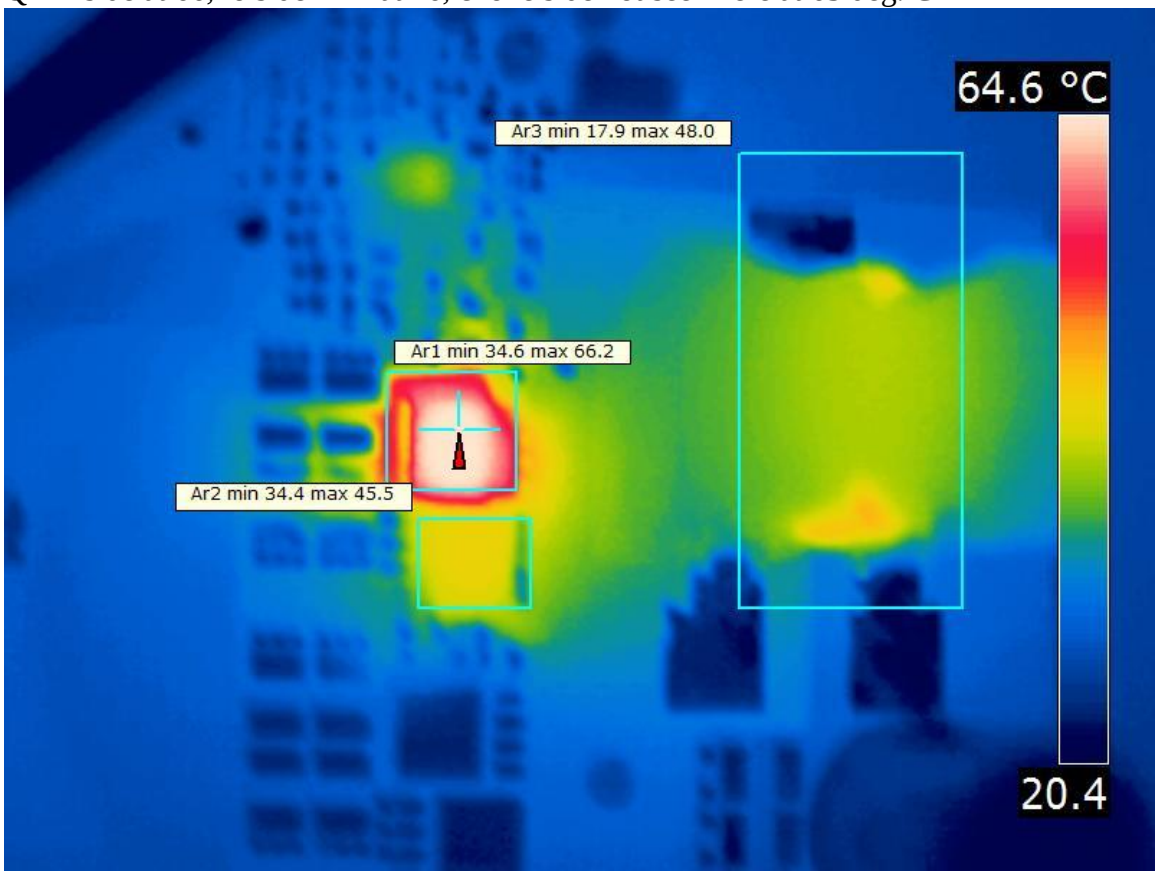
Table of Contents:

Regulation / efficiency / losses: actual operating frequency 172kHz and about one meter per second airflow

Vin Volts	Iin A	Vout Volts	Iout A	% Efficiency	Losses in W	notes
48.05	7.59	29.77	12.00	98.0	7.459	
48.03	6.96	29.77	11.00	98.0	6.819	
48.03	6.33	29.76	10.00	97.9	6.430	
48.05	5.70	29.76	9.00	97.8	6.045	
48.04	5.069	29.76	8.00	97.8	5.435	
48.03	4.443	29.76	7.00	97.6	5.077	
48.01	3.818	29.76	6.00	97.4	4.742	
48.06	3.190	29.76	5.00	97.1	4.511	
48.02	2.567	29.77	4.00	96.6	4.187	
48.06	1.9405	29.78	3.00	95.8	3.920	
48.02	1.3125	29.81	2.00	94.6	3.406	
48.06	0.6835	29.82	1.00	90.8	3.029	
48.08	0.048	29.82	0	0.0	2.308	
48.03	5.397	29.82	8.50	97.8	5.748	No fan

Thermal run with about 1 Meter per second airflow at full 12A load:

