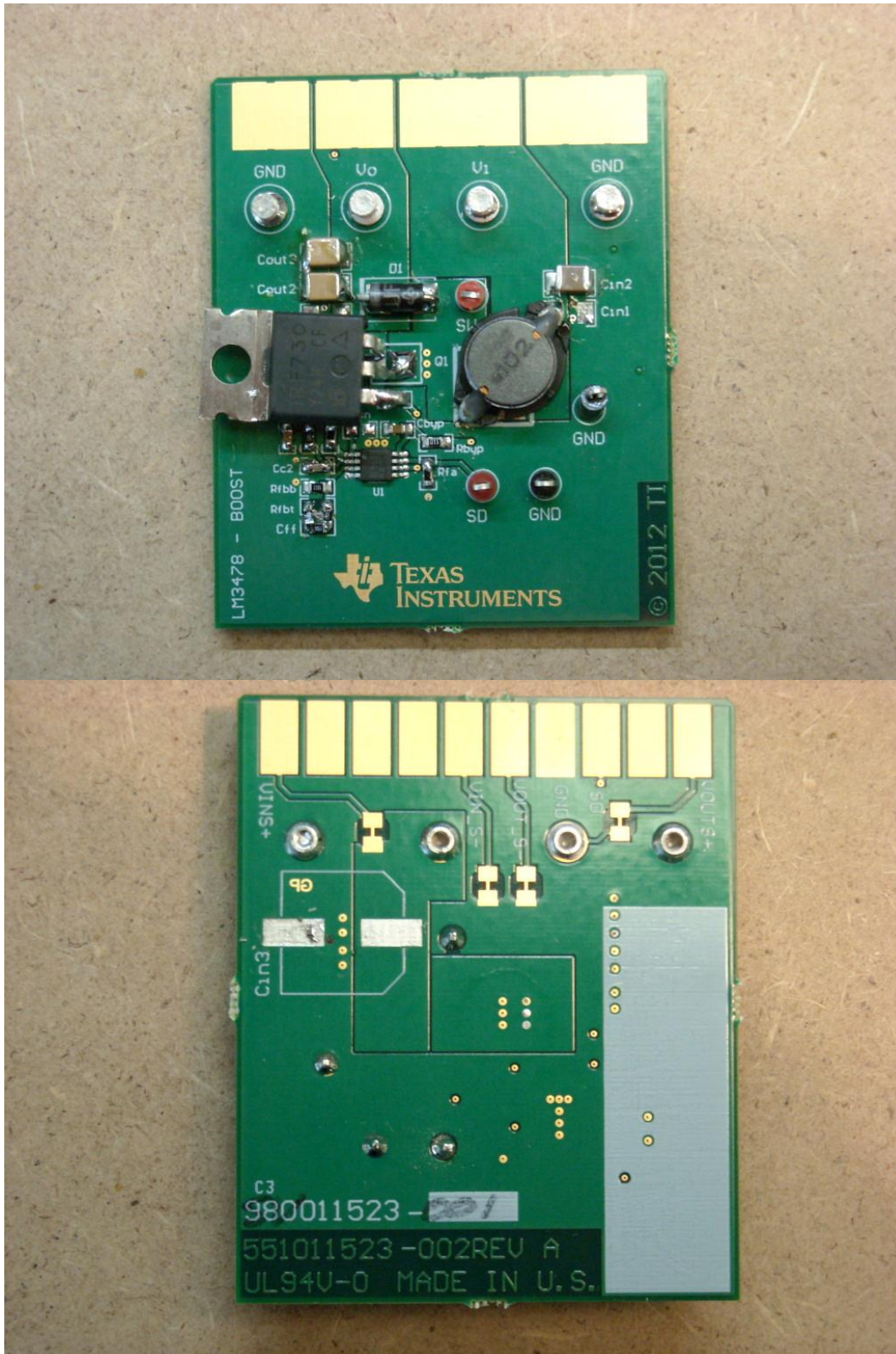


**PHOTO OF THE PROTOTYPE:**

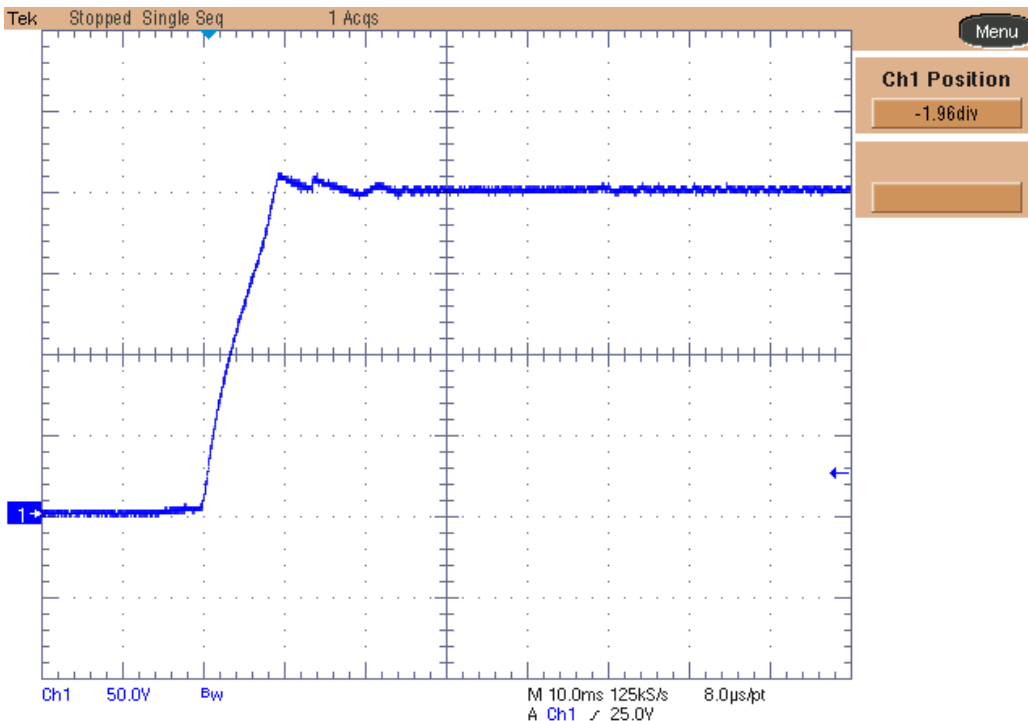
