

PMP30284RevB Test Results

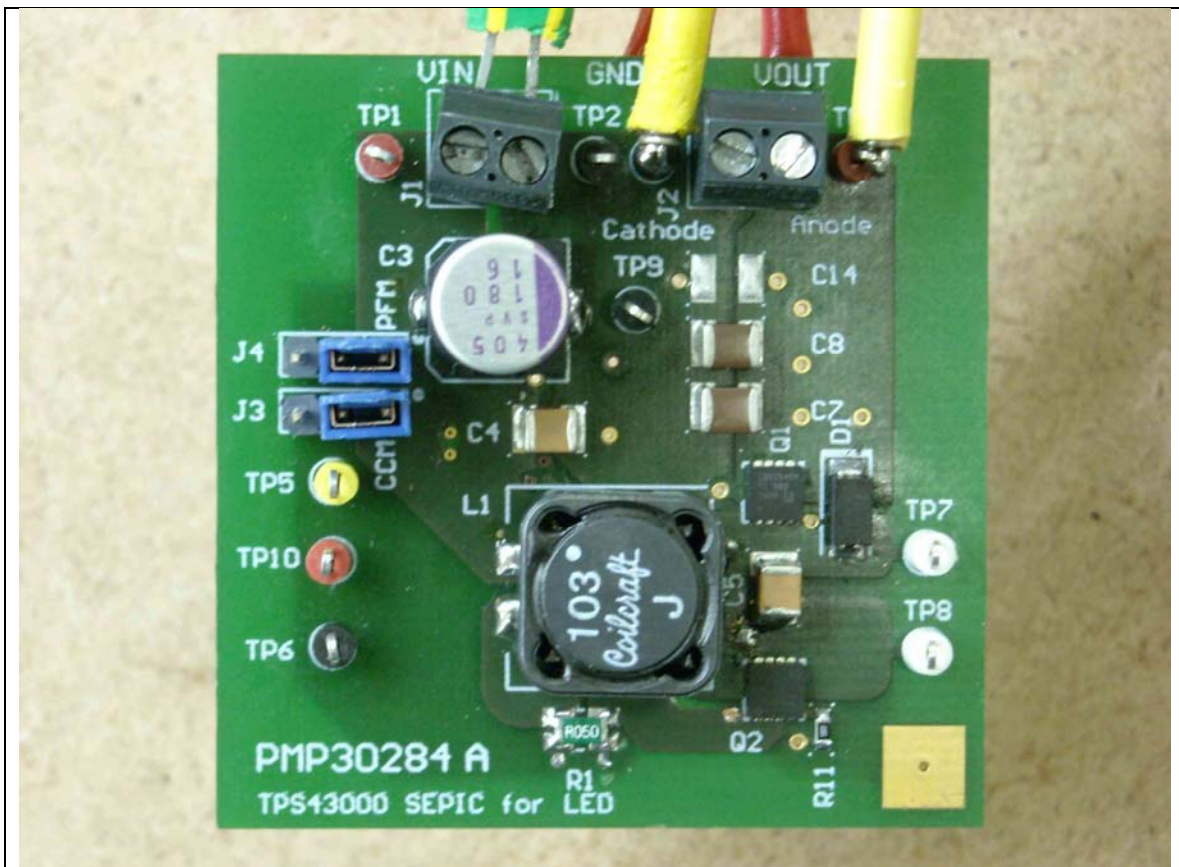
1	Startup	2
2	Efficiency	4
3	Line Regulation	5
4	Output Ripple Voltage	6
5	Input Ripple Voltage	6
6	Control Loop Frequency Response	7
7	Miscellaneous Waveforms	9
7.1	Switch Node Q2	9
7.2	Gate Q2	10
7.3	HS Switch Q1	11
7.4	Q1 Gate-Source	12
8	Thermal Image	13

Topology: SEPIC for LED

Device: TPS43000

Load: LED REBEL STAR NW100 (Opulent); LED voltage 3.0V around 800mA current

Unless otherwise mentioned the input voltage was 4.2V



1 Startup

The startup waveform is shown in the Figure 1. The input voltage was set to 1.8V.

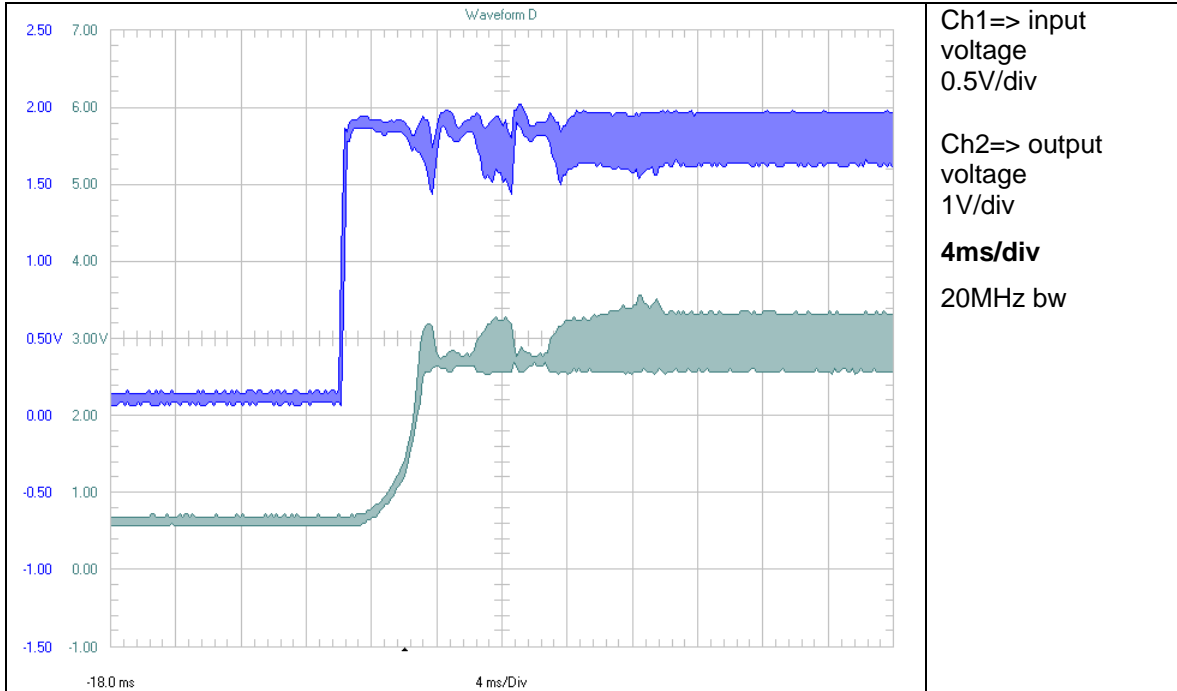


Figure 1

The startup waveform is shown in the Figure 2. The input voltage was set to 4.2V.

