PMP10026RevB Test Results
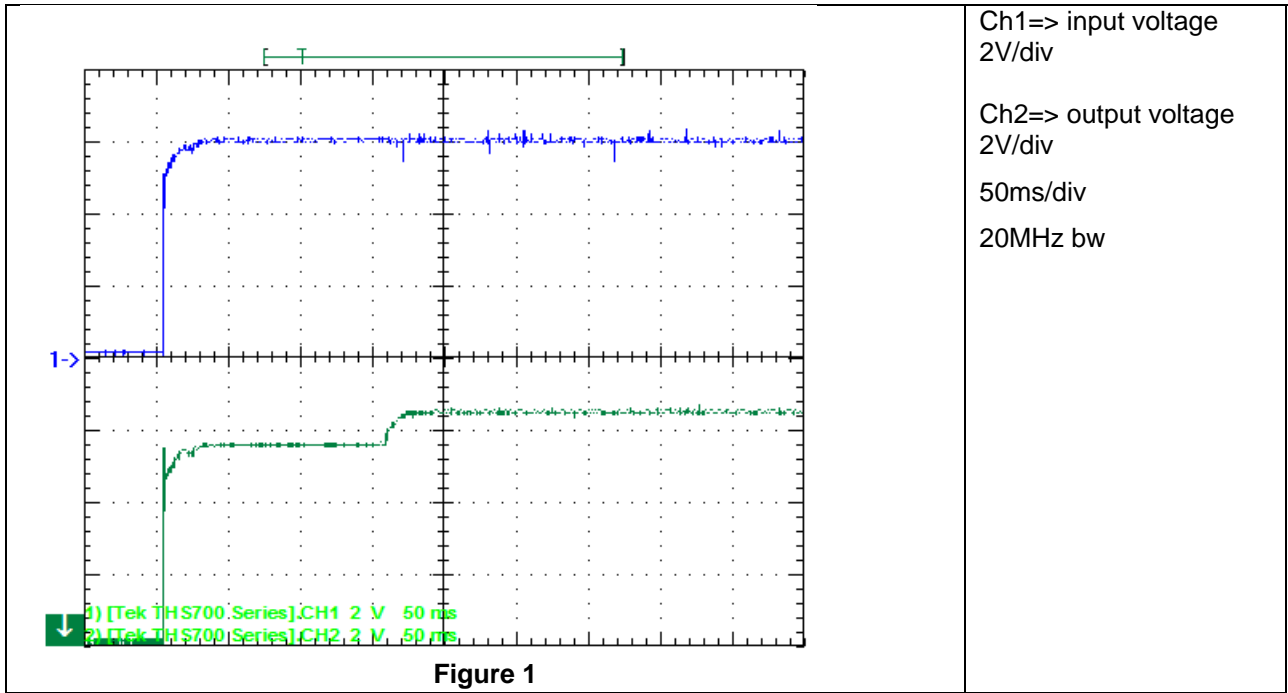
Topology: Boost
Device: TPS40210

1   Startup

The startup waveform is shown in the Figure 1. The input voltage was set at 6V, with 2A load at the output.

Ch1=> input voltage 2V/div

Ch2=> output voltage 2V/div

50ms/div

20MHz bw

Figure 1

2 Efficiency

The efficiency is shown in the Figure 2 below. The input voltage was set to 6V and 3V.
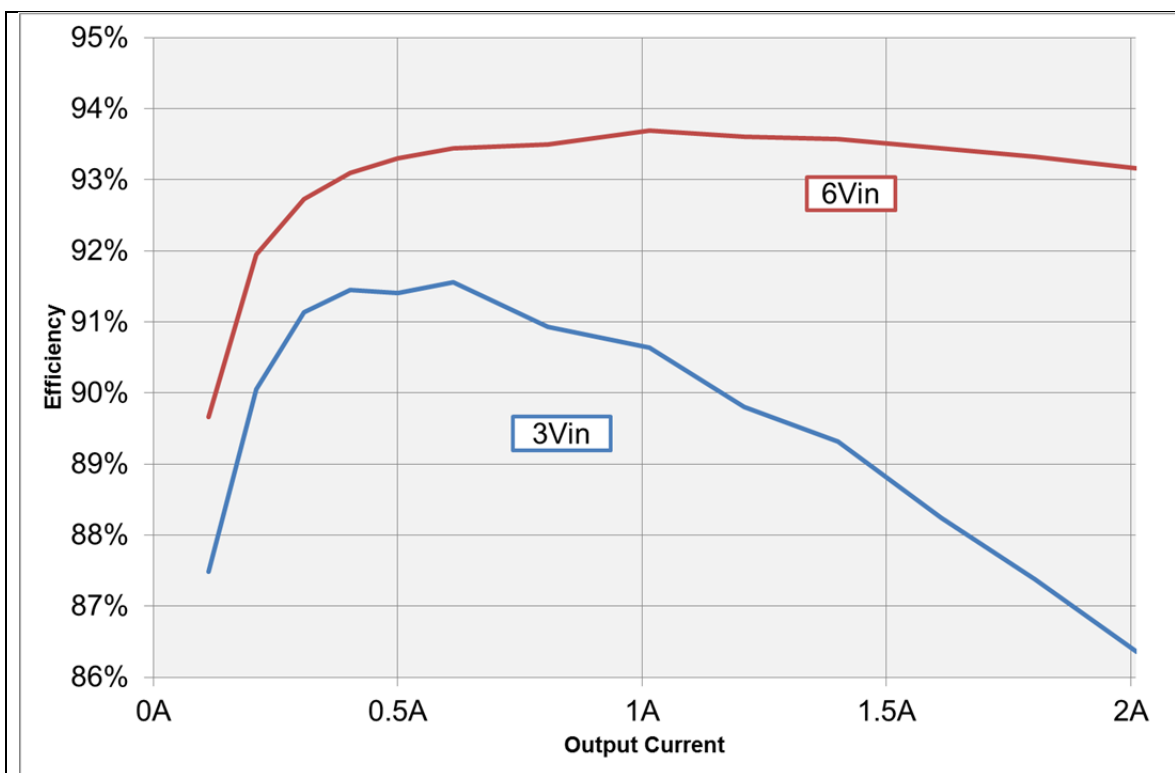