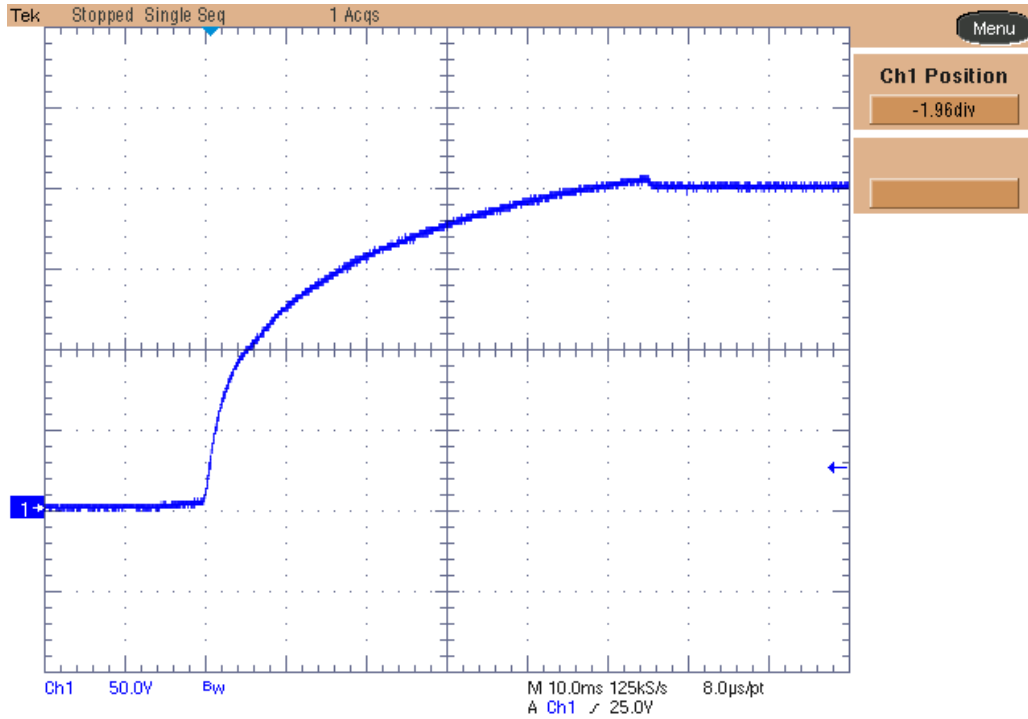


## 1 Startup

The output voltage behavior at startup is shown in the images below.

