Test Report of PMP10696

(Boost with LM2700)

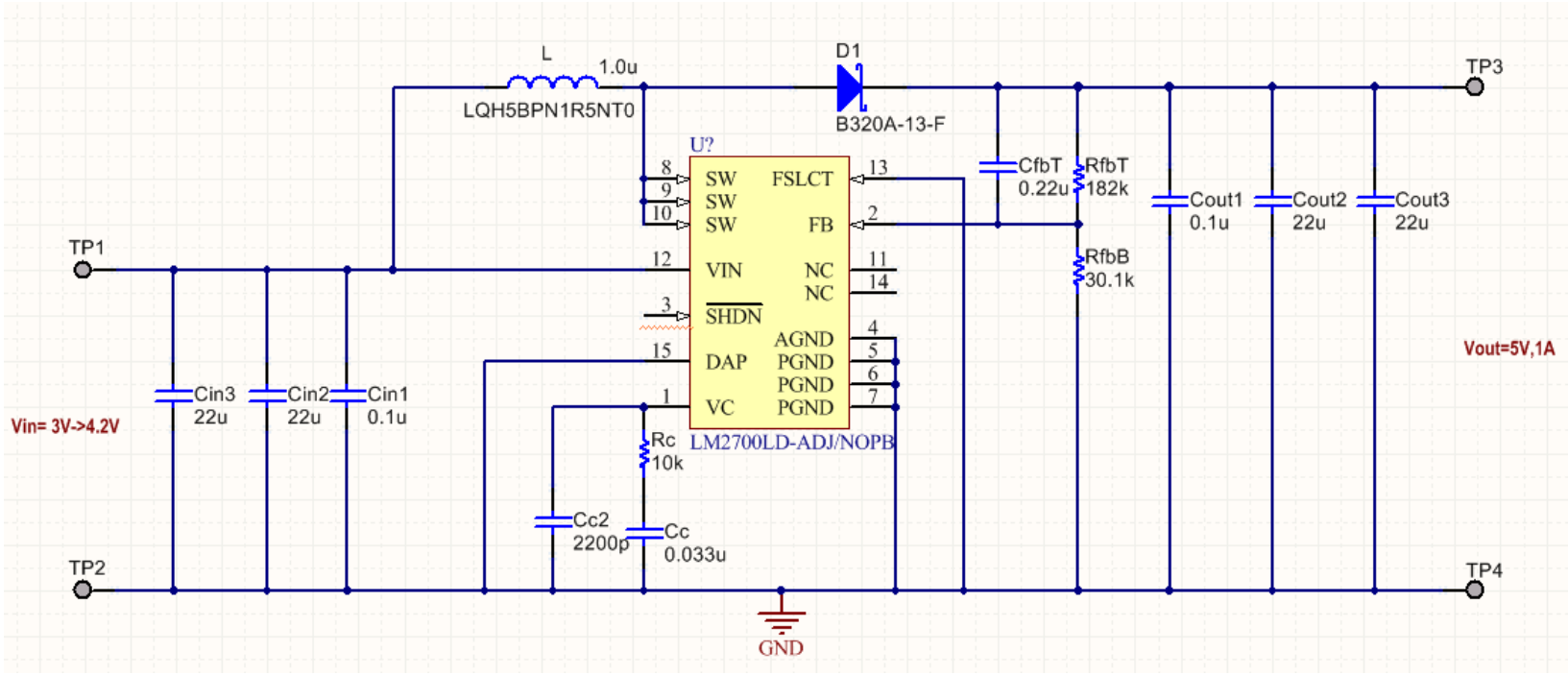
27 May 2015

Table of Contents

1) Design Specifications

Vin	**3V→4.2Vdc**
Vout	**5Vdc**
Iout	**1A**
Switching frequency	**600k**

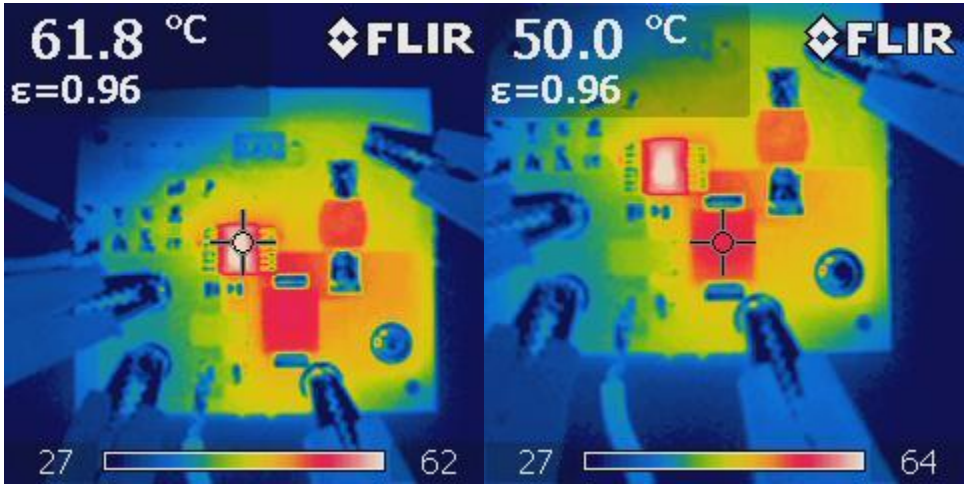
2) Circuit Schematic


L
1.0u
LQH5BPN1R5NT0
D1
B320A-13-F
TP3
U?
SW
SW
SW
FSLCT
FB
VIN
NC
NC
SHDN
AGND
DAP
PGND
PGND
VC
PGND
LM2700LD-ADJ/NOPB
CfbT
0.22u
RfbT
182k
RfbB
30.1k
Cout1
0.1u
Cout2
22u
Cout3
22u
TP1
Vin= 3V->4.2V
Cin3
22u
Cin2
22u
Cin1
0.1u
Rc
10k
Cc2
2200p
Cc
0.033u
TP2
TP4
Vout=5V,1A
GND

