1 Startup

The startup waveform with input voltage=20 V is shown in

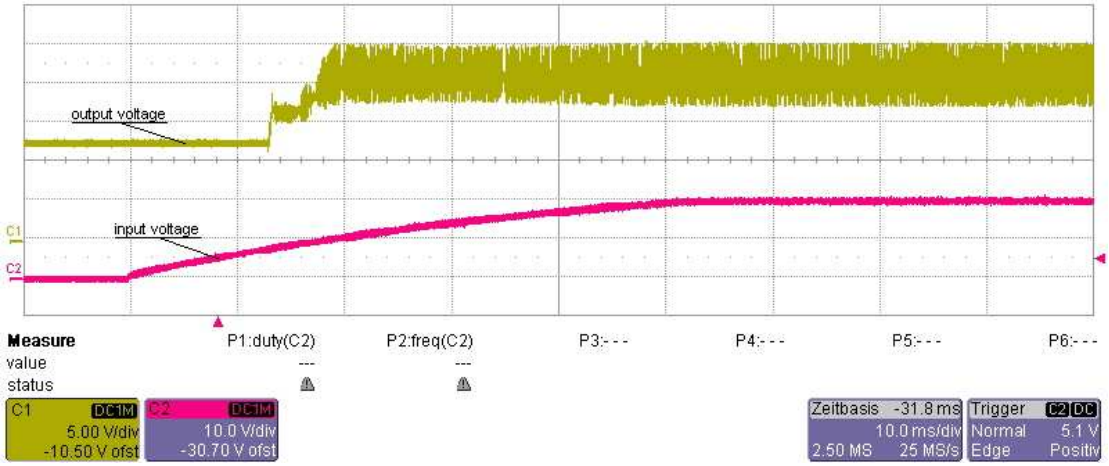

Figure 1. As Load LED (Citizen CL-L102-C7D) was used

Channel C2: **input voltage**
10V/div, 10 ms/div

Channel C1: **output voltage**
5V/div, 10 ms/div

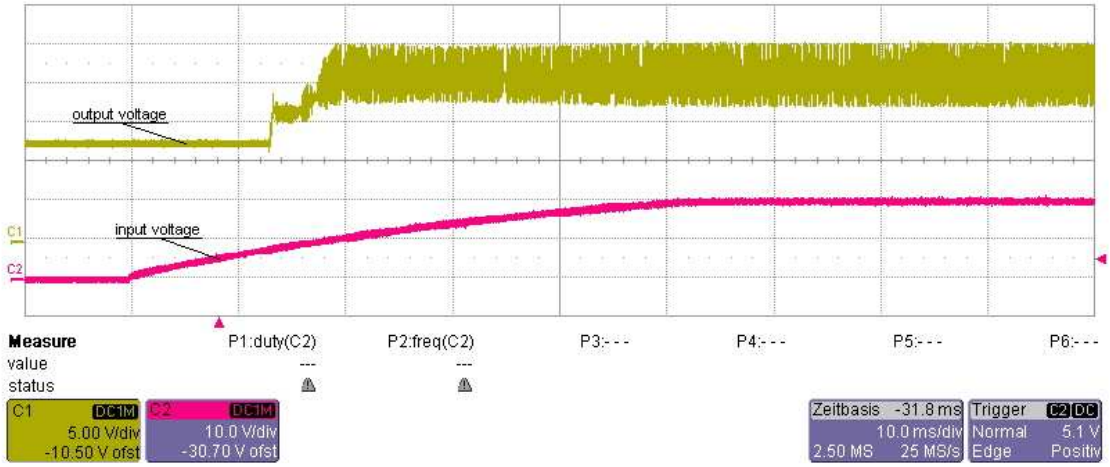

Figure 1

2 Shutdown

The shutdown waveform is shown in Figure 2. The input voltage is set at 20 V with a LED load on the output.

