

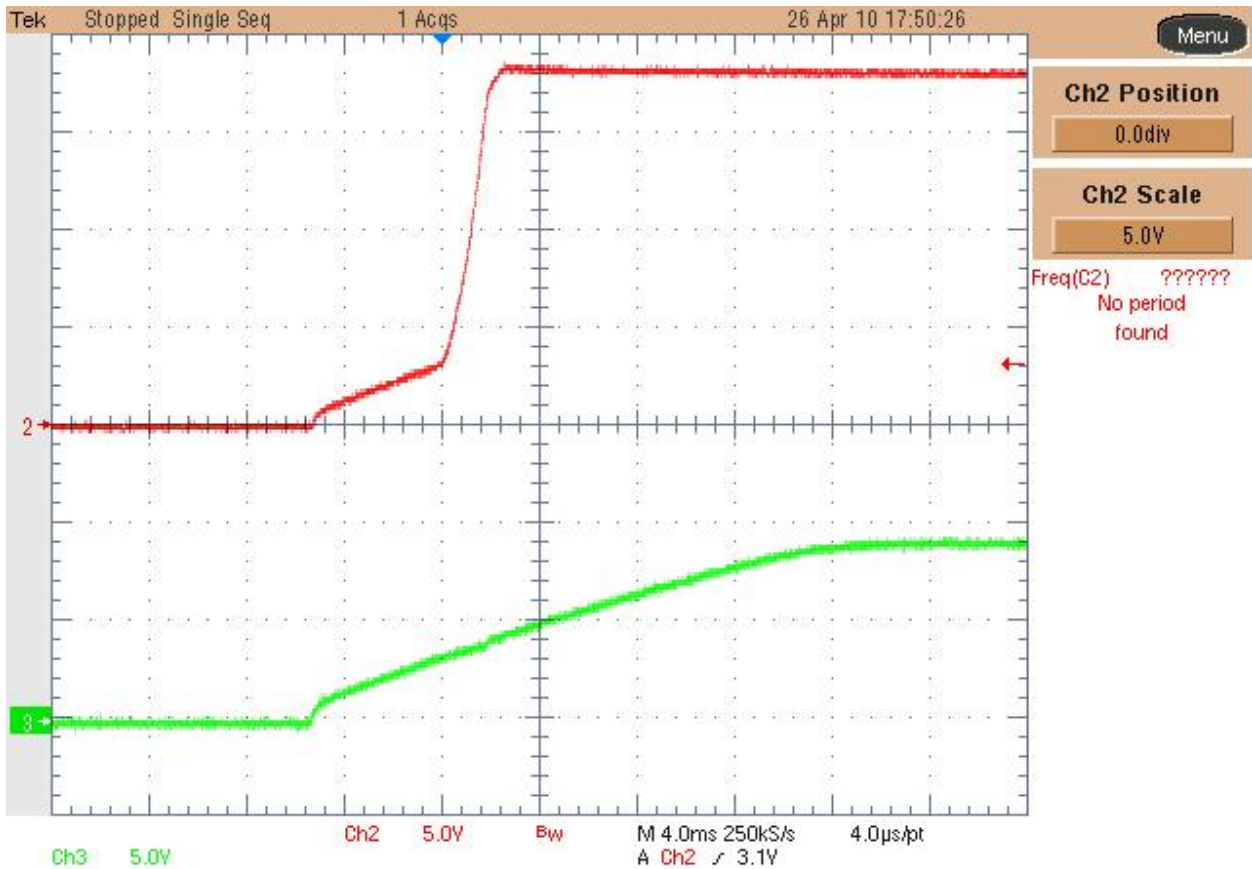
1. Startup

The output voltage at startup is shown in the images below. The images were taken in three conditions: 9V, No Load, 9V, Full Load and 13V, Full Load.

