PMP5694RevB Test Results

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.

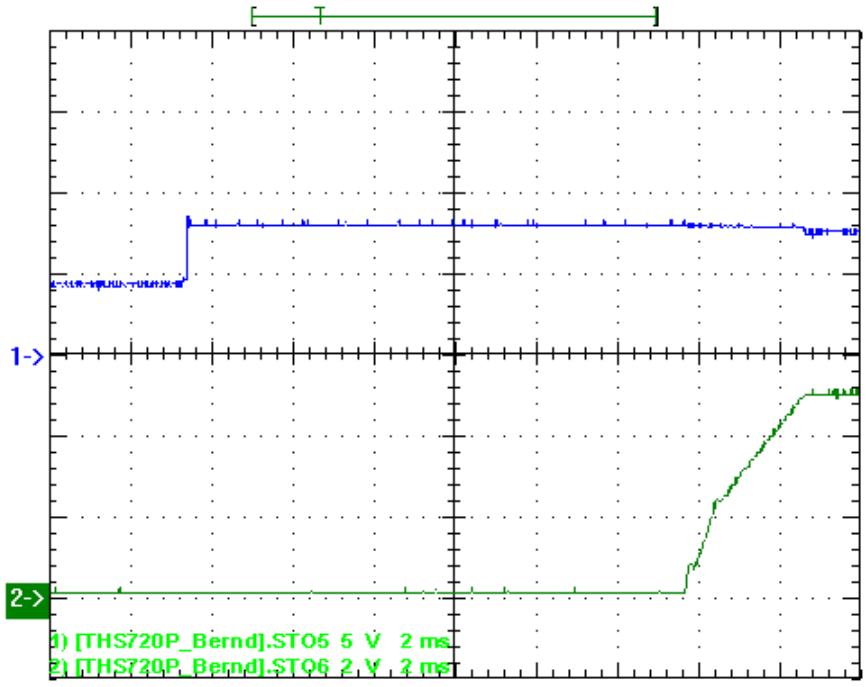


Figure 1

Ch1=> input voltage 5V/div

Ch2=> output voltage 2V/div

2ms/div

20MHz bandwidth

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

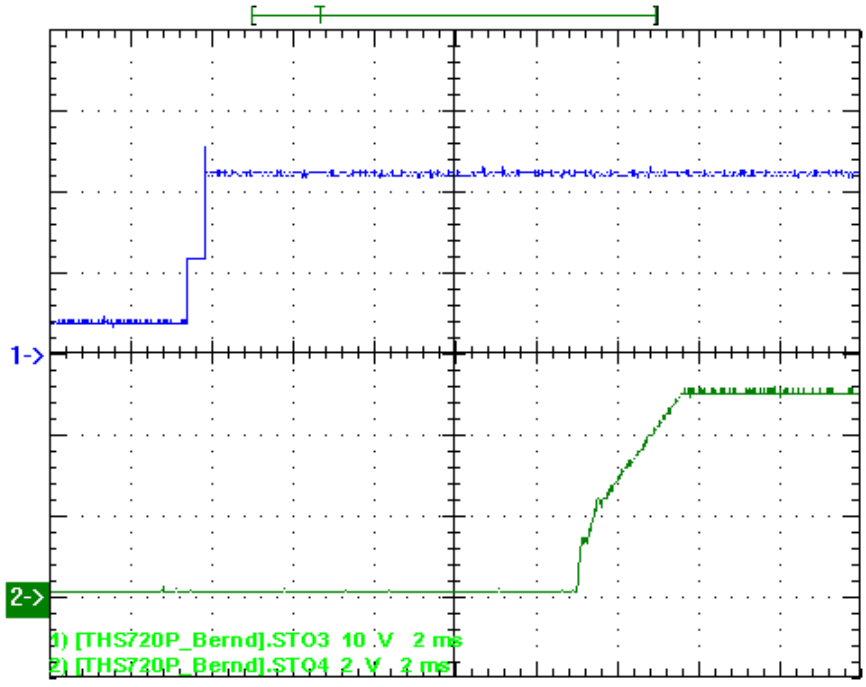


Figure 2

Ch2=> input voltage 10V/div

Ch2=> output voltage 2V/div

2ms/div

20MHz bandwidth

PMP5694RevB Test Results

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

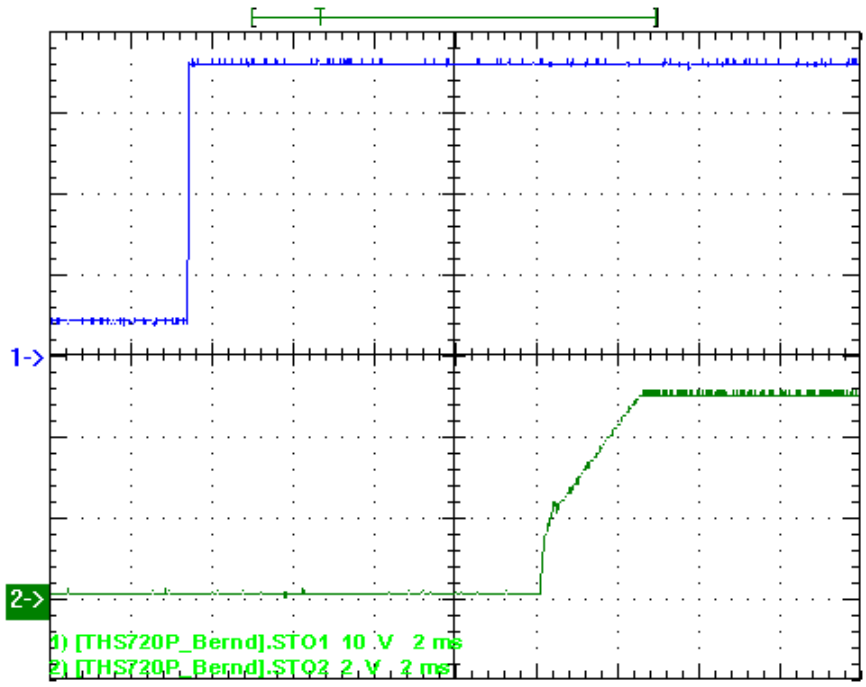


Figure 3

Ch1=> input voltage 10V/div