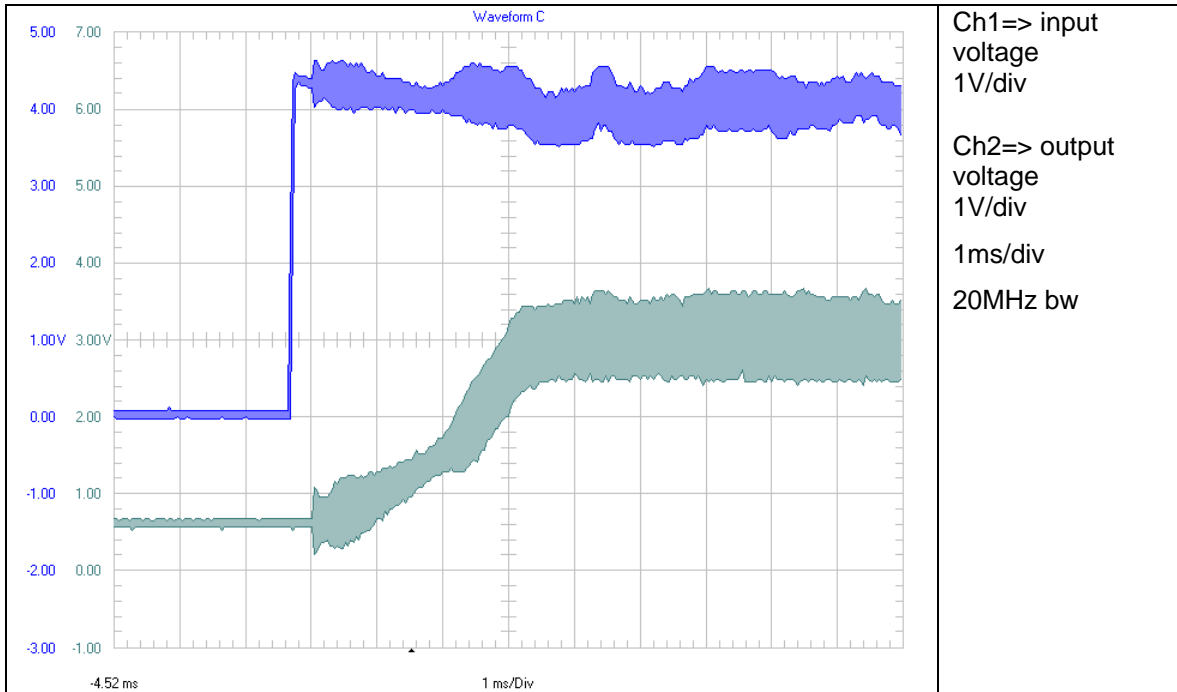


Figure 2

The startup waveform is shown in the Figure 3. The input voltage was set to 8.4V.

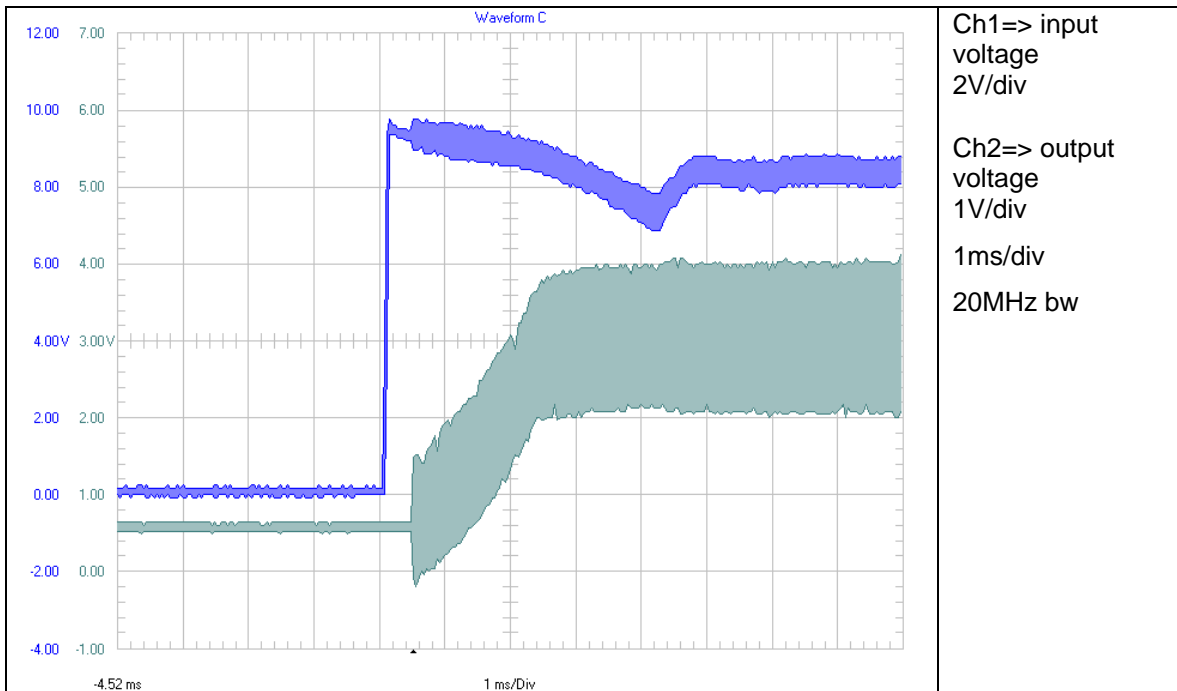


Figure 3

2 Efficiency

The efficiency is shown in the Figure 4 below, LED current 765mA, LED voltage 3.0V.

