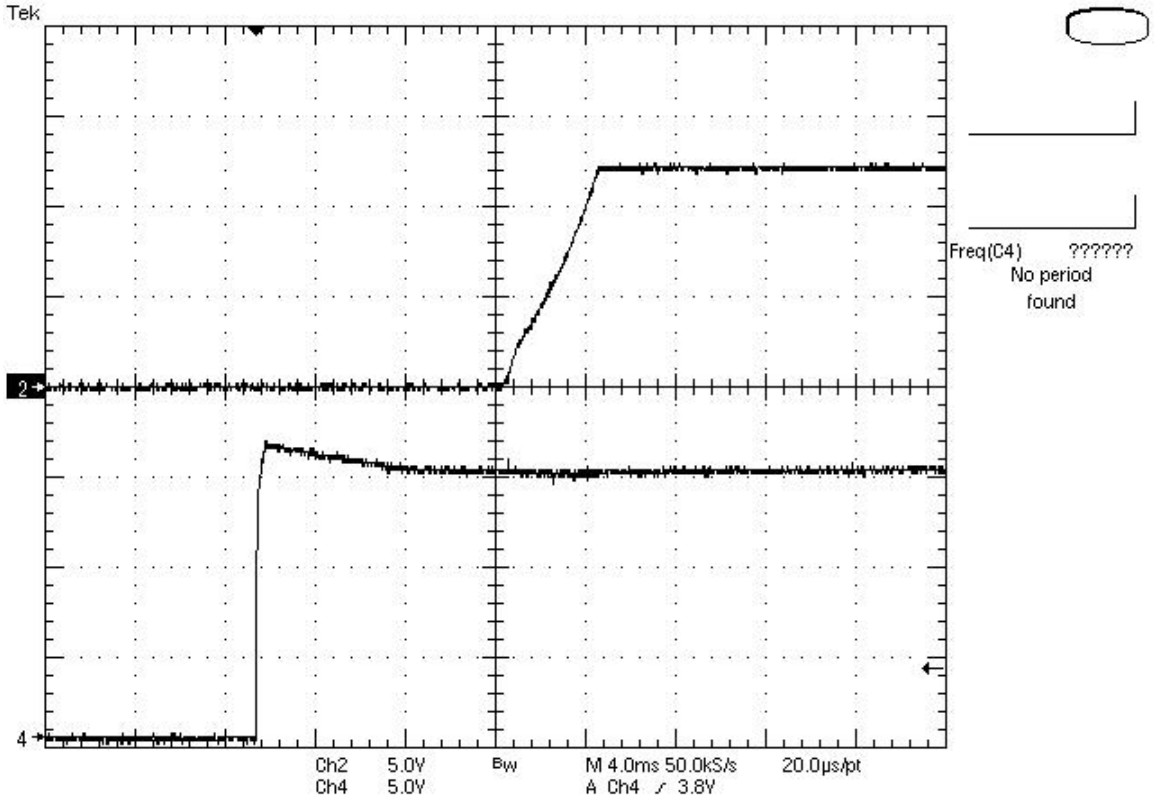
1 Startup

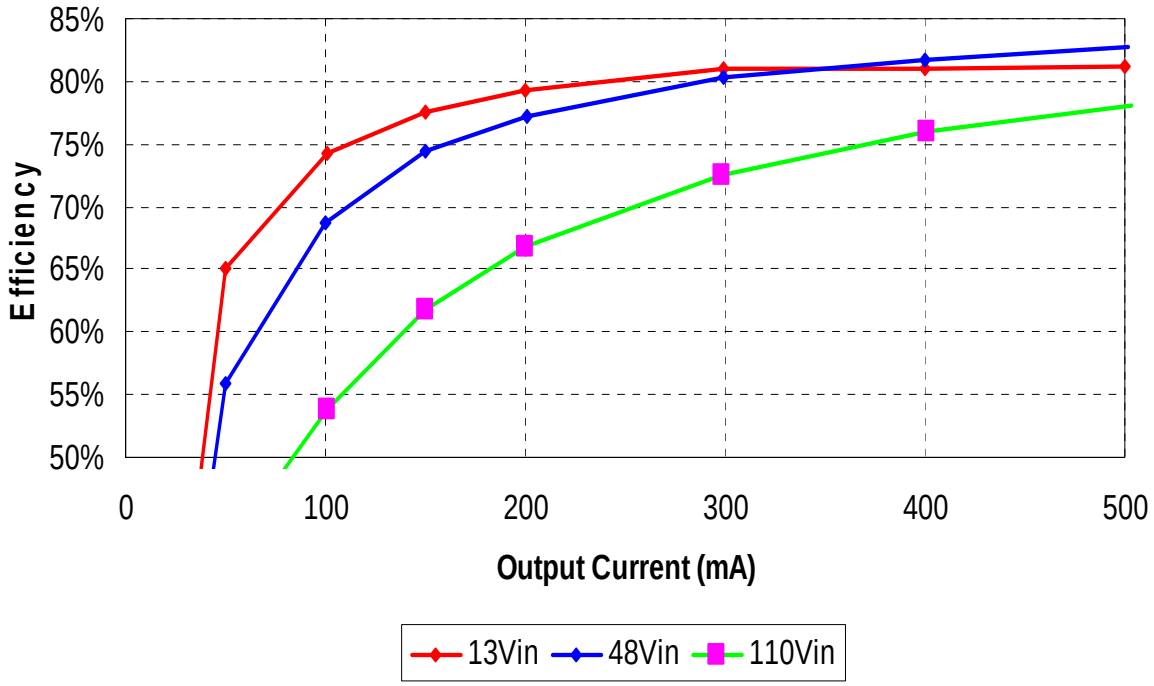
The startup waveform is shown in the figure below. The input voltage is set at 15V, with no load on the output.

Channel 4 : Vin 5V/div
Channel 2 : Vout 5V/div
Timebase: 4.00 ms/div



2 Efficiency

The efficiency is shown in the figure below.