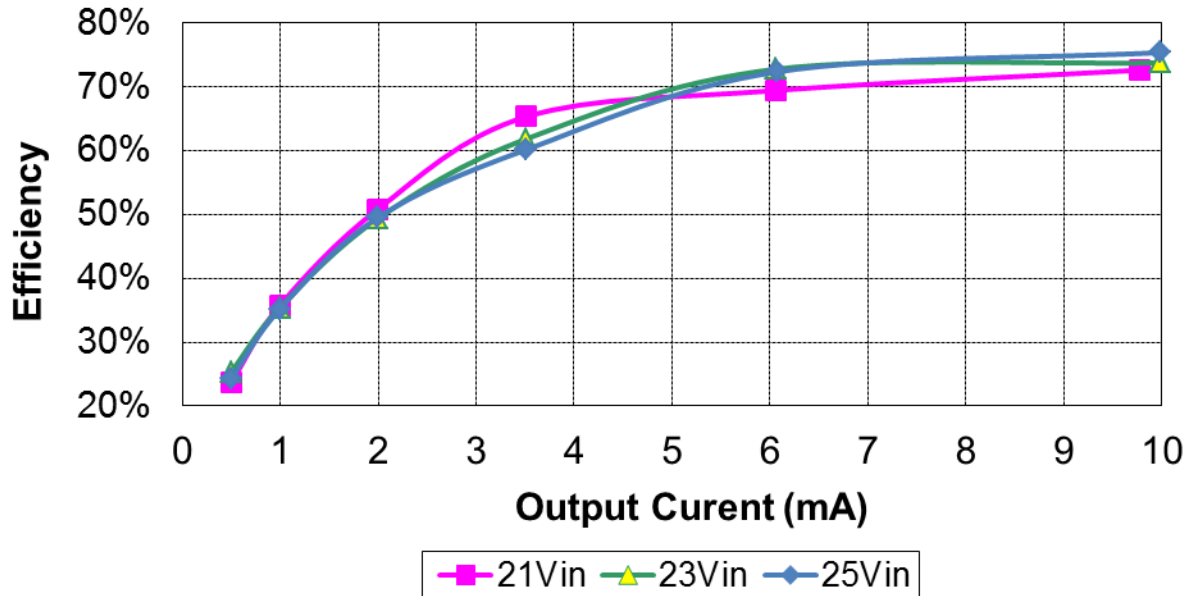
The output was loaded with a 20 KOhm resistor (top picture) and unloaded for the bottom one.

### Ch.1: Output voltage (50V/div, 10ms/div, 20MHz BWL)



## 2 Efficiency

The efficiency data are shown in the tables and graph below. The dc input source has been set to 21V, 23V and 25V, while the load has been varied between 0 and 10mA.