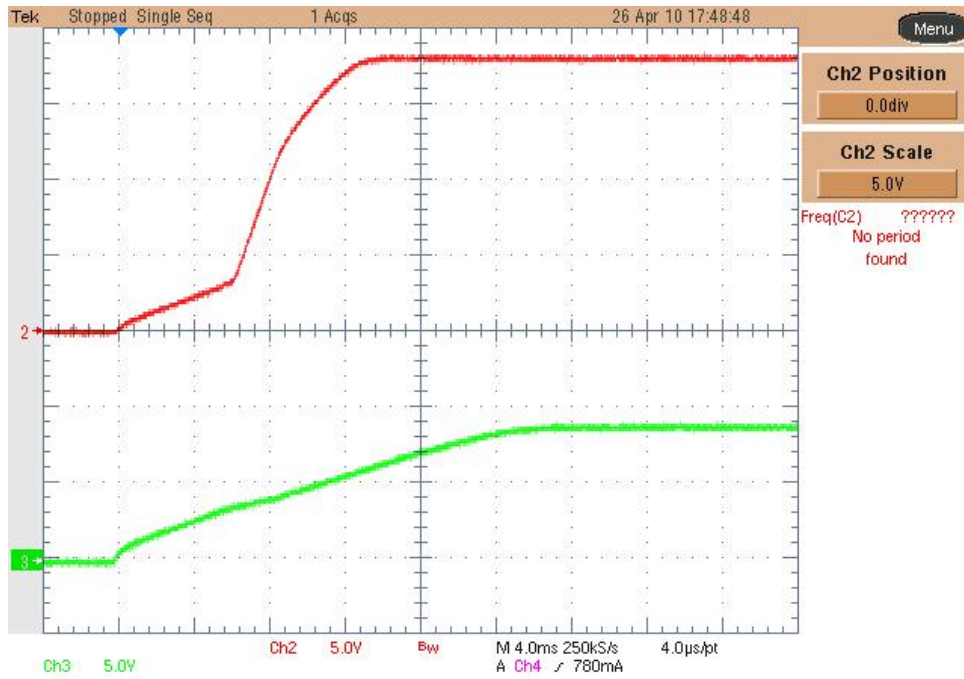
Channel 2: Output voltage (5 V/div, 4msec/div).

Channel 3: Input voltage (5V/div).

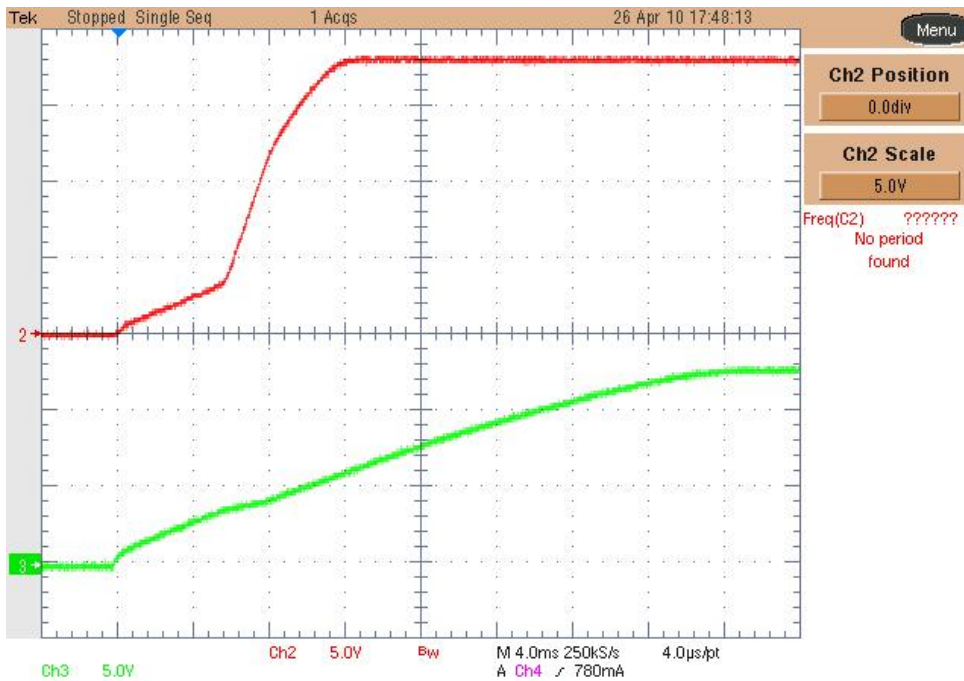
9V_{in}, No Load:



9Vin, Full Load:

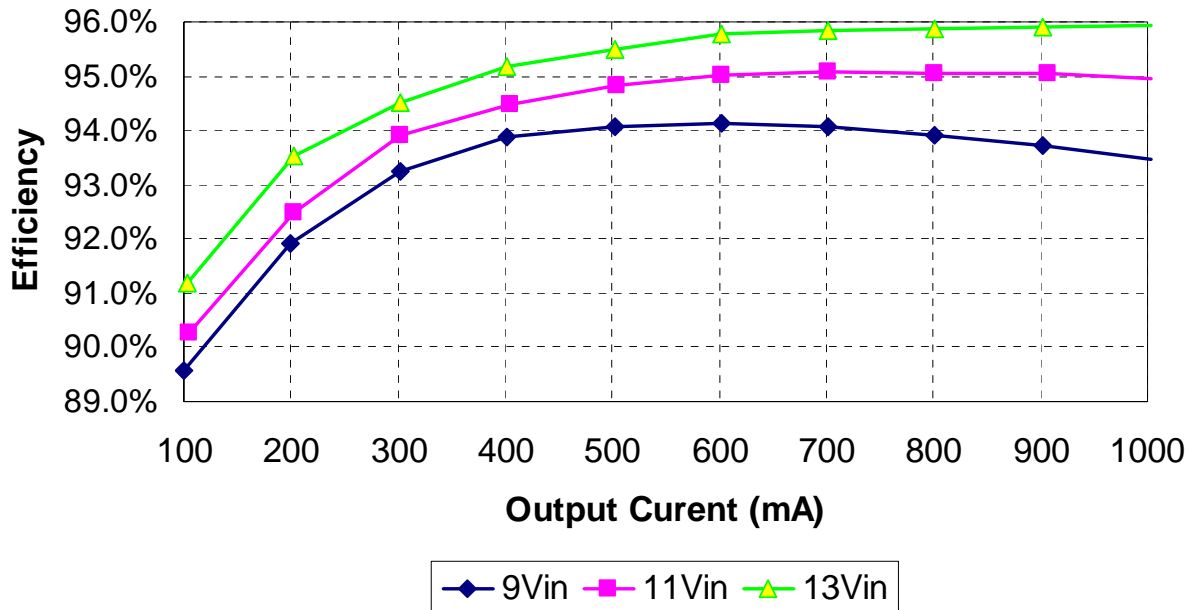


13Vin, Full Load:



2. Efficiency

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



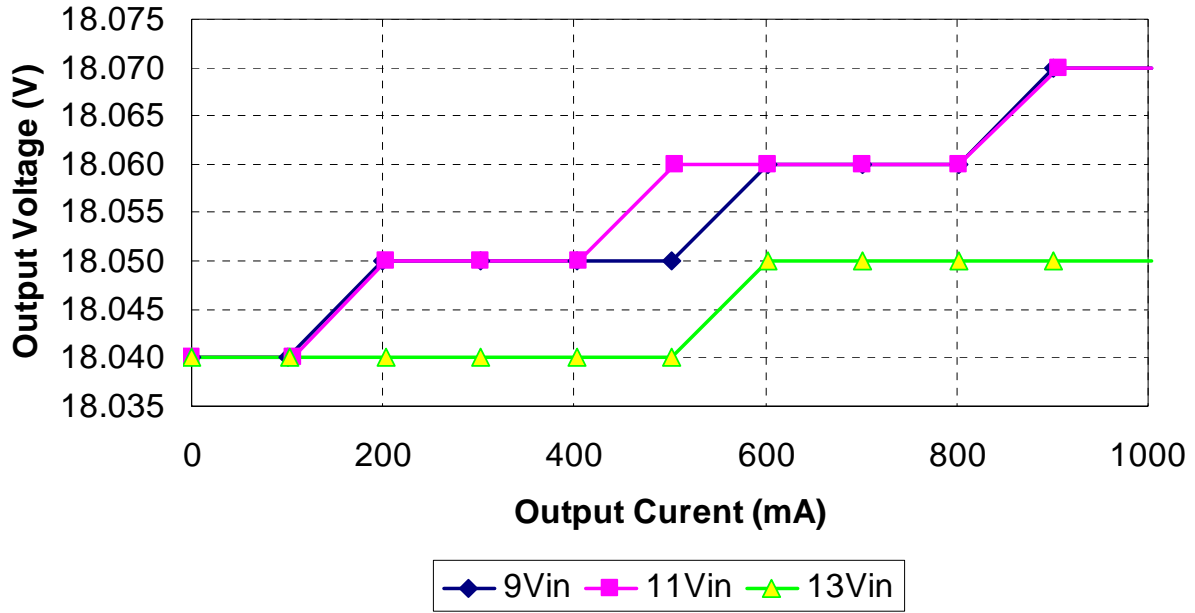
Iout (mA)	Vout (V)	Pout (W)	Iin (mA)	Vin (V)	Pin (W)	Ploss (W)	Eff
0.0	18.04	0.00	4.58	9.006	0.041	0.041	0.00%
100.0	18.04	1.80	223.5	9.012	2.014	0.210	89.56%
199.8	18.05	3.61	436	9.000	3.924	0.318	91.91%
302.4	18.05	5.46	649	9.019	5.853	0.395	93.25%
402.2	18.05	7.26	859	9.004	7.734	0.475	93.86%
502.0	18.05	9.06	1069	9.011	9.633	0.572	94.07%
602.0	18.06	10.87	1283	9.003	11.551	0.679	94.12%
701.7	18.06	12.67	1496	9.006	13.473	0.800	94.06%
801.7	18.06	14.48	1712	9.005	15.417	0.938	93.92%
901.4	18.07	16.29	1931	9.000	17.379	1.091	93.72%
1004.0	18.07	18.14	2155	9.007	19.410	1.268	93.47%

Iout (mA)	Vout (V)	Pout (W)	Iin (mA)	Vin (V)	Pin (W)	Ploss (W)	Eff
0.0	18.04	0.00	1.12	11.043	0.012	0.012	0.00%
105.4	18.04	1.90	190.9	11.033	2.106	0.205	90.28%
202.5	18.05	3.66	359	11.010	3.953	0.297	92.47%
302.4	18.05	5.46	528	11.010	5.813	0.355	93.89%
404.9	18.05	7.31	703	11.002	7.734	0.426	94.49%
504.7	18.06	9.11	873	11.011	9.613	0.498	94.82%
601.9	18.06	10.87	1040	11.000	11.440	0.570	95.02%
701.7	18.06	12.67	1210	11.014	13.327	0.654	95.09%
801.7	18.06	14.48	1383	11.015	15.234	0.755	95.04%
906.8	18.07	16.39	1567	11.001	17.239	0.853	95.05%
1004.0	18.07	18.14	1735	11.014	19.109	0.967	94.94%

Iout (mA)	Vout (V)	Pout (W)	Iin (mA)	Vin (V)	Pin (W)	Ploss (W)	Eff
0.0	18.04	0.00	0.85	13.00	0.011	0.011	0.00%
102.7	18.04	1.85	156.3	13.00	2.032	0.179	91.18%
202.5	18.04	3.65	299.8	13.03	3.906	0.253	93.52%
302.4	18.04	5.46	444	13.00	5.772	0.317	94.51%
402.2	18.04	7.26	586	13.01	7.624	0.368	95.17%
502.0	18.04	9.06	729	13.01	9.484	0.428	95.49%
601.9	18.05	10.86	872	13.01	11.345	0.480	95.77%
701.7	18.05	12.67	1015	13.02	13.215	0.550	95.84%
801.6	18.05	14.47	1161	13.00	15.093	0.624	95.86%
901.4	18.05	16.27	1305	13.00	16.965	0.695	95.90%
1004.0	18.05	18.12	1453	13.00	18.889	0.767	95.94%

