Test Data
For PMP9460
06/08/2014

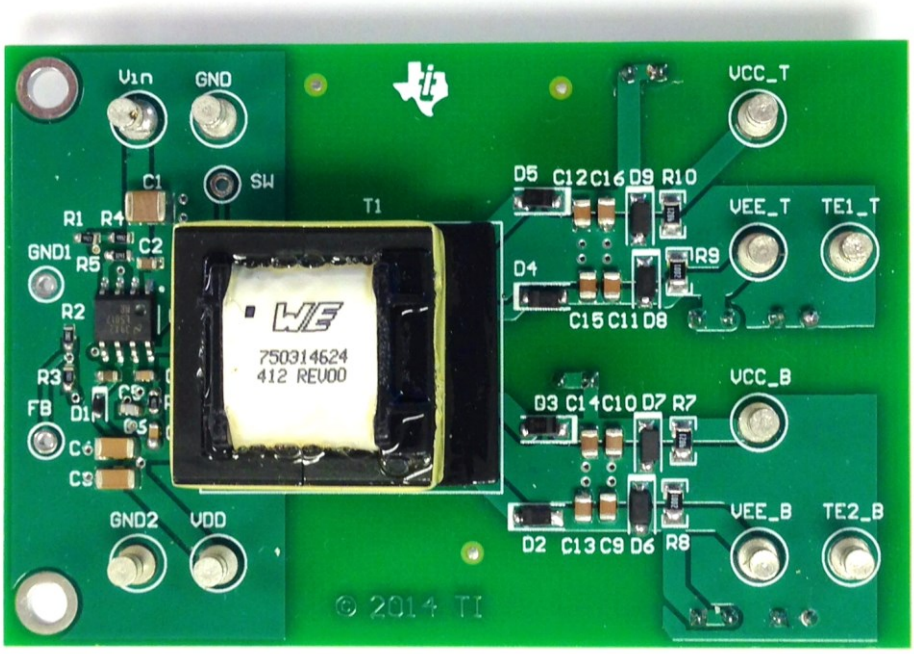
Overview

The PMP9460 reference design is a quad isolated output Fly-Buck power supply designed for IGBT gate driver bias in motor drive or inverter applications. It features the LM5017, 7.5-100V wide Vin, 600mA, Constant On-Time (COT), synchronous buck regulator configured in the Fly-Buck topology. The Fly-Buck converter is a simple, cost effective and compact isolated power solution. The reference board generates two pair of +16V and -9V outputs each with 100mA current capability; they are suitable for biasing the gate drivers of two IGBTs. The supply provides good regulation performance over an input voltage range of 19V to 30V.

Power Specification

Vin range: 19V – 30V
Nominal Vin = 24V
Quad Isolated Outputs: 2 x (+16V@100mA, -9V@100mA)
Fsw = 350kHz

