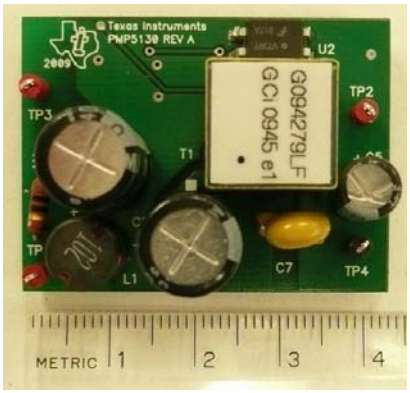
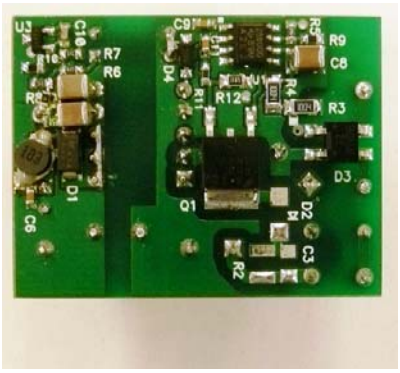
1 Photo

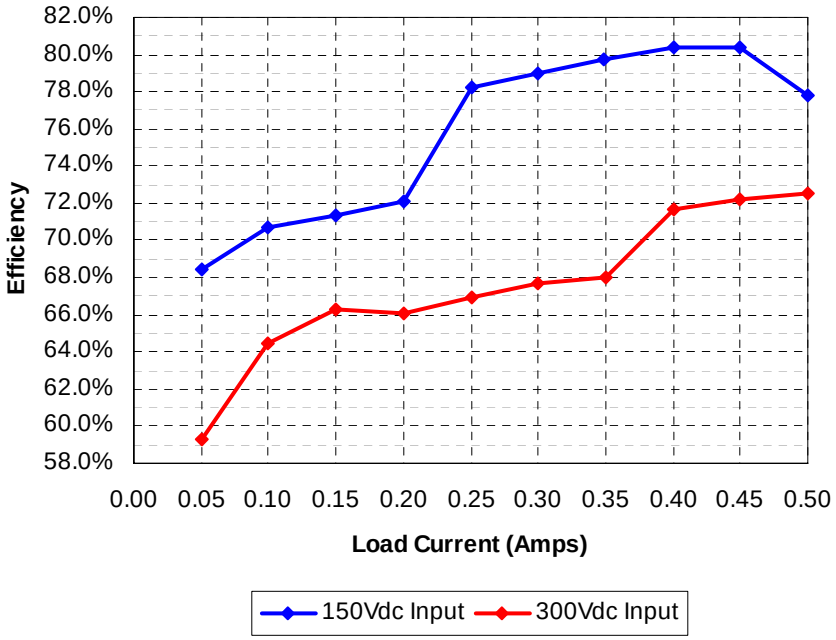
The photographs below show the top and bottom views of the PMP5192 Rev B demo board. The circuit is built on a PMP5130 Rev A PWB.





2 Efficiency

The efficiency data is shown in the tables and graph below.



150VDC

Iout	Vout	Vin (Vdc)	Iin (mAdc)	Pin	Pout	Losses	Efficiency
0.050	4.95	150.6	2.40	0.36	0.25	0.11	68.5%
0.100	4.95	150.6	4.65	0.70	0.50	0.21	70.7%
0.150	4.95	150.6	6.91	1.04	0.74	0.30	71.3%
0.201	4.95	150.6	9.17	1.38	0.99	0.39	72.0%
0.250	4.95	150.6	10.50	1.58	1.24	0.34	78.3%
0.299	4.95	150.6	12.44	1.87	1.48	0.39	79.0%
0.349	4.95	150.6	14.39	2.17	1.73	0.44	79.7%
0.400	4.95	150.6	16.36	2.46	1.98	0.48	80.4%
0.450	4.95	150.6	18.39	2.77	2.23	0.54	80.4%
0.500	4.95	150.6	21.13	3.18	2.48	0.71	77.8%

300VDC

Iout	Vout	Vin (Vdc)	Iin (mAdc)	Pin	Pout	Losses	Efficiency
0.050	4.95	300.1	1.39	0.42	0.25	0.17	59.3%
0.100	4.95	300.1	2.56	0.77	0.50	0.27	64.4%
0.150	4.95	300.1	3.73	1.12	0.74	0.38	66.3%
0.200	4.95	300.1	4.99	1.50	0.99	0.51	66.1%
0.250	4.95	300.1	6.16	1.85	1.24	0.61	66.9%
0.300	4.95	300.1	7.31	2.19	1.49	0.71	67.7%
0.350	4.95	300.1	8.49	2.55	1.73	0.82	68.0%
0.400	4.95	300.1	9.20	2.76	1.98	0.78	71.7%
0.450	4.95	300.1	10.28	3.09	2.23	0.86	72.2%
0.500	4.95	300.1	11.37	3.41	2.48	0.94	72.5%

3 Standby Mode Power Consumption

The tables below show the input power and efficiency during light load operation.