3. Output Voltage Regulation

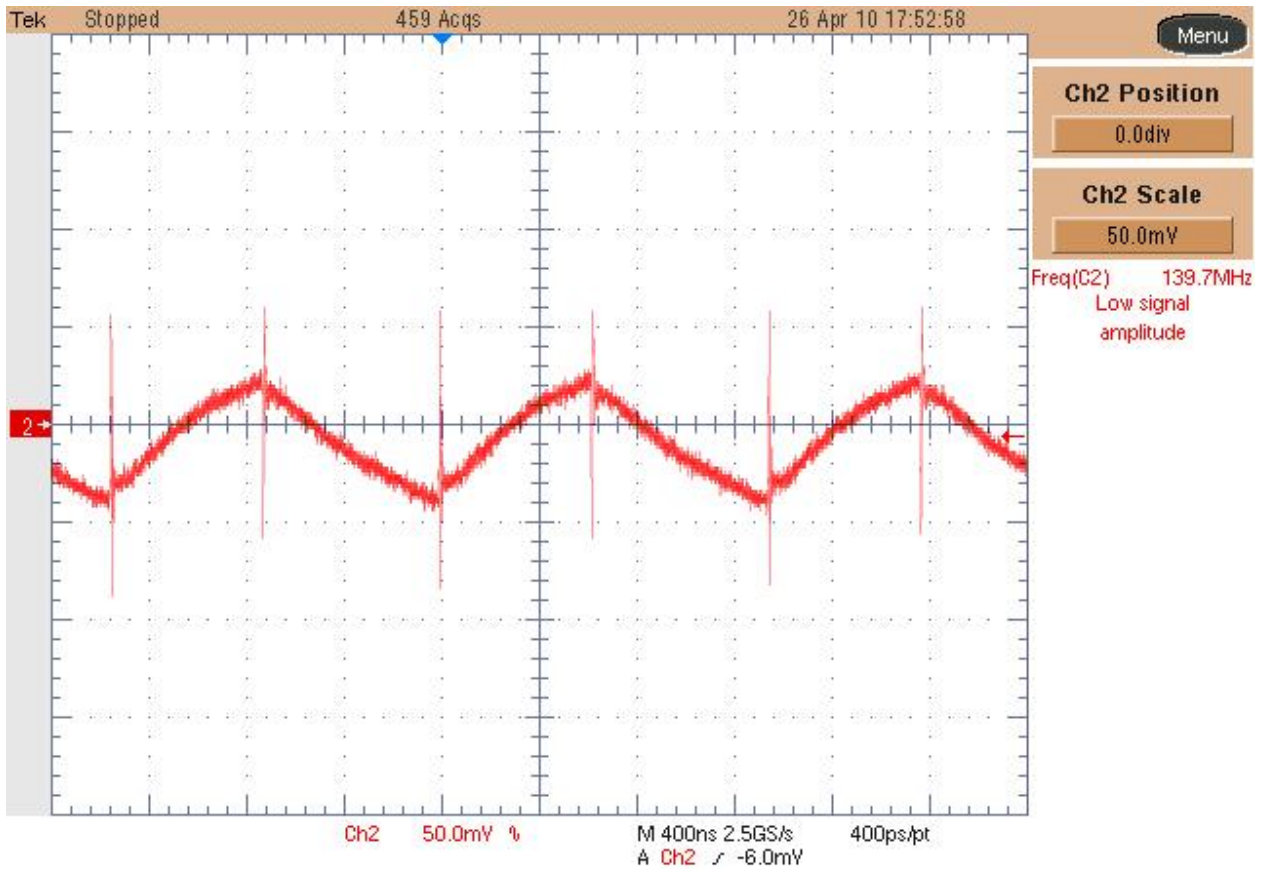
The output voltage regulation versus output load plot is shown below.