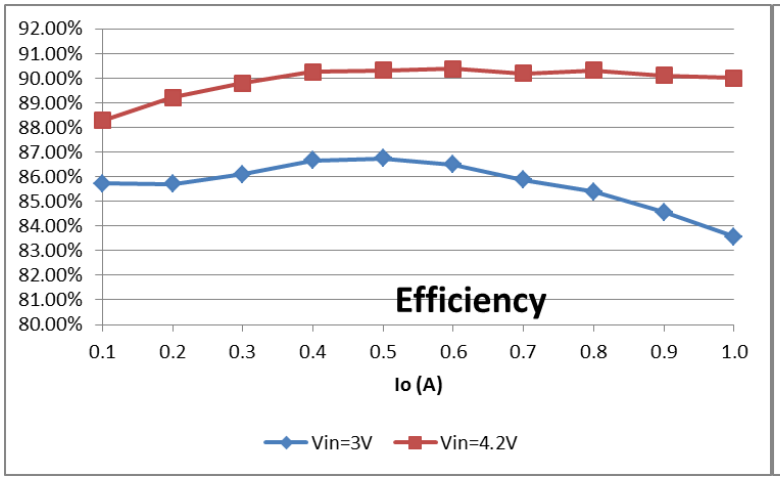
3) Typical Performances

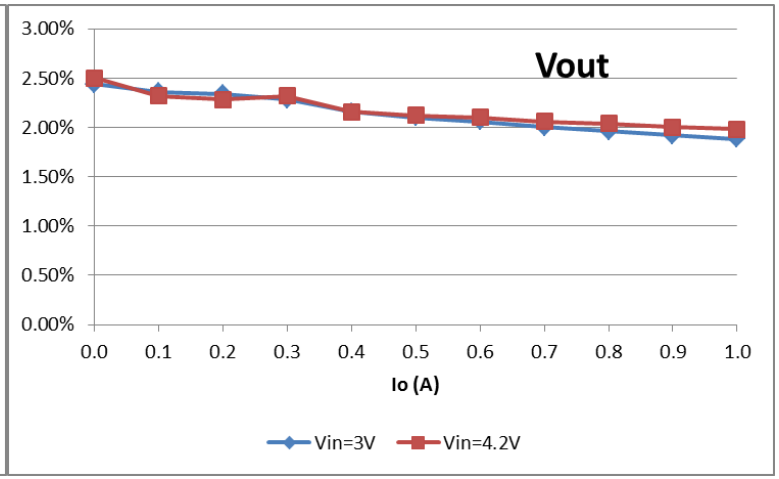
3.1) Board and Thermal

Board Dimensions: 35mm x 38mm



3.2) Efficiency and Load Regulation

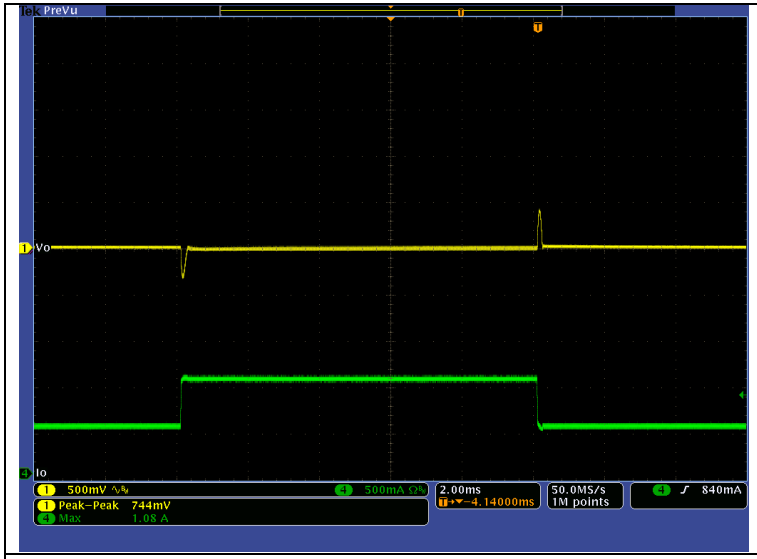
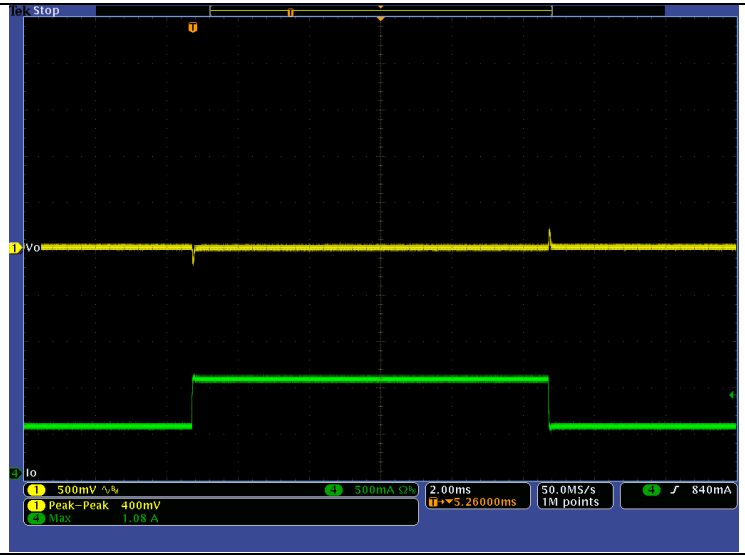