150VDC

Iout	Vout	Vin (Vdc)	Iin (mA)	Pin (mW)	Pout (mW)	Losses	Efficiency
0.000	4.95	150.4	0.18	27	0	27	0.0%
0.010	4.95	150.3	0.62	93	50	44	53.1%

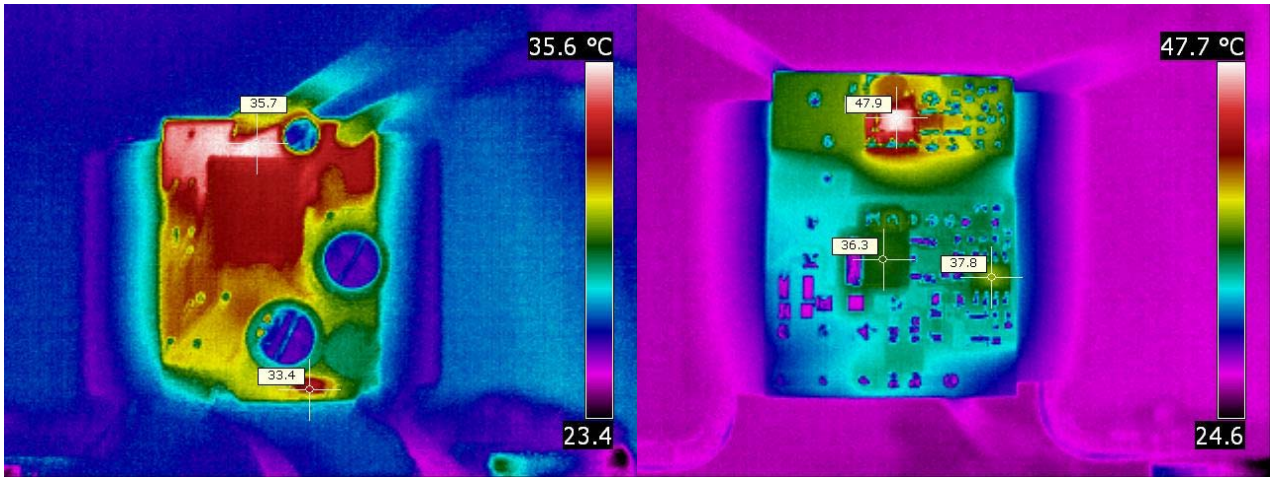
300VDC

Iout	Vout	Vin (Vdc)	Iin (mA)	Pin (mW)	Pout (mW)	Losses	Efficiency
0.000	4.95	300.1	0.23	69	0	69	0.0%
0.010	4.95	300.1	0.47	141	50	92	35.1%

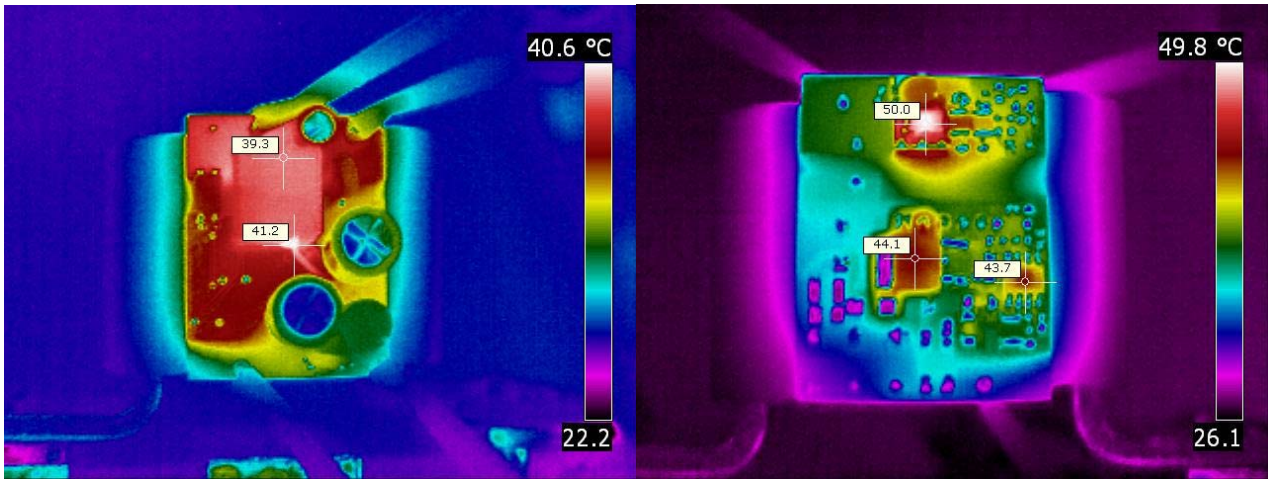
4 Thermal Images

The thermal images below show a top view (left) and bottom view (right) of the board. The ambient temperature was 26ºC with no forced air flow. The output was loaded with 500mA.

