

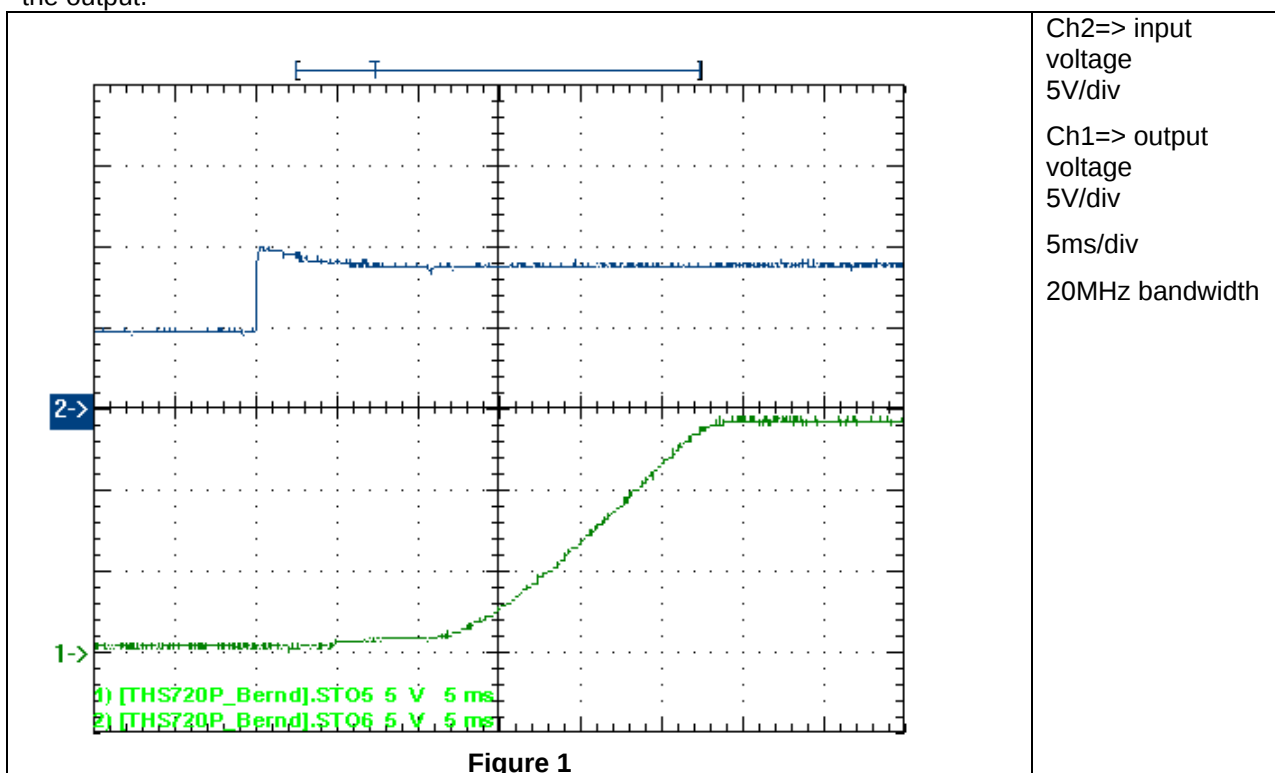
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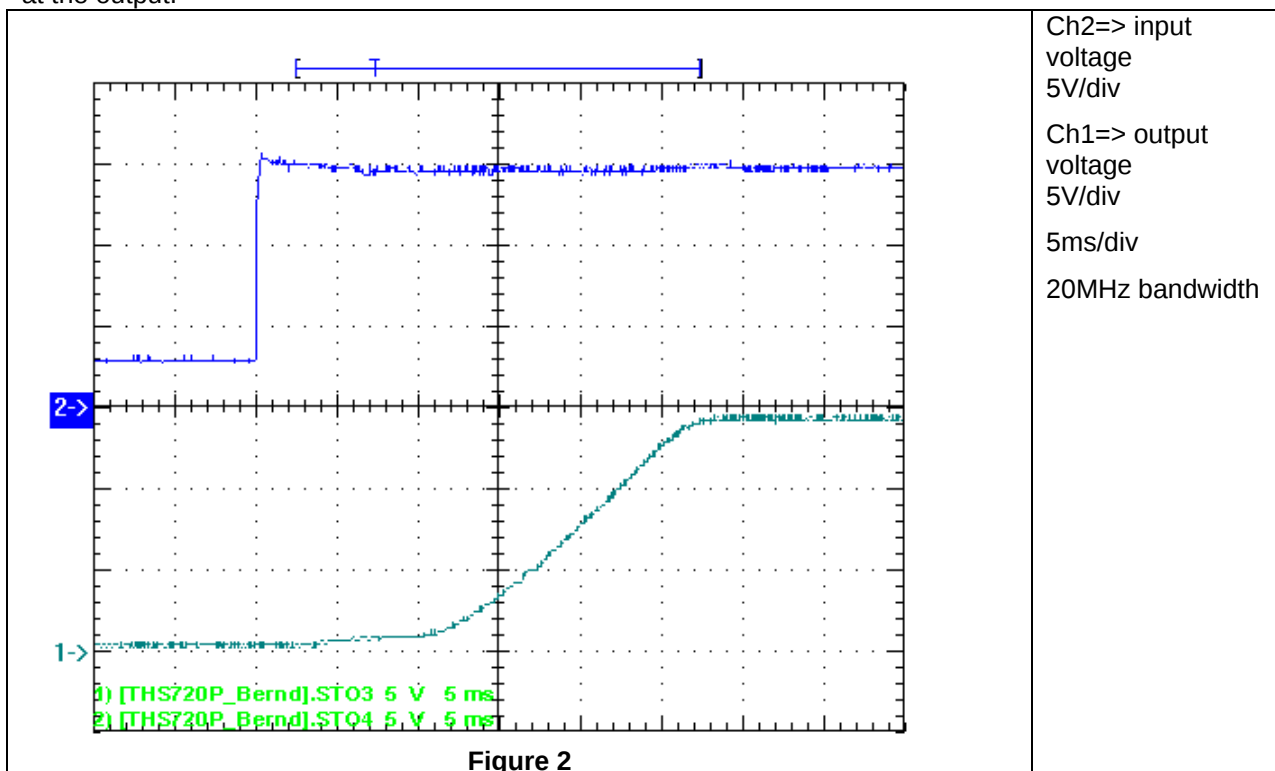
ON threshold is 7.99V, OFF threshold is 6.76V (tested at 0.2A)

1 Startup

The startup waveform is shown in the Figure 1. The input voltage was set to 9V, with 1.5A load at the output.

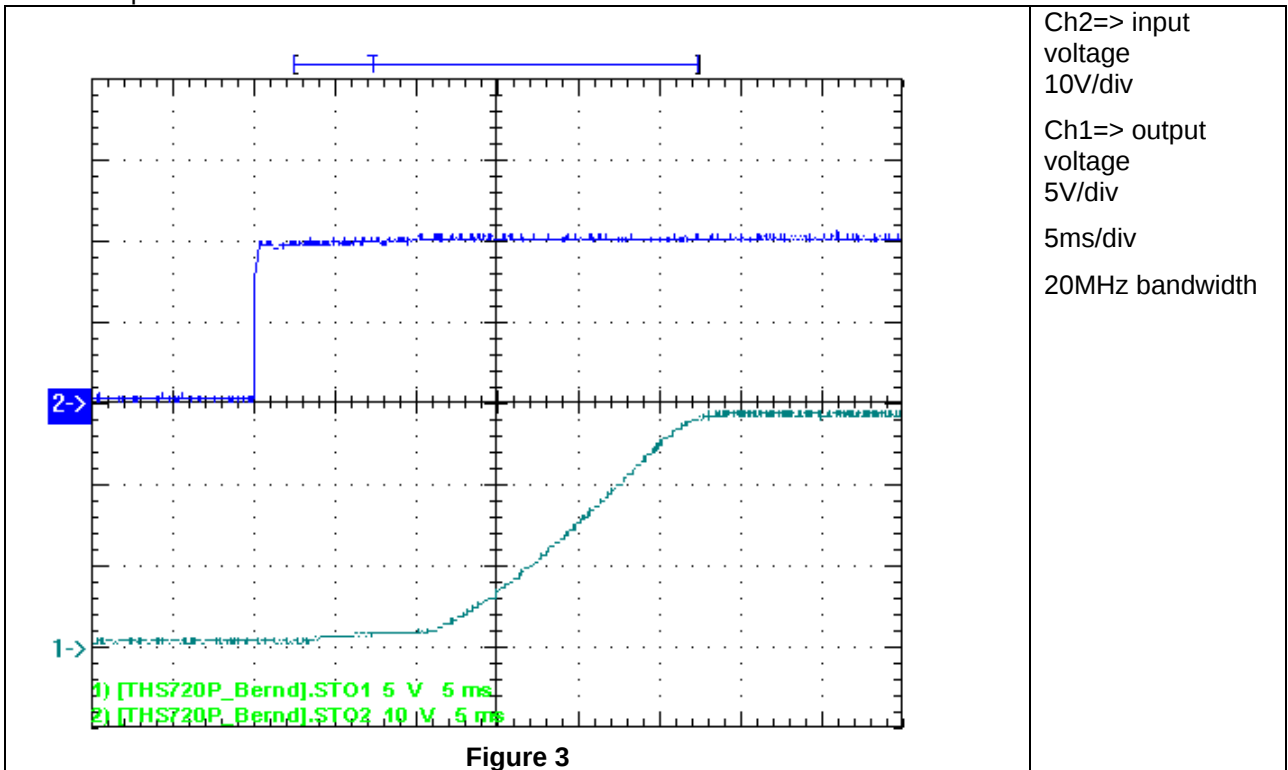


The startup waveform is shown in the Figure 2. The input voltage was set to 15V, with 1.5A load at the output.



