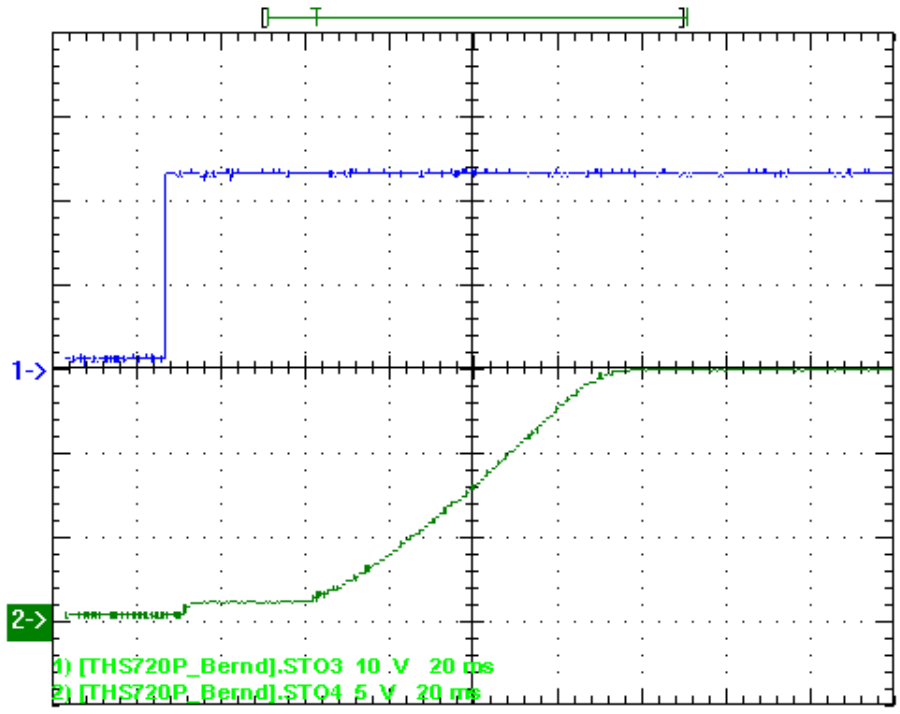
PMP4616RevC Test Results

1 Startup

The startup waveform is shown in the Figure 1. The input voltage was set at 24V, with 120mA load on the output.



Ch1=> input voltage 10V/div

CH3=> output voltage 5V/div

20ms/div

Figure 1

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2 Shutdown

The shutdown waveform is shown in the Figure 2 at 24V input voltage. With 120mA load applied at the output.

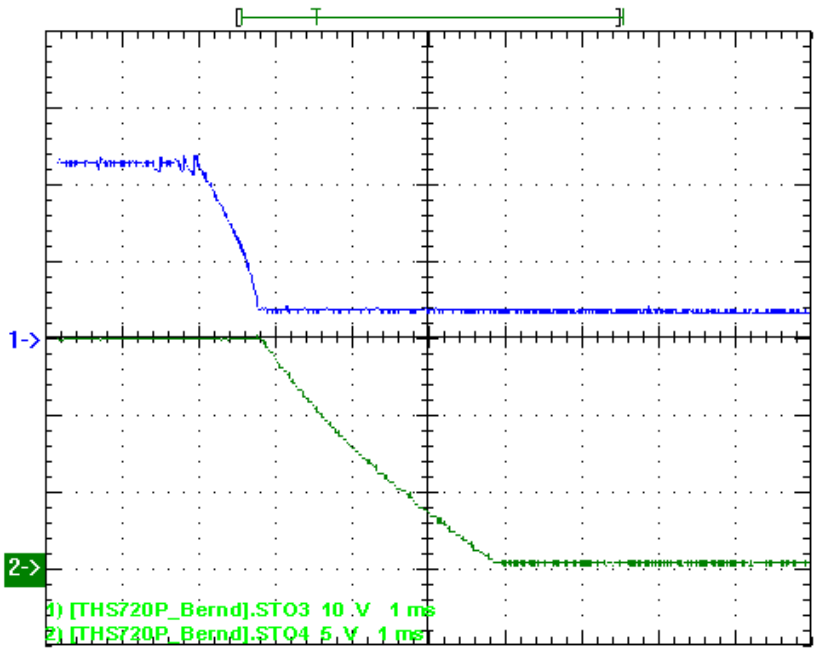


Figure 2

Ch1=> input voltage 10V/div

CH2=> output voltage 5V/div

1ms/div

The shutdown waveform is shown in the Figure 3 at 24V input voltage. With no external load applied at the output.