4.1 115VAC, 60Hz Input

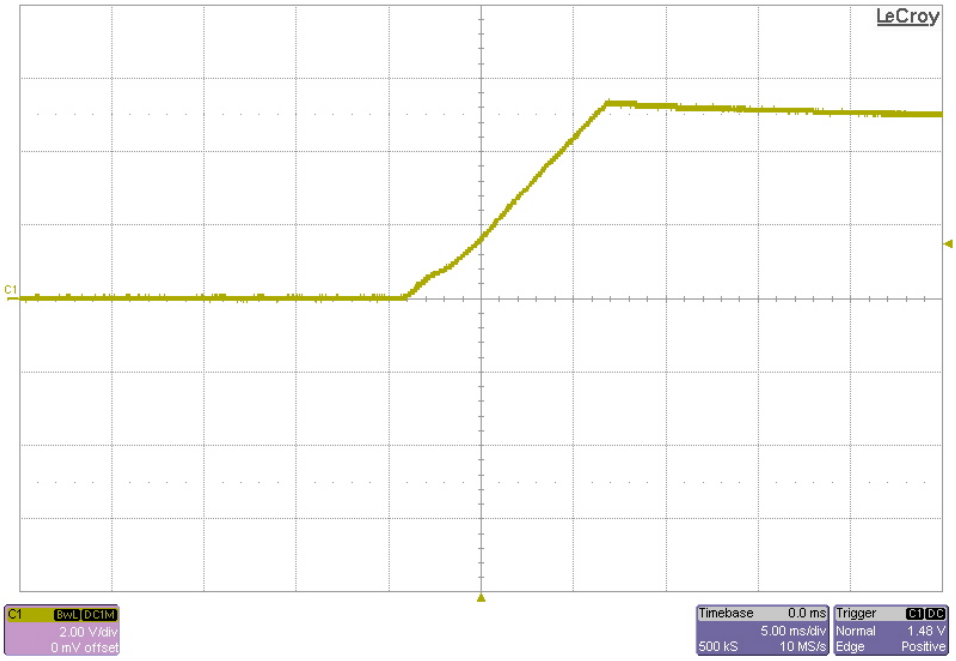


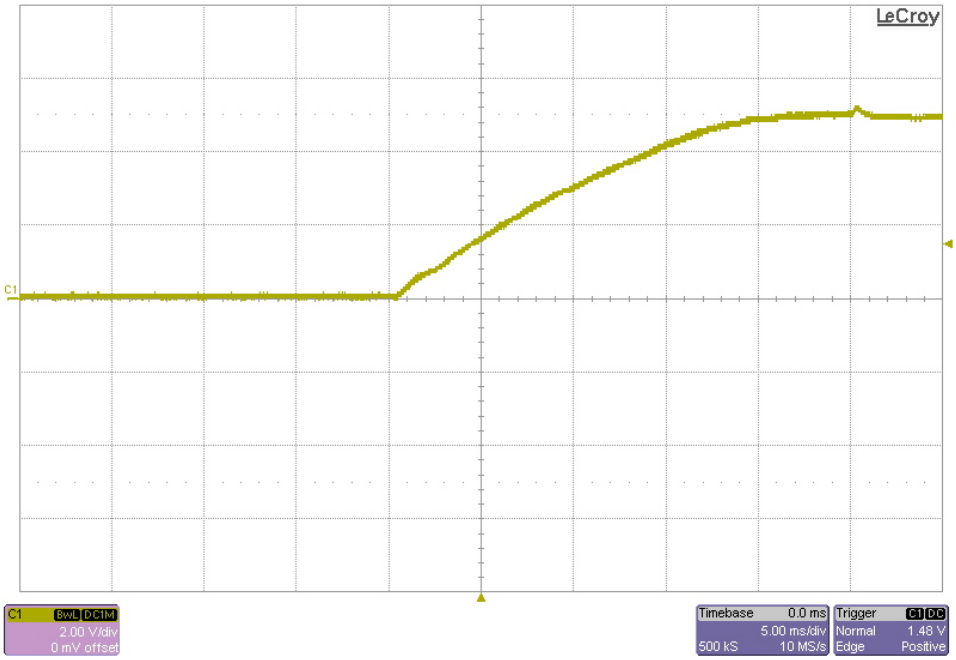
4.2 220VAC, 50Hz Input



5 Startup

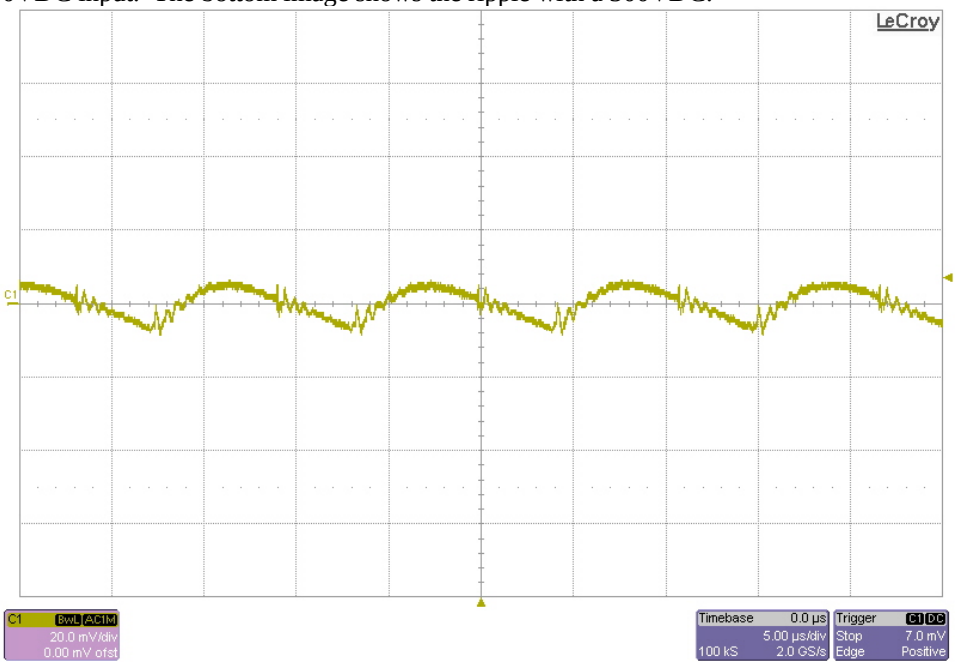
The output voltage at startup is shown in the images below. The input was 150VDC. For the top image, the output was unloaded. For the bottom image, the output was loaded with 500mA.

