



**Intel**  
**2-Phase 30A Design**  
**12/7/07**

The following test report is for the Intel 2-Phase 30A power supply project that includes measurements for the following output voltage: 1.1V@30A

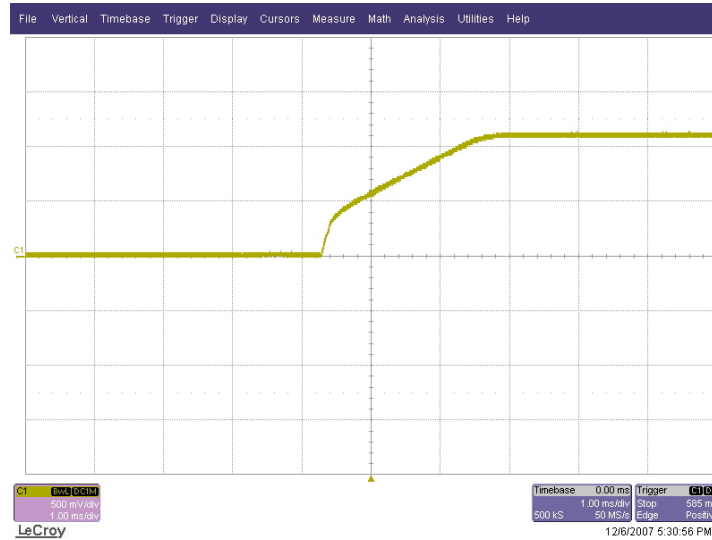
The tests performed on the 1.1V output were as follows:

- A. Turn-On (No Load)
- B. Turn-Off (1A Load)
- C. Output Voltage Ripple (Measured with Full Load)
- D. Transient Response (3A to 30A; 30A to 3A)
- E. Efficiency
- F. Load Regulation
- G. Switch Node (20MHz Bandwidth Limited)
- H. Loop Response

## 1 Startup - (TPS40131 – 1.1V Rail)

The photo below shows the startup waveform. The input voltage is 12V, the output is not loaded.

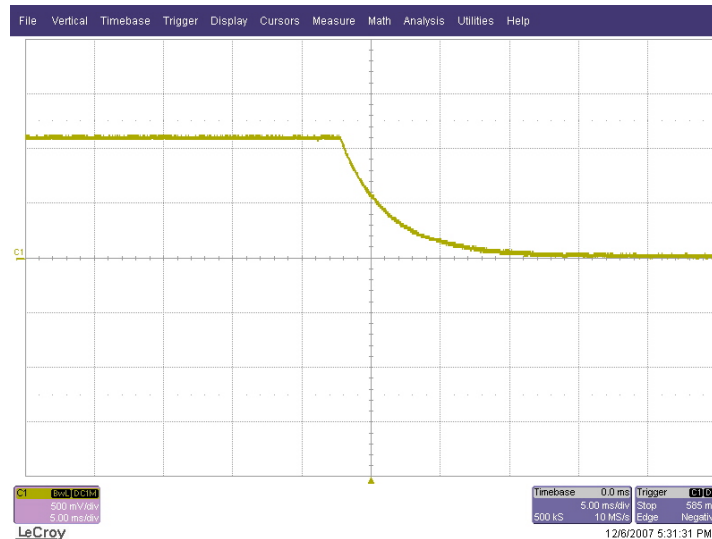
Channel 1 : 1.1V Output – Yellow (500mV/Division)



## 2 Shutdown - (TPS40131 – 1.1V Rail)

The photo below shows the shutdown waveform. The input voltage is 12V, the output is loaded with 1A.

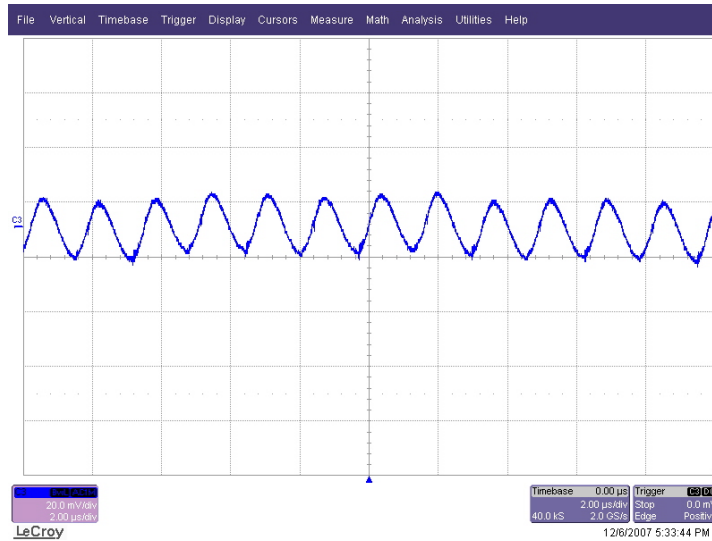
Channel 1 : 1.1V Output – Yellow (500mV/Division)



### 3 Output Ripple Voltage - (TPS40131 – 1.1V Rail)

The output voltage ripple is shown in the figure below. The input is 12V. The output is fully loaded. The timebase is 2us/Division.