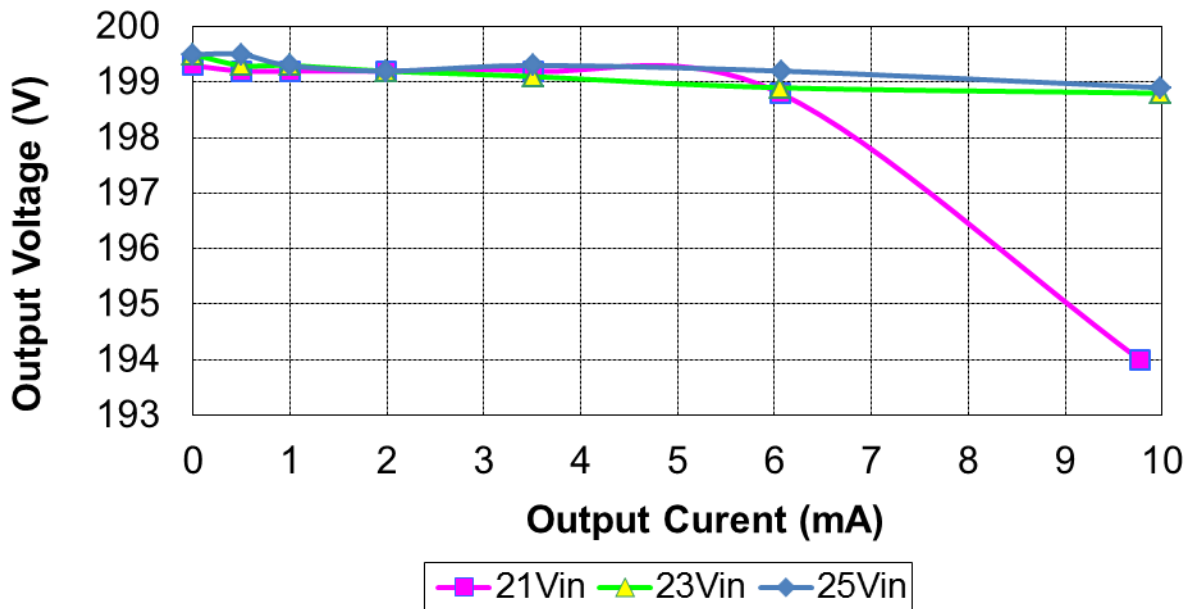
Iout (mA)	Vout (V)	Pout (W)	Iin (mA)	Vin (V)	Pin (W)	Ploss (W)	Eff. (%)
0.000	199.3	0.000	11.07	21.02	0.23	0.23	0.0%
0.497	199.2	0.099	19.92	21.00	0.42	0.32	23.7%
0.995	199.2	0.198	26.36	21.05	0.55	0.36	35.7%
1.992	199.2	0.397	37.22	21.01	0.78	0.39	50.7%
3.515	199.2	0.700	50.91	21.06	1.07	0.37	65.3%
6.06	198.8	1.205	82.48	21.05	1.74	0.53	69.4%
9.77	194.0	1.895	124.08	21.05	2.61	0.72	72.6%

Iout (mA)	Vout (V)	Pout (W)	Iin (mA)	Vin (V)	Pin (W)	Ploss (W)	Eff. (%)
0.000	199.5	0.000	9.22	23.07	0.21	0.21	0.0%
0.497	199.3	0.099	16.96	23.06	0.39	0.29	25.3%
0.995	199.3	0.198	24.31	23.04	0.56	0.36	35.4%
1.992	199.2	0.397	34.94	23.04	0.81	0.41	49.3%
3.515	199.1	0.700	49.13	23.04	1.13	0.43	61.8%
6.06	198.9	1.205	71.94	23.04	1.66	0.45	72.7%
9.99	198.8	1.986	117.11	23.00	2.69	0.71	73.7%

Iout (mA)	Vout (V)	Pout (W)	Iin (mA)	Vin (V)	Pin (W)	Ploss (W)	Eff. (%)
0.000	199.5	0.000	9.28	25.00	0.23	0.23	0.0%
0.498	199.5	0.099	16.34	25.00	0.41	0.31	24.3%
0.995	199.3	0.198	22.52	25.02	0.56	0.37	35.2%
1.992	199.2	0.397	32.03	25.05	0.80	0.41	49.5%
3.514	199.3	0.700	46.58	25.00	1.16	0.46	60.1%
6.07	199.2	1.209	66.85	25.02	1.67	0.46	72.3%
9.99	198.9	1.987	105.31	25.05	2.64	0.65	75.3%

