

1 Efficiency

The efficiency was measured without dimming and by selecting the three different output currents: 50mA, 150mA, 300mA. The load was built by 12 LED in series.

I _{out} (mA)	V _{out} (V)	P _{out} (W)	I _{in} (mA)	V _{in} (V)	P _{in} (W)	P _{loss} (W)	Eff
49.0	33.91	1.66	117.1	20	2.342	0.68	70.9%
145.8	36.5	5.32	329.0	20	6.58	1.26	80.9%
288.2	37.56	10.82	644.3	20	12.89	2.06	84.0%

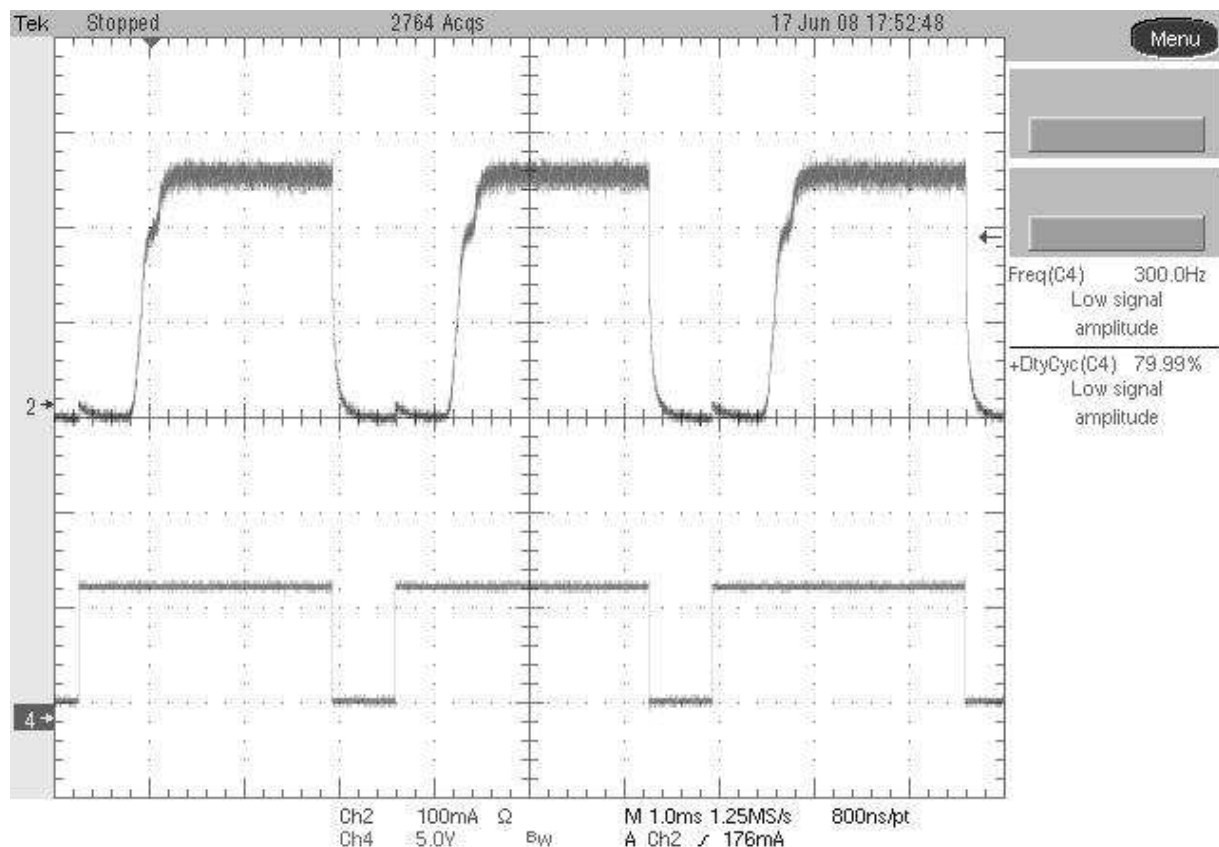
I _{out} (mA)	V _{out} (V)	P _{out} (W)	I _{in} (mA)	V _{in} (V)	P _{in} (W)	P _{loss} (W)	Eff
49.0	33.9	1.66	82.7	35	2.8945	1.23	57.4%
146.0	36.18	5.28	205.2	35	7.18	1.90	73.5%
286.4	37.55	10.75	385.2	35	13.48	2.73	79.8%