4. Output Ripple Voltage

The ripple voltage waveform measured at the terminal blocks is shown in the plot below. The input was set to 9V_{in} and the output was fully loaded.

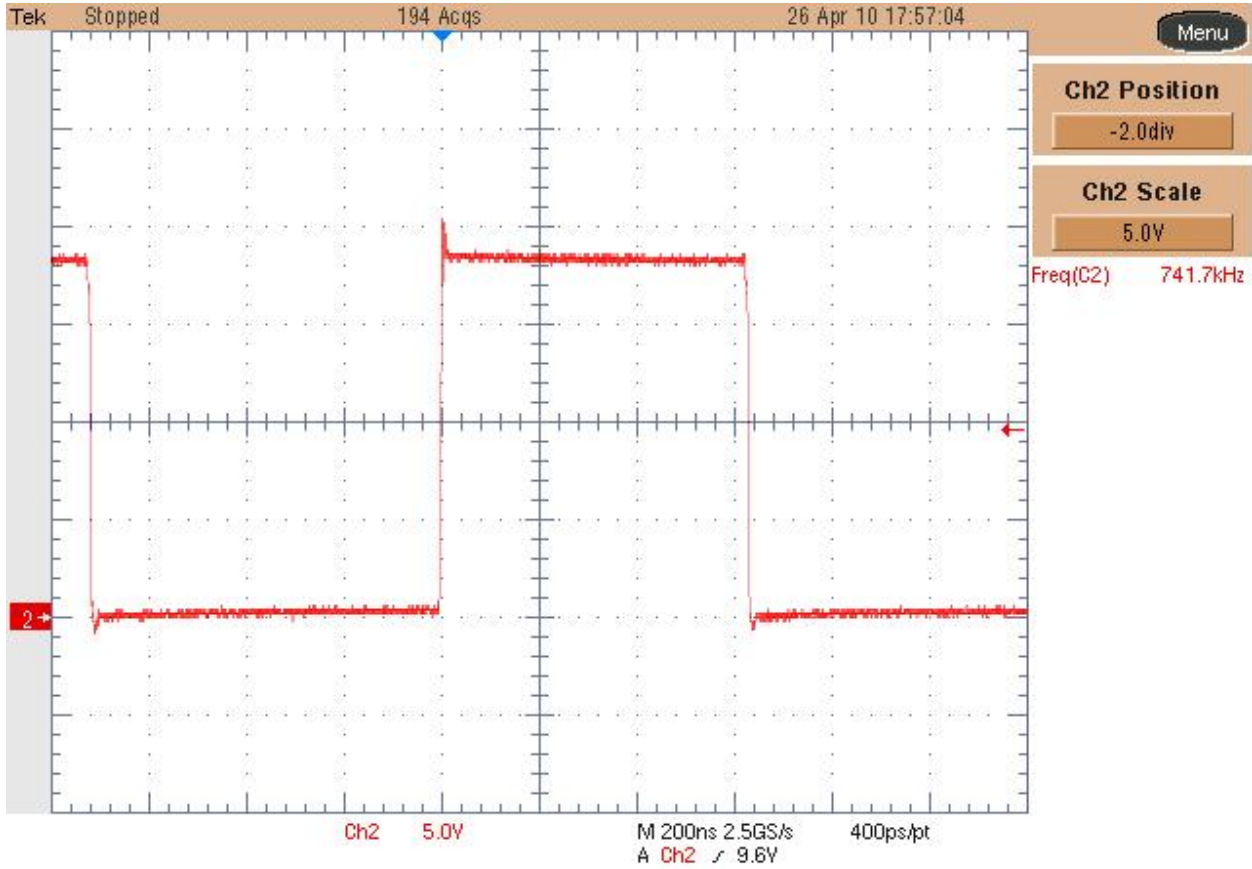
Channel 2: Output voltage (50 mV/div, 400nsec/div, AC coupled, full bandwidth).