Figure 2

PMP10026RevB Test Results

3   Load Regulation

The load regulation of the output is shown in the Figure 3 below. The input voltage was set to 6V and 3V.

Figure 3

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4 Line Regulation

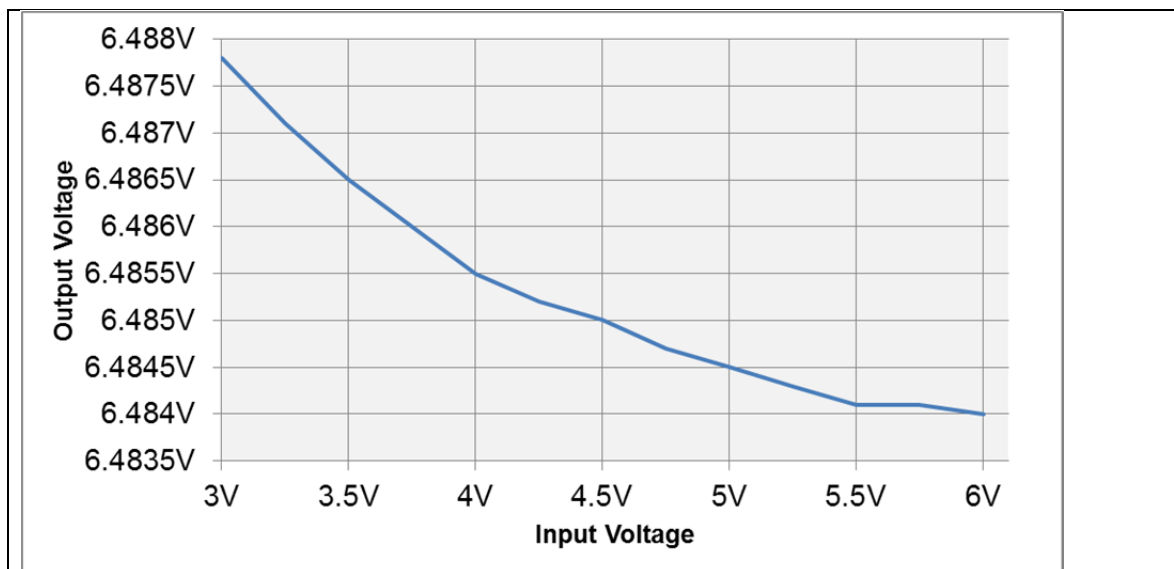The line regulation at 2A output current is displayed in Figure 4.