Channel C2: **input voltage**
10V/div, 10ms/div

Channel C1: **output voltage**
10V/div, 10ms/div

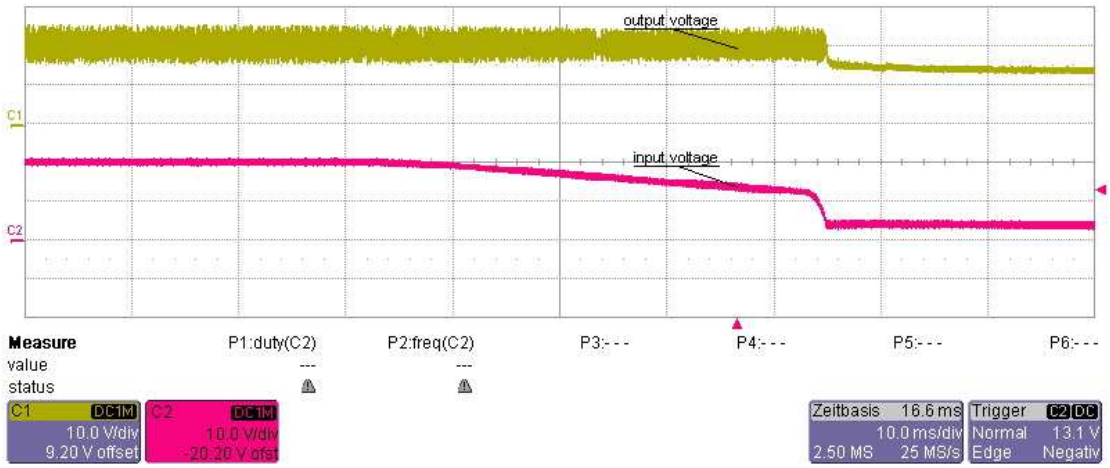

Figure 2

3 Efficiency

The efficiency with LED load is shown in

Vin [V]	Iin [A]	Vout [V]	Iout [A]	efficiency [%]
19.98	0.38	20.80	0.34	93.42
18.06	0.42	20.80	0.34	93.51
16.01	0.48	20.70	0.34	92.43
15.07	0.51	20.80	0.34	92.65
14.03	0.55	20.70	0.34	91.37
12.00	0.64	20.70	0.34	91.78
9.98	0.77	20.70	0.34	91.47

Table 1.

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9.98	0.77	20.70	0.34	91.47

Table 1

A graph of the efficiency is shown in Figure 3.

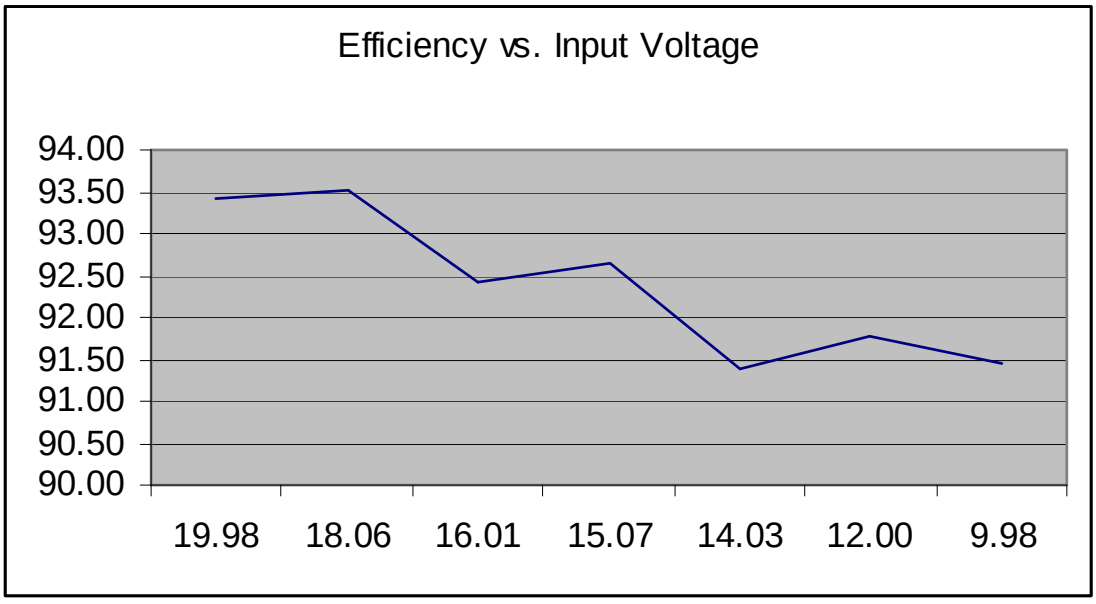


Figure 3

4 Load regulation

The load regulation with different input voltages is shown in Figure 4.