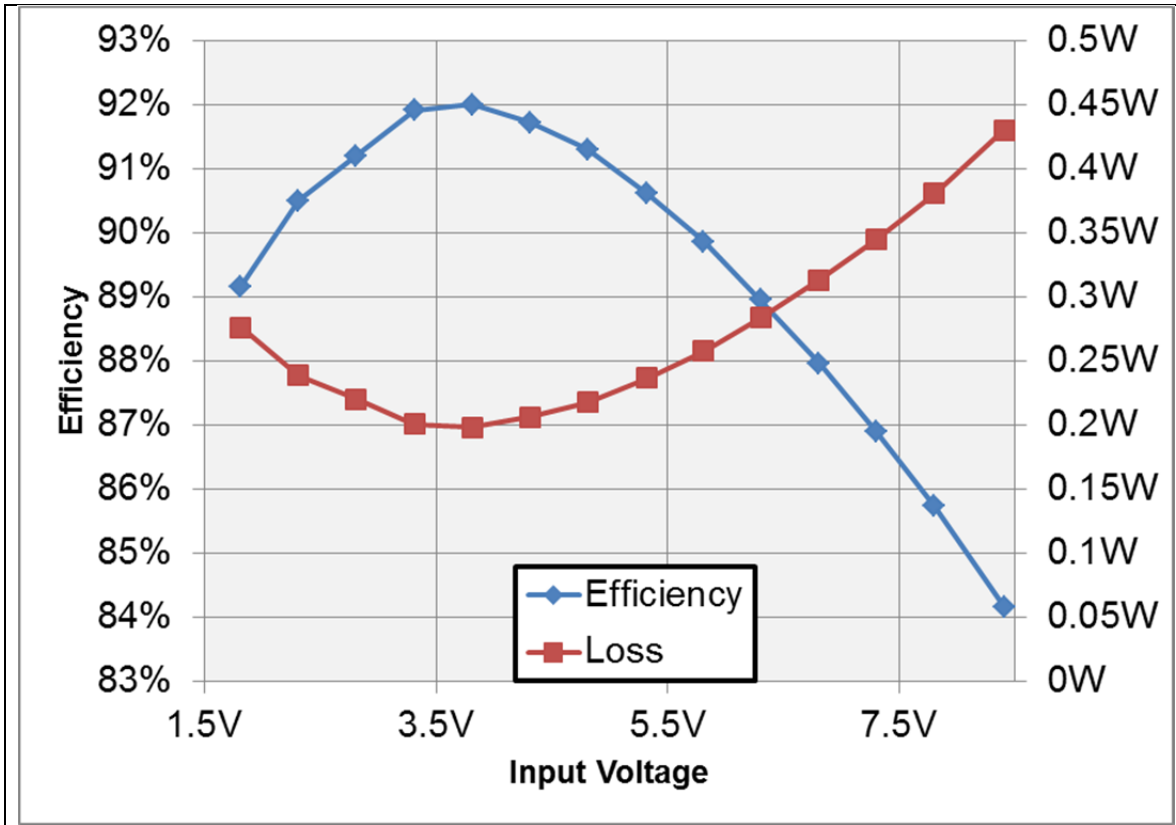


Figure 4

3 Line Regulation

The line regulation is shown in Figure 5.

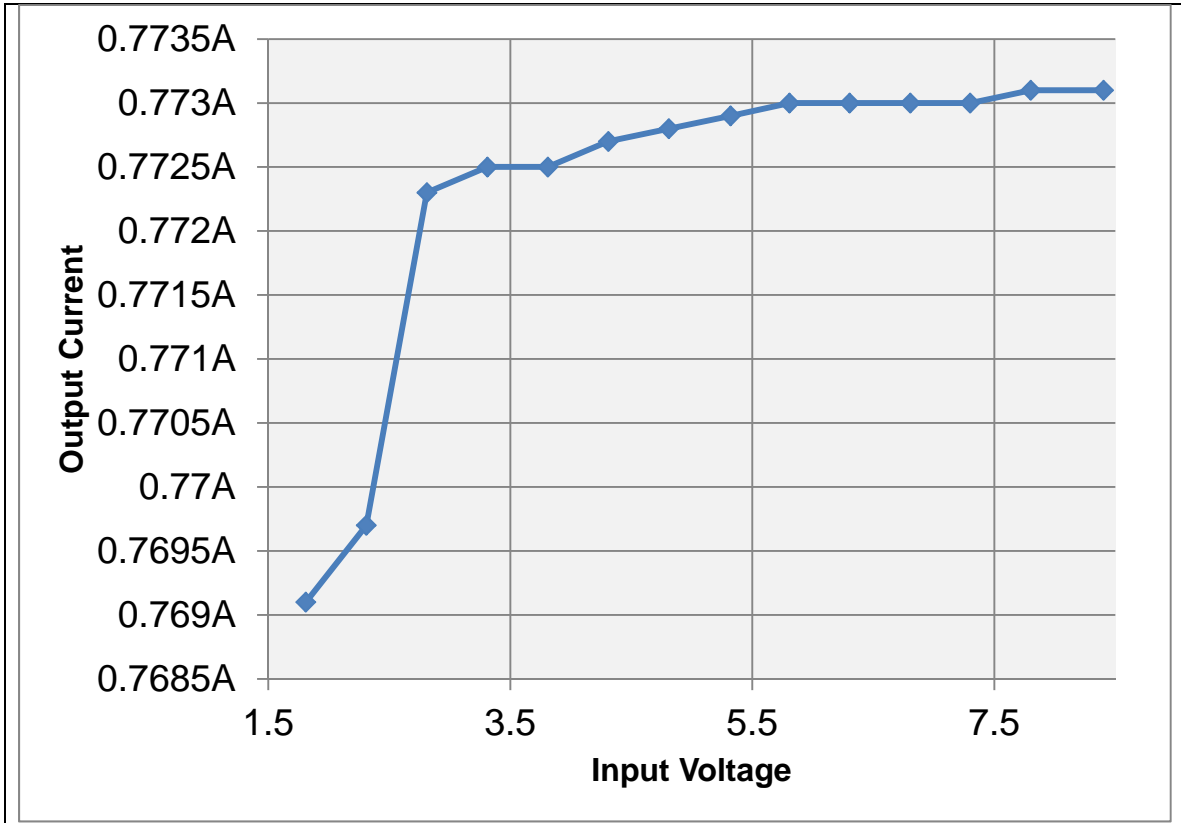


Figure 5

4 Output Ripple Voltage

The output ripple voltage is shown in Figure 6.

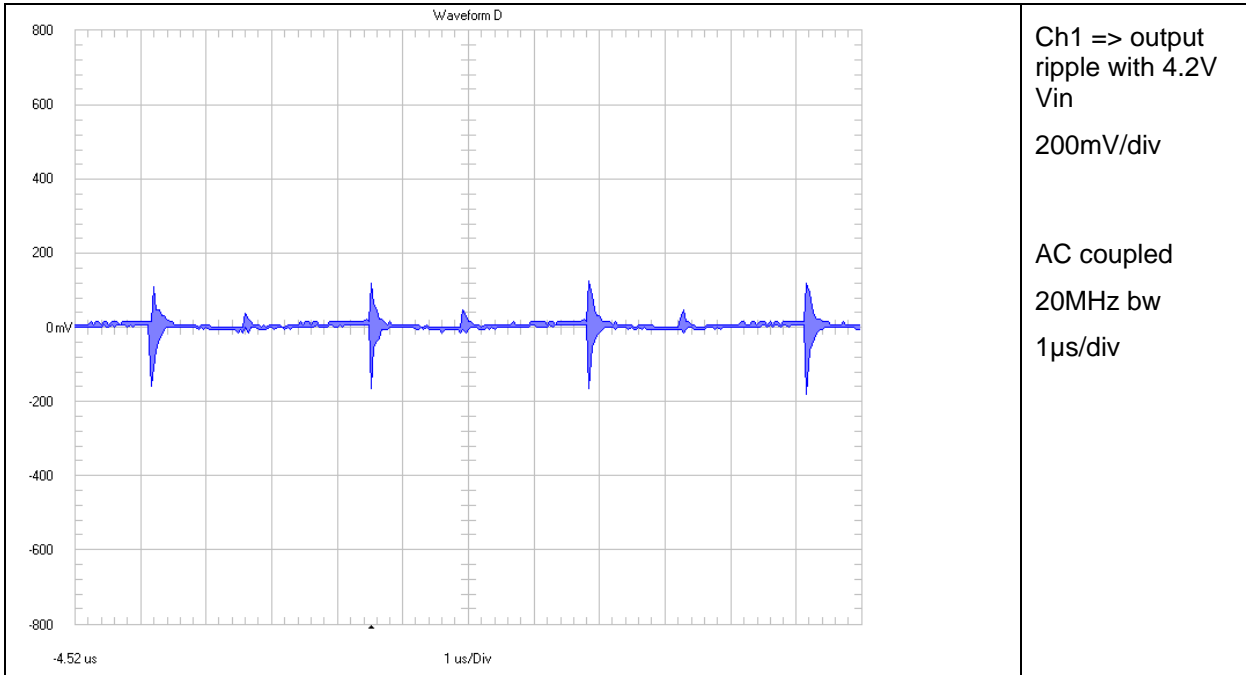


Figure 6

5 Input Ripple Voltage

The input ripple voltage is shown in Figure 7.

