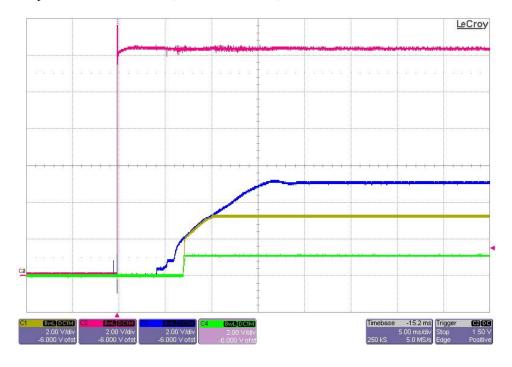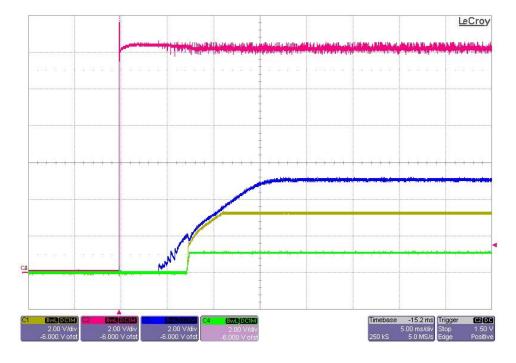# PMP8903 REVB Test Results

TEXAS INSTRUMENTS

1 Startup

The photo below shows the output voltage startup waveforms after the application of 12V in. The 5V, 3.3V and 1.1V outputs were loaded to 0A. (2V/DIV, 5mS/DIV)
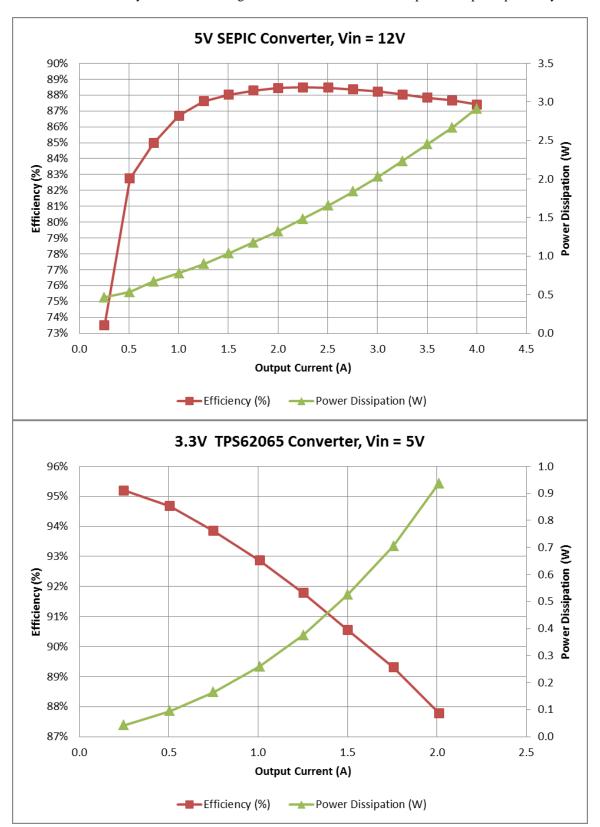

The photo below shows the output voltage startup waveforms after the application of 12V in. The 5V, 3.3V and 1.1V outputs were loaded to 1A each. (2V/DIV, 5mS/DIV)
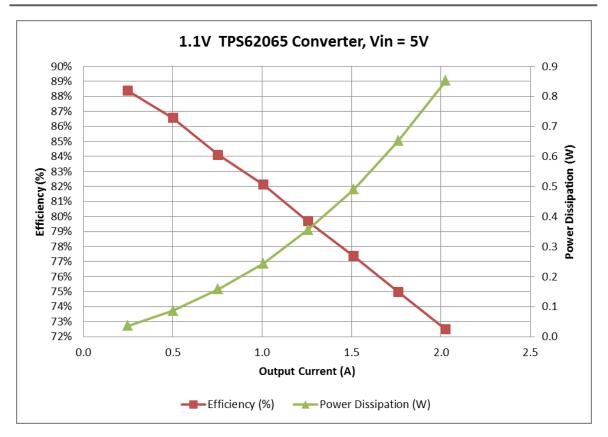
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PMP8903 REVB Test Results

TEXAS INSTRUMENTS

2   Efficiency

The converter efficiency is shown in the figure below. Each converter was powered up independently.