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The startup waveform is shown in the Figure 3. The input voltage was set to 20V, with 1.5A load at the output.



2 Shutdown

The shutdown waveform is shown in the Figure 4 to 9V input voltage. With 1.5A load applied at the output.

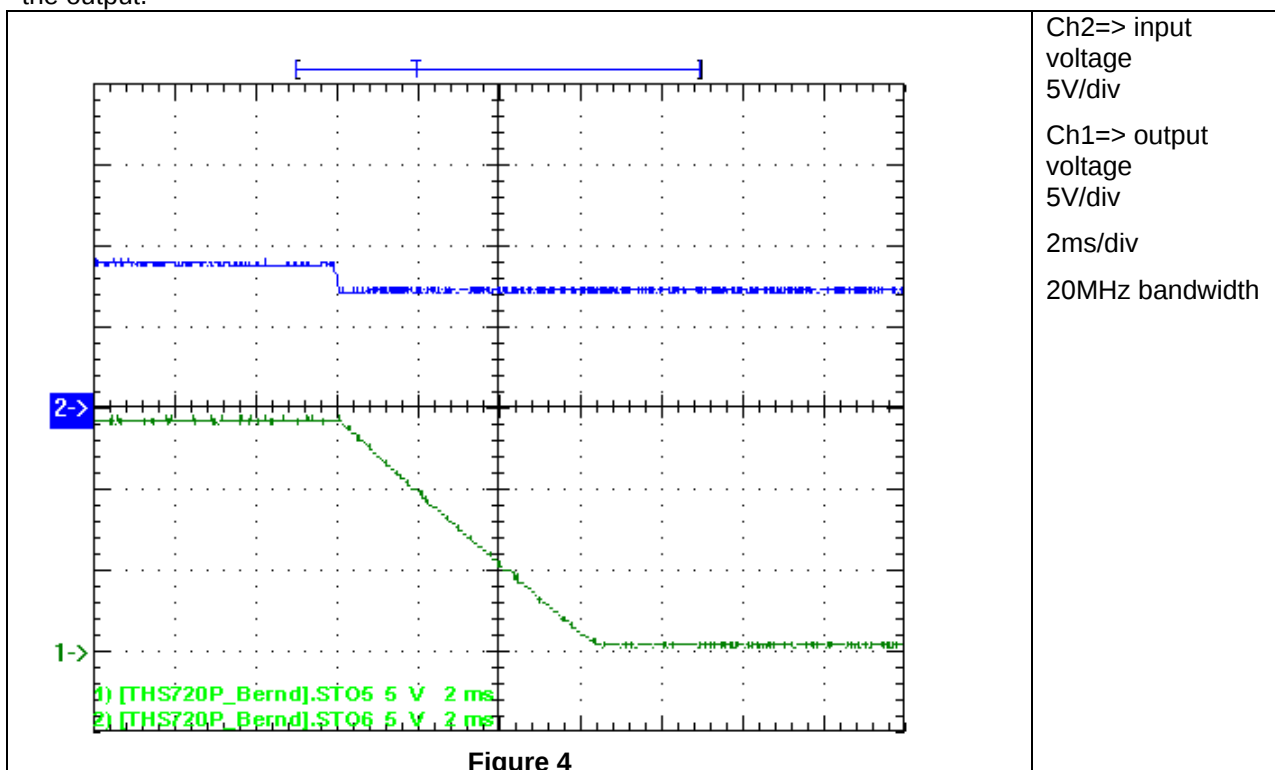


Figure 4

The shutdown waveform is shown in the Figure 5 to 12V input voltage. With 1.5A load applied at the output.

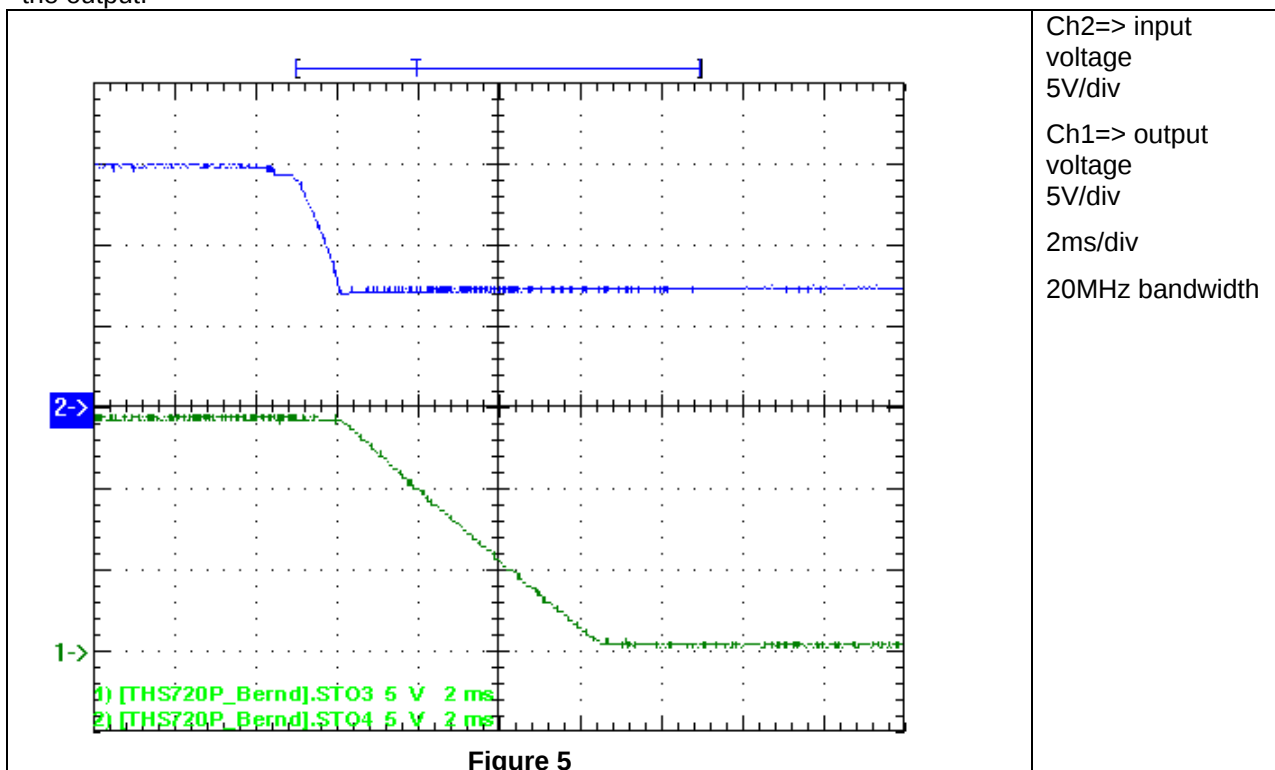
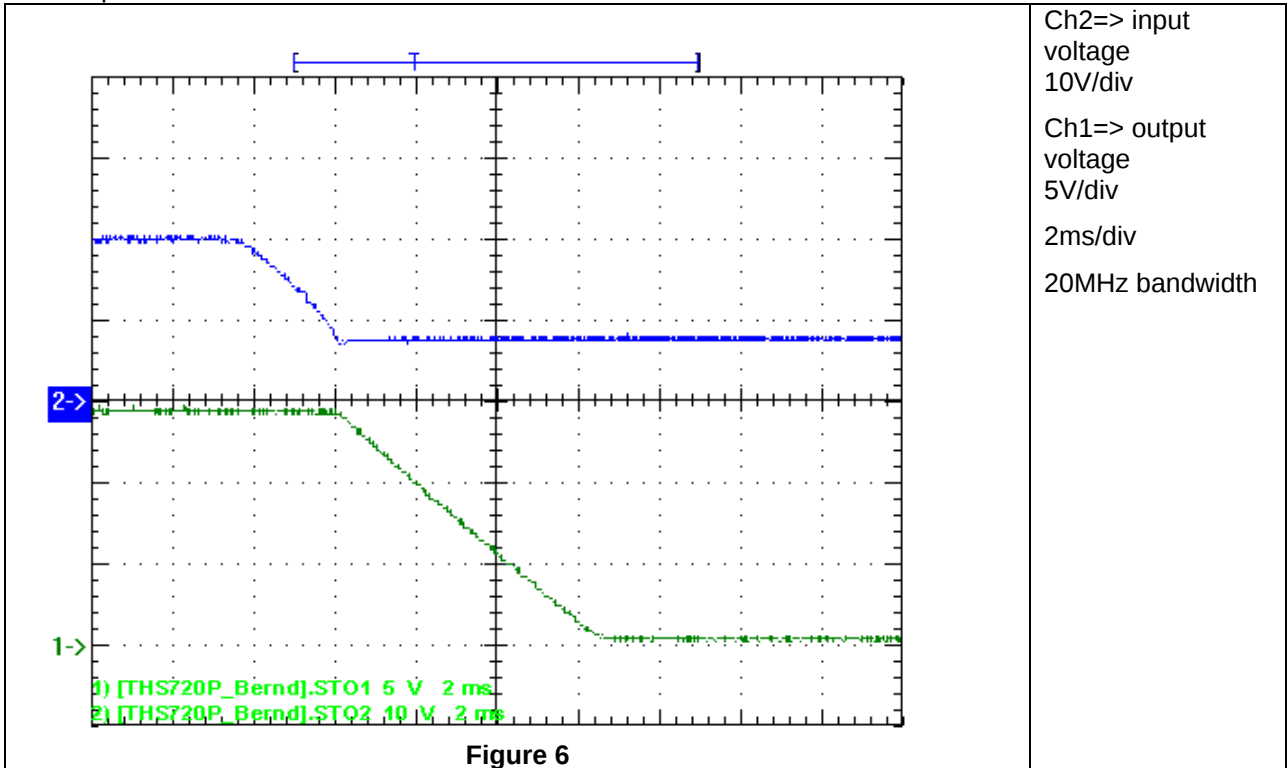


Figure 5

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The shutdown waveform is shown in the Figure 6 to 18V input voltage. With 1.5A load applied at the output.