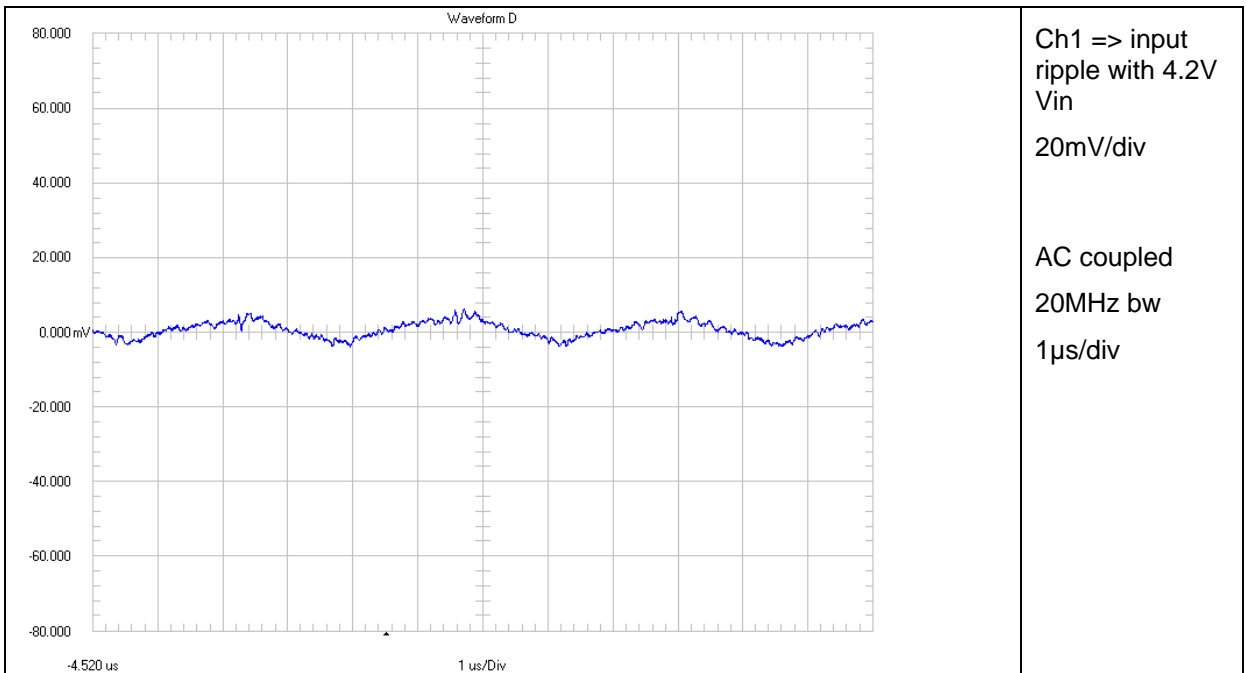


Figure 7

6 Control Loop Frequency Response

Figure 8 shows the loop response for 1.8V.

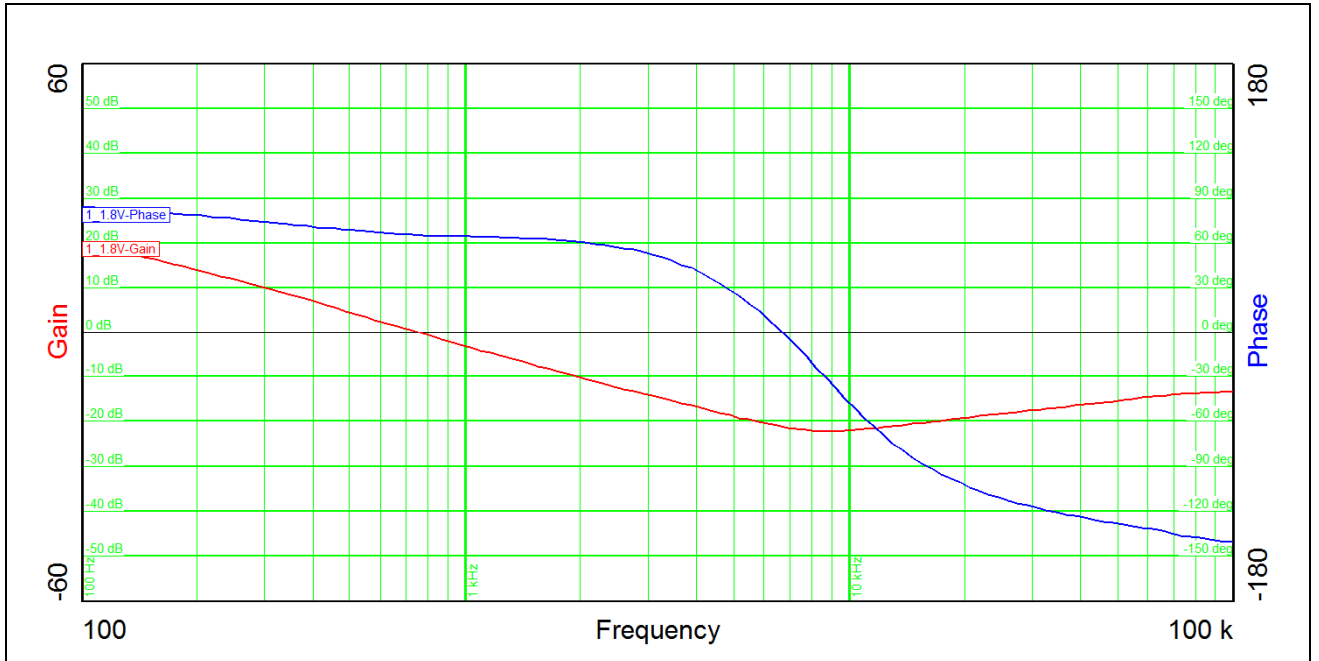


Figure 8

Figure 9 shows the loop response for 4.2V.

