

**Test Data
For PMP9332
12/16/2013**



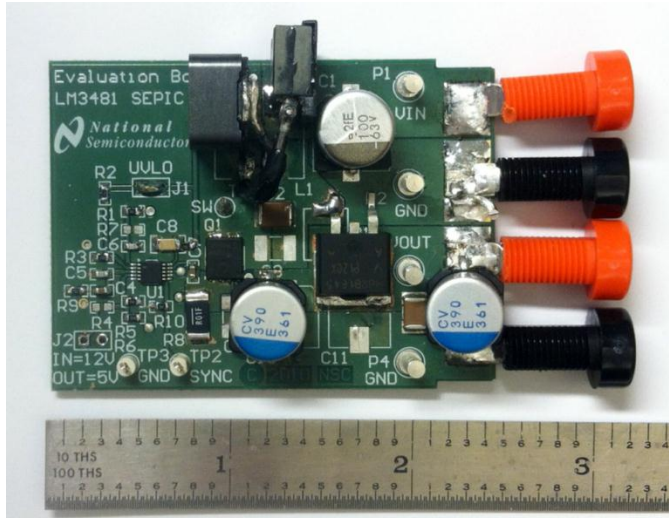
1. Circuit Description

PMP9332 is a Wide-Vin, SEPIC, switching regulator. This test report was performed on a modified LM3481 SEPIC EVM in compliance with the below specifications. The circuit has an operating input voltage range of 6V to 16V. The output is set at 12V at 4A continuous. All tests were performed at room temperature on an open bench.

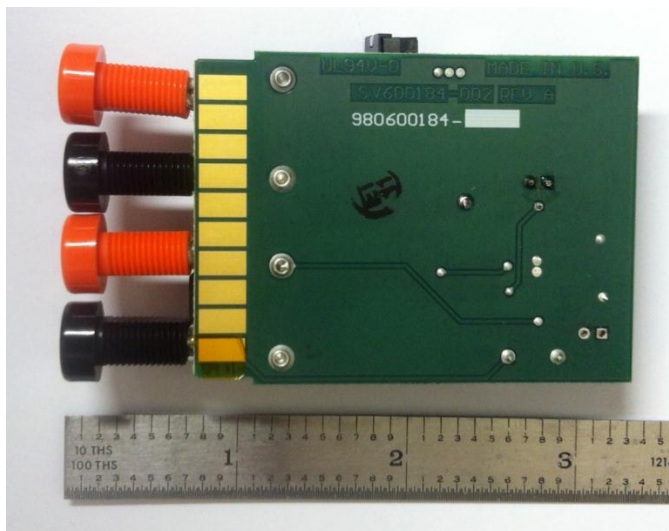
Vin	6-16V +/-10%
Vout(s)	12V
Iout Max	4A
FSW	550kHz

2. Photos

Top Side: (Modified LM3481 EVM)



Bottom Side:

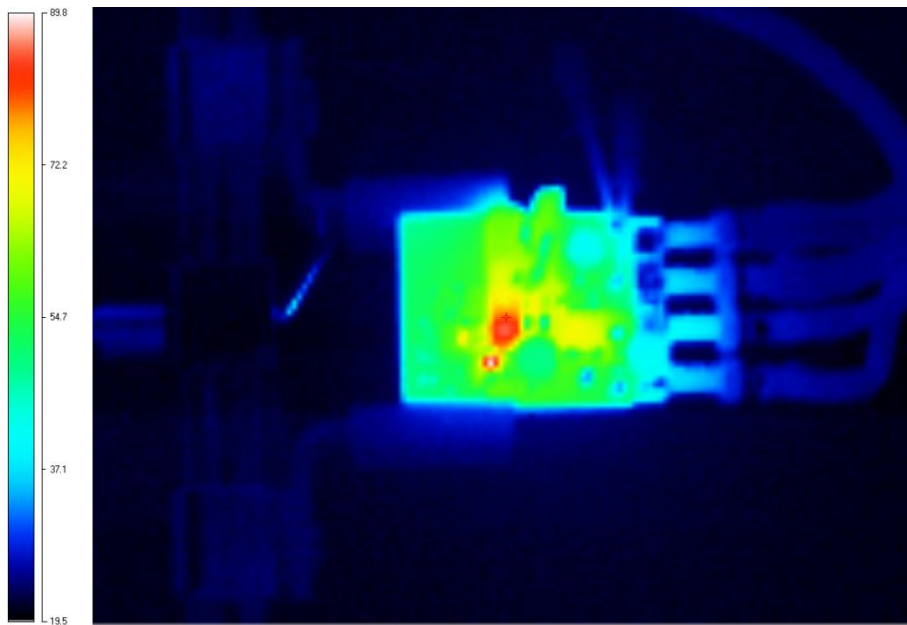


3. Thermal Image.

Steady State Temp - 6Vin, 12 Vout at 4A. (15min settling time)

