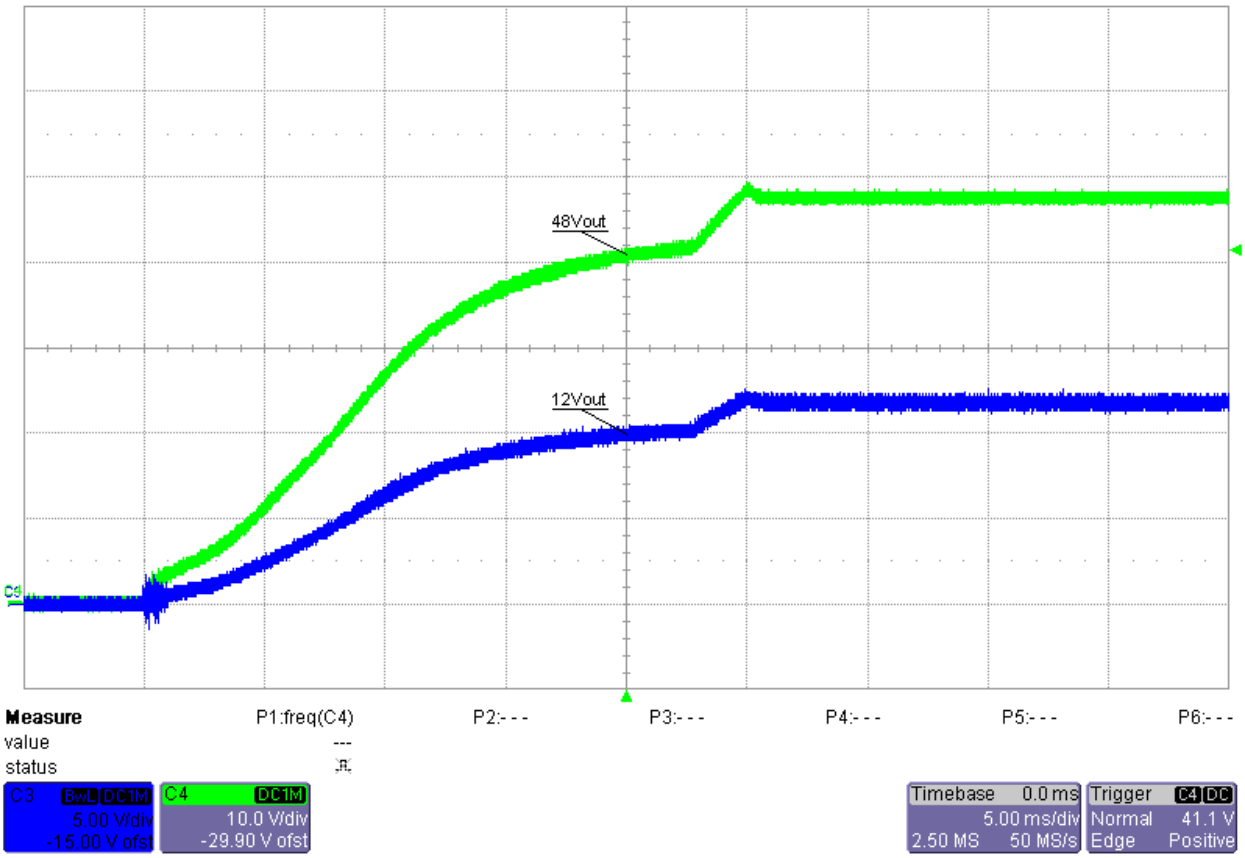
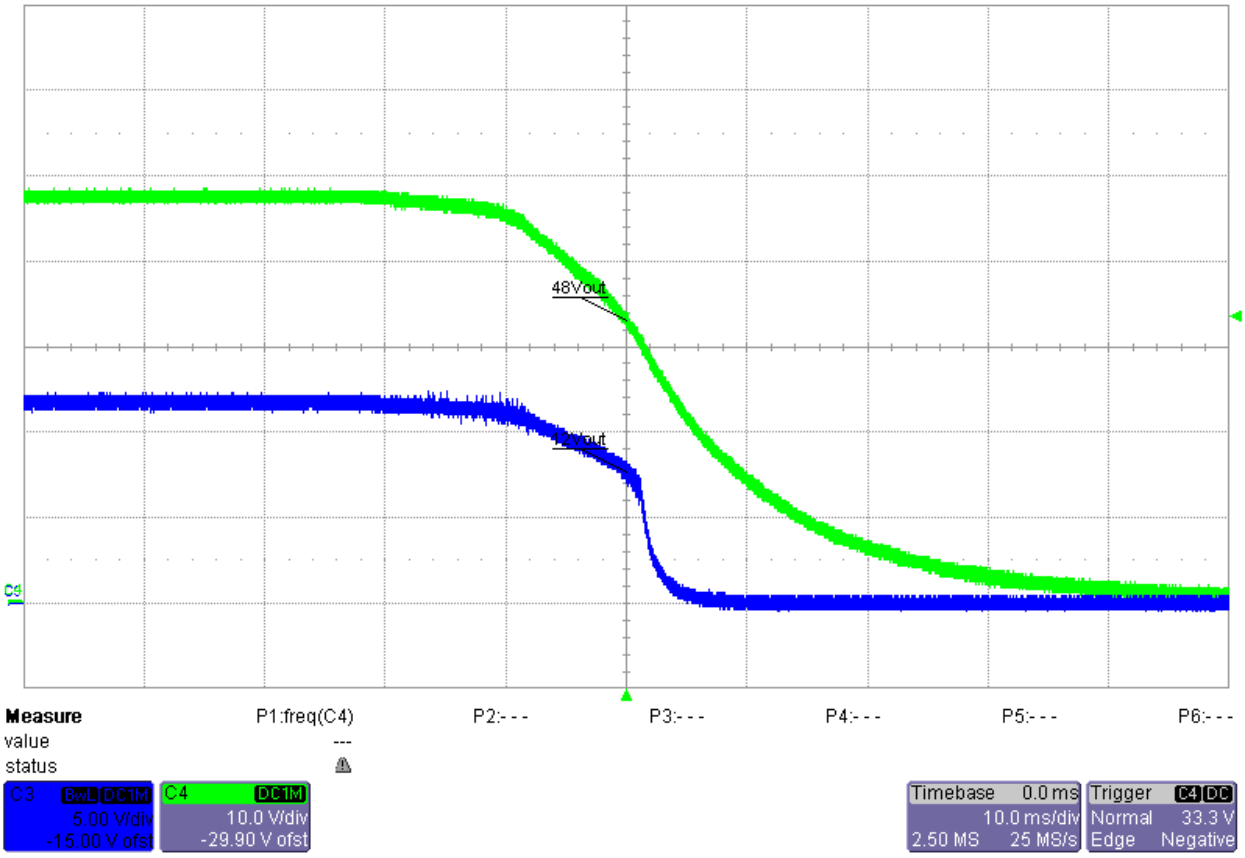
1 Startup