Figure 4

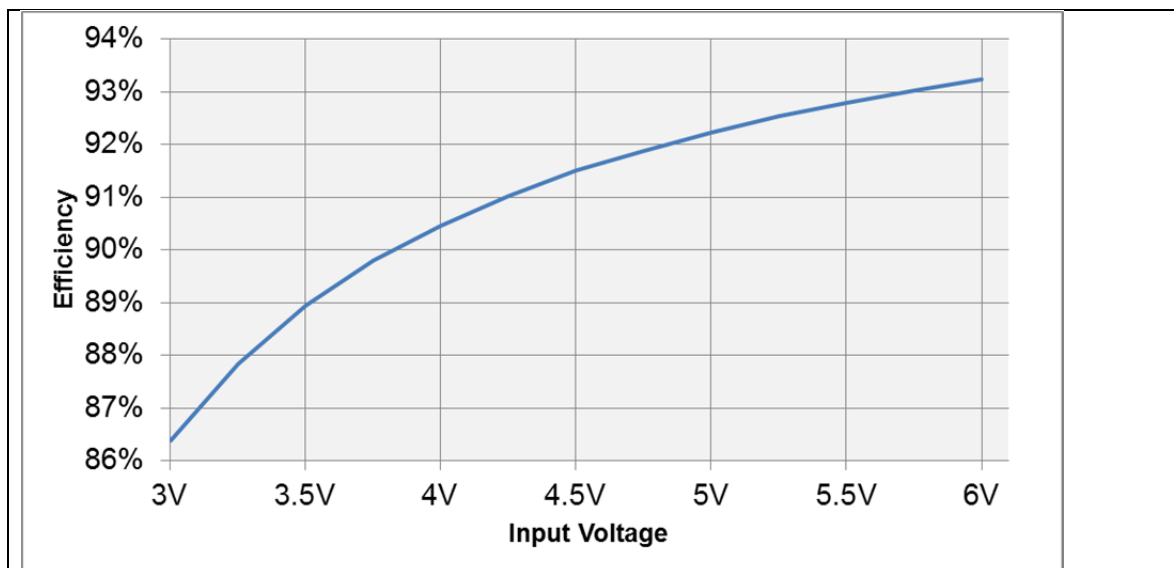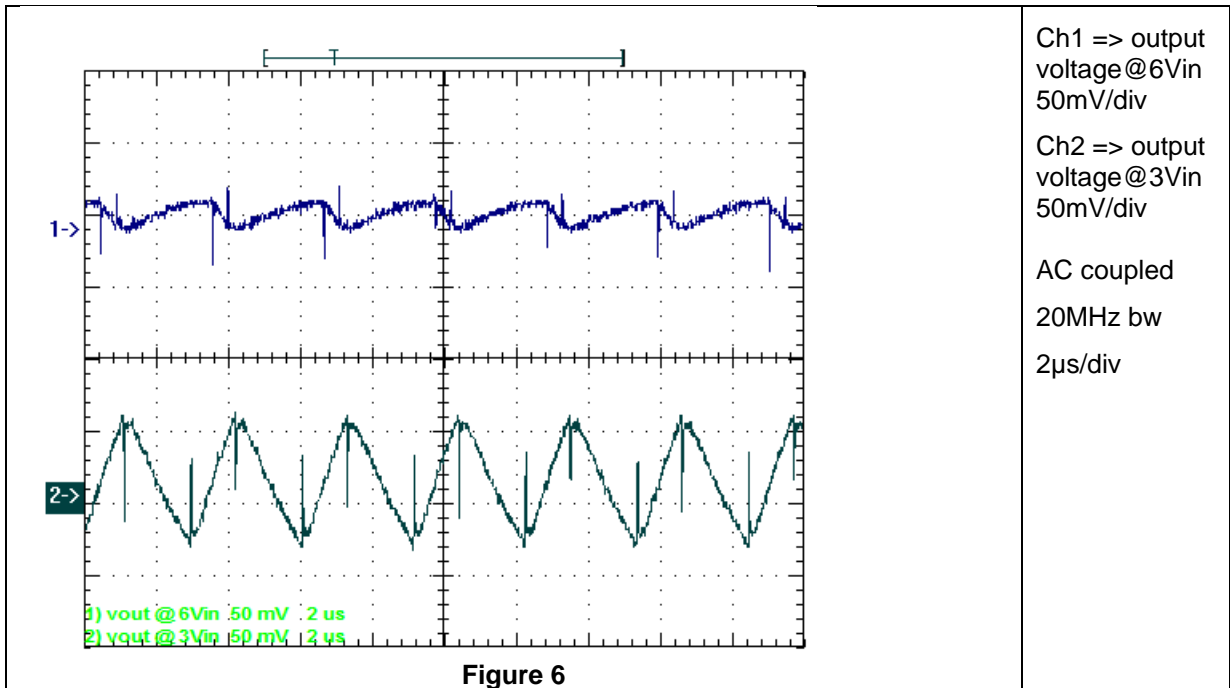The calculated efficiencies are displayed in Figure 5

Figure 5

5   Output Ripple Voltage

The output ripple voltage is shown in Figure 6. The image was taken with 2A load and 6V and 3V input.

Ch1 => output voltage@6Vin 50mV/div