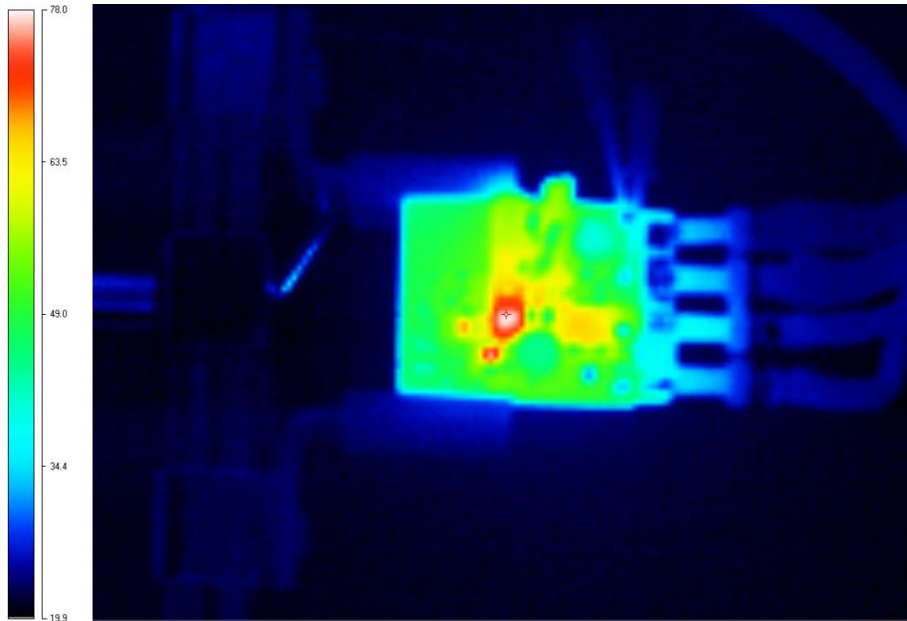
At 6V in the temperature reached level where we needed to terminate test due to risk of failure. After 15 minute temperatures in excess of 125C MOSFET will need heat sinking if sustained operation is required at 6Vin. Power rating of Shunt resistor will need to be increased if sustained operation is required at 6Vin.

Steady State Temp - 12Vin, 12 Vout at 4A. (15min settling time)



The Mosfet and Shunt resistor are the hottest items. Heat-sinking recommended.

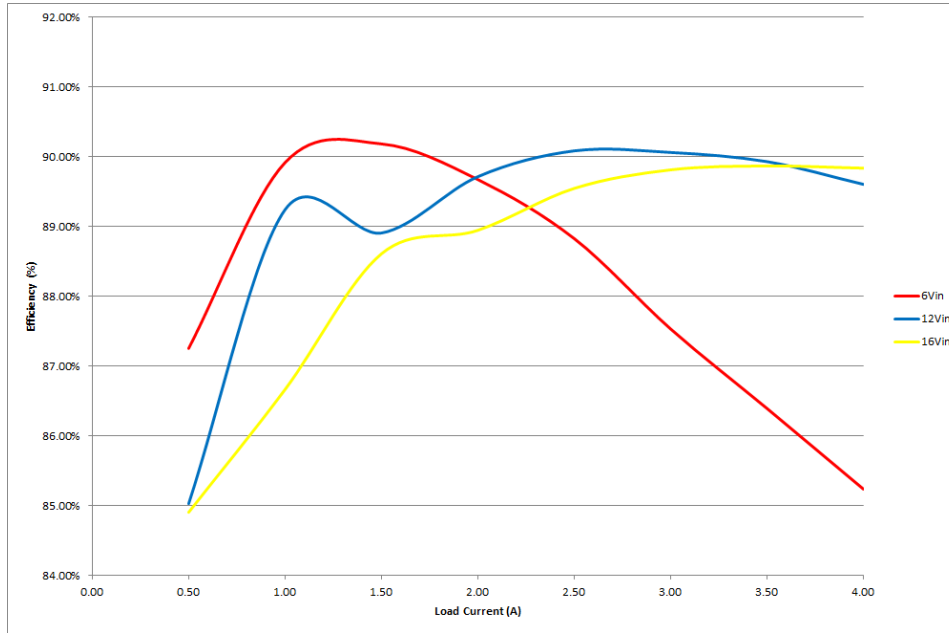
Steady State Temp - 16Vin, 12 Vout at 4A. (15min settling time)



The Mosfet and Shunt resistor are the hottest items. Heat-sinking recommended.

