

PMP5694RevB Test Results

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1 Startup

The startup waveform is shown in the Figure 1. The input voltage was set to 8V, with 0.7A load at the output.

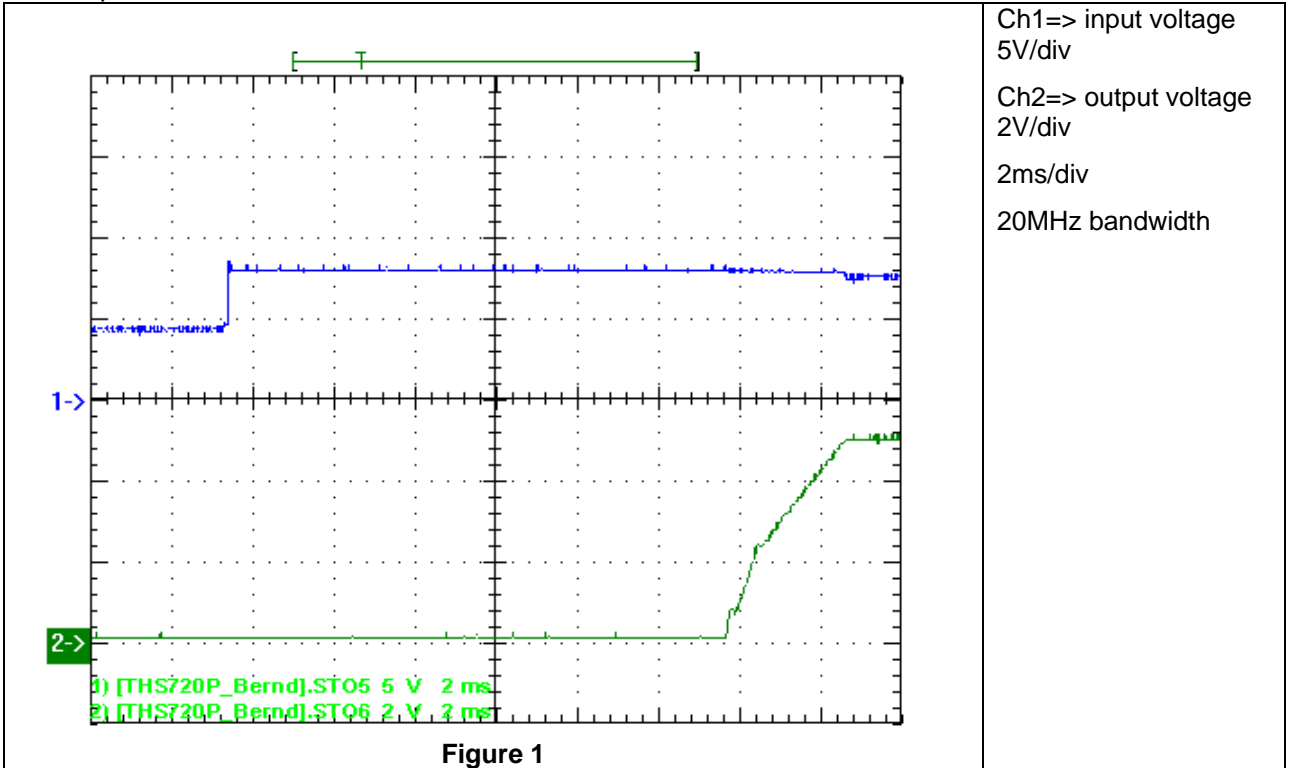


Figure 1

The startup waveform is shown in the Figure 2. The input voltage was set to 22V, with 0.7A load at the output.

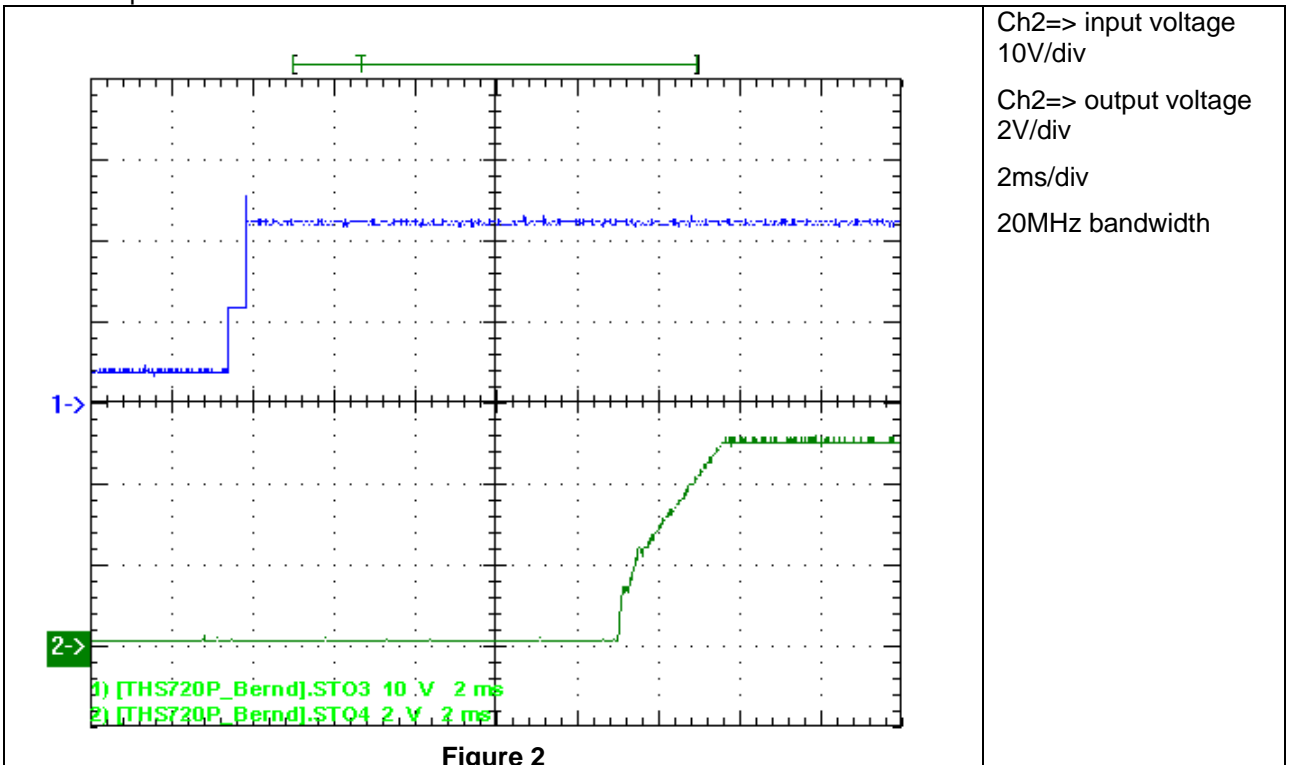
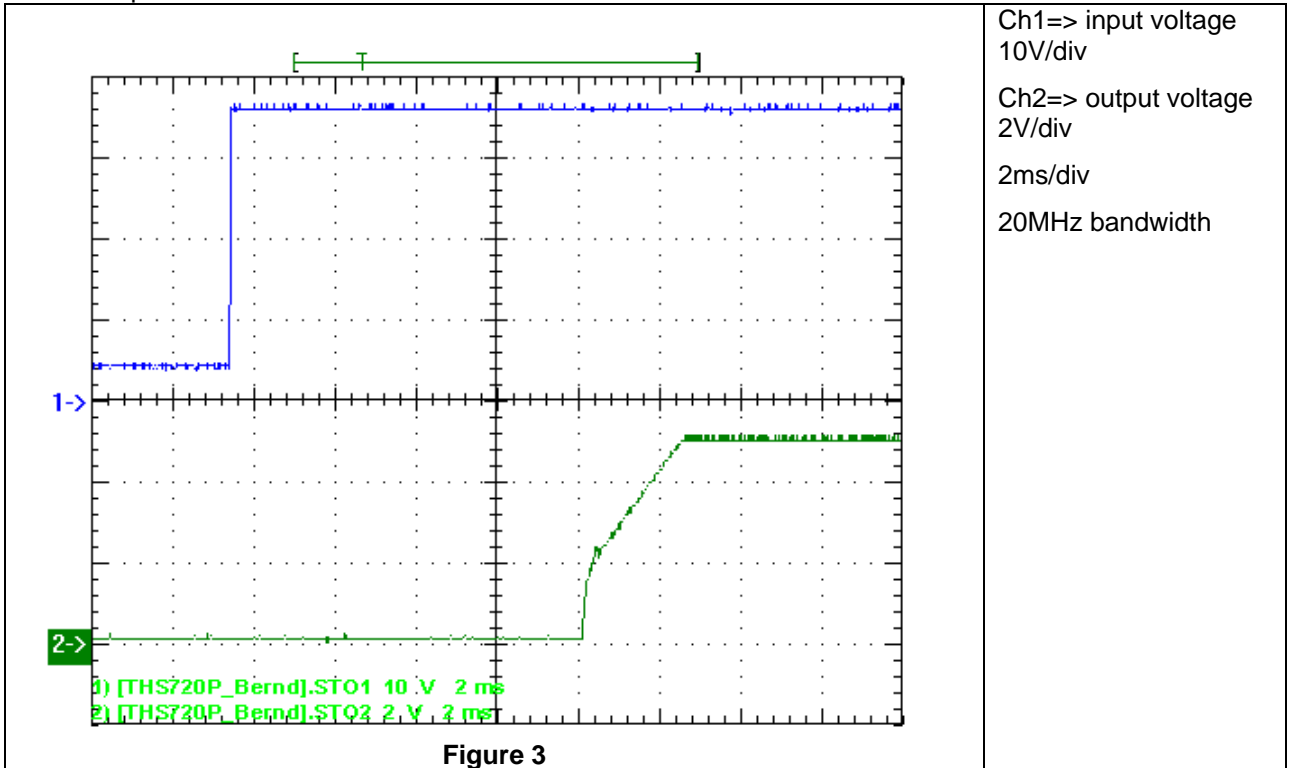


