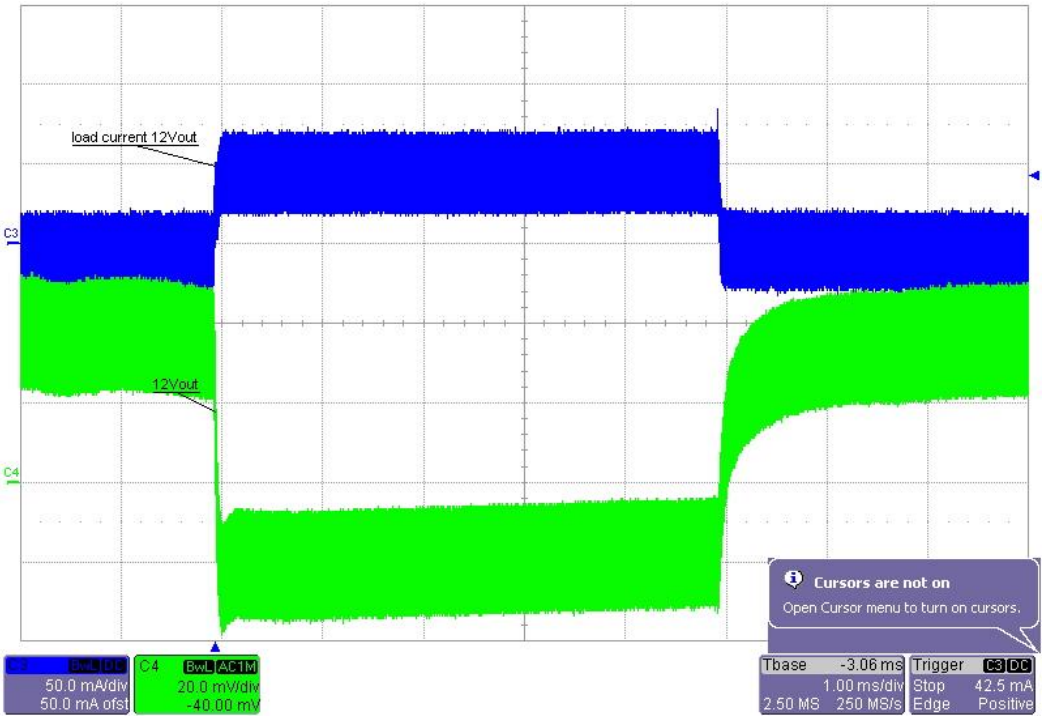
5.1 7Vout:

Input voltage = 12V
Load current 7Vout = 0A - 0.3A
Load current 12Vout = 0.05A
Load current 30Vout = 0.075A



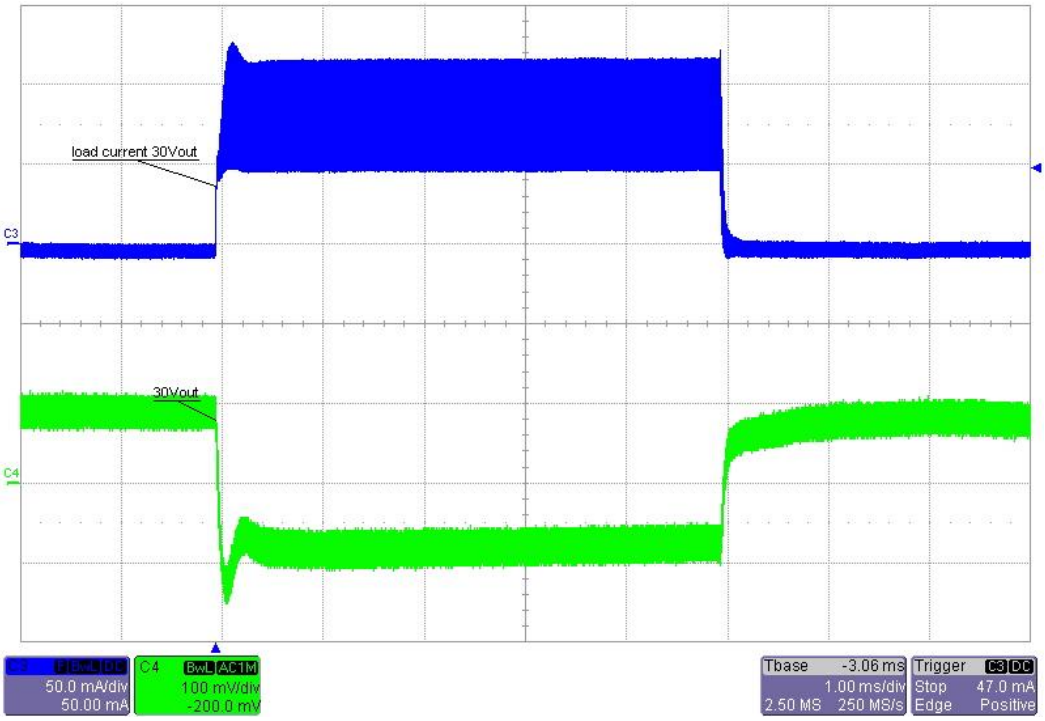
5.2 12Vout:

Input voltage = 12V
Load current 7Vout = 0.3A
Load current 12Vout = 0 - 0.05A
Load current 30Vout = 0.075A



5.3 30Vout:

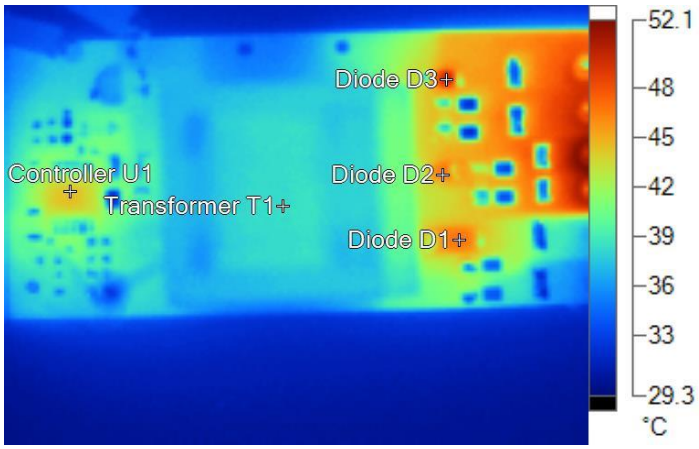
Input voltage = 12V
Load current 7Vout = 0.3A
Load current 12Vout = 0.05A
Load current 30Vout = 0 - 0.075A



6 Thermal Analysis

The images below show the infrared images taken from the FlexCam after 15min at full load output power.

Input voltage = 12VDC
Output power = full load (7V@0.3A; 12V@0.05A; 30V@0.075A)
Ambient temperature = 25°C
No heatsink, no airflow



Name	Temperature	
Controller U1	44.4°C	
Diode D3	50.0°C	
Diode D2	46.5°C	
Diode D1	46.7°C	
Transformer T1	38.3°C	

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