4. Efficiency Data

Efficiency Curve



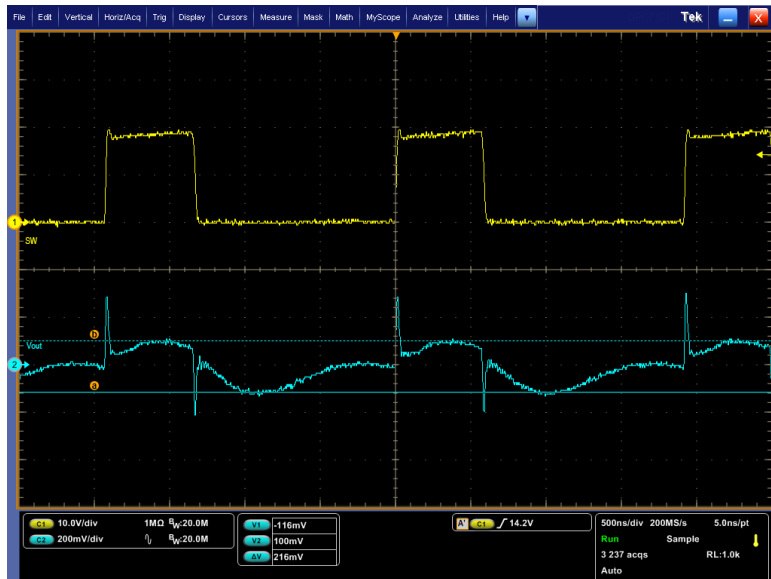
Efficiency Curve Data

(V _{IN})	(I _{IN})	(V _{OUT})	(I _{OUT})	(P _{IN})	(P _{OUT})	(P _{LOSS})	(Eff%)
6.00	1.143	11.968	0.50	6.86	5.98	0.87	87.26%
6.00	2.217	11.961	1.00	13.30	11.96	1.34	89.92%
6.00	3.314	11.955	1.50	19.88	17.93	1.95	90.19%
6.00	4.442	11.950	2.00	26.65	23.90	2.75	89.67%
6.00	5.604	11.947	2.50	33.62	29.87	3.76	88.83%
6.00	6.822	11.943	3.00	40.93	35.83	5.10	87.53%
6.00	8.062	11.940	3.50	48.37	41.79	6.58	86.39%
6.00	9.337	11.938	4.00	56.02	47.75	8.27	85.24%
(V _{IN})	(I _{IN})	(V _{OUT})	(I _{OUT})	(P _{IN})	(P _{OUT})	(P _{LOSS})	(Eff%)
12.00	0.587	11.979	0.50	7.04	5.99	1.05	85.03%
12.00	1.118	11.973	1.00	13.42	11.97	1.44	89.24%
12.00	1.677	11.928	1.50	20.12	17.89	2.23	88.91%
12.00	2.214	11.918	2.00	26.57	23.84	2.73	89.72%
12.00	2.755	11.913	2.50	33.06	29.78	3.28	90.09%
12.00	3.306	11.910	3.00	39.67	35.73	3.94	90.06%
12.00	3.862	11.908	3.50	46.34	41.68	4.67	89.93%
12.00	4.429	11.906	4.00	53.15	47.62	5.52	89.61%
(V _{IN})	(I _{IN})	(V _{OUT})	(I _{OUT})	(P _{IN})	(P _{OUT})	(P _{LOSS})	(Eff%)
16.00	0.441	11.982	0.50	7.06	5.99	1.07	84.91%
16.00	0.863	11.967	1.00	13.81	11.97	1.84	86.67%
16.00	1.266	11.966	1.50	20.26	17.95	2.31	88.61%
16.00	1.675	11.919	2.00	26.80	23.84	2.96	88.95%
16.00	2.079	11.915	2.50	33.26	29.79	3.48	89.55%
16.00	2.487	11.913	3.00	39.79	35.74	4.05	89.81%
16.00	2.899	11.910	3.50	46.38	41.69	4.70	89.87%
16.00	3.314	11.909	4.00	53.02	47.64	5.39	89.84%