Input voltage = 560VDC
Load current = full load (48V@1A, 12V@0.5A)



2 Shutdown

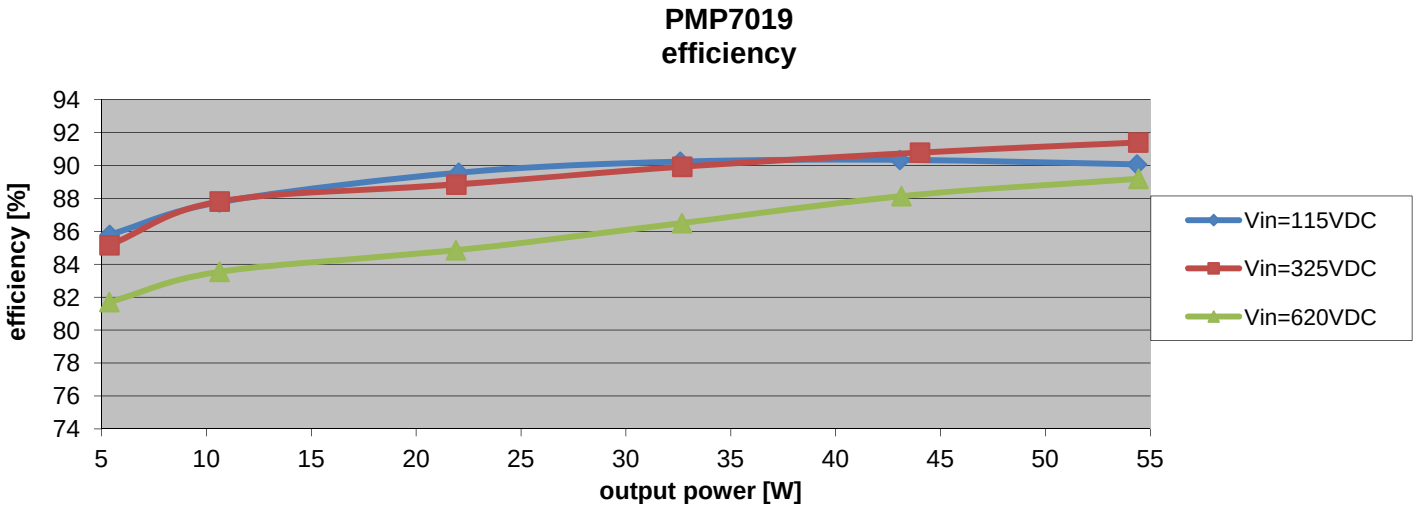
Input voltage = 560VDC
Load current = full load (48V@1A, 12V@0.5A)