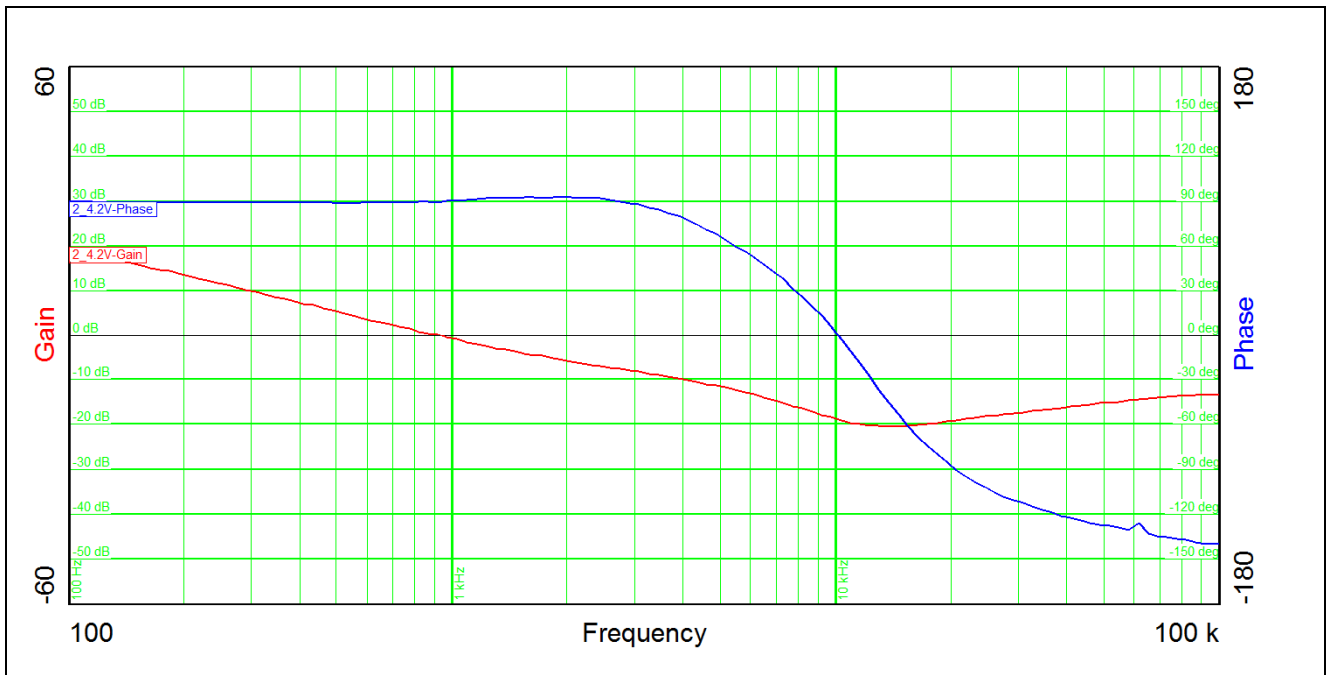


Figure 9

Figure 10 shows the loop response for 8.4V input voltage.

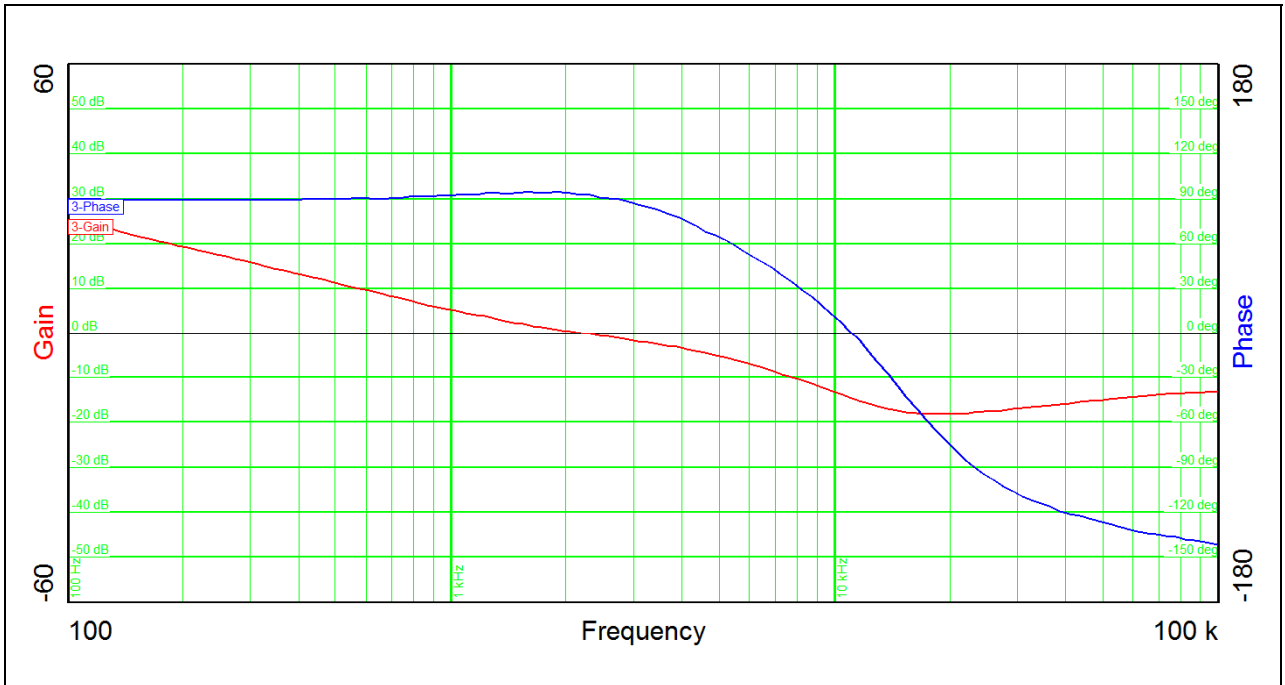


Figure 10

Table 1 summarizes the results of the above measurements

Vin	1.8V	4.2V	8.2V
Bandwidth (kHz)	0.754	0.935	2.2
Phase margin	65°	89°	92°
slope (20dB/decade)	-1.26	-1.25	-0.67
gain margin (dB)	-21	-18.8	-14.6
slope (20dB/decade)	-0.99	-1.23	-1.27
freq (kHz)	6.67	10.13	11.12

Table 1

7 Miscellaneous Waveforms

7.1 Switch Node Q2

The waveform of the voltage on switchnode is shown in Figure 11.