Ch2 => output voltage@3Vin 50mV/div

AC coupled

20MHz bw

2µs/div

Figure 6

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6   Load Transients

The Figure 7 shows the response to load transients. The load is switching from 1A to 2A with a frequency of 300Hz. The input voltage was set to 6V
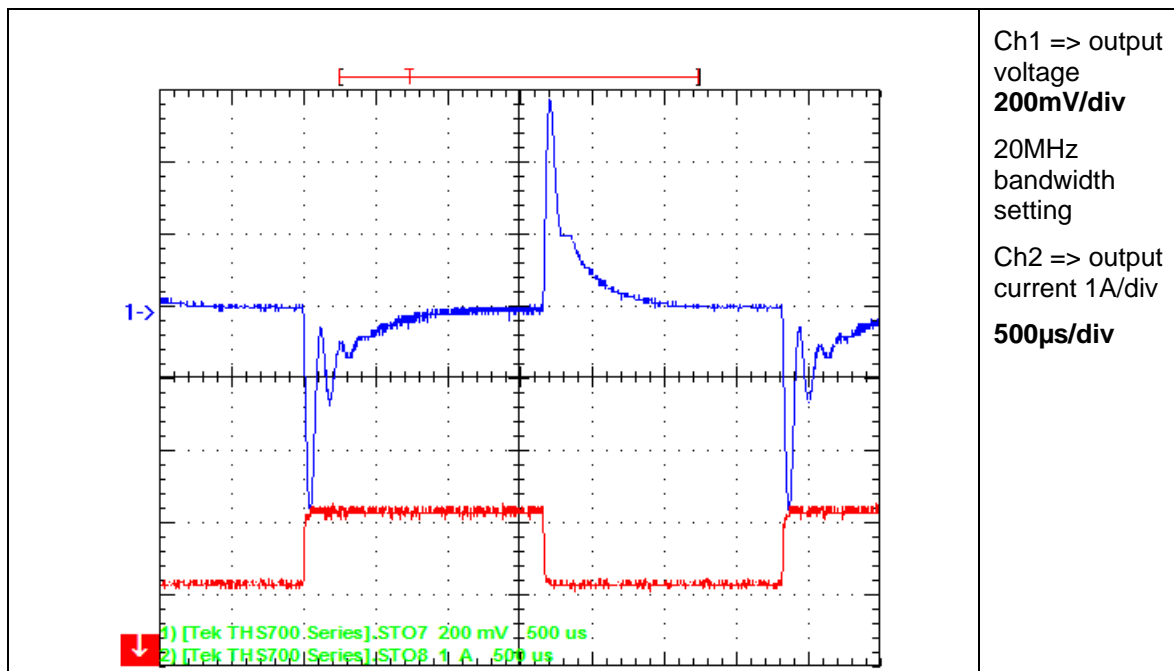