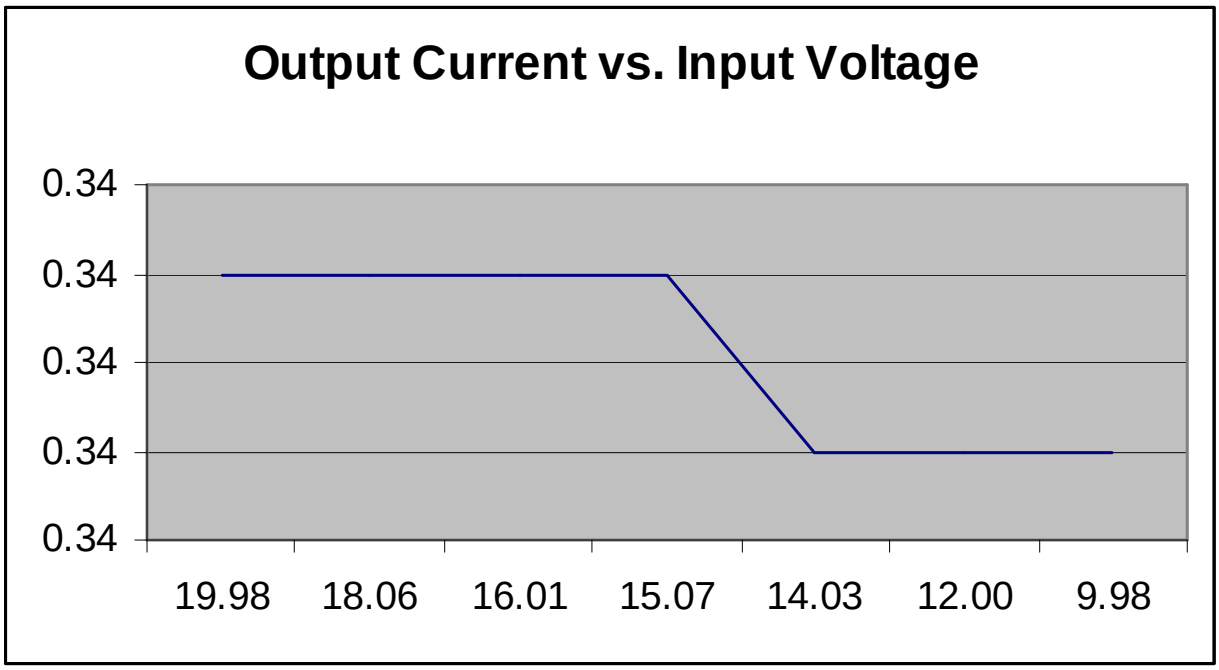


Figure 4

5 Input/Output ripple voltage

The output and input ripple voltage with LED Load is shown in Figure 5.