Figure 2

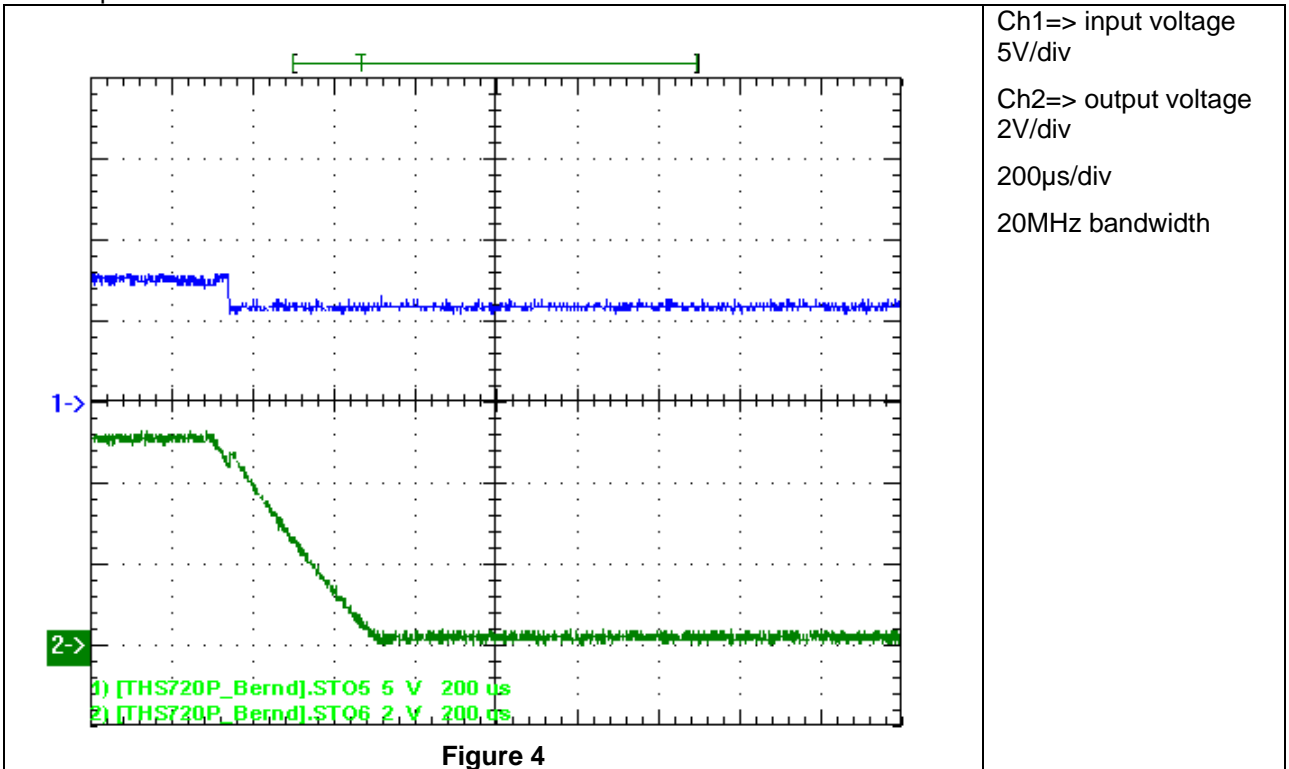
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The startup waveform is shown in the Figure 4. The input voltage was set to 36V, with 0.7A load at the output.

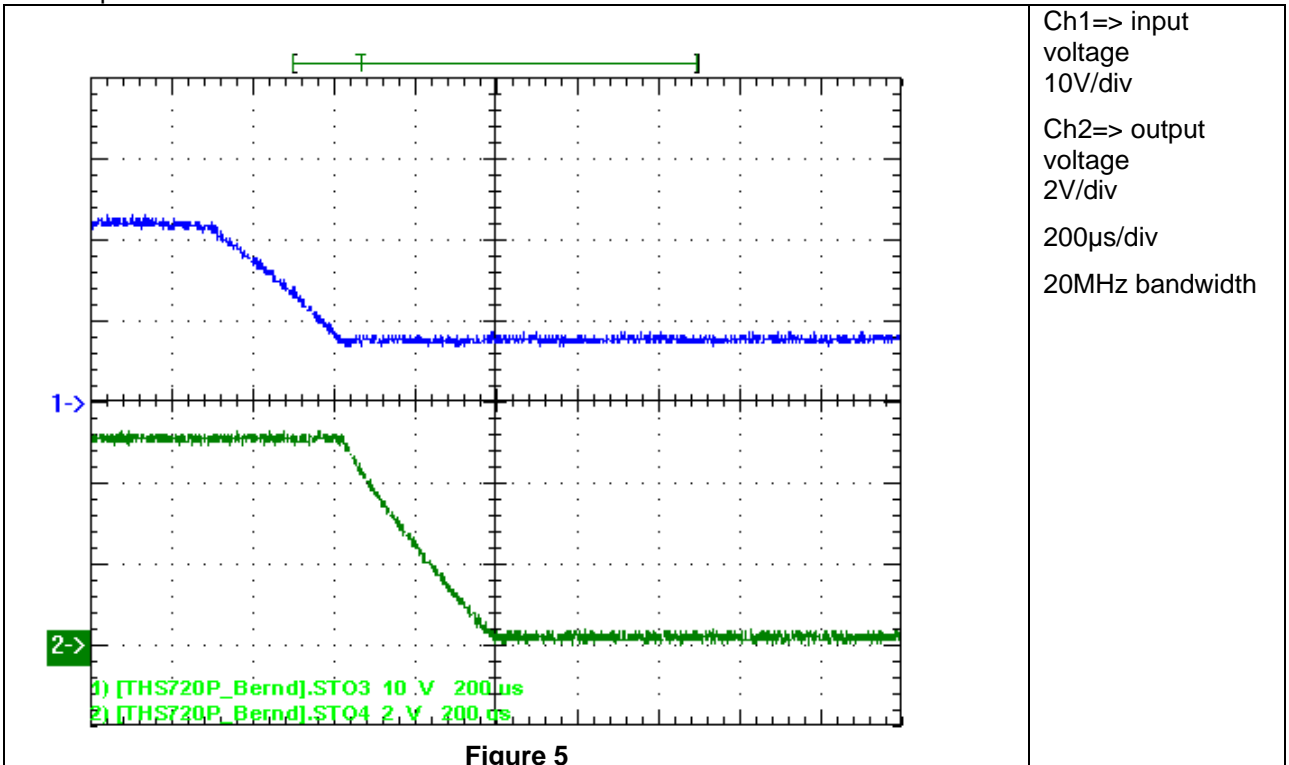


2 Shutdown

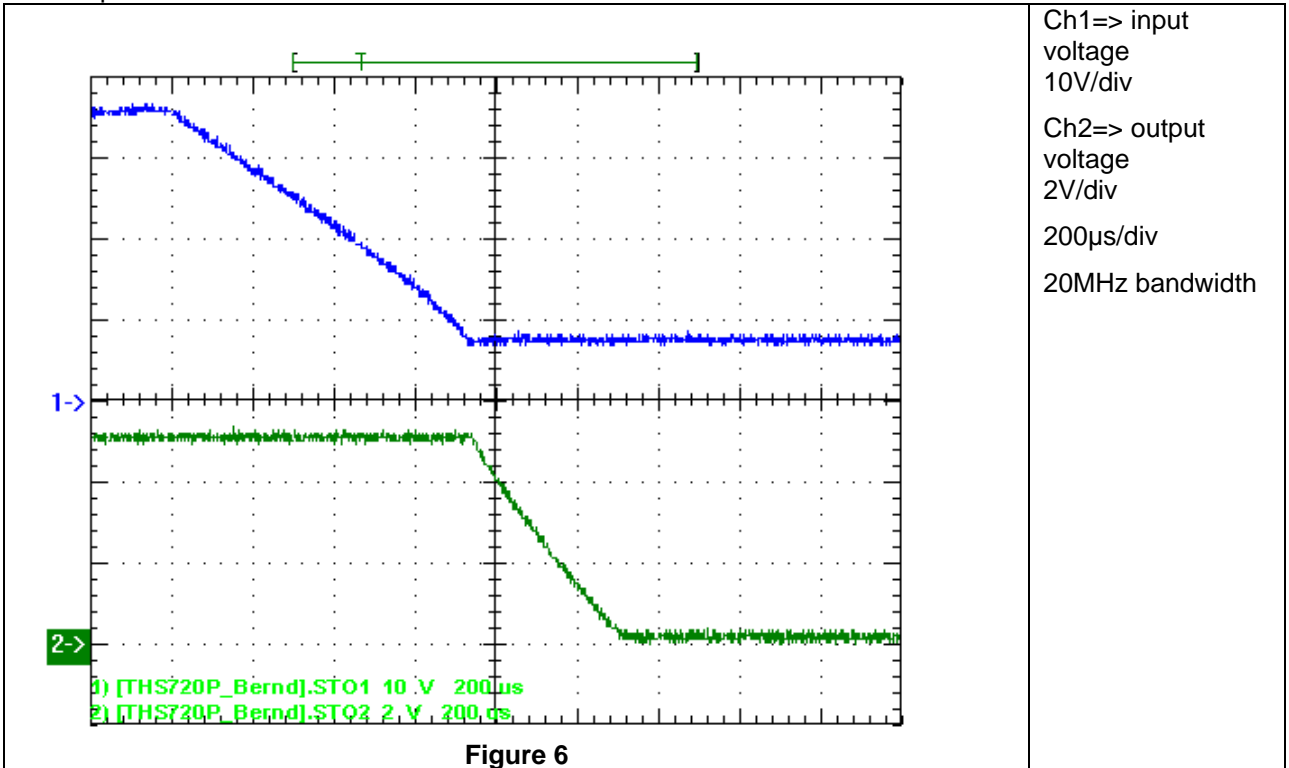
The shutdown waveform is shown in the Figure 4 at 8V input voltage. With 0.7A load applied at the output.