5. Switch-Node

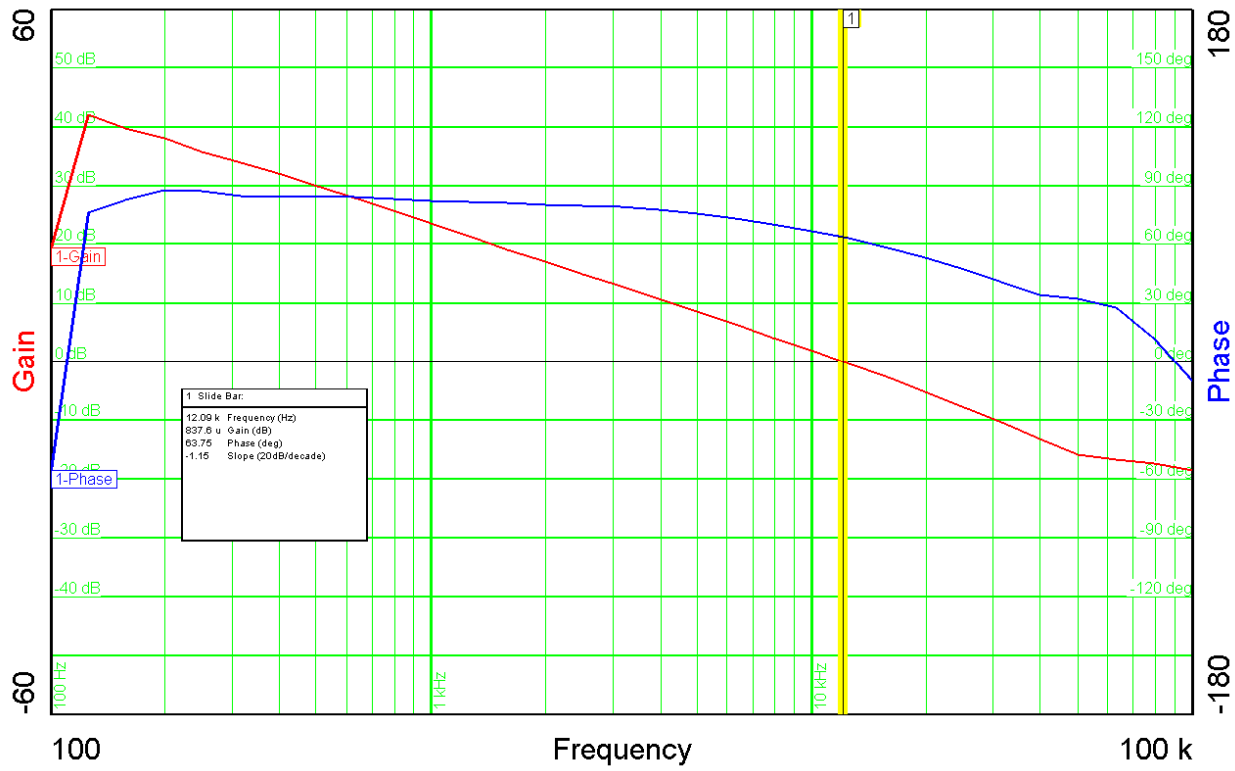
The image below shows the switch-node waveform (SW pins 1 and 2 of U1). The input was set to 9V while the output was fully loaded.

Channel 2: Switch Node, SW pin, (2V/div, 200nsec/div), no bandwidth reduction.



6. Loop Response

The image below shows the loop response of the converter measured with a 12V input at full load. Phase margin was 63.75 deg. and crossover frequency is 12.09 KHz, while the gain margin was 18.1dB.