5V SEPIC Converter, Vin = 12V

3.3V TPS62065 Converter, Vin = 5V

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TEXAS INSTRUMENTS

1.1V TPS62065 Converter, Vin = 5V

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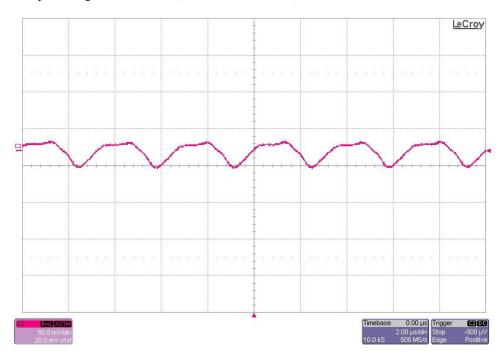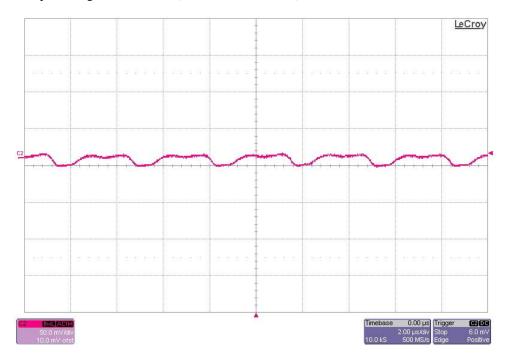
PMP8903 REVB Test Results

3 Output Ripple Voltage

The 5V output ripple voltage is shown in the figure below. The image was taken with the output loaded to 3.25A. The input voltage is set to 12V. (50mV/DIV, 2uS/DIV)
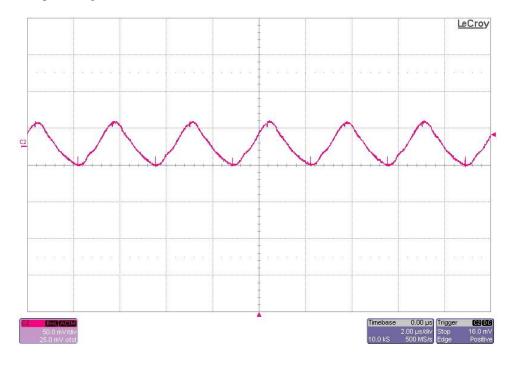

The 5V output ripple voltage is shown in the figure below. The image was taken with the output loaded to 3.25A. The input voltage is set to 42V. (50mV/DIV, 2uS/DIV)
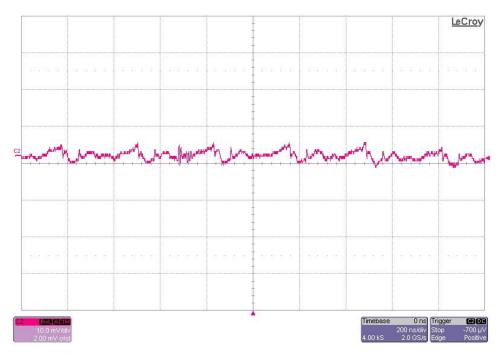
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TEXAS
INSTRUMENTS

The 5V output ripple voltage is shown in the figure below. The image was taken with the output loaded to 3.25A. The input voltage is set to 4.5V. (50mV/DIV, 2uS/DIV)
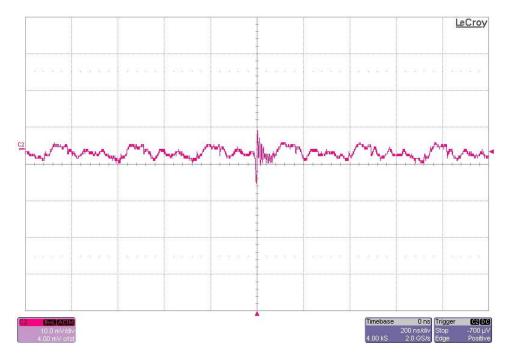