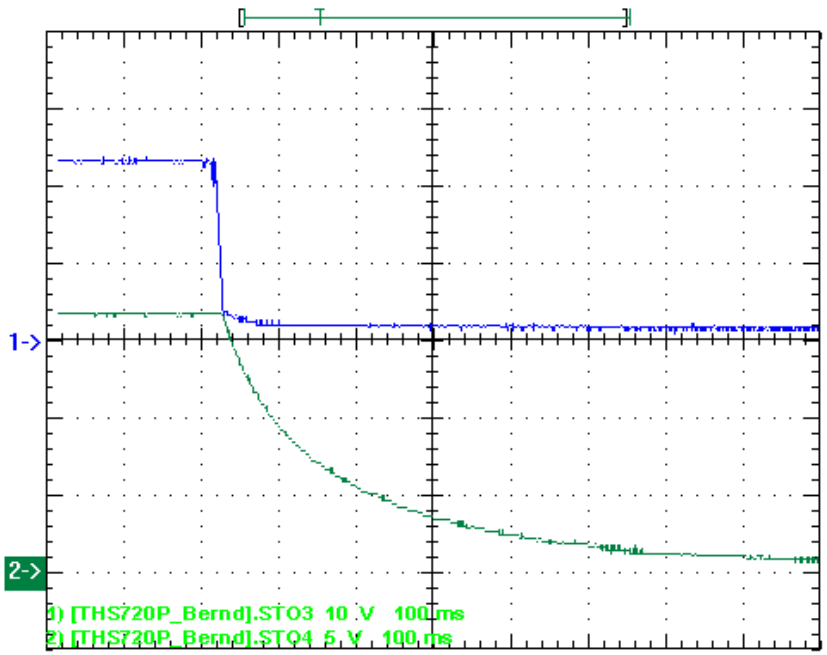


Figure 3

Ch1=> input voltage 10V/div

CH2=> output voltage 5V/div

100ms/div

3 Efficiency

These measurements were performed without R100.
The efficiency at different input voltages is shown in the Figure 4 below.

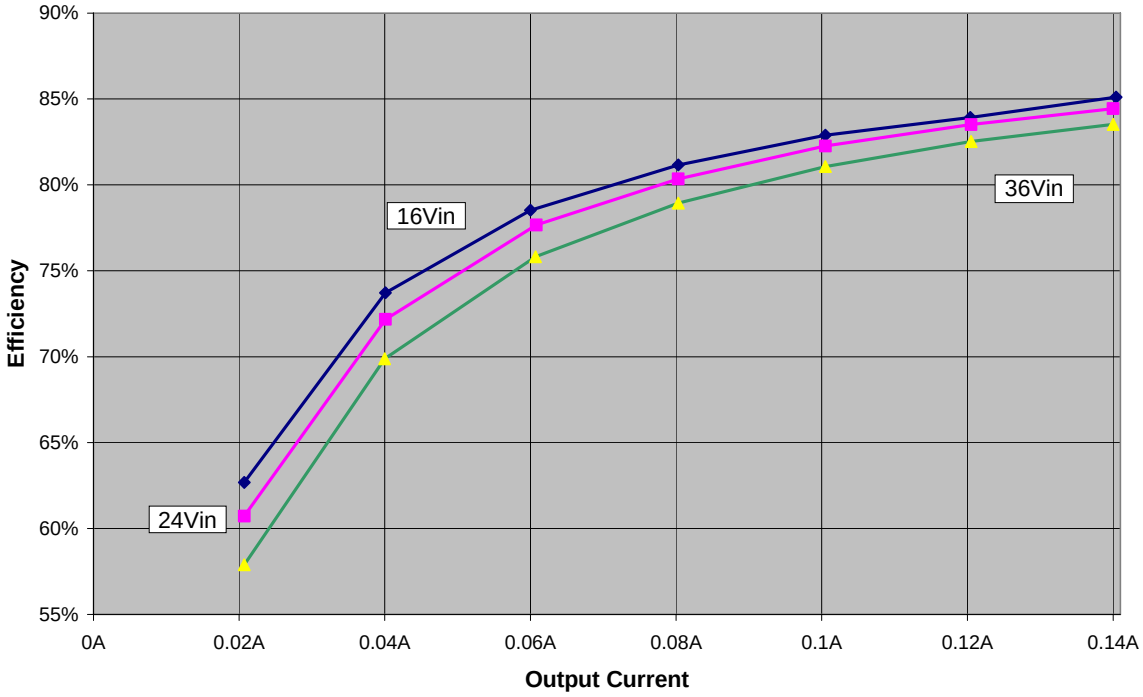


Figure 4

The efficiency dependant at the input voltage is shown in Figure 5.