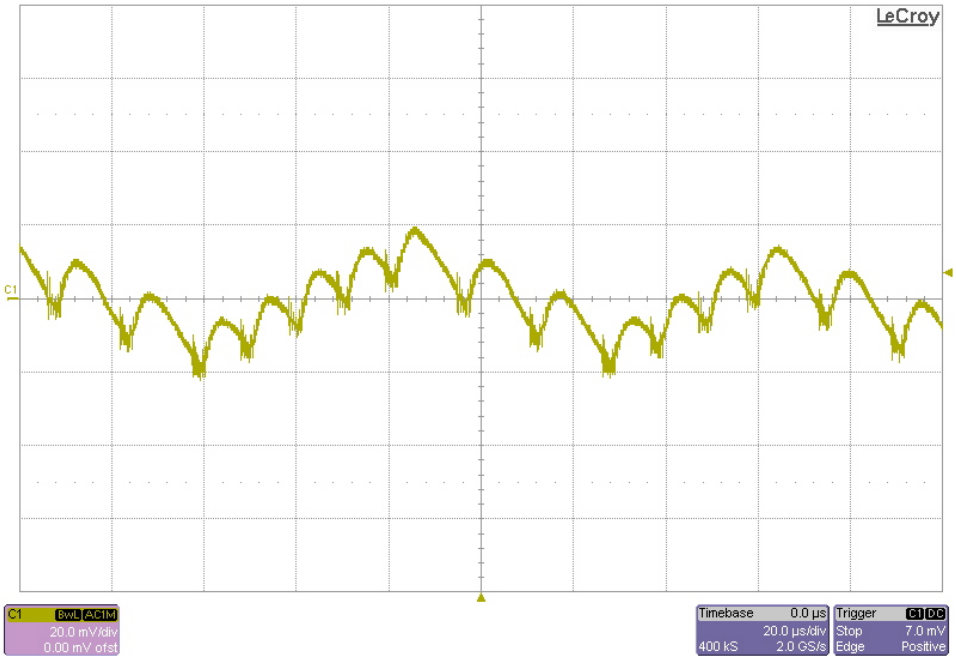




6 Output Ripple Voltage – Full Load

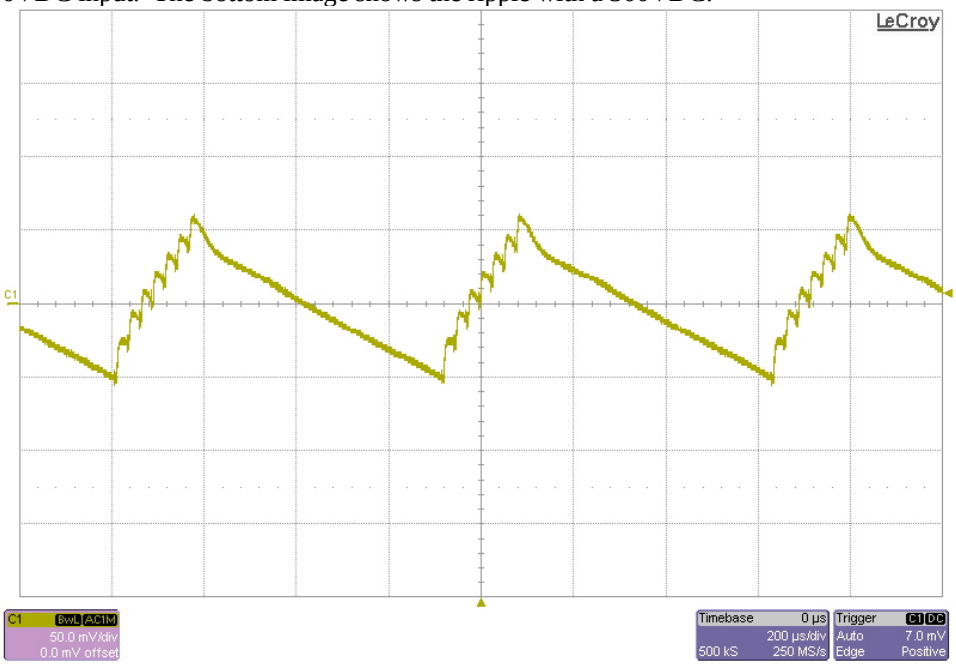
The output ripple voltage during full load (500mA) operation is shown in the plots below. The top image shows the ripple with a 150VDC input. The bottom image shows the ripple with a 300VDC.