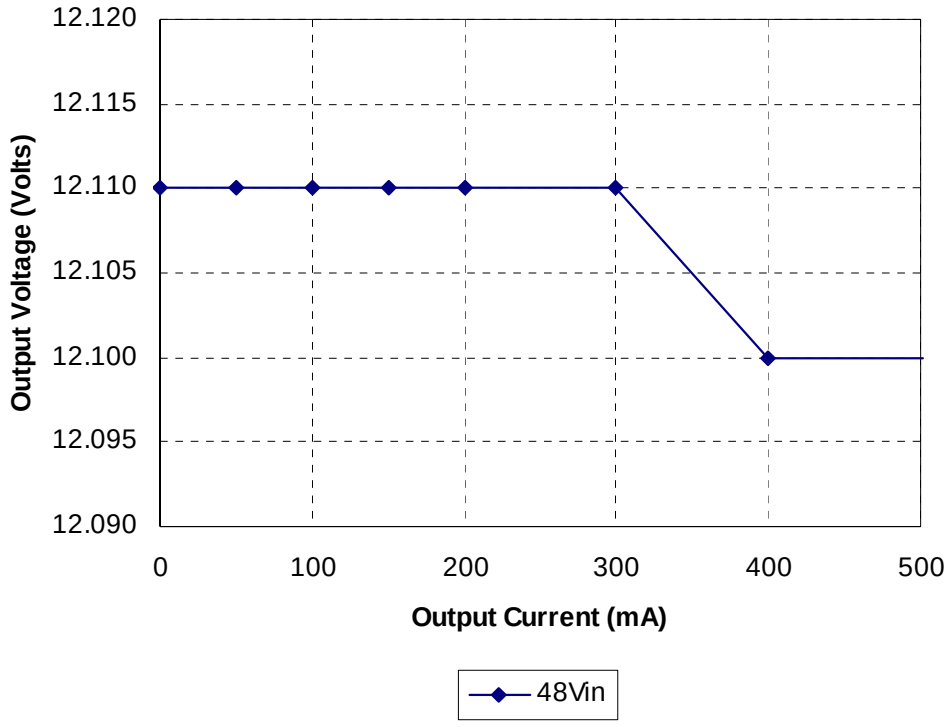
Pout (W)	Iin (mA)	Vin (V)	Pin (W)	Ploss (W)	Eff
0.00	16.65	13.08	0.22	0.22	0.0%
0.61	71.20	13.07	0.93	0.33	65.1%
1.22	127.80	12.90	1.65	0.43	74.2%
1.82	181.00	12.94	2.34	0.53	77.6%
2.42	238.00	12.84	3.06	0.63	79.3%
3.62	340.30	13.12	4.46	0.85	81.0%
4.84	461.00	12.95	5.97	1.13	81.0%
6.05	578.00	12.87	7.44	1.39	81.3%