The 3.3V output ripple voltage is shown in the figure below. The image was taken with the output loaded to 2A. The input voltage is set to 5V. (10mV/DIV, 200nS/DIV)
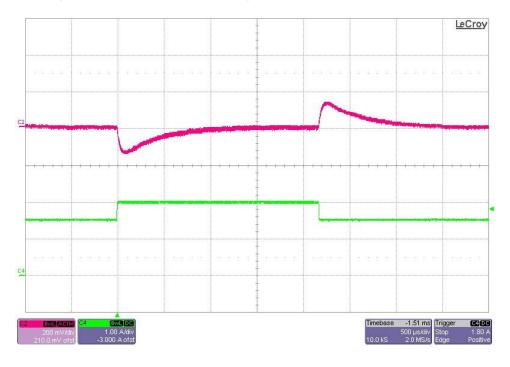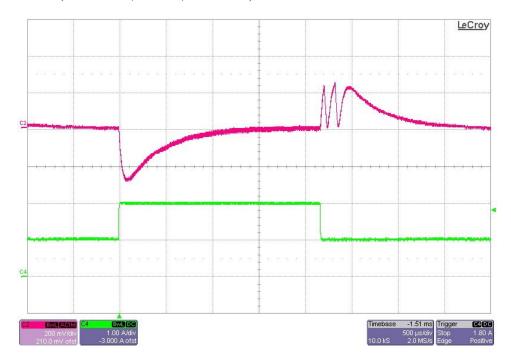
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The 1.1V output ripple voltage is shown in the figure below. The image was taken with the output loaded to 2A. The input voltage is set to 5V. (10mV/DIV, 200nS/DIV)

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TEXAS
INSTRUMENTS

4   Load Transients

The photo below shows the output voltage (ac coupled) when the load current is stepped between 1.5A and 2A. Vin = 12V. (200mV/DIV, 1A/DIV, 500uS/DIV)
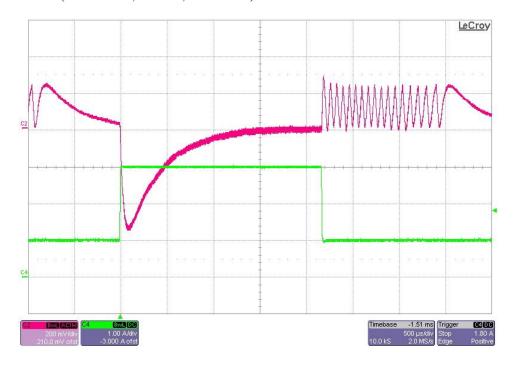

The photo below shows the output voltage (ac coupled) when the load current is stepped between 1A and 2A. Vin = 12V. (200mV/DIV, 1A/DIV, 500uS/DIV)
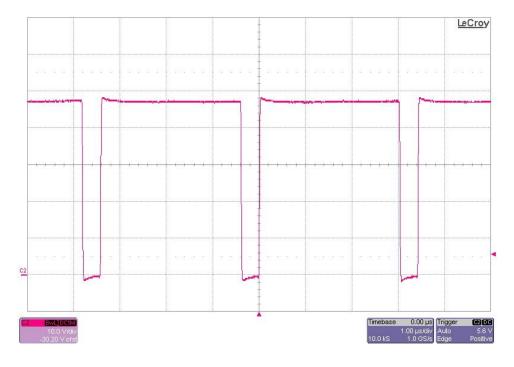

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PMP8903 REVB Test Results

The photo below shows the output voltage (ac coupled) when the load current is stepped between 1A and 3A. Vin = 12V. (200mV/DIV, 1A/DIV, 500uS/DIV)