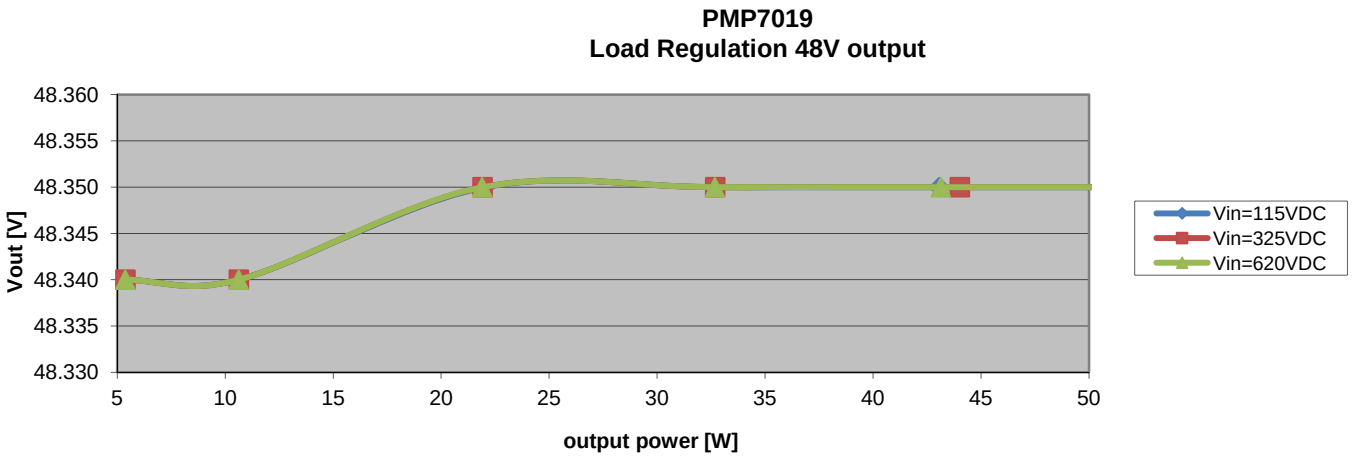
3 Efficiency

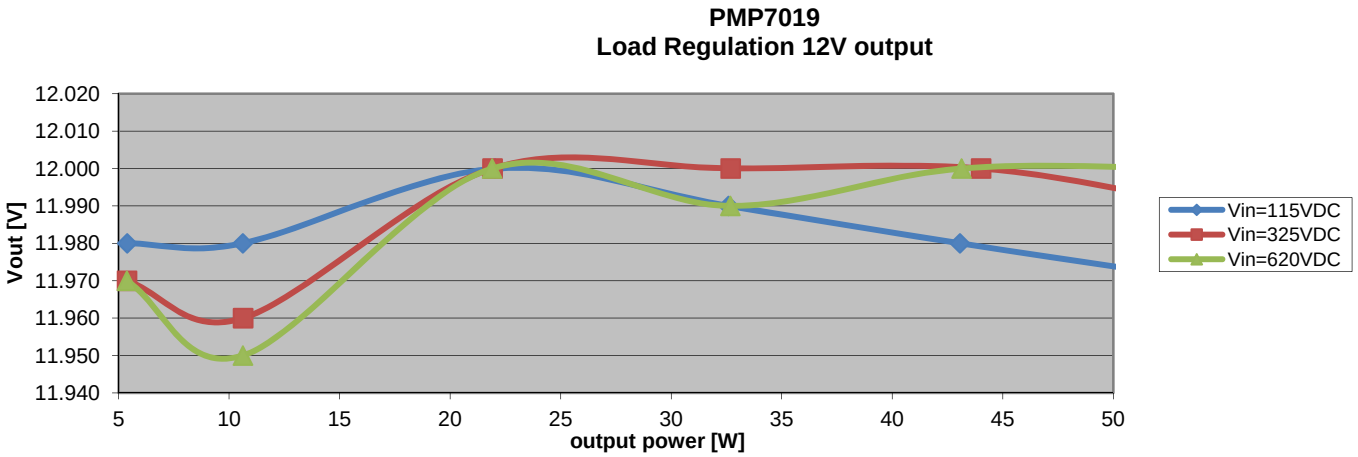
All measurements are done with DC voltage at the input.

