PMP10001_RevB Test Results

Topology: Boost
Device: TPS61175 (http://www.ti.com/product/tps61175)

1 Start up

Load current: 180mA
Input voltage: 5V

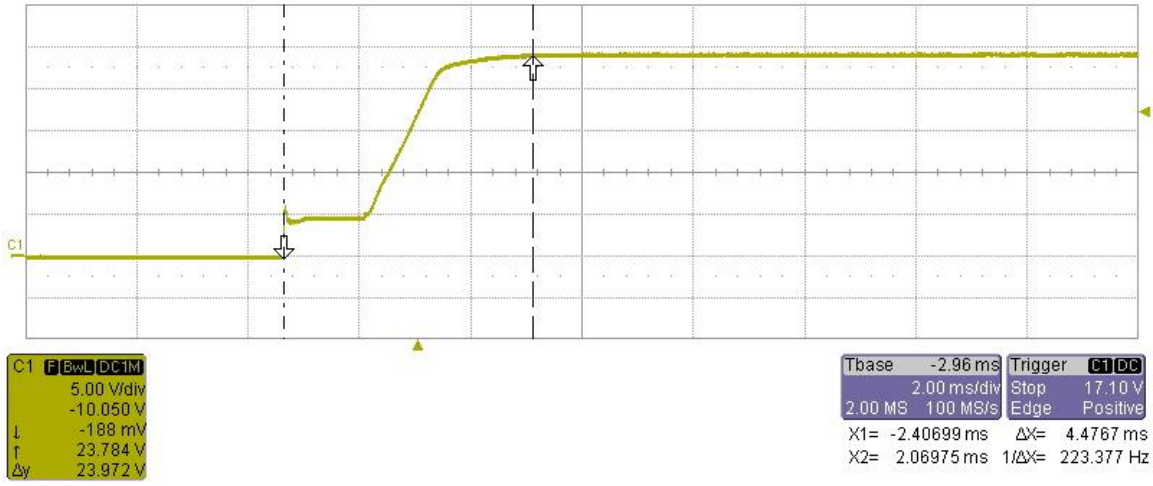

Figure 1. Start up.

Start up time: 4.5ms

2 Shut down

Load current: 180mA
Input voltage: 5V

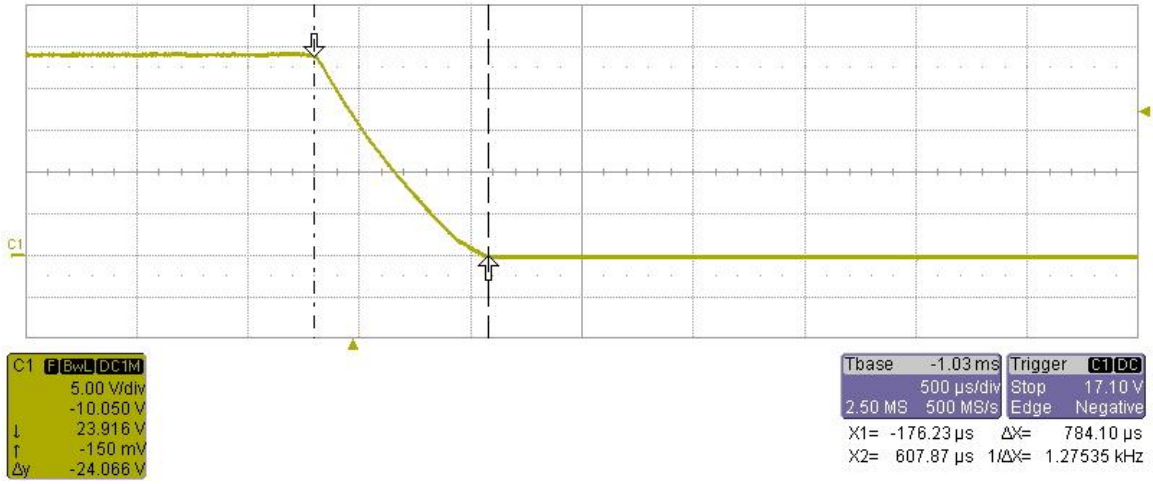

Figure 2. Shut down.

