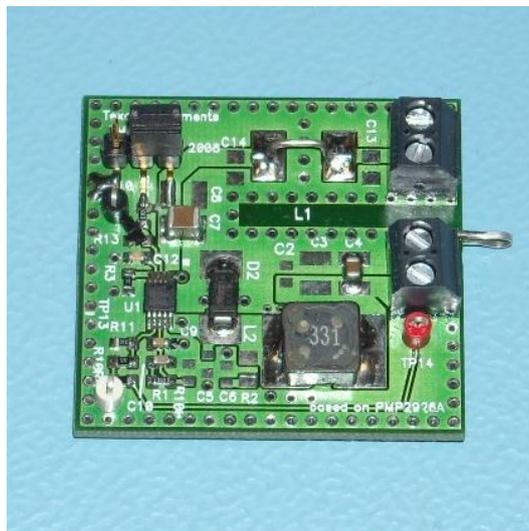


TPS54040 Buck Converter - 5.0V @ 70mA

- Input 9..14V DC
Can withstand up to 40V
- Output 5.0V @ 70mA
- Working in continuous conduction mode
- Enable/disable by logic signal (3.3V or 5.0V)
- Built on PCB PMP2644 Rev.B



Note: The text “PMP2926” on the PCB is incorrect. This is a board photo of PMP2644 NOT PMP2926.

Startup

The startup waveform is shown in Figure 1. The input voltage is set at 12.0V, with no load on the 5.0V output.

Channel C1: **Input voltage**
2V/div, 1ms/div

Channel C2: **Output voltage**
2V/div, 1ms/div



Figure 1

1 Shutdown

The shutdown waveform is shown in Figure 2. The input voltage is set at 12.0V with a 70mA load on the 5.0V output.

- Channel C1: **Input voltage**
2V/div, 1ms/div
- Channel C2: **Output voltage**
2V/div, 1ms/div



Figure 2

2 Efficiency

The efficiency and load regulation at 12.0V input voltage are shown in Figure 3 and Figure 4.