3 Efficiency

The efficiency is shown in the Figure 7 below. The input voltage was adjusted to 9V, 15V and 20V

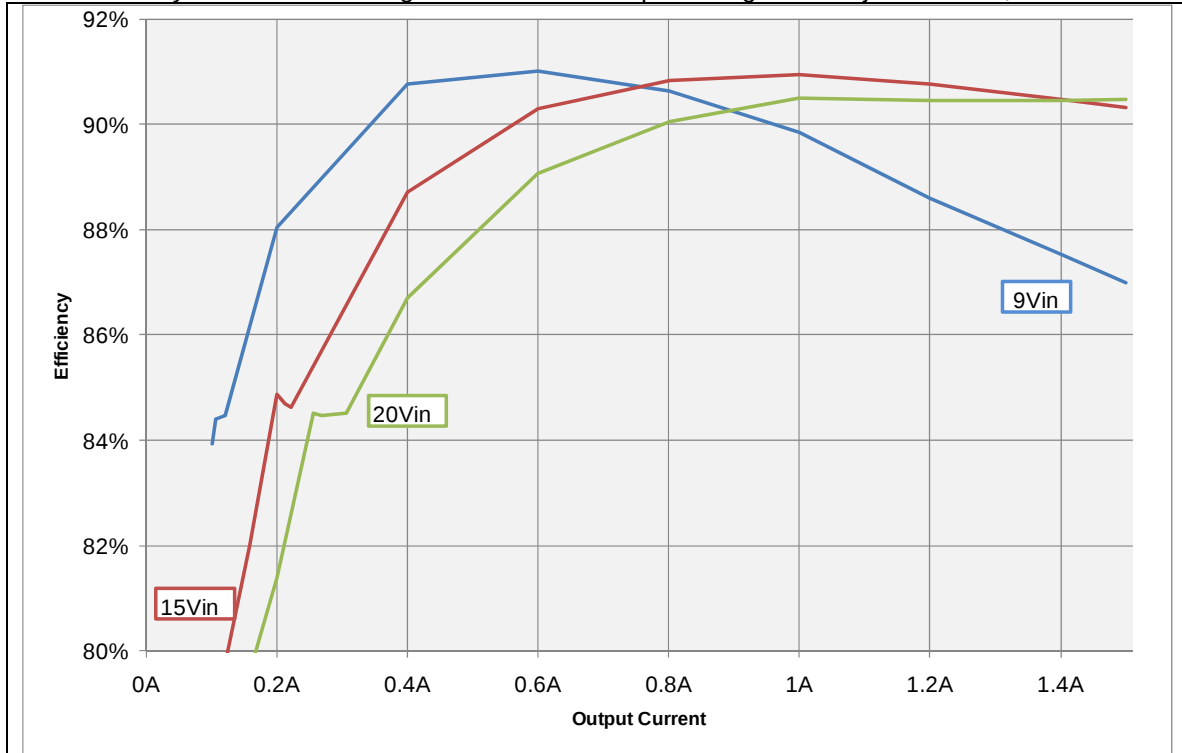


Figure 7

4 Load regulation

The load regulation for 9V, 15V and 20V input voltage is shown in Figure 8.

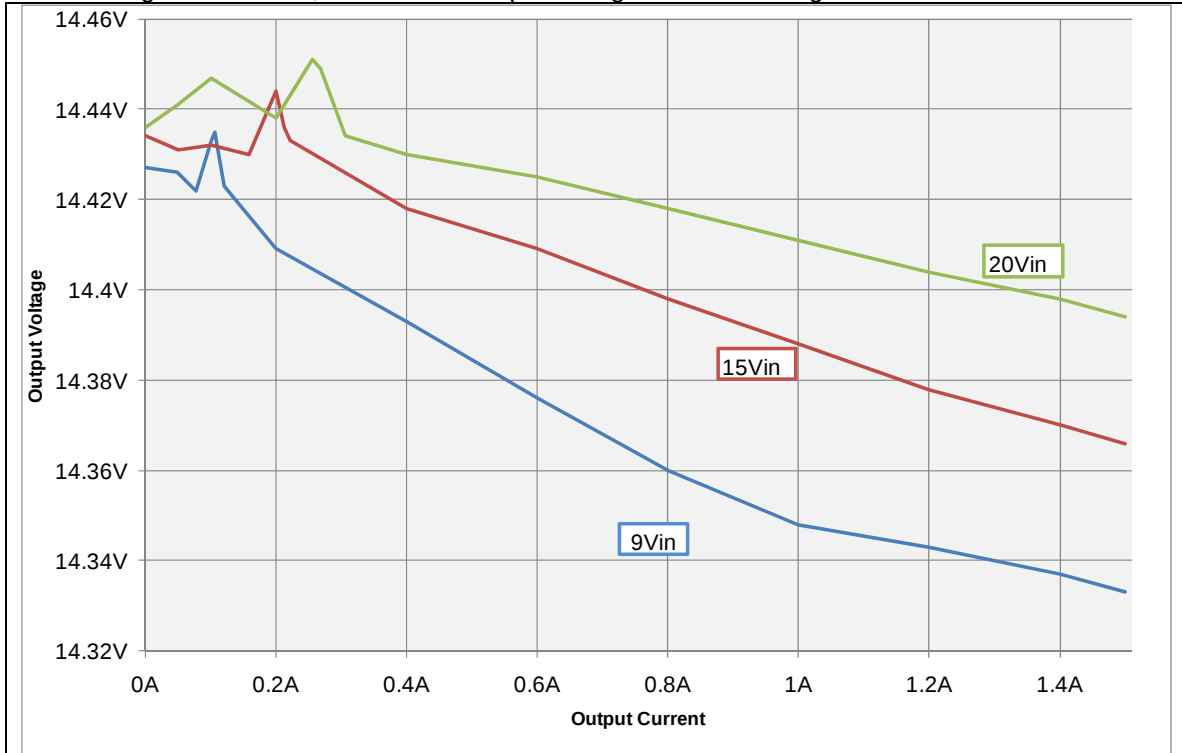


Figure 8

5 Line Regulation

The line regulation at 1.5A output current is shown in Figure 9

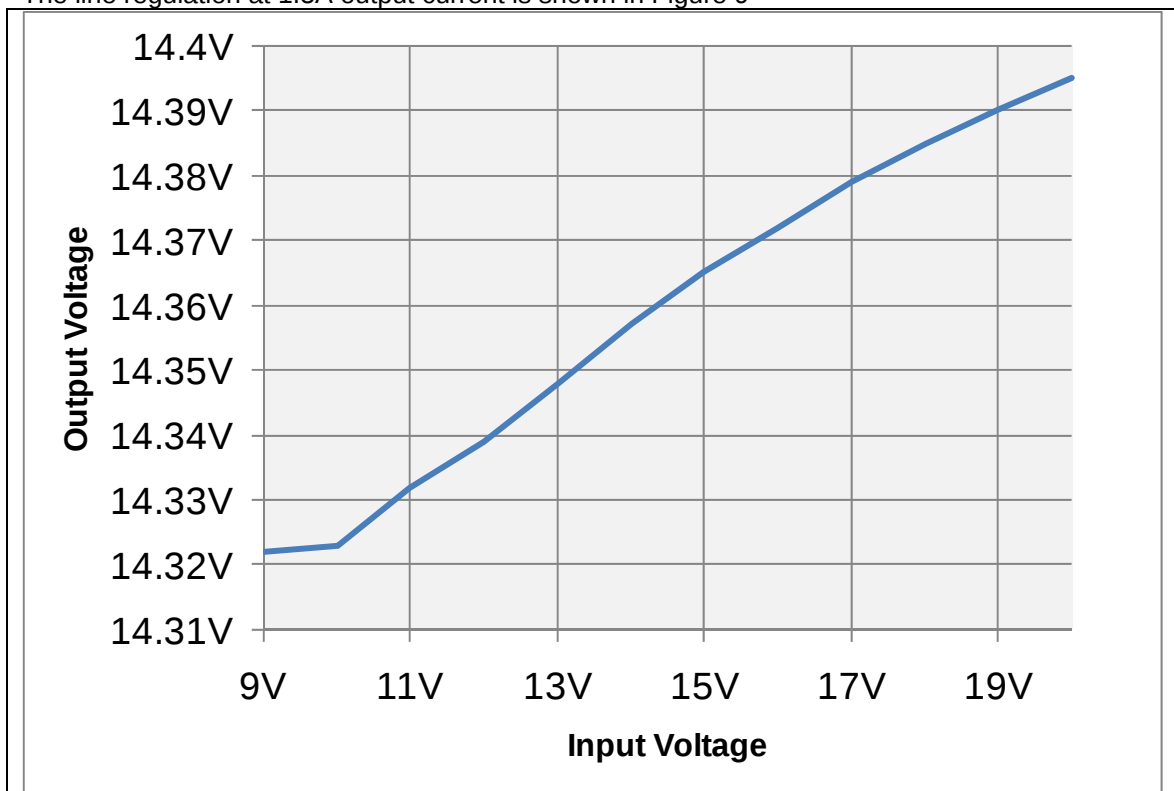


Figure 9

With the same measurement setup the efficiencies are shown in Figure 10.