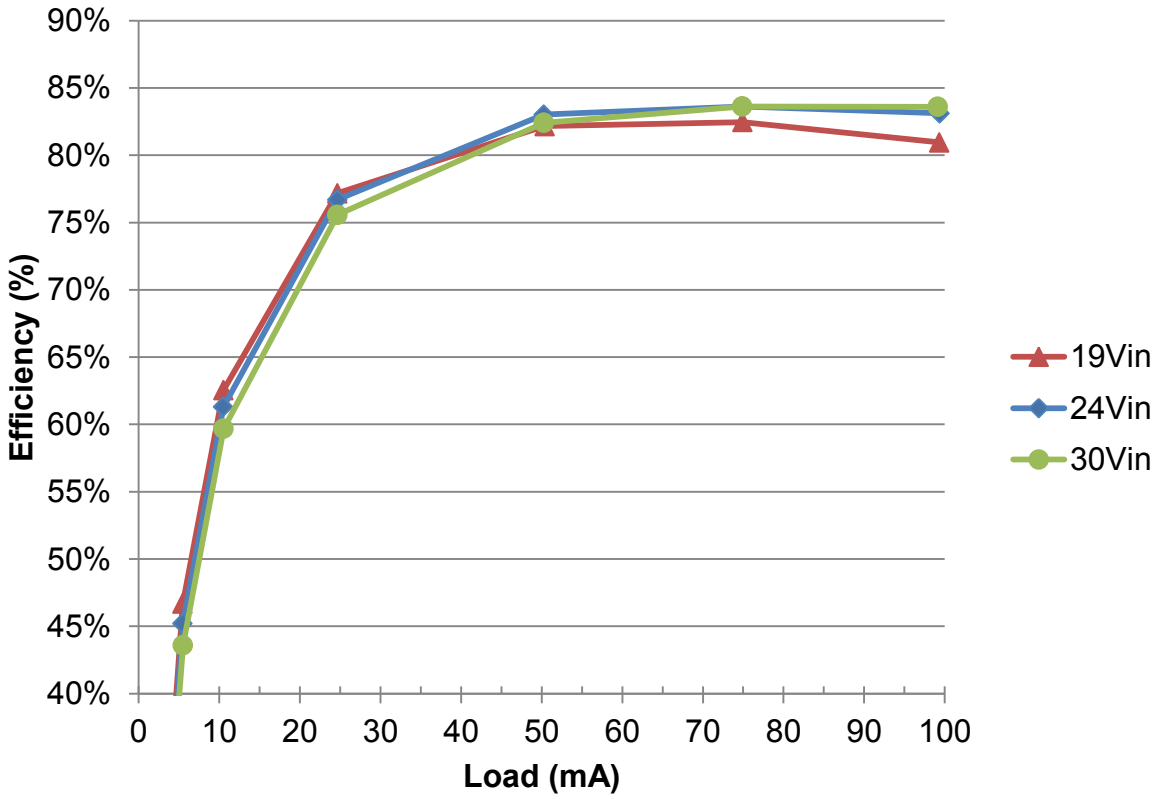
Board Photo



Size: 75x50mm

Efficiency

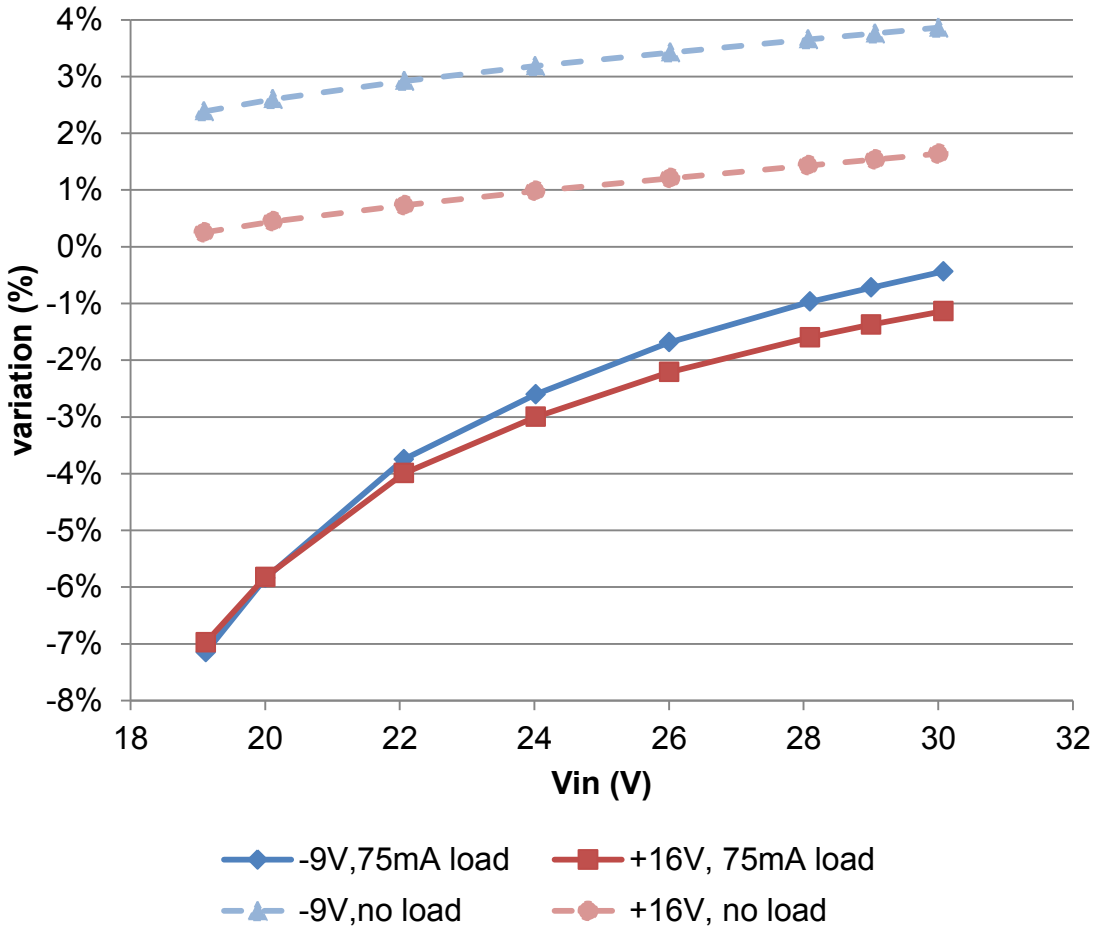
The efficiency is calculated for all four outputs; the load current is equally loaded to each output.