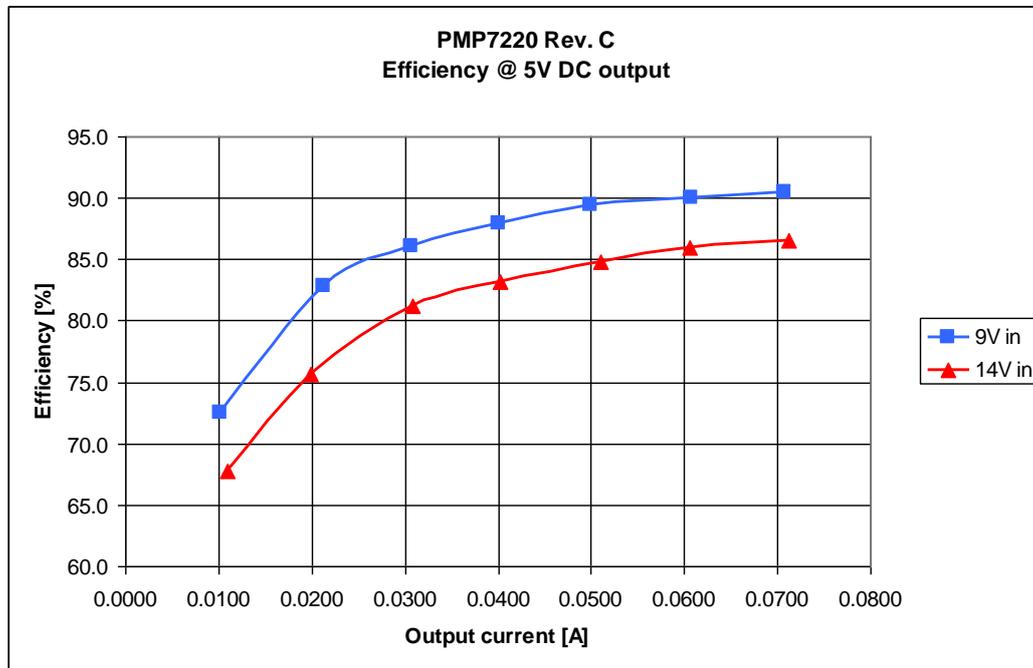


Figure 3

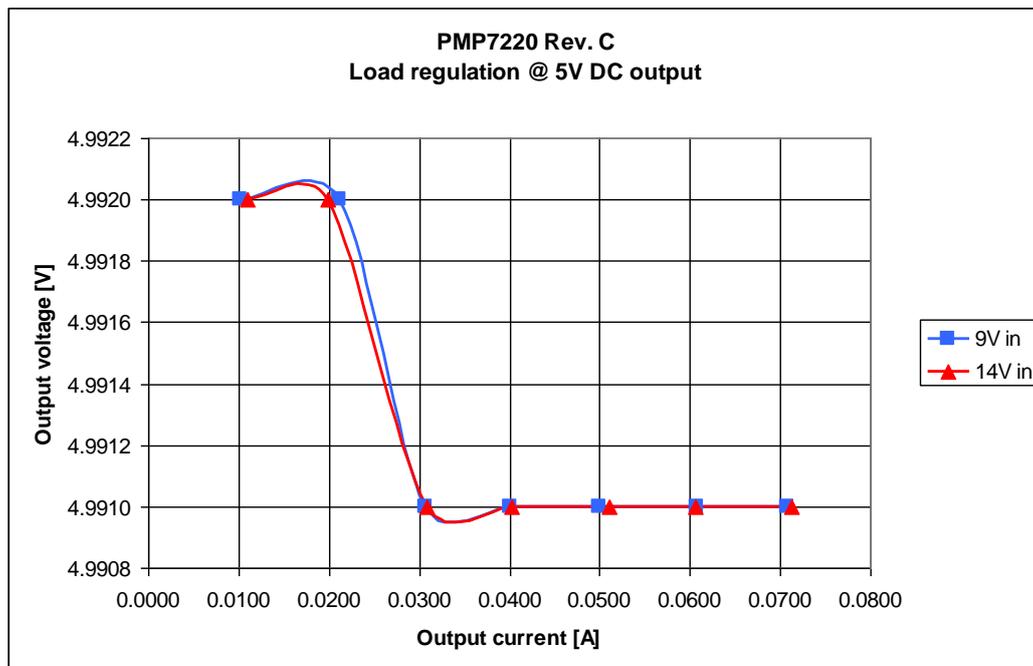


Figure 4

3 Output ripple voltage

The output ripple voltage at 70mA load and 12.0V input voltage is shown in Figure 5.

Channel C2: **Output voltage**, AC coupled, <5mV
20mV/div, 5us/div

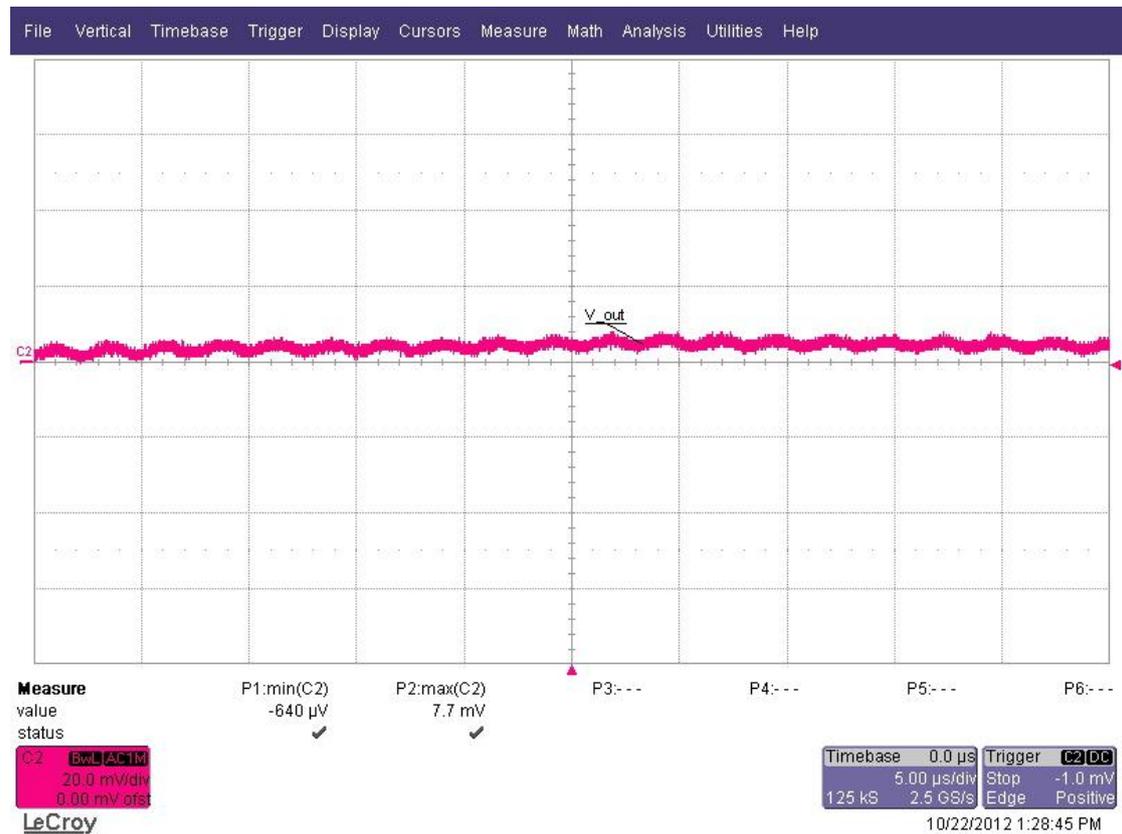


Figure 5

4 Frequency response

Figure 6 shows the loop response of the 5.0V output with 12.0V input voltage and a 70mA load.