Ch1 => output voltage
200mV/div

20MHz bandwidth setting

Ch2 => output current 1A/div

500µs/div

Figure 7

The Figure 8 shows the response to load transients. The load is switching from 1A to 2A with a frequency of 300Hz. The input voltage was set to 3V
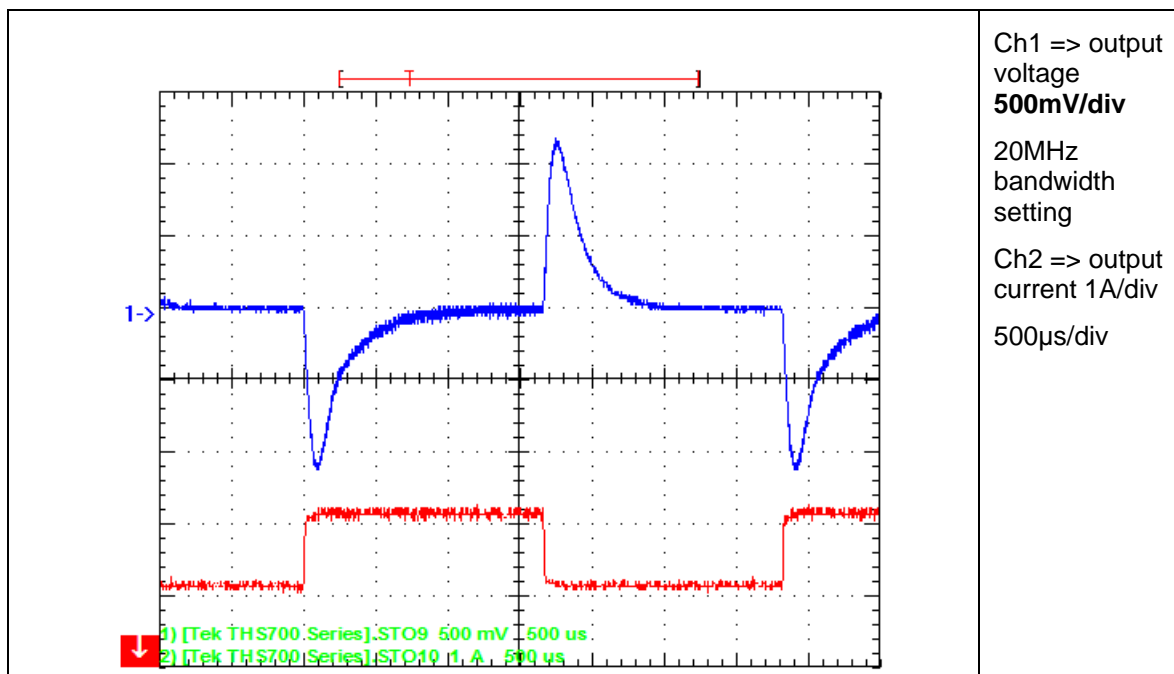