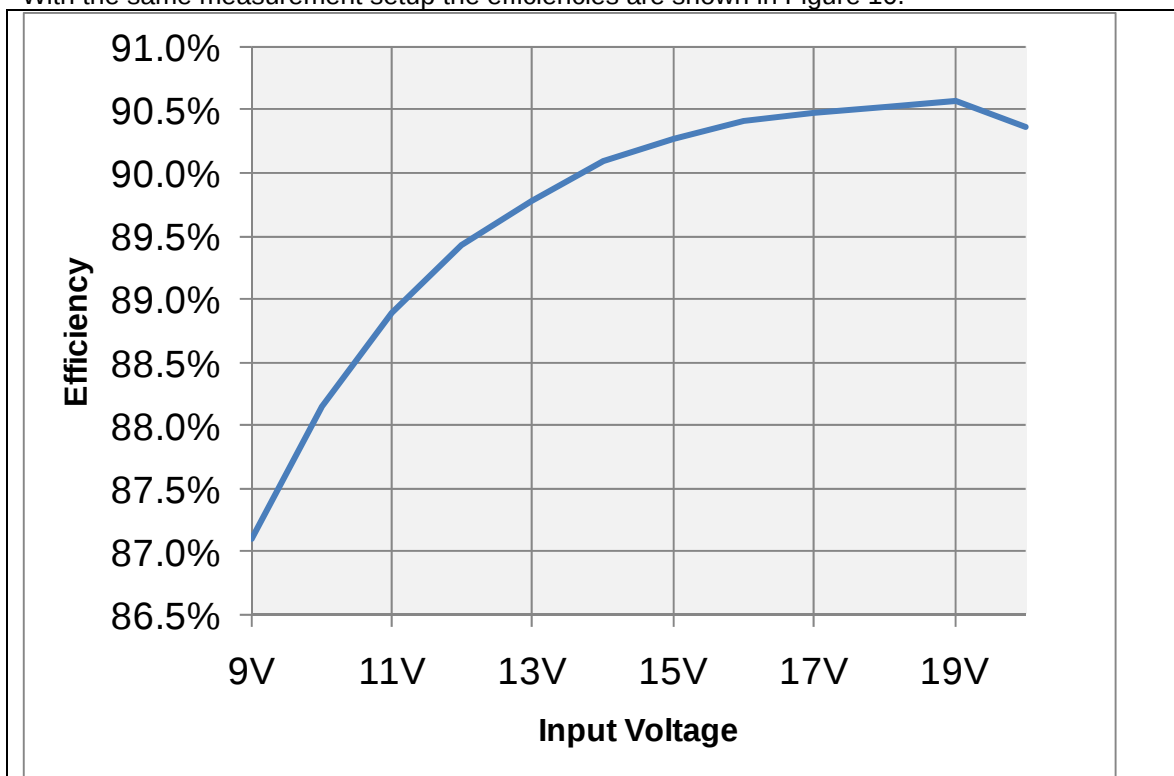


Figure 10

6 Control Loop Frequency Response

Figure 11 shows the loop response. 1.5A-load applied. The input voltage was set to 9V.

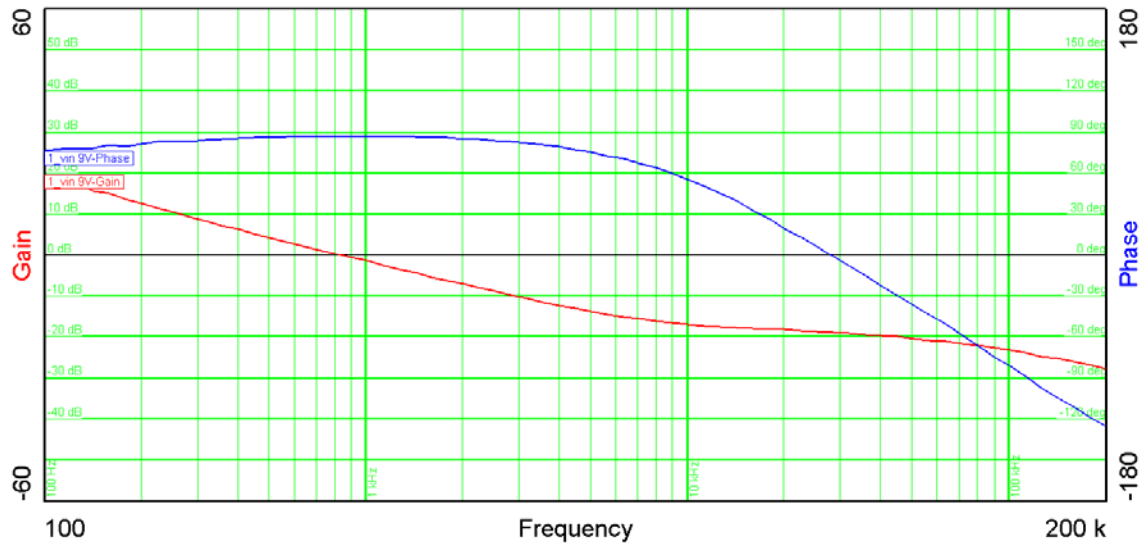


Figure 11

Figure 12 shows the loop response. 1.5A-load applied. The input voltage was set to 20V.

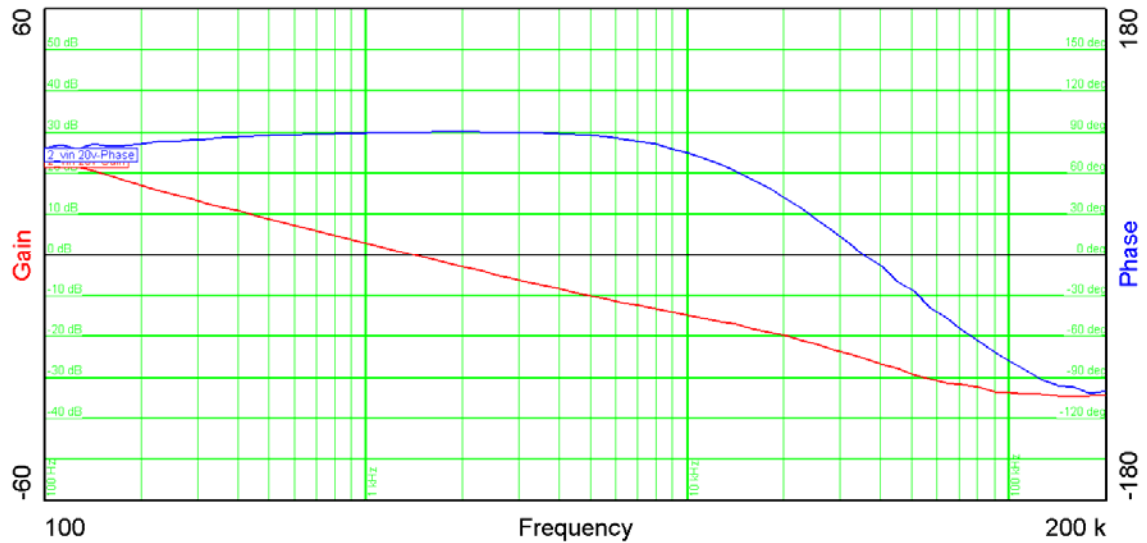


Figure 12

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Table 1 summarizes the results from Figure 11, and Figure 12

V_{in}	9V	20V
Bandwidth (kHz)	0.833	1.41
Phase margin	87°	90°
slope (20dB/decade)	-0.99	-0.969
gain margin (dB)	-18.9	-25.4
slope (20dB/decade)	-0.231	-1.28
freq (kHz)	28	35.3

Table 1

7 Switch Node Waveform

7.1 Switchnode primary

With 1.5A load results in the waveforms shown in Figure 13 and Figure 14. 9V were applied to the input.