- 67 deg phase margin @ crossover frequency 5.1 kHz
- -23 db gain margin

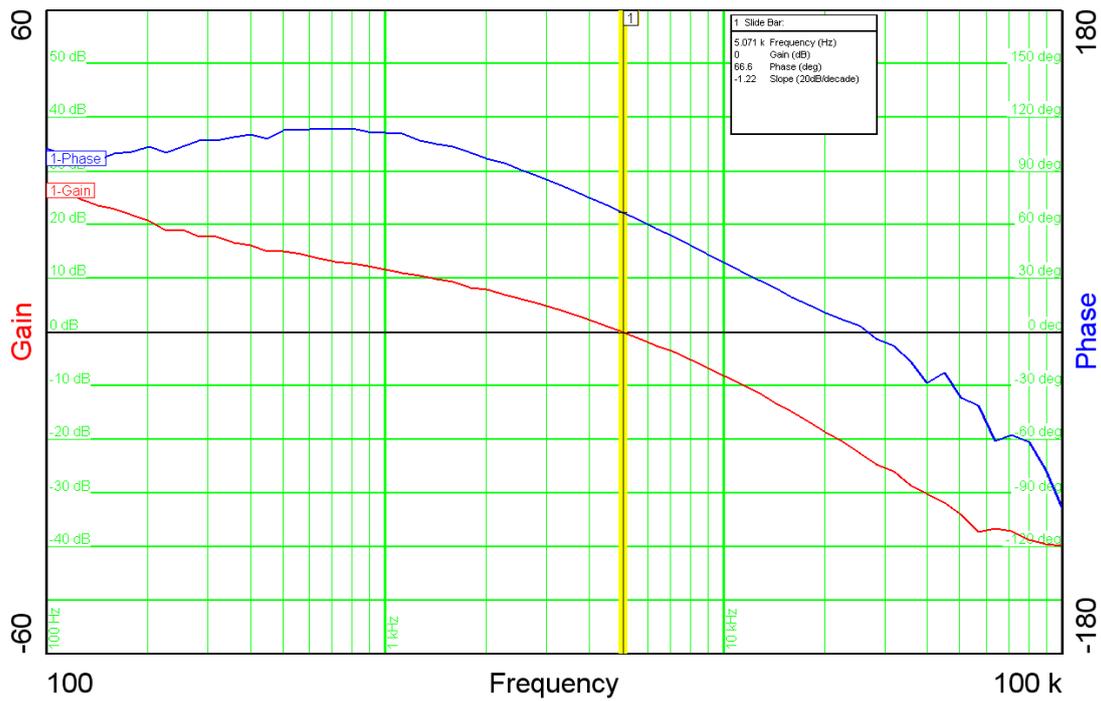


Figure 6

5 Miscellaneous waveforms

The drain-source voltage on the switching node is shown in Figure 7. The image was captured with 12.0V input and a 70mA load.

Channel C2: **Drain-source voltage**, -0.9V minimum voltage, 12.5V maximum voltage
2V/div, 1us/div