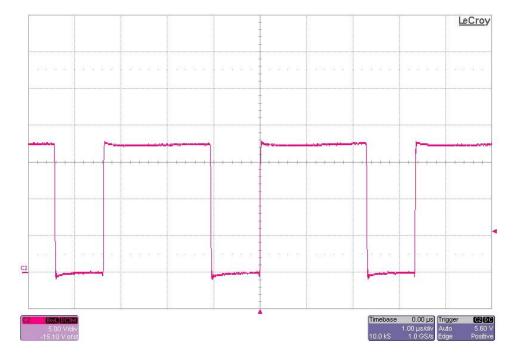Power Management Solutions

PMP8903 REVB Test Results

5   Switch Node Waveforms

The photo below shows the 5V SEPIC switch node. The input voltage is 42V and the output is loaded to 3.25A. (10V/DIV, 1uS/DIV)
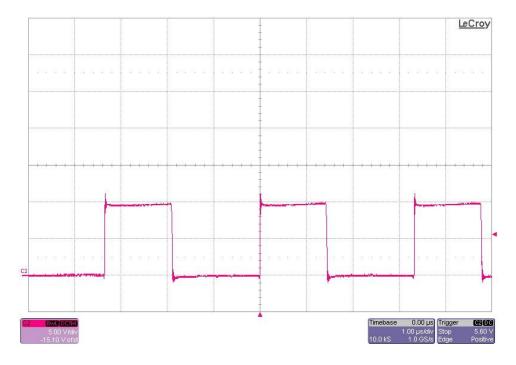

The photo below shows the 5V SEPIC switch node. The input voltage is 12V and the output is loaded to 3.25A. (5V/DIV, 1uS/DIV)
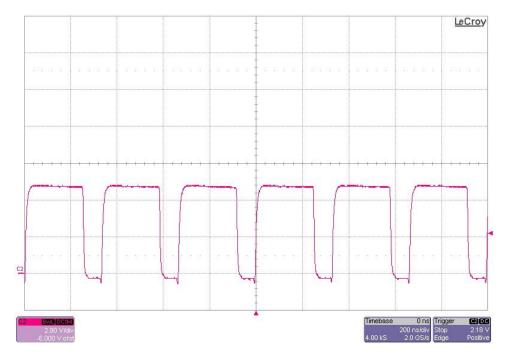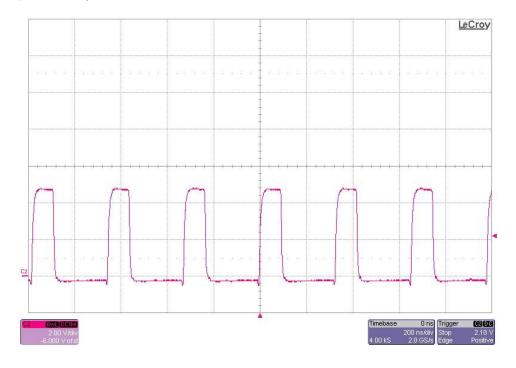
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The photo below shows the 5V SEPIC switch node. The input voltage is 4.5V and the output is loaded to 3.25A. (5V/DIV, 1uS/DIV)

The photo below shows the 3.3V switch node. The input voltage is 5V and the output is loaded to 2A. (2V/DIV, 200nS/DIV)
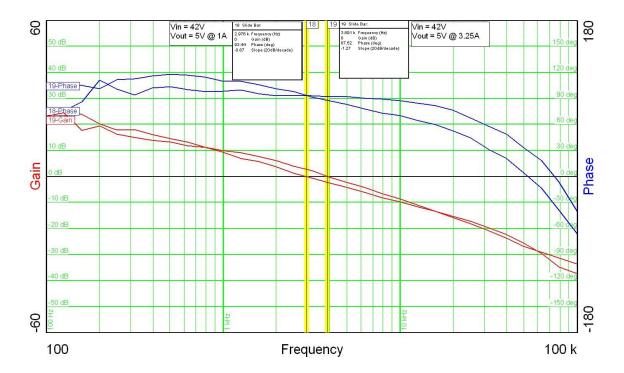
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The photo below shows the 1.1V switch node. The input voltage is 5V and the output is loaded to 2A. (2V/DIV, 200nS/DIV)

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6   Control Loop Gain / Stability