input voltage [V]	input current [A]	48V output voltage [V]	48V output current [A]	12V output voltage [V]	12V output current [A]	output power [W]	efficiency
115.200	0.0545	48.340	0.1001	11.980	0.0457	5.39	85.79
115.200	0.1050	48.340	0.1965	11.980	0.0933	10.62	87.77
115.200	0.2135	48.350	0.4043	12.000	0.2068	22.03	89.57
115.200	0.3135	48.350	0.5985	11.990	0.3046	32.59	90.24
115.100	0.4141	48.350	0.7914	11.980	0.4003	43.06	90.34
115.100	0.5244	48.350	1.0009	11.970	0.4987	54.36	90.07
325.400	0.0194	48.340	0.0998	11.970	0.0461	5.38	85.16
325.400	0.0372	48.340	0.1966	11.960	0.0942	10.63	87.82
325.400	0.0758	48.350	0.4050	12.000	0.1944	21.91	88.85
325.400	0.1117	48.350	0.5994	12.000	0.3088	32.69	89.93
325.400	0.1490	48.350	0.8102	12.000	0.4037	44.02	90.79
325.200	0.1831	48.350	1.0015	11.990	0.5006	54.42	91.40
620.200	0.0106	48.340	0.0998	11.970	0.0457	5.37	81.70
620.200	0.0205	48.340	0.1966	11.950	0.0936	10.62	83.55
620.200	0.0416	48.350	0.4048	12.000	0.1935	21.89	84.86
620.200	0.0609	48.350	0.5993	11.990	0.3083	32.67	86.50
620.200	0.0789	48.350	0.7920	12.000	0.4032	43.13	88.14
620.200	0.0984	48.350	1.0015	12.000	0.5011	54.44	89.20