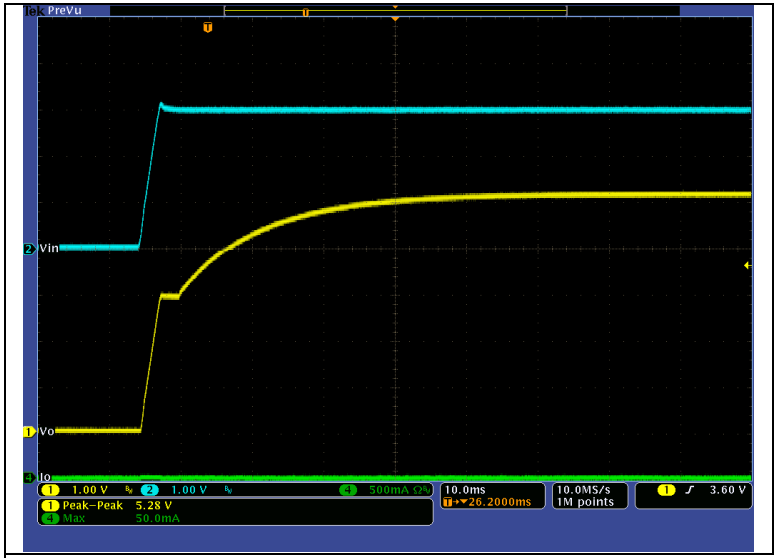
Vin	Iin	Vo	Io	Pin	Po	Efficiency	Vo%
3	0.002	5.122	0.0	0.005			2.44%
3	0.199	5.118	0.1	0.597	0.512	85.73%	2.36%
3	0.398	5.117	0.2	1.194	1.023	85.71%	2.34%
3	0.594	5.114	0.3	1.782	1.534	86.09%	2.28%
3	0.786	5.108	0.4	2.358	2.043	86.65%	2.16%
3	0.981	5.105	0.5	2.943	2.553	86.73%	2.10%
3	1.180	5.103	0.6	3.540	3.062	86.49%	2.06%
3	1.386	5.100	0.7	4.158	3.570	85.86%	2.00%
3	1.592	5.098	0.8	4.776	4.078	85.39%	1.96%
3	1.808	5.096	0.9	5.424	4.586	84.56%	1.92%
3	2.032	5.094	1.0	6.096	5.094	83.56%	1.88%
4.2	0.002	5.125	0.0	0.007			2.50%
4.2	0.138	5.116	0.1	0.580	0.512	88.27%	2.32%

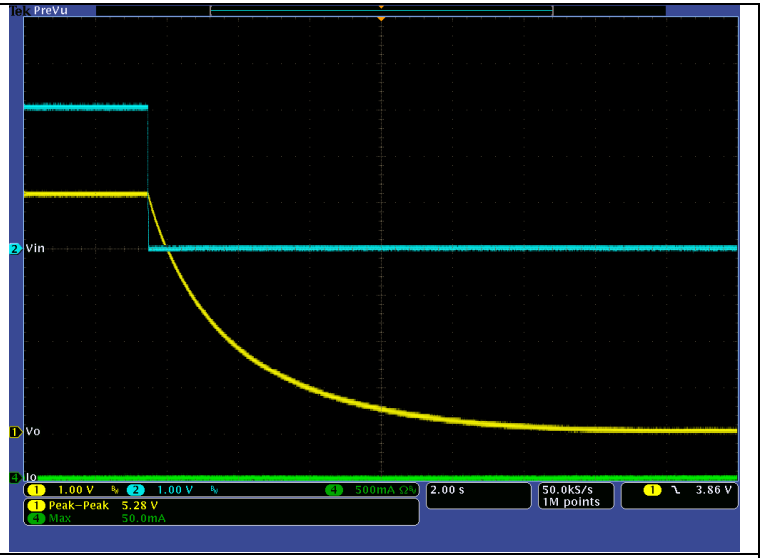
4.2	0.273	5.114	0.2	1.147	1.023	89.20%	2.28%
4.2	0.407	5.116	0.3	1.709	1.535	89.79%	2.32%
4.2	0.539	5.108	0.4	2.264	2.043	90.26%	2.16%
4.2	0.673	5.106	0.5	2.827	2.553	90.32%	2.12%
4.2	0.807	5.105	0.6	3.389	3.063	90.37%	2.10%
4.2	0.943	5.103	0.7	3.961	3.572	90.19%	2.06%
4.2	1.076	5.102	0.8	4.519	4.082	90.32%	2.04%
4.2	1.213	5.100	0.9	5.095	4.590	90.10%	2.00%
4.2	1.349	5.099	1.0	5.666	5.099	90.00%	1.98%