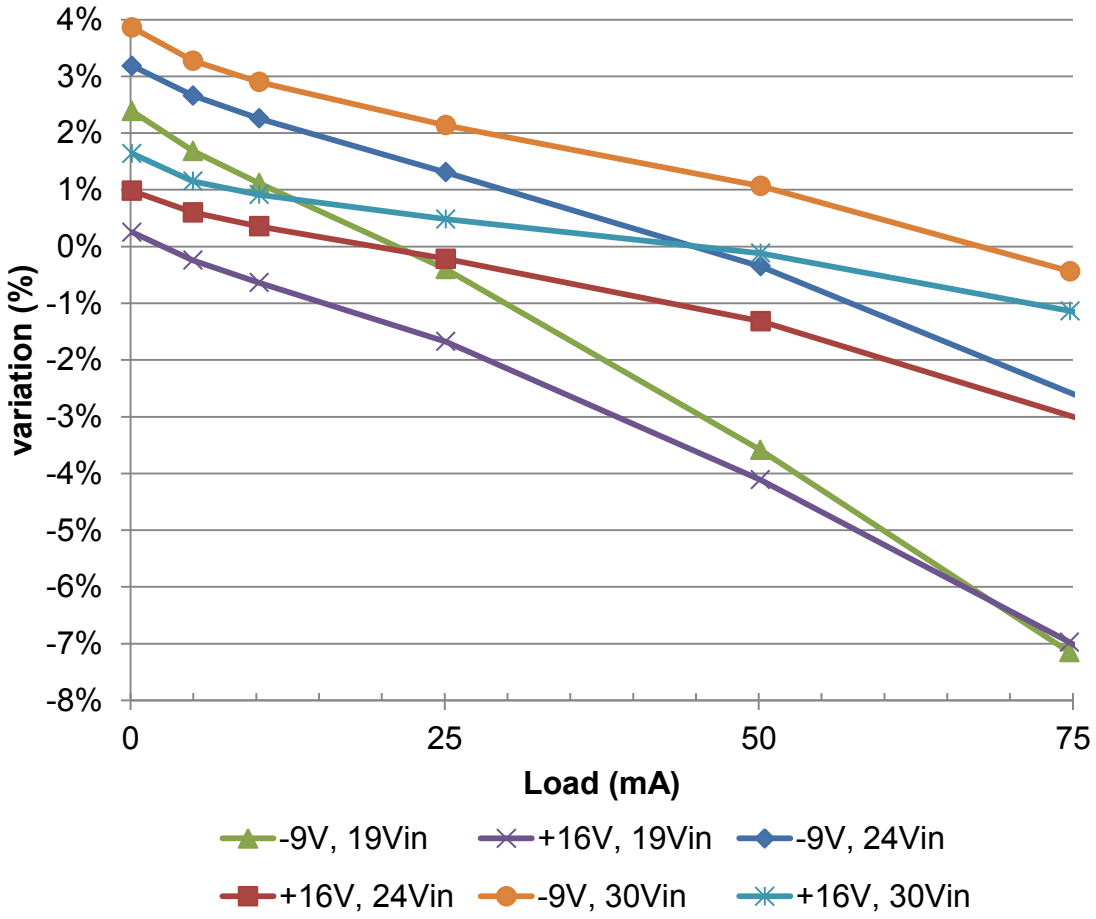
Cross Regulation

The cross regulation was tested by sweeping Vin or output loads. The max output drift happens at max Vin, no load condition, while the lowest output drop happens at min Vin and full load condition.

Vin sweep result:



Load sweep result:

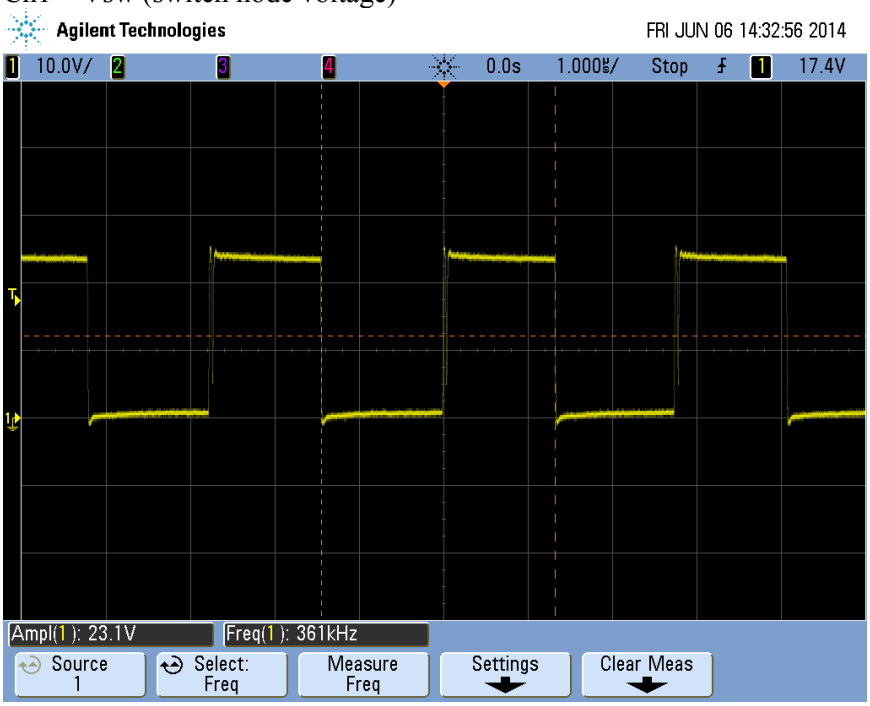


Start Up

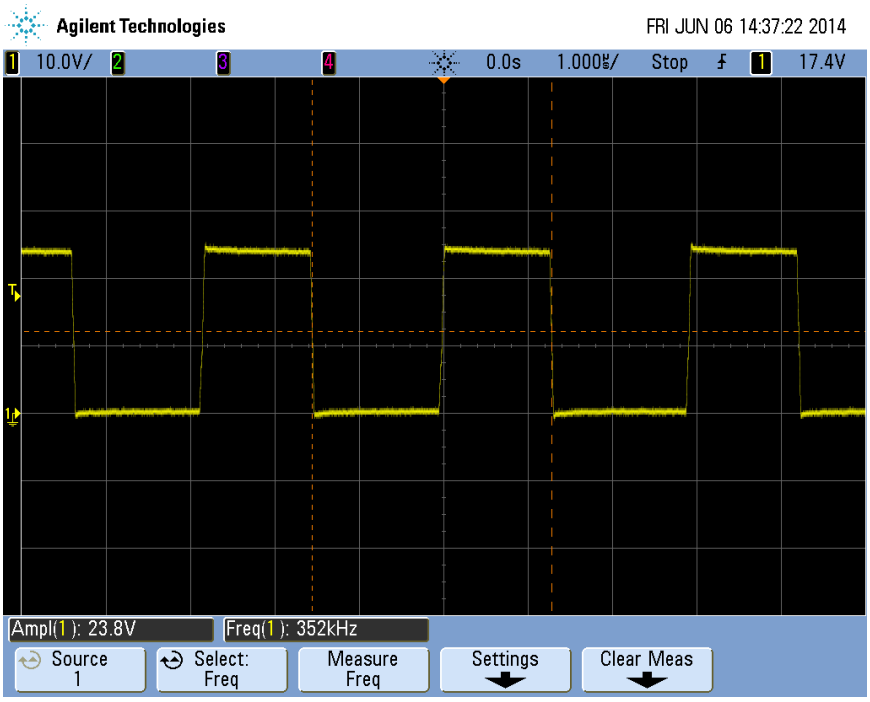
Test condition: The input voltage was set at 24V, and all four outputs were set at 100mA load.
Ch1 - Vin, Ch2 – +16V output, Ch3 – -9V output