Ch2=> output voltage 2V/div

2ms/div

20MHz bandwidth

2 Shutdown

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

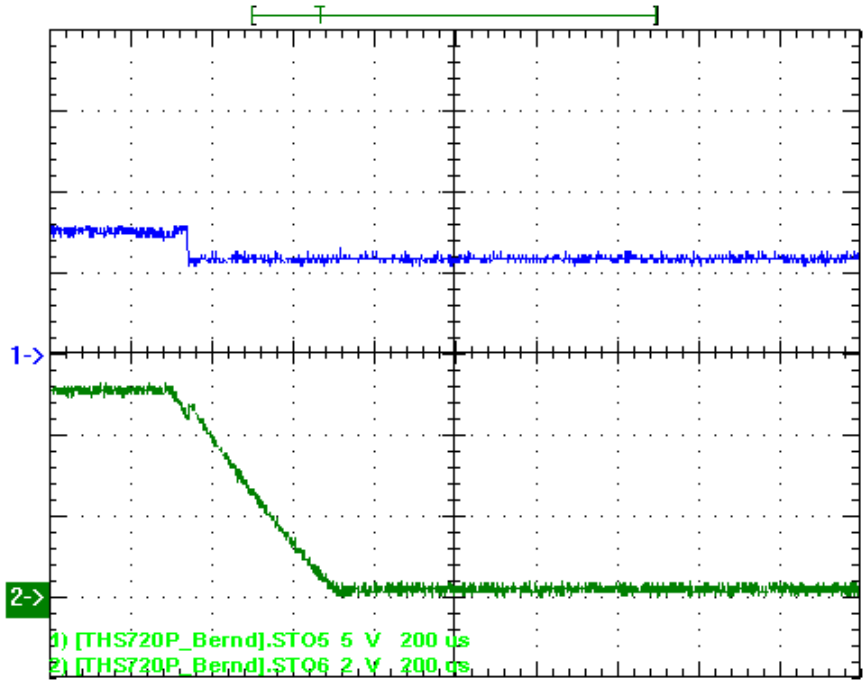


Figure 4

Ch1=> input voltage 5V/div

Ch2=> output voltage 2V/div

200µs/div

20MHz bandwidth

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

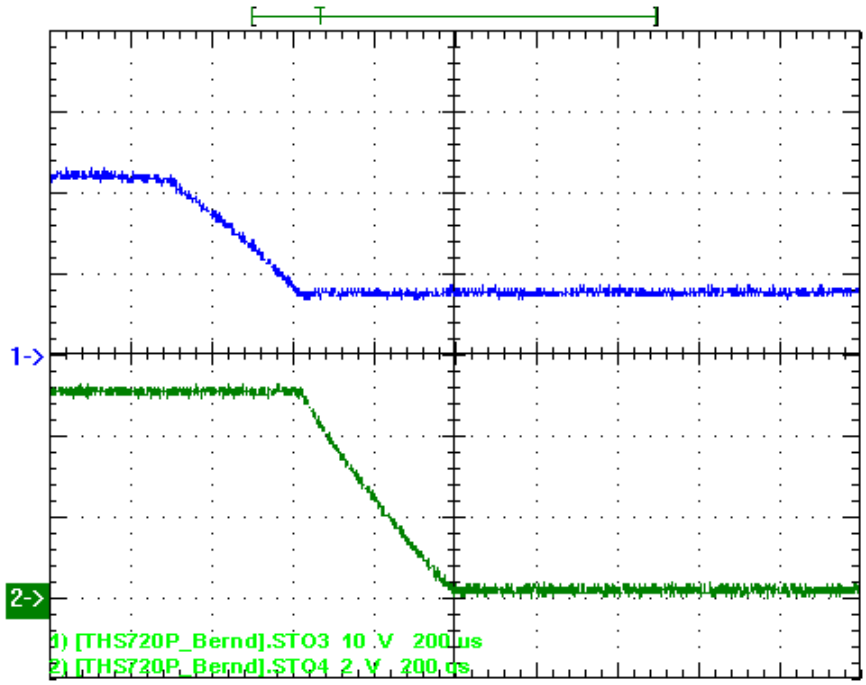


Figure 5

Ch1=> input voltage 10V/div

Ch2=> output voltage 2V/div

200µs/div

20MHz bandwidth

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

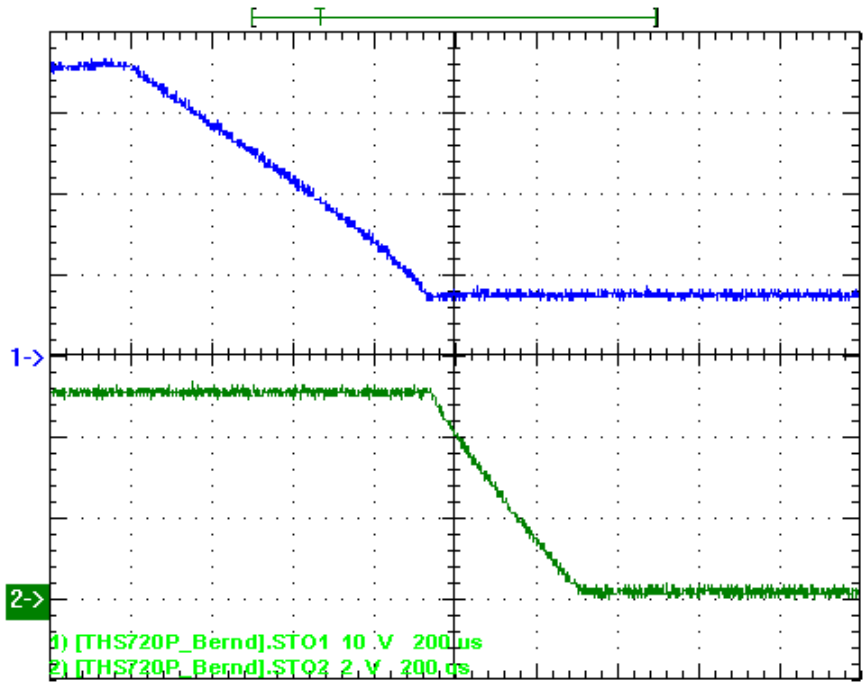


Figure 6

Ch1=> input voltage
10V/div

Ch2=> output voltage
2V/div

200µs/div

20MHz bandwidth

3 Efficiency

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

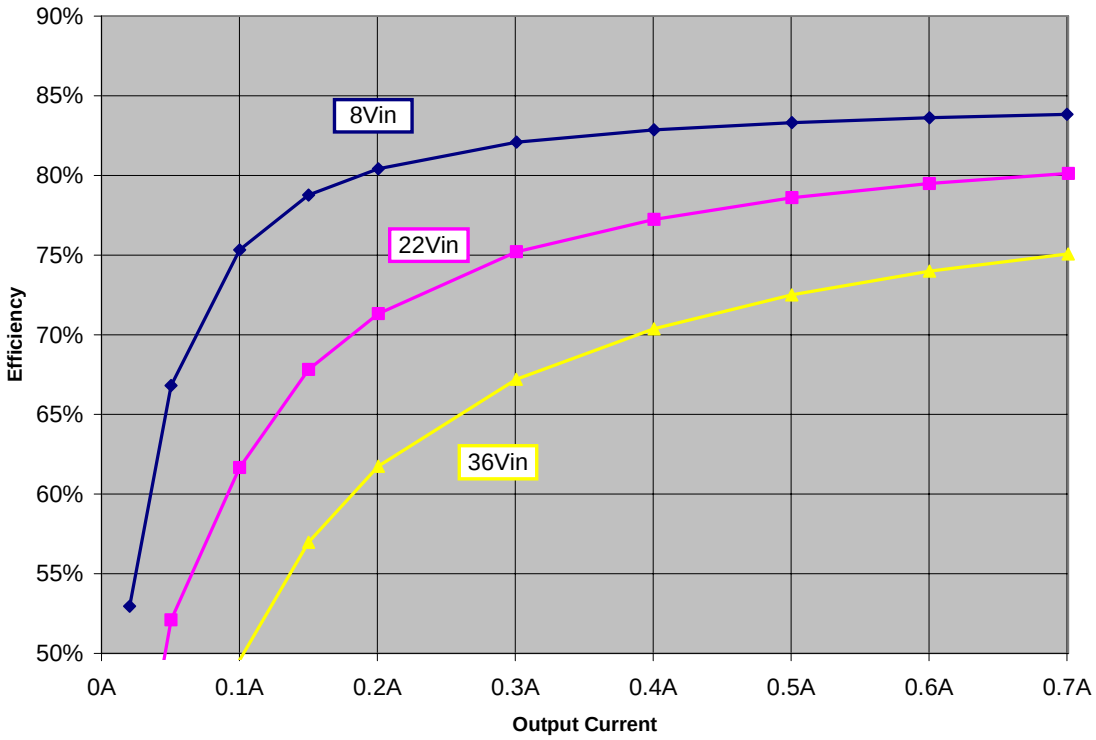


Figure 7

4 Load regulation

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

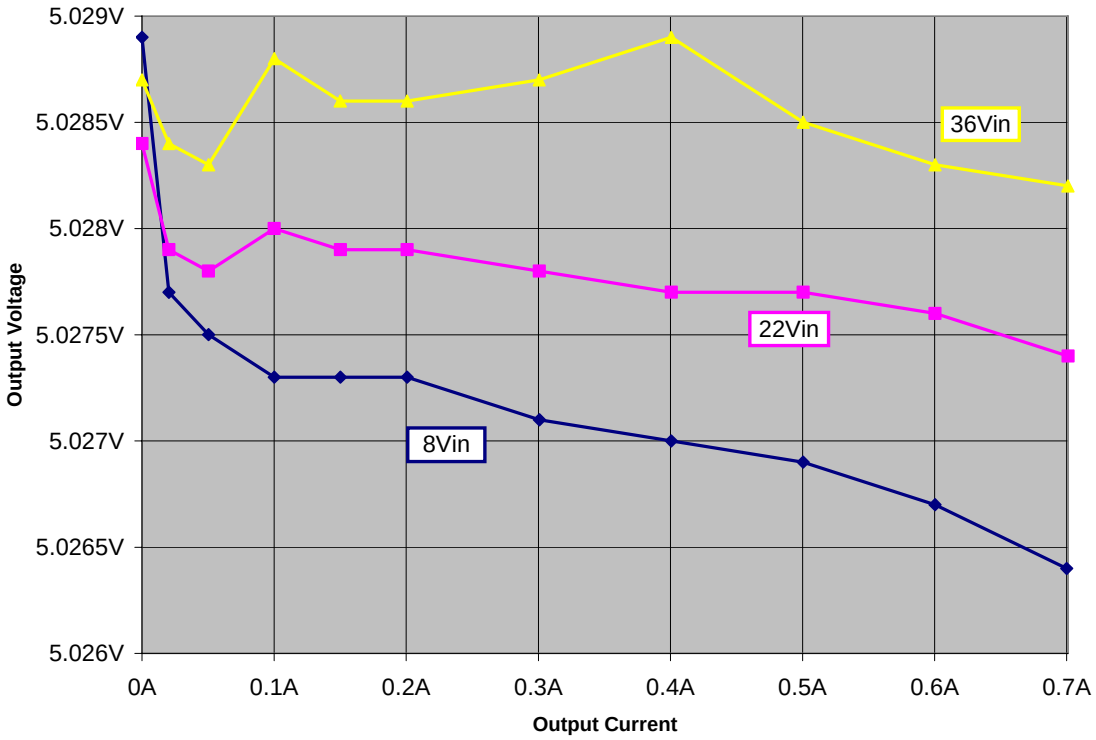


Figure 8

5 Line Regulation

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

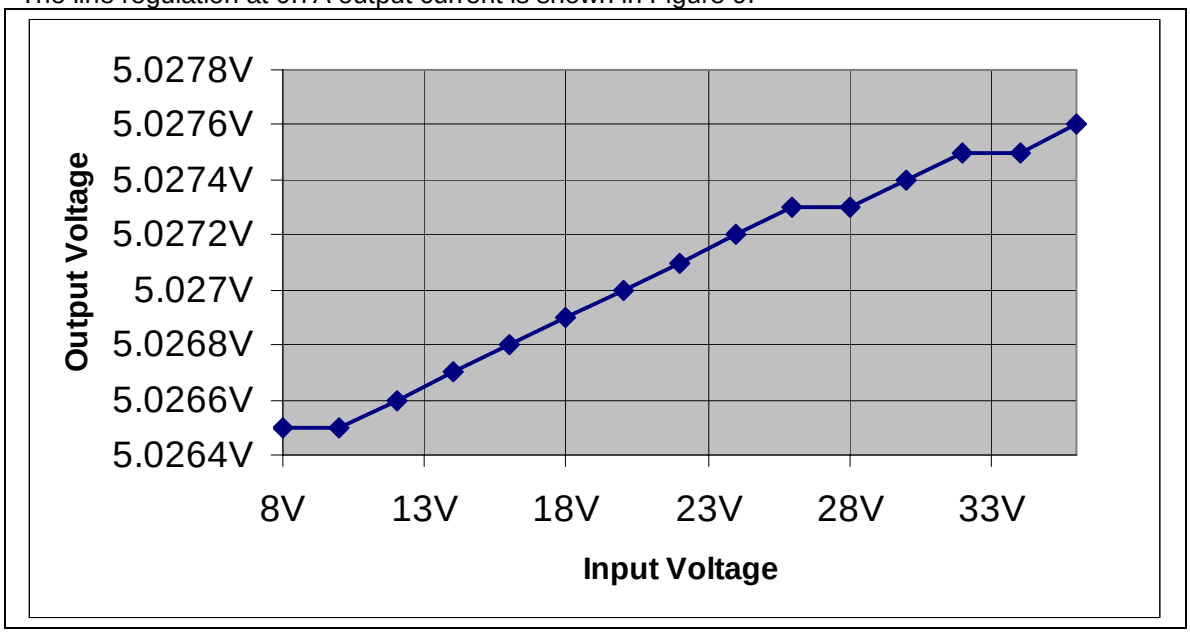


Figure 9

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

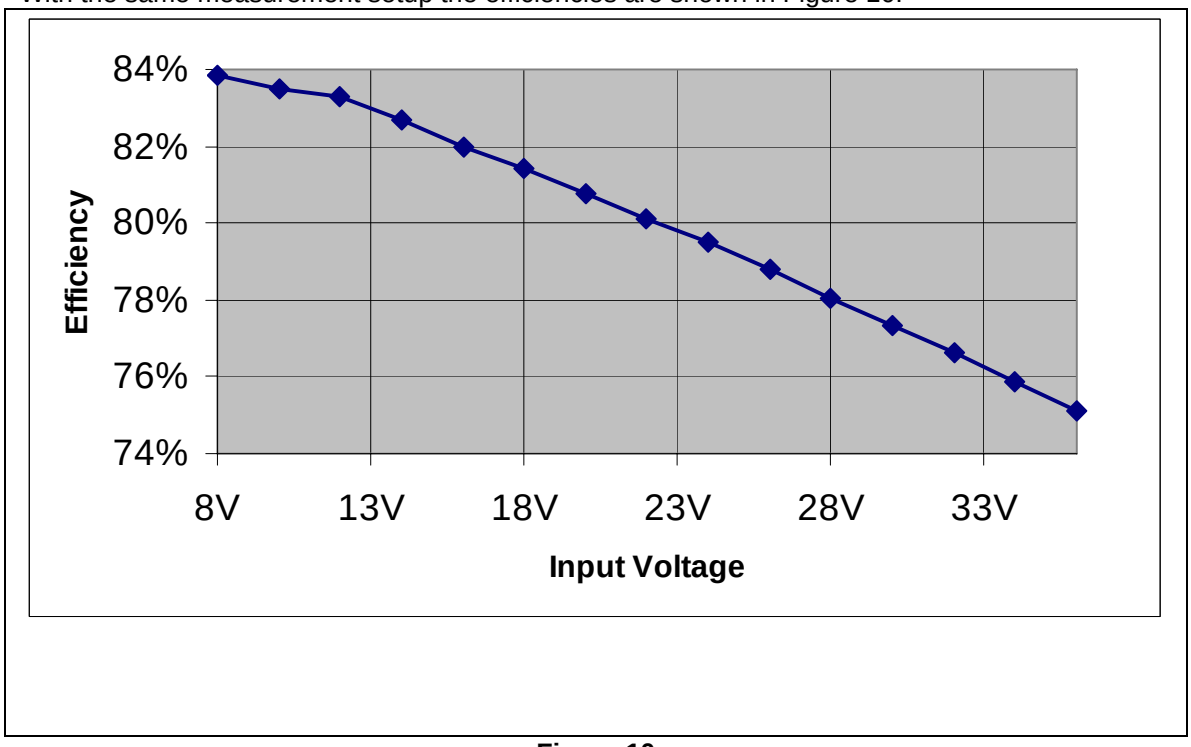
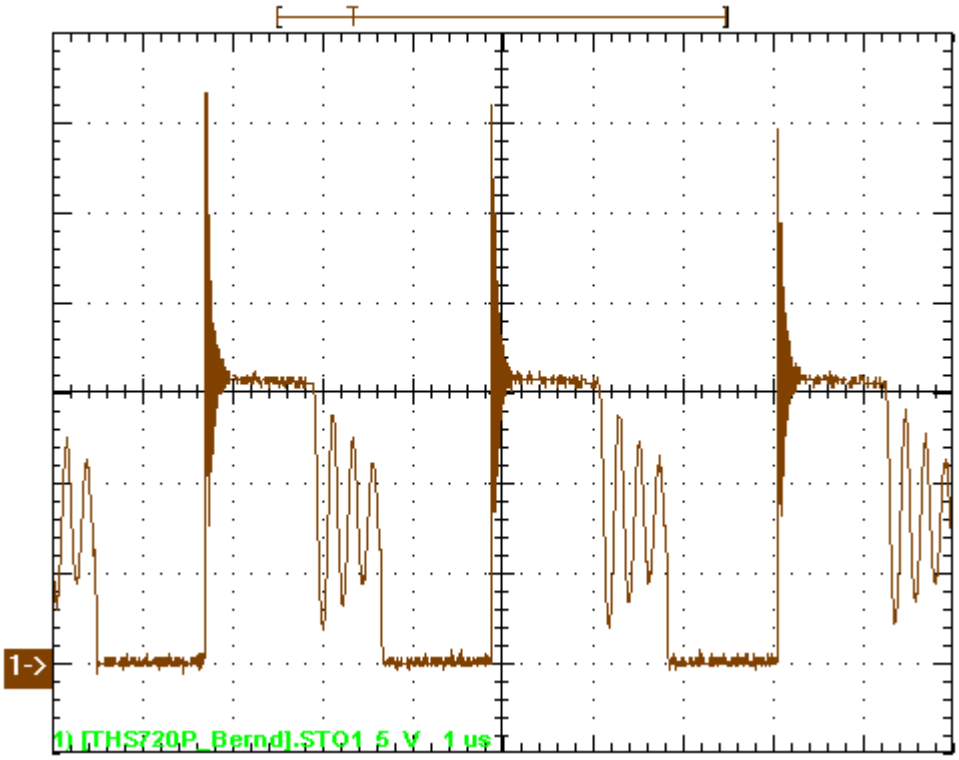