The shutdown waveform is shown in the Figure 5 at 22V input voltage. With 0.7A load applied at the output.



The shutdown waveform is shown in the Figure 6 at 36V input voltage. With 0.7A load applied at the output.



3 Efficiency

The efficiencies with different input voltages are shown in the Figure 7 below.

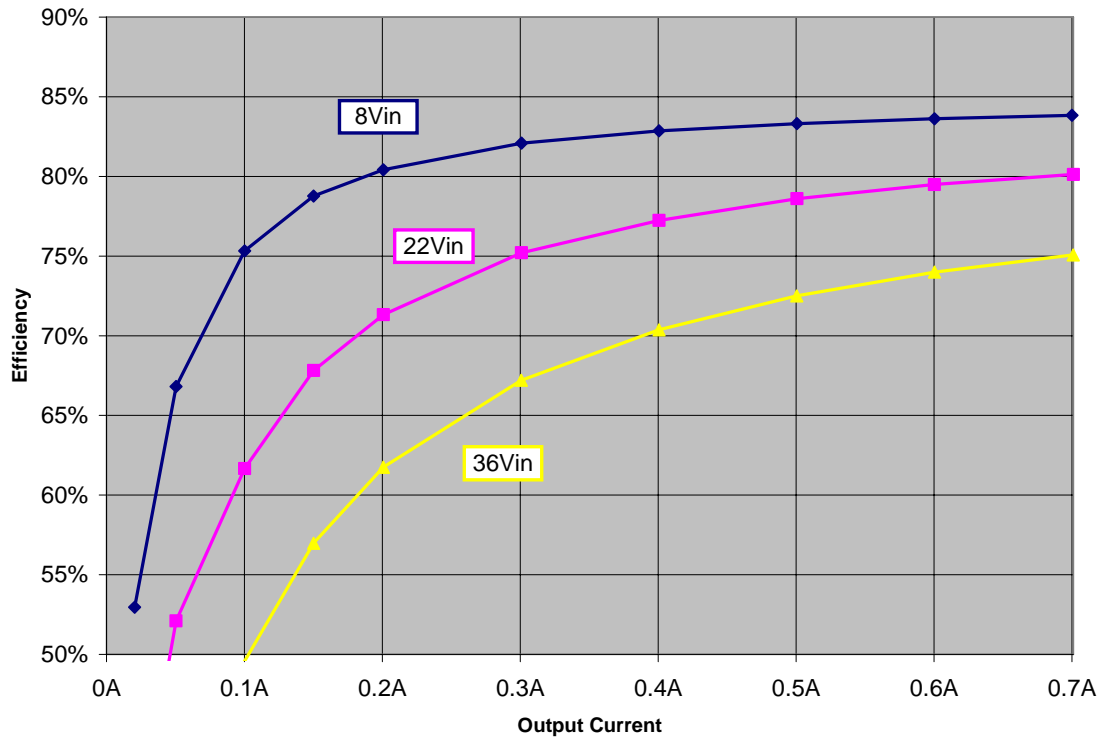


Figure 7

4 Load regulation

The load regulation at different input voltages are shown in Figure 8.

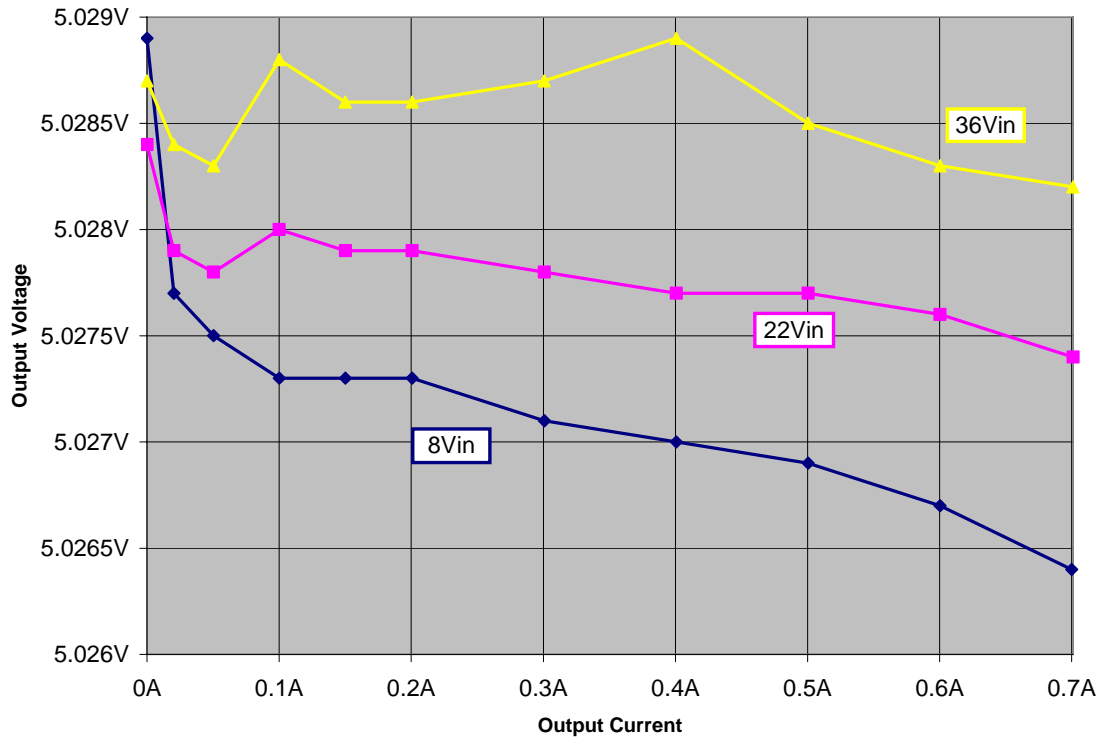


Figure 8

5 Line Regulation

The line regulation at 0.7A output current is shown in Figure 9.

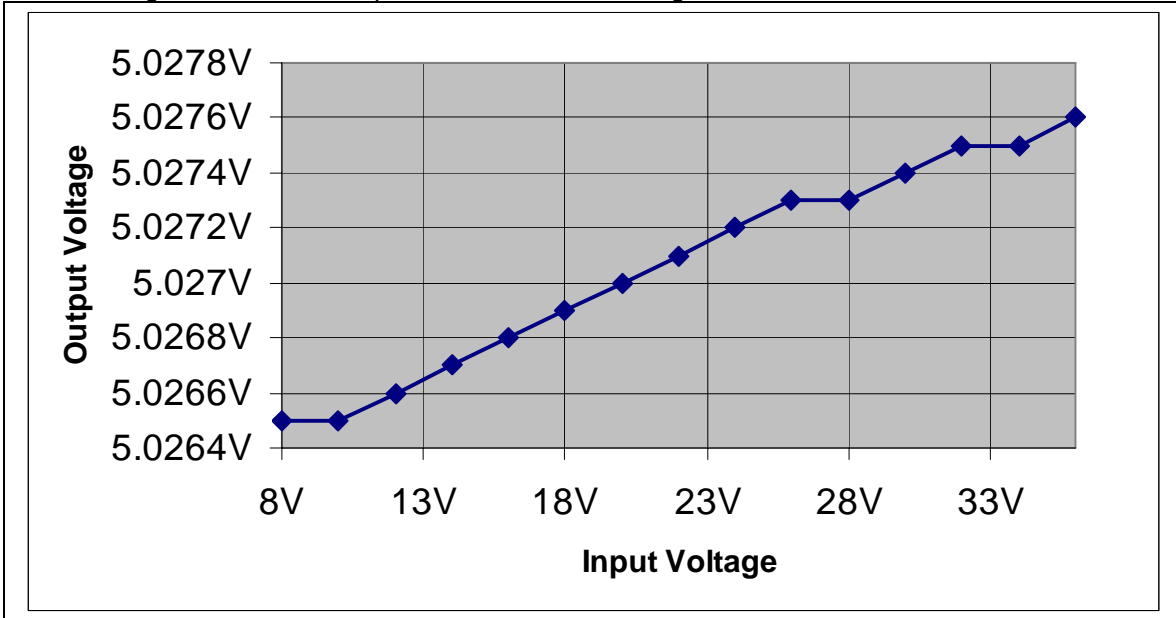


Figure 9

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

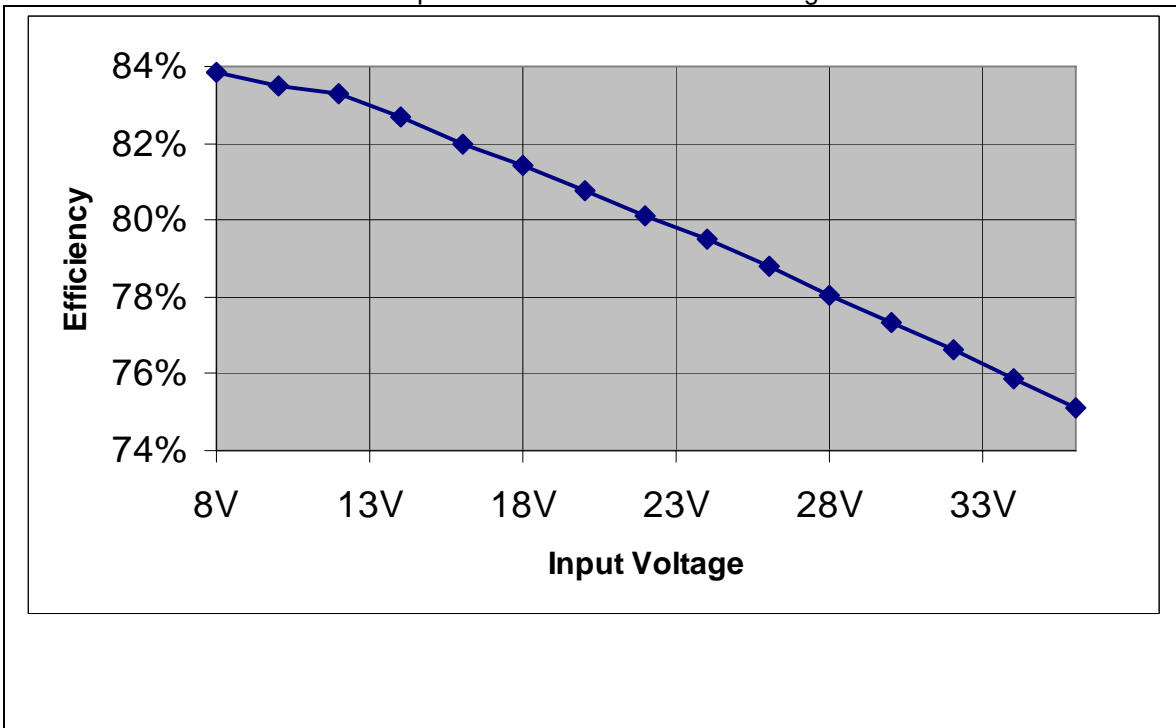


Figure 10

6 Switch Node Waveform

With 0.7A load results in the waveforms shown in Figure 11. 8V were applied to the input (Primary).