Switching Waveforms

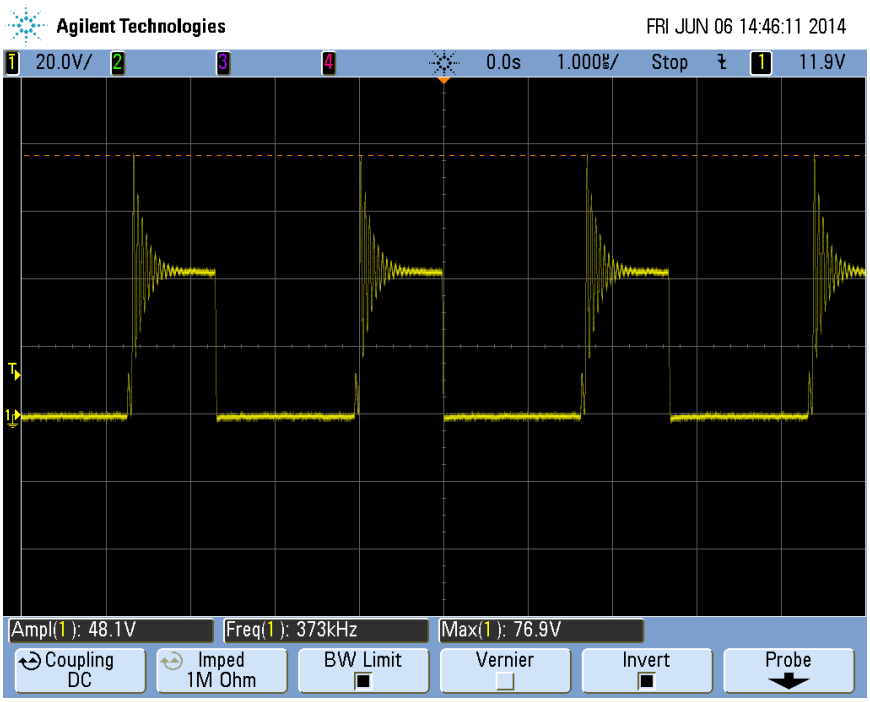
1. Test condition: The input voltage was set at 24V, and all four outputs were set at 100mA load.
   Ch1 – Vsw (switch node voltage)