Pout (W)	Iin (mA)	Vin (V)	Pin (W)	Ploss (W)	Eff
0.00	5.90	48.08	0.28	0.28	0.0%
0.61	22.55	48.07	1.08	0.48	55.9%
1.21	36.70	48.02	1.76	0.55	68.7%
1.82	50.80	48.00	2.44	0.62	74.5%
2.43	65.60	48.05	3.15	0.72	77.2%
3.62	93.20	48.42	4.51	0.89	80.2%
4.84	122.50	48.38	5.93	1.09	81.7%
6.07	152.00	48.33	7.35	1.27	82.7%

Pout (W)	Iin (mA)	Vin (V)	Pin (W)	Ploss (W)	Eff
0.00	4.52	110.33	0.50	0.50	0.0%
0.61	13.00	110.32	1.43	0.82	42.7%
1.22	20.50	110.31	2.26	1.05	53.8%
1.82	26.70	110.30	2.95	1.13	61.8%
2.42	32.87	110.29	3.63	1.21	66.8%
3.61	45.10	110.26	4.97	1.36	72.6%
4.85	57.90	110.24	6.38	1.53	76.0%
6.09	70.80	110.22	7.80	1.72	78.0%

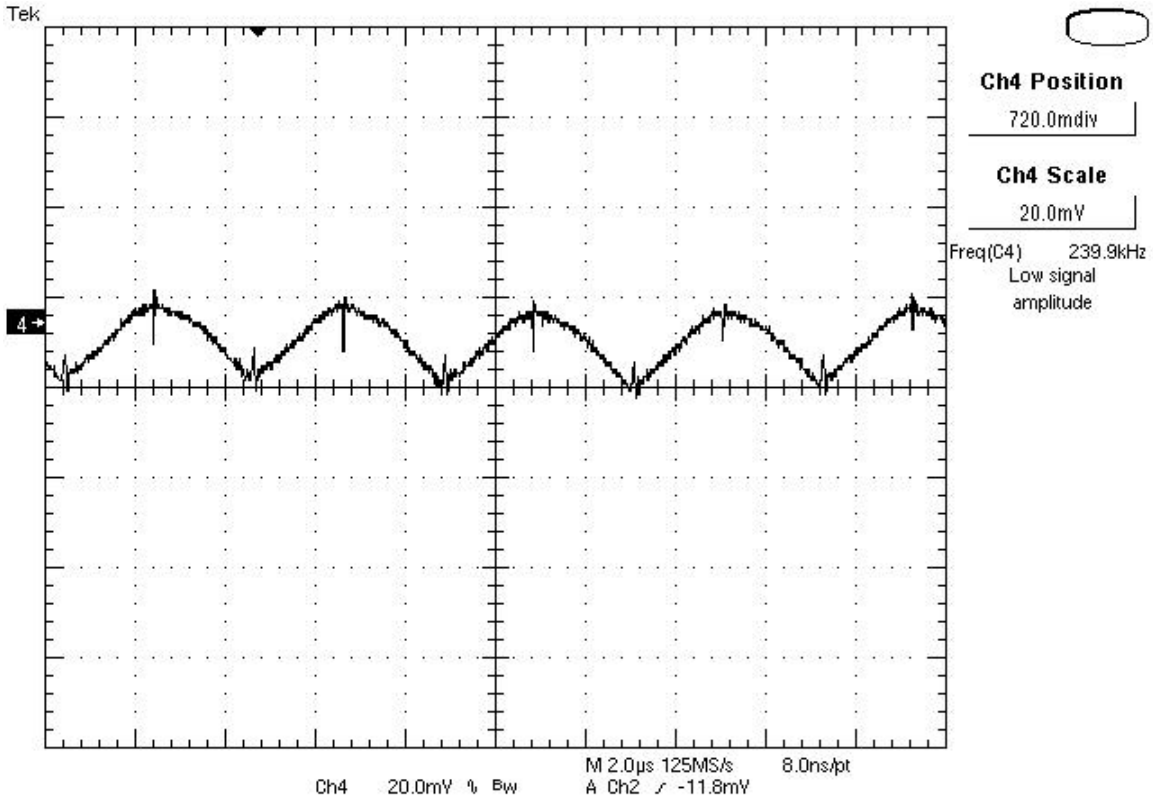
3 Load Regulation

The load regulation of the 12V output is shown in the graph below.
Input voltage was set to 48V.