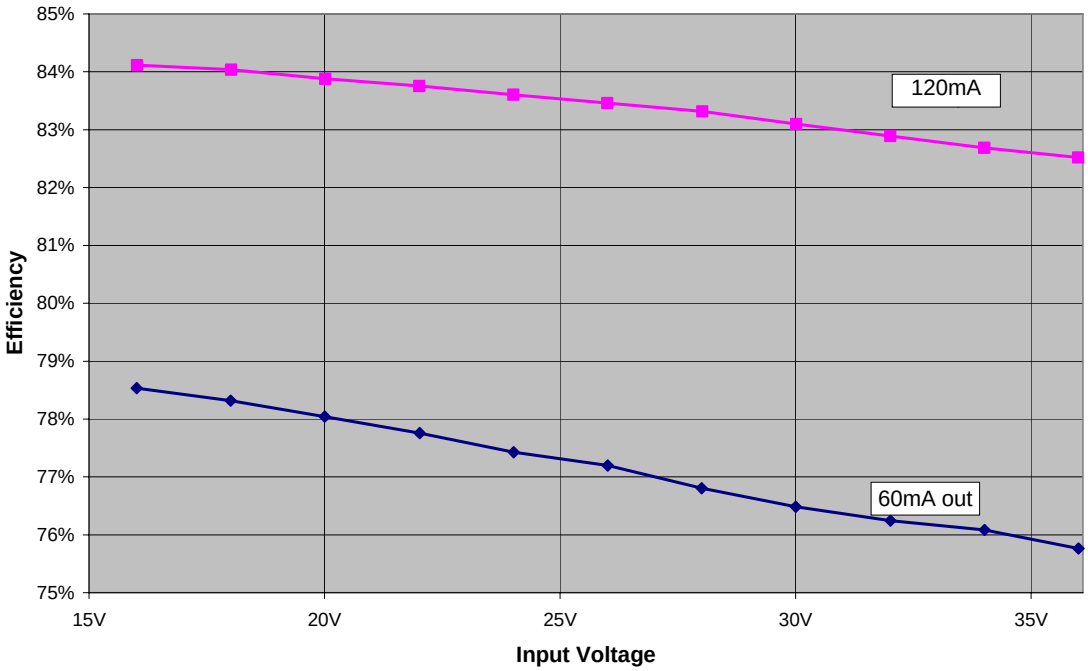


Figure 5

4 Load Regulation

These measurements were performed without R100.
The load regulation of the output is shown in the Figure 6 below. The input voltages were 16V, 24V and 36V.

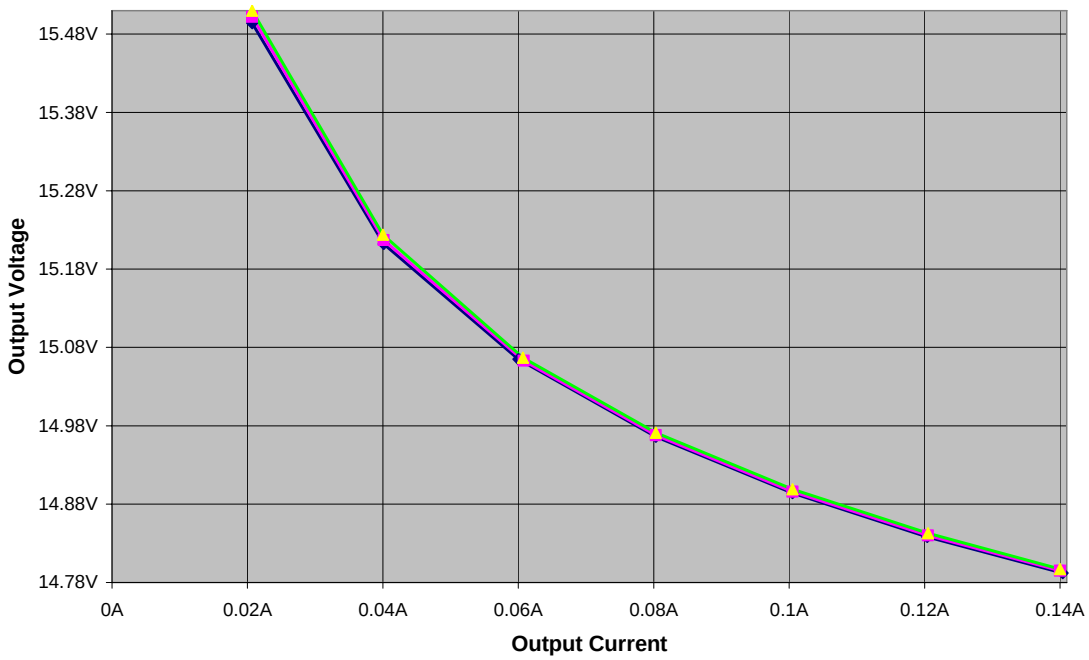


Figure 6

5 Line Regulation

These measurements were performed without R100.
The effects of variation from the input voltage to the output voltage are shown in Figure 7. The results for 120mA output current are show on the right y-axis.