3.3) Dynamic Response

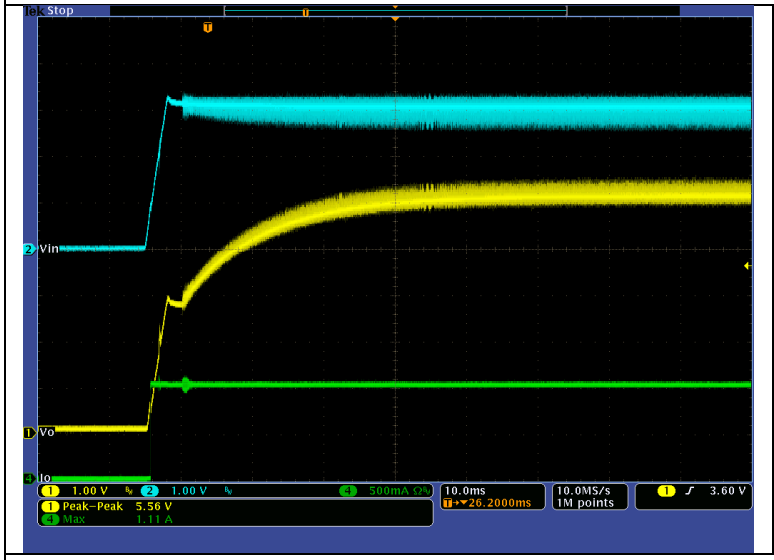
	
Vin = 3V, Io=0.5A→1A, 10ms,10ms,100mA/us	**Vin = 4.2V, Io=0.5A→1A, 10ms,10ms,100mA/us**