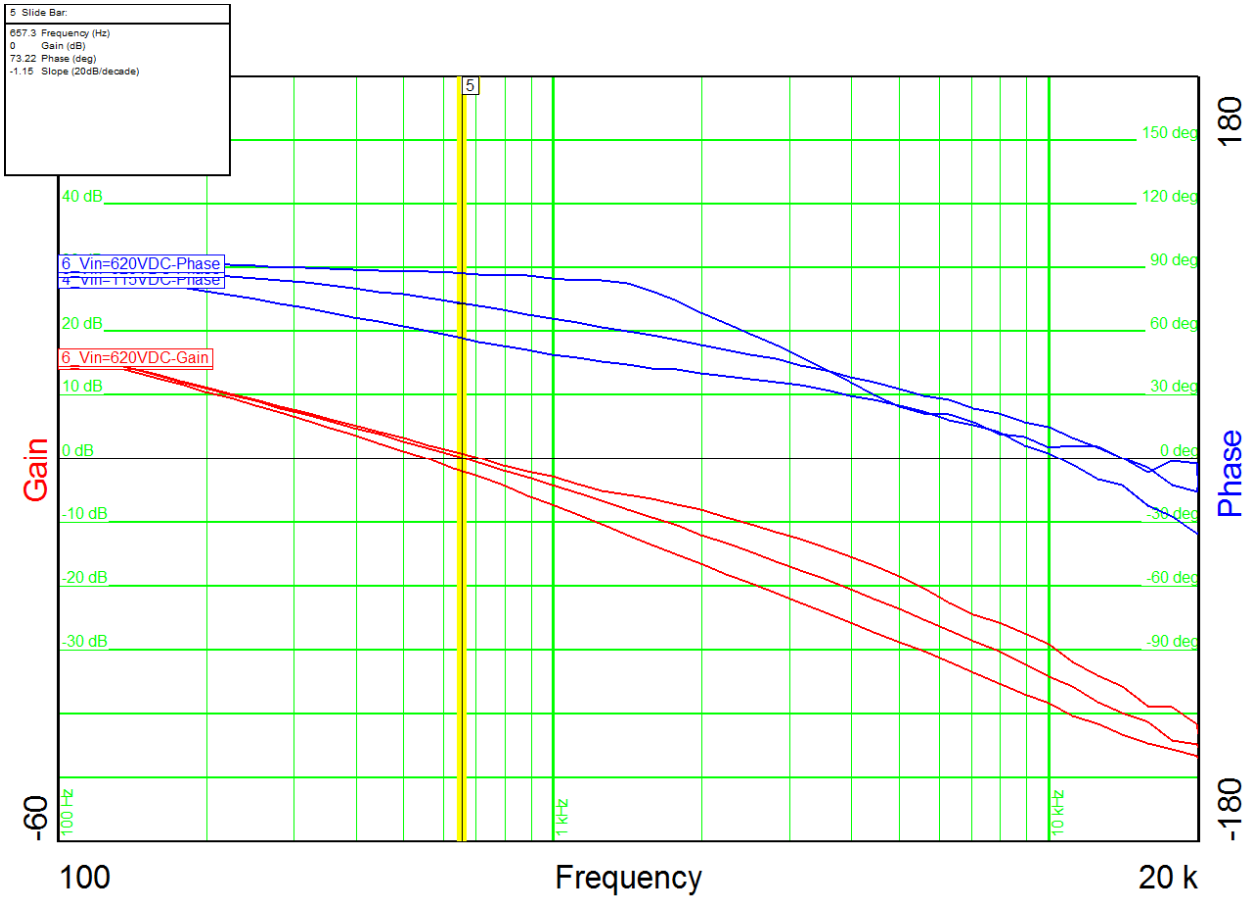
4 Load regulation





5 Control Loop Frequency Response

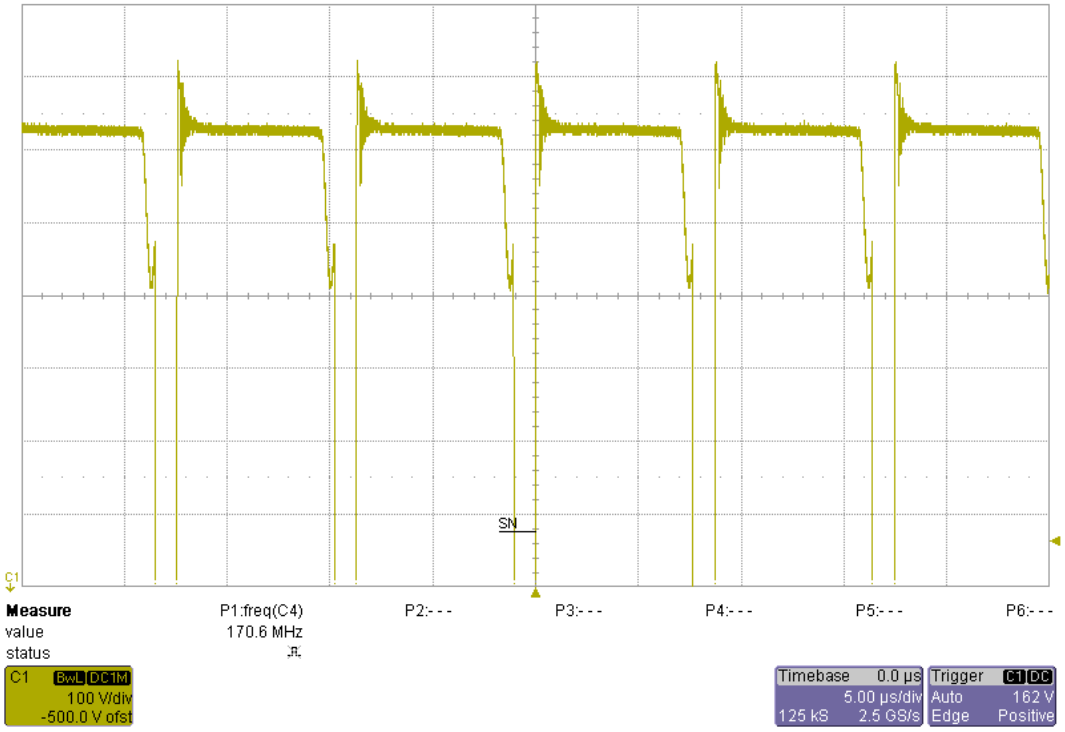
This graph shows the loop response with 115VDC, 325VDC and 620VDC at the input and full load (48@1A, 12V@0.5A) at the output.

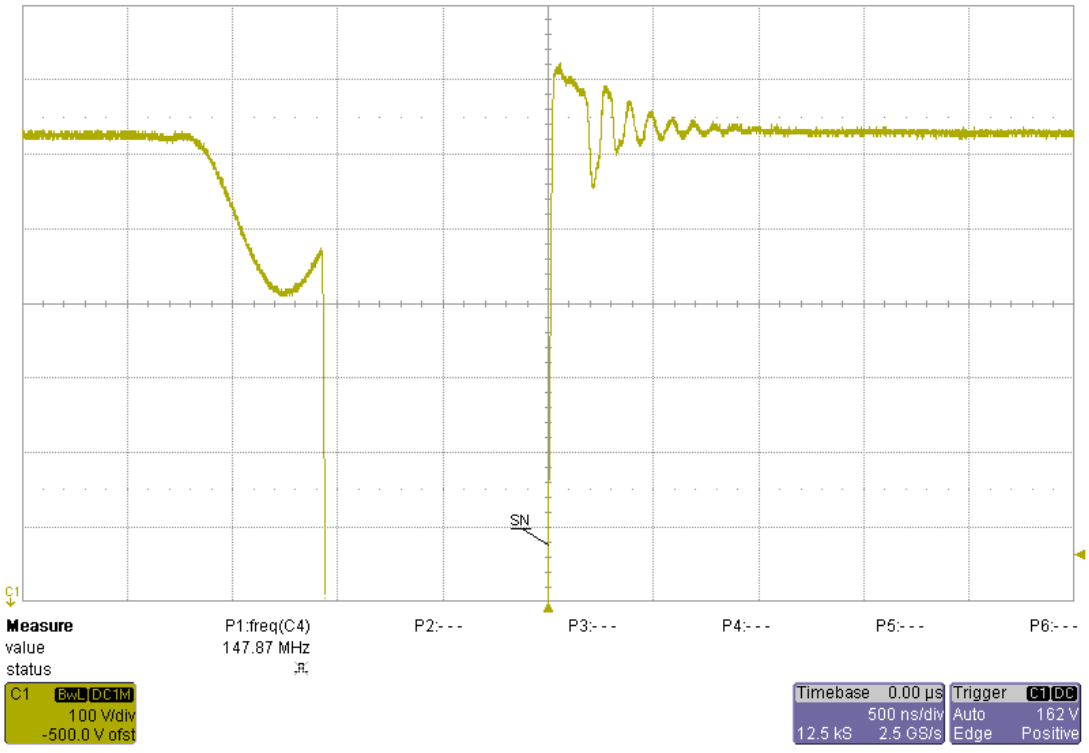


Input voltage = 325VDC:
Phase margin = 73°
Bandwidth = 0.657kHz

6 Switch node Waveform

Input voltage = 622VDC
Load current = full load (48V@1A, 12V@0.5A)