Figure 10

6 Switch Node Waveform

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

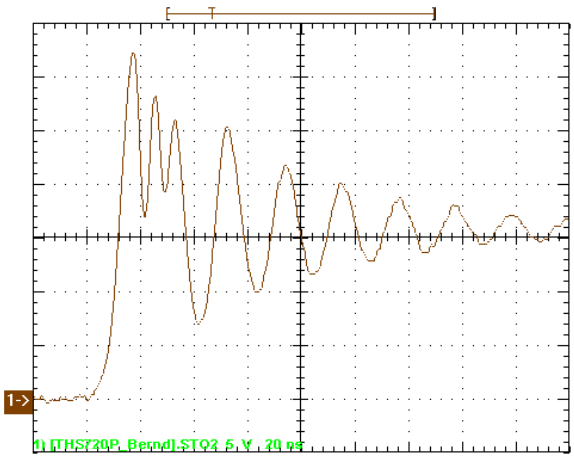


Ch1 => switchnode
5V/div

1µs/div

full bandwidth

Figure 11



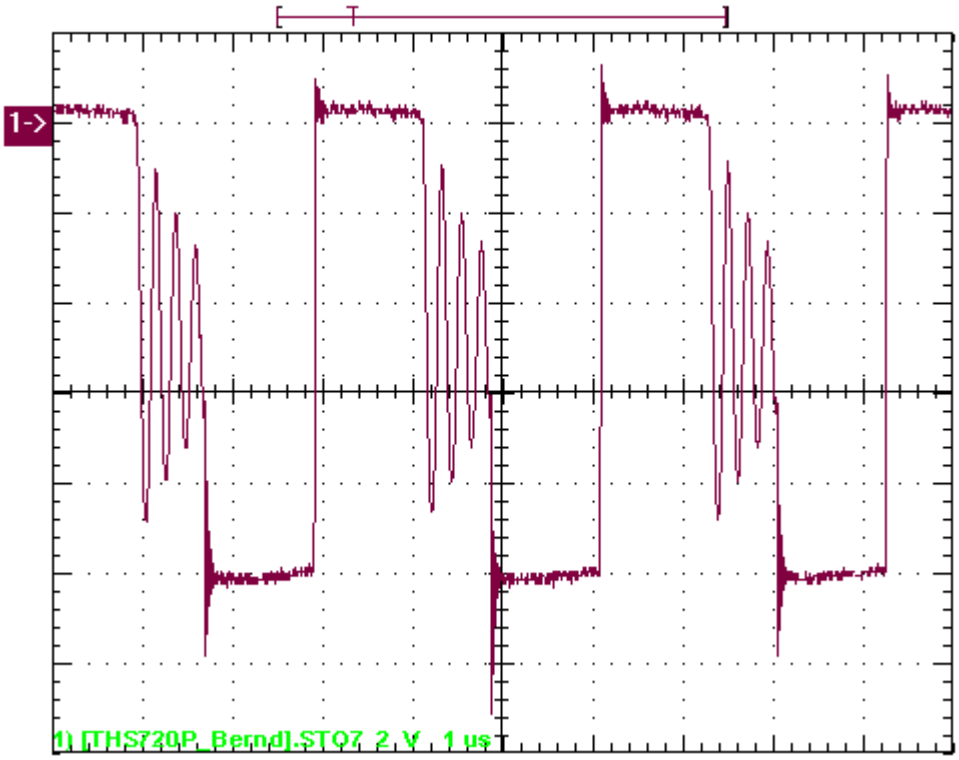
Ch1 => switchnode
5V/div

20ns/div

full bandwidth

Figure 12

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

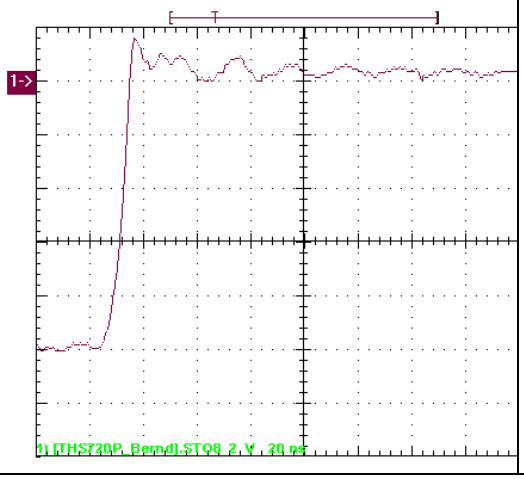


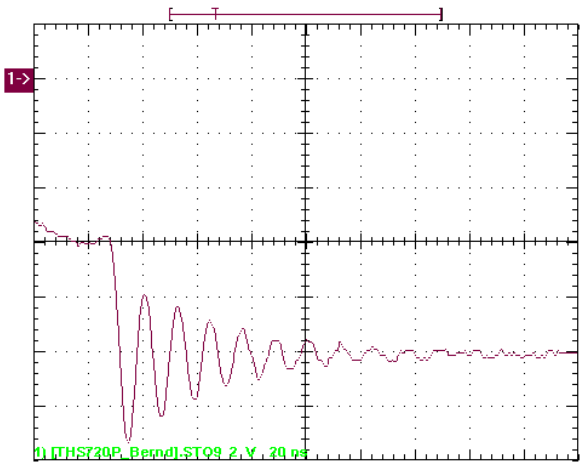
Ch1 => switchnode
2V/div

1µs/div

full bandwidth

Figure 13





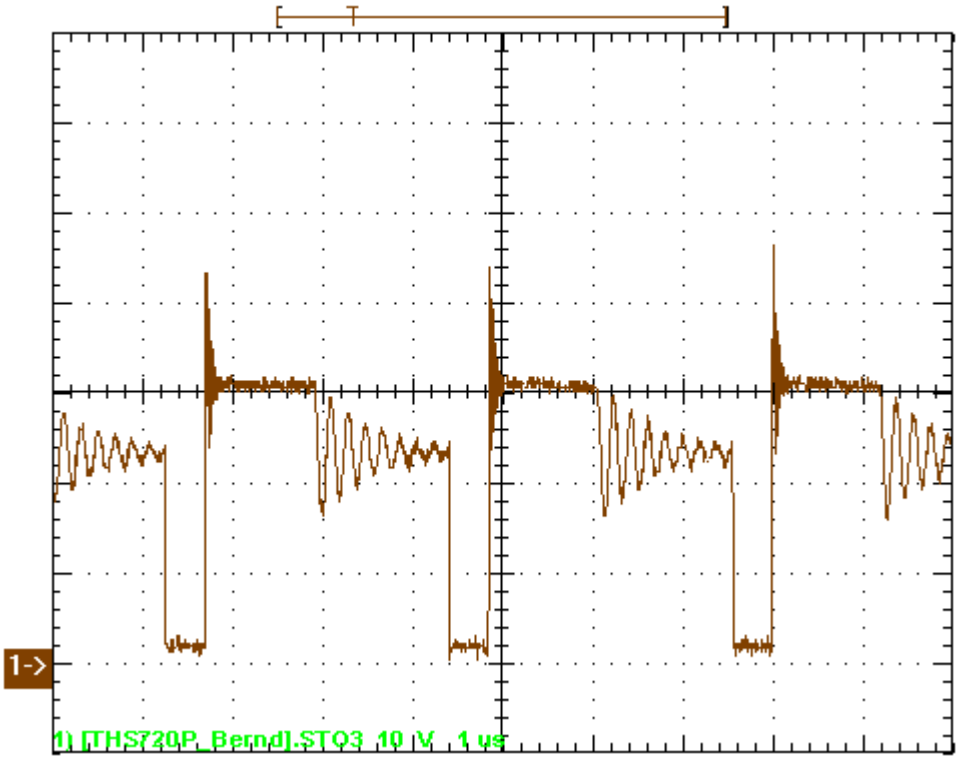
Ch1 => switchnode
2V/div

20ns/div

full bandwidth