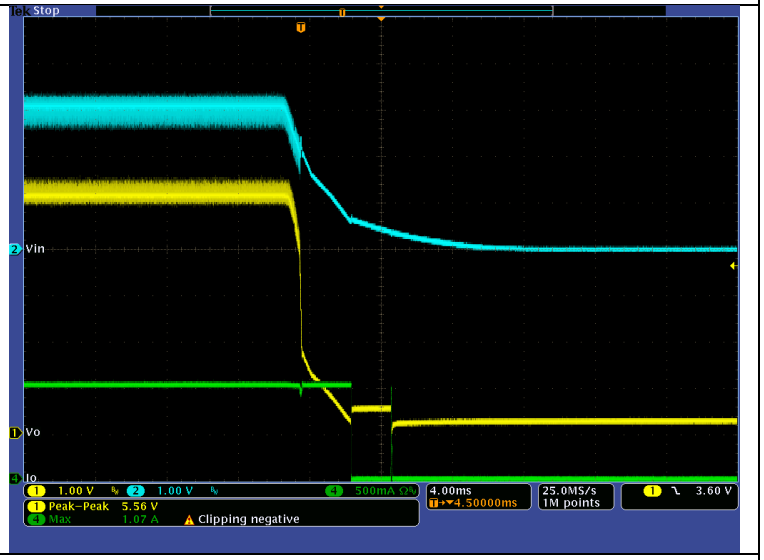
3.4) Start up and Shutdown



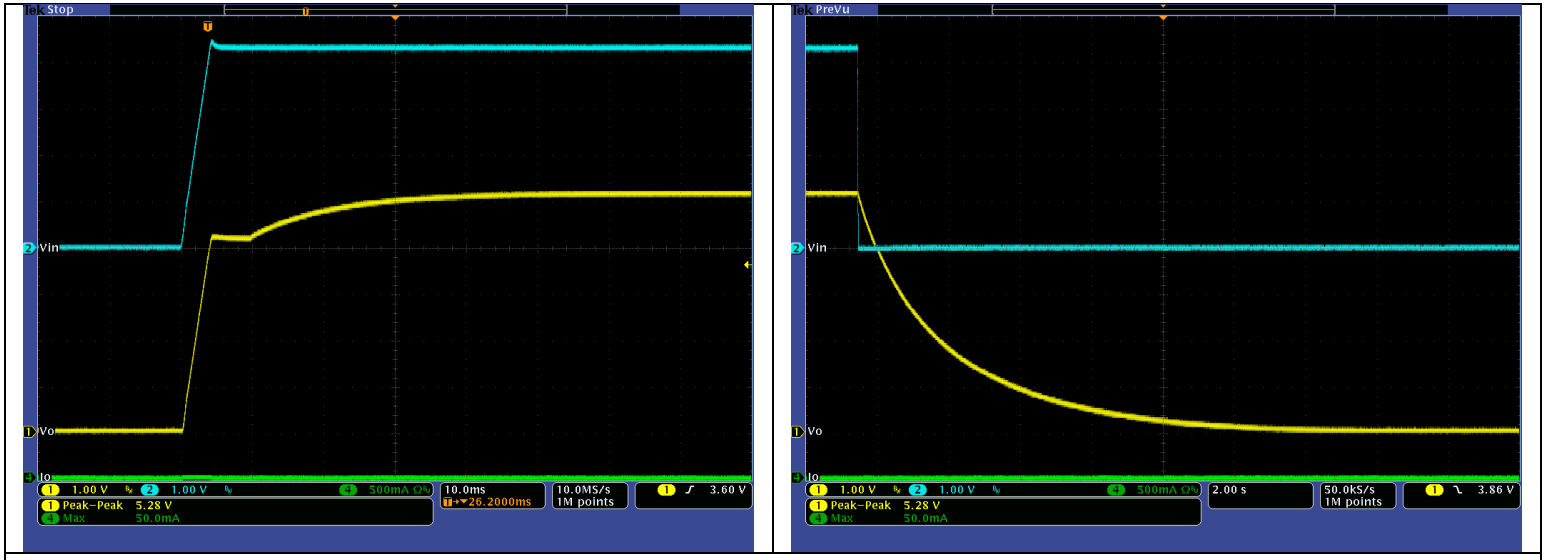


Vin = 3V, Io=0

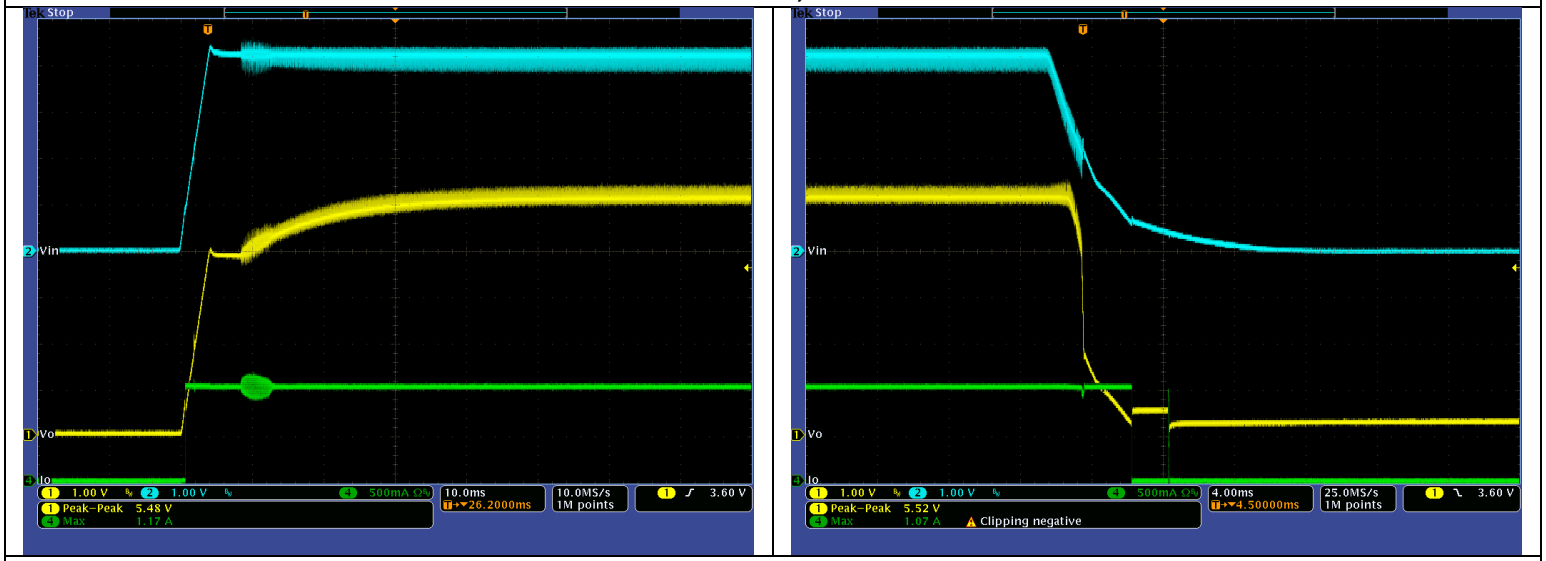




Vin = 3V, Io=1A

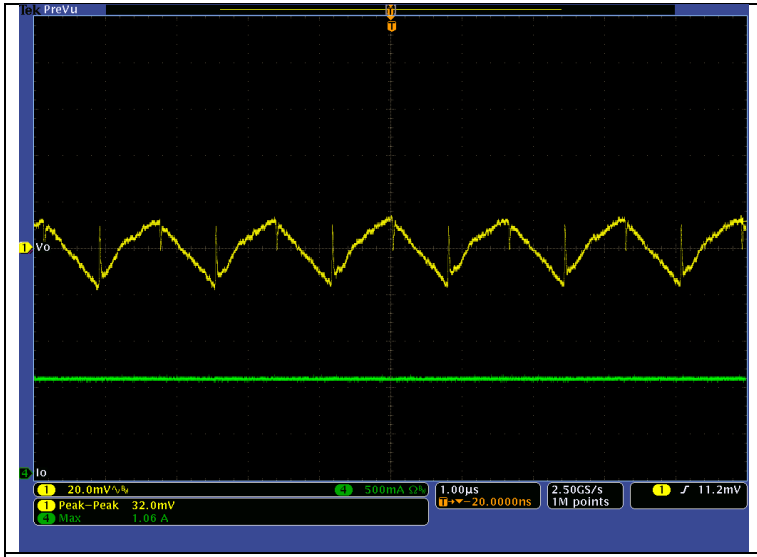


Vin = 4.2V, Io=0

