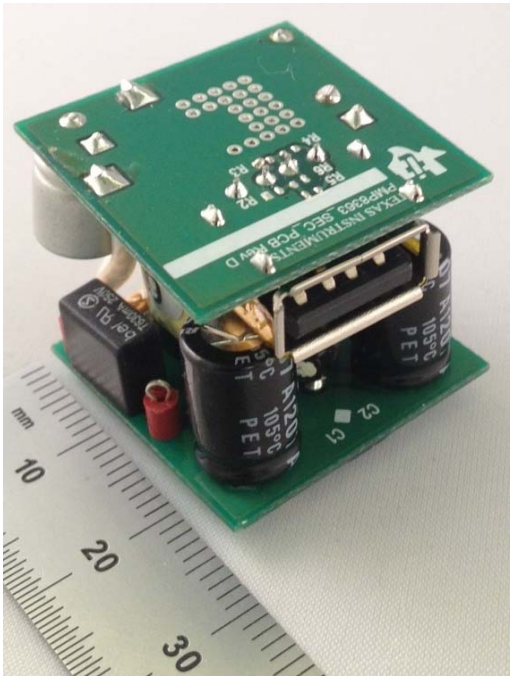
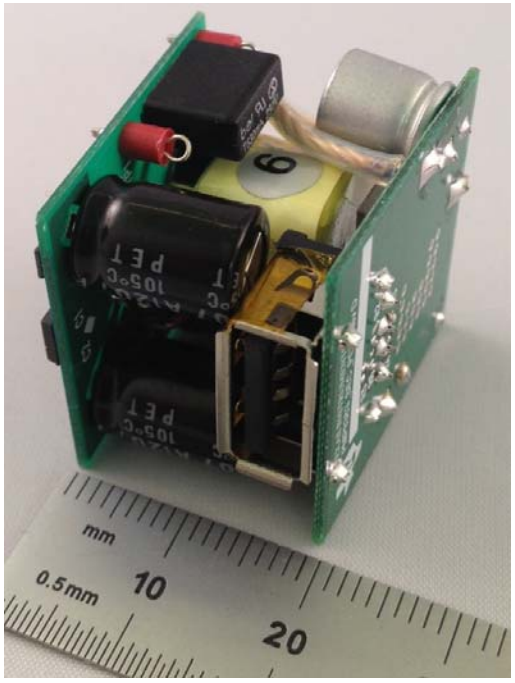
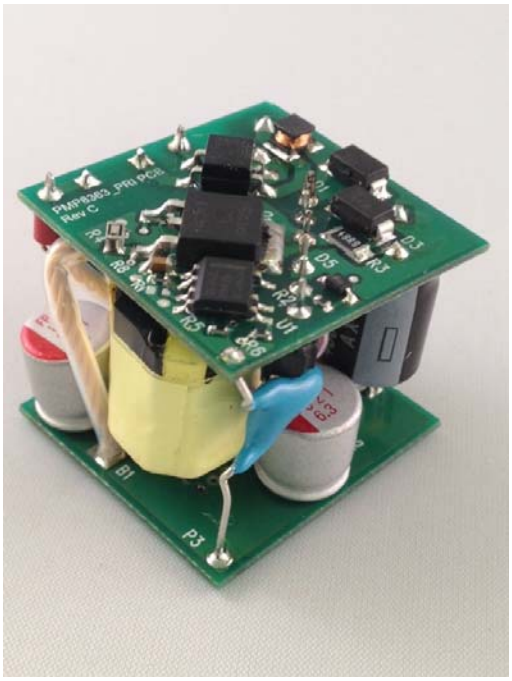
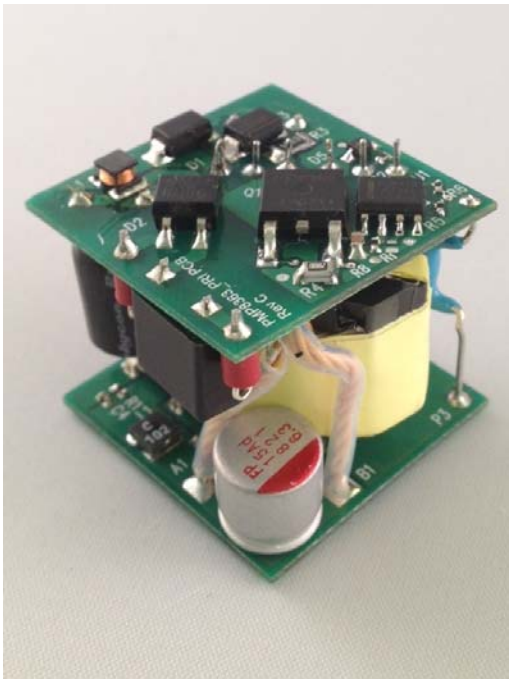
1 Photos

The photographs below show the PMP8363 Rev D prototype assembly.





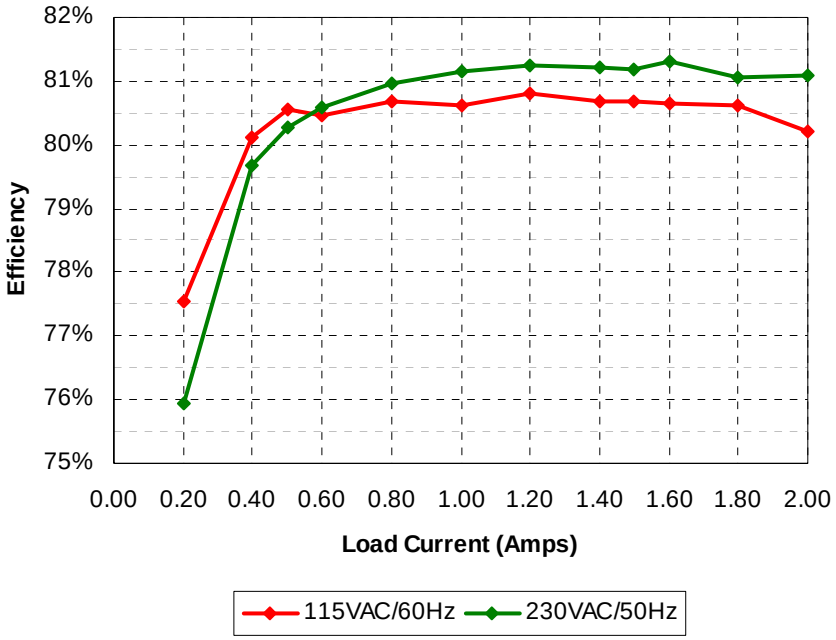




2 Standby Power

With no load attached to the output of the supply, the unit draws 15mW of input power with a 115VAC/60Hz input, and 17mW of input power with a 230VAC/50Hz input.

3 Efficiency



115VAC/60Hz

Iout	Vout	Vin	Iin	Pin	PF	Pout	Losses	Efficiency
0.000	5.09	115.0	0.0009	0.015	0.15	0.00	0.02	0.0%
0.200	5.04	115.0	0.029	1.30	0.39	1.01	0.29	77.5%
0.399	5.02	115.0	0.050	2.50	0.44	2.00	0.50	80.1%
0.500	5.01	115.0	0.059	3.11	0.46	2.51	0.61	80.5%
0.599	5.01	115.0	0.069	3.73	0.47	3.00	0.73	80.5%
0.802	5.00	115.0	0.087	4.97	0.50	4.01	0.96	80.7%
1.000	4.99	115.0	0.104	6.19	0.52	4.99	1.20	80.6%
1.200	4.99	115.0	0.120	7.41	0.54	5.99	1.42	80.8%
1.400	4.98	115.0	0.137	8.64	0.55	6.97	1.67	80.7%
1.500	4.98	115.0	0.145	9.26	0.56	7.47	1.79	80.7%
1.600	4.98	115.0	0.153	9.88	0.56	7.97	1.91	80.6%
1.800	4.98	115.0	0.169	11.12	0.57	8.96	2.16	80.6%
2.000	4.97	115.0	0.185	12.39	0.58	9.94	2.45	80.2%

230VAC/50Hz

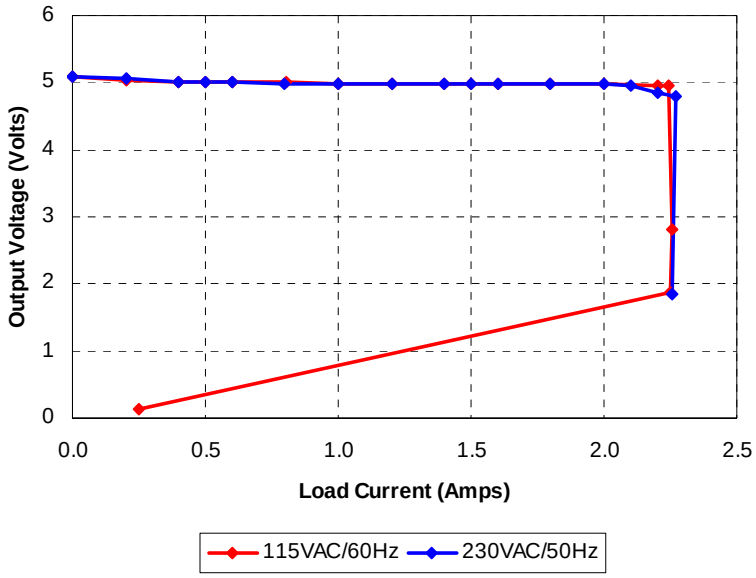
Iout	Vout	Vin	Iin	Pin	PF	Pout	Losses	Efficiency
0.000	5.09	230.0	0.0006	0.017	0.12	0.00	0.02	0.0%
0.200	5.05	230.0	0.020	1.33	0.29	1.01	0.32	75.9%
0.400	5.02	230.0	0.033	2.52	0.33	2.01	0.51	79.7%
0.500	5.01	230.0	0.039	3.12	0.35	2.51	0.62	80.3%
0.600	5.01	229.9	0.045	3.73	0.36	3.01	0.72	80.6%
0.800	4.99	229.9	0.056	4.93	0.38	3.99	0.94	81.0%
1.000	4.99	229.9	0.067	6.15	0.40	4.99	1.16	81.1%
1.200	4.99	229.9	0.077	7.37	0.41	5.99	1.38	81.2%
1.399	4.98	229.9	0.087	8.58	0.43	6.97	1.61	81.2%
1.500	4.98	229.9	0.092	9.20	0.43	7.47	1.73	81.2%
1.600	4.98	229.9	0.097	9.80	0.44	7.97	1.83	81.3%
1.799	4.97	229.9	0.107	11.03	0.45	8.94	2.09	81.1%
2.000	4.97	229.9	0.116	12.26	0.46	9.94	2.32	81.1%

4 Average Efficiency

Vin	Pin	Vout	Iout	Load	Efficiency	Avg. Eff.
115VAC/60Hz	3.11	5.01	0.500	25%	80.55%	**80.51%**
	6.19	4.99	1.000	50%	80.61%	
	9.26	4.98	1.500	75%	80.67%	
	12.39	4.97	2.000	100%	80.23%	
230VAC/50Hz	3.12	5.01	0.500	25%	80.29%	**80.92%**
	6.15	4.99	1.000	50%	81.14%	
	9.20	4.98	1.500	75%	81.20%	
	12.26	4.97	2.000	100%	81.08%	

5 Current Limit

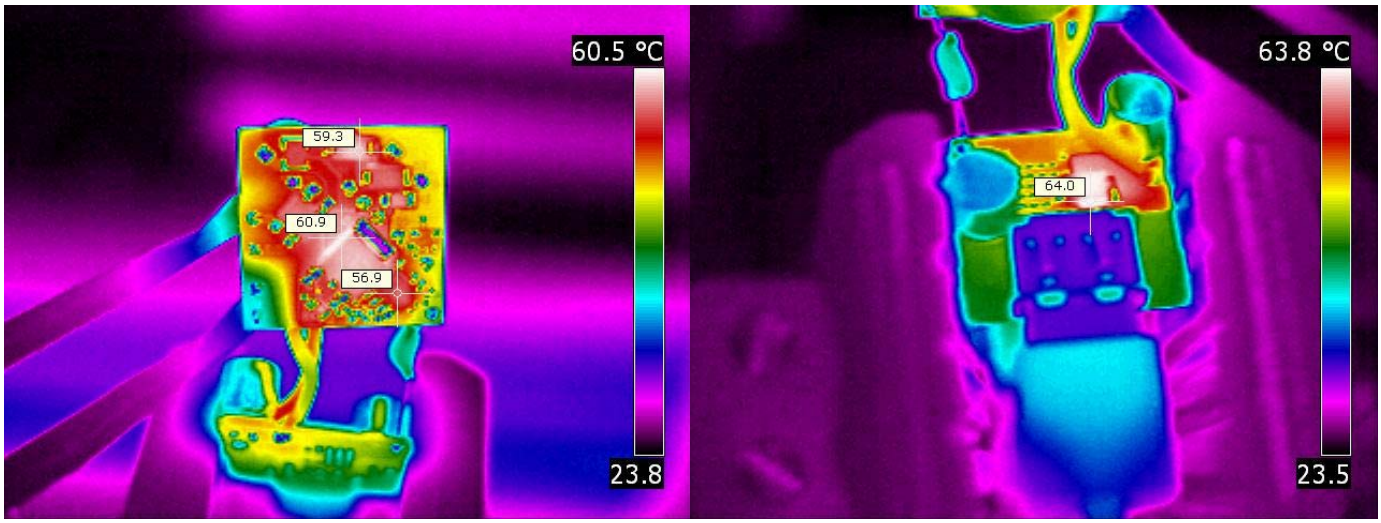
The plot below shows the output voltage versus output current as the load is increased into current limit.

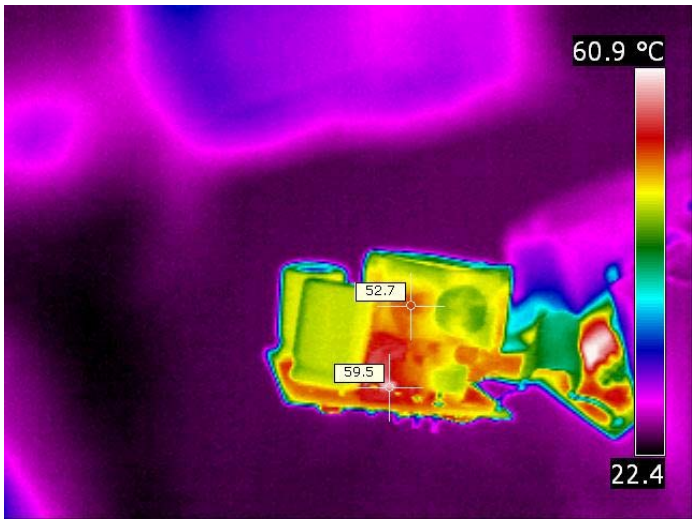


6 Thermal Images

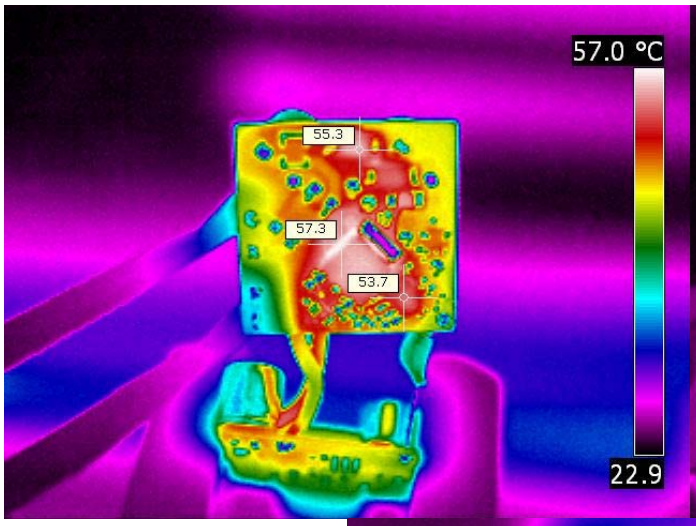
The thermal images below show the primary and secondary boards with a 2A load. The ambient temperature was 25ºC.

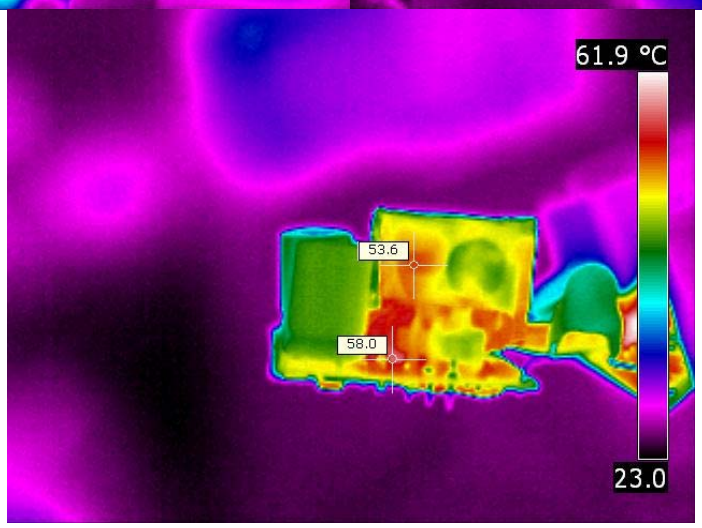
6.1 115VAC/60Hz Input





6.2 230VAC/50Hz Input

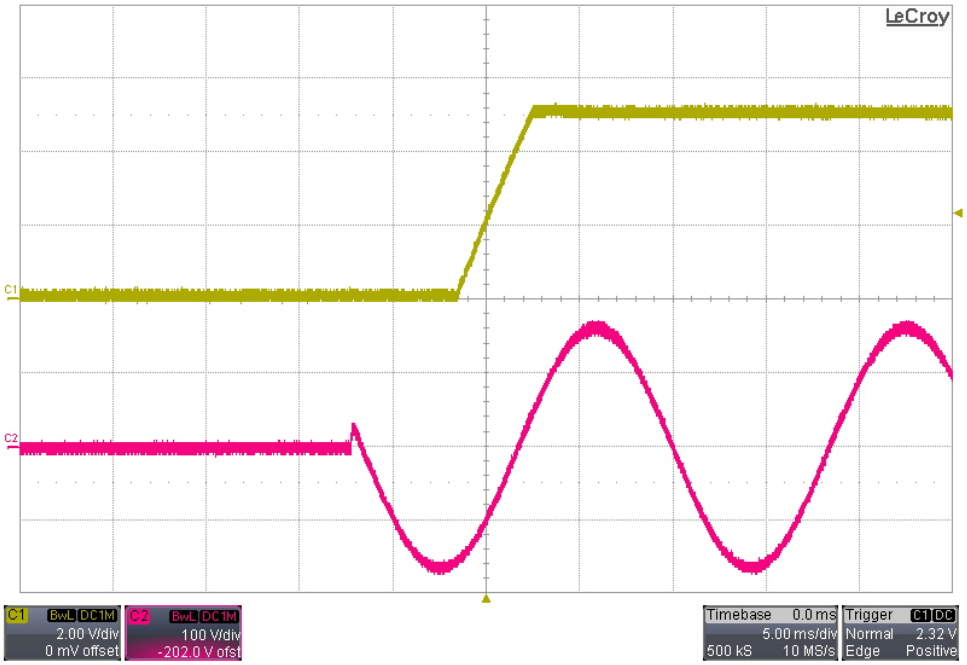




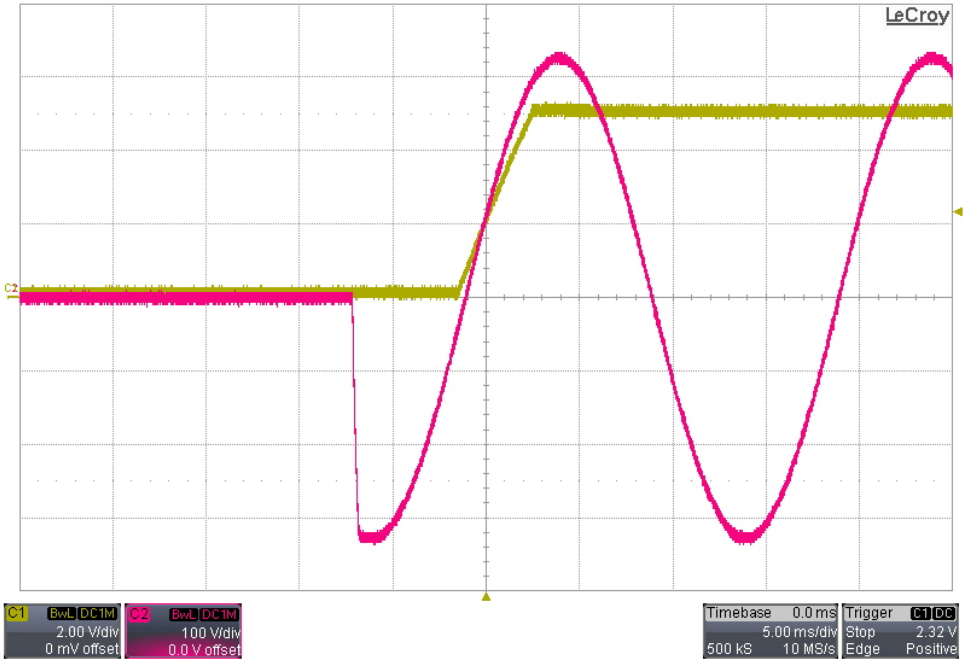
7 Startup

Channel 1 shows the output voltage. Channel 2 shows the AC input voltage.

7.1 115VAC/60Hz Input – No Load



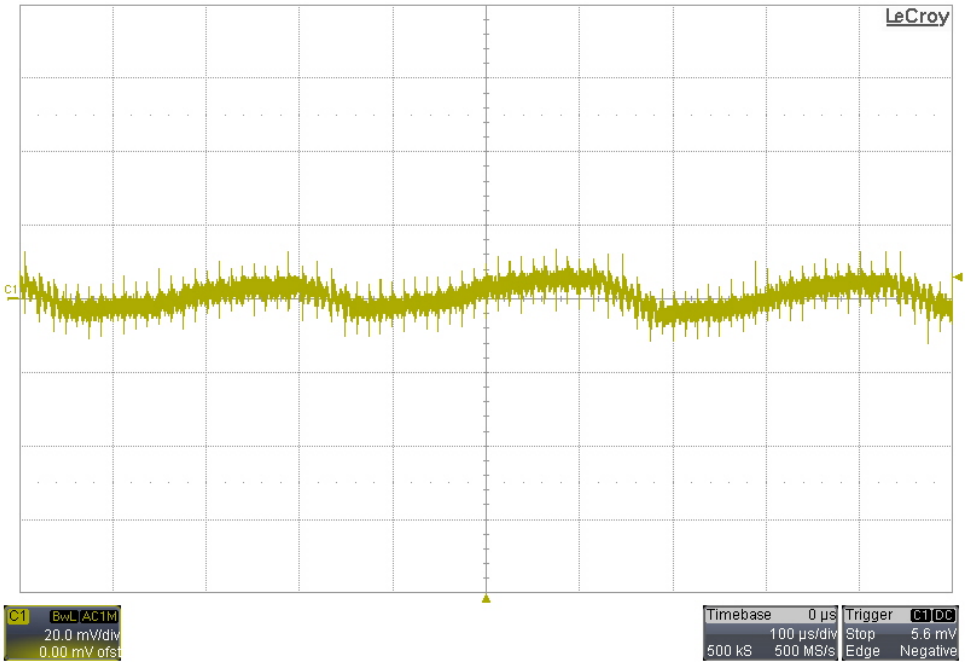
7.2 230VAC/50Hz Input – No Load



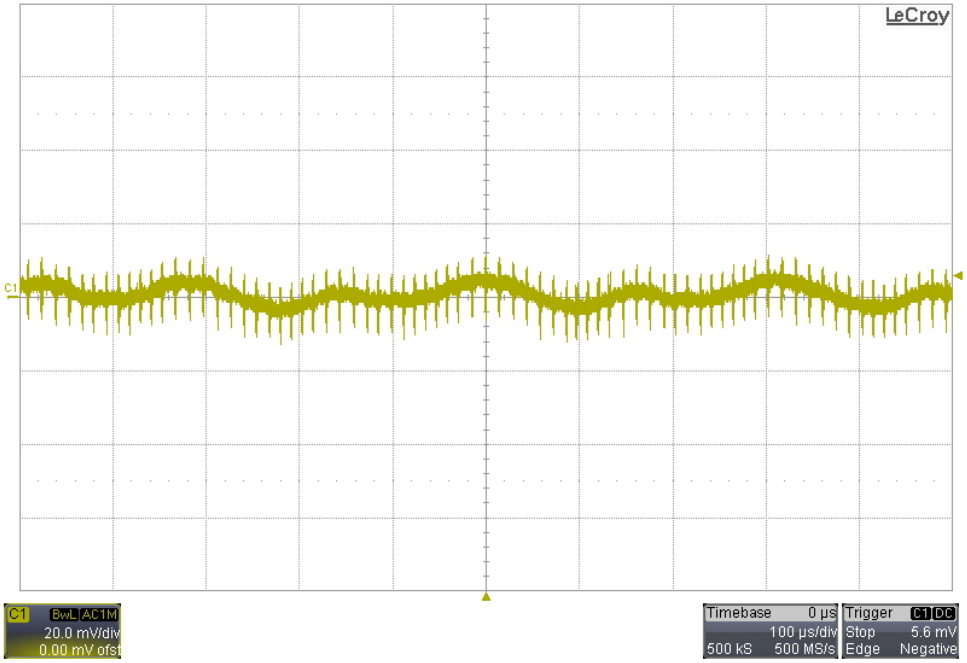
8 Output Ripple Voltage

The output ripple voltage was measured across C2 on the PMP8363_SEC board.

8.1 2A Load – 115VAC/60Hz Input



8.2 2A Load – 230VAC/50Hz Input



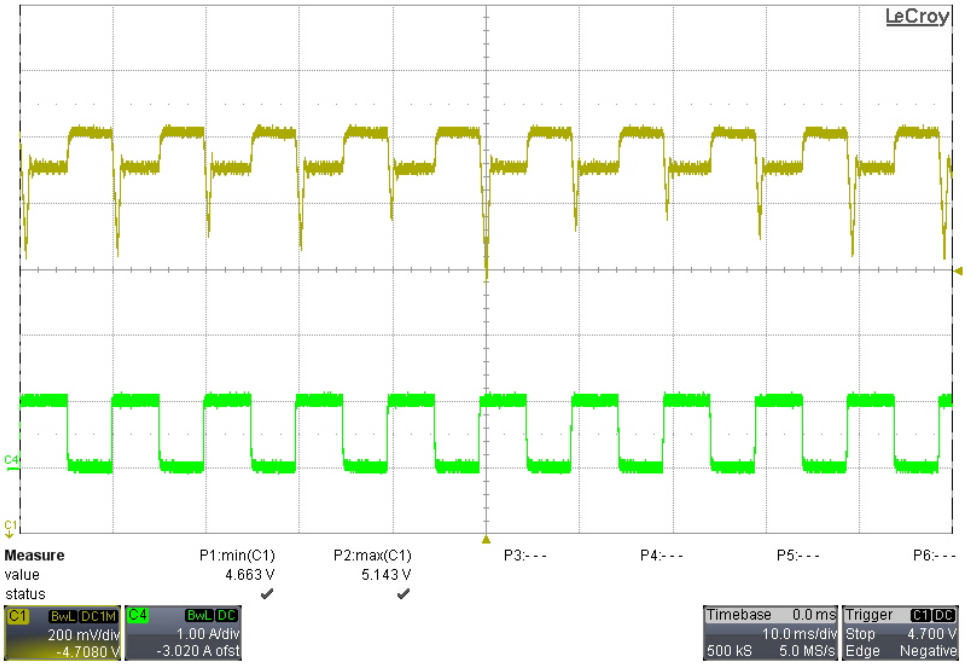
9 Load Transients

The output voltage was measured across C2 on the PMP8363_SEC board.

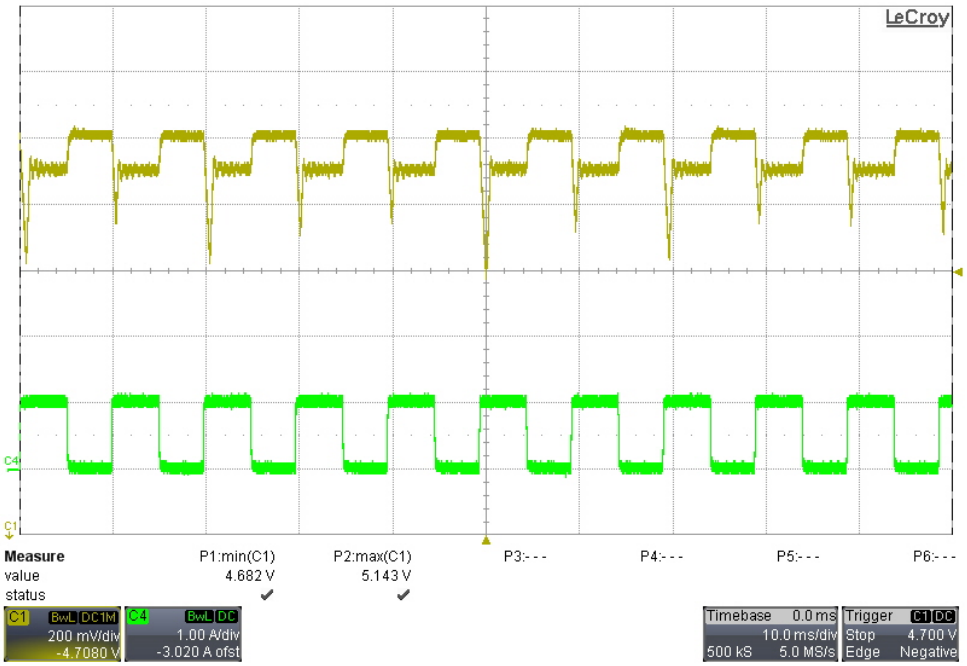
9.1 Summary of Transient Tests

Test Waveform	Input Voltage	Min. Output Voltage
0A to 1A Transient, 100Hz	115VAC/60Hz	4.66V
	230VAC/50Hz	4.68V
0A to 1A Transient, 1kHz	115VAC/60Hz	4.89V
	230VAC/50Hz	4.89V
0A to 1A Transient, Single Pulse	115VAC/60Hz	4.36V
	230VAC/50Hz	4.29V
100mA to 2A Transient, Single Pulse	115VAC/60Hz	4.82V
	230VAC/50Hz	4.78V

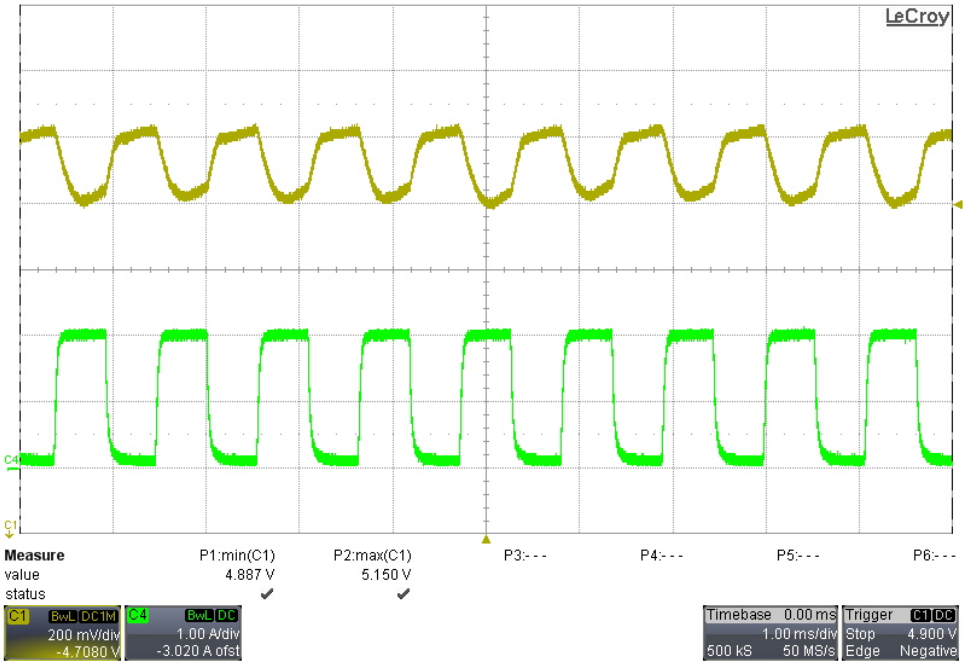
9.2 0A to 1A Transient, 100Hz – 115VAC/60Hz Input



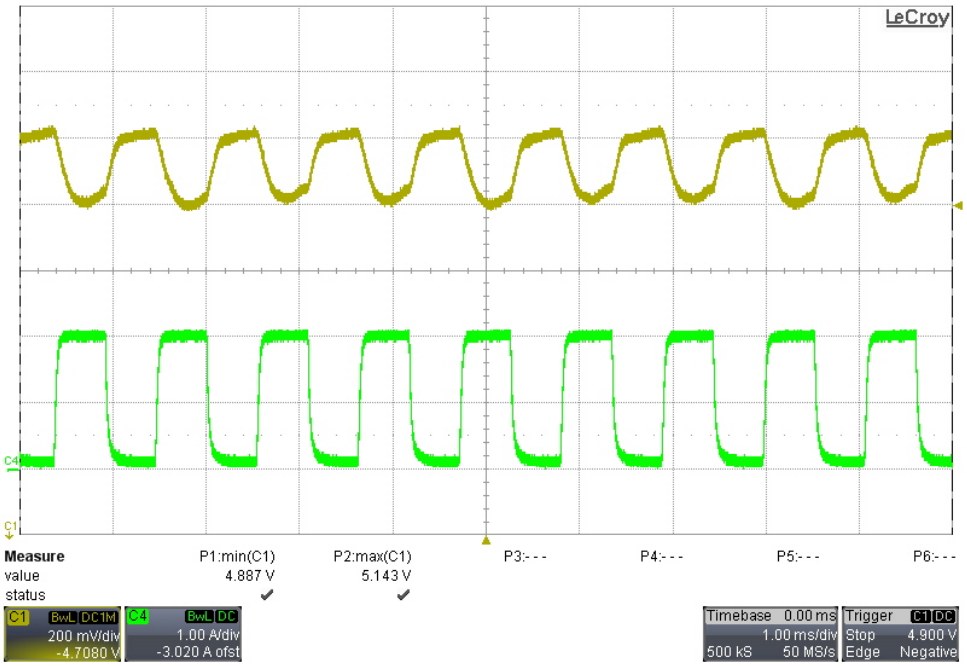
9.3 0A to 1A Transient, 100Hz – 230VAC/50Hz Input



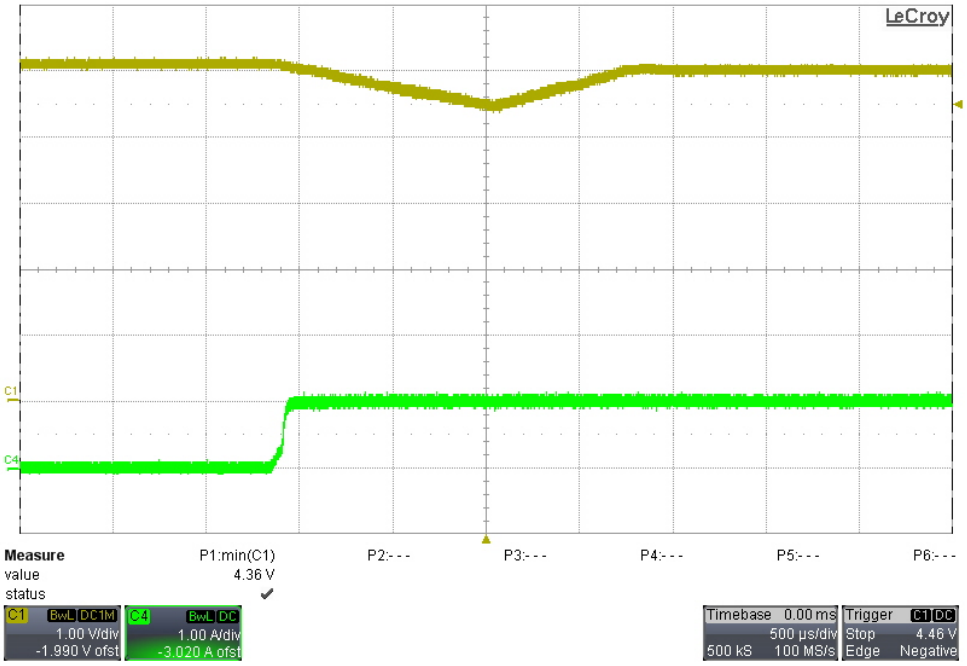
9.4 0A to 1A Transient, 1kHz – 115VAC/60Hz Input



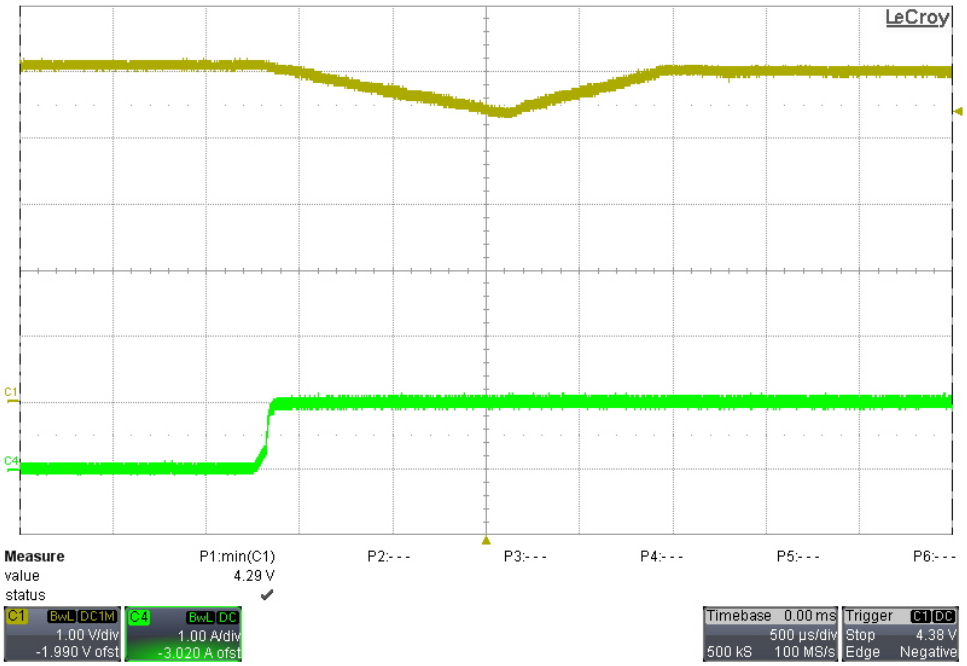
9.5 0A to 1A Transient, 1 kHz – 230VAC/50Hz Input



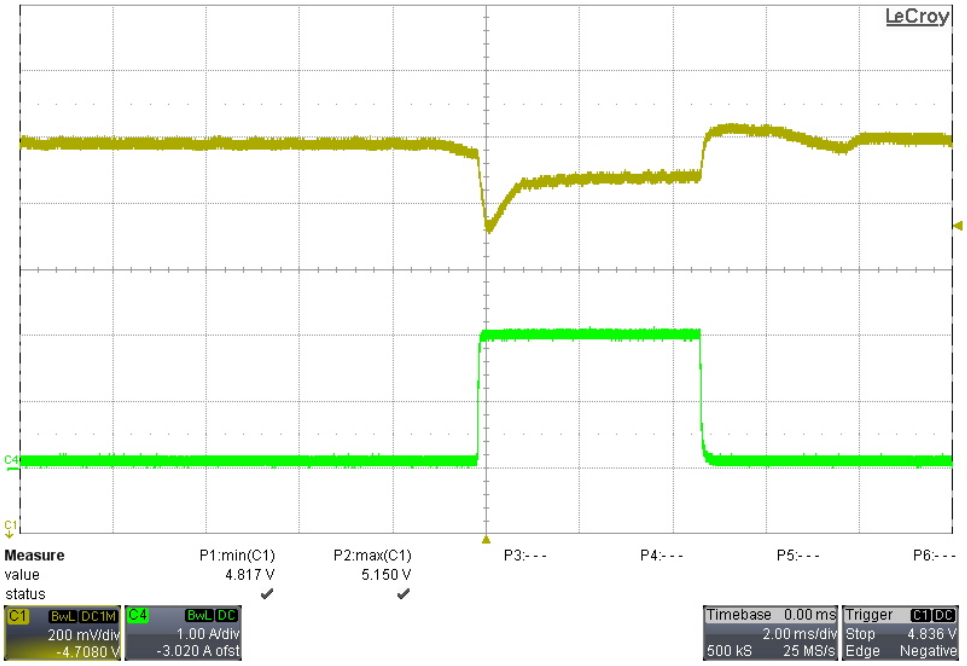
9.6 0A to 1A Transient, Single Pulse, Worst Case – 115VAC/60Hz Input



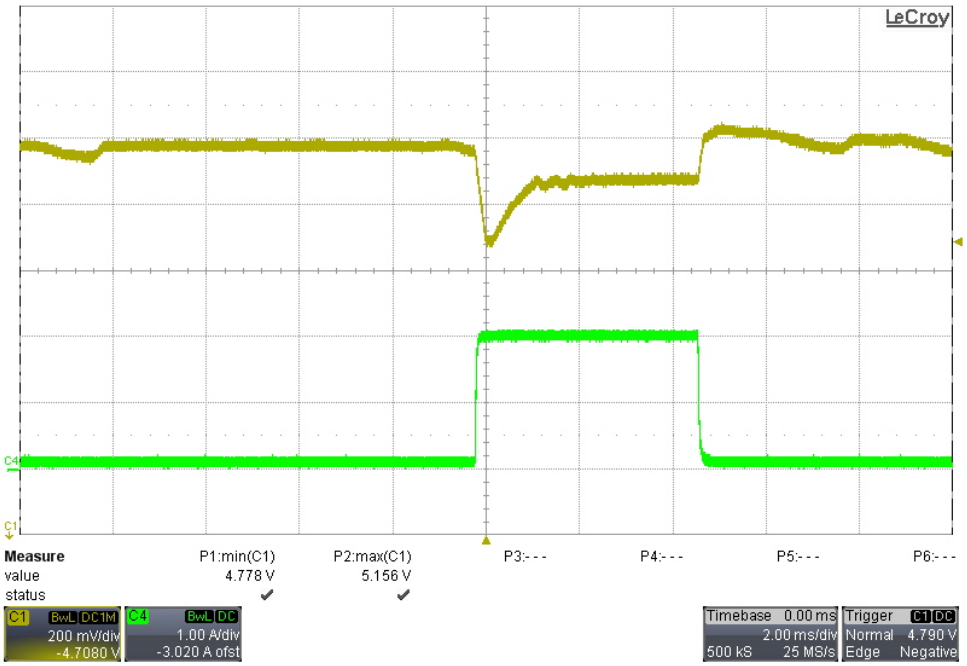
9.7 0A to 1A Transient, Single Pulse, Worst Case – 230VAC/60Hz Input



9.8 100mA to 2A Transient, Single Pulse, Worst Case – 115VAC/60Hz Input



9.9 100mA to 2A Transient, Single Pulse, Worst Case – 230VAC/60Hz Input

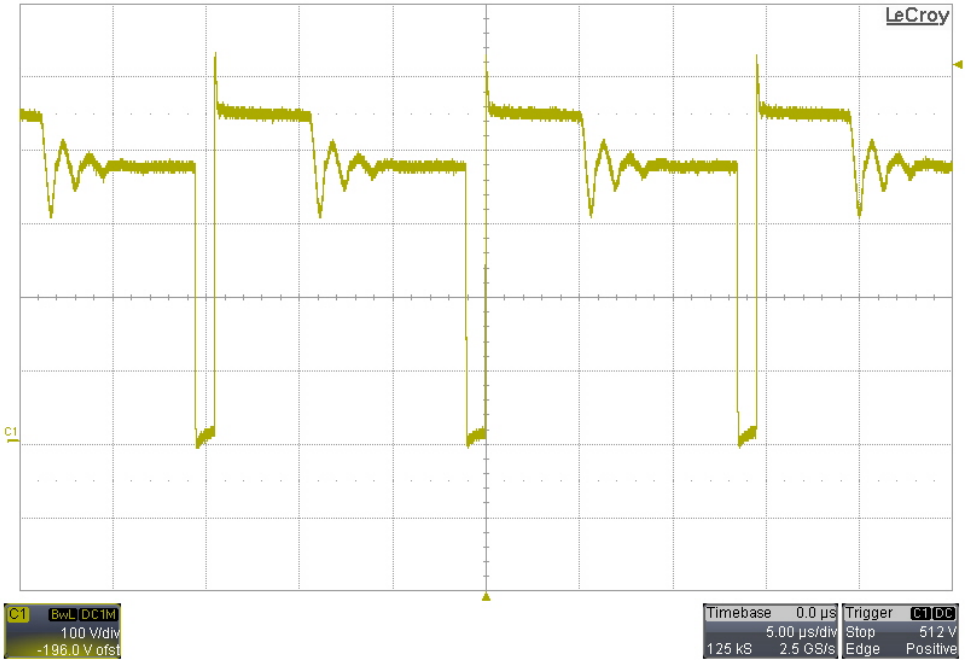


10 Switching Waveforms

The images below show the voltage waveforms on the switching devices within the supply. The input was 265VAC/50Hz. The output was loaded 2A.

10.1 Primary Waveforms

The image below shows the drain-to-source voltage on Q1on the primary board.



10.2 Secondary Waveforms

The image below shows the voltage on the anode of D1 on the secondary board.

IMPORTANT NOTICE

Texas Instruments Incorporated and its subsidiaries (TI) reserve the right to make corrections, enhancements, improvements and other changes to its semiconductor products and services per JESD46, latest issue, and to discontinue any product or service per JESD48, latest issue. Buyers should obtain the latest relevant information before placing orders and should verify that such information is current and complete. All semiconductor products (also referred to herein as “components”) are sold subject to TI’s terms and conditions of sale supplied at the time of order acknowledgment.

TI warrants performance of its components to the specifications applicable at the time of sale, in accordance with the warranty in TI’s terms and conditions of sale of semiconductor products. Testing and other quality control techniques are used to the extent TI deems necessary to support this warranty. Except where mandated by applicable law, testing of all parameters of each component is not necessarily performed.

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

TI does not warrant or represent that any license, either express or implied, is granted under any patent right, copyright, mask work right, or other intellectual property right relating to any combination, machine, or process in which TI components or services are used. Information published by TI regarding third-party products or services does not constitute a license 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 significant portions 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. TI is not responsible or liable for such altered documentation. Information of third parties may be subject to additional restrictions.

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

Buyer acknowledges and agrees that it is solely responsible for compliance with all legal, regulatory and safety-related requirements concerning its products, and any use of TI components in its applications, notwithstanding any applications-related information or support that may be provided by TI. Buyer represents and agrees that it has all the necessary expertise to create and implement safeguards which anticipate dangerous consequences of failures, monitor failures and their consequences, lessen the likelihood of failures that might cause harm and take appropriate remedial actions. Buyer will fully indemnify TI and its representatives against any damages arising out of the use of any TI components in safety-critical applications.

In some cases, TI components may be promoted specifically to facilitate safety-related applications. With such components, TI’s goal is to help enable customers to design and create their own end-product solutions that meet applicable functional safety standards and requirements. Nonetheless, such components are subject to these terms.

No TI components are authorized for use in FDA Class III (or similar life-critical medical equipment) unless authorized officers of the parties have executed a special agreement specifically governing such use.

Only those TI components which TI has specifically designated as military grade or “enhanced plastic” are designed and intended for use in military/aerospace applications or environments. Buyer acknowledges and agrees that any military or aerospace use of TI components which have ***not*** been so designated is solely at the Buyer's risk, and that Buyer is solely responsible for compliance with all legal and regulatory requirements in connection with such use.

TI has specifically designated certain components which meet ISO/TS16949 requirements, mainly for automotive use. Components which have not been so designated are neither designed nor intended for automotive use; and TI will not be responsible for any failure of such components to meet such requirements.

Products		**Applications**	
Audio	www.ti.com/audio	Automotive and Transportation	www.ti.com/automotive
Amplifiers	amplifier.ti.com	Communications and Telecom	www.ti.com/communications
Data Converters	dataconverter.ti.com	Computers and Peripherals	www.ti.com/computers
DLP® Products	www.dlp.com	Consumer Electronics	www.ti.com/consumer-apps
DSP	dsp.ti.com	Energy and Lighting	www.ti.com/energy
Clocks and Timers	www.ti.com/clocks	Industrial	www.ti.com/industrial
Interface	interface.ti.com	Medical	www.ti.com/medical
Logic	logic.ti.com	Security	www.ti.com/security
Power Mgmt	power.ti.com	Space, Avionics and Defense	www.ti.com/space-avionics-defense
Microcontrollers	microcontroller.ti.com	Video and Imaging	www.ti.com/video
RFID	www.ti-rfid.com		
OMAP Applications Processors	www.ti.com/omap	**TI E2E Community**	e2e.ti.com
Wireless Connectivity	www.ti.com/wirelessconnectivity		

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