# PMP10898 Test Results

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**Note: Tested with load step from 100mA to full 7A as application of satellite communications often has transmitter that goes from near no load to full load.**

## Efficiency & Losses:

Model t2 of PMP10828 build modified to be PMP10898
tested January 13-15, 2015
Switching frequency was 151+ kHz at 50 and 55 Vin
Tested without fan
Vin at (TP2-TP3) & Vout (TP7-TP10) senses
FLIR EX320 thermal camera with emissivity set at 0.94
Meters Fluke 83V and 87III cal. Due March 2015;

| Vin Volts DVM | Iin A DVM | Vout Volts DVM | Iout A | % Effi ciency | Losses in W |
|---|---|---|---|---|---|
| 55.08 | 0.853 | 6.0665 | 7.00 | 90.4 | 4.518 |
| 55.04 | 0.7295 | 6.068 | 6.00 | 90.7 | 3.744 |
| 55.09 | 0.6065 | 6.070 | 5.0005 | 90.8 | 3.059 |
| 55.10 | 0.486 | 6.073 | 4.0005 | 90.7 | 2.484 |
| 55.09 | 0.367 | 6.074 | 3.001 | 90.2 | 1.990 |
| 55.10 | 0.2495 | 6.075 | 2.0005 | 88.4 | 1.594 |
| 55.08 | 0.133 | 6.069 | 1.000 | 82.8 | 1.257 |
| 55.09 | 0.017 | 6.080 | 0 | 0.0 | 0.937 |
| | | | | | |
| 50.04 | 0.934 | 6.0665 | 7.00 | 90.9 | 4.272 |
| 50.04 | 0.798 | 6.068 | 6.00 | 91.2 | 3.524 |
| 50.045 | 0.6635 | 6.070 | 5.0005 | 91.4 | 2.852 |
| 50.02 | 0.532 | 6.072 | 4.0005 | 91.3 | 2.320 |
| 50.03 | 0.401 | 6.074 | 3.001 | 90.9 | 1.834 |
| 50.04 | 0.272 | 6.074 | 2.0005 | 89.3 | 1.460 |
| 50.055 | 0.144 | 6.069 | 1.000 | 84.2 | 1.139 |
| 50.01 | 0.017 | 6.0795 | 0 | 0.0 | 0.850 |

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Same UVLO as PMP10828 with turn on at 28V and turn off at 25 Vin.

## Thermal image:

PMP10898 55Vin 6.0Vout at 7A ~4.5W on PCB, no fan, steady state >20 minutes
21 deg. C ambient 151+kHz switching: All temperatures in degrees Celsius
Hottest is high side FET at 70+, low side FET 63, main inductor top 50, TPS40170 controller 47, snubber 10 ohm size 2010 at 43


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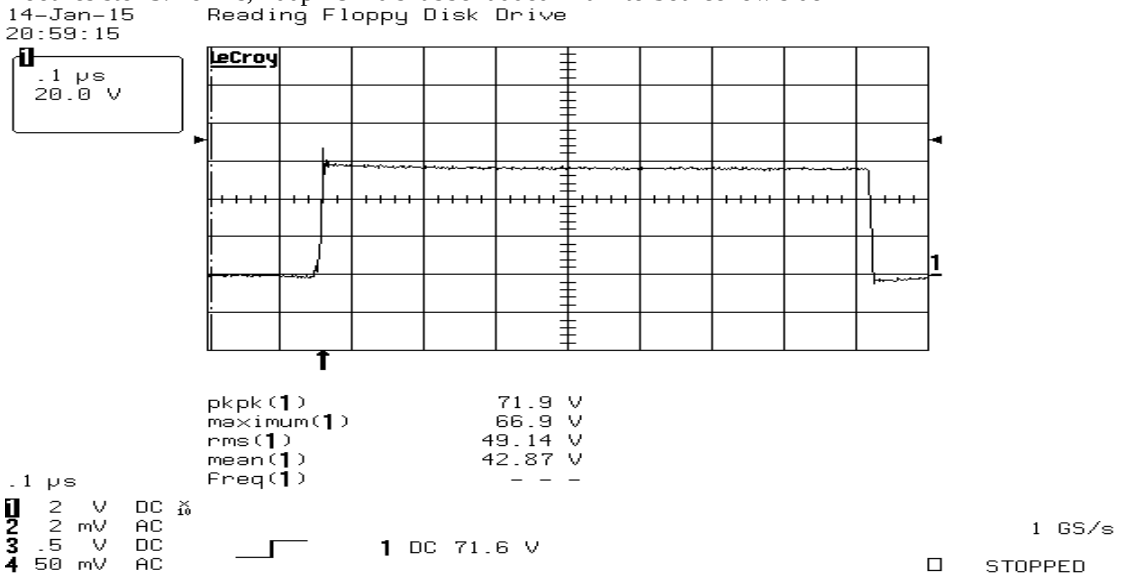
Snubber R (10 ohms) was size 2010. Based upon minimal heating, it can be size 1210 or even size 1206.