Channel 1: **output voltage**, AC coupled, full bandwidth

Channel 2: **input voltage,** AC coupled, full bandwidth

The curve were measured separately

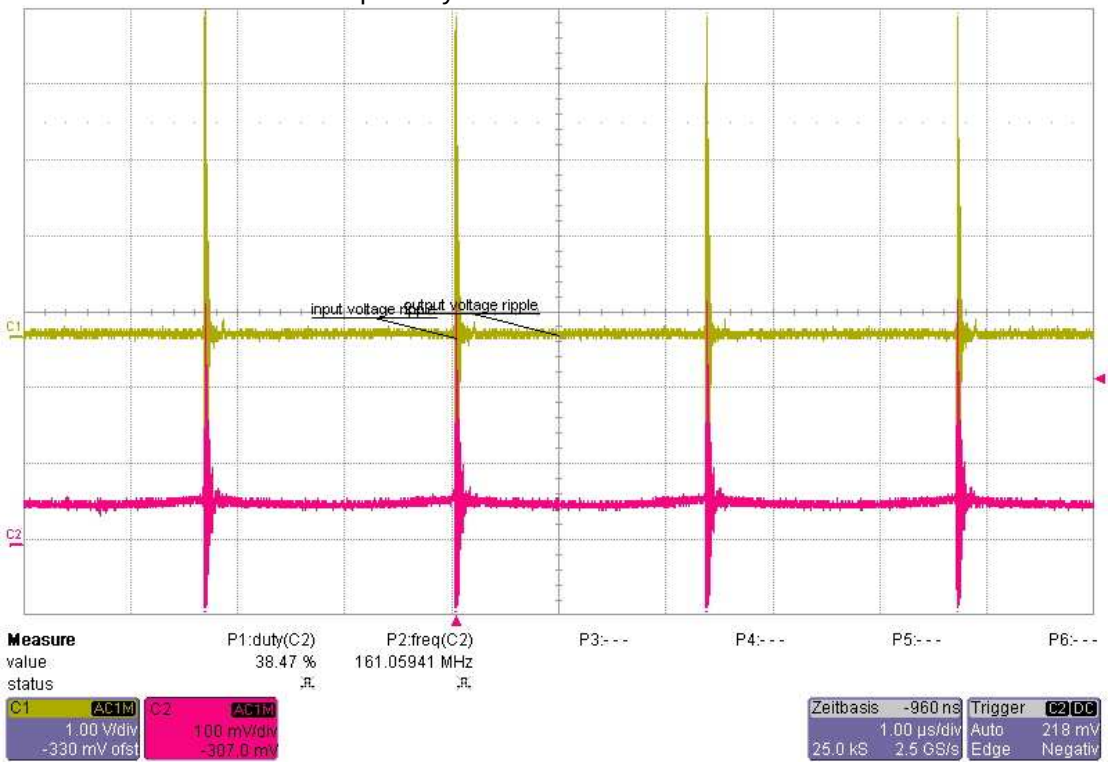


Figure 5

6 Frequency response

Figure 6 shows the loop response with both, 10 V and 20 V input. The load is a LED array with approx. 20.6 V forward voltage.

Vin = 10 V

A phase margin of 55.5°can be achieved at crossove r frequency of 4.8 kHz. A Gain margin of 28 dB is realized at a frequency of 50 kHz.

Vin = 20 V

A phase margin of 103°can be achieved at crossover frequency of 6.2 kHz. A Gain margin of 14 dB is realized at a frequency of 31.8 kHz.