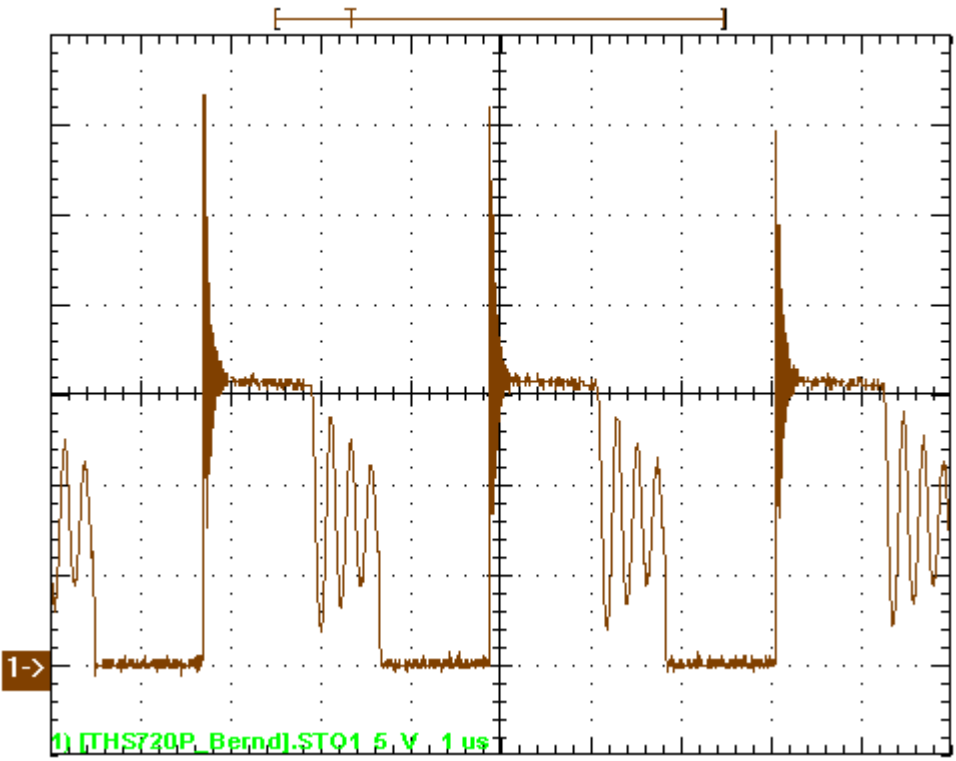
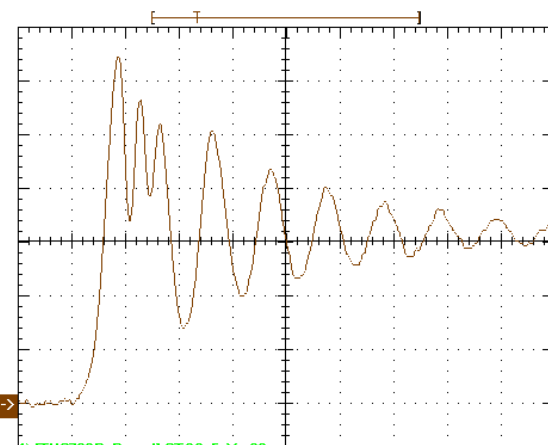
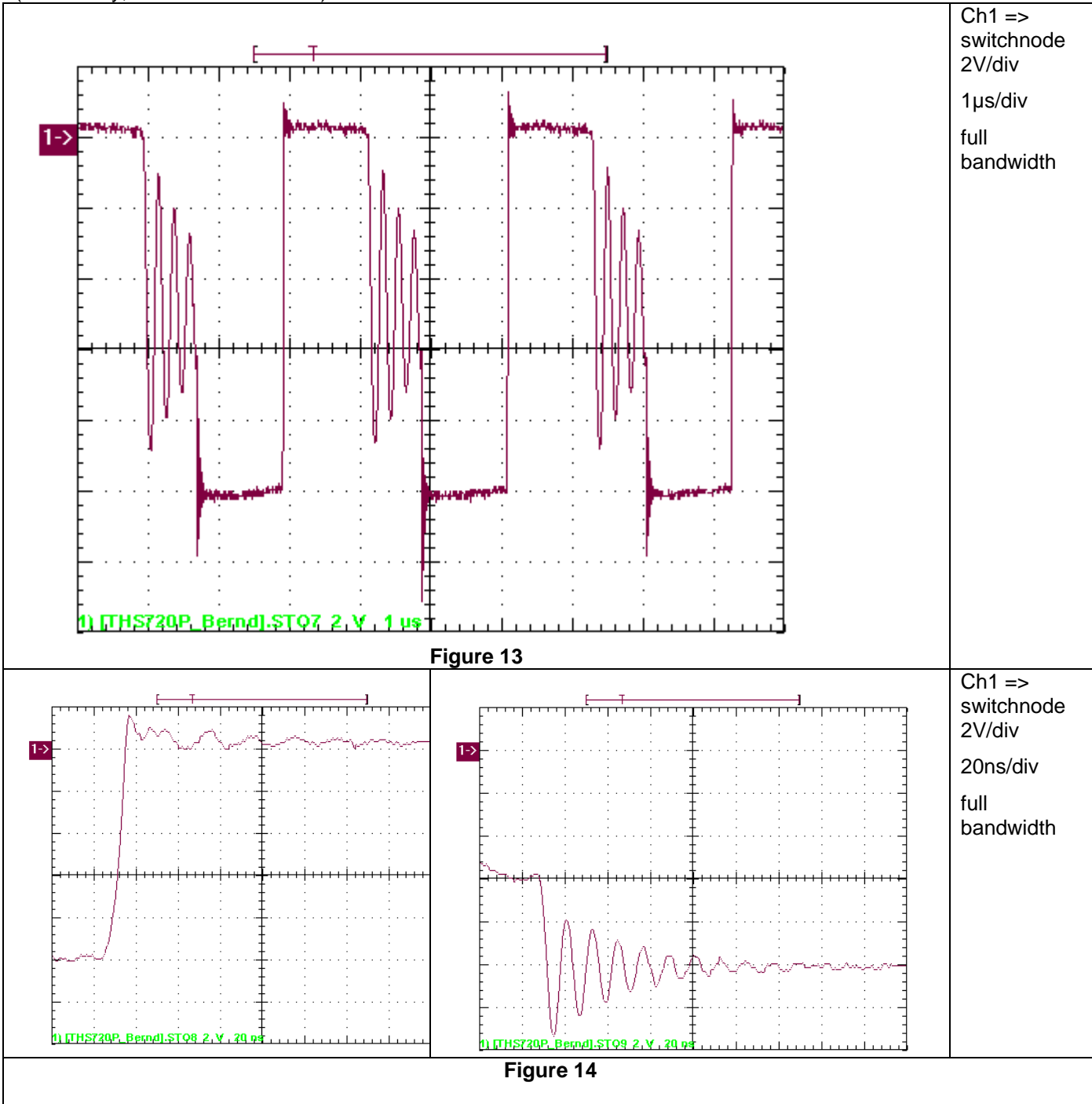
 <p>1-></p> <p>1) [ITHS720P_Bernd].STQ1 5 V 1 µs</p>	<p>Ch1 => switchnode 5V/div 1µs/div full bandwidth</p>
 <p>1-></p> <p>1) [ITHS720P_Bernd].STQ2 5 V 20 ns</p>	<p>Ch1 => switchnode 5V/div 20ns/div full bandwidth</p>

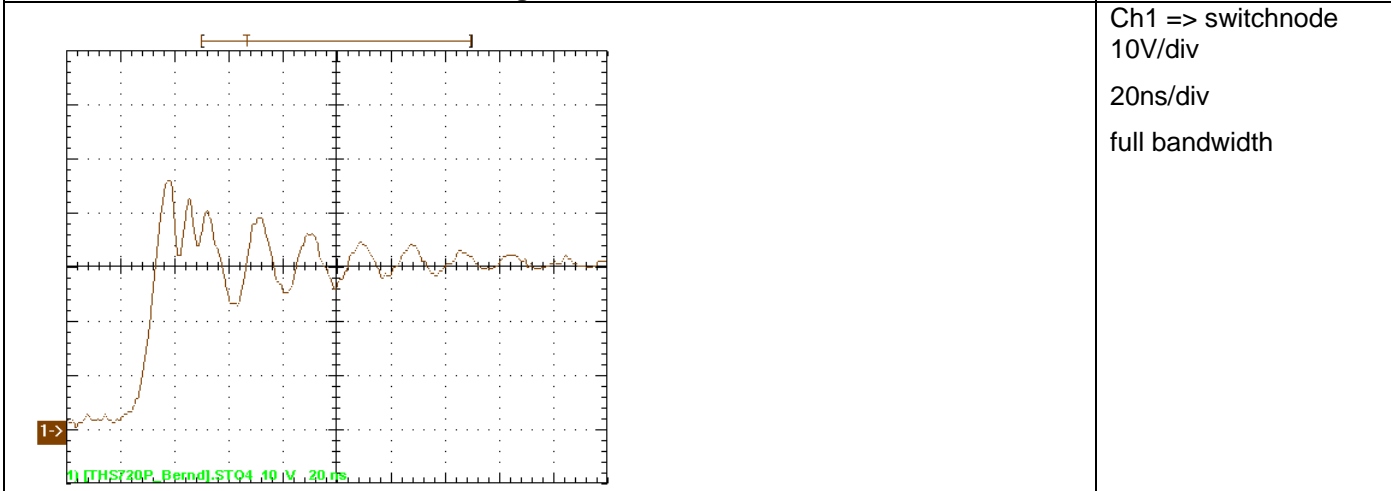
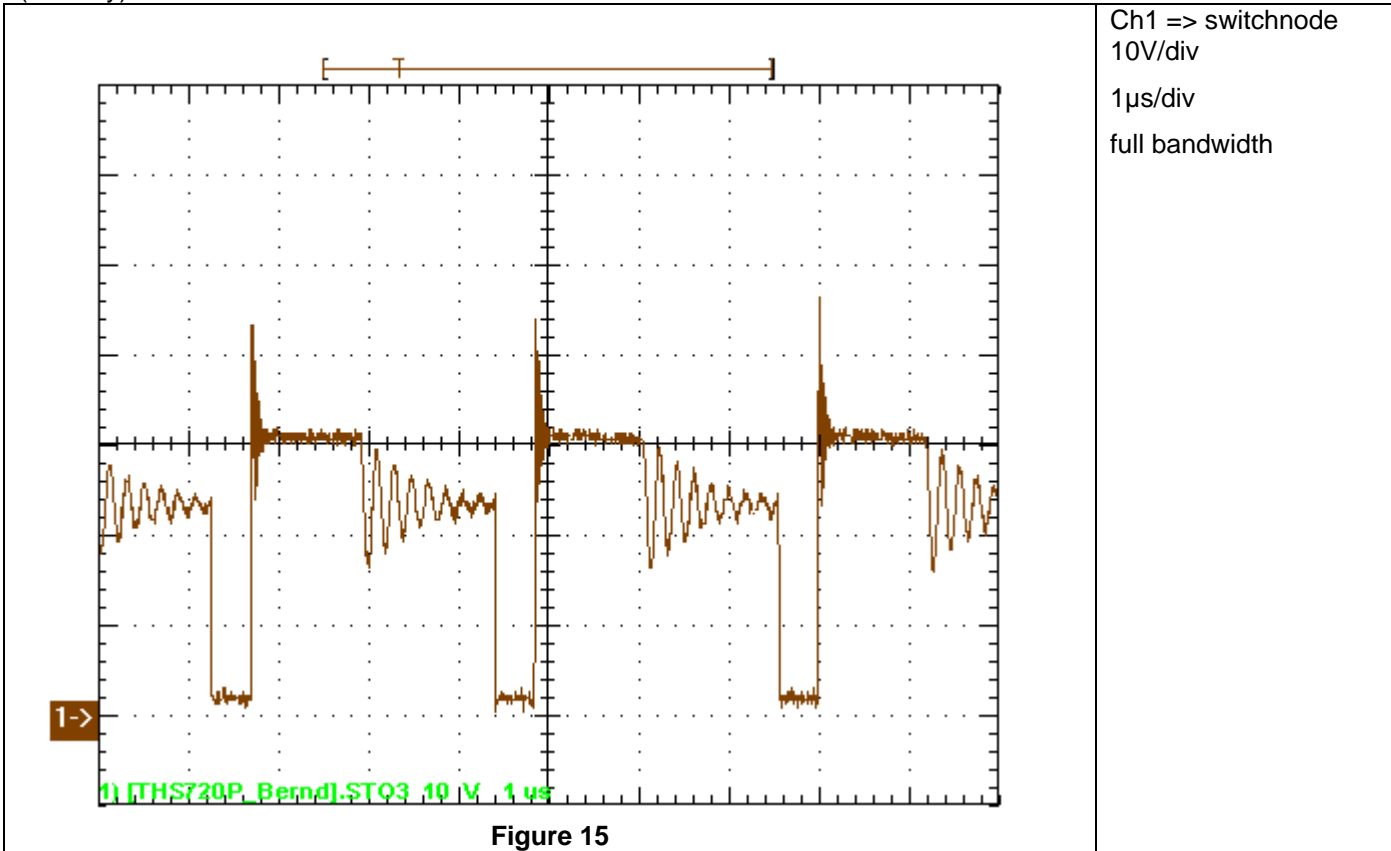
Figure 11

Figure 12

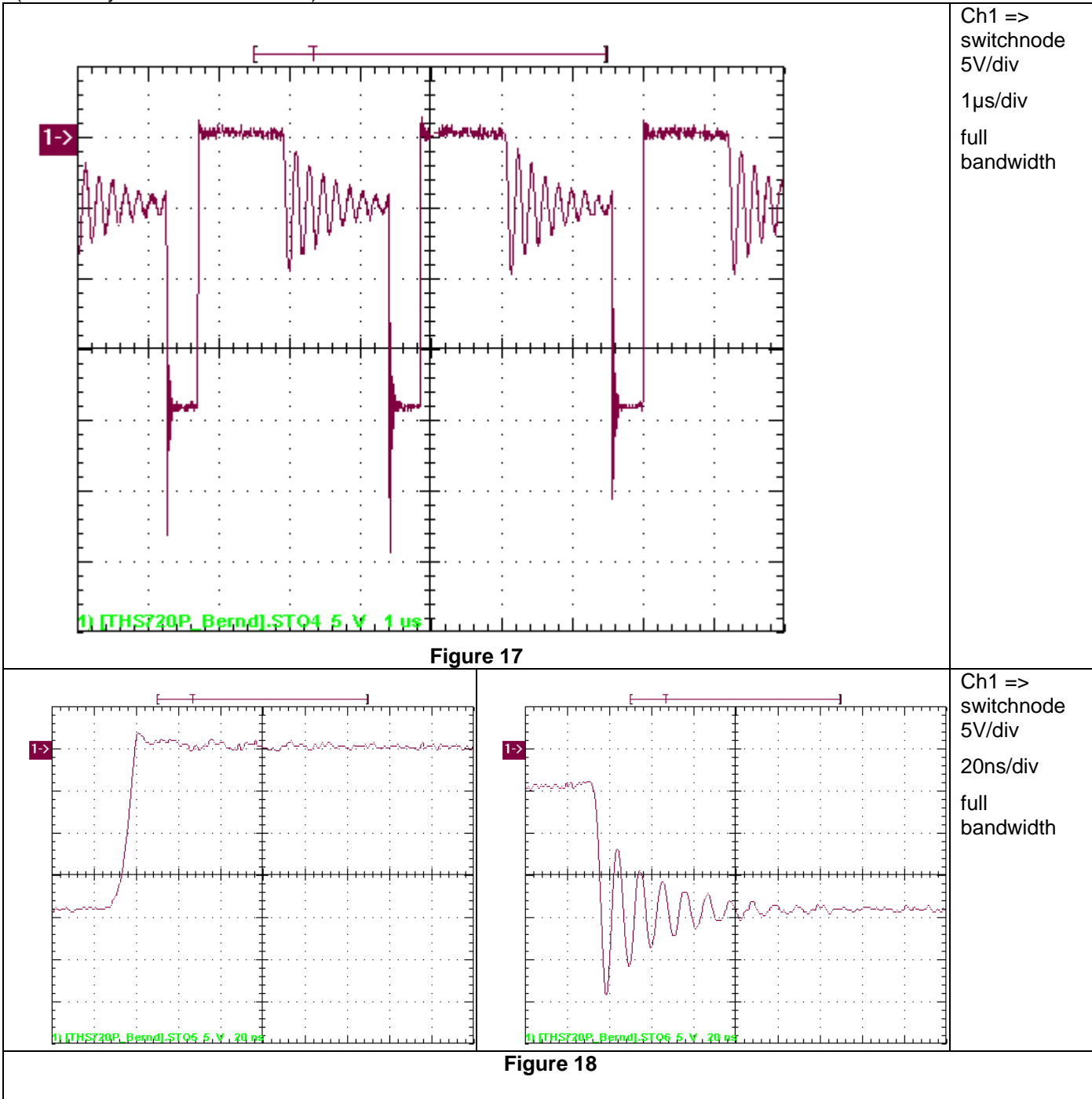
With 0.7A load results in the waveforms shown in Figure 13. 8V were applied to the input (Secondary; referenced to VOUT).