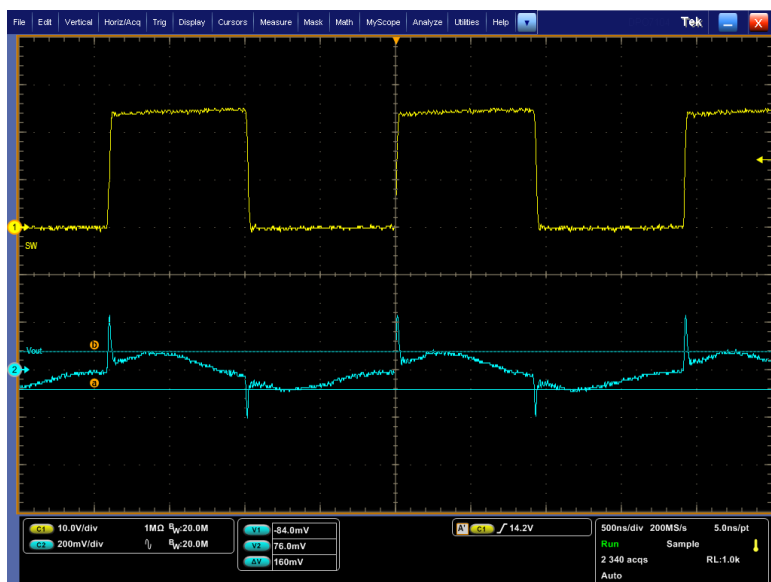
5. Waveforms

Switch-Node Voltage and Output Ripple Voltage

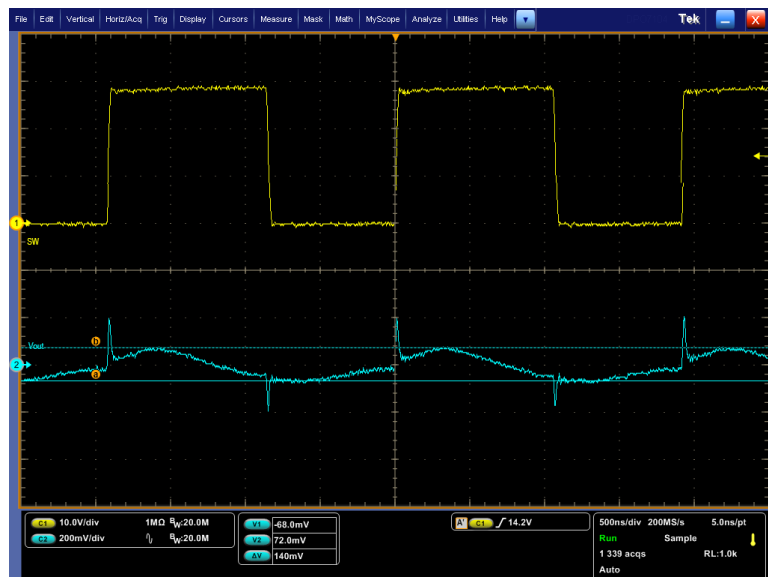
6Vin, 12Vout @ 4A load current.
(~216mV p-p Ripple)



12Vin, 12Vout @ 4A load current.
(~160mV p-p Ripple)

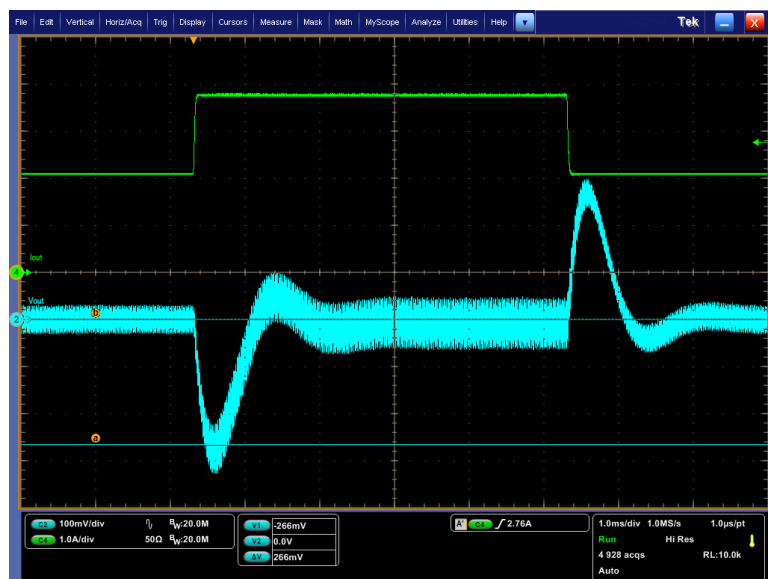


16Vin, 12Vout @ 4A load current.
(~140mV p-p Ripple)