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

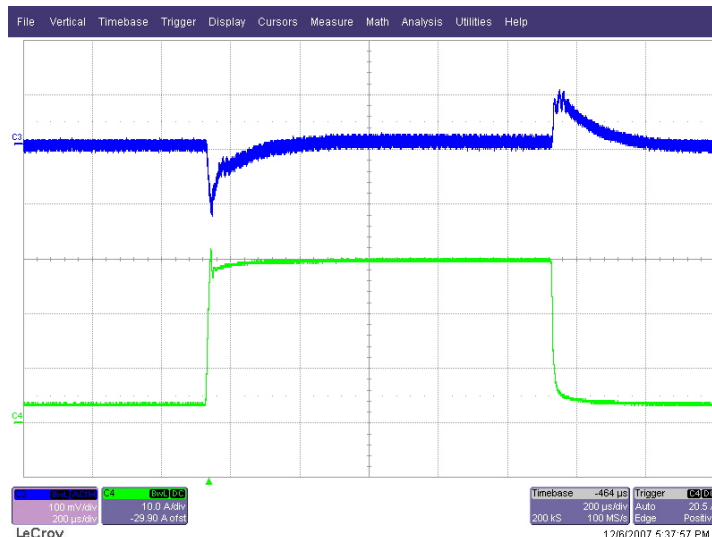


### 4 Transient Response – (TPS40131 – 1.1V Rail)

The transient response of the converter is shown in the figures below. The input voltage is 12V. The output is pulse from 3A to 30A.

Channel 3 : Output Voltage – Blue (100mV/Division)

Channel 4 : Output Current – Green (10mA)

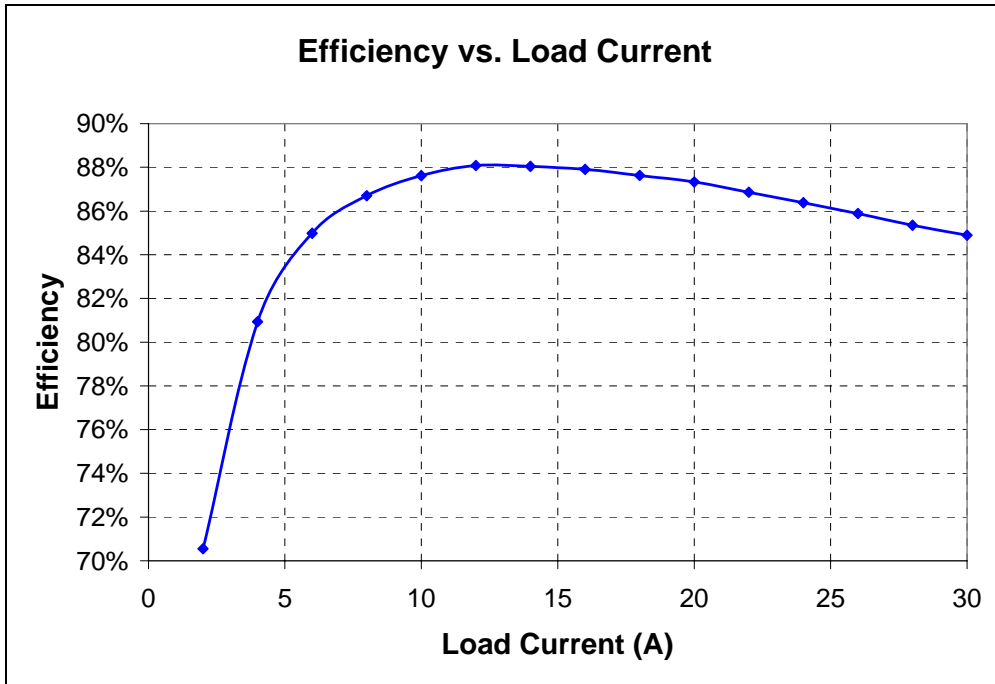


3A to 30A Transition

30A to 3A Transition

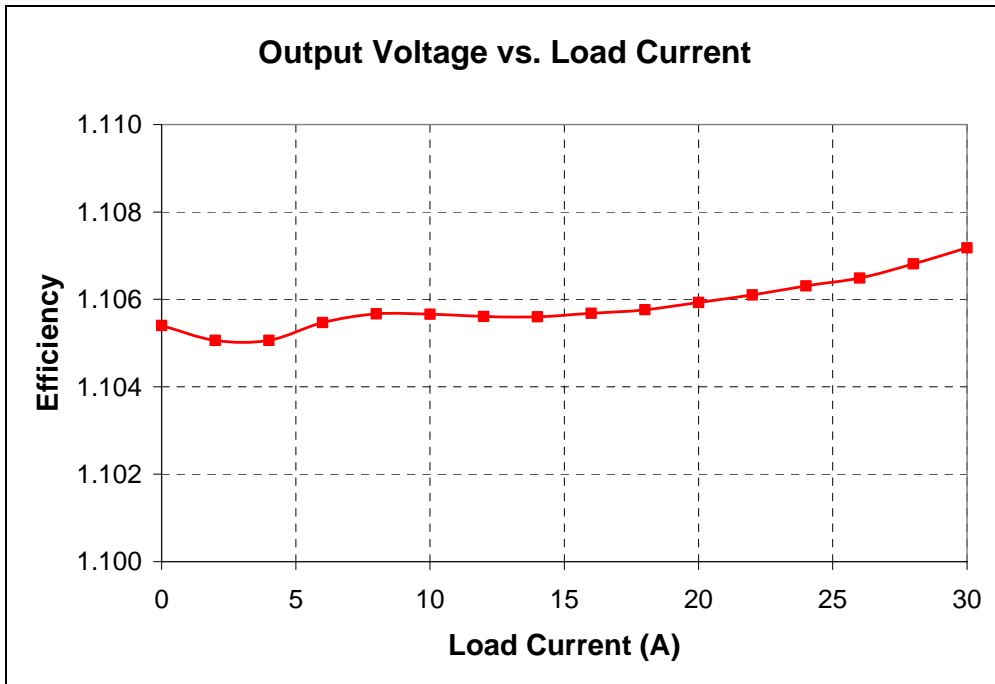
### 5 Efficiency – (TPS40131 – 1.1V Rail)