## Main waveform:

Main waveform at full 7A load: 55Vin 6.0 Vout 7A 151+kHz operation:
Boot resistor 5.1 ohms, 100pF & 10 snubber added Drain to Source low side FET

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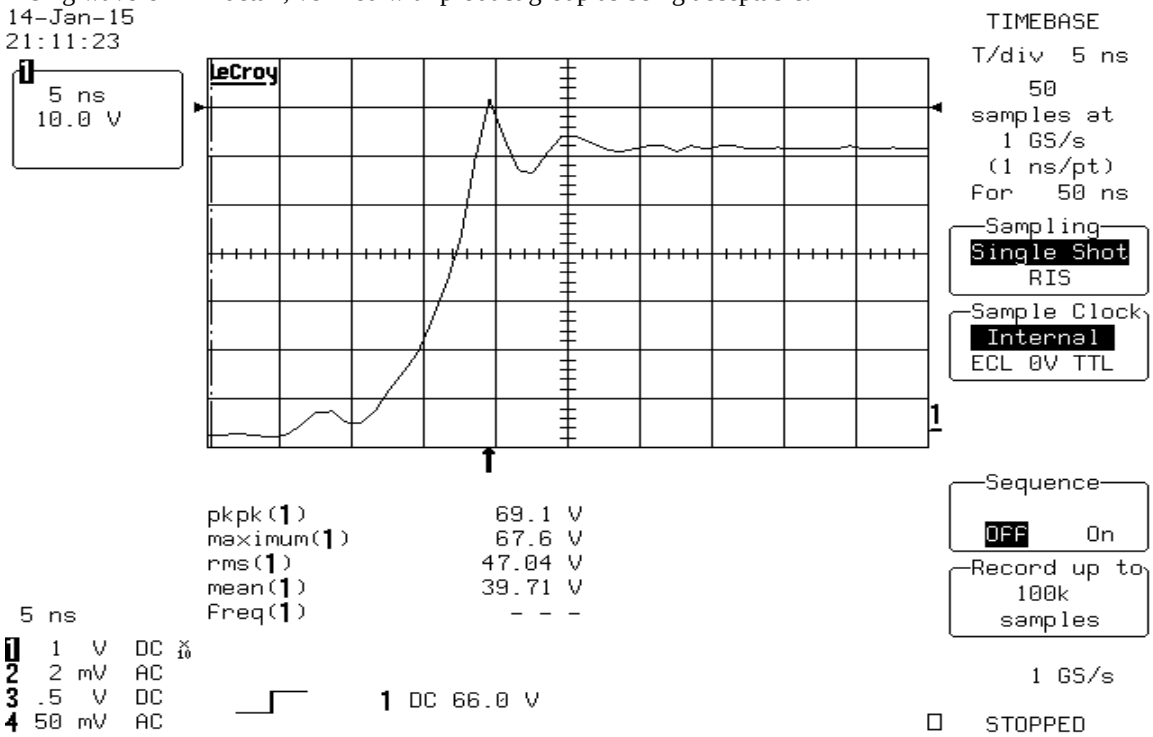
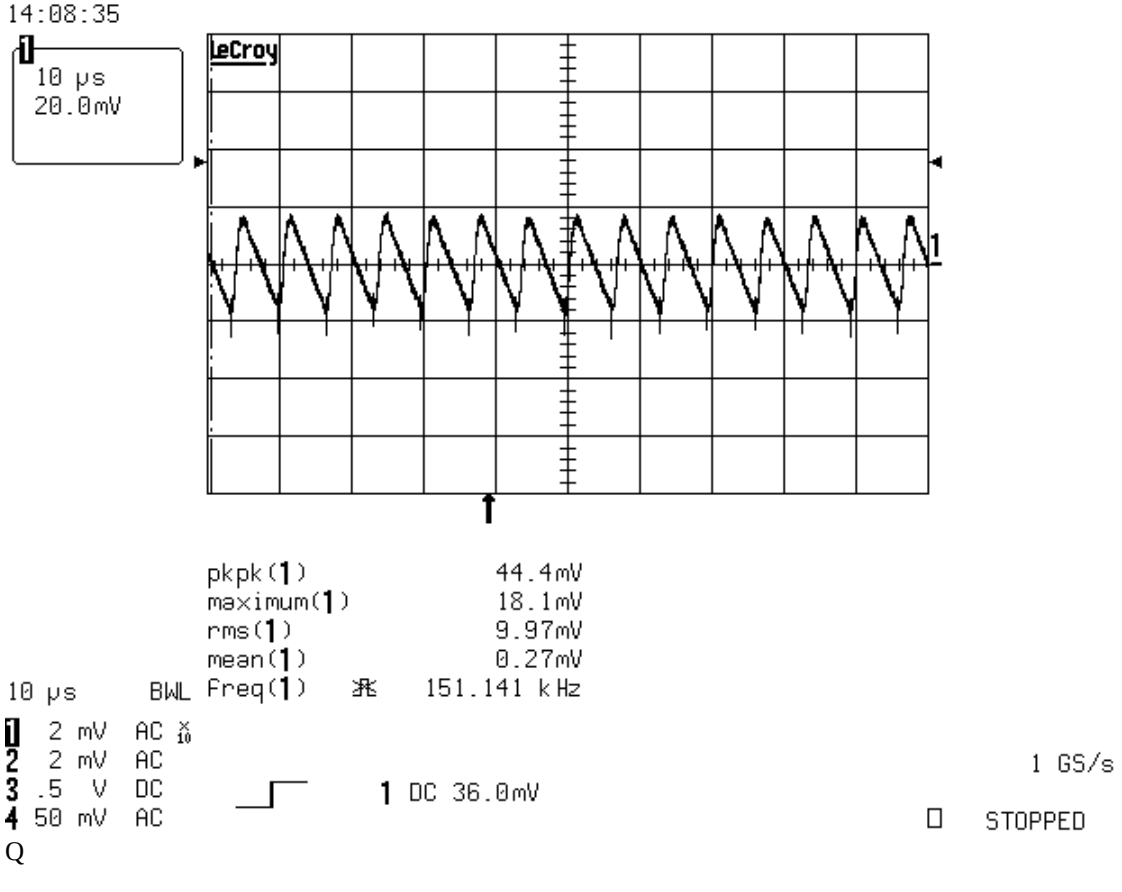
Rising waveform in detail, verified with product group as being acceptable:



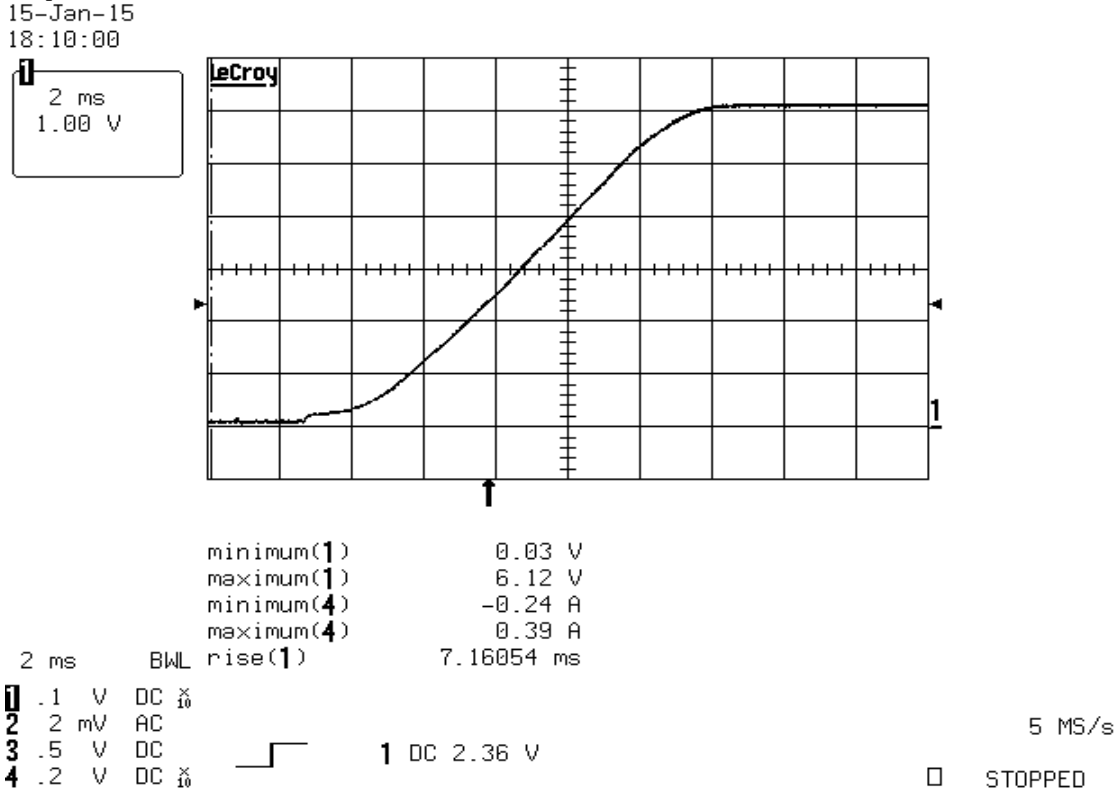
## Output Ripple:

Output ripple at C28, same conditions as above full 7A load



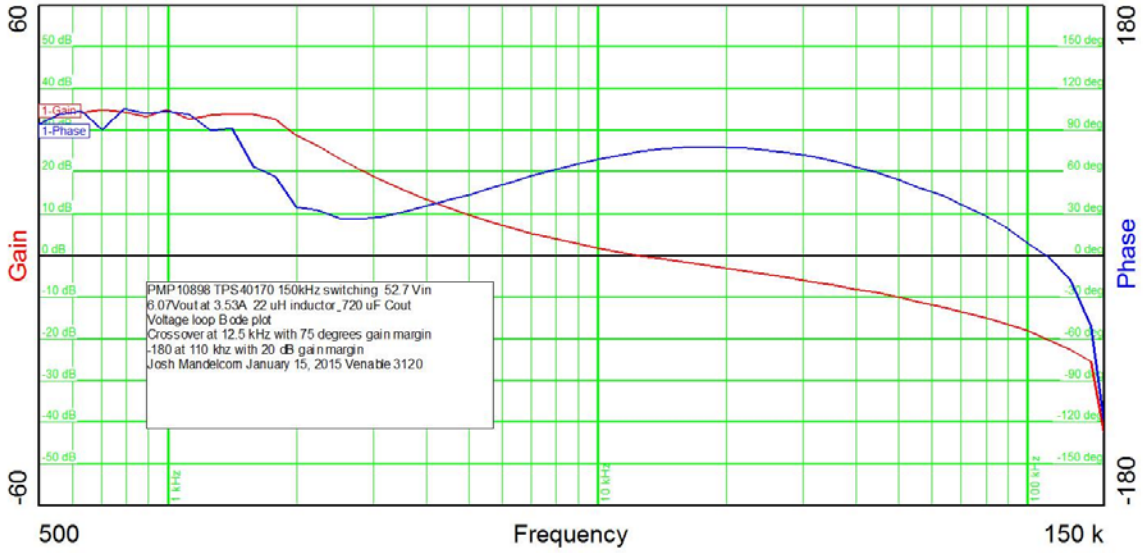
## Start up:

Start up at no load: 55Vin applied: Rise time to 6Vout is 11 msec with no overshoot
Scope calculated rise is 10% to 90%