Figure 14

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

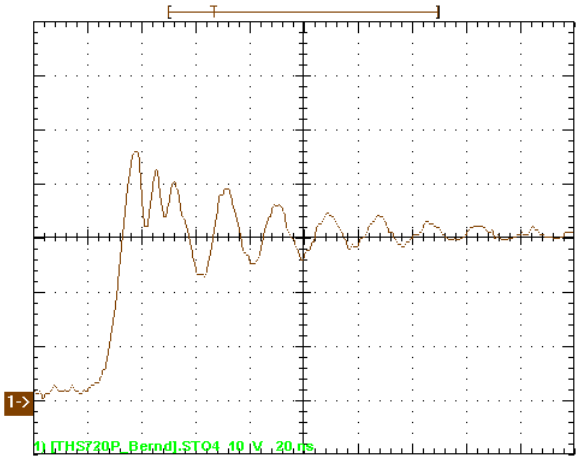


Ch1 => switchnode
10V/div

1µs/div

full bandwidth

Figure 15



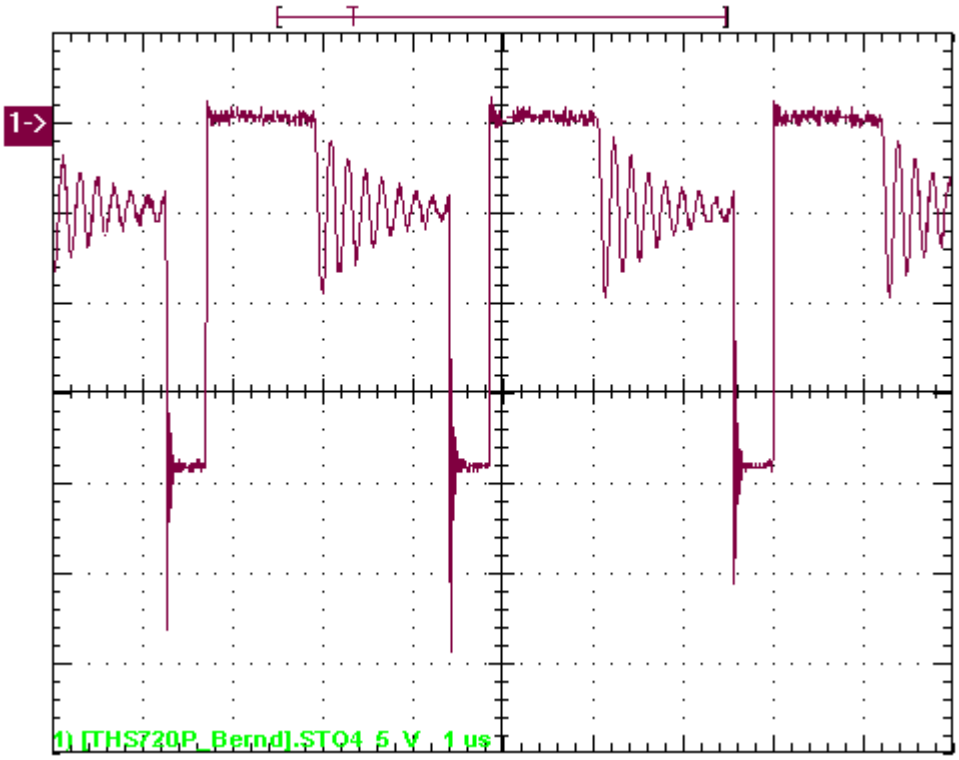
Ch1 => switchnode
10V/div

20ns/div

full bandwidth

Figure 16

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

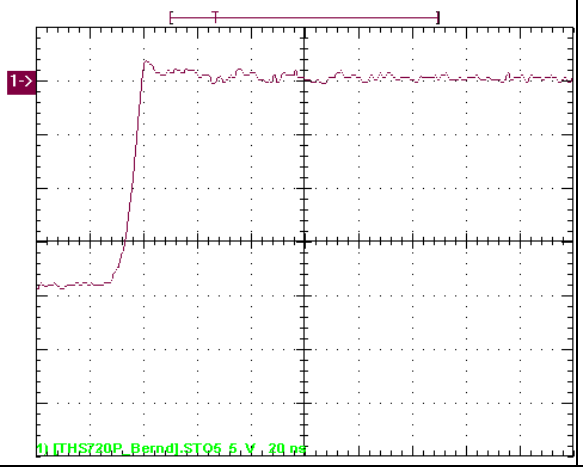


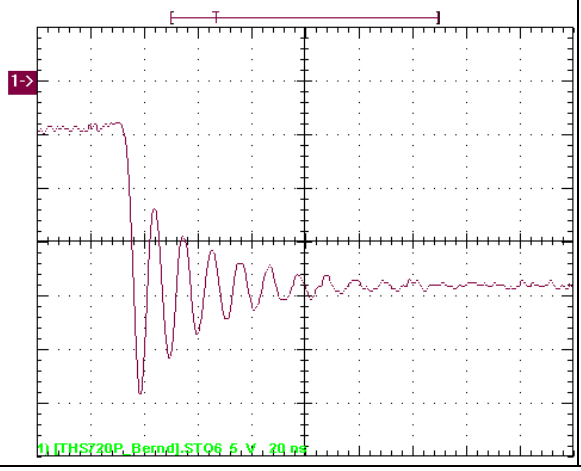
Ch1 => switchnode 5V/div

1µs/div

full bandwidth

Figure 17





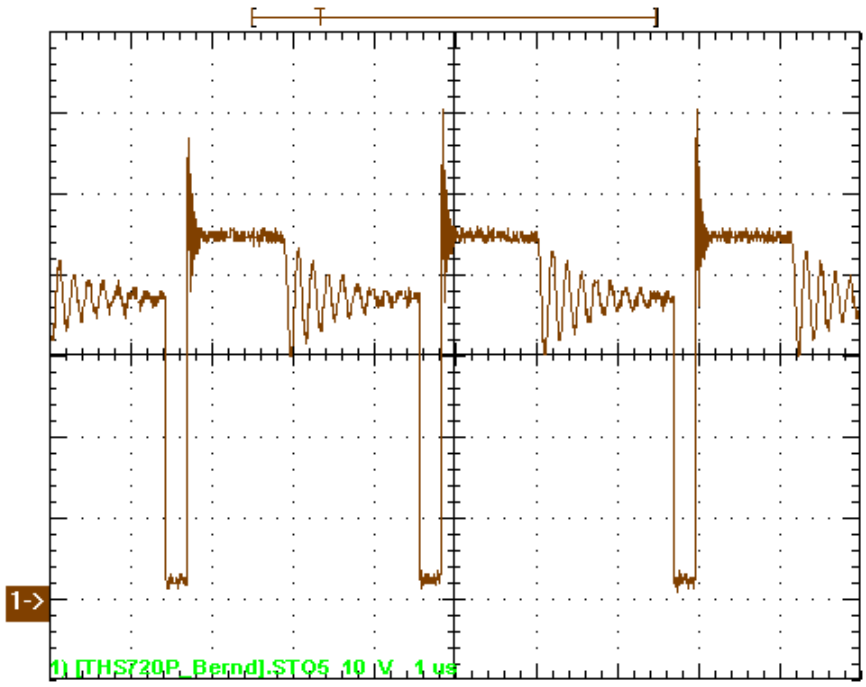
Ch1 => switchnode 5V/div

20ns/div

full bandwidth

Figure 18