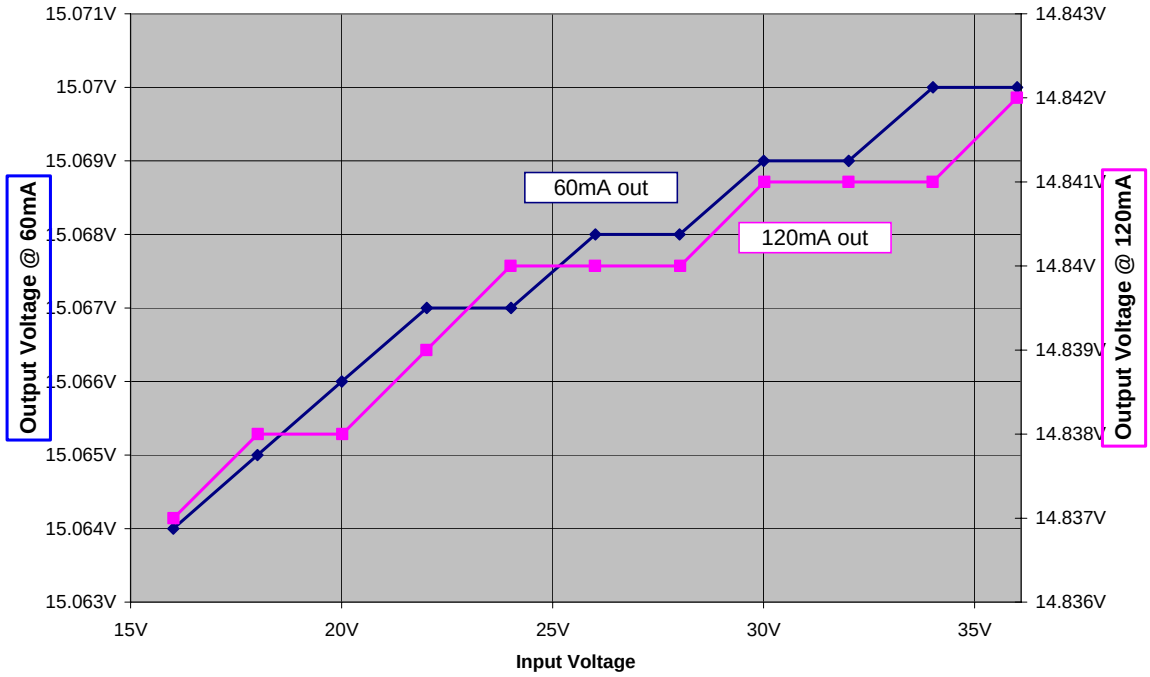


Figure 7

6 Ripple Voltage

The output ripple voltage is shown in Figure 8. The image was taken with a 120mA load at the output.

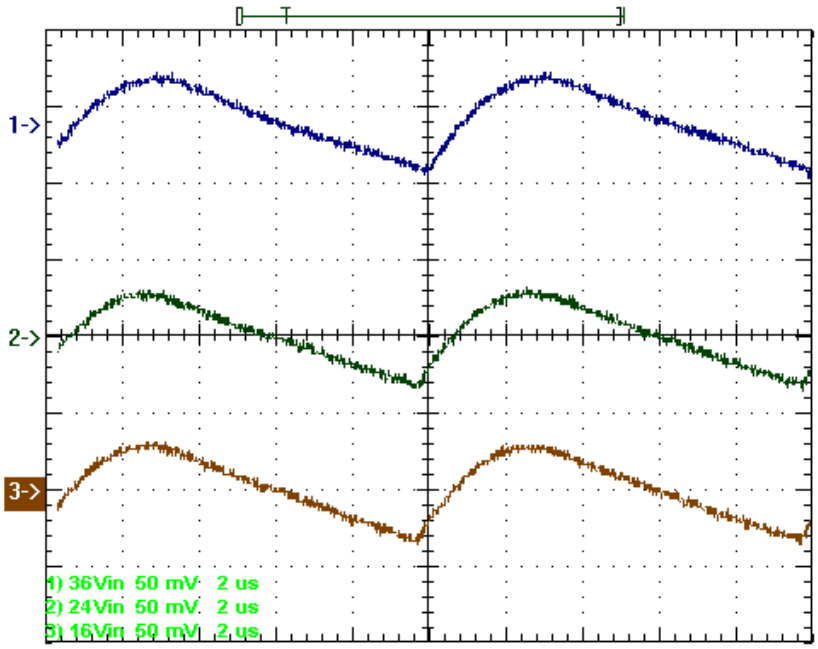


Figure 8

Ch1 =>output voltage@36Vin 50mV/Div

Ch2 =>output voltage@24Vin 50mV/Div

Ch3 =>output voltage@16Vin 50mV/Div

20MHz bandwidth

2µs/div

The input ripple voltage at different output currents are shown in Figure 9.