### 3 Output voltage regulation vs. load

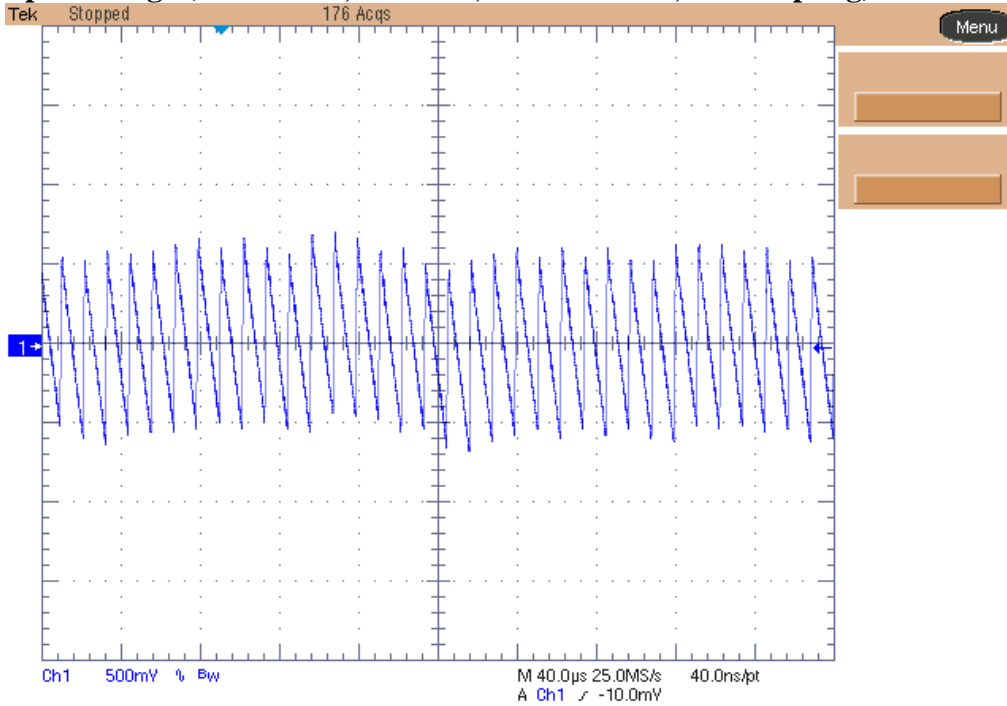
The output voltage variation versus load current, for the three input voltages, is plotted below.



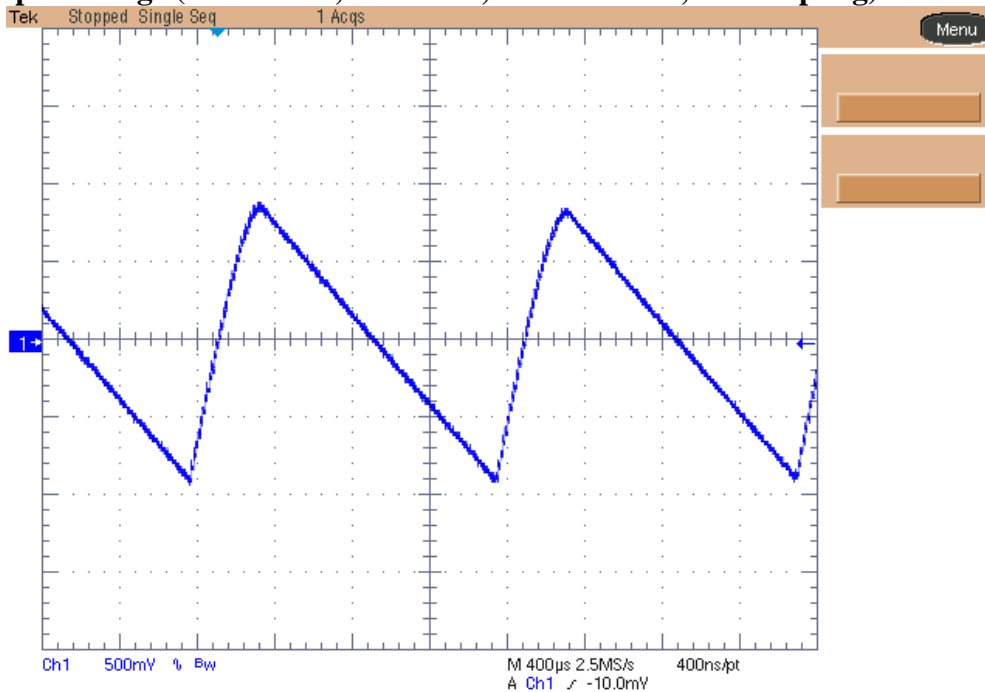
### 4 Output ripple voltage

The output ripple voltage has been measured by supplying the converter @ 24Vdc, while the load has been set to 10mA for the top picture and unloaded for the bottom one.