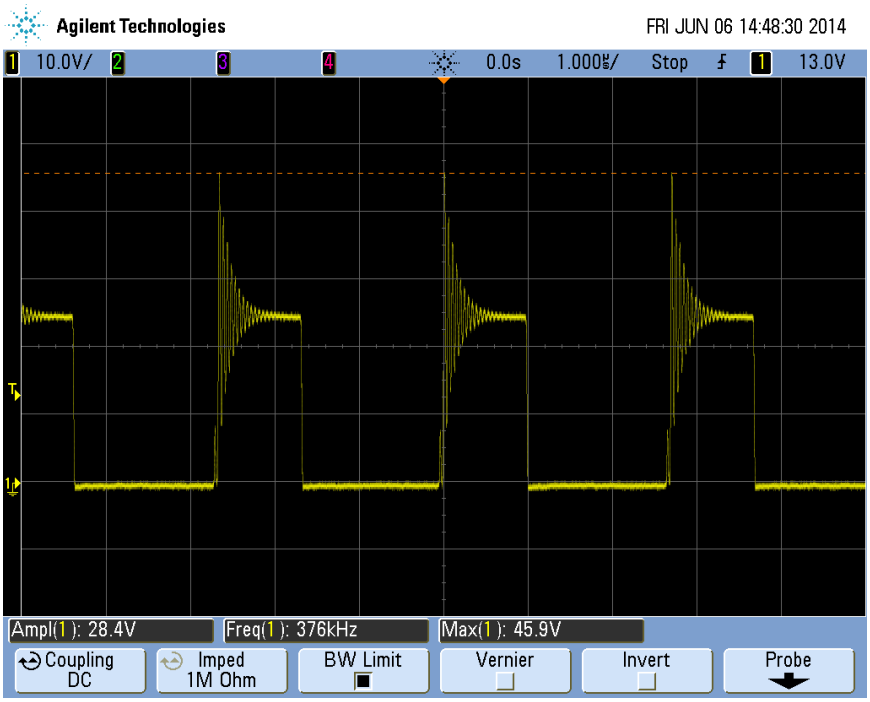
2. Test condition: The input voltage was set at 24V, and all four outputs were set at no load.
   Ch1 – Vsw (switch node voltage)



3. Test condition: The input voltage was set at 30V, and all four outputs were set at 100mA load. Ch1 – Vd5 (+16V output diode voltage stress from cathode (-) to anode (+), 100V rating diode)



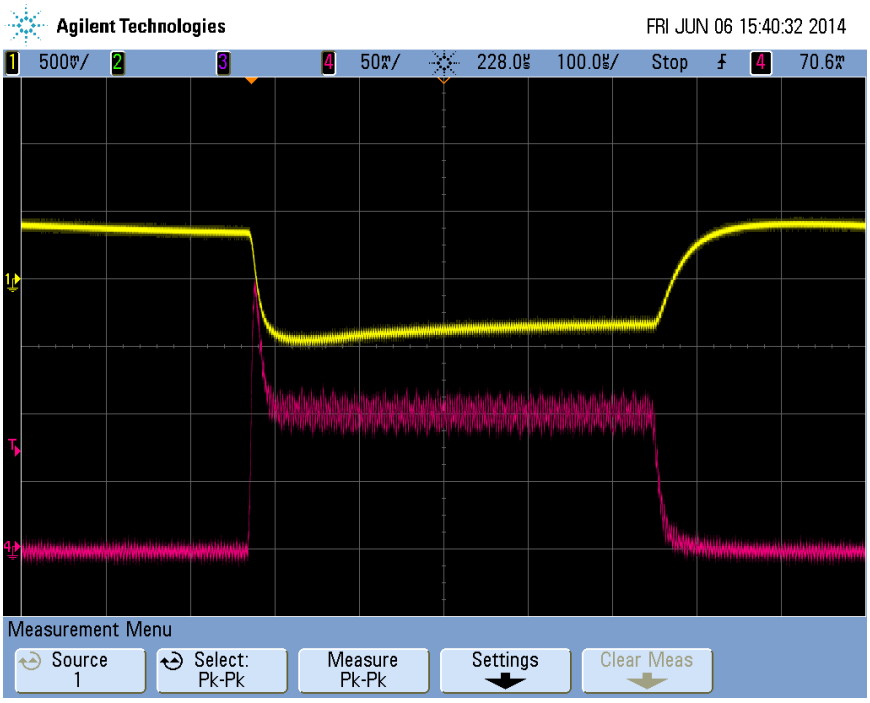
4. Test condition: The input voltage was set at 30V, and all four outputs were set at 100mA load. Ch1 – Vd2 (-9V output diode voltage stress from cathode (-) to anode (+), 100V rating diode)