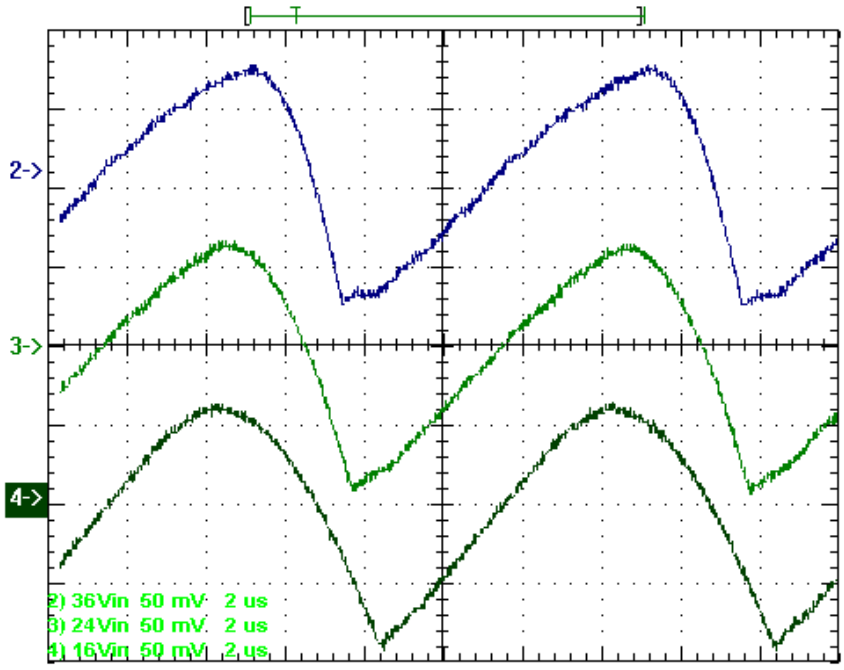


Figure 9

Ch1 =>input voltage@36Vin

Ch2 =>input voltage@24Vin

Ch3 =>input voltage@16Vin

50mV/Div

20MHz bandwidth

2µs/div

7 Control Loop Frequency Response

Figure 10 shows the loop response. The electronic load was set to 120mA and the input voltage was set to 36V.

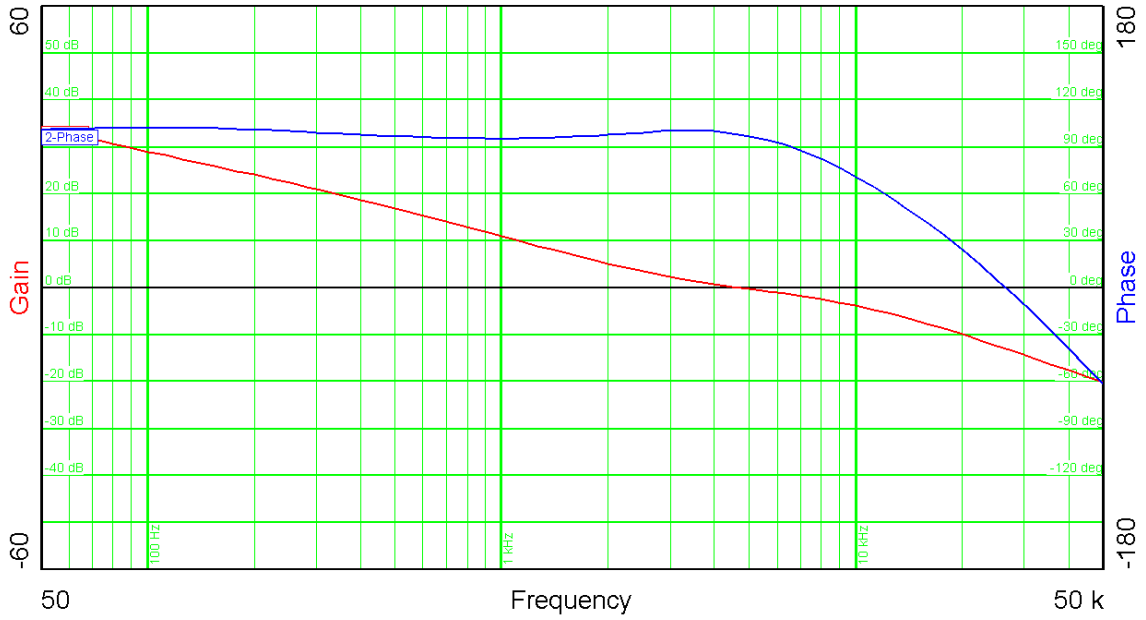


Figure 10

Table 1 summarizes the results from Figure 10

Bandwidth (kHz)	4.8
Phase margin	97.6°
slope (20dB/decade)	-0.502
gain margin (dB)	-12.93
slope (20dB/decade)	-1.3
freq (kHz)	26.5

Table 1

8 Load Transients

The Figure 11 shows the response to load transients. The load is switching from 60mA to 120mA.with 40Hz frequency. The input voltage was set to 36V