The plot below shows the 5V loop gain and phase margin with the output loaded to 1A and 3.25A. The input voltage was set to 42V.
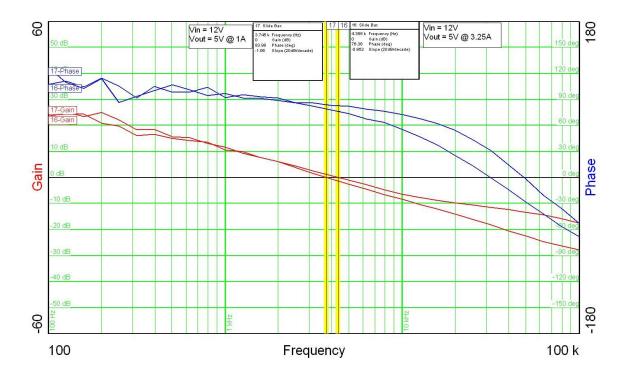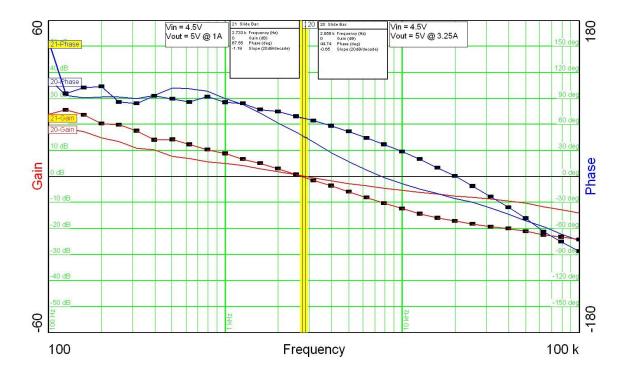
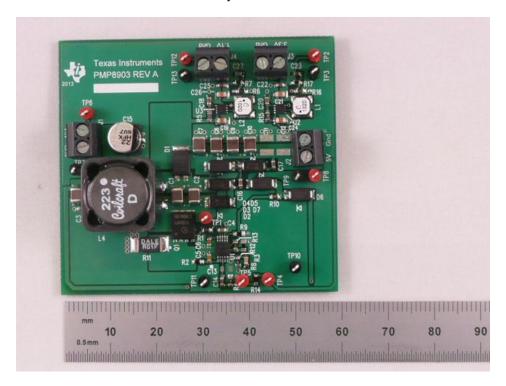Band Width = 2.98KHz,   Phase Margin = 93 degrees   (5V@1A)
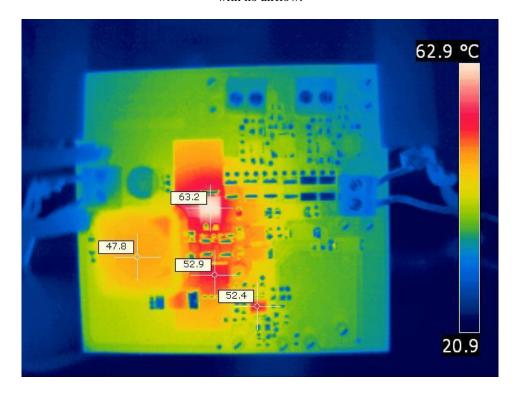Band Width = 3.89KHz,   Phase Margin = 88 degrees   (5V@3.25A)

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PMP8903 REVB Test Results

The plot below shows the 5V loop gain and phase margin with the output loaded to 1A and 3.25A. The input voltage was set to 12V.

Band Width = 3.75KHz,   Phase Margin = 84 degrees   (5V@1A)
Band Width = 4.36KHz,   Phase Margin = 76 degrees   (5V@3.25A)

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PMP8903 REVB Test Results

The plot below shows the 5V loop gain and phase margin with the output loaded to 1A and 3.25A. The input voltage was set to 4.5V.

Band Width = 2.73KHz,	Phase Margin = 68 degrees	(5V@1A)
Band Width = 2.86KHz,	Phase Margin = 45 degrees	(5V@3.25A)

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PMP8903 REVB Test Results

7 Photo

The photo below shows the PMP8903 REVB assy.

8 Thermal Image

A thermal image is shown below when operating the 5V SEPIC converter at 12V input and 3.25A output, with no airflow.

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