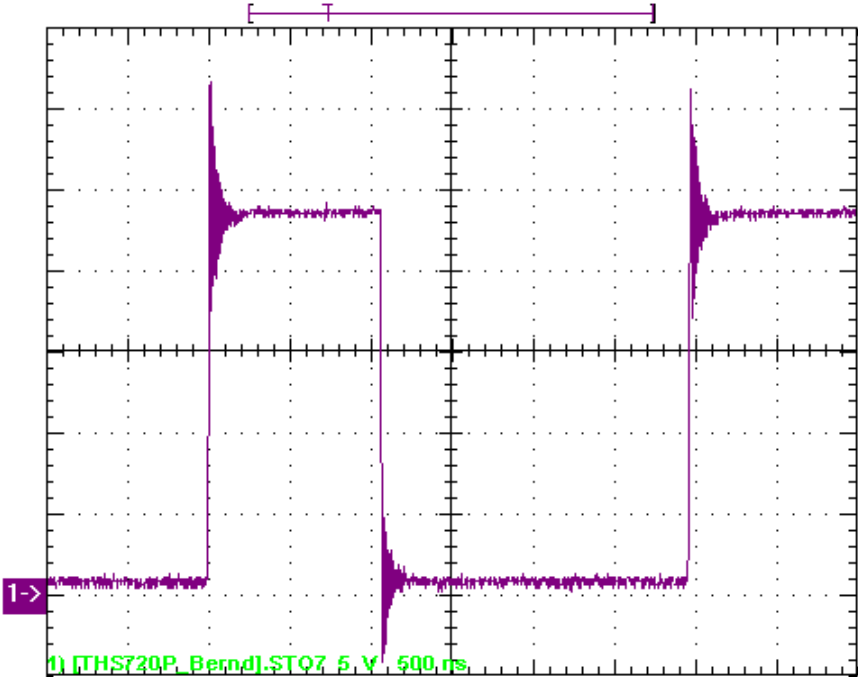
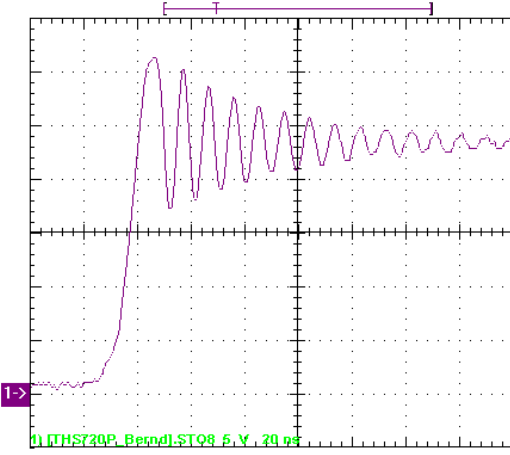
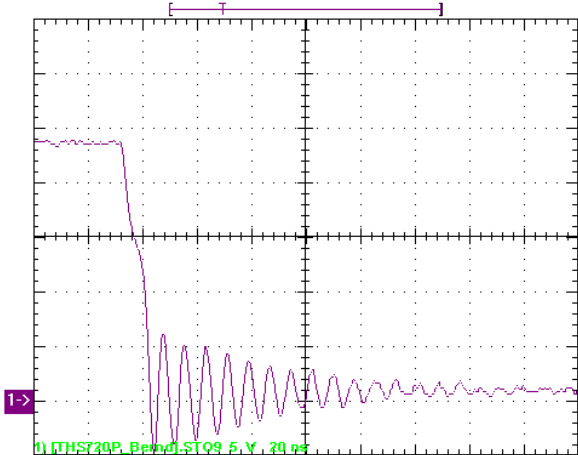
		Ch1 => switchnode primary 5V/div 500ns/div full bandwidth
		Ch1 => switchnode 5V/div 20ns/div full bandwidth

Figure 14

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With 1.5A load results in the waveforms shown in Figure 15 and Figure 16. 15V were applied to the input.

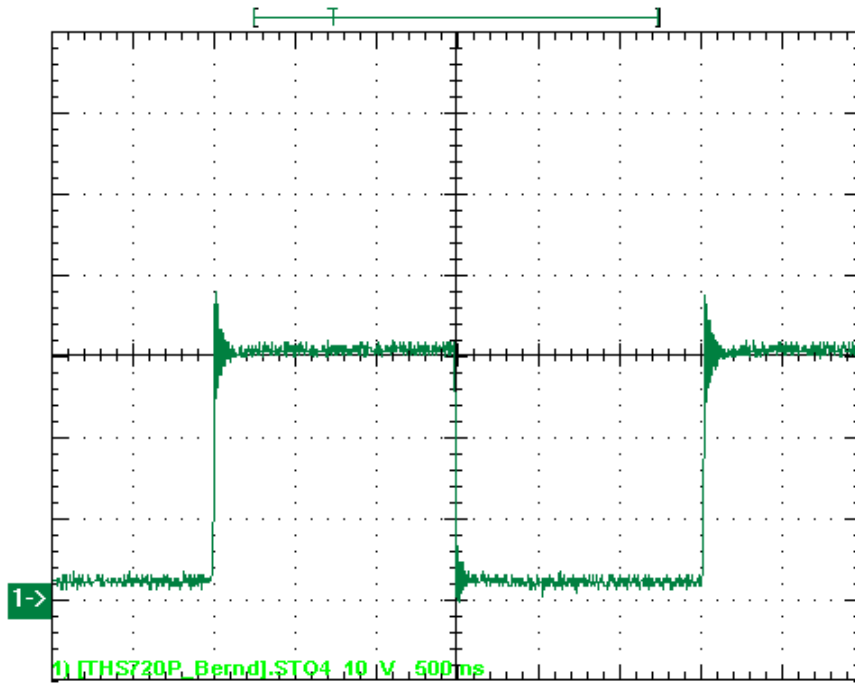


Figure 15

Ch1 =>
switchnode
primary
10V/div
500ns/div
full
bandwidth

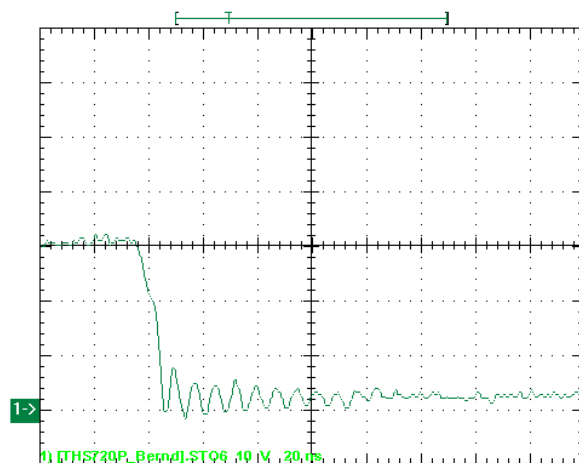
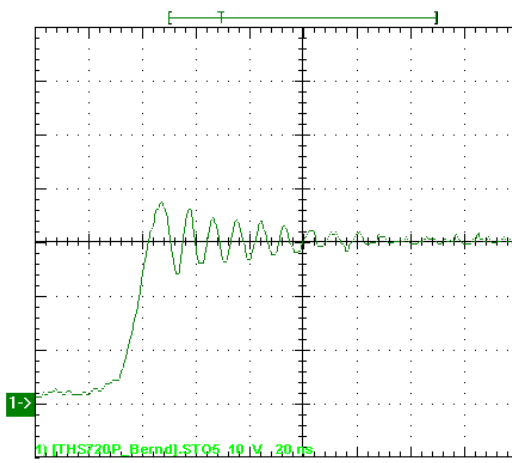


Figure 16

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

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With 1.2A load results in the waveforms shown in Figure 17 and Figure 18. 20V were applied to the input.