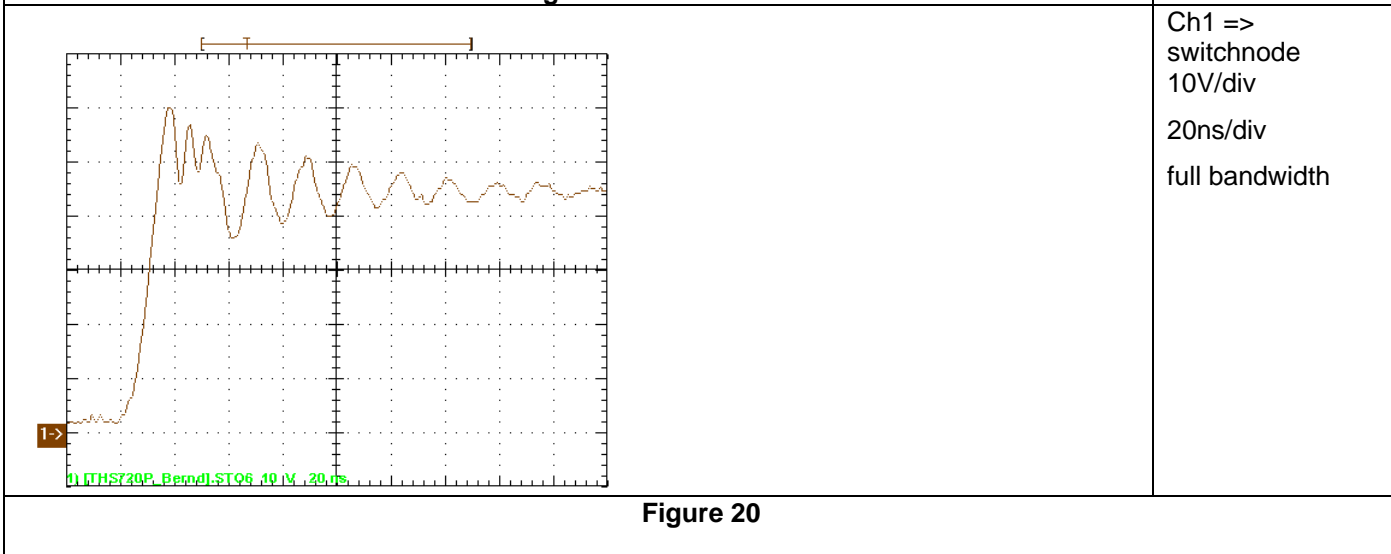
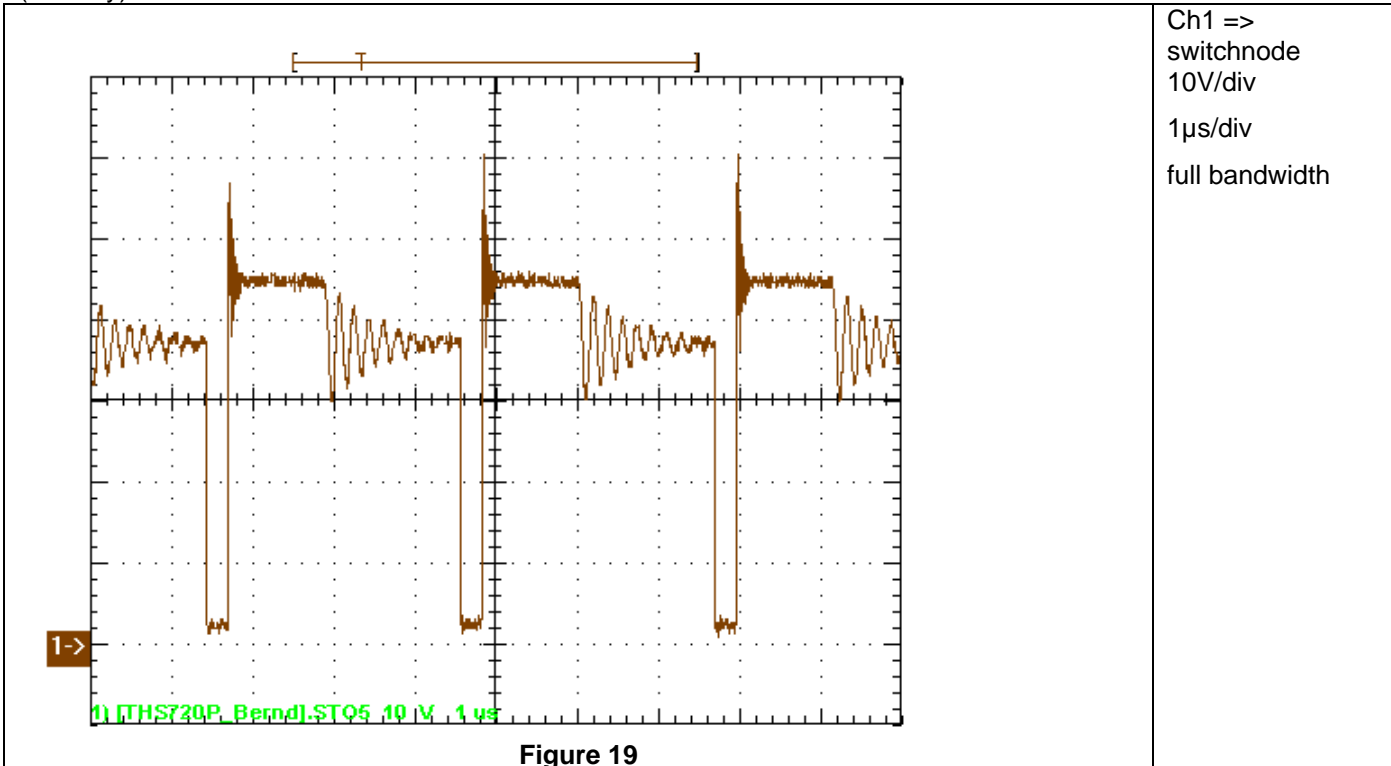
With 0.7A load results in the waveforms shown in Figure 15. 22V were applied to the input (Primary).



With 0.7A load results in the waveforms shown in Figure 17. 22V were applied to the input (secondary referenced to VOUT).



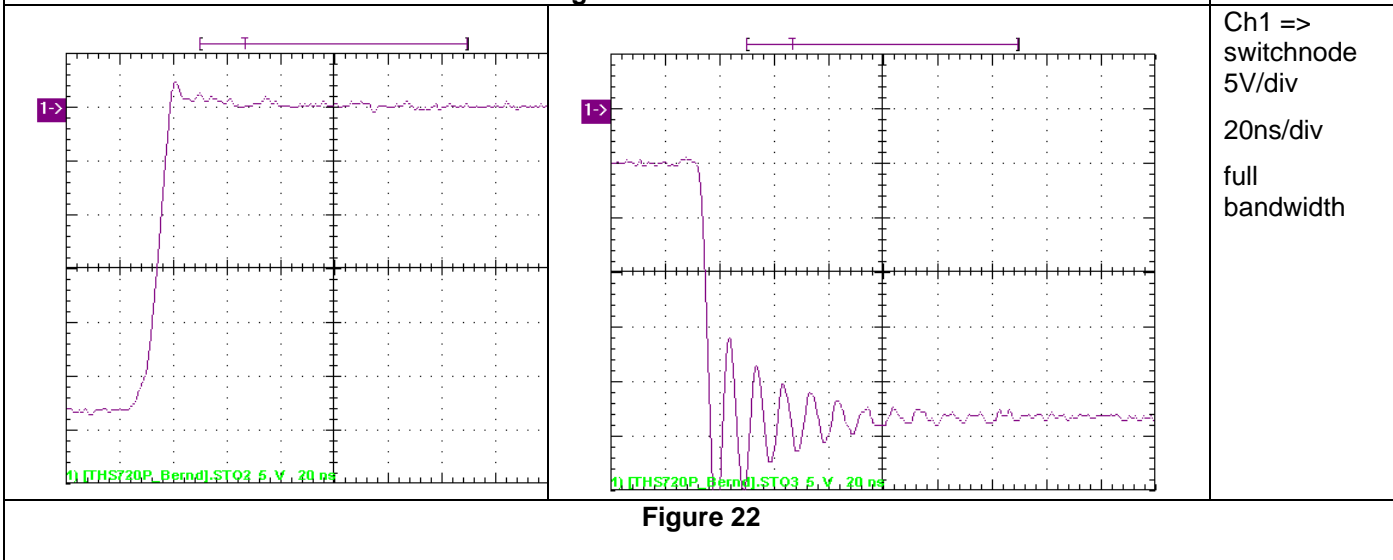
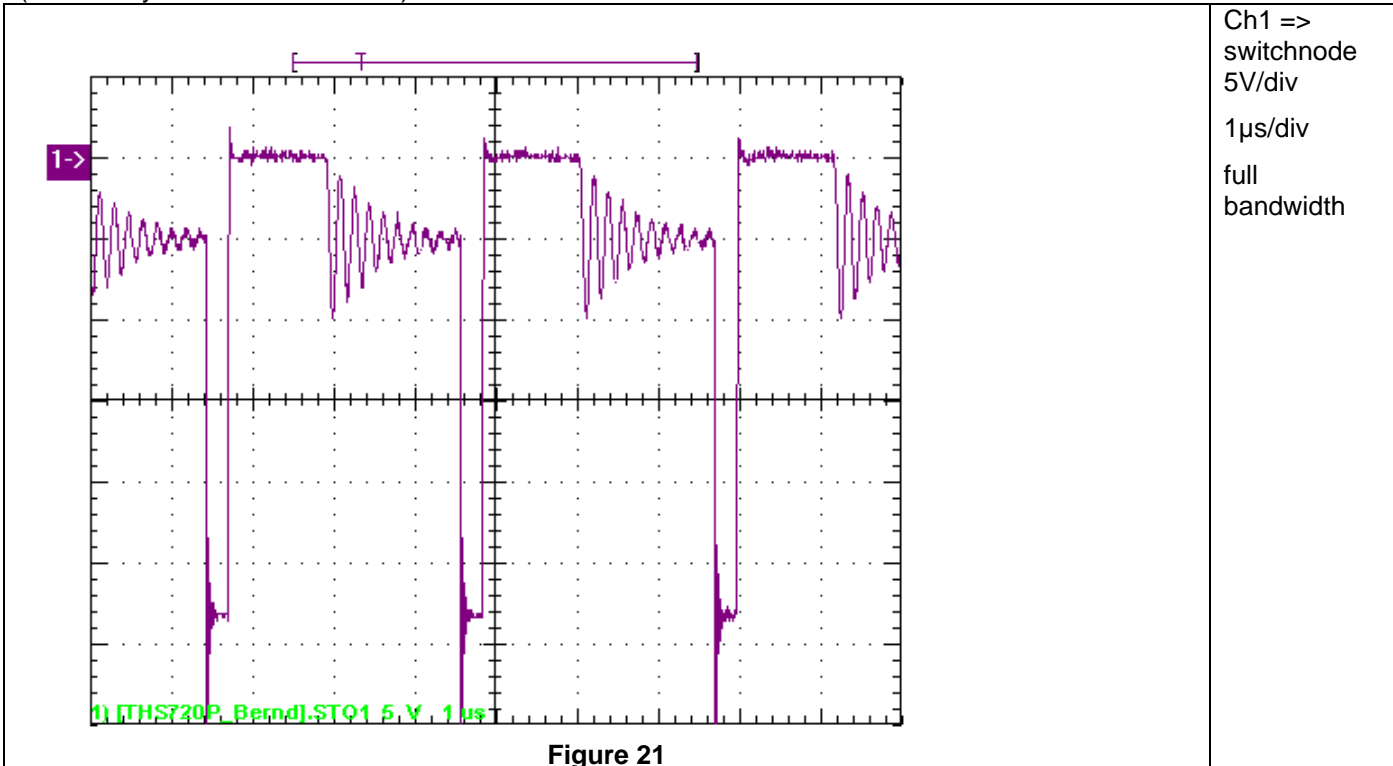
With 0.7A load results in the waveforms shown in Figure 19. 36V were applied to the input (Primary).