Shut down time: 784µs

3 Load transient

Input voltage: 5V
Pulsating frequency: 100Hz
Slope speed: 0.833A/µs
Load variation: from 10mA to 180mA = 170mA
Current probe scale: 10mV/A

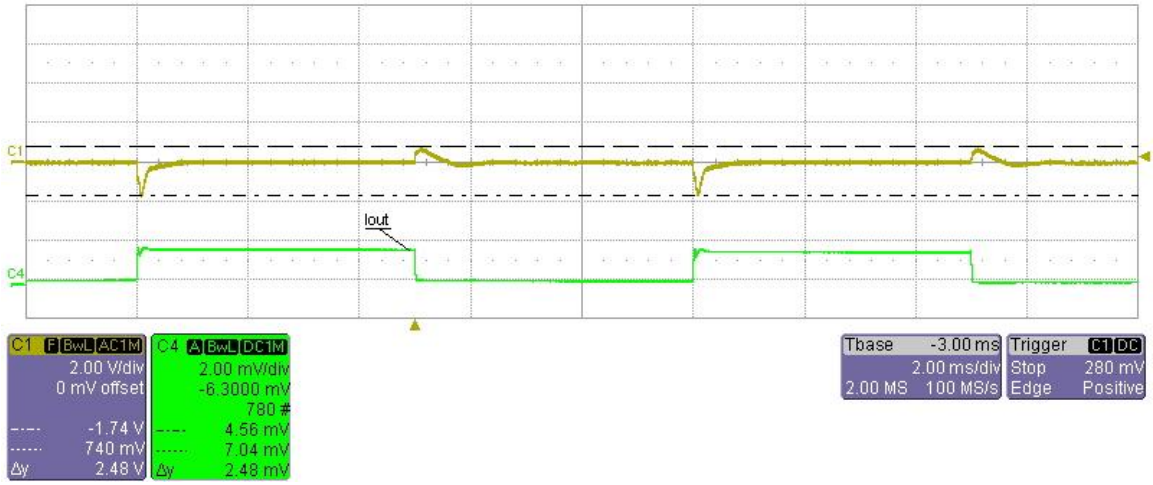

Figure 3. Load transient.

Positive voltage variation: 0.74V
Negative voltage variation: 1.74V

4 Output ripple

Load current: 180mA
Input voltage: 5V

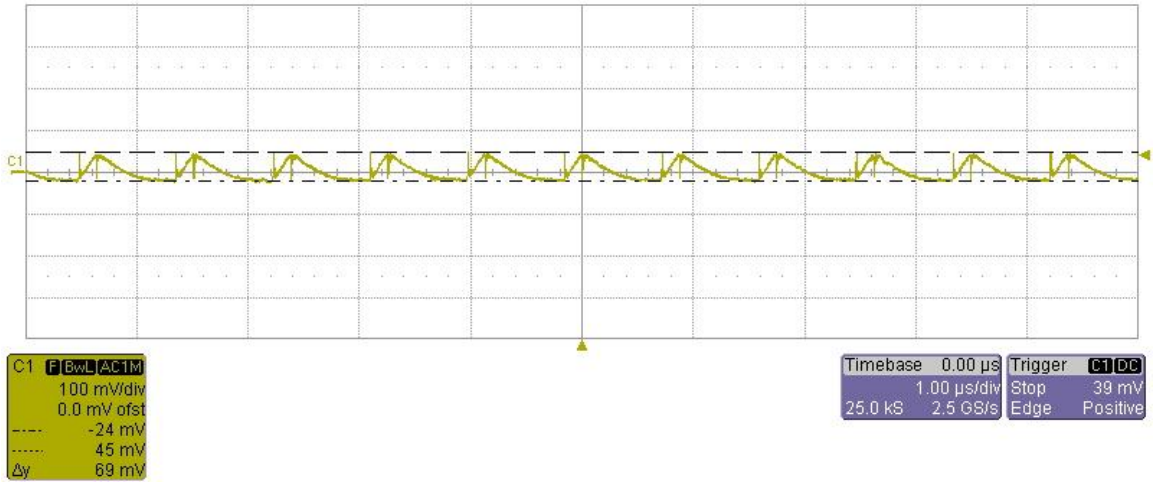

Figure 4. Output ripple.