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

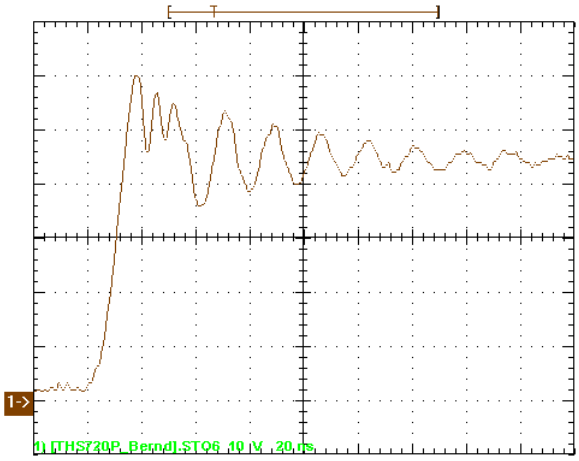


Ch1 => switchnode
10V/div

1µs/div

full bandwidth

Figure 19



Ch1 => switchnode
10V/div

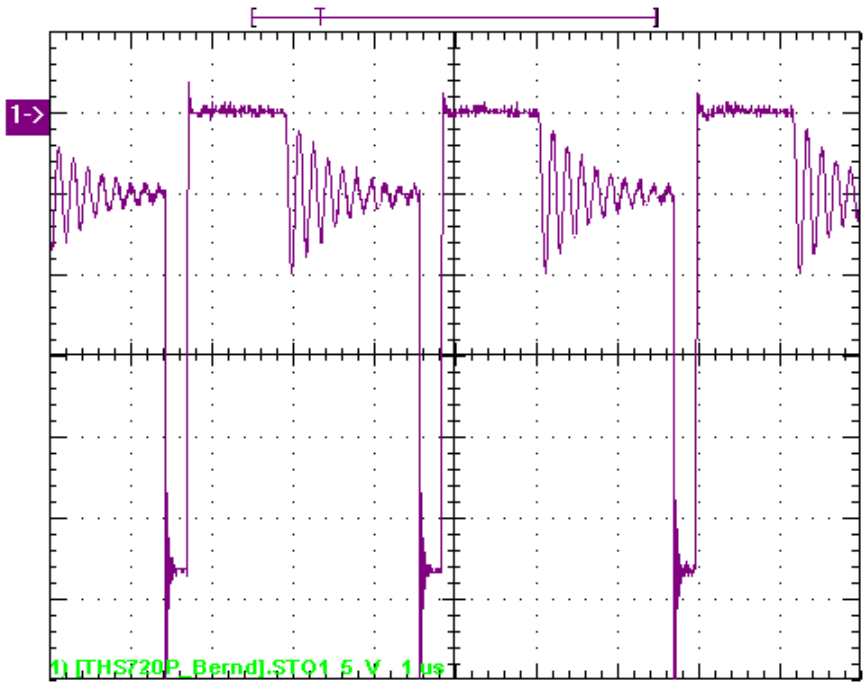
20ns/div

full bandwidth

Figure 20

PMP5694RevB Test Results

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

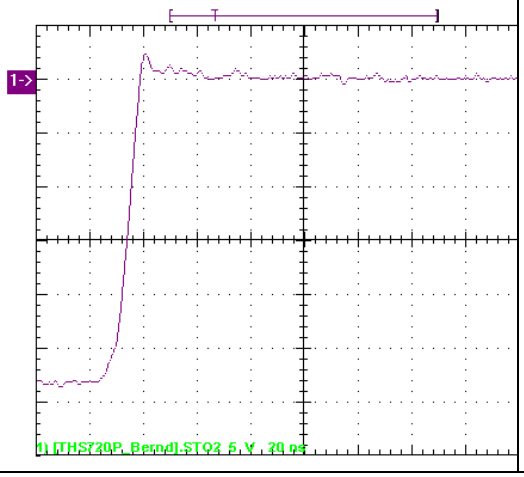


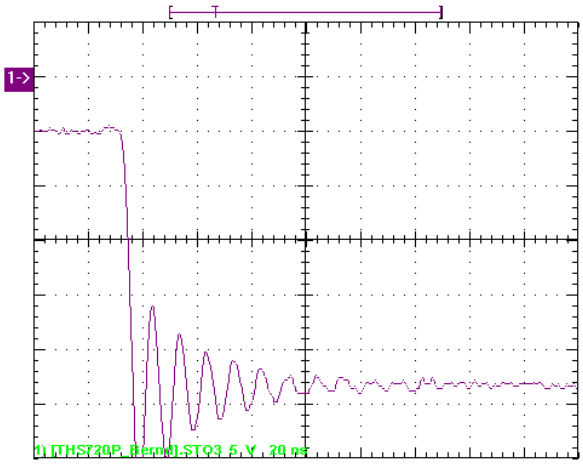
Ch1 => switchnode
5V/div

1µs/div

full bandwidth

Figure 21





Ch1 => switchnode
5V/div

20ns/div

full bandwidth

Figure 22

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.