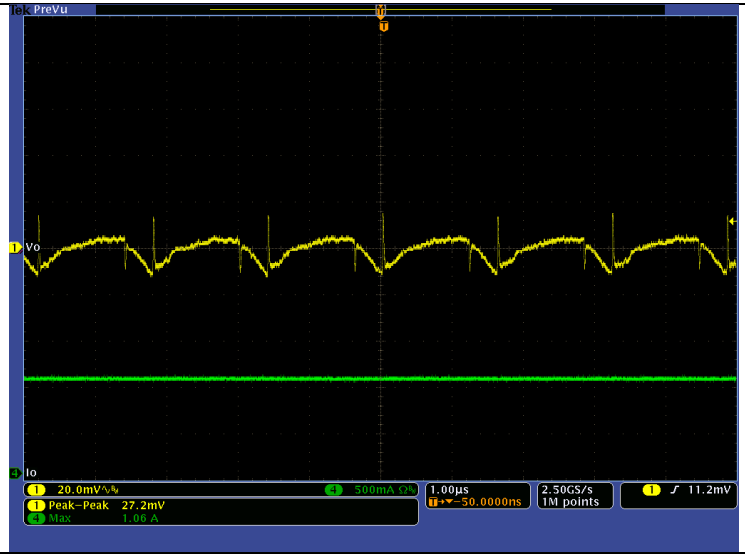


Vin = 4.2V, Io=1A

3.5) Output Ripple

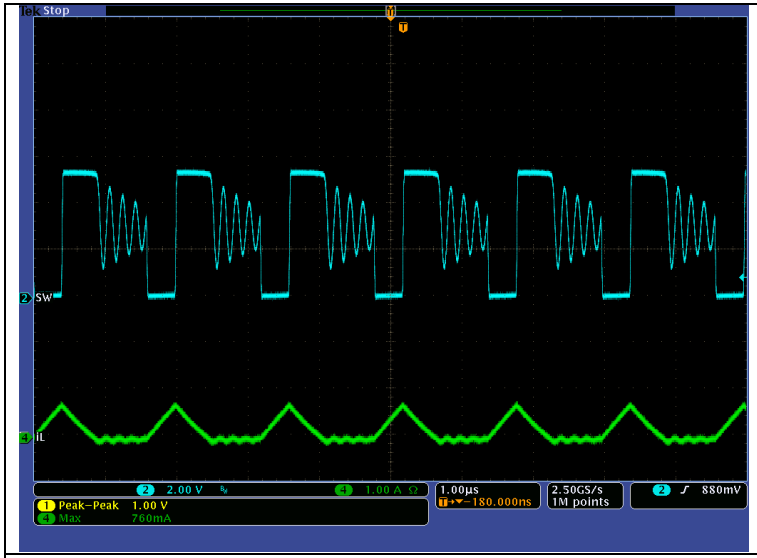


Vin = 3V, Io=1A

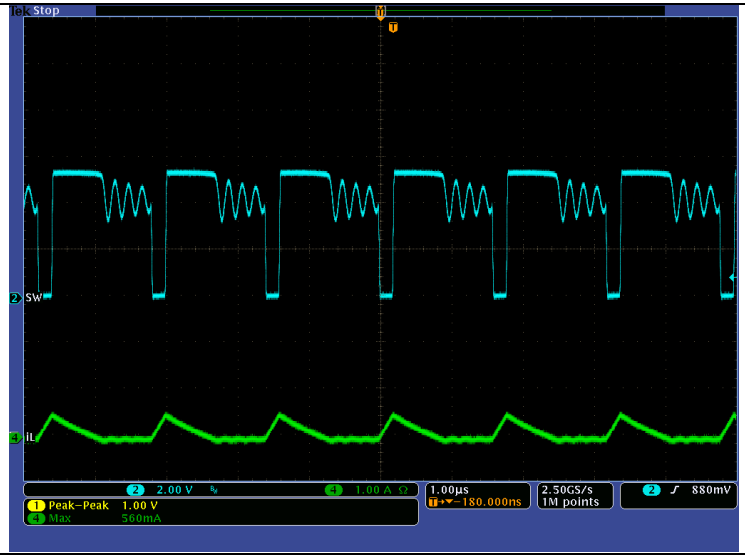


Vin = 4.2V, Io=1A

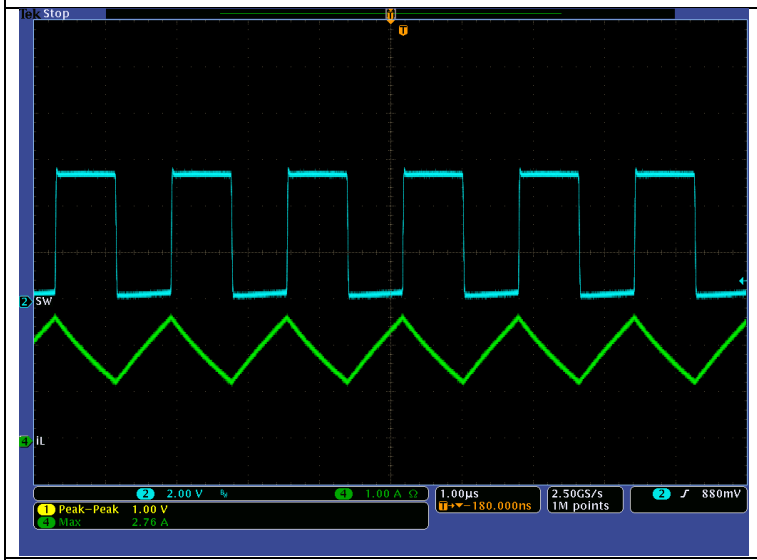
3.6) Inductor Current and SW waveform