Peak-to-peak ripple amplitude: 69mV

5 Efficiency

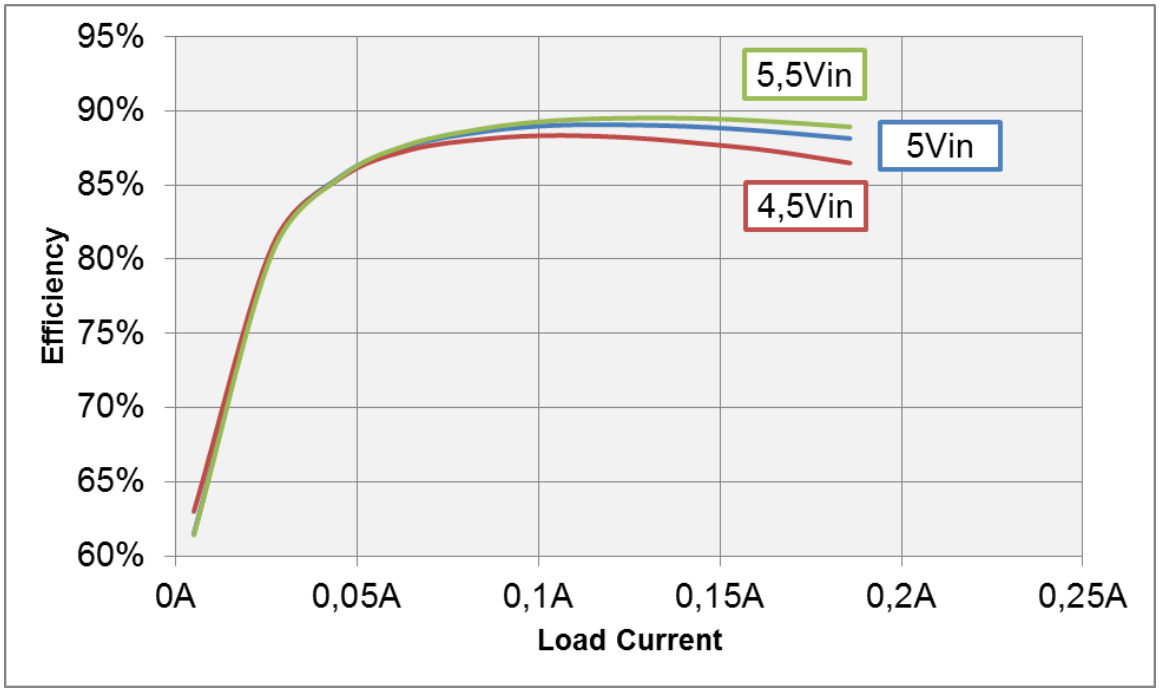

Figure 5. Efficiency as a function of load current.

6 Line regulation

Load current: 170mA

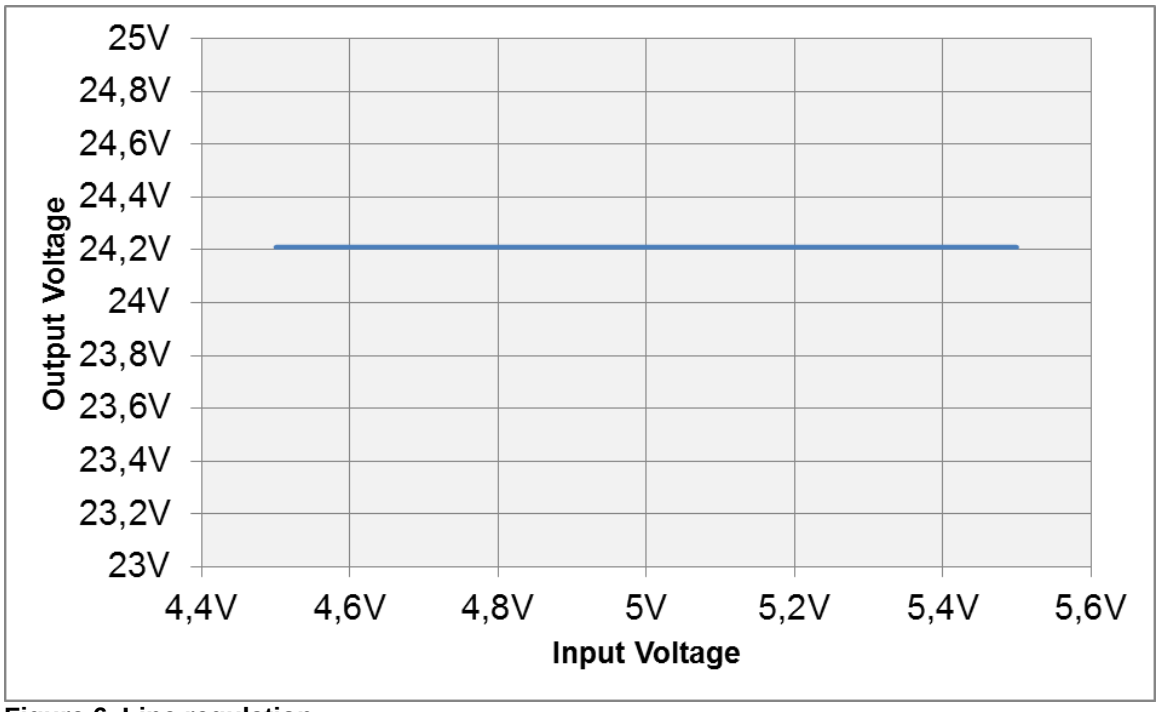

Figure 6. Line regulation.