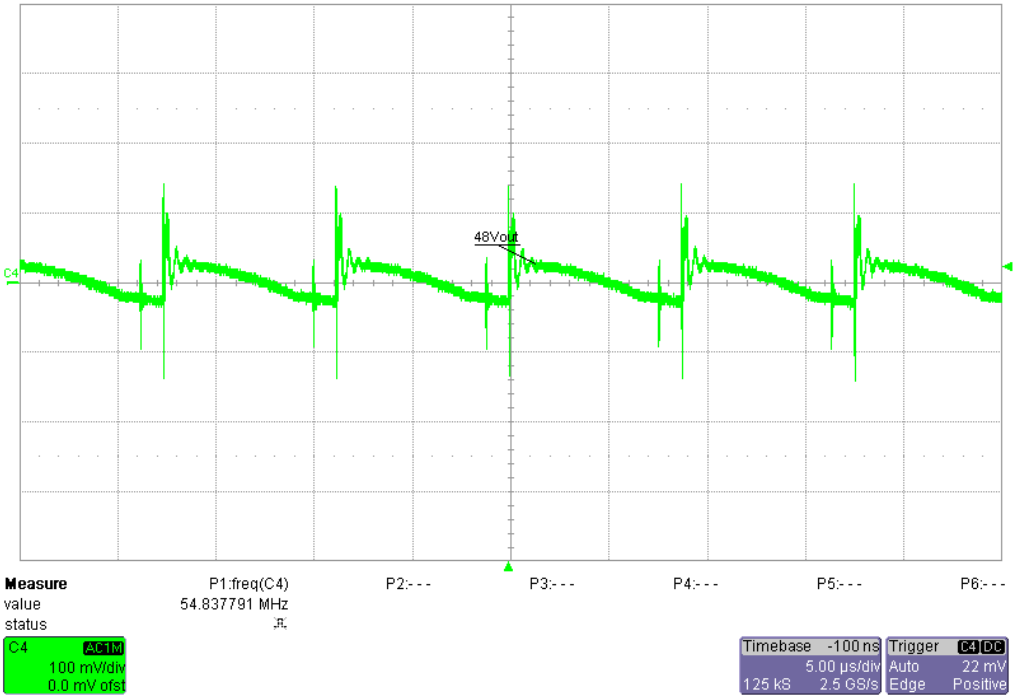




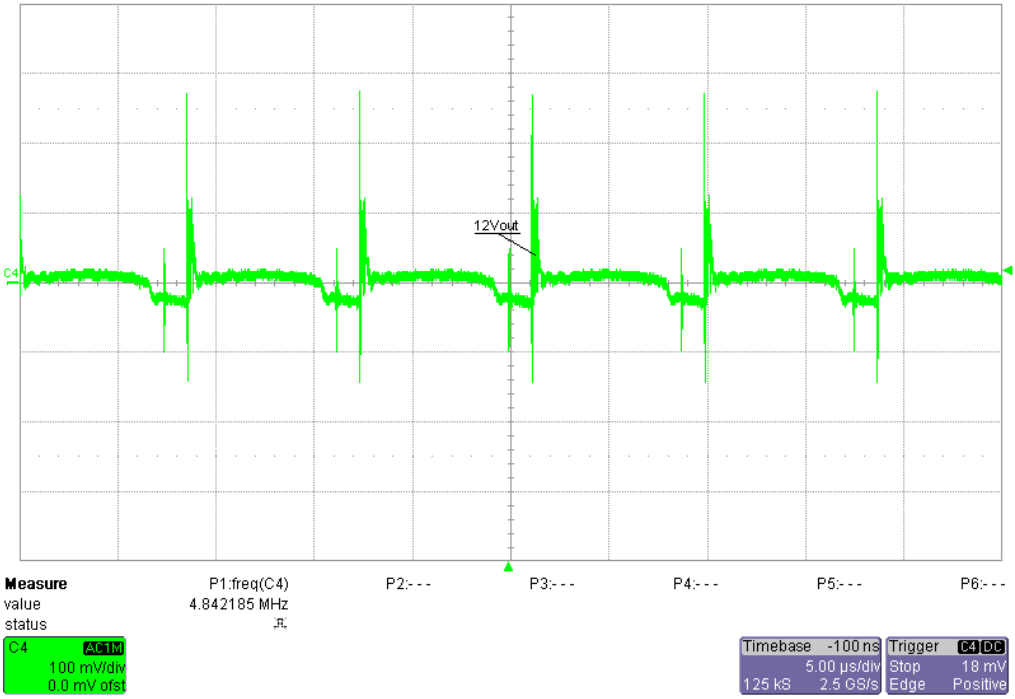
Input voltage = 115VAC
Load current = full load (48V@1A, 12V@0.5A)