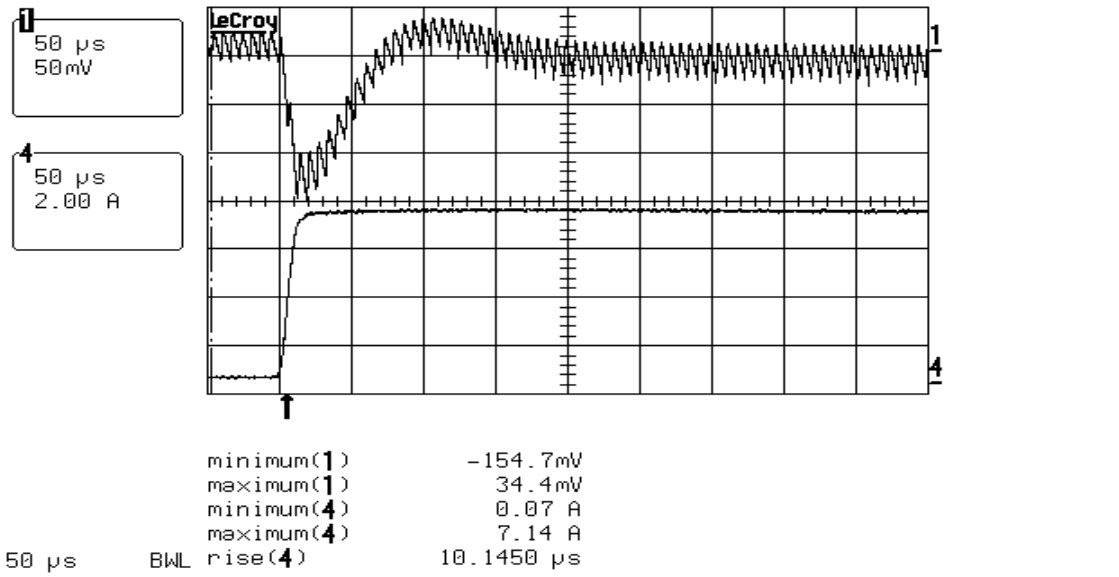

## Bode plot:

Bode Plot of main control loop: crossover target 15 kHz, 12.5 kHz actual



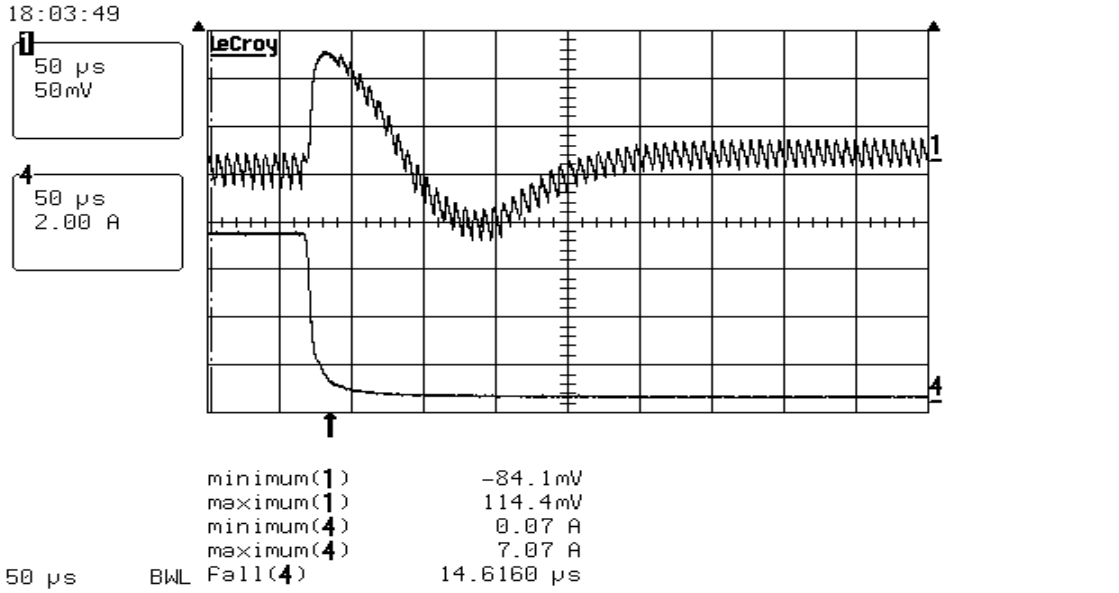
## Step load & load dump responses:

Step load response: 52.5Vin, 6.0Vout 100mA to 7A in ~13 usec:




~140mV undershoot with recovery to within 50mV in 60 usec.

Load dump response: 52.5Vin 6Vout 7A to 100mA in ~20 usec:
~100mV overshoot with recovery to within 50mV in 180 usec.



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