I _{out} (mA)	V _{out} (V)	P _{out} (W)	I _{in} (mA)	V _{in} (V)	P _{in} (W)	P _{loss} (W)	Eff
48.5	33.79	1.64	73.7	50	3.685	2.04	44.5%
146.4	35.76	5.24	158.5	50	7.93	2.69	66.1%
286.9	37.56	10.78	291.6	50	14.58	3.80	73.9%

2 Load Dimming

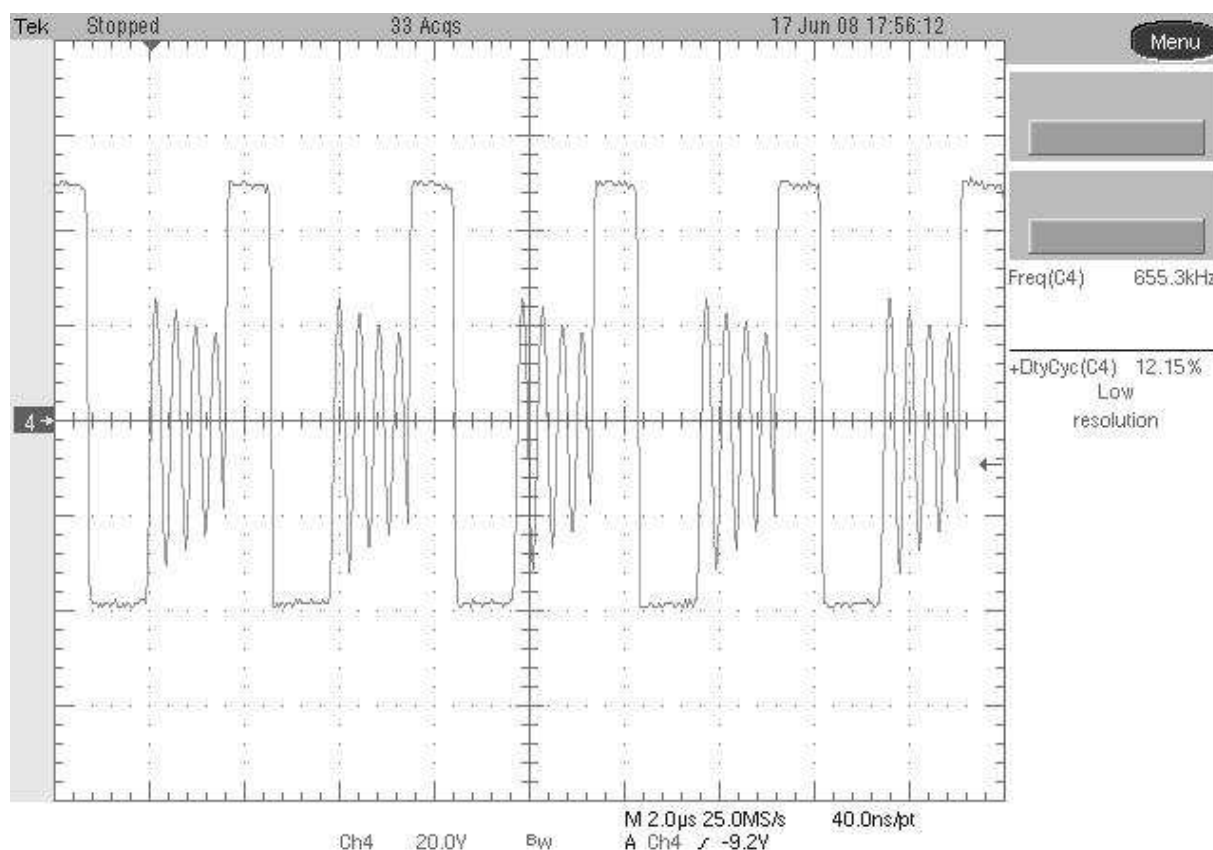
The image below shows the response to 300Hz 80% duty cycle PWM. The input voltage was set 20V and the load at 260mApeak.

Channel 2: LED current 100 mA/div, Channel 4: Control Voltage 5V/div.