Ch1 => output voltage
500mV/div

20MHz bandwidth setting

Ch2 => output current 1A/div

500µs/div

Figure 8

7   Control Loop Frequency Response

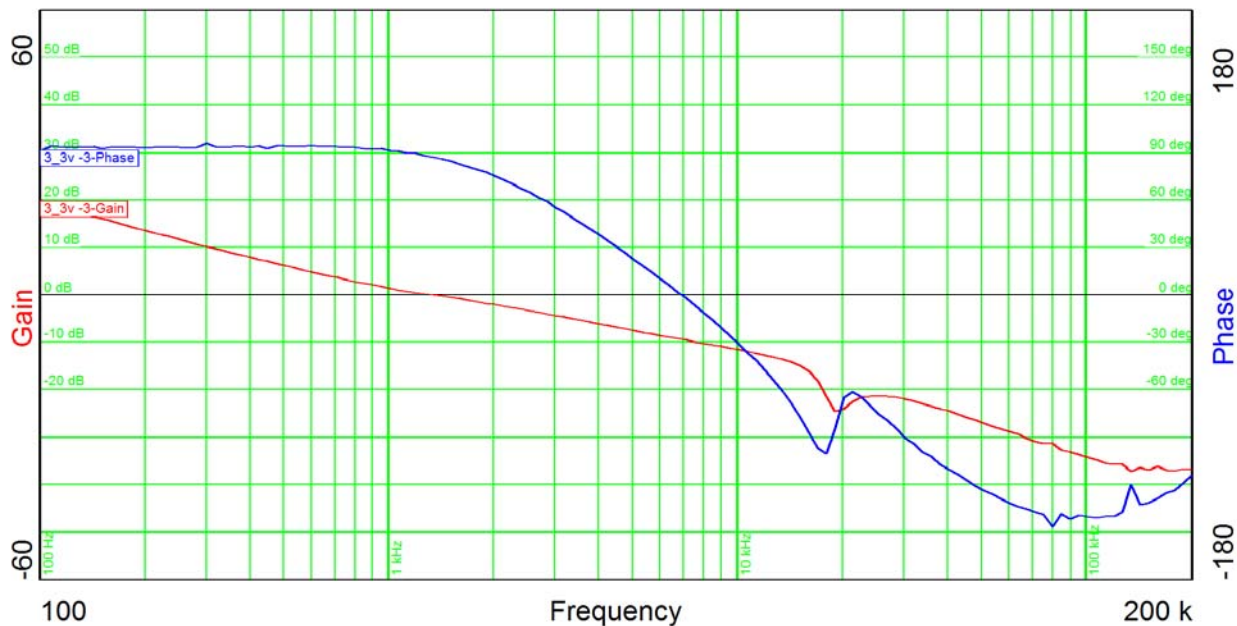Figure 9 shows the loop response. 2A-load applied. The input voltage was set to 3V.

Figure 9

Table 1 summarizes the results Figure 9

Vin	3V
Bandwidth (kHz)	1.325
Phase margin	87.3
slope (20dB/decade)	-0.591
gain margin (dB)	-9.45
slope (20dB/decade)	-0.686
freq (kHz)	6.899

Table 1

PMP10026RevB Test Results

8   Miscellaneous Waveforms

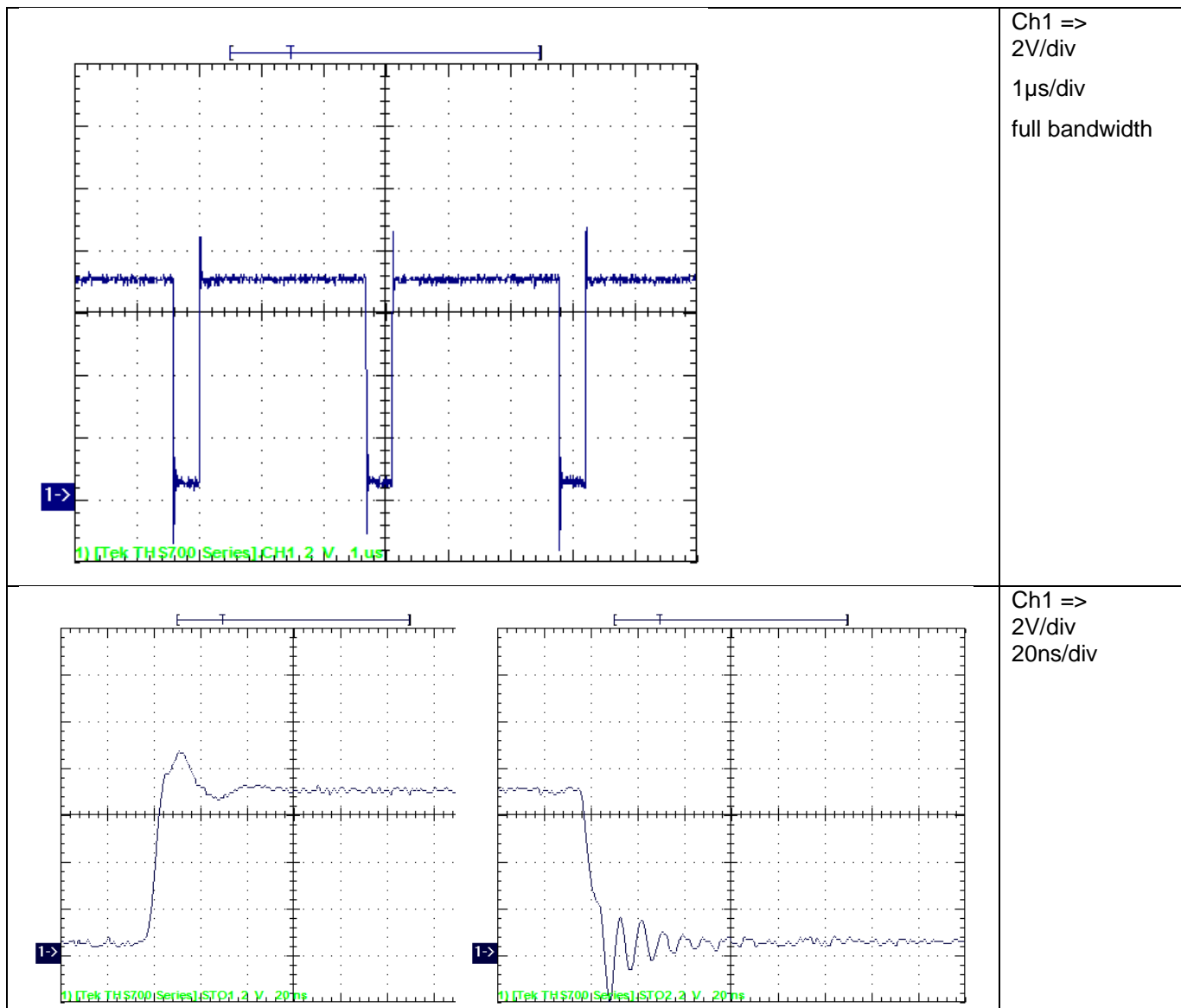The waveform of the voltage on switchnode is shown in Figure 10. Input voltage was set to 6V and output current to 2A.