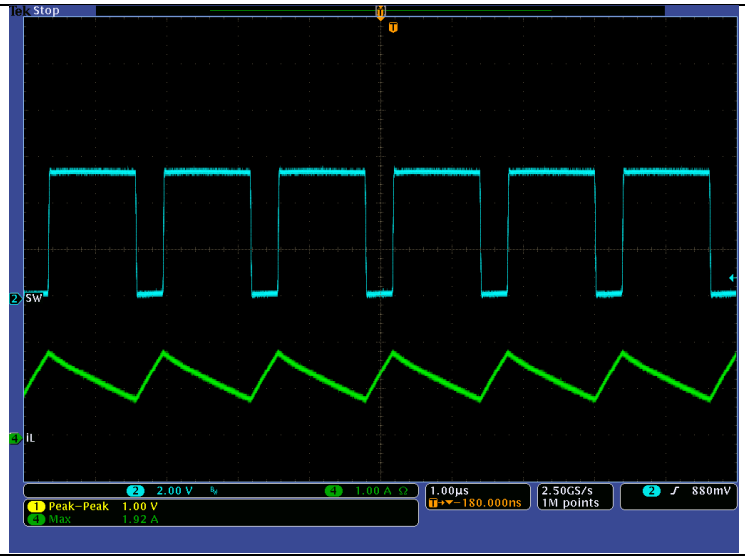
Vin = 3V, Io=100mA



Vin = 4.2V, Io=100mA

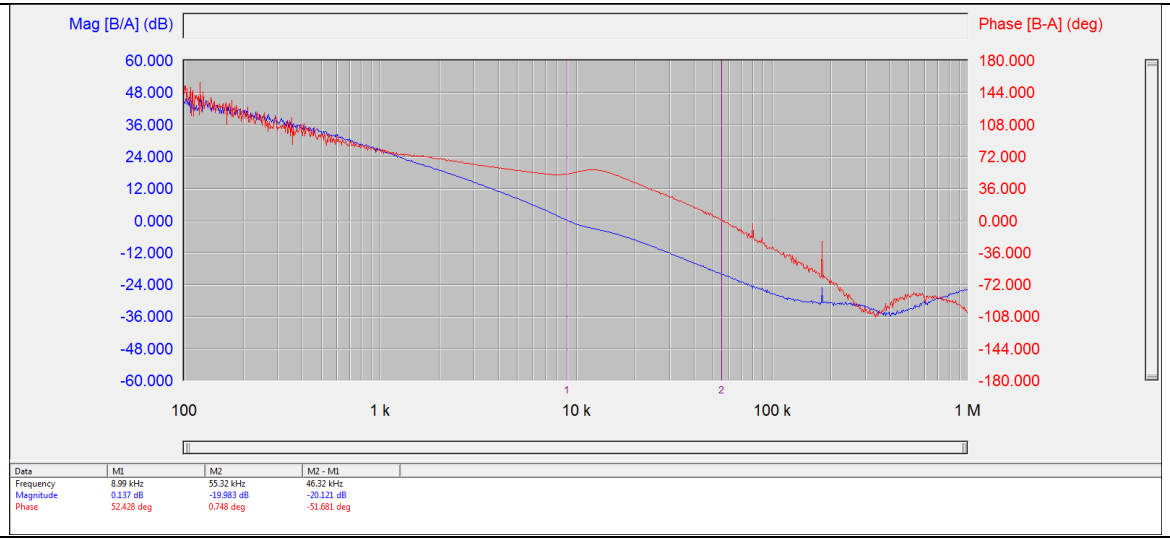


Vin = 3V, Io=1A

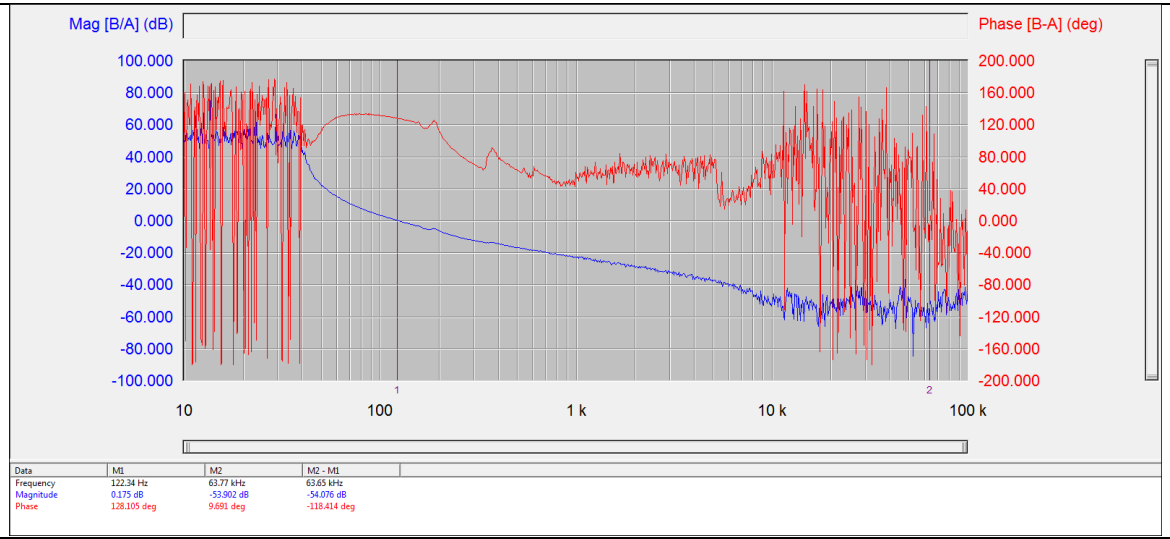


Vin = 4.2V, Io=1A

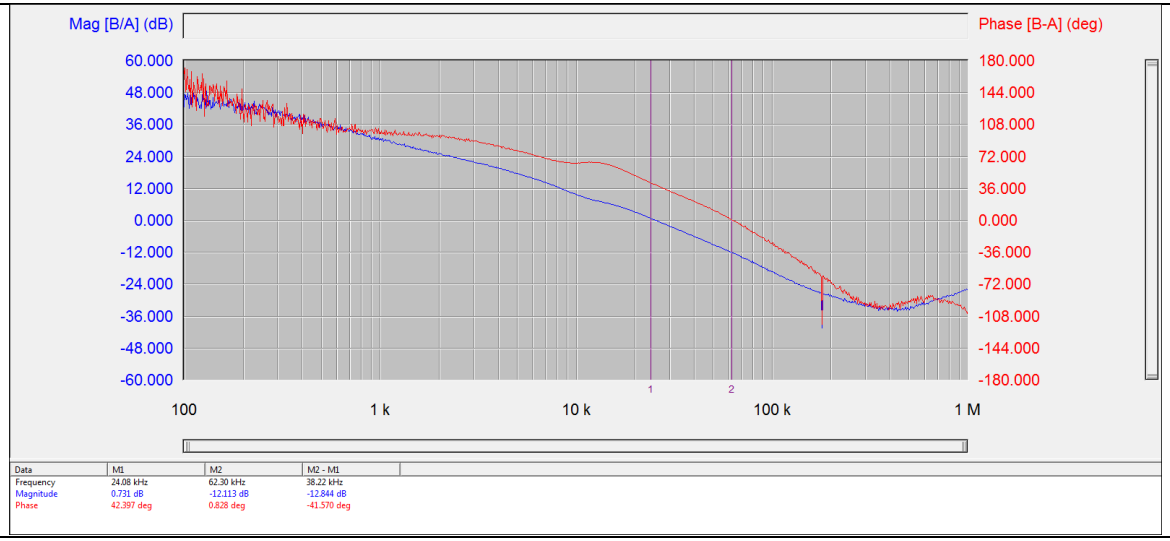
3.7) Loop Gain