7 Load regulation

Input voltage: 5V

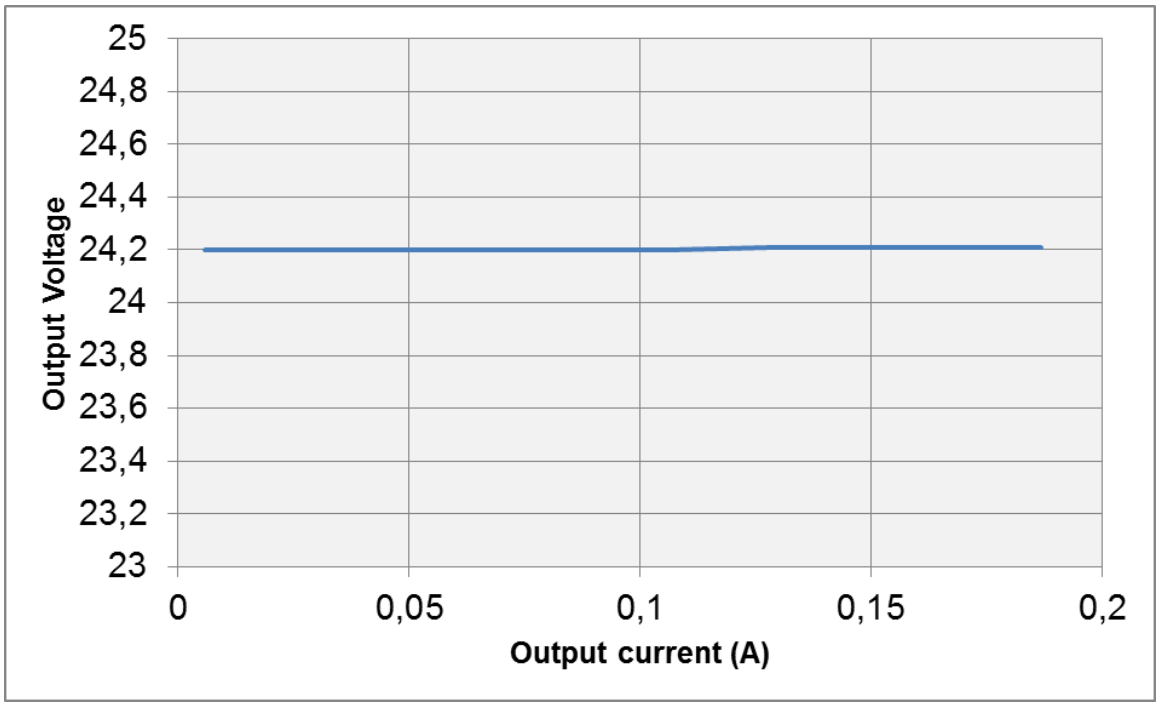

Figure 7. Load regulation.