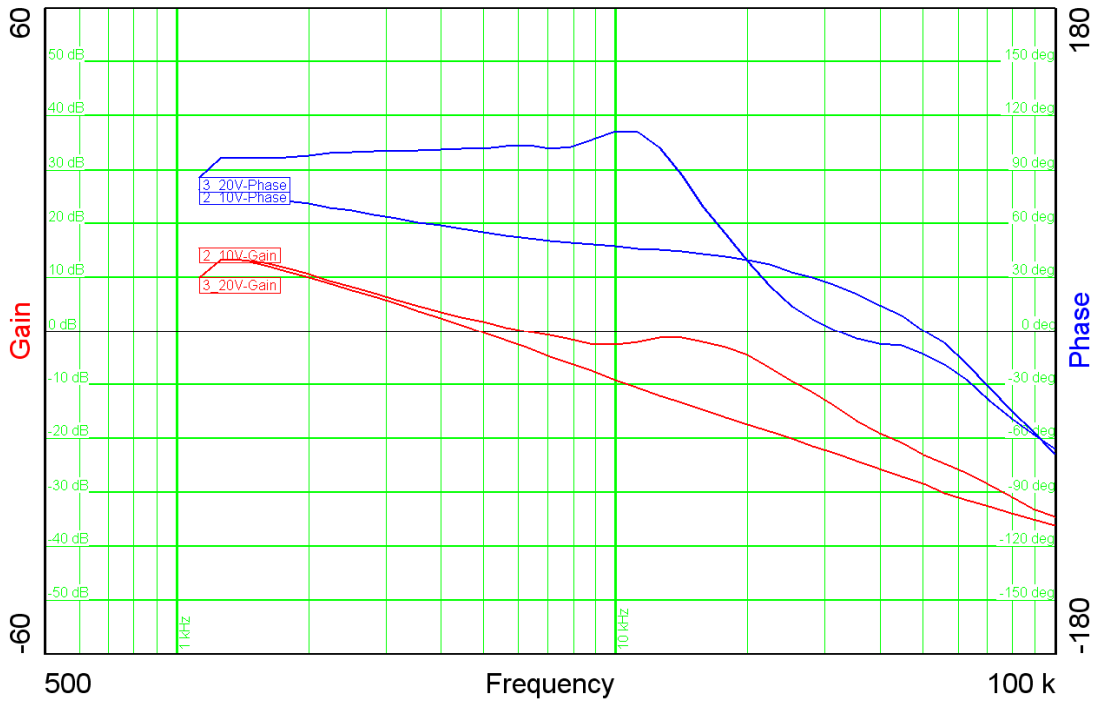
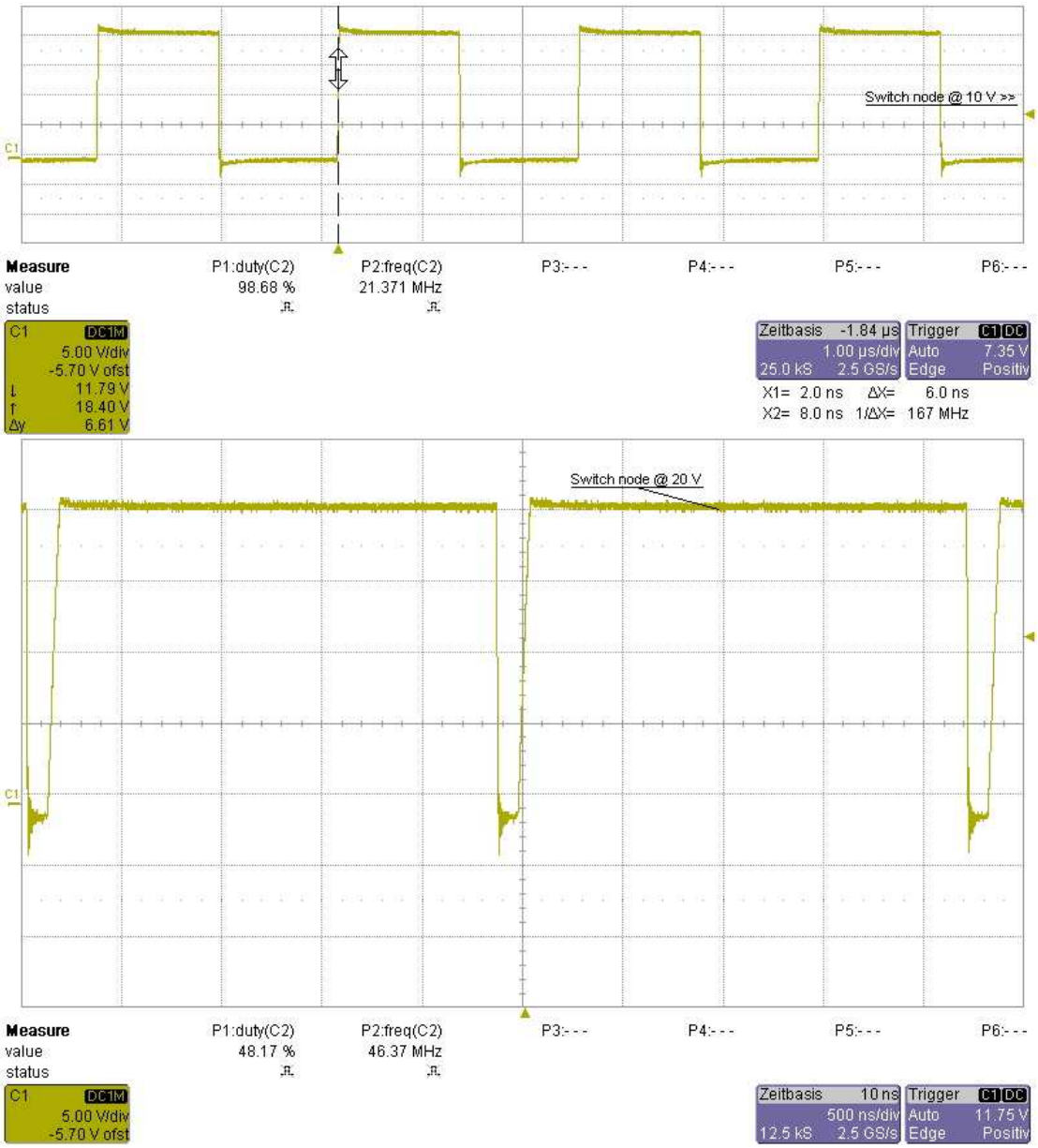


Figure 6

7 Miscellaneous waveforms

The voltage on the switch node is shown in Figure 7.



5V/div
1 us/div

10 V input

5 V/ Div
500 ns/ Div

20 V input

Figure 7

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