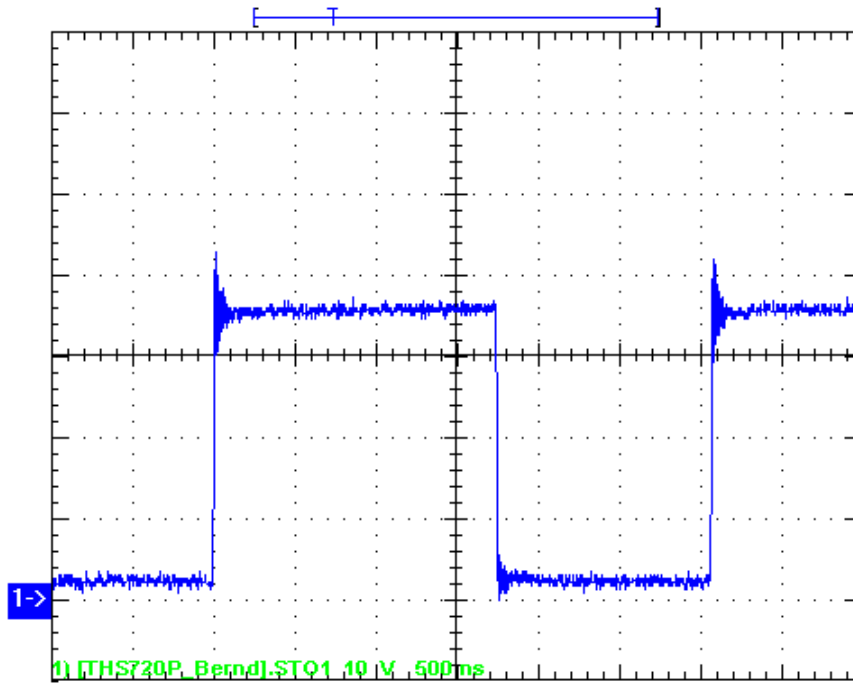


Figure 17

Ch1 =>
switchnode
primary
10V/div
500ns/div
full
bandwidth

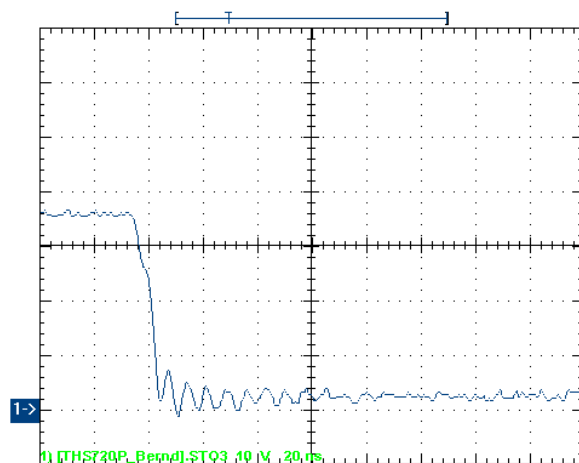
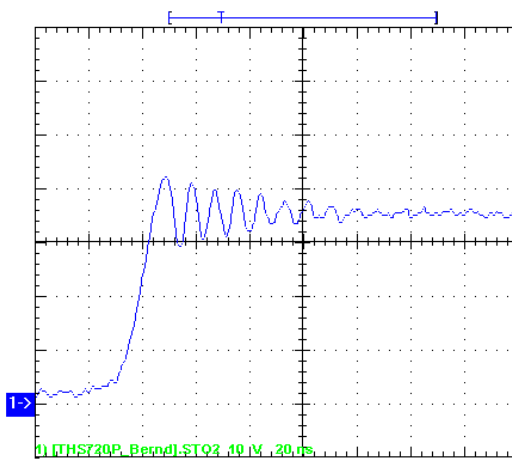
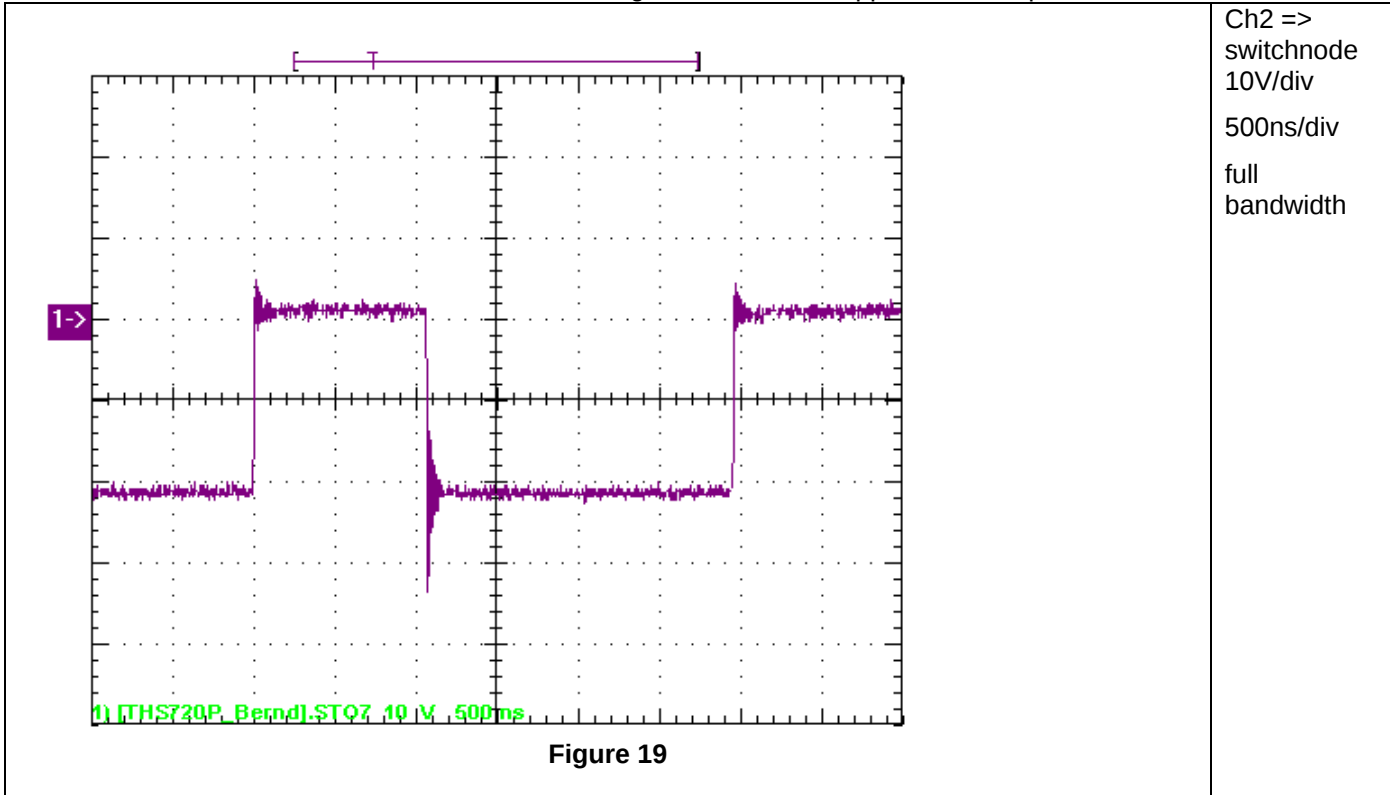


Figure 18

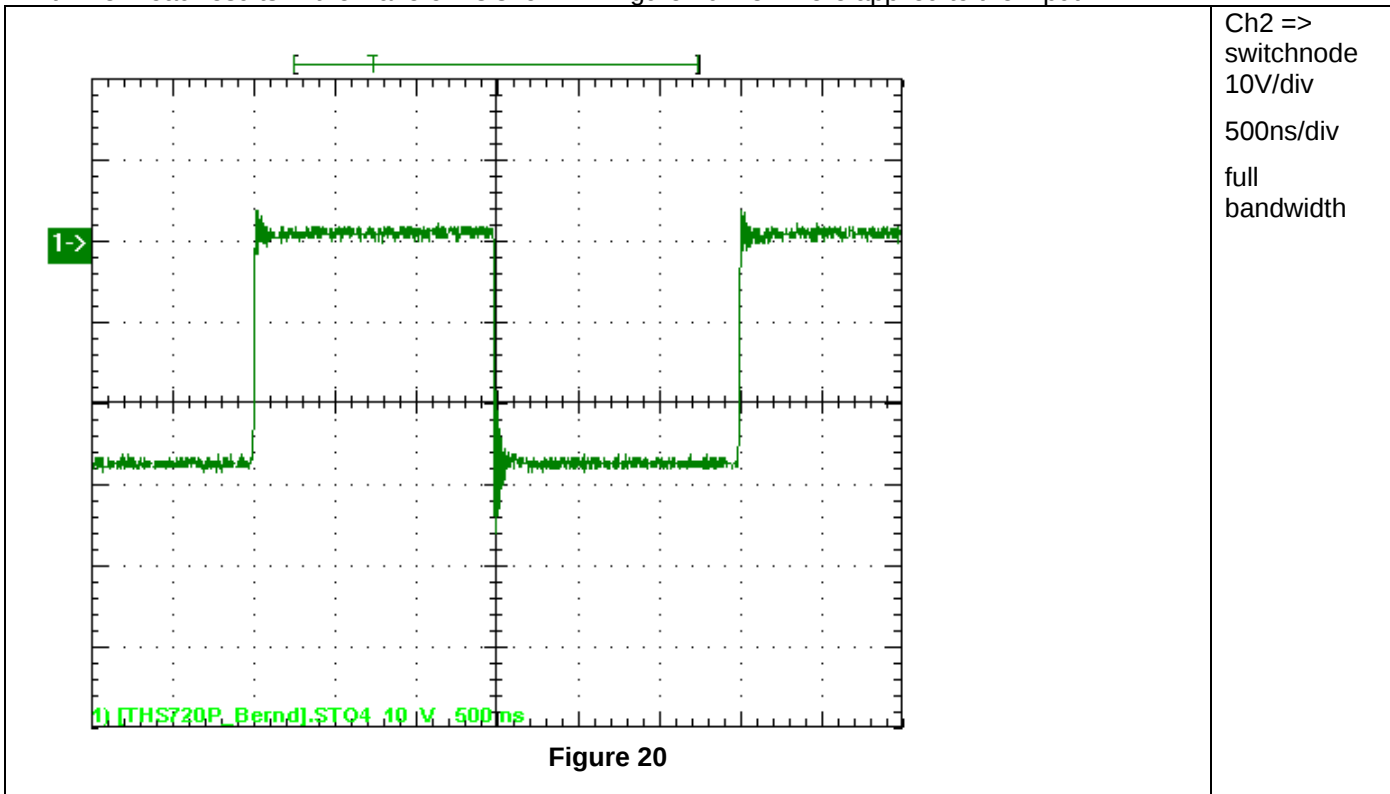
Ch1 =>
switchnode
10V/div
20ns/div
full
bandwidth

7.2 Switch secondary (referenced to VOUT)

With 1.5A load results in the waveforms shown in Figure 19. 9V were applied to the input.



With 1.5A load results in the waveforms shown in Figure 20. 15V were applied to the input.



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With 1.5A load results in the waveforms shown in Figure 21. 20V were applied to the input.