**Ch.1: Output voltage (500mV/div, 40us/div, 20MHz BWL, AC coupling)**



**Ch.1: Output voltage (500mV/div, 400us/div, 20MHz BWL, AC coupling)**

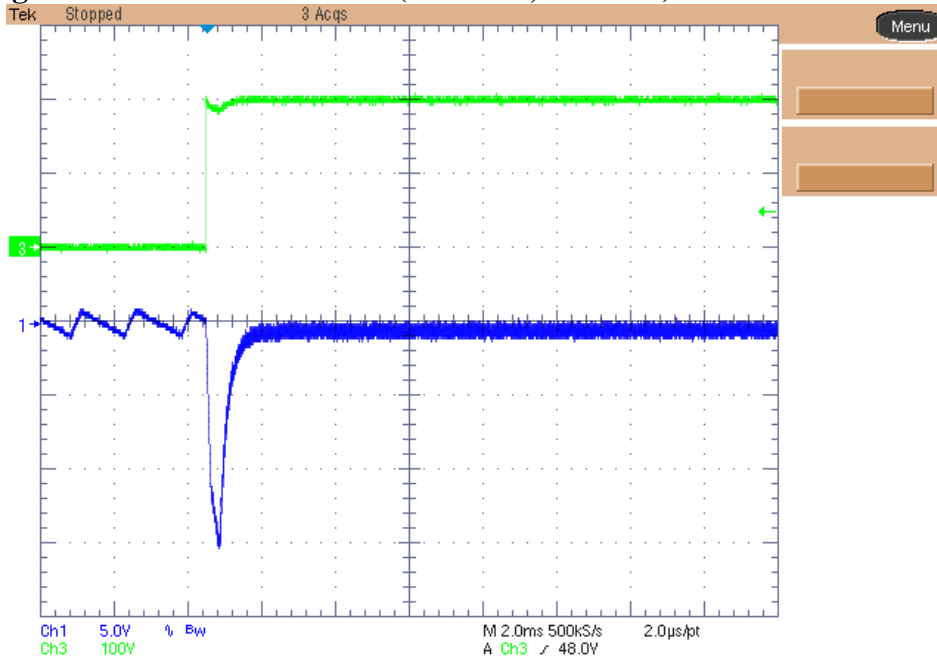


### 5 Load Transient

The images below show the response of the converter to 0% - 100% (0mA to 10mA) and 100% - 0% (10mA to 0mA) transients on the load by connecting and disconnecting 1 20 KOhm resistor, while the converter was supplied @ 24Vdc.

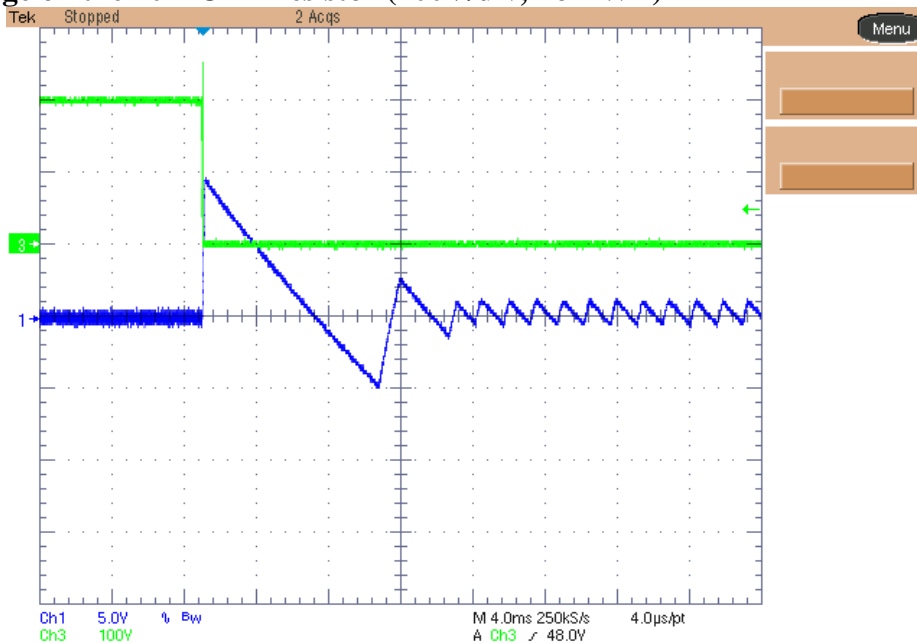
**Ch.1: Output voltage (5V/div, 2ms/div, 20MHz BWL, AC coupling)**