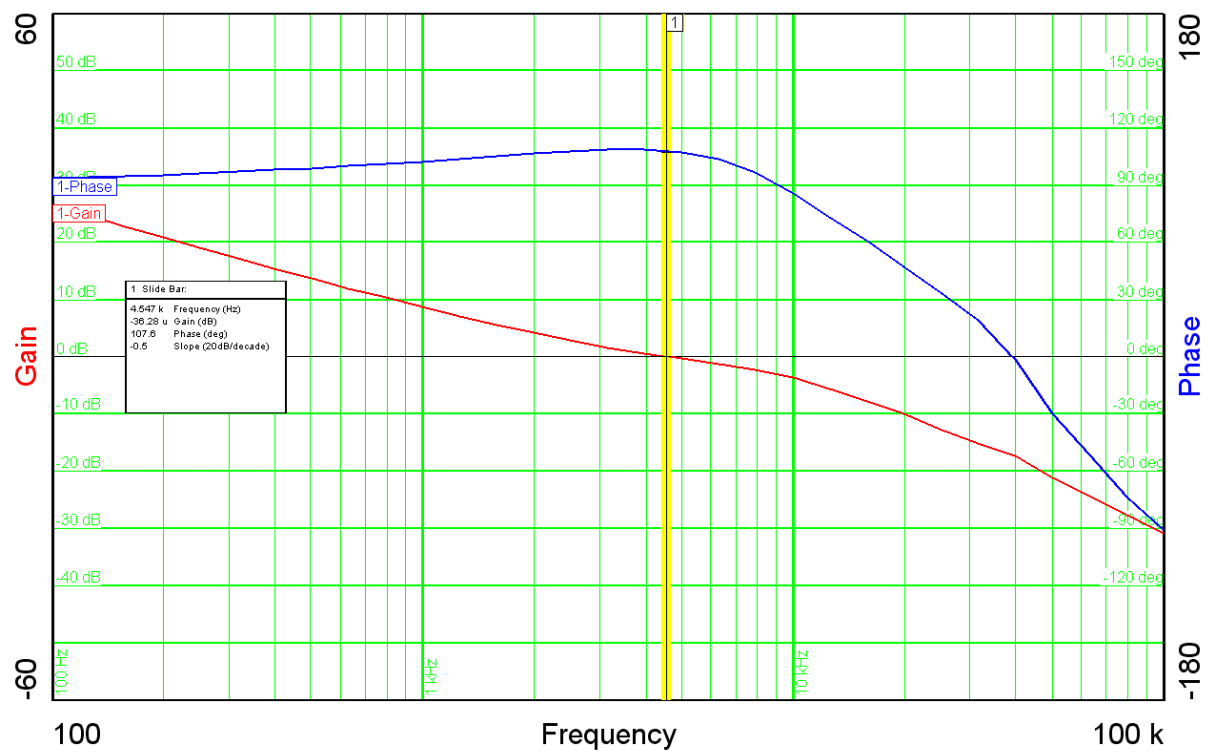
3 Switching Node Waveform

The image below shows the voltage on the drain of the switching node (Q1). Input voltage was set to 50Vdc, output load was set at 300mA, 37V.