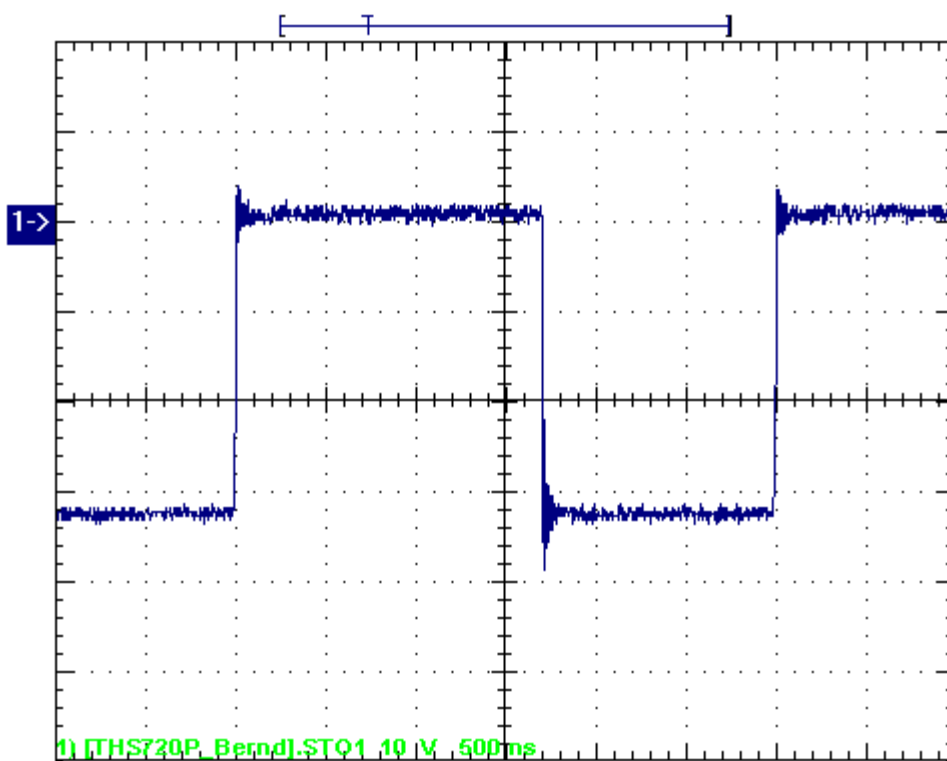


Figure 21

Ch2 =>
switchnode
10V/div
500ns/div
full
bandwidth

8 Ripple Voltages

The output ripple voltage is displayed in Figure 22. The input voltage was set to 9V, 15V and 20V with output current 1.5A.

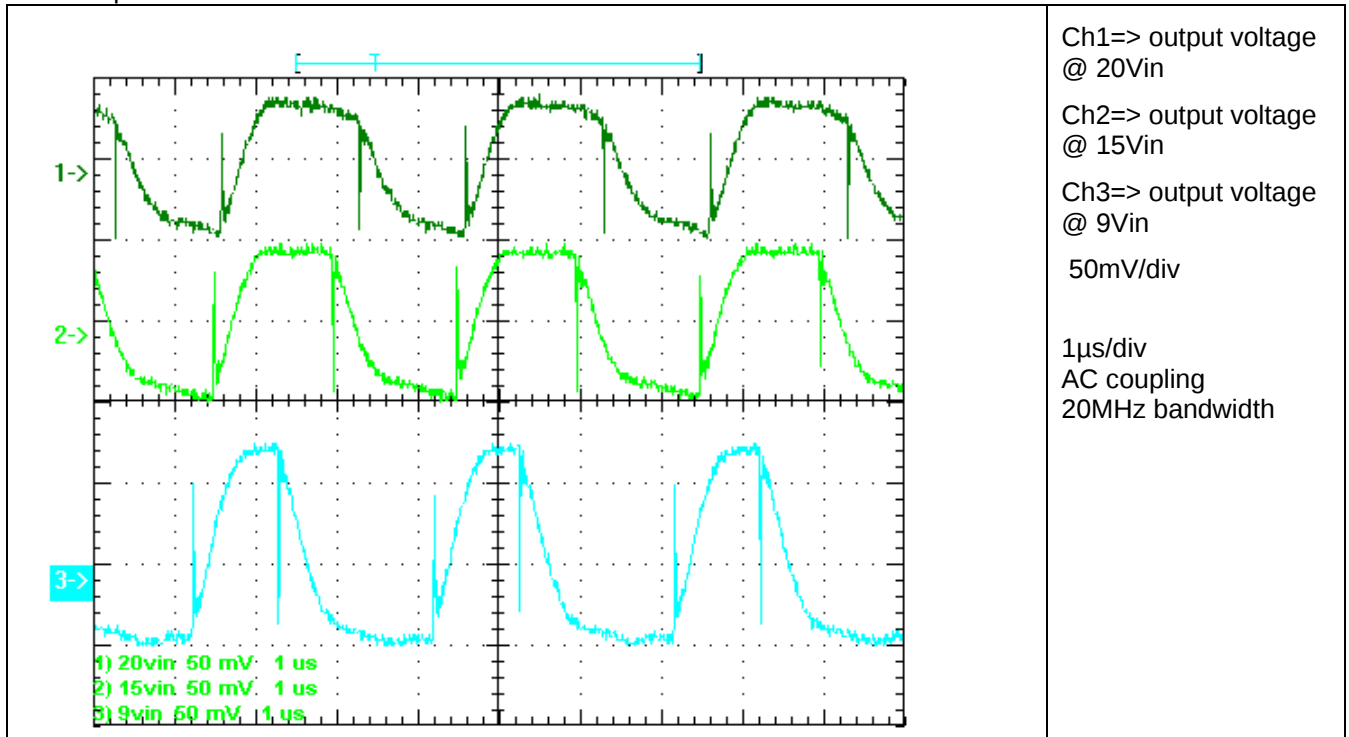
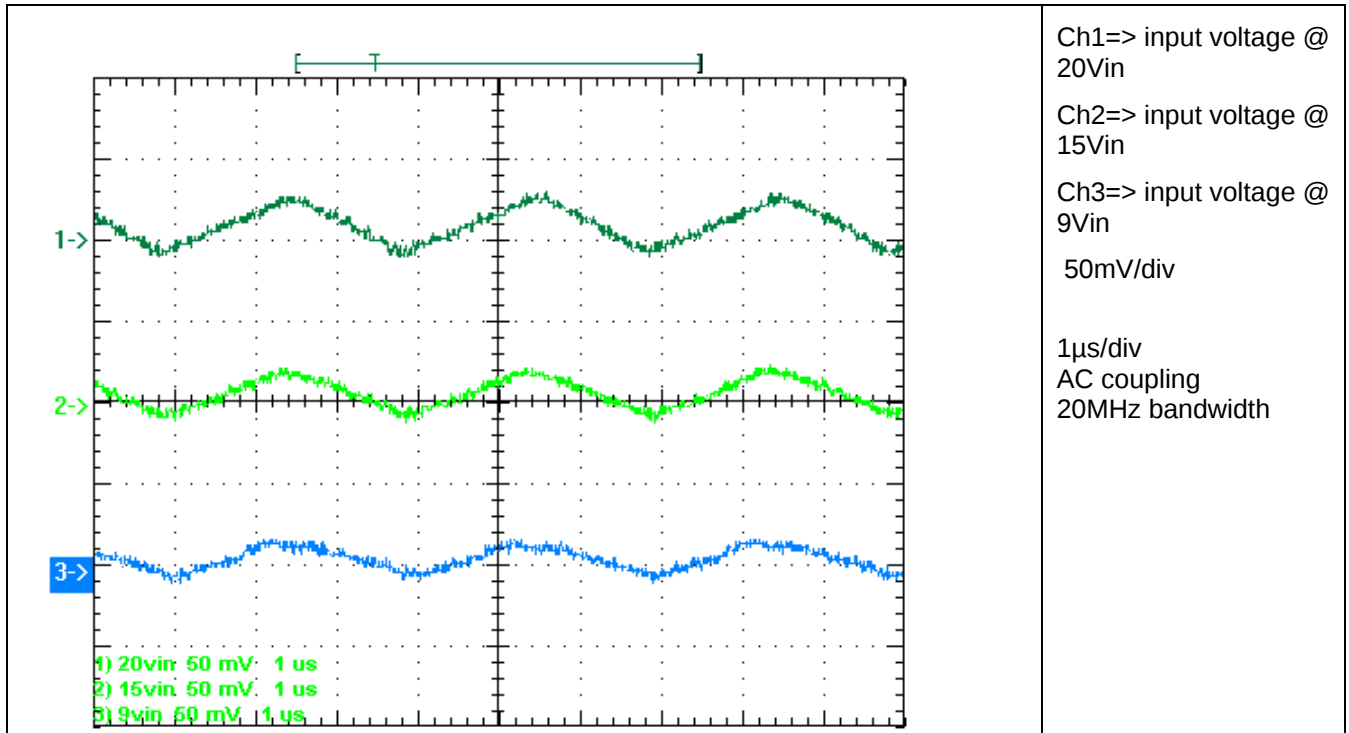