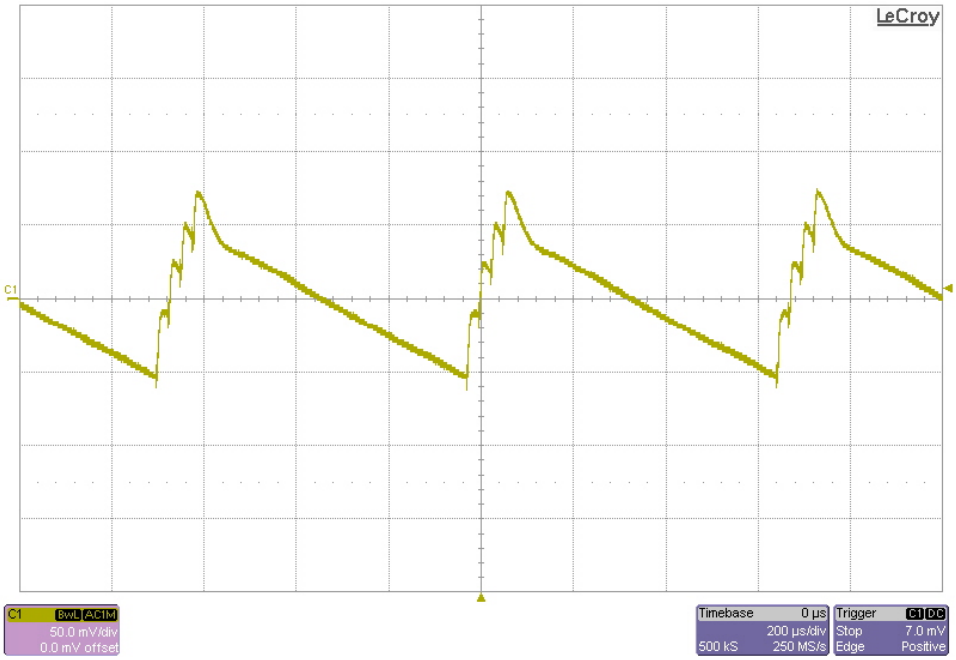




7 Output Ripple Voltage – Light Load

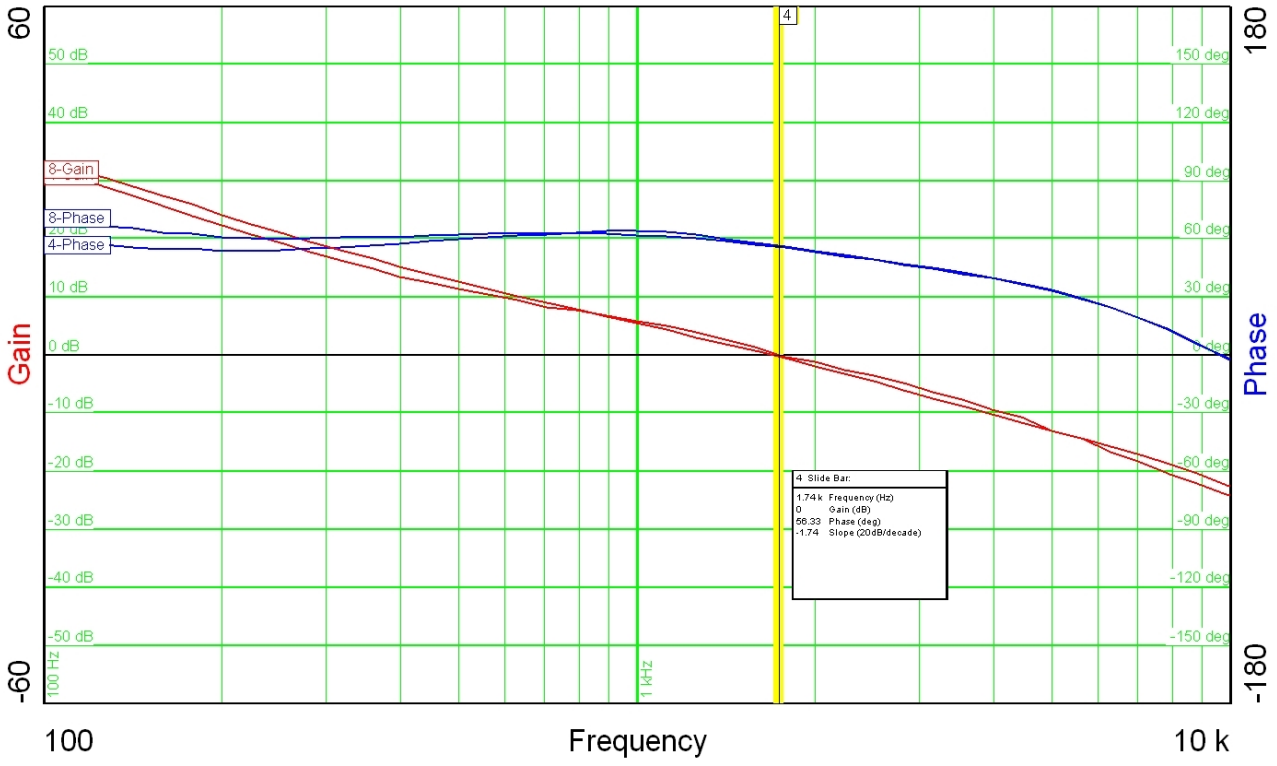
The output ripple voltage during light load operation (50mA) is shown in the plots below. The top image shows the ripple with a 150VDC input. The bottom image shows the ripple with a 300VDC.