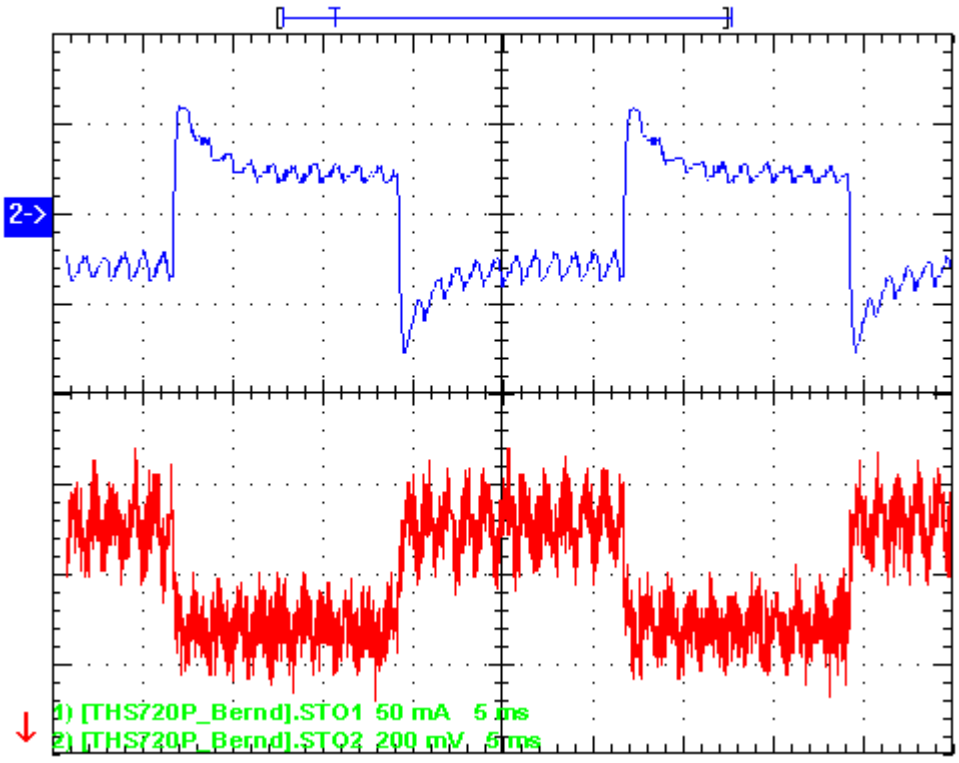


Figure 11

Ch2 => output voltage 200mV/div

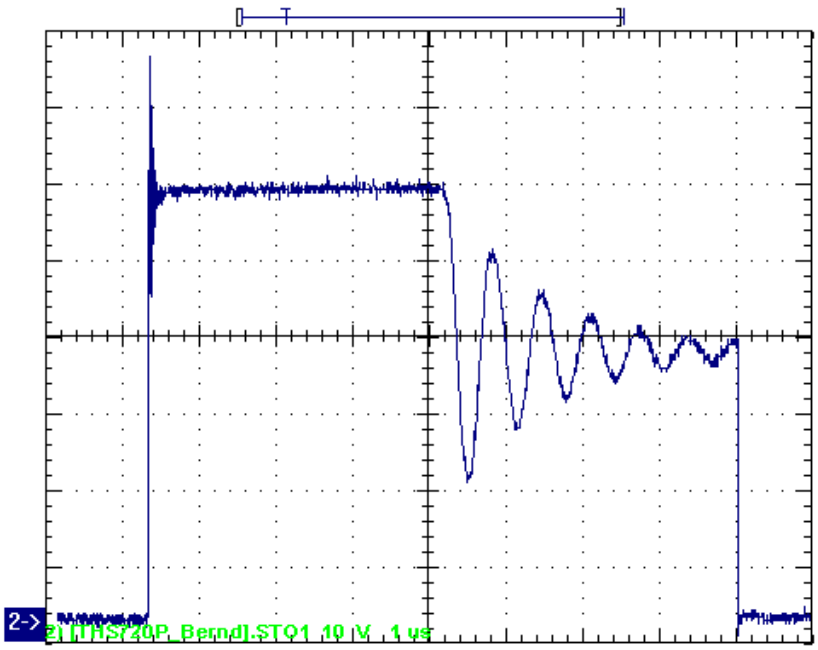
Ch1 => output current 50mA/div

20Mhz bandwidth setting

5ms/div

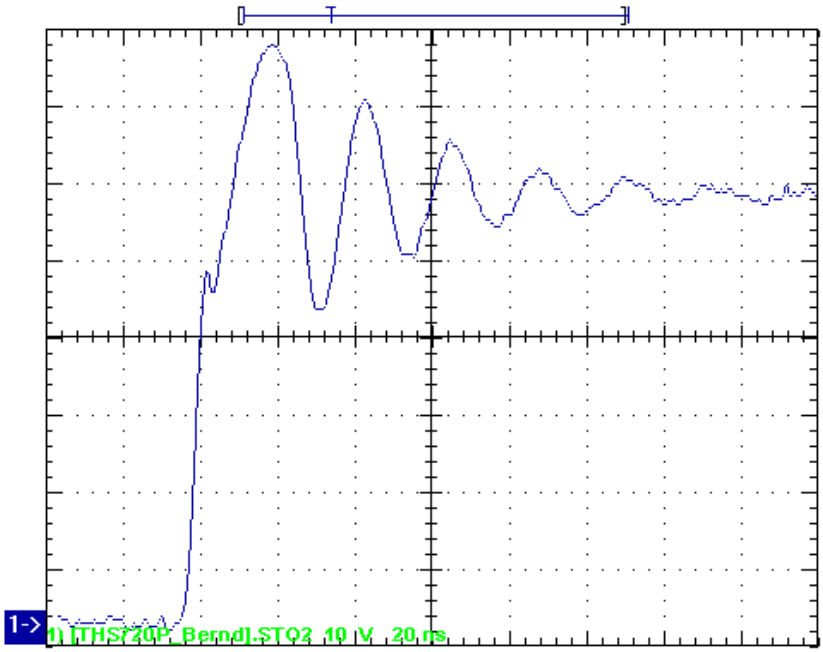
9 Switch Node Waveform

With a load of 120mA results in the waveforms shown in Figure 12 and Figure 13. 36V were applied to the input.