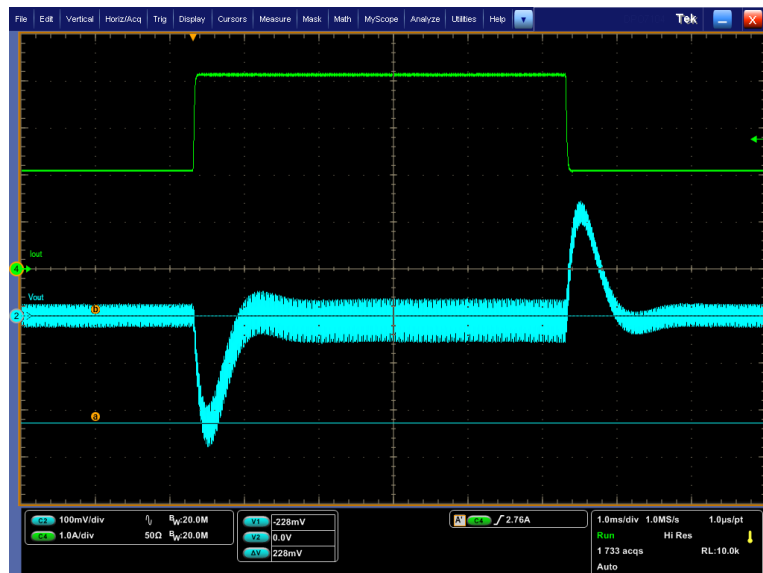


Transient Response Test

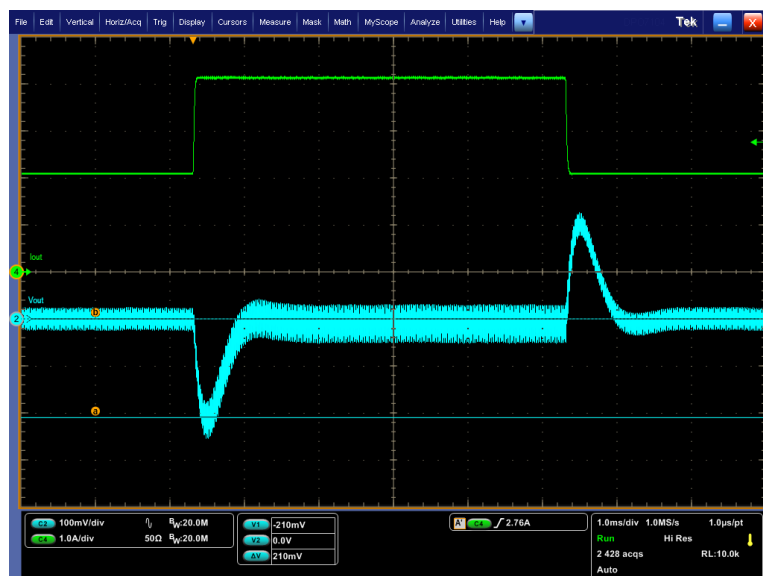
6Vin @ 2A to 3.6A, 100mA/ μ s, Pulse f @ 100 Hz,
50% duty cycle, 12V out. Load Step on/off.



12Vin @ 2A to 4A, 100mA/μs, Pulse f @ 100 Hz,
50% duty cycle, 12V out. Load Step on/off.

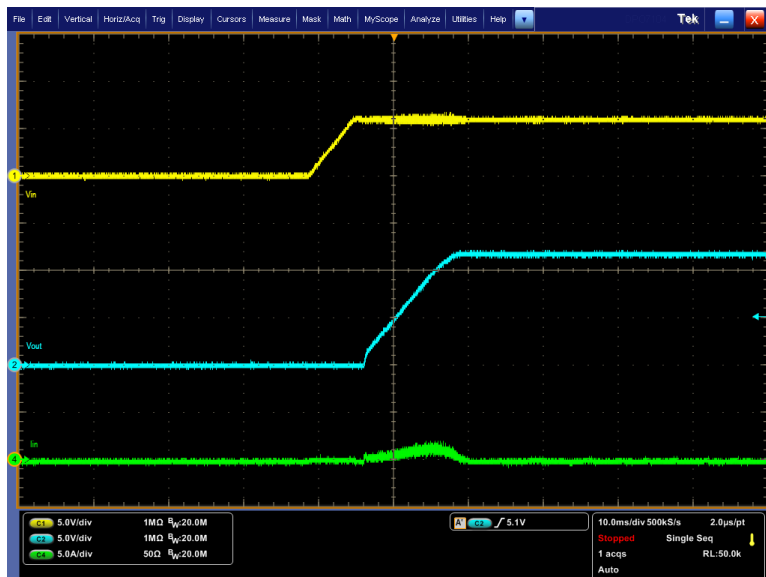


16Vin @ 2A to 4A, 100mA/μs, Pulse f @ 100 Hz,
50% duty cycle, 12V out. Load Step on/off.