8 Loop Response

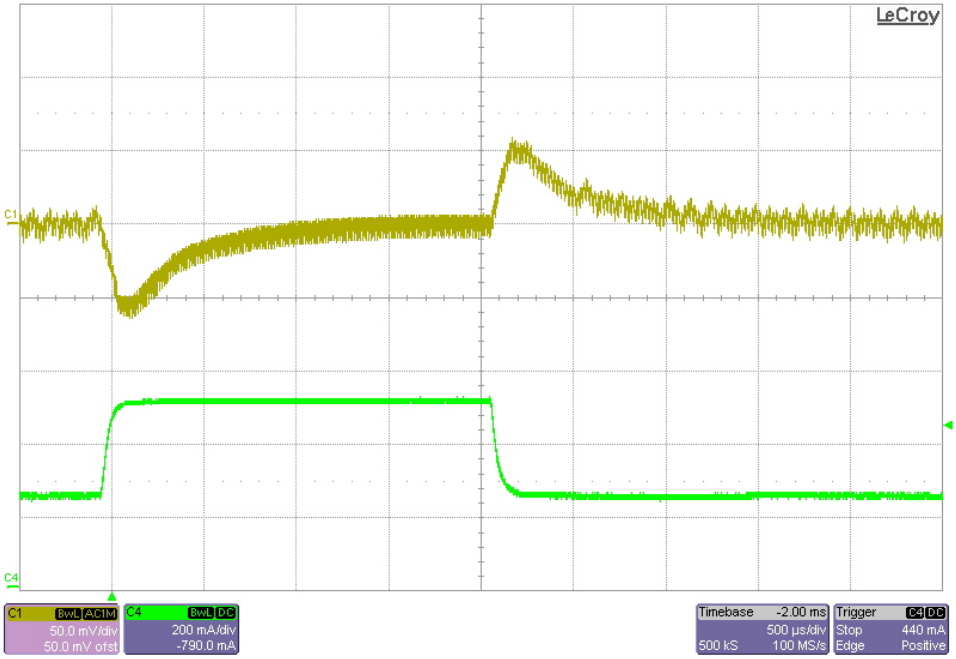
The image below shows the loop response of the converter. The upper gain/phase plot was measured with a 300Vdc input and a 500mA load. The lower gain/phase plot was measured with a 150Vdc input and a 500mA load.