Ch3 => switchnode
10V/div
1µs/div
full bandwidth

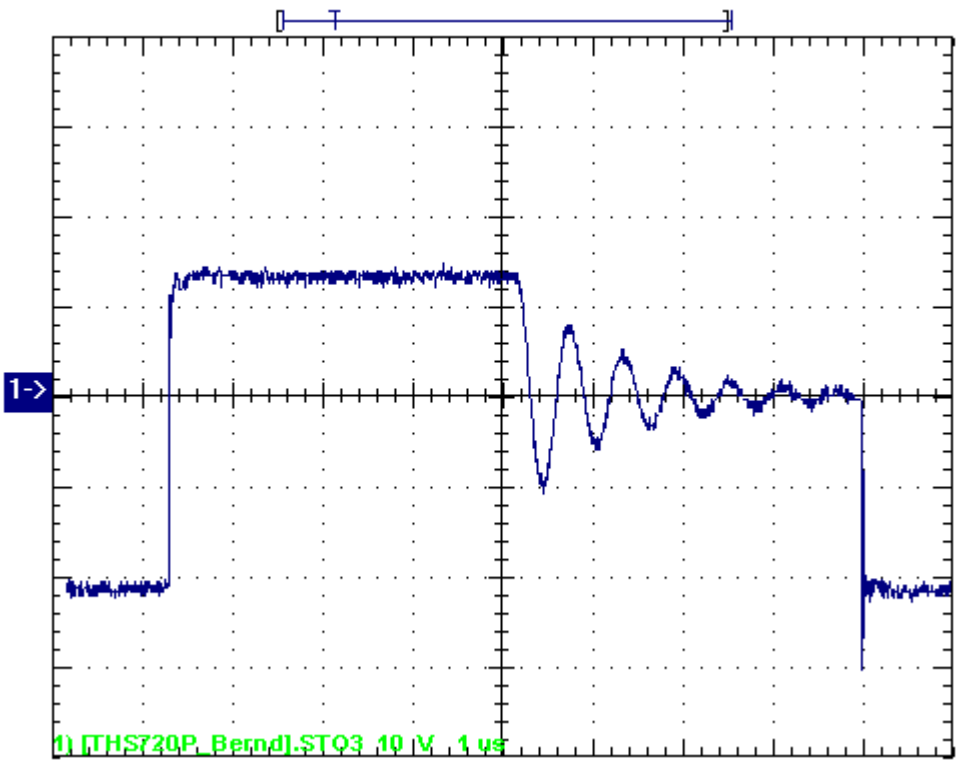
Figure 12



Ch1 =>
10V/div
20ns/div
full bandwidth

Figure 13

Figure 14 shows the swichnode waveform of the secondary side with the same settings.



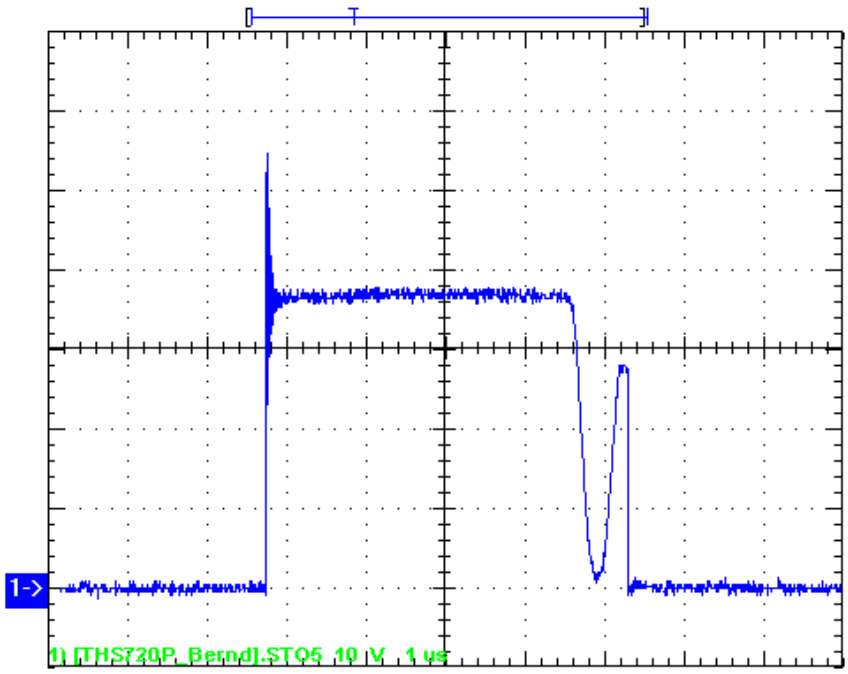
Ch3 => switchnode 2nd
10V/div

1µs/div

full bandwidth

Figure 14

With a load of 120mA results in the waveforms shown in Figure 15 and Figure 16. 16V were applied to the input.