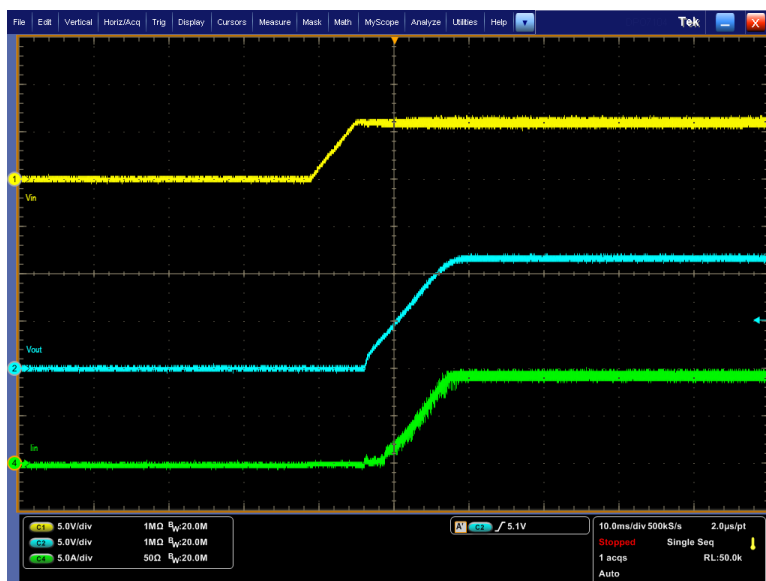


Startup Test

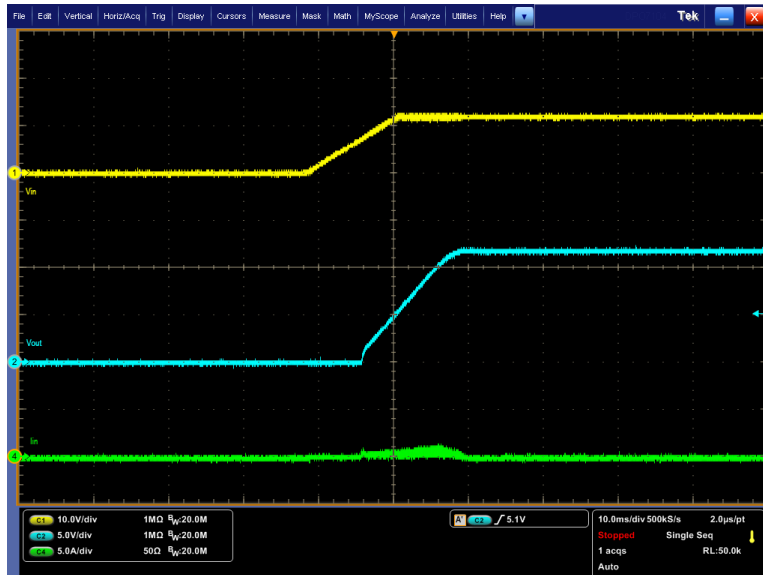
6Vin, 12Vout @ no load current.



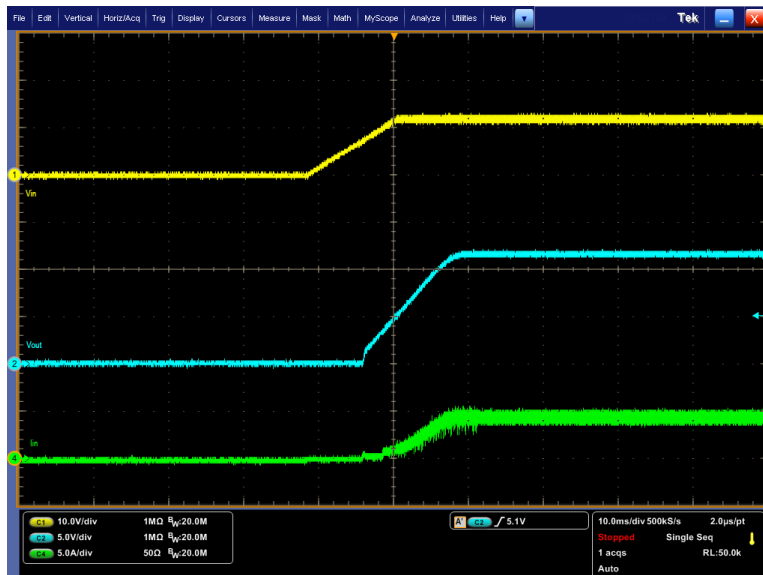
6Vin, 12Vout @ 2.7ohm Load.



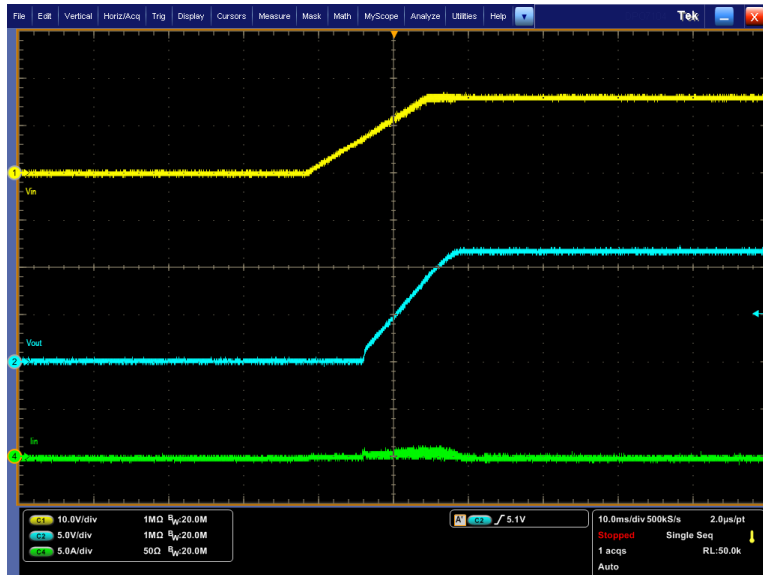
12Vin, 12Vout @ no load current.



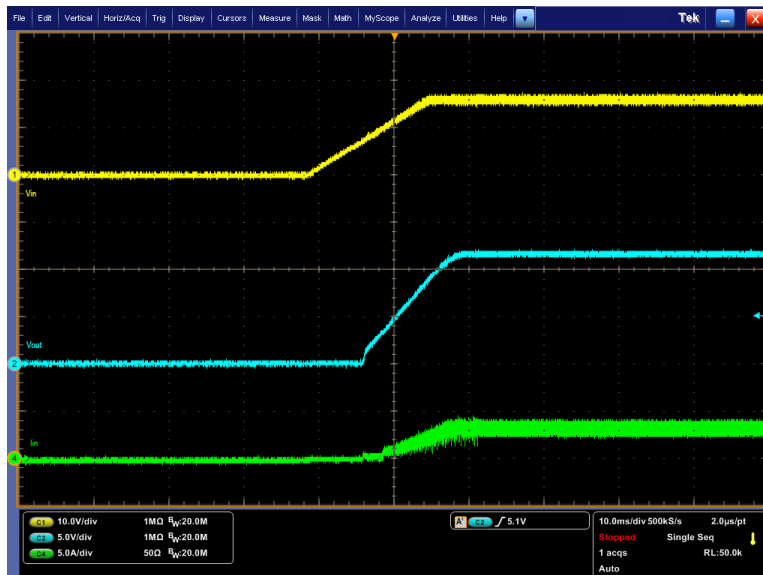
12Vin, 12Vout @ 2.7ohm Load.