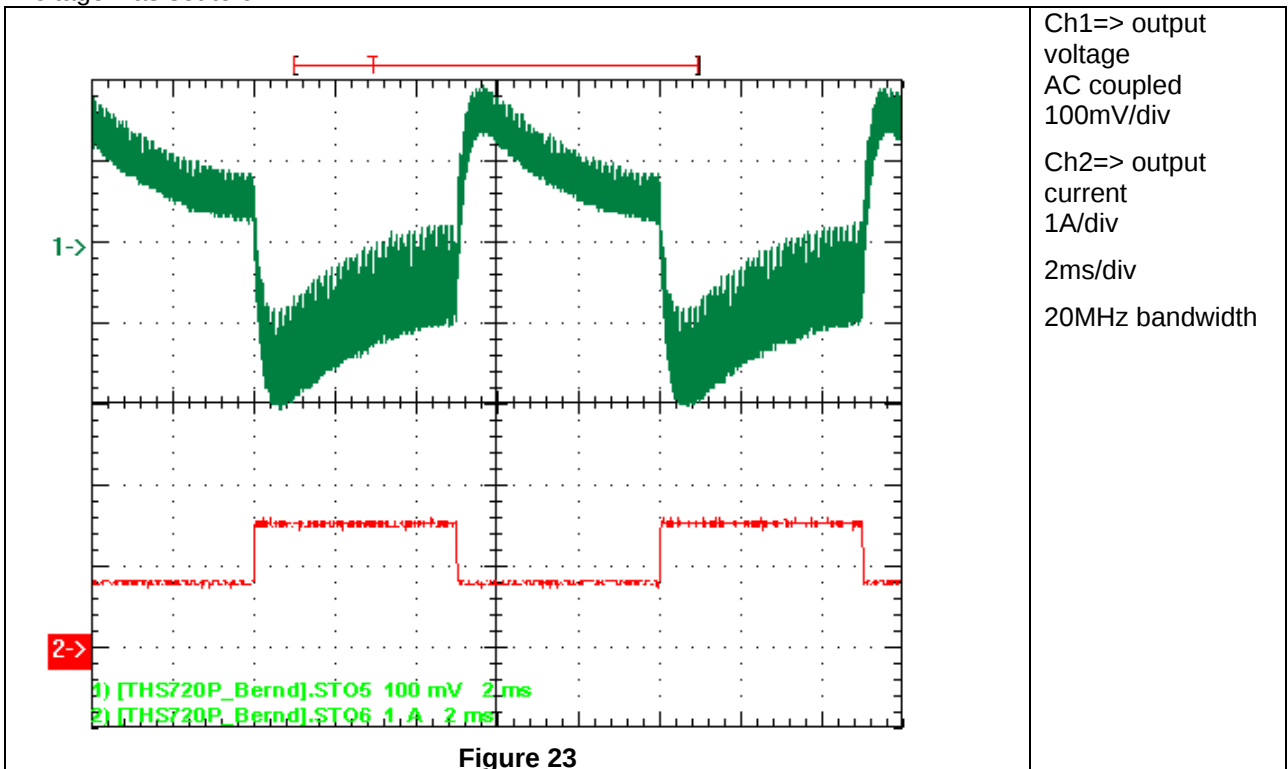
Figure 22

The input ripple voltage is displayed in. The input voltage was set to 9V, 15V and 20V with output current 1.5A.

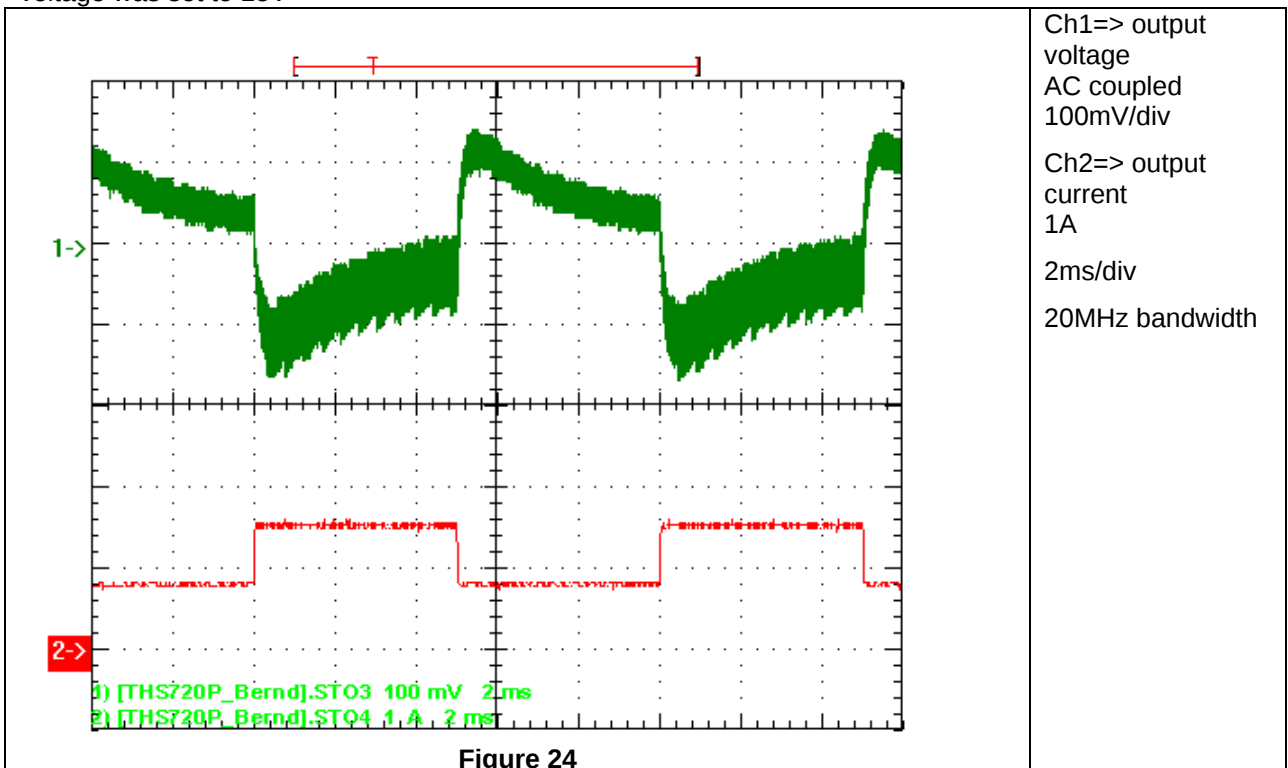


9 Load Transients

A output current change from 0.75A to 1.5A (100Hz) results in following Figure 23. The input voltage was set to 9V

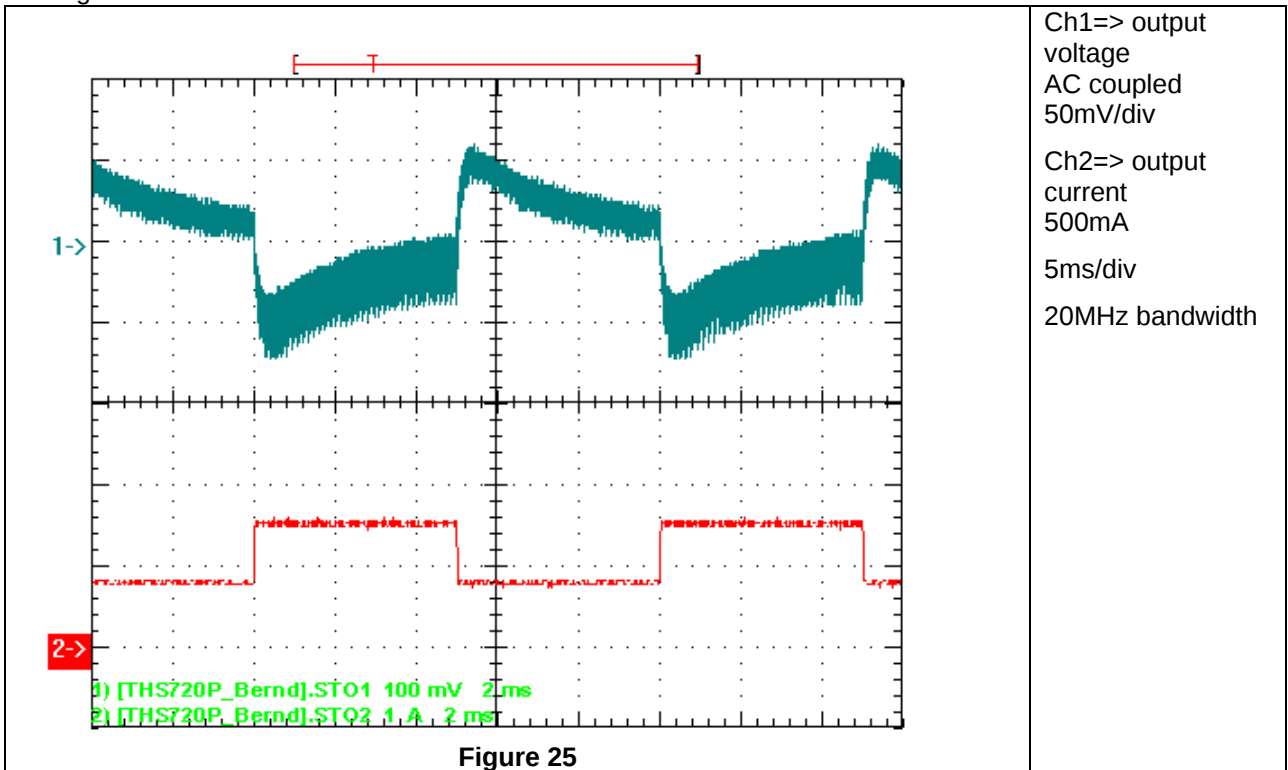


A output current change from 0.75A to 1.5A (100Hz) results in following Figure 24. The input voltage was set to 15V



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A output current change from 0.75A to 1.5A (100Hz) results in following Figure 25. The input voltage was set to 20V



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