**Ch.3: Voltage on the 20 KOhm resistor (100V/div, no BWL)**



**Ch.1: Output voltage (5V/div, 4ms/div, 20MHz BWL, AC coupling)**

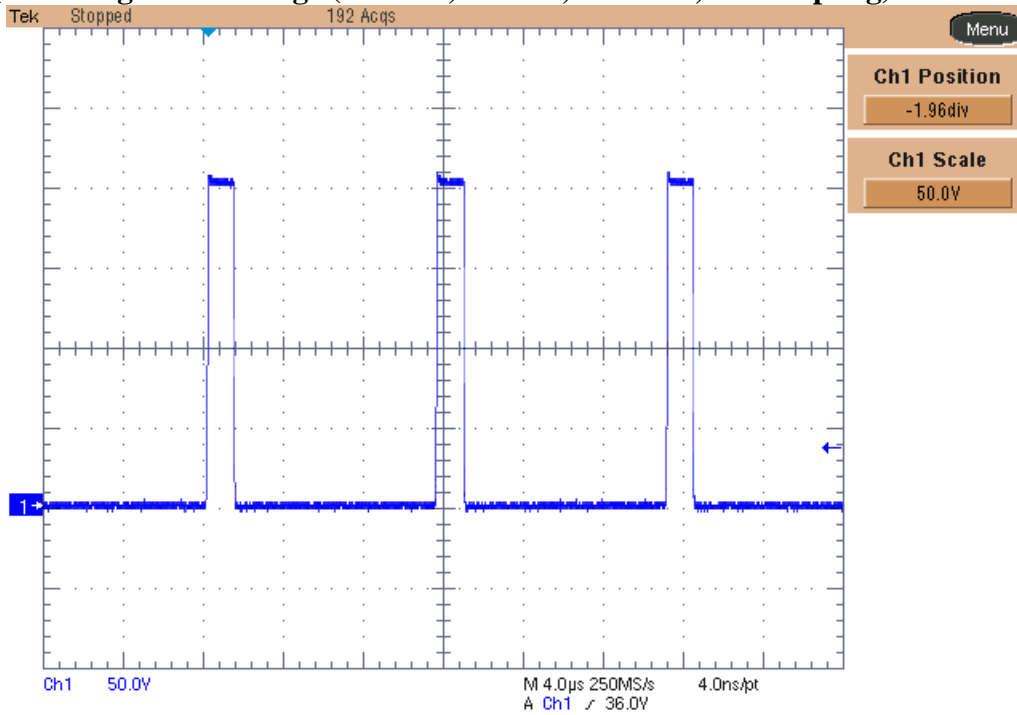
**Ch.3: Voltage on the 20 KOhm resistor (100V/div, no BWL)**



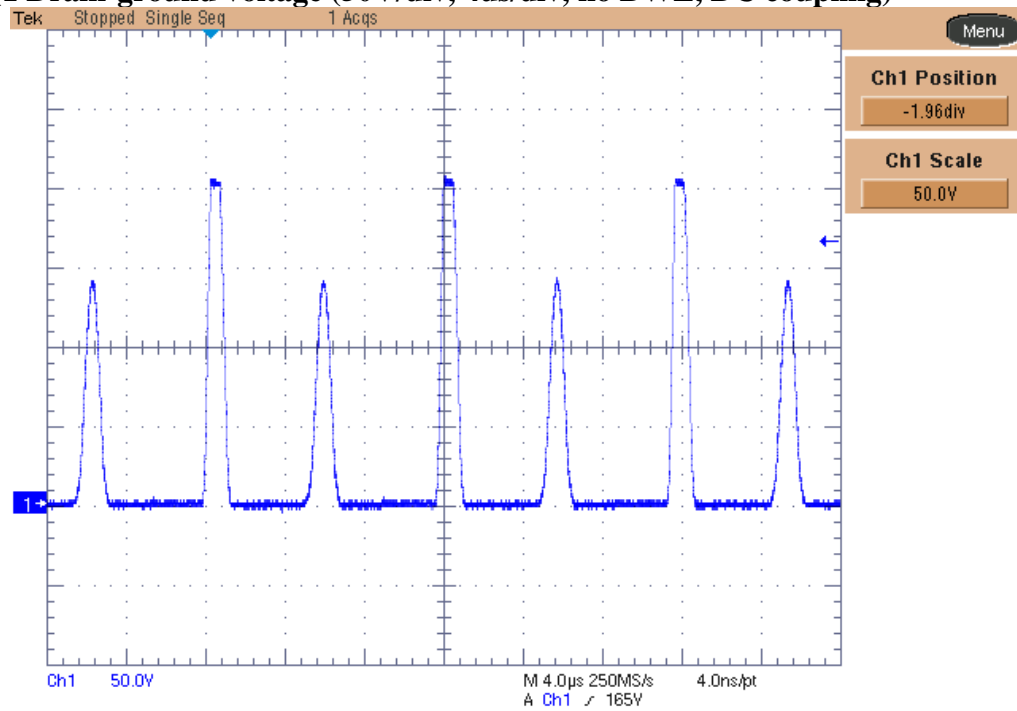
## 6 Switch-node

The images below show the switch-node (Q1 drain to ground voltage) waveform at 24Vdc input and 10mA load for the top picture and 0 load for the bottom one.