16Vin, 12Vout @ no load current.



16Vin, 12Vout @ 2.7ohm Load.



Short-Circuit Test

Applied to board under the following conditions:

6Vin, 12Vout @ no load current.



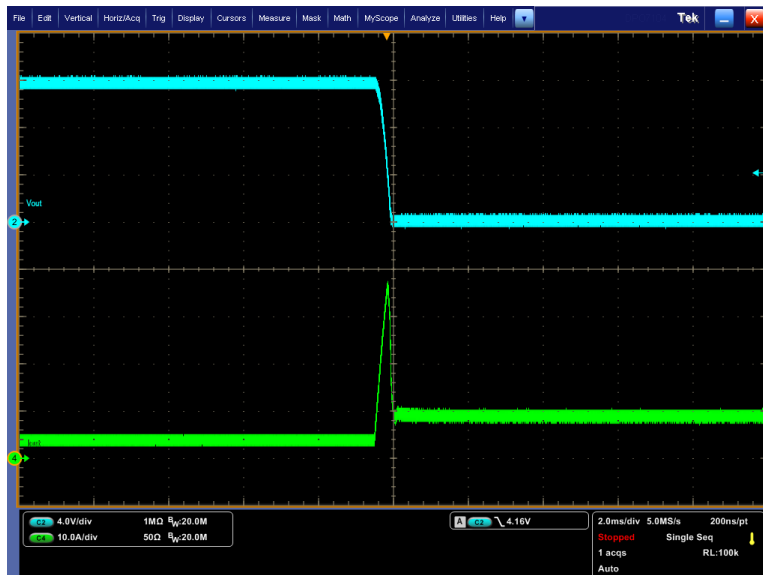
6Vin, 12Vout @ 4A Load.



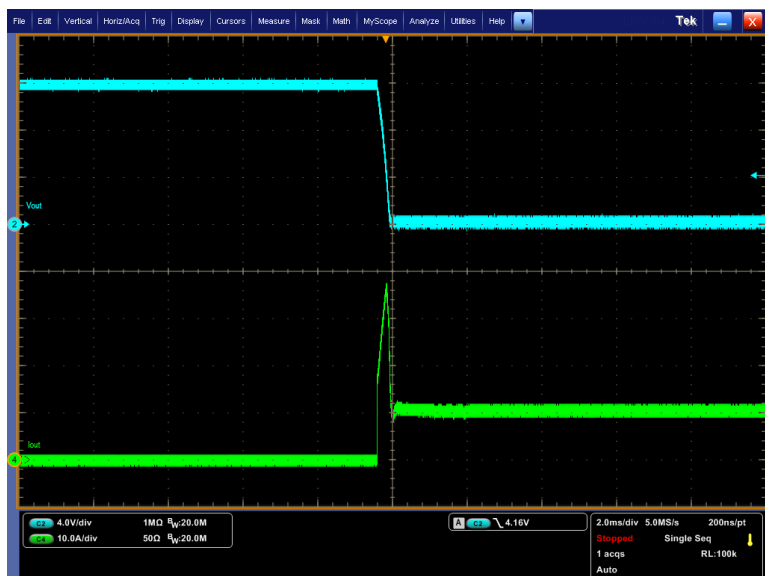
12Vin, 12V out @ no load current.



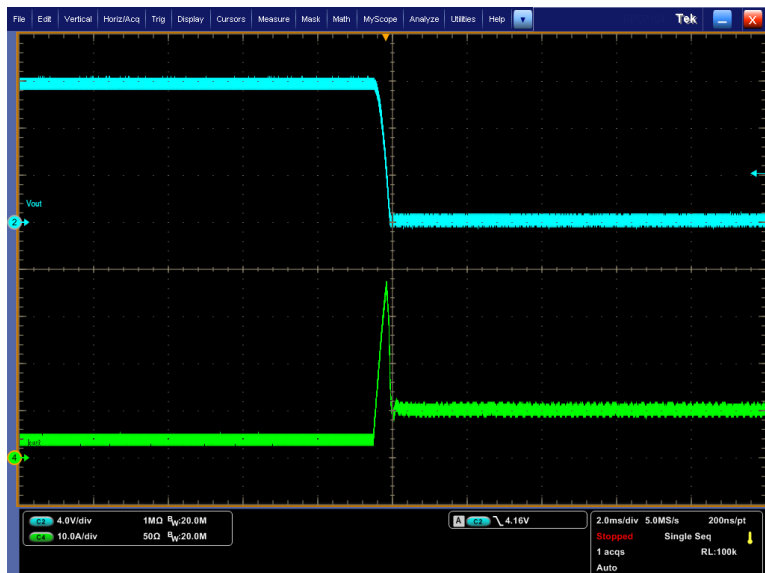
12Vin, 12Vout @ 4A Load.