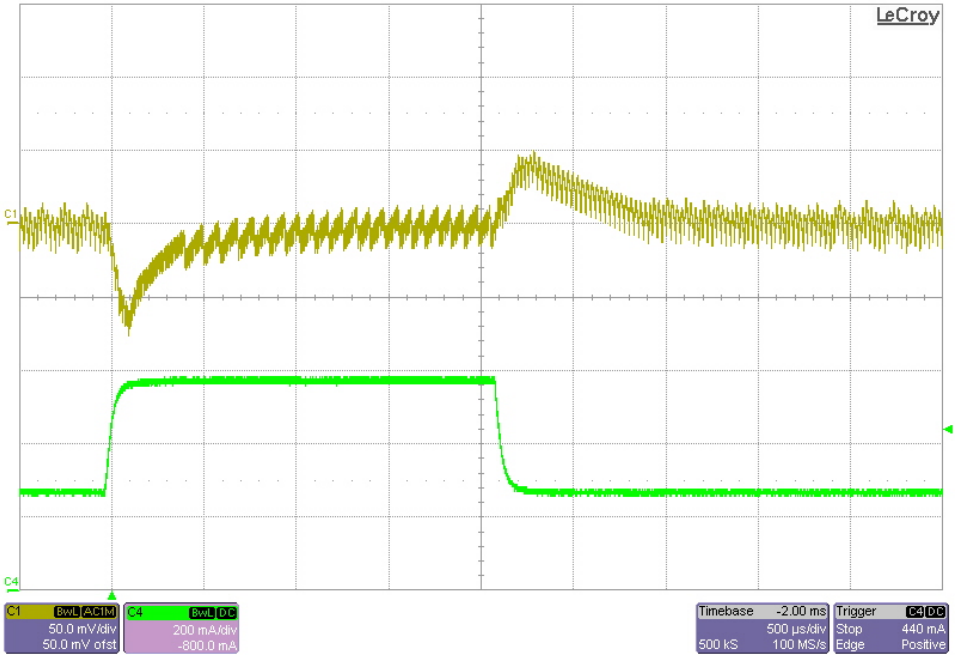


9 Load Transients

The images below show the response to a 0.25A to 0.5A load transient. For the top image, the input voltage was set to 150VDC. For the bottom image, the input was set to 300VDC.

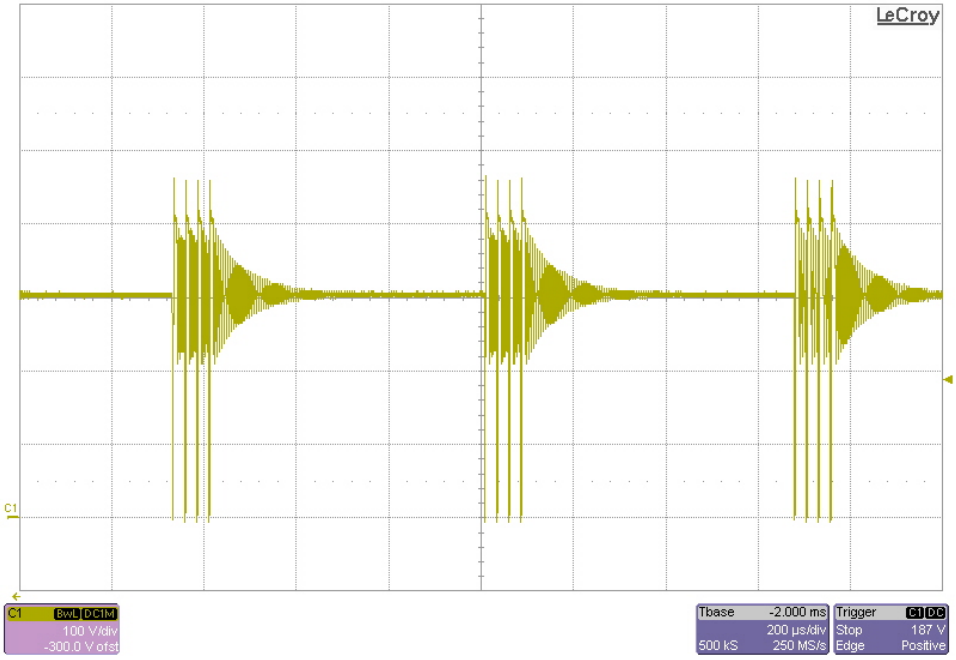
Channel 1: Vout (ac coupled) 50mV/div Channel 4: Iout 200mA/div