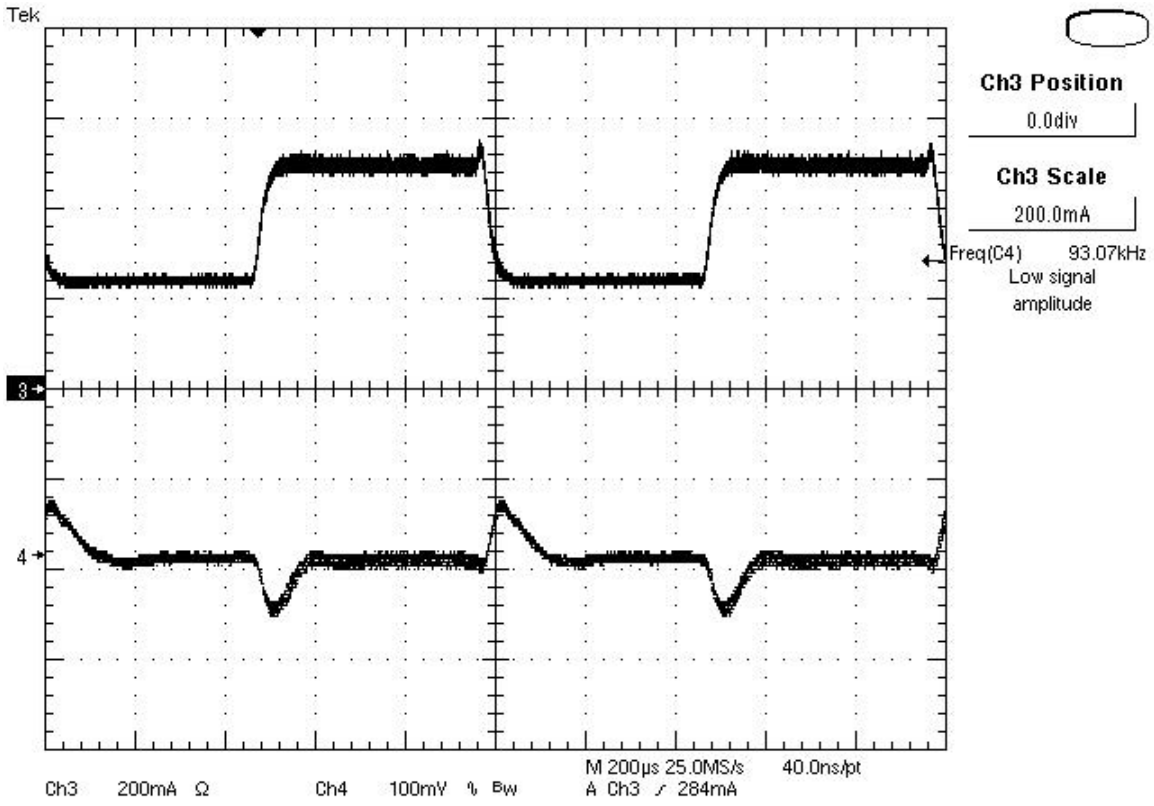
4 Output Ripple Voltage

The output ripple voltage of the 12V output is shown in the figure below. The image was taken with a 0.5A load, while input voltage was set to 13V.
Channel 4 : Vout 20mV/div (AC coupling)
Timebase: 2 us/div



5 Load Transients

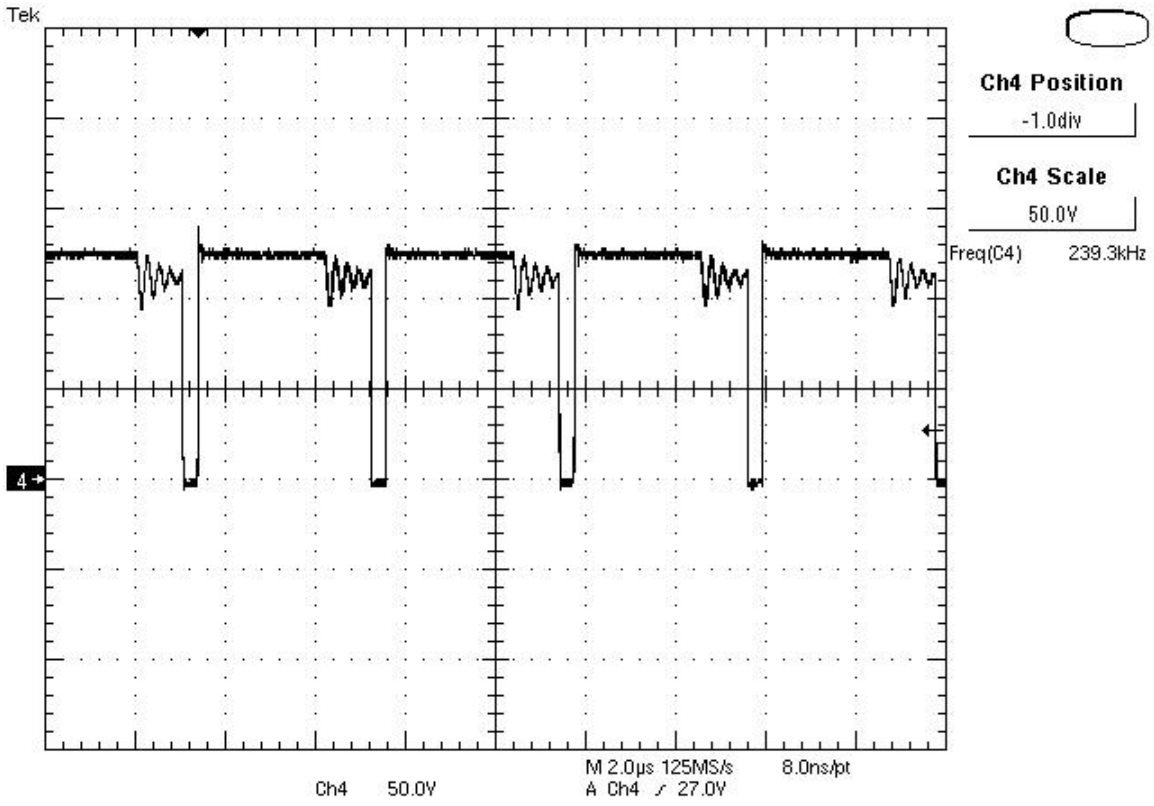
The figures below show the response of the 12V output to a load transient step from 250mA to 500mA. The input voltage was set to 13V.
Channel 3 : Iout 200mA/div (DC coupling)
Channel 4 : Vout 100mV/div (AC coupling)
Timebase: 200 us/div



6 Switch Node

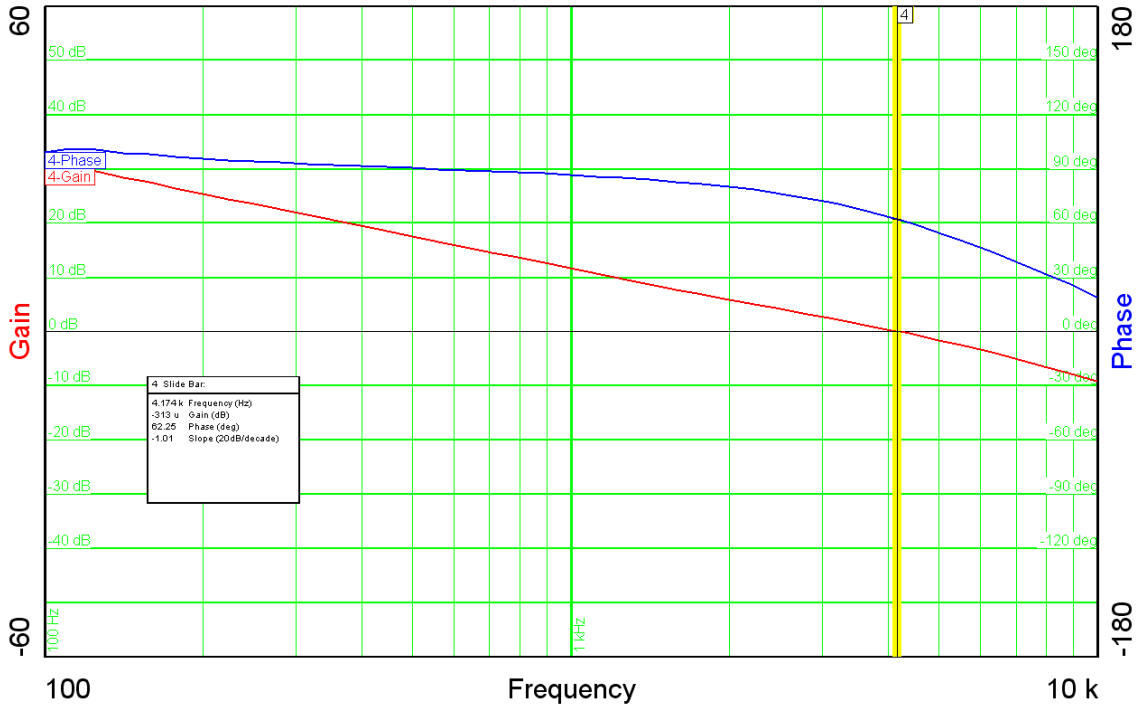
The figures below show the drain of Q1 waveform. The input voltage was set to 110V and the output was loaded at 500mA.

Channel 4 : Vds 50V/div (DC coupling)
Timebase: 2 us/div



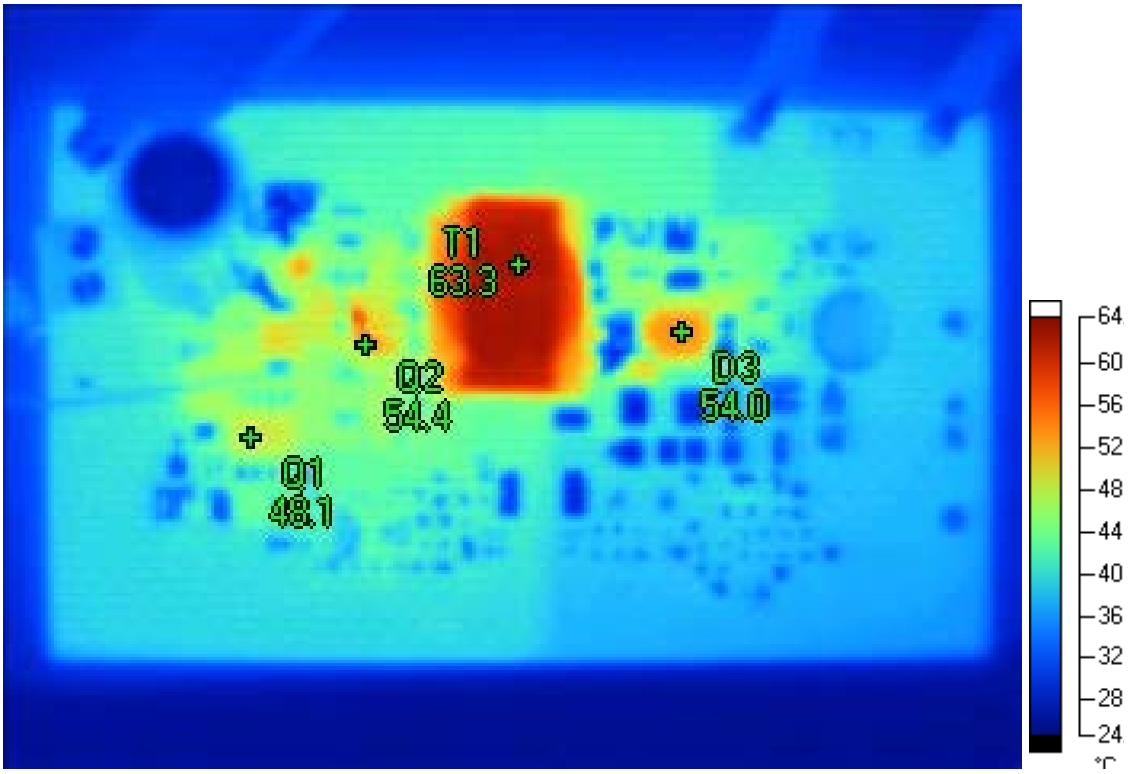
7 Frequency Response

The figure below shows the loop response of the 12V output with a 13V input and a 500mA load. Crossover Frequency was 4.174KHz and phase margin 62.25 degrees.