16Vin, 12Vout @ no load current.



16Vin, 12Vout @ 4A Load.



Short-Circuit Recovery Test

6Vin, 12Vout @ no load current.



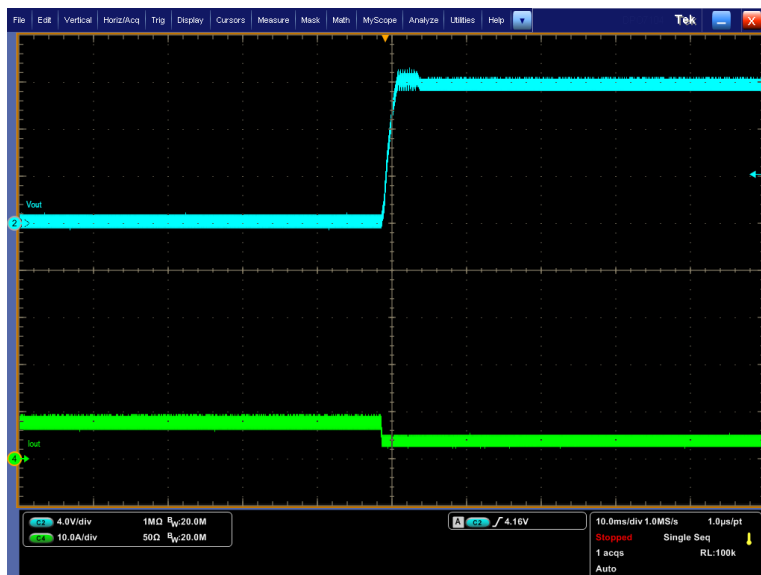
6Vin, 12V out @ 4A Load.



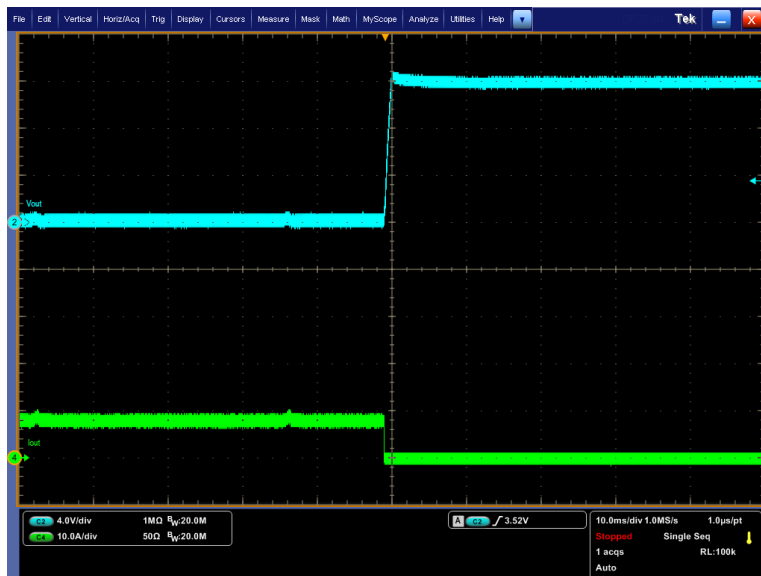
12Vin, 12Vout @ no load current.



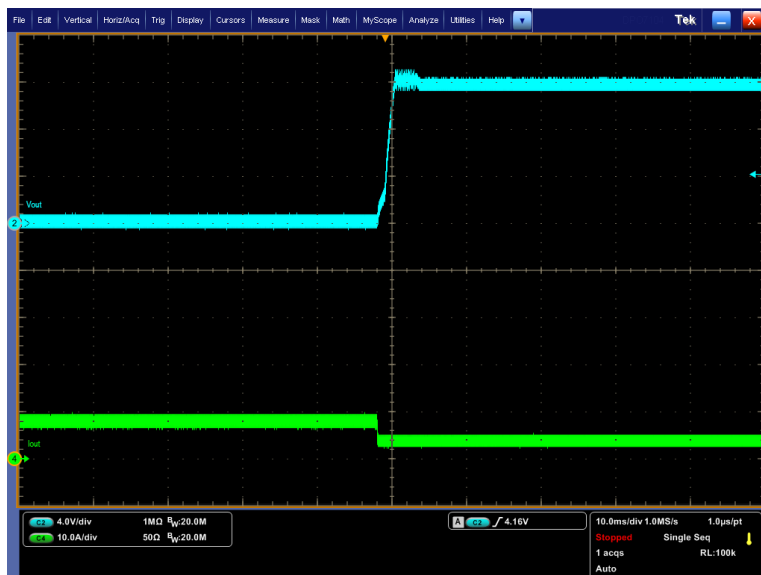
12Vin, 12Vout @ 4A Load.



16Vin, 12V out @ no load current.



16Vin, 12Vout @ 4A Load.



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