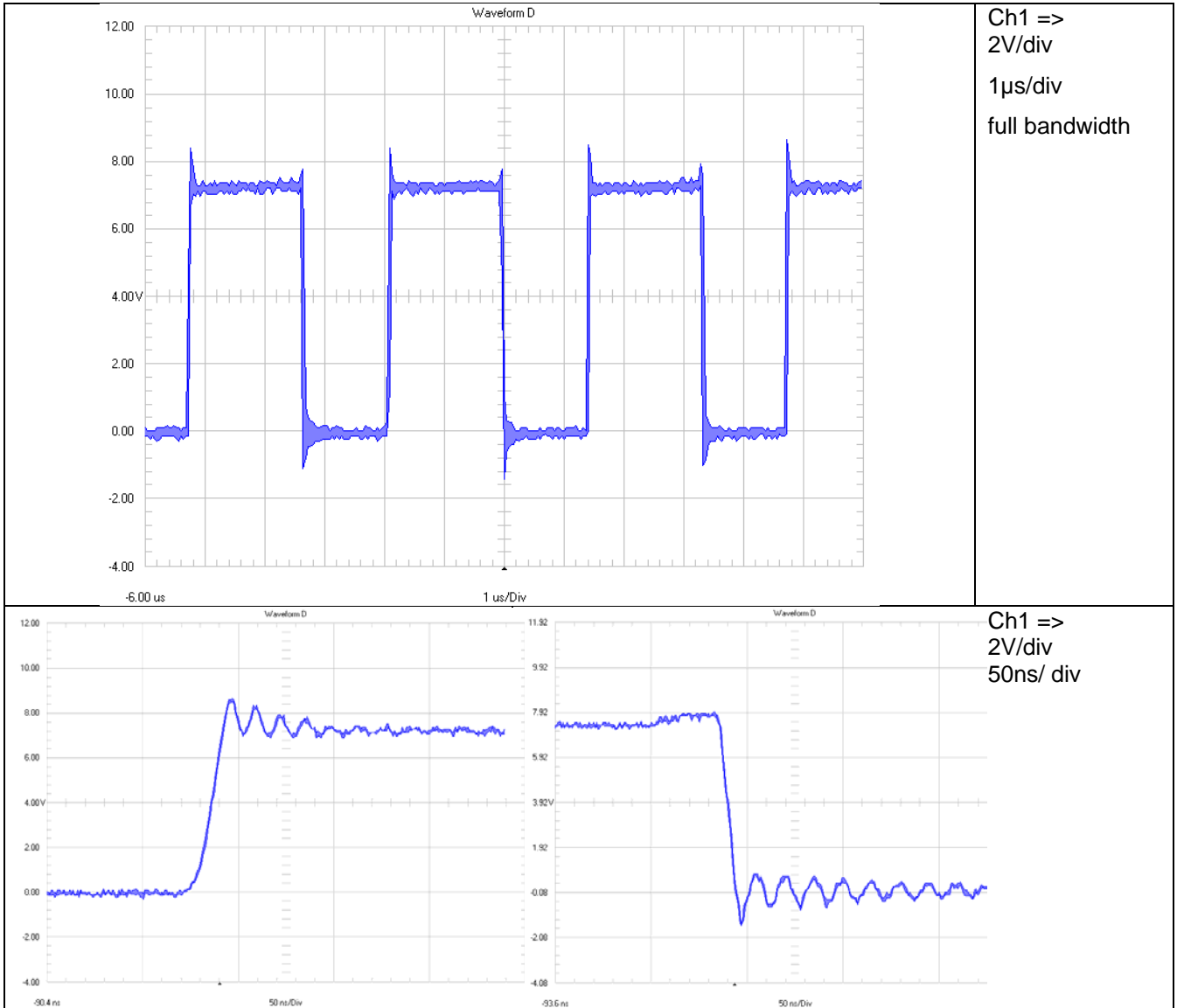


Figure 11

7.2 Gate Q2

The waveform of the voltage at gate to ground is shown in Figure 12.

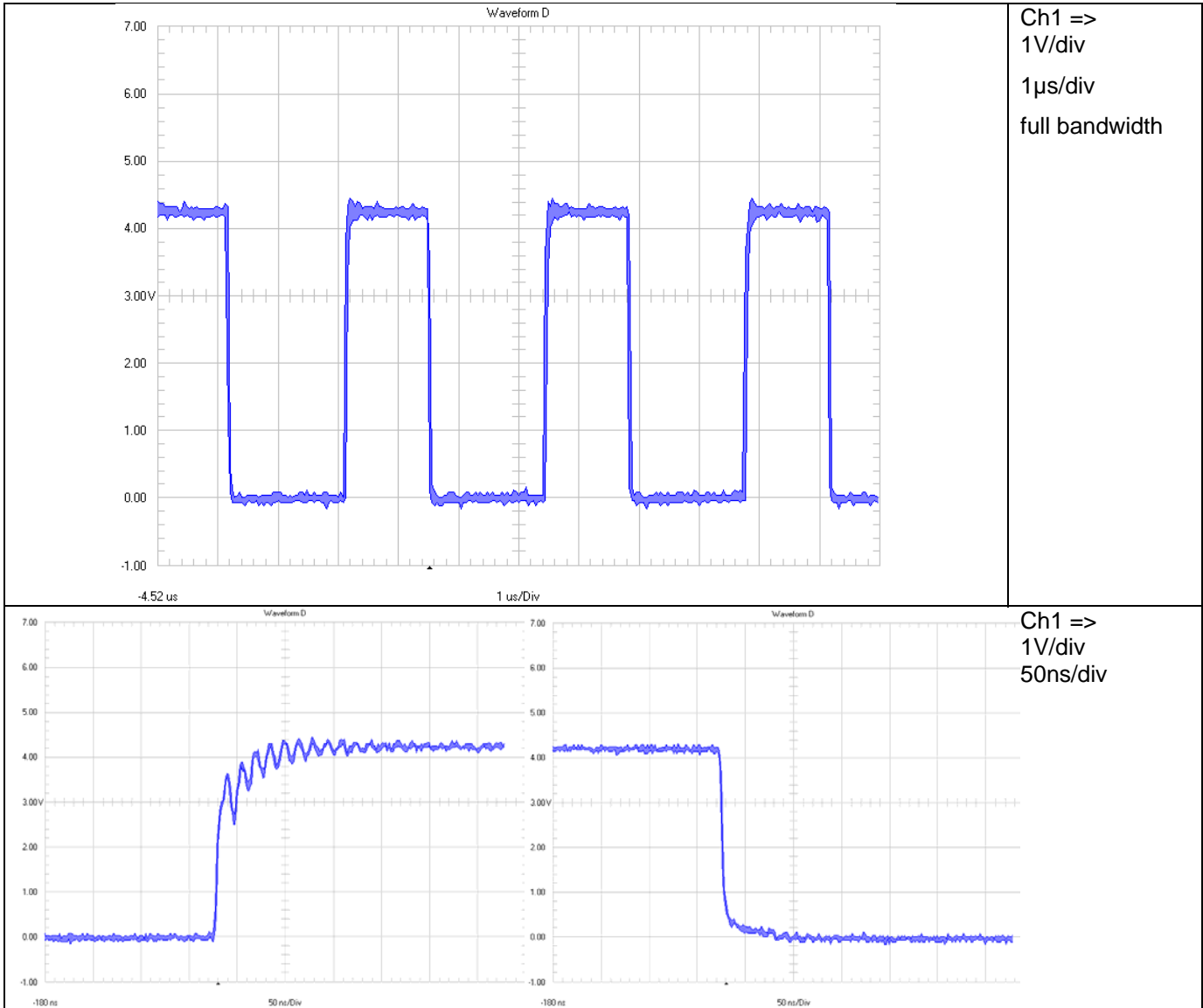


Figure 12

7.3 HS Switch Q1

The waveform of the voltage on drain to source (referenced to VOUT) is shown in Figure 13.