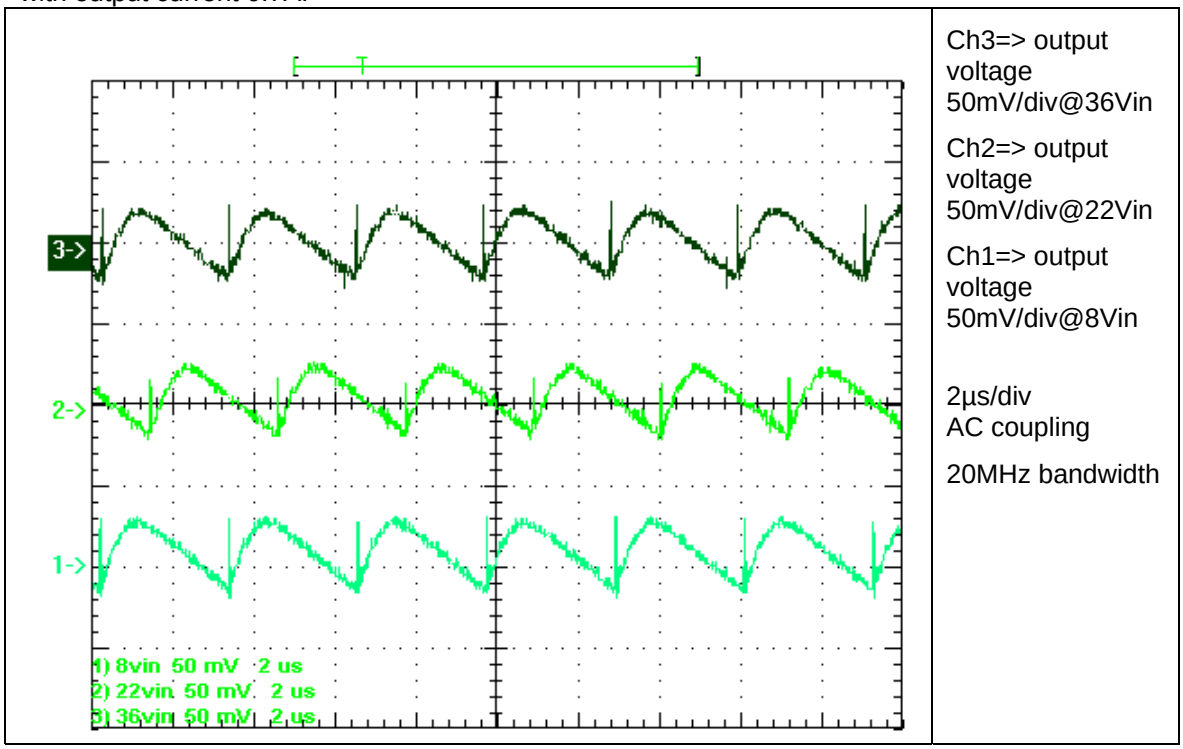


Figure 23

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

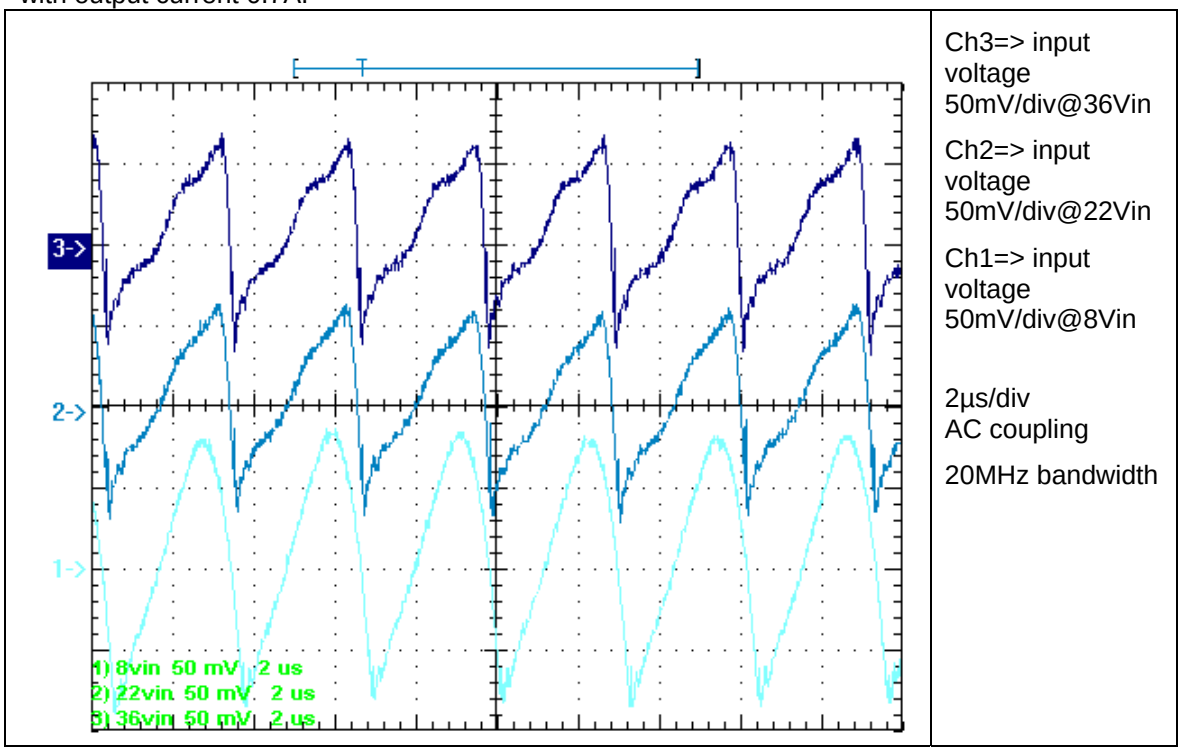


Figure 24

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

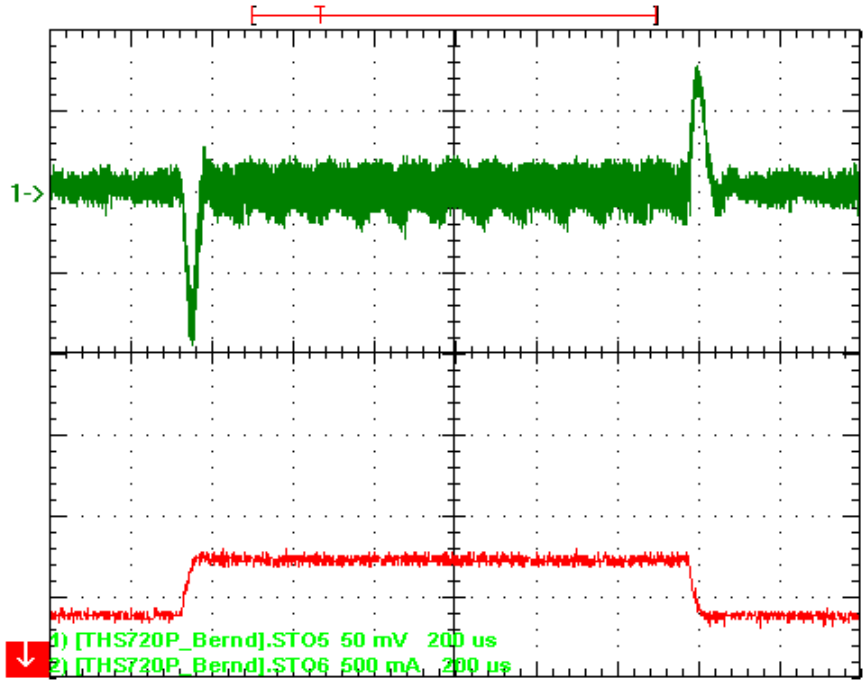


Figure 25

Ch1=> output voltage
AC coupled
50mV/div

Ch2=> output current
500mA/div

200µs/div

20MHz bandwidth

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

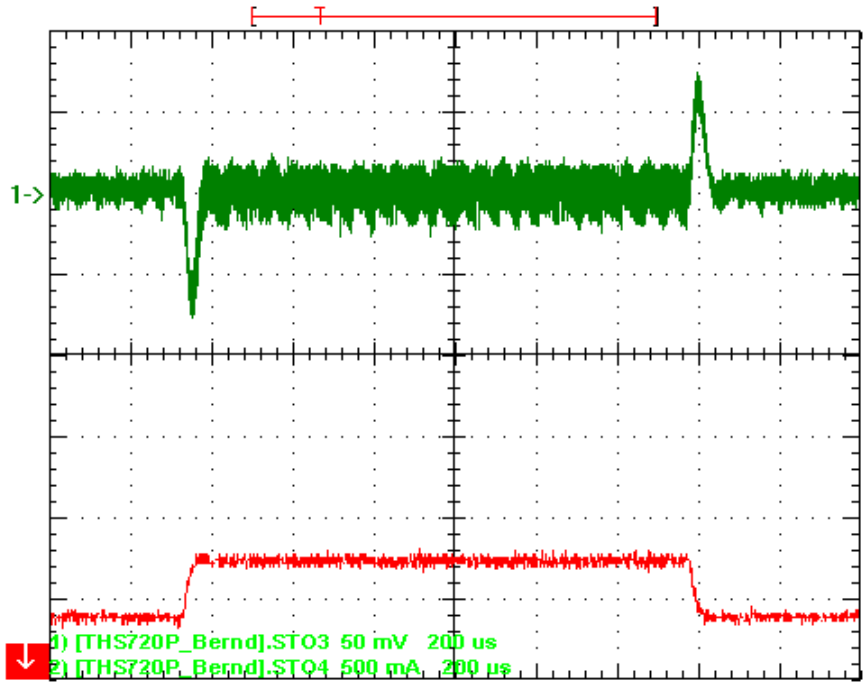


Figure 26

Ch1=> output voltage