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With 0.7A load results in the waveforms shown in Figure 19. 36V were applied to the input (Secondary referenced to VOUT).



7 Ripple Voltages

The output ripple voltage is displayed in Figure 23. The input voltage was set to 8V, 22V and 36V with output current 0.7A.

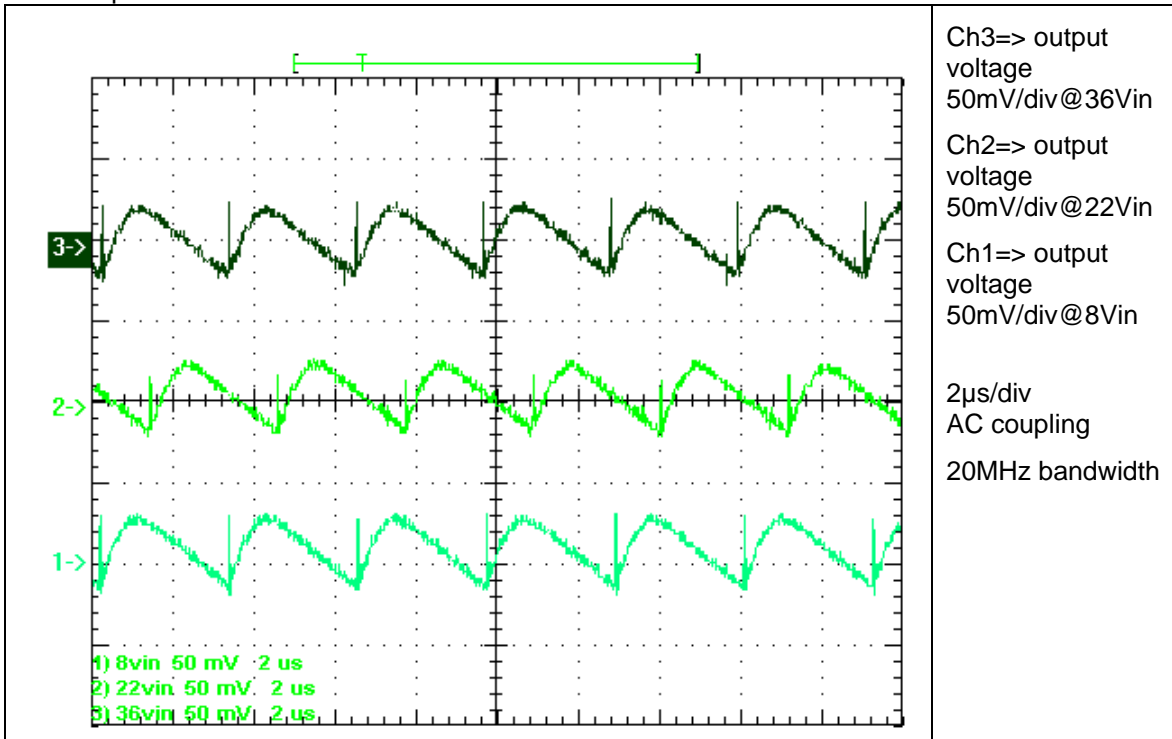


Figure 23

The input ripple voltage is displayed in Figure 24. The input voltage was set to 8V, 22V and 36V with output current 0.7A.

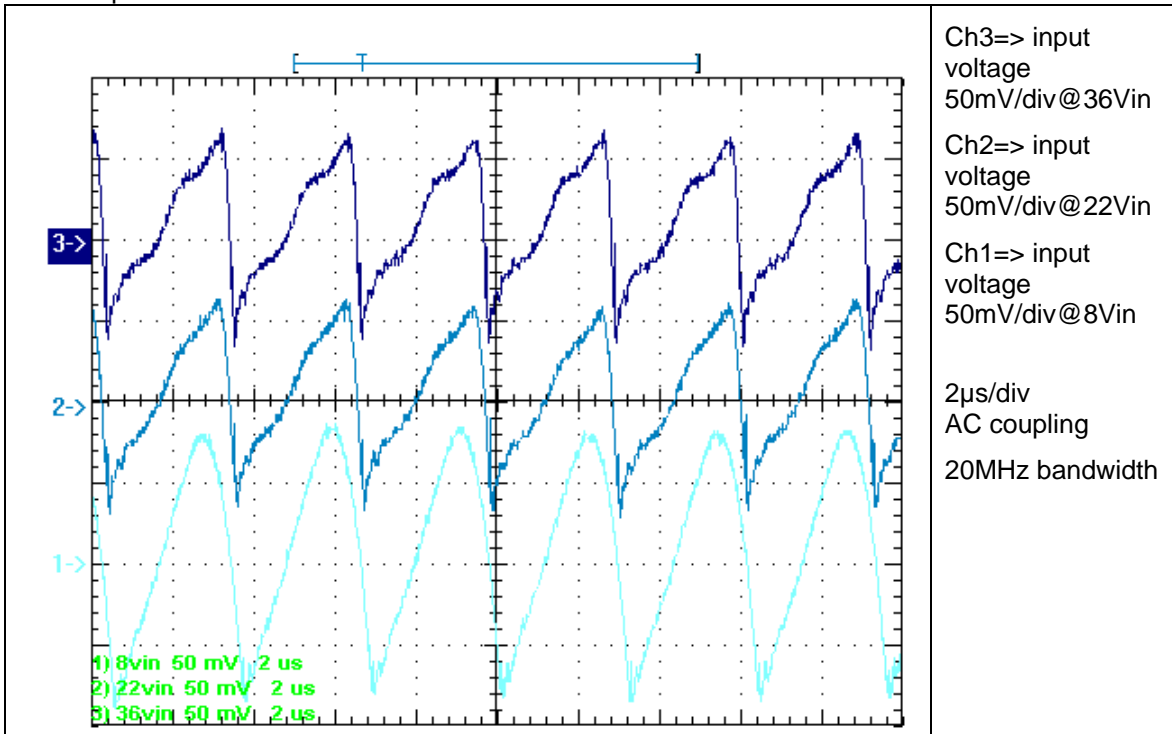
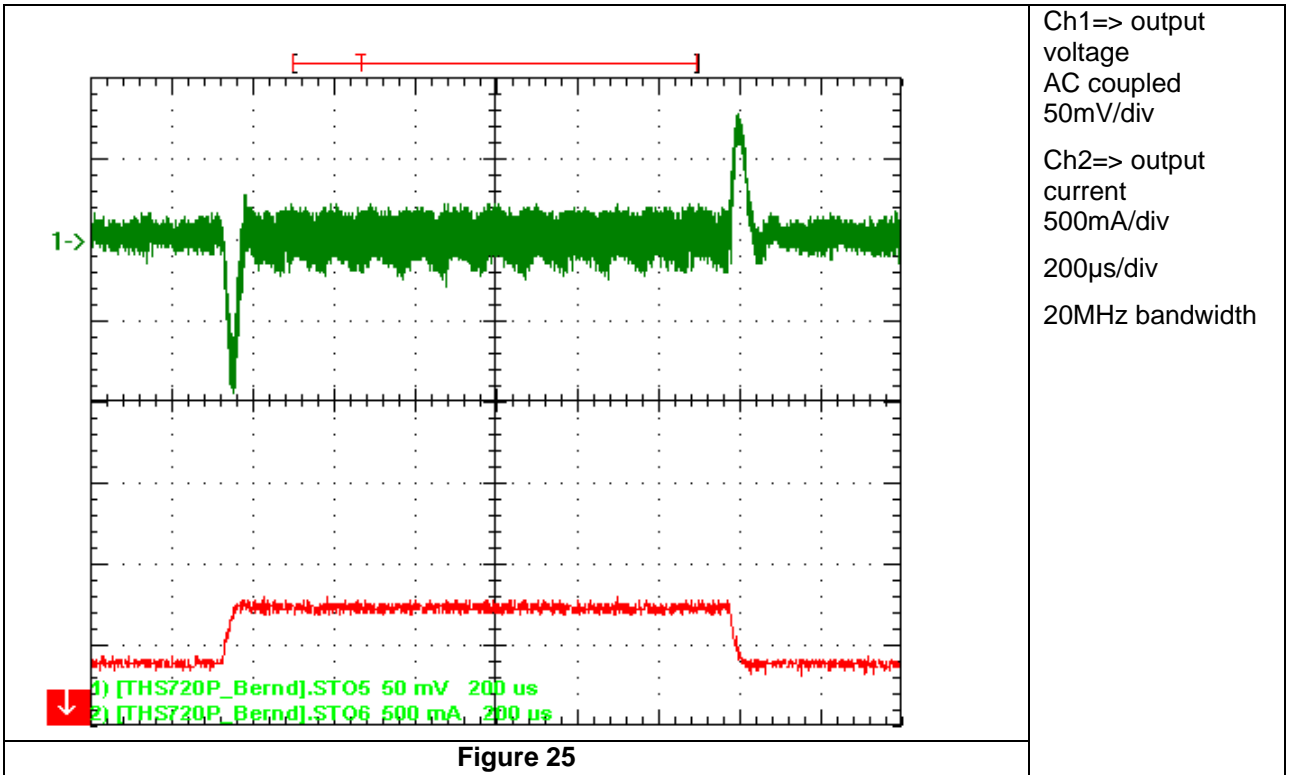