8 Loop stability

Load current: 180mA
Input voltage: 5V

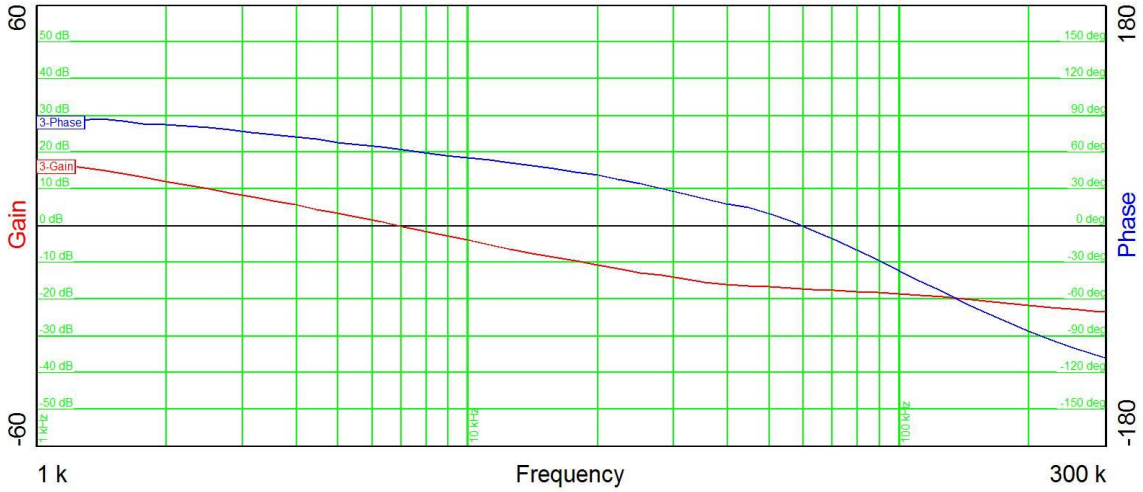

Figure 8. Control loop gain and phase.

Bandwidth: 6.9kHz
Phase margin: 63°

9 SW-node waveform

Load current: 180mA
Input voltage: 5V

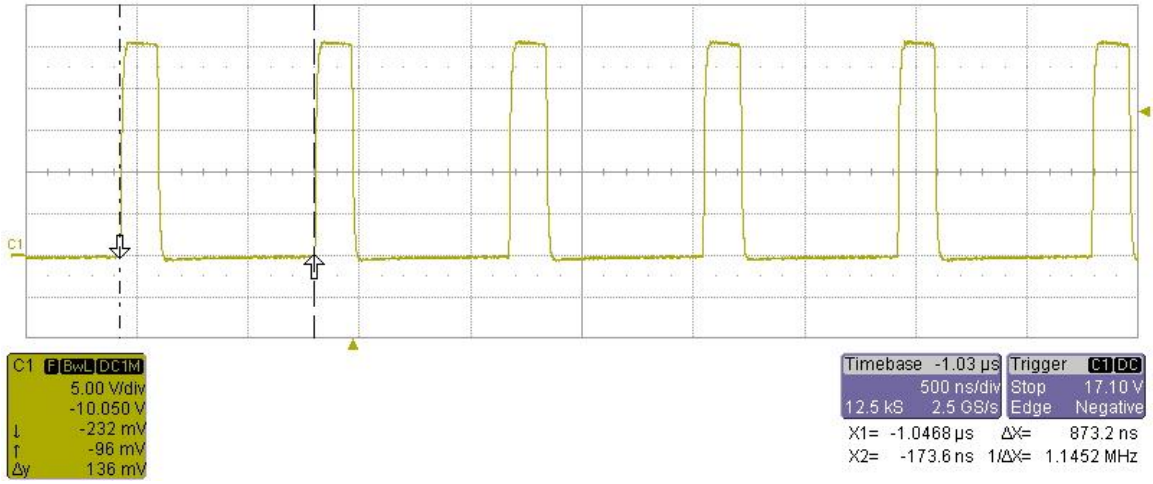

Figure 9. SW-node waveform

Switching frequency: 1.145MHz

10 Thermal performance

Load current: 180mA
Input voltage: 5V
Time: 30min
No airflow

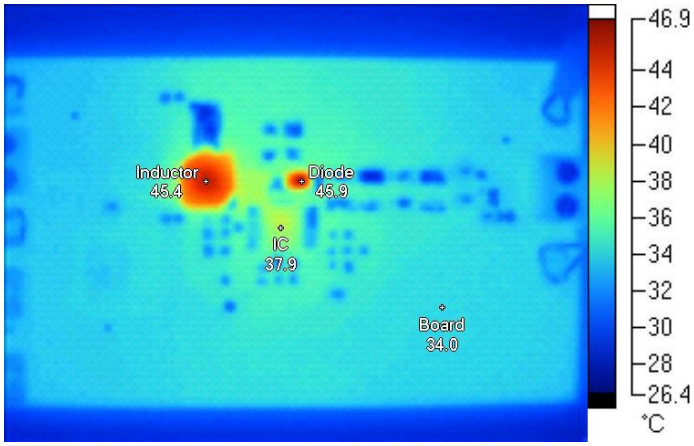

Figure 10. Temperatures on board.

Name	Temperature
MBR0530T1G (D1)	45.9°C
MSS6132-153MLB (L1)	45.4°C
TPS61175PWP (U1)	37.9°C
Board	34.0°C

Table 1. Component temperatures.

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