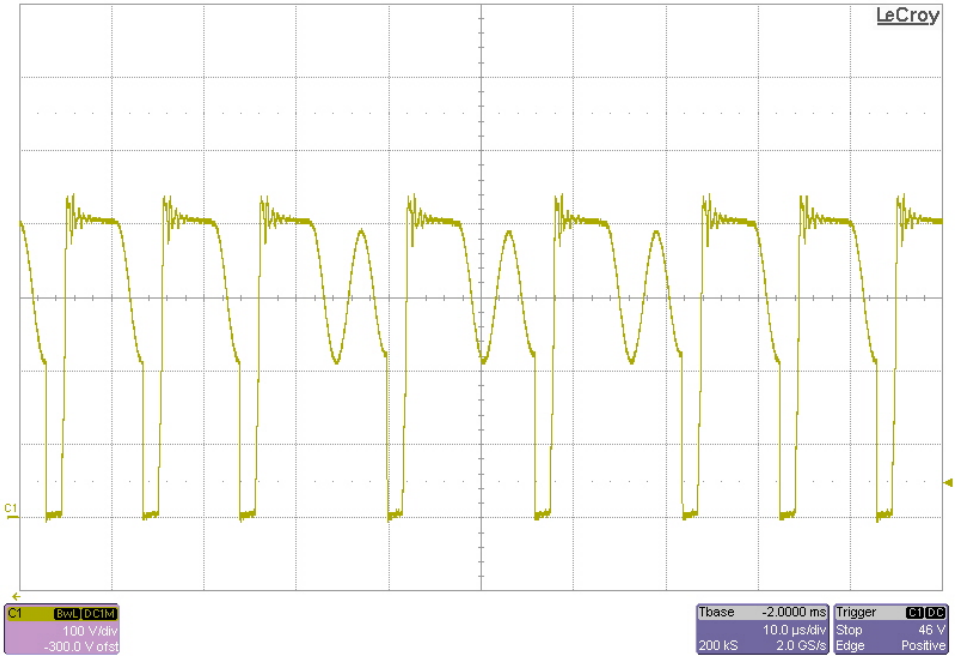




10 Switching Waveforms

The images below show the drain-to-source voltage waveform on the primary MOSFET (Q1). The top image demonstrates burst mode operation, where the load was 50mA and the input was set to 300VDC. In the bottom image, the load was 500mA and the input was 300VDC.





IMPORTANT NOTICE

Texas Instruments Incorporated and its subsidiaries (TI) reserve the right to make corrections, modifications, enhancements, improvements, and other changes to its products and services at any time and to discontinue any product or service without notice. Customers should obtain the latest relevant information before placing orders and should verify that such information is current and complete. All products are sold subject to TI's terms and conditions of sale supplied at the time of order acknowledgment.

TI warrants performance of its hardware products to the specifications applicable at the time of sale in accordance with TI's standard warranty. Testing and other quality control techniques are used to the extent TI deems necessary to support this warranty. Except where mandated by government requirements, testing of all parameters of each product is not necessarily performed.

TI assumes no liability for applications assistance or customer product design. Customers are responsible for their products and applications using TI components. To minimize the risks associated with customer products and applications, customers should provide adequate design and operating safeguards.

TI does not warrant or represent that any license, either express or implied, is granted under any TI patent right, copyright, mask work right, or other TI intellectual property right relating to any combination, machine, or process in which TI products or services are used. Information published by TI regarding third-party products or services does not constitute a license from TI to use such products or services or a warranty or endorsement thereof. Use of such information may require a license from a third party under the patents or other intellectual property of the third party, or a license from TI under the patents or other intellectual property of TI.

Reproduction of TI information in TI data books or data sheets is permissible only if reproduction is without alteration and is accompanied by all associated warranties, conditions, limitations, and notices. Reproduction of this information with alteration is an unfair and deceptive business practice. TI is not responsible or liable for such altered documentation. Information of third parties may be subject to additional restrictions.

Resale of TI products or services with statements different from or beyond the parameters stated by TI for that product or service voids all express and any implied warranties for the associated TI product or service and is an unfair and deceptive business practice. TI is not responsible or liable for any such statements.

TI products are not authorized for use in safety-critical applications (such as life support) where a failure of the TI product would reasonably be expected to cause severe personal injury or death, unless officers of the parties have executed an agreement specifically governing such use. Buyers represent that they have all necessary expertise in the safety and regulatory ramifications of their applications, and acknowledge and agree that they are solely responsible for all legal, regulatory and safety-related requirements concerning their products and any use of TI products in such safety-critical applications, notwithstanding any applications-related information or support that may be provided by TI. Further, Buyers must fully indemnify TI and its representatives against any damages arising out of the use of TI products in such safety-critical applications.

TI products are neither designed nor intended for use in military/aerospace applications or environments unless the TI products are specifically designated by TI as military-grade or "enhanced plastic." Only products designated by TI as military-grade meet military specifications. Buyers acknowledge and agree that any such use of TI products which TI has not designated as military-grade is solely at the Buyer's risk, and that they are solely responsible for compliance with all legal and regulatory requirements in connection with such use.

TI products are neither designed nor intended for use in automotive applications or environments unless the specific TI products are designated by TI as compliant with ISO/TS 16949 requirements. Buyers acknowledge and agree that, if they use any non-designated products in automotive applications, TI will not be responsible for any failure to meet such requirements.

Following are URLs where you can obtain information on other Texas Instruments products and application solutions:

Products		**Applications**	
Amplifiers	amplifier.ti.com	Audio	www.ti.com/audio
Data Converters	dataconverter.ti.com	Automotive	www.ti.com/automotive
DLP® Products	www.dlp.com	Communications and Telecom	www.ti.com/communications
DSP	dsp.ti.com	Computers and Peripherals	www.ti.com/computers
Clocks and Timers	www.ti.com/clocks	Consumer Electronics	www.ti.com/consumer-apps
Interface	interface.ti.com	Energy	www.ti.com/energy
Logic	logic.ti.com	Industrial	www.ti.com/industrial
Power Mgmt	power.ti.com	Medical	www.ti.com/medical
Microcontrollers	microcontroller.ti.com	Security	www.ti.com/security
RFID	www.ti-rfid.com	Space, Avionics & Defense	www.ti.com/space-avionics-defense
RF/IF and ZigBee® Solutions	www.ti.com/lprf	Video and Imaging	www.ti.com/video
		Wireless	www.ti.com/wireless-apps

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