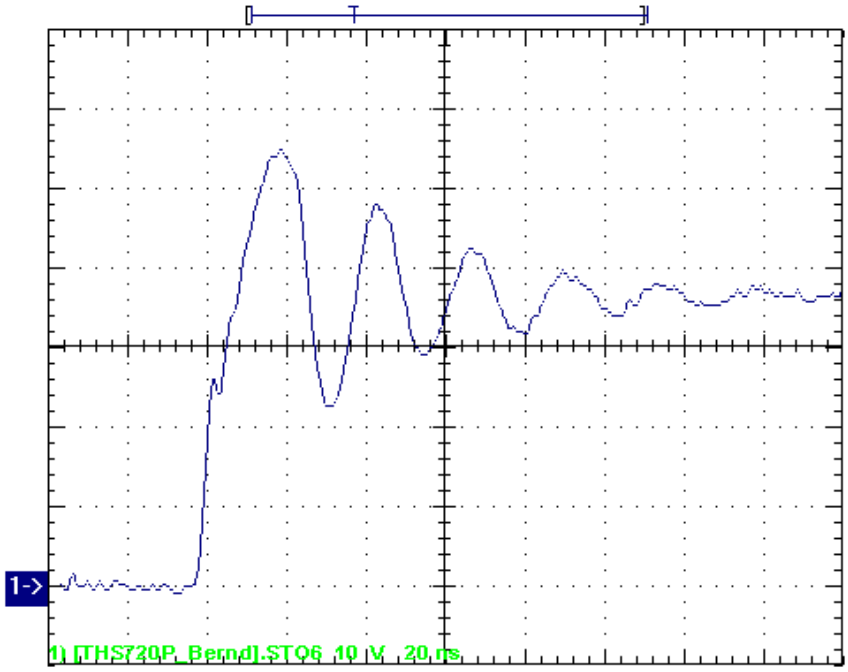


Ch1 => SW
10V/div

1µs/div

full bandwidth

Figure 15



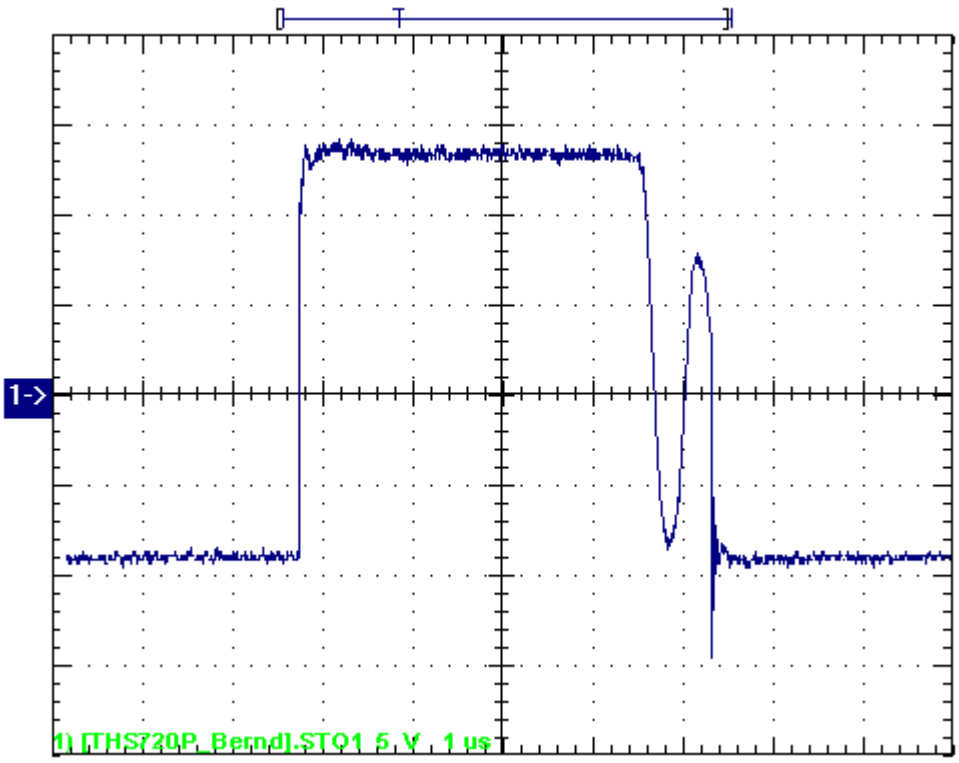
Ch1 => switchnode
10V/div

20ns/div

full bandwidth

Figure 16

Figure 17 shows the swichnode waveform of the secondary side with the same settings as above.



Ch3 => switchnode 2nd
5V/div

1µs/div

full bandwidth

Figure 17

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