8 Thermal Analysis

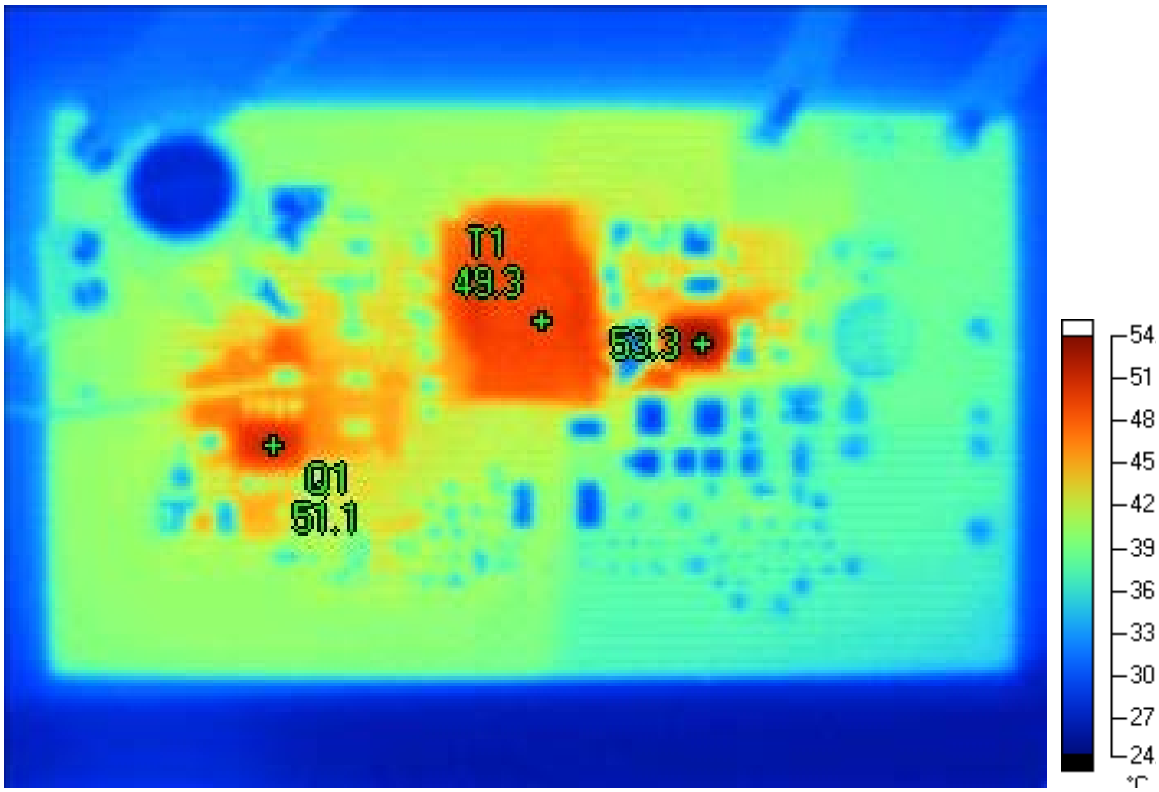
The figure below shows the worst case infrared image captured with 110V input and full load. Ambient temperature was 24°C.



Markers

Label	Temperature	Emissivity	Background
T1	63.3 °C	0.95	24.0 °C
D3	54.0 °C	0.95	24.0 °C
Q2	54.4 °C	0.95	24.0 °C
Q1	48.1 °C	0.95	24.0 °C

The second figure below shows the infrared image captured with 13V input and full load.



Markers

Label	Temperature	Emissivity	Background
D3	53.3 °C	0.95	24.0 °C
T1	49.3 °C	0.95	24.0 °C
Q1	51.1 °C	0.95	24.0 °C

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