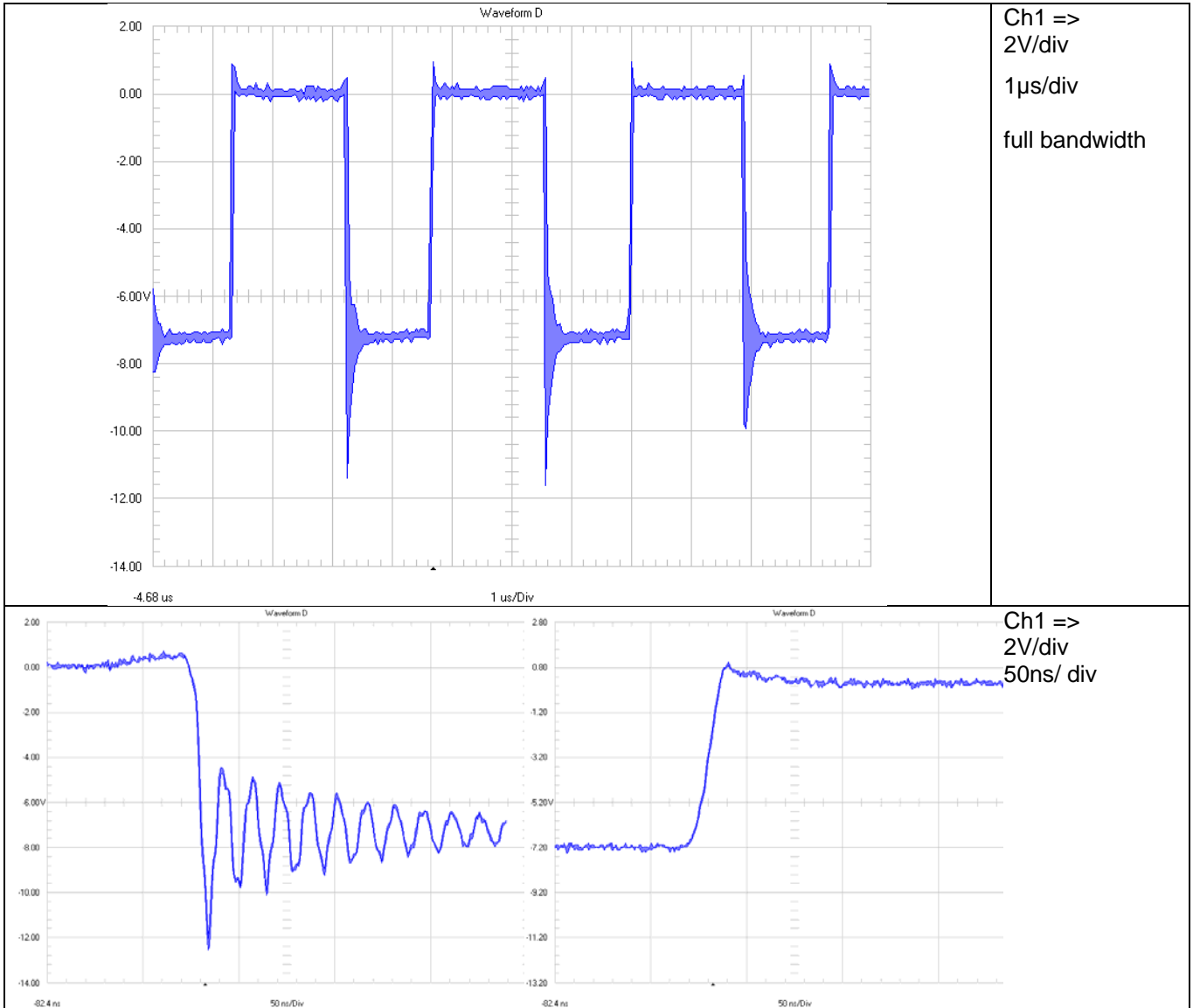


Figure 13

7.4 Q1 Gate-Source

The waveform of the voltage on gate to source (referenced to VOUT) is shown in Figure 14.

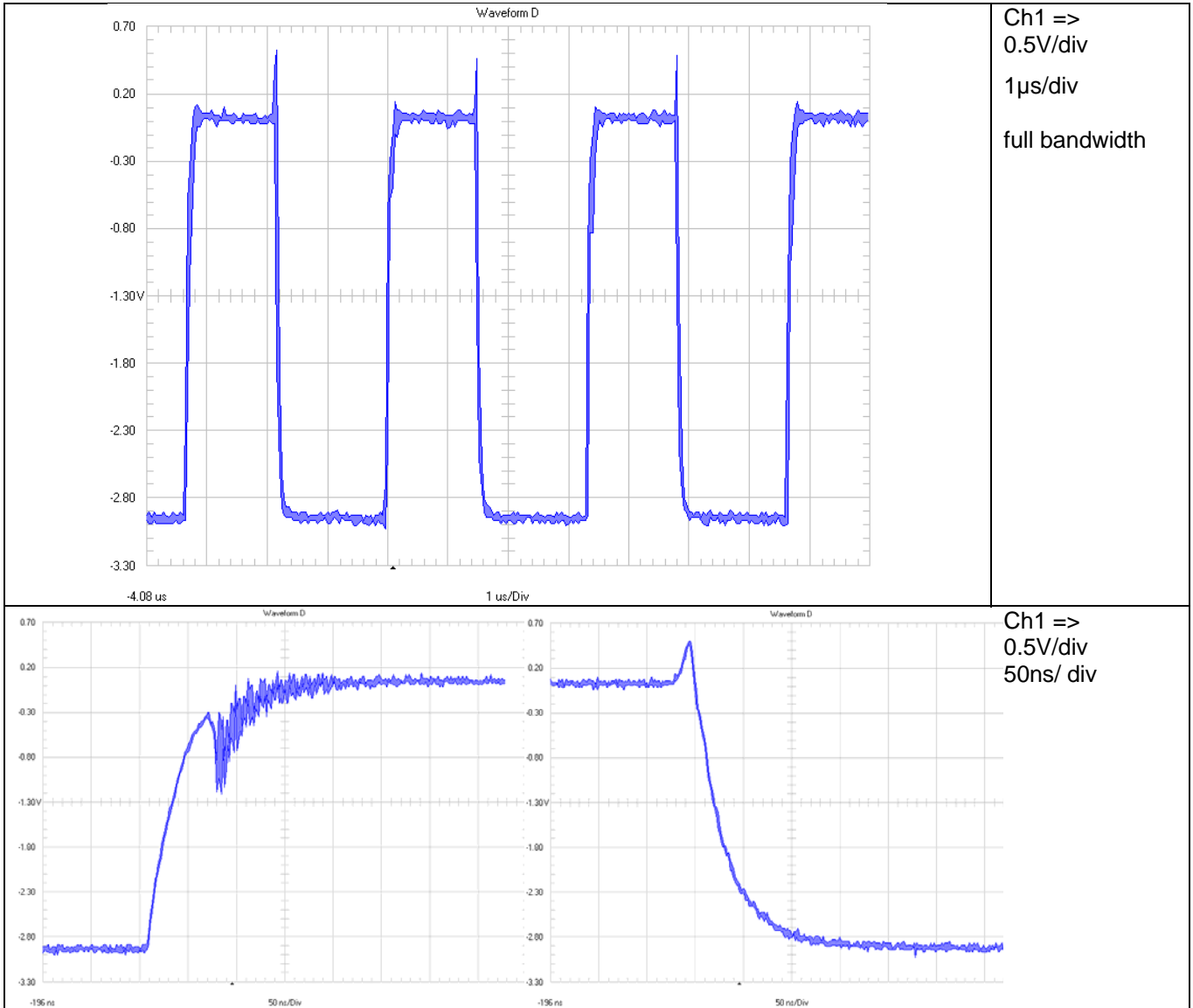


Figure 14

8 Thermal Image

Figure 15 shows the thermal image at 4.2V input voltage.

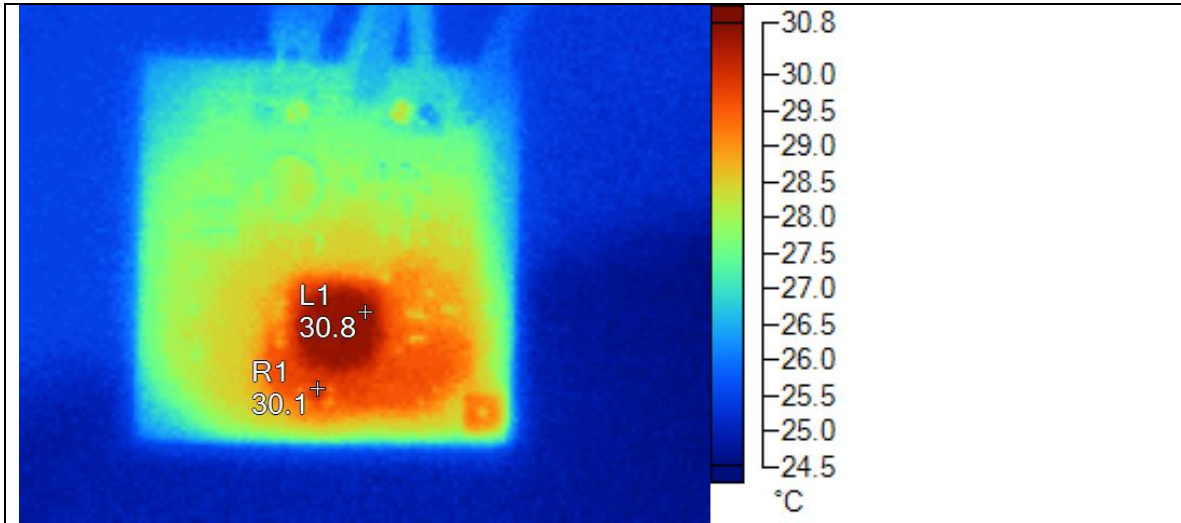
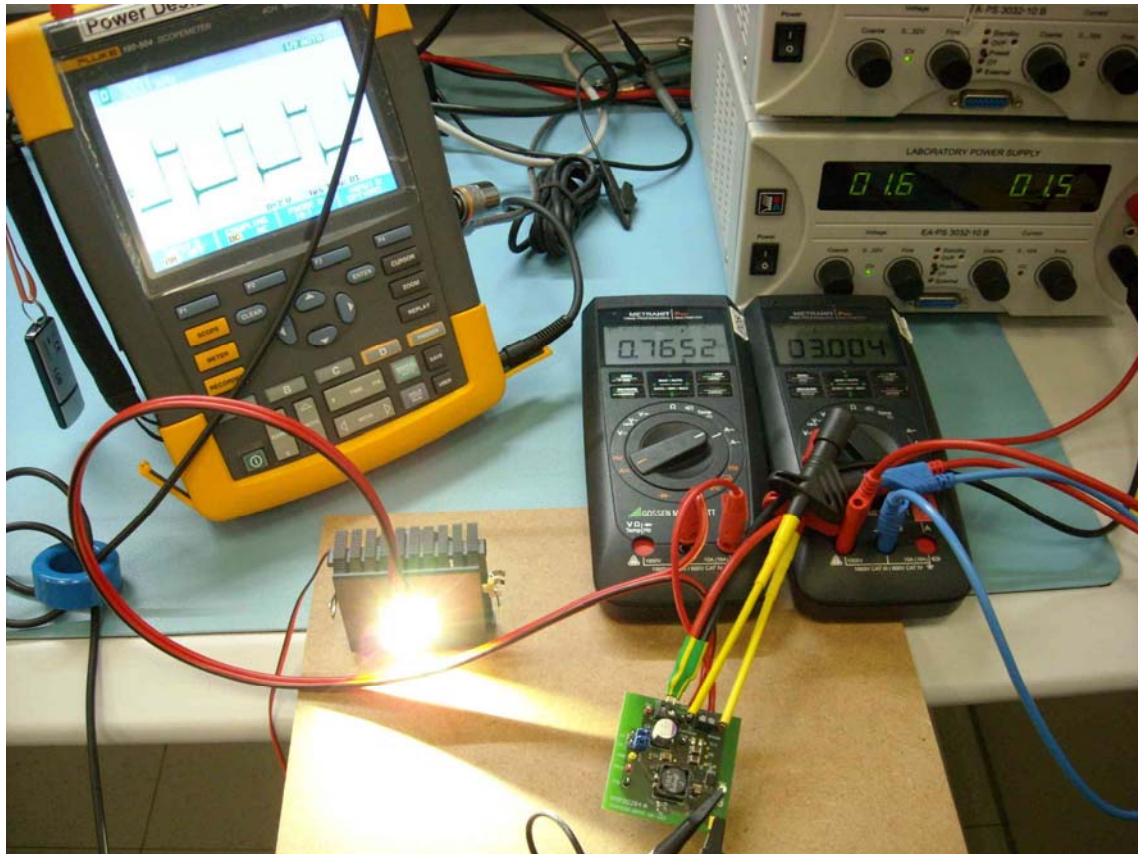


Figure 15

Name	Temperature
L1	30.8°C
R1	30.1°C



PMP30284 RevB on the bench, input voltage 1.6V, LED current 765mA, LED voltage 3.0V

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