AC coupled
50mV/div

Ch2=> output current
500mA

200µs/div

20MHz bandwidth

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

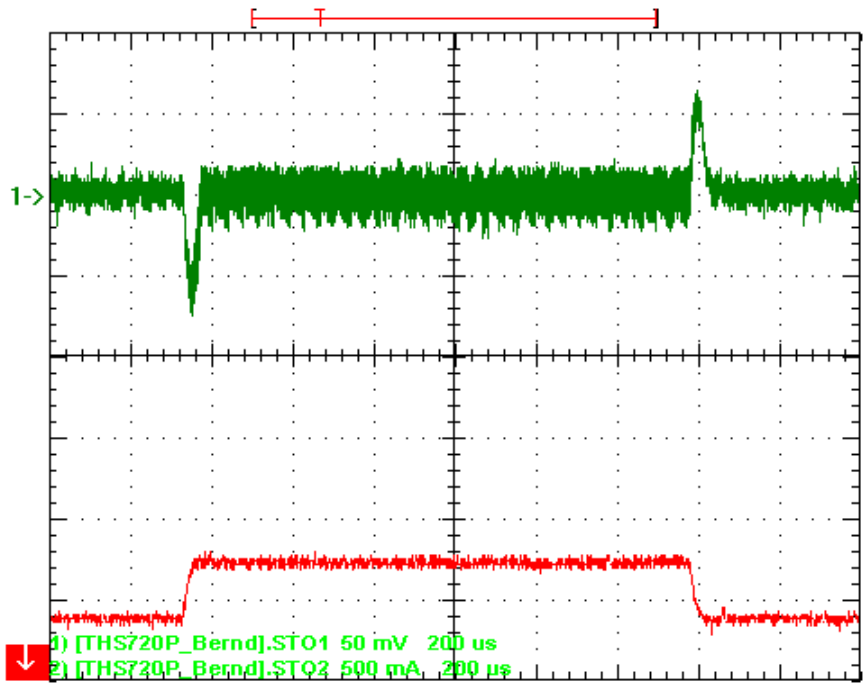


Figure 27

Ch1=> output voltage
AC coupled
50mV/div

Ch2=> output current
500mA

200µs/div

20MHz bandwidth

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

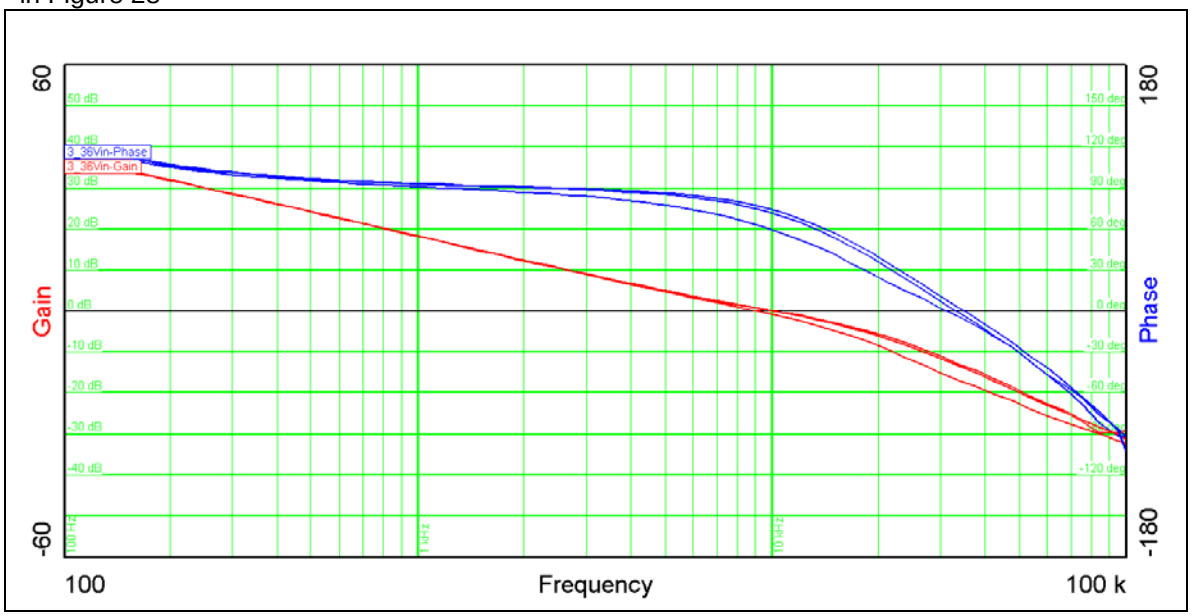


Figure 28

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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