



**TPS40140 Project  
9/9/08**

The following test report is for the TPS40140 project.

The tests performed were as follows:

**A. TPS40140 – 1.1V@20A**

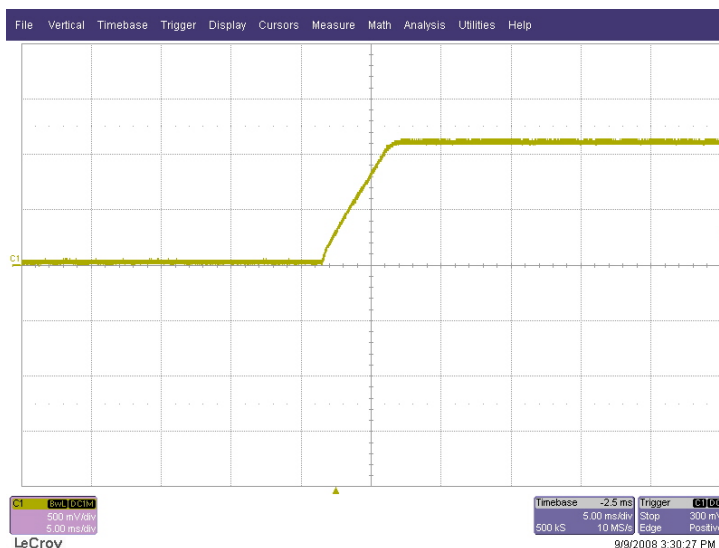
1. Turn-On (No Load)
2. Turn-Off (1A Load)
3. Switching Waveforms (20A Load)
4. Thermal Images
5. Output Voltage Ripple (20A Load)
6. Transient Response (10A to 20A)
7. Efficiency
8. Load Regulation
9. Bode Plot

# TPS40140 Test Results Rev. A

## 1 Turn On – (TPS40140 - 1.1V@20A)

The photo below shows the startup waveform. The input voltage is 12V, the output is not loaded. The time-base is set to 5ms/Division.

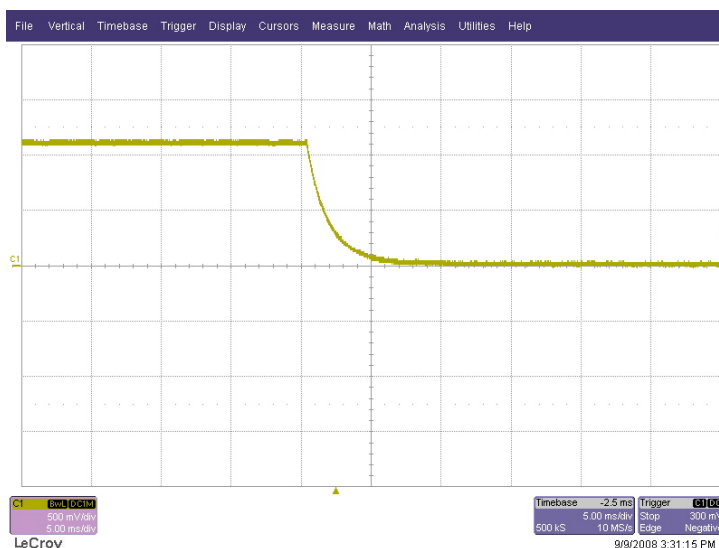
Channel 1 – Yellow : 1.1V Output – (500mV/Division)



## 2 Turn Off – (TPS40140 - 1.1V@20A)

The photo below shows the shutdown waveform. The input voltage is 12V, the output is loaded with 1A. The time-base is set to 10ms/Division.

Channel 1 – Yellow : 1.1V Output – (500mV/Division)



## 3 Switching Waveforms – (TPS40140 - 1.1V@20A)

The waveforms below show the switching waveform for the converter. The input voltage is 12V. The output is fully loaded.

Channel 1 – Yellow : 1.1V Switch Node #1 – (5V/Division)

Channel 2 – Pink : 1.1V Switch Node #2 – (5V/Division)



1us Time Base

## 4 Thermal Images – (TPS40140 - 1.1V@20A)

The image below shows the thermal performance of the PMP3978 PCB. The board is measured with full load on the output. The input voltage is 5V and 12V. The ambient temperature is 25 degree C with no airflow.



5V Input

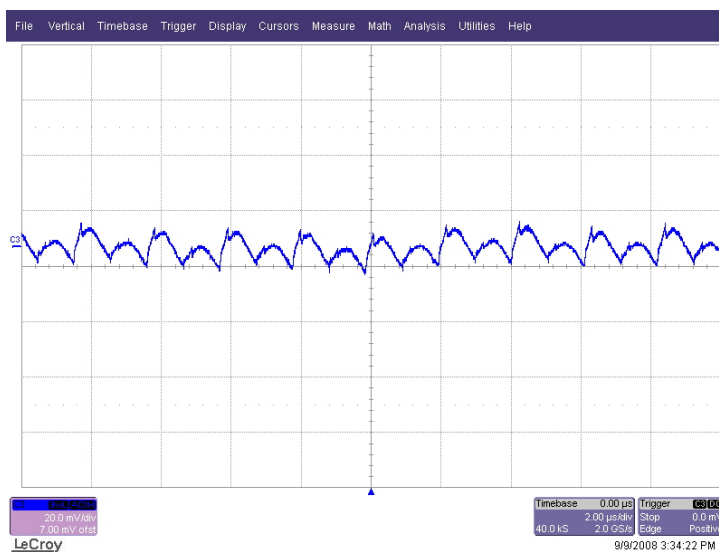


12V Input

## 5 Output Voltage Ripple – (TPS40140 - 1.1V@20A)

The photo below shows the output voltage ripple. The input voltage is 12V. The timebase is set to 2us/Division.

Channel 3 – Output Voltage : (20mV/Division; AC Coupled)

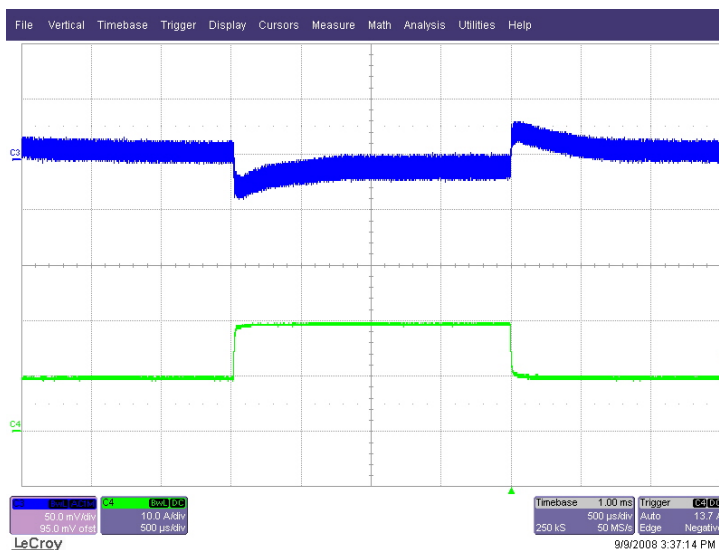


## 6 Transient Response – (TPS40140 - 1.1V@20A)

The transient response of the converter is shown in the figure below. The input voltage is 12V. The current is pulsed from 10A to 20A.