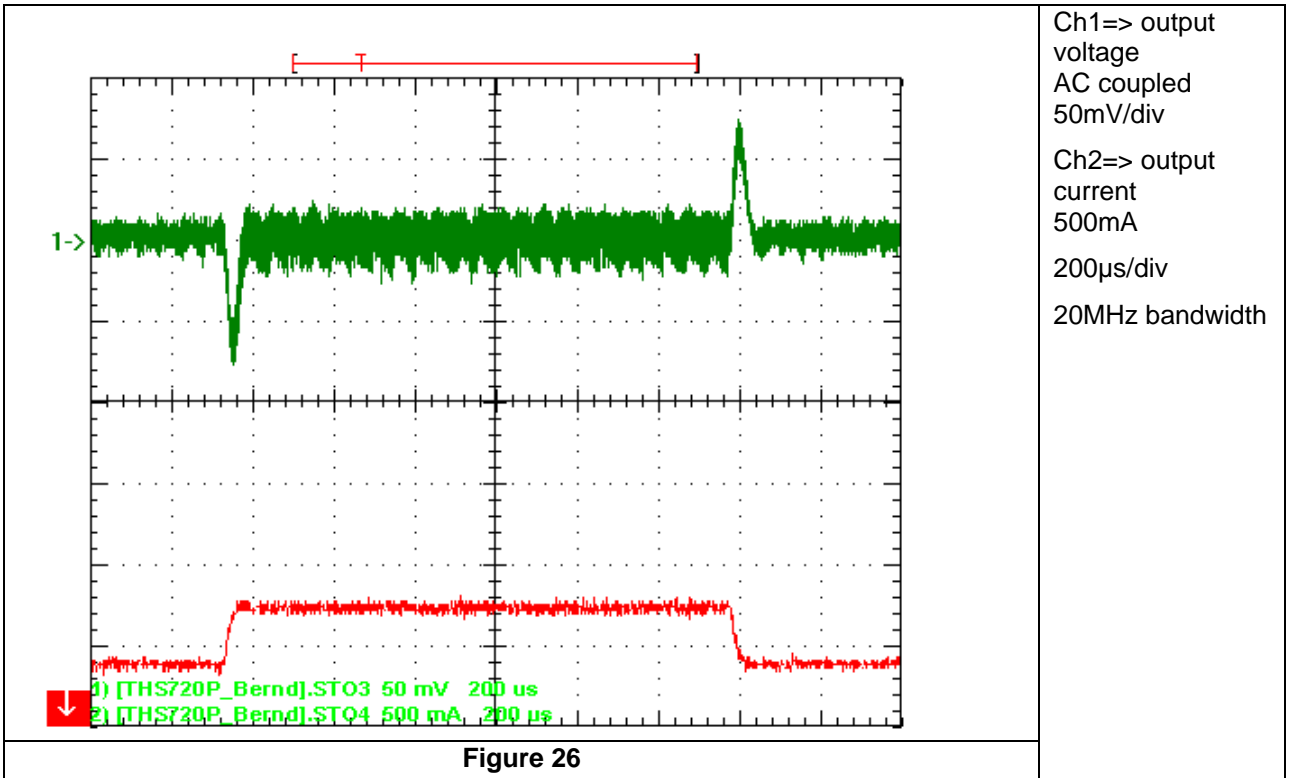
Figure 24

8 Load Transients

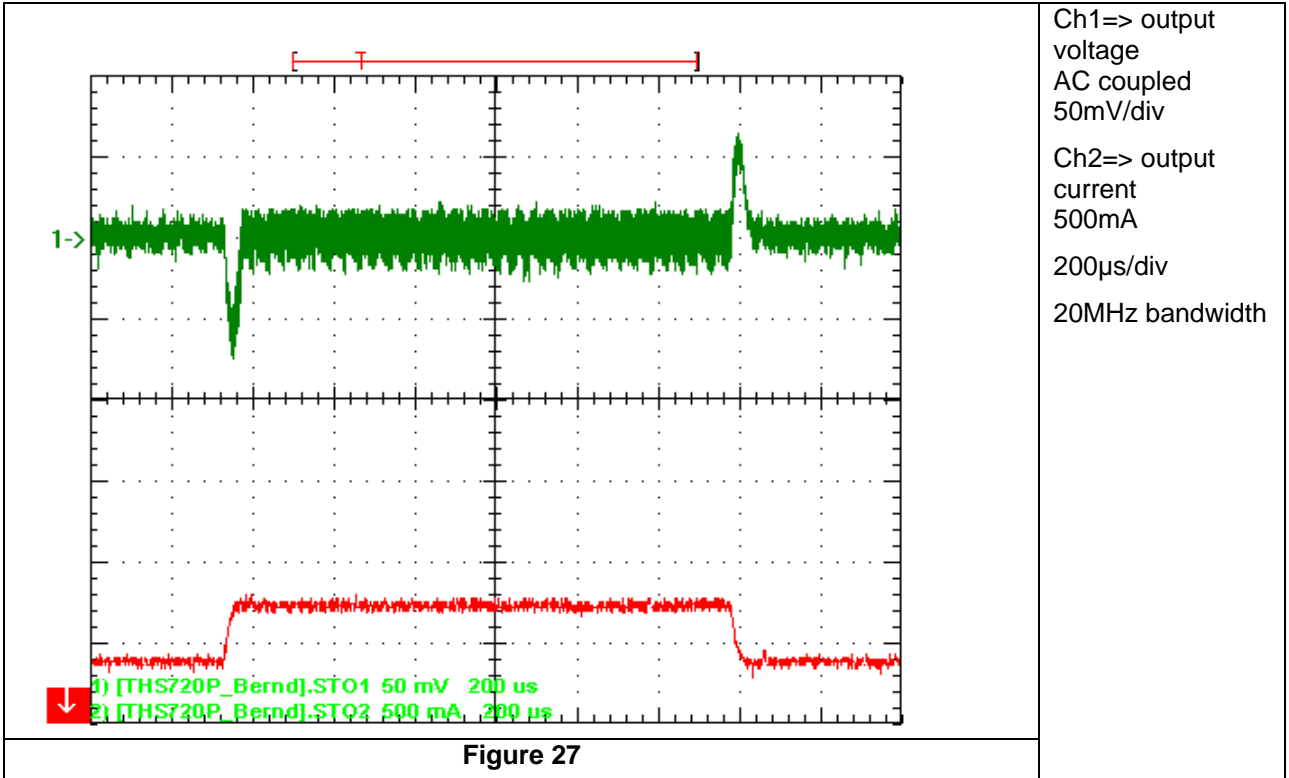
A output current change from 0.35A to 0.7A results in following Figure 25. The input voltage was set to 8V



A output current change from 0.35A to 0.7A results in following Figure 26. The input voltage was set to 22V



A output current change from 0.35A to 0.7A results in following Figure 27. The input voltage was set to 36V



9 Control Loop Frequency Response

The control loop frequency response with 0.7A load and 8V, 22V and 36V input voltage is shown in Figure 28

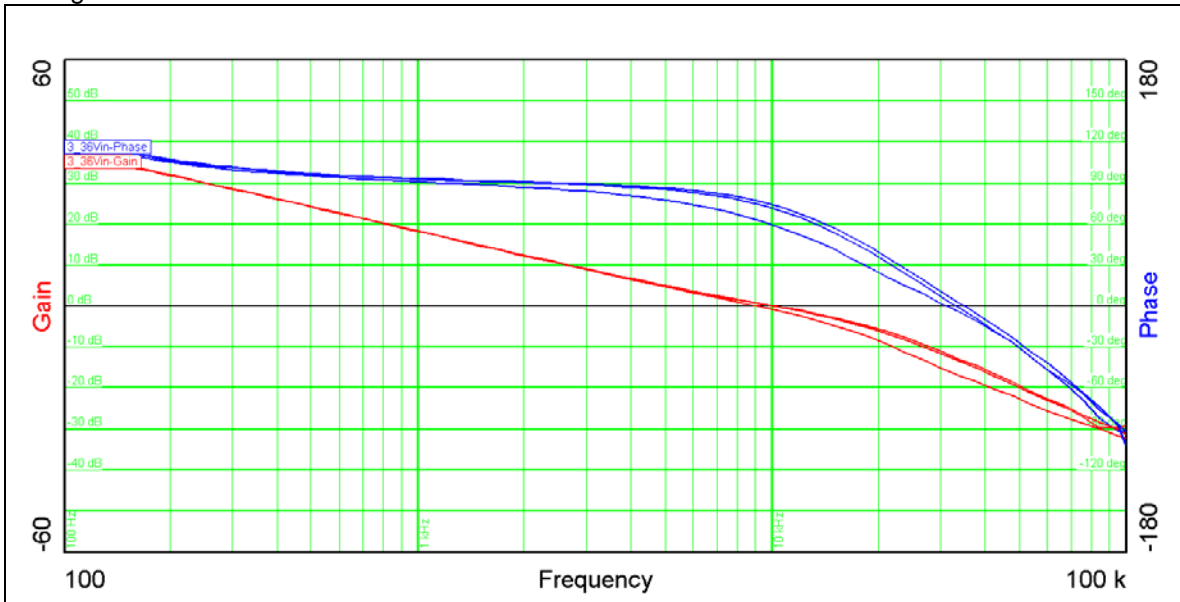


Figure 28

Table 1 summarizes the results.

Vin	8V	22V	36V
Bandwidth (kHz)	9	10	10
Phase margin	63°	71.8°	73.7°
slope (20dB/decade)	-0.97	-0.8	-0.8
gain margin (dB)	-15.8	-13.3	-13.5
slope (20dB/decade)	-1.73	-1.84	-1.79
freq (kHz)	31.4	33.3	35

Table 1

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