**Ch.1: Q1 Drain-ground voltage (50V/div, 4us/div, no BWL, DC coupling)**

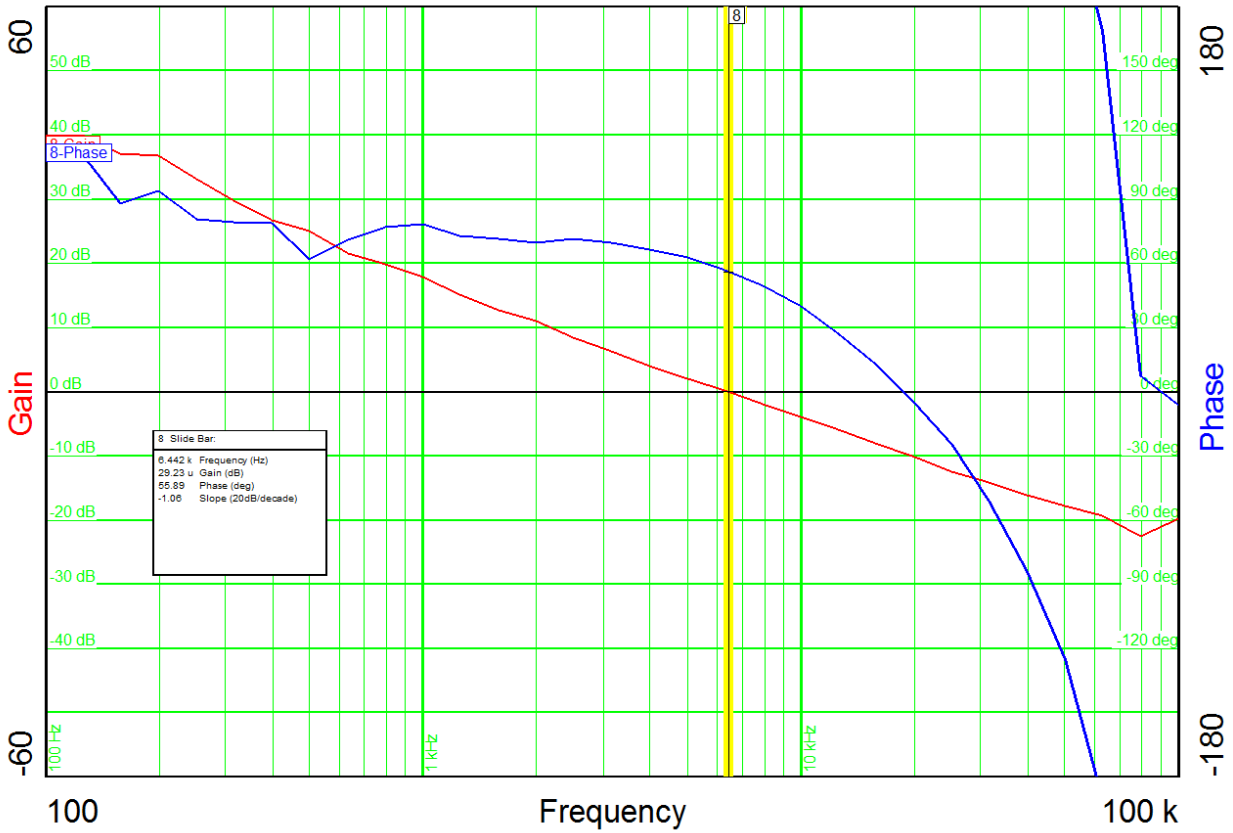


**Ch.1: Q1 Drain-ground voltage (50V/div, 4us/div, no BWL, DC coupling)**



## 7 Loop Response

The picture below shows the loop response of the converter measured at 24V input voltage and 10mA resistive load. The crossover frequency was 6.442 KHz, the phase margin 55.89 deg. and the gain margin 9.55 dB.





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Mailing Address: Texas Instruments, Post Office Box 655303, Dallas, Texas 75265  
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