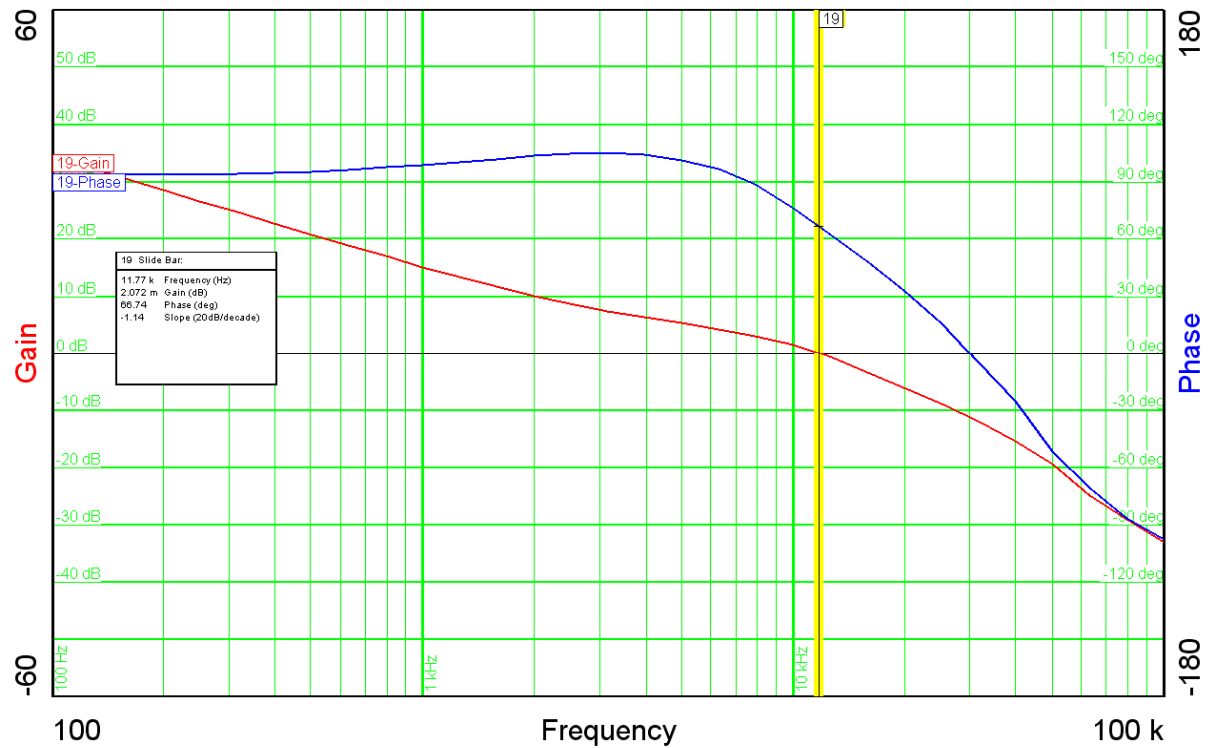


4 Loop Response

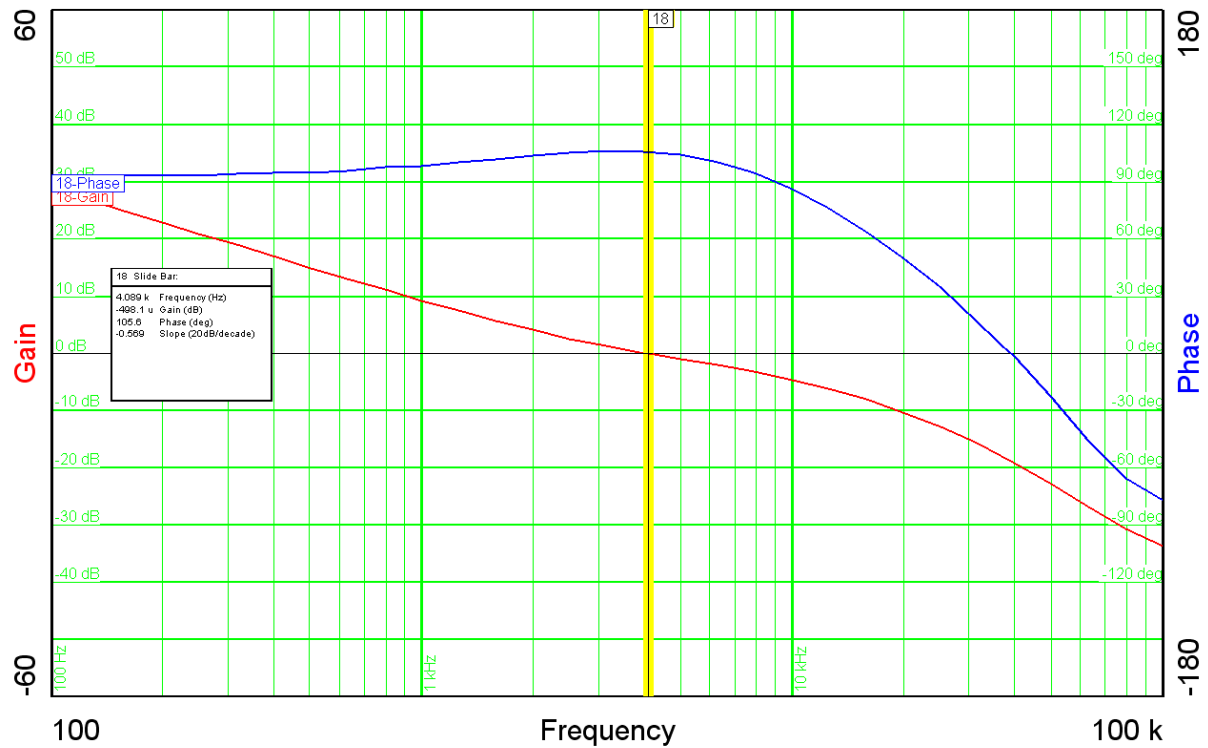
The image below shows the loop response of the converter measured with a 20Vdc input; output load was set at 300mA 37Vdc. Phase margin is 107 deg. and crossover frequency is 4.547 KHz.



The image below shows the loop response of the converter measured with a 30Vdc input; output load was set at 300mA 37Vdc. Phase margin is 66.74 deg. and crossover frequency is 11.77KHz.



The image below shows the loop response of the converter measured with a 50Vdc input; output load was set at 300mA 37Vdc. Phase margin is 105.6 deg. and crossover frequency is 4.089KHz.



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