Load Transients

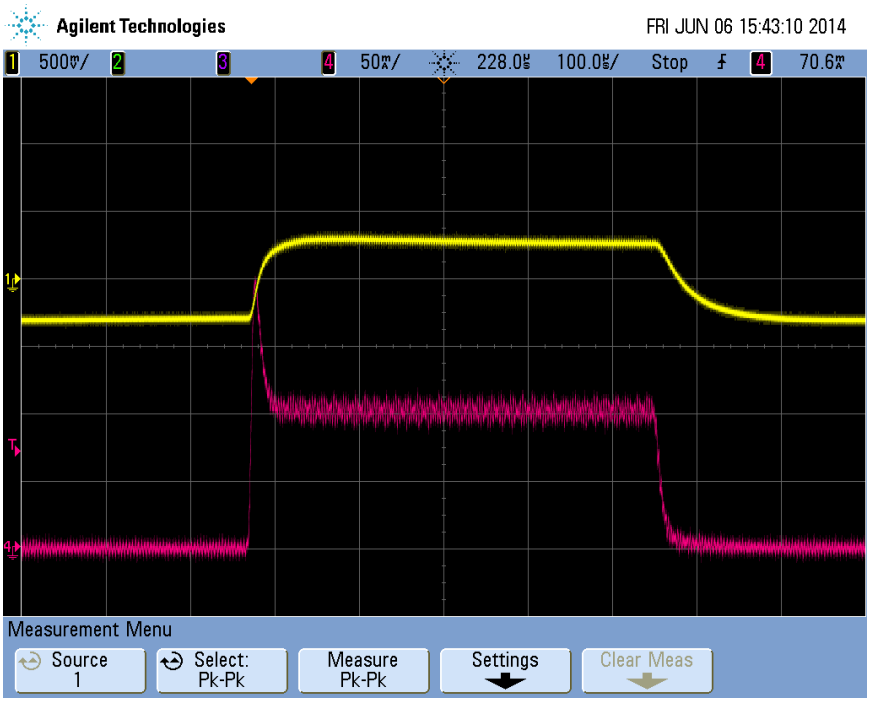
+16V Output Load Step

Test condition: Vin = 24V, +16V output load from 0A to 100mA, no load on other outputs.
Ch1- +16V output (AC mode), Ch4- +16V output current