7. Thermal Report

The picture below shows the infrared image of the converter taken after 30 minutes. The input voltage was set to 9V during a full load condition. The three hot spots (L1, D1, U1) are indicated.

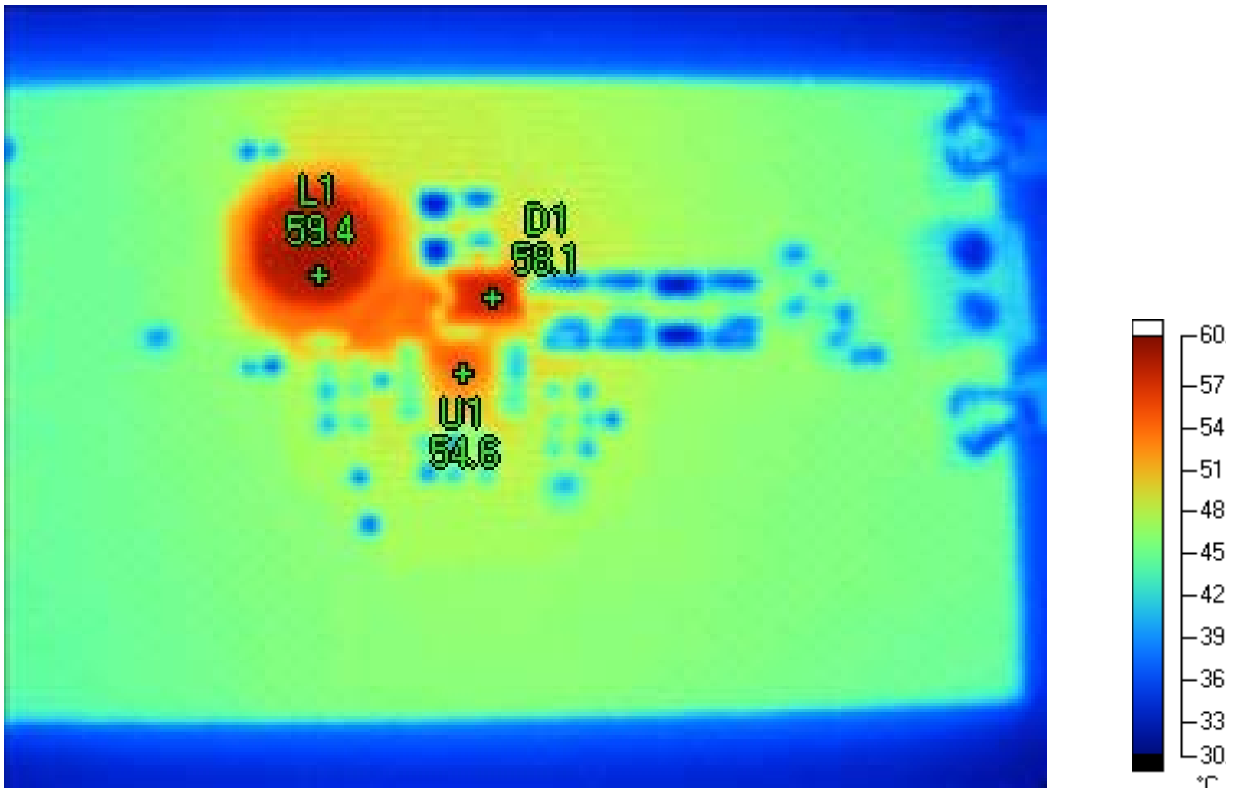


Image Info

Background	25.0 °C
Average Temperature	43.8 °C
Camera Model	Ti40FT
Image Range	31.3 °C to 59.7 °C
Lens Description	20mm/F0.8
Lens Serial #	40948-4409
Manufacturer	Fluke

Markers

Label	Temperature	Emissivity	Background
L1	59.4 °C	0.95	25.0 °C
D1	58.1 °C	0.95	25.0 °C
U1	54.6 °C	0.95	25.0 °C

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