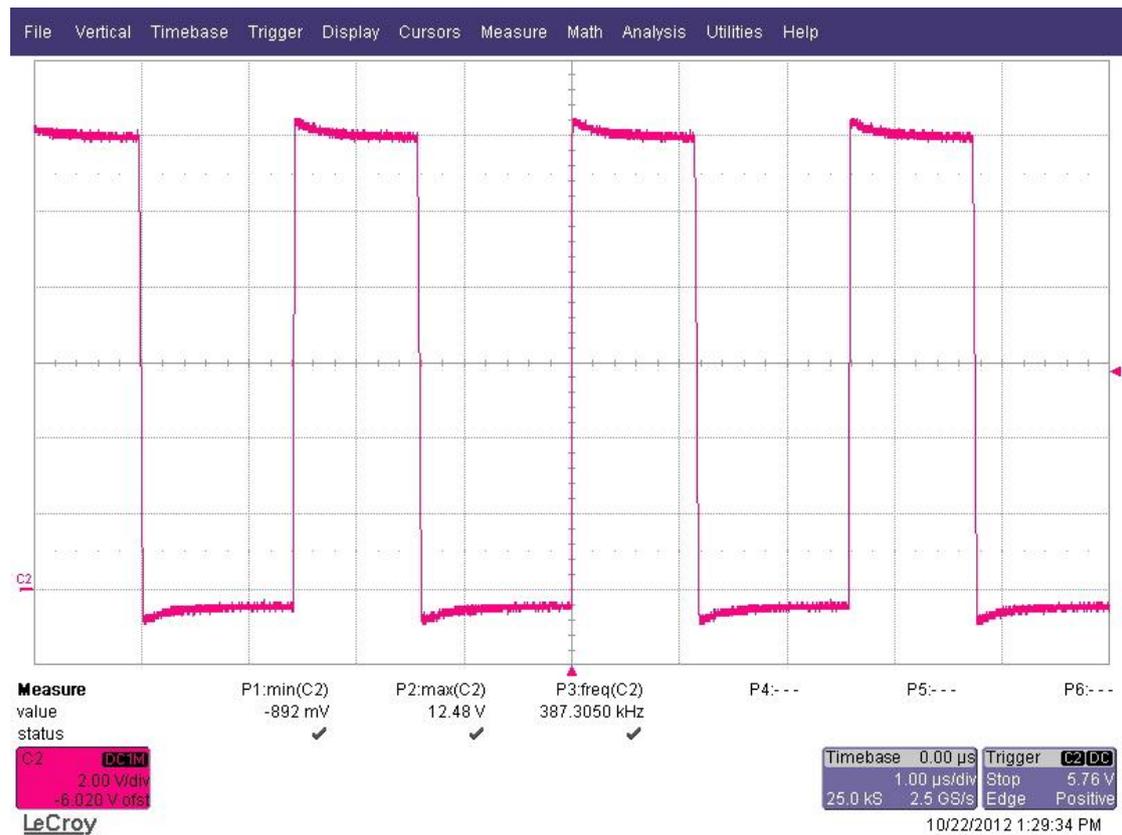


Figure 7

6 Thermal measurement

The thermal image (Figure 8) shows the circuit at an ambient temperature of 21 °C with an input voltage of 12.0V and a load of 70mA.

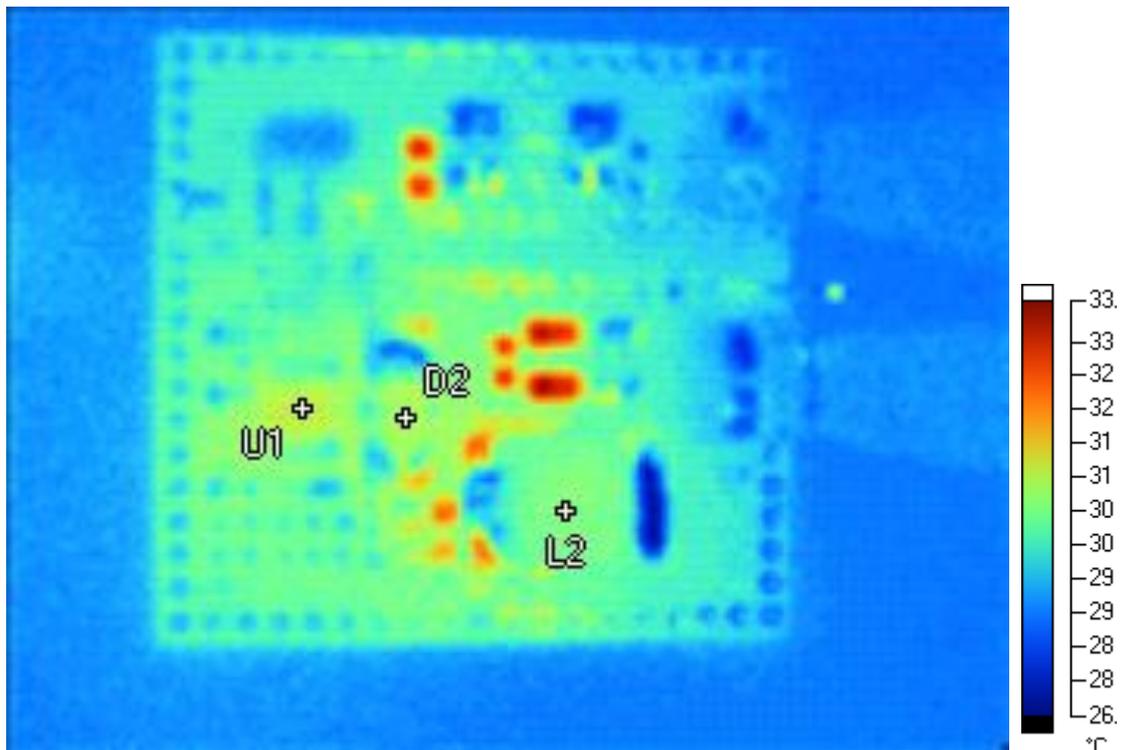


Figure 8

Markers

Label	Temperature	Emissivity	Background
U1	30.6 °C	0.95	21.0 °C
D2	30.4 °C	0.95	21.0 °C
L2	30.1 °C	0.95	21.0 °C

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