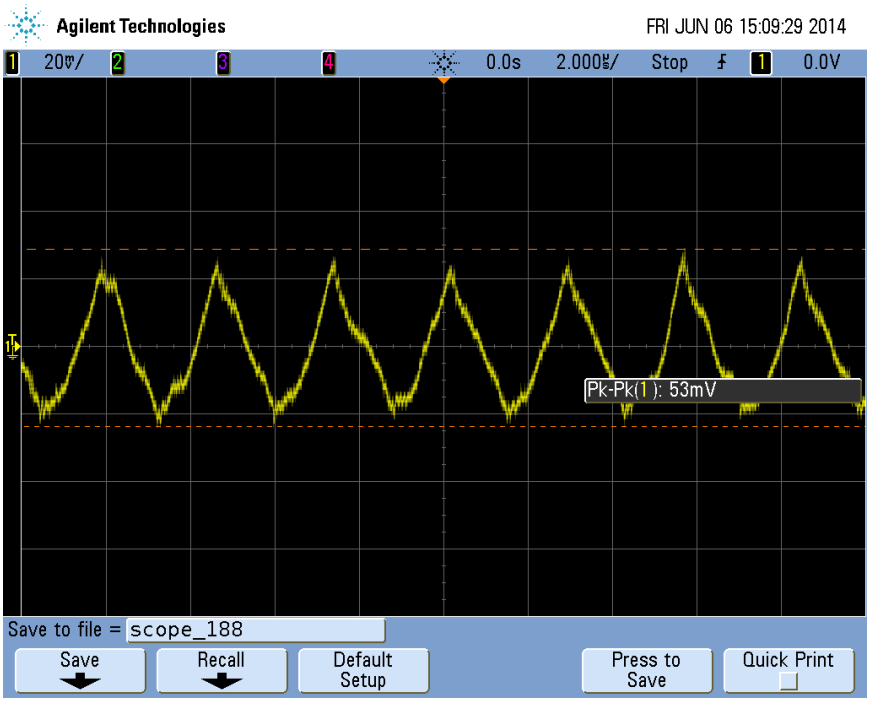
-9V Output Load Step

Test condition: Vin = 24V, -9V load from 0A to 100mA, no load on other outputs.
Ch1- -9V output (AC mode), Ch4- -9V output current

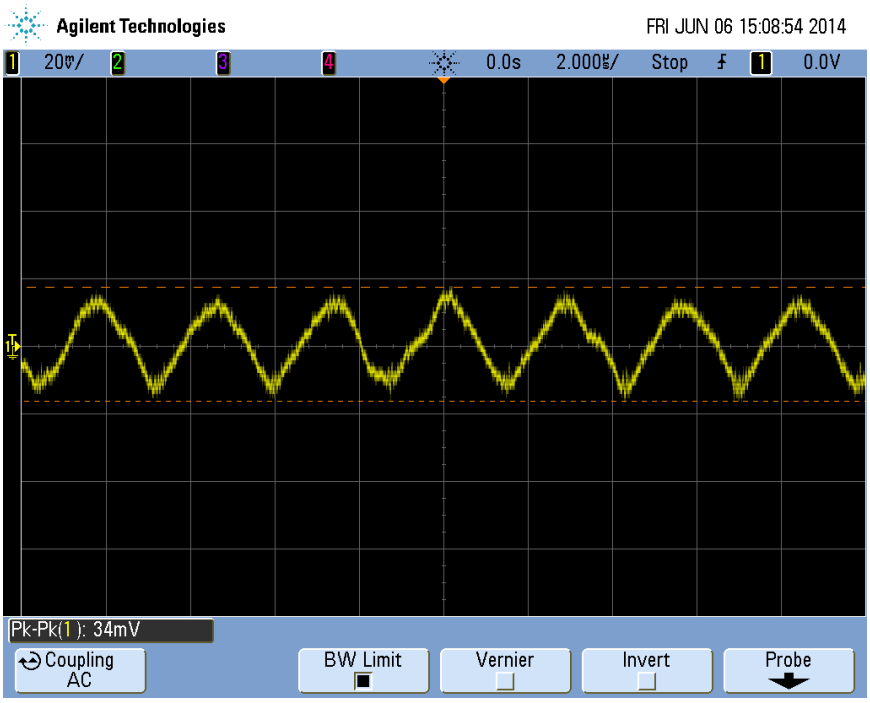


Output Voltage Ripples

Test condition: The input voltage was set at 24V, and all four outputs were set at 100mA load.
Ch1 - +16V output (AC coupled)



Ch1 - -9V output (AC coupled)



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