7 Output ripple voltages

48V output:
Input voltage = 560VDC
Output current = 1A

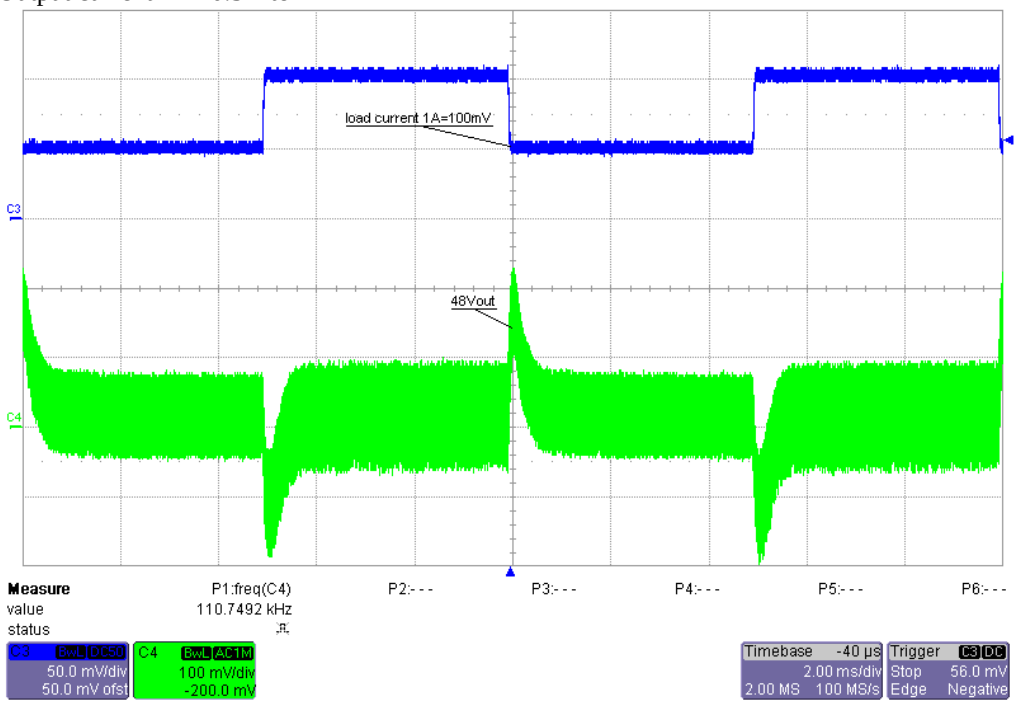


12V output:
Input voltage = 560VDC
Output current = 0.5A

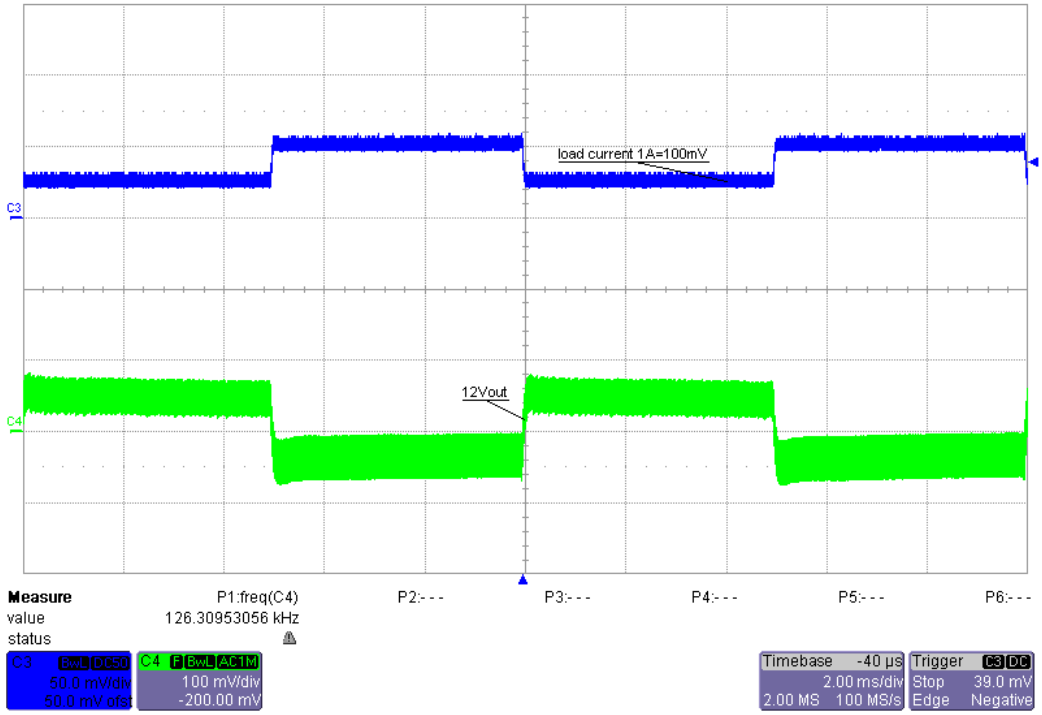


8 Load Transients

48V output:
Input voltage = 560VDC
Output current = 0.5A to 1A



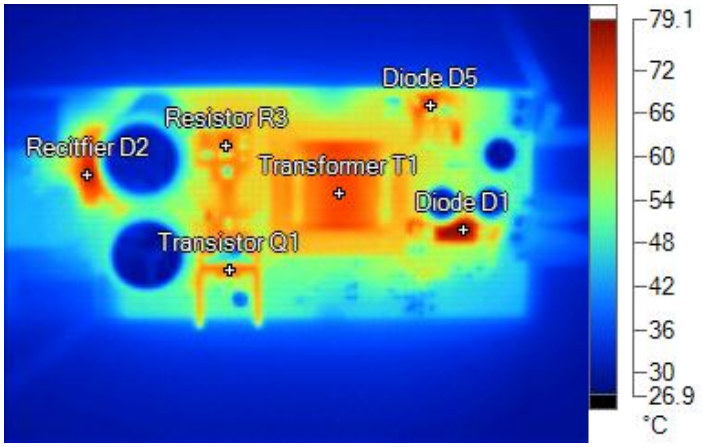
12V output:
Input voltage = 560VDC
Output current = 0.25A to 0.5A



9 Thermal Analysis

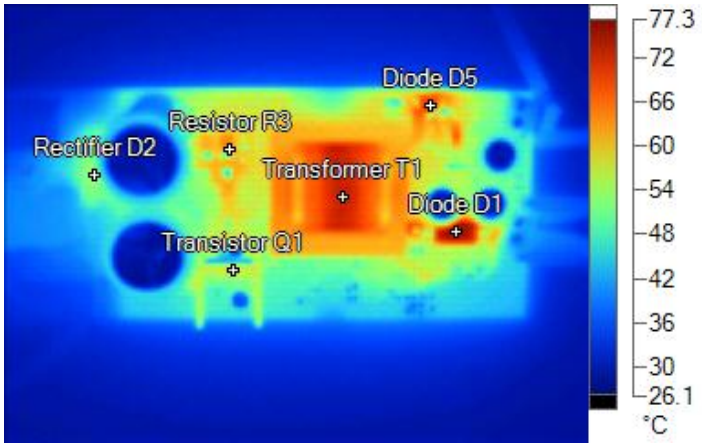
The images below show the infrared images taken from the FlexCam after 15min at full load.

Input voltage = 115VAC
Load current = full load (48V@1A, 12V@0.5A)



Name	Temperature
Recitfier D2	73.8°C
Transistor Q1	66.0°C
Resistor R3	67.9°C
Transformer T1	70.4°C
Diode D1	78.0°C
Diode D5	71.5°C

Input voltage = 270VAC
Load current = full load (48V@1A, 12V@0.5A)



Name	Temperature
Transformer T1	72.6°C
Transistor Q1	56.9°C
Resistor R3	63.9°C
Rectifier D2	52.8°C
Diode D1	75.8°C
Diode D5	70.6°C

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