	Ch1 => 2V/div
	1µs/div
	full bandwidth

Figure 10

The waveform of the voltage between gate and source of the MOSFET is shown in Figure 11.
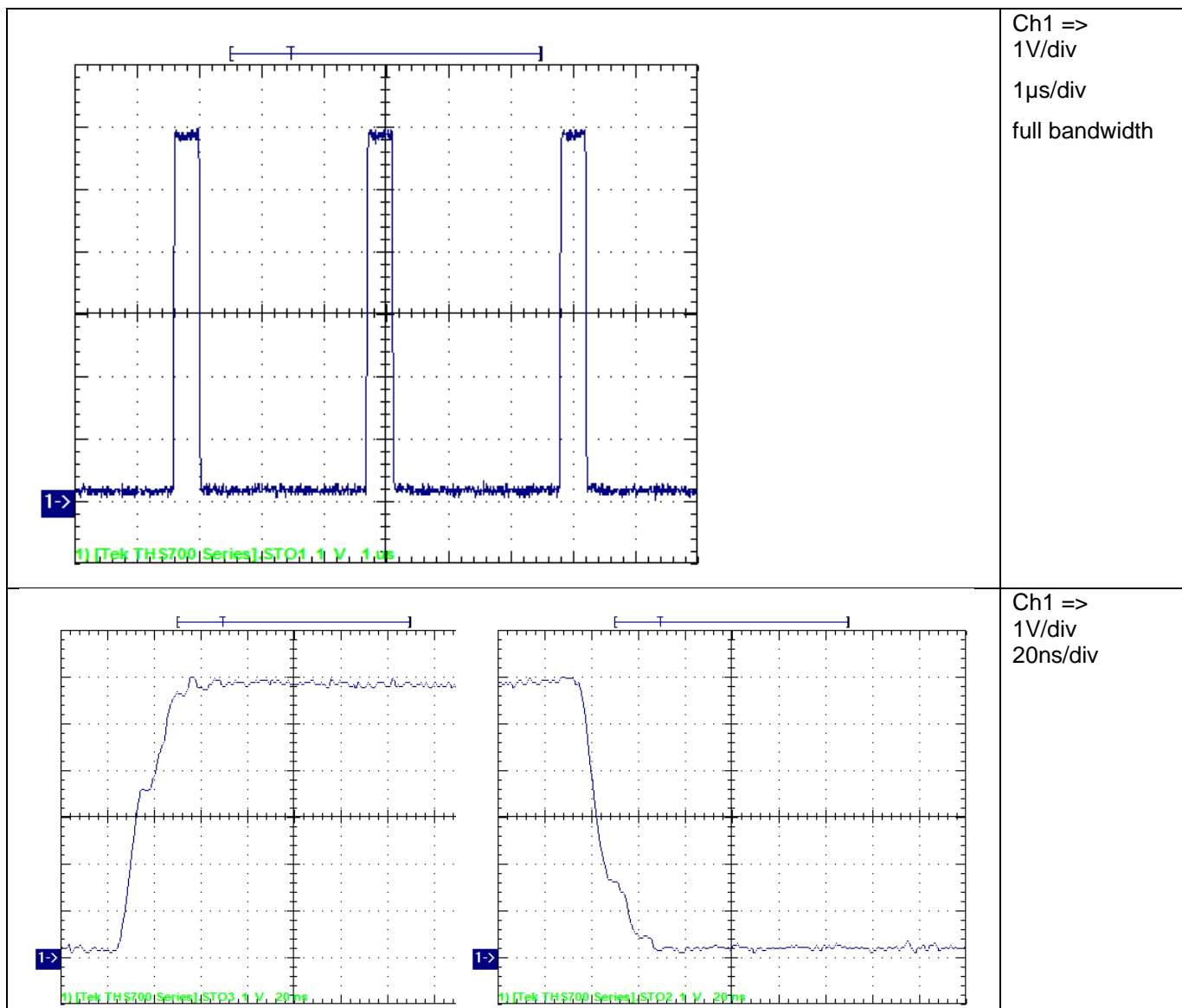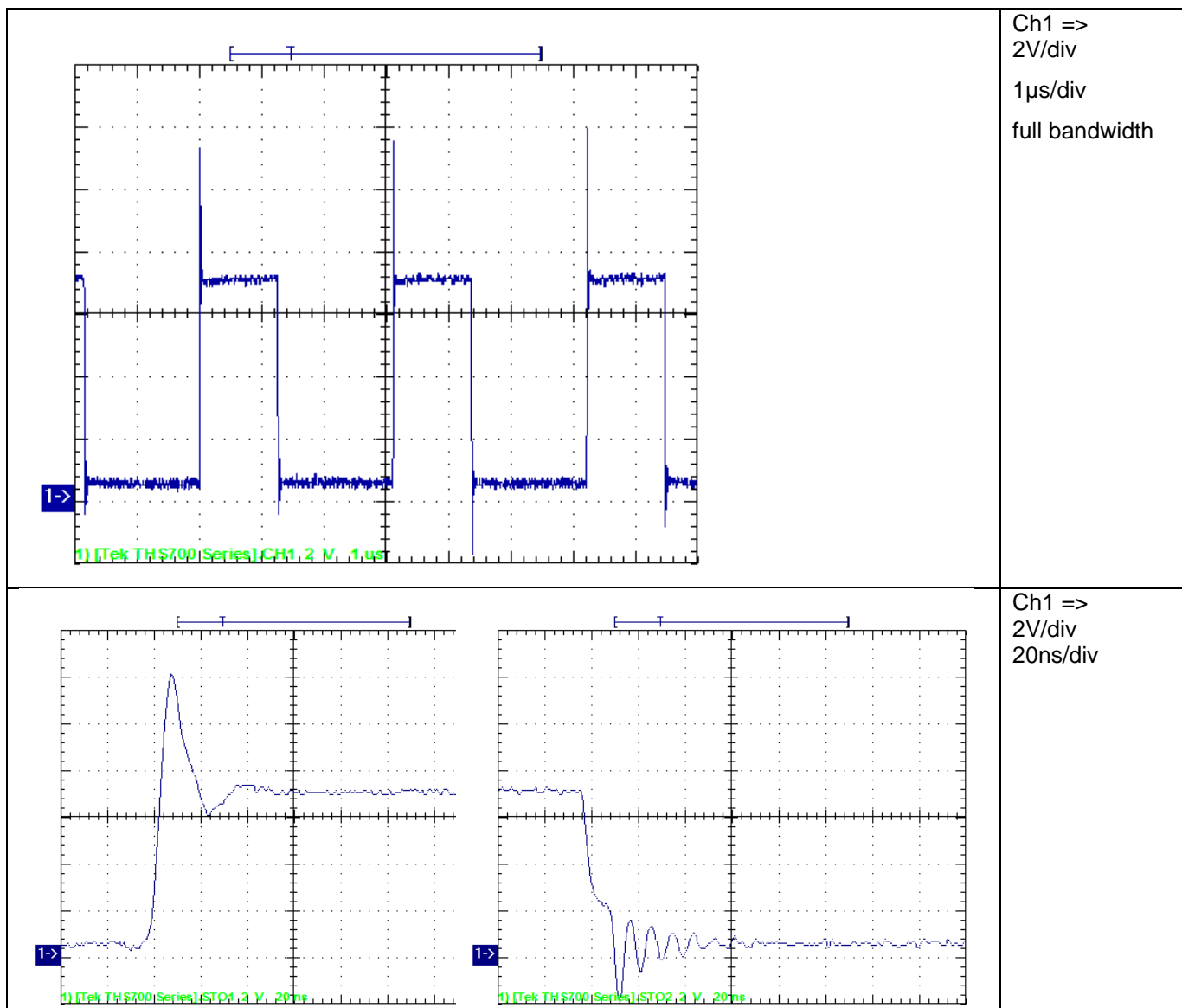Input voltage was set to 6V and output current to 2A.