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



### 6 Load Regulation - (TPS40131 – 1.1V Rail)

The load regulation of the converter is shown in the figure below.



## 7 Switching Waveforms - (TPS40131 – 1.1V Rail)

The figure below shows the switching waveform of the master. The input is 12V.

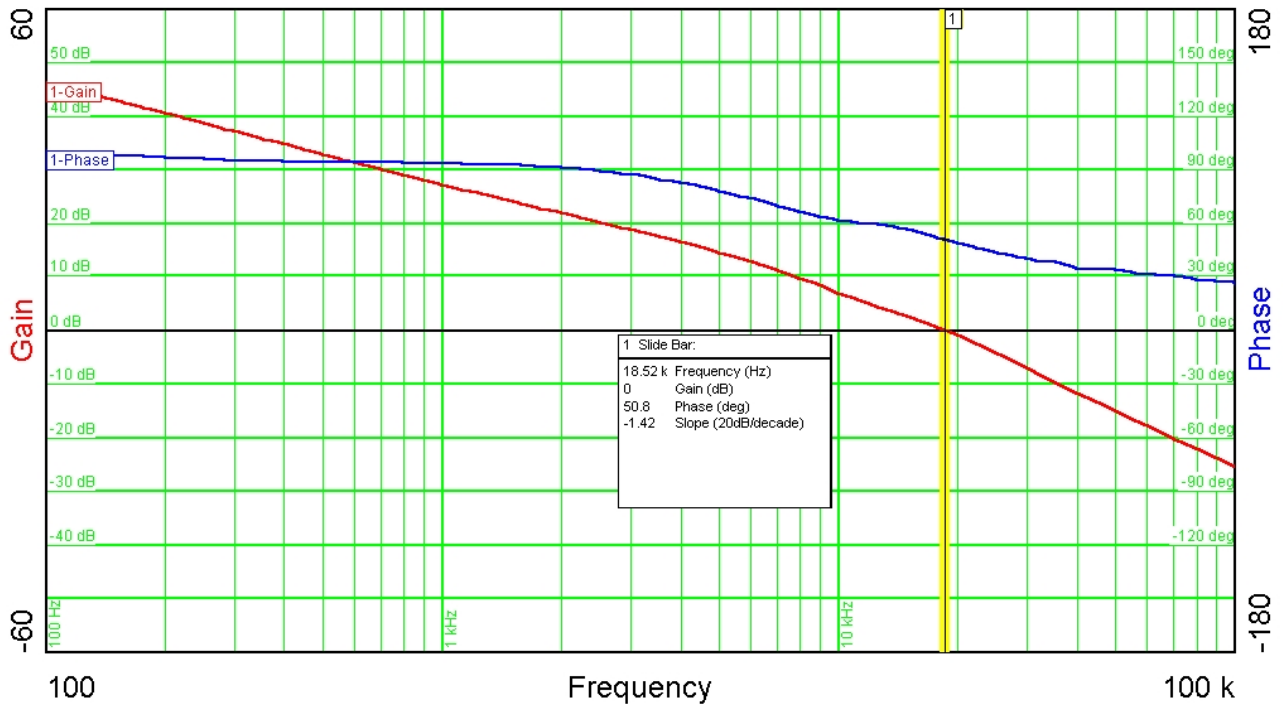
Channel 1 : Switch Node Phase 1 – Yellow (5V/Division)

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



## 8 Loop Response

The loop response for the converter is shown in the figure below. The input voltage is 12V, the output is fully loaded.



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DLP® Products	<a href="http://www.dlp.com">www.dlp.com</a>	Communications and Telecom	<a href="http://www.ti.com/communications">www.ti.com/communications</a>
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>
RF/IF and ZigBee® Solutions	<a href="http://www.ti.com/lprf">www.ti.com/lprf</a>	Video and Imaging	<a href="http://www.ti.com/video">www.ti.com/video</a>
		Wireless	<a href="http://www.ti.com/wireless-apps">www.ti.com/wireless-apps</a>

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