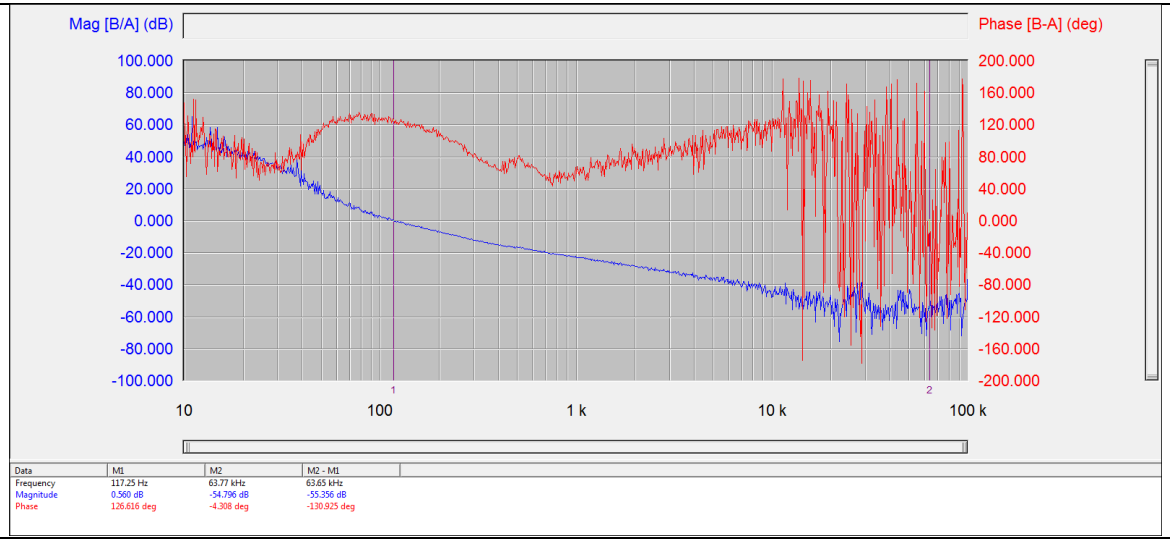
Vin = 3V, Io=1A, fsw=9.0kHz, PM=52deg, GM=-20dB



Vin = 3V, Io=0, fsw=122Hz, PM=128deg



Vin = 4.2V, Io=1A, fsw=24kHz, PM=42deg, GM=-12dB



Vin = 4.2V,Io=0, fsw=117Hz, PM=126deg

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