Ch1 =>
1V/div

1µs/div

full bandwidth

Ch1 =>
1V/div
20ns/div

Figure 11

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The waveform of the voltage on switchnode is shown in Figure 12. Input voltage was set to 3V and output current to 2A.

	Ch1 => 2V/div
	1µs/div
	full bandwidth
	Ch1 => 2V/div 20ns/div

Figure 12

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The waveform of the voltage between gate and source of the MOSFET is shown in Figure 13.
Input voltage was set to 3V and output current to 2A.

	Ch1 => 1V/div 1µs/div full bandwidth
	Ch1 => 1V/div 20ns/div
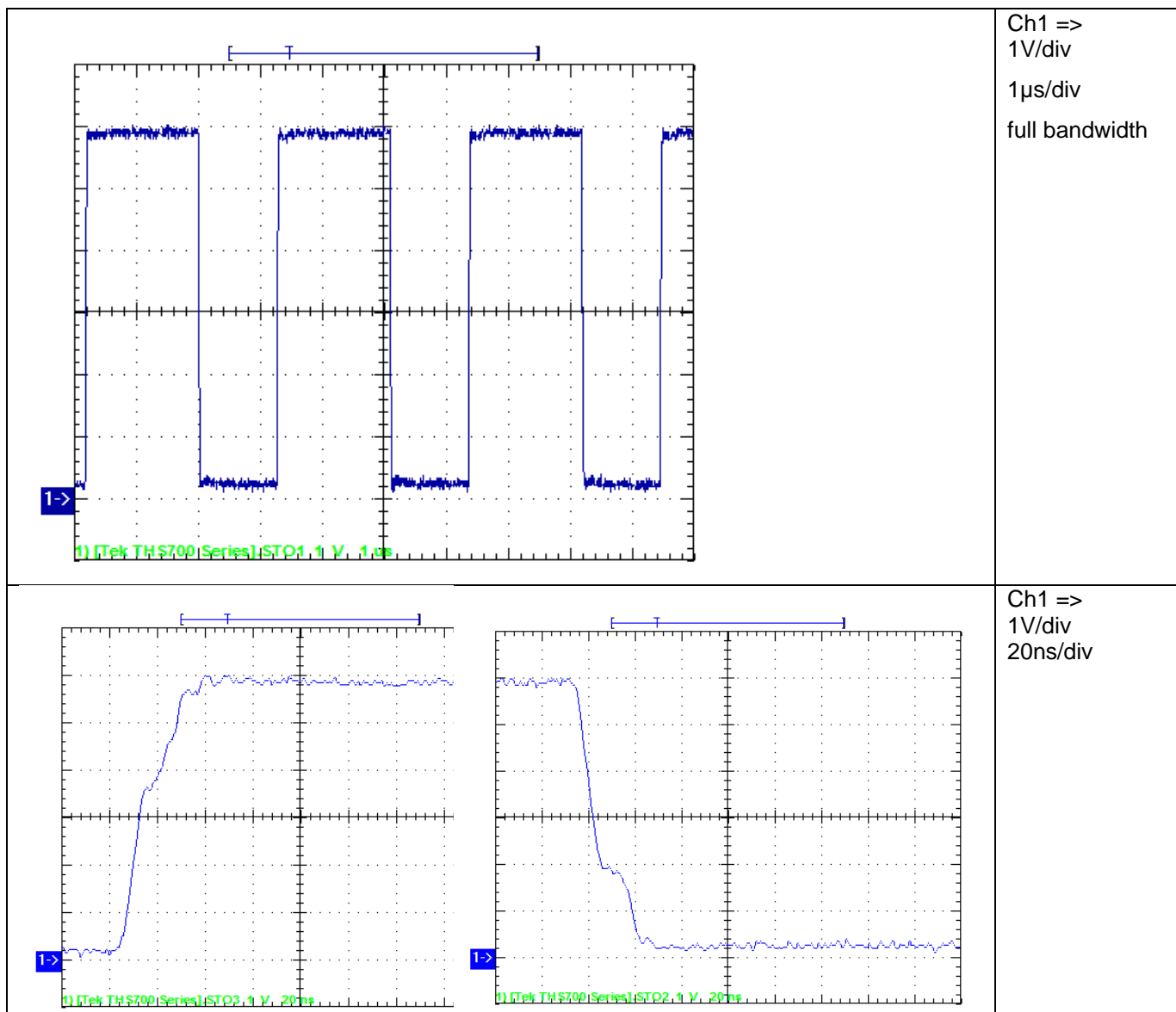
Figure 13

9   IR Image

The IR-Image is shown in Figure 14; min. Vin 3V, max. load 2Amps for 30mins
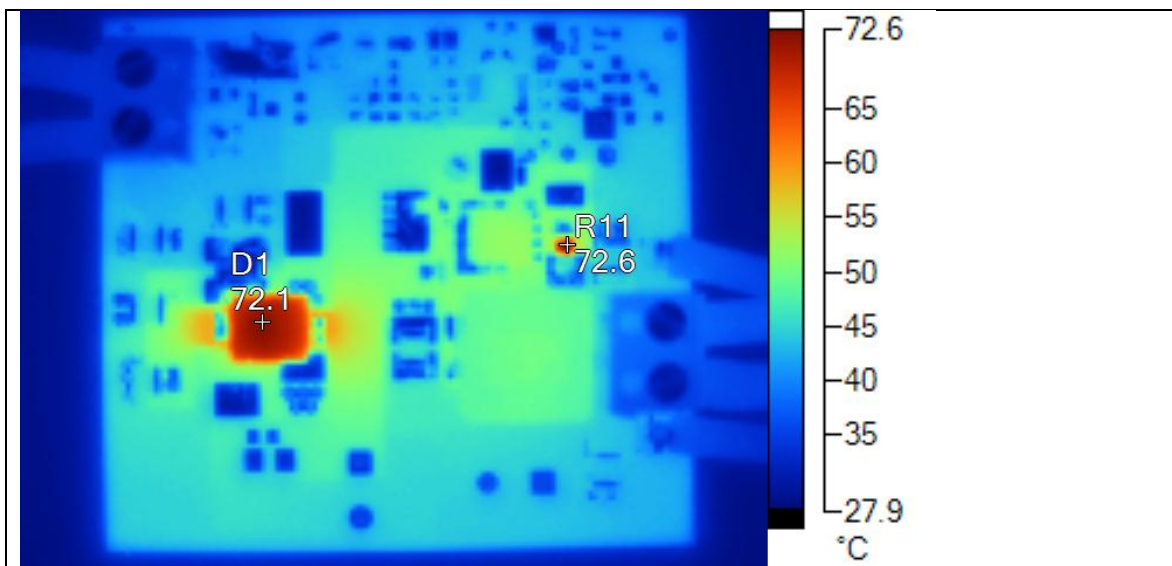
Figure 14

Name	Temperature
R11	72.6°C
D1	72.1°C

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