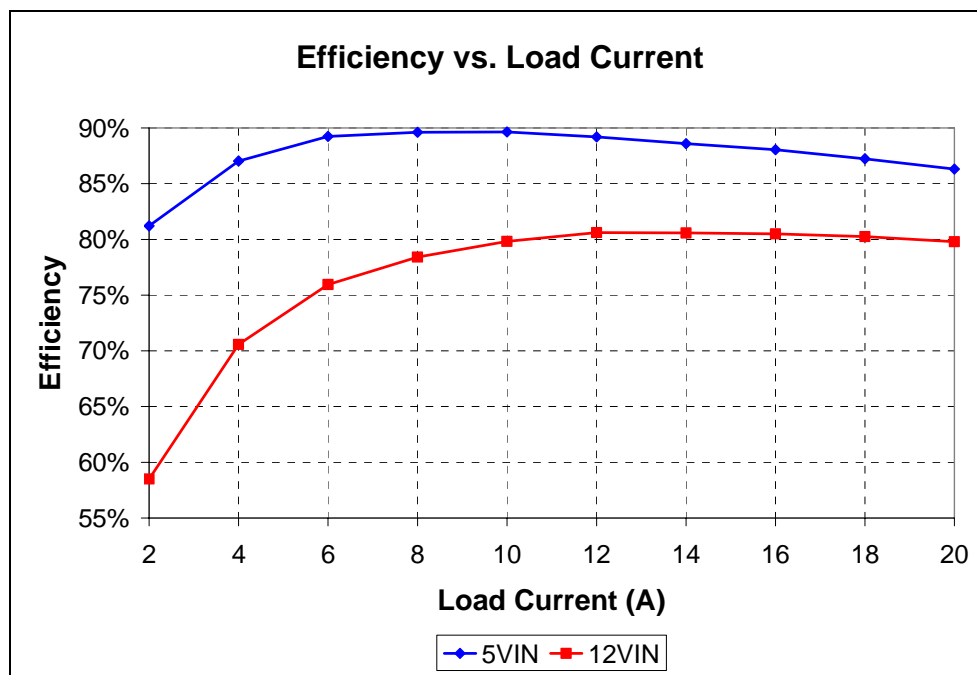
Channel 3 – Output Voltage : (50mV/Division; AC Coupled)

Channel 4 – Output Current : (10A/Division; AC Coupled)



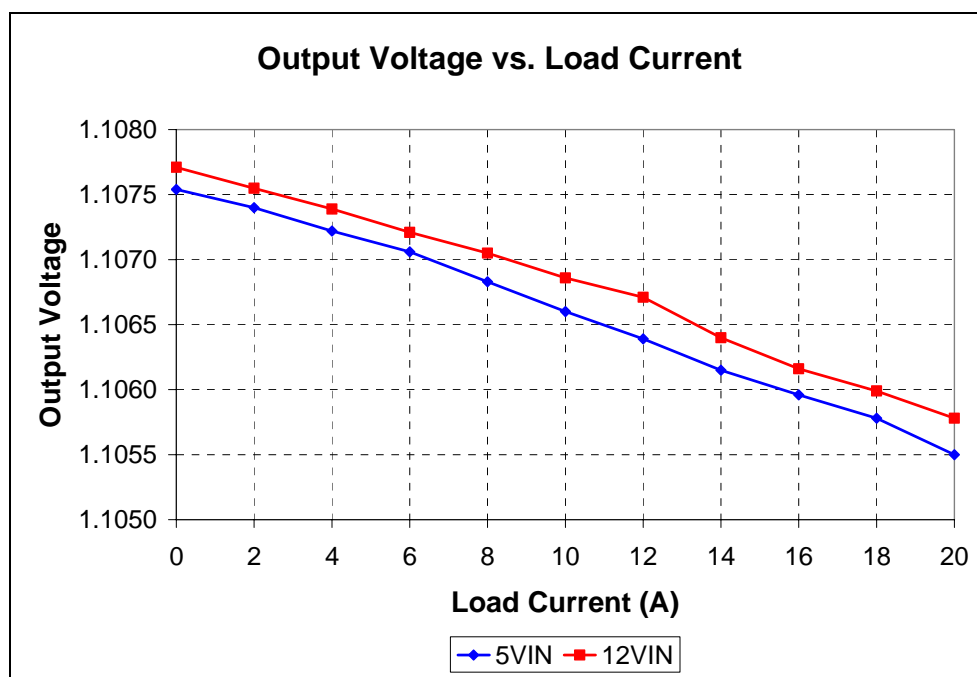
## 7 Efficiency – (TPS40140 - 1.1V@20A)

The efficiency of the converter is shown in the picture below.



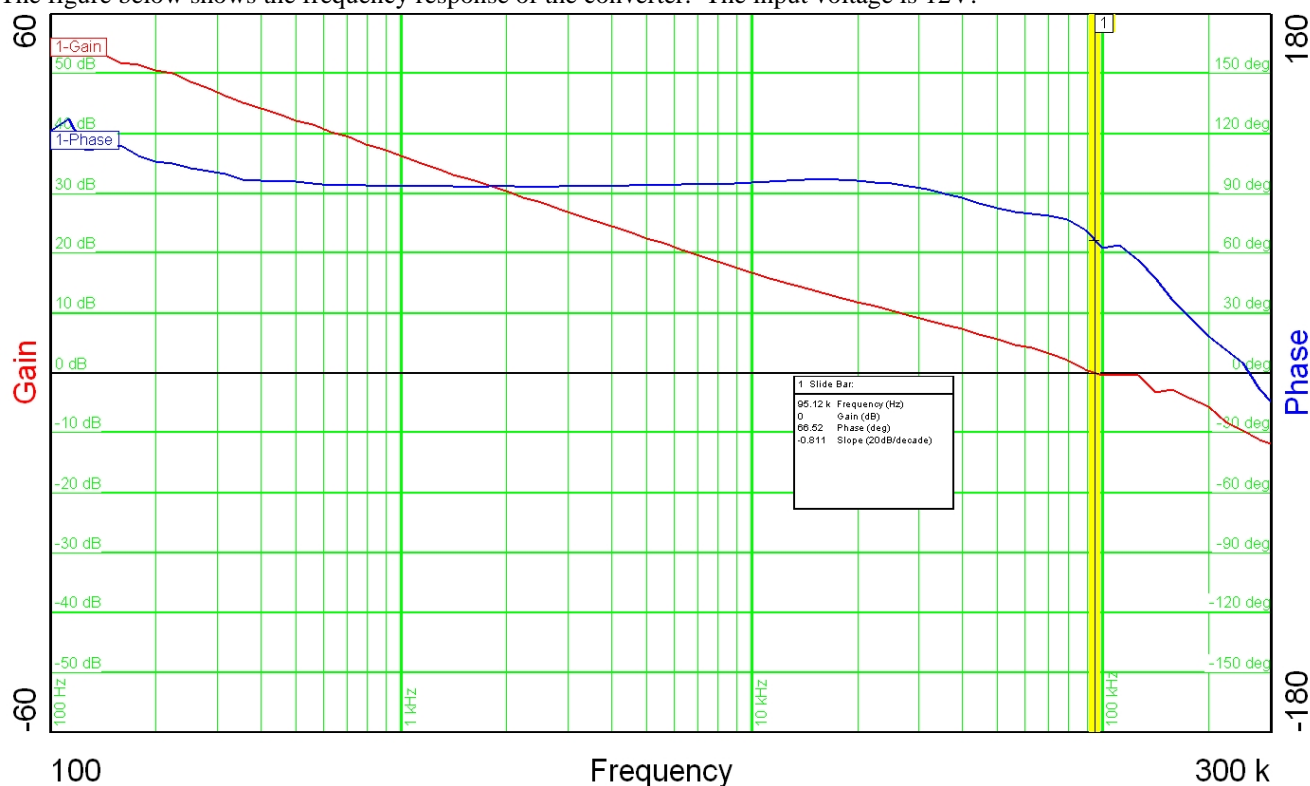
## 8 Load Regulation – (TPS40140 - 1.1V@20A)

The load regulation for each output is shown in the figure below.



## 9 Bode Plot – (TPS40140 - 1.1V@20A)

The figure below shows the frequency response of the converter. The input voltage is 12V.



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DSP	<a href="http://dsp.ti.com">dsp.ti.com</a>	Computers and Peripherals	<a href="http://www.ti.com/computers">www.ti.com/computers</a>
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Interface	<a href="http://interface.ti.com">interface.ti.com</a>	Energy	<a href="http://www.ti.com/energy">www.ti.com/energy</a>
Logic	<a href="http://logic.ti.com">logic.ti.com</a>	Industrial	<a href="http://www.ti.com/industrial">www.ti.com/industrial</a>
Power Mgmt	<a href="http://power.ti.com">power.ti.com</a>	Medical	<a href="http://www.ti.com/medical">www.ti.com/medical</a>
Microcontrollers	<a href="http://microcontroller.ti.com">microcontroller.ti.com</a>	Security	<a href="http://www.ti.com/security">www.ti.com/security</a>
RFID	<a href="http://www.ti-rfid.com">www.ti-rfid.com</a>	Space, Avionics & Defense	<a href="http://www.ti.com/space-avionics-defense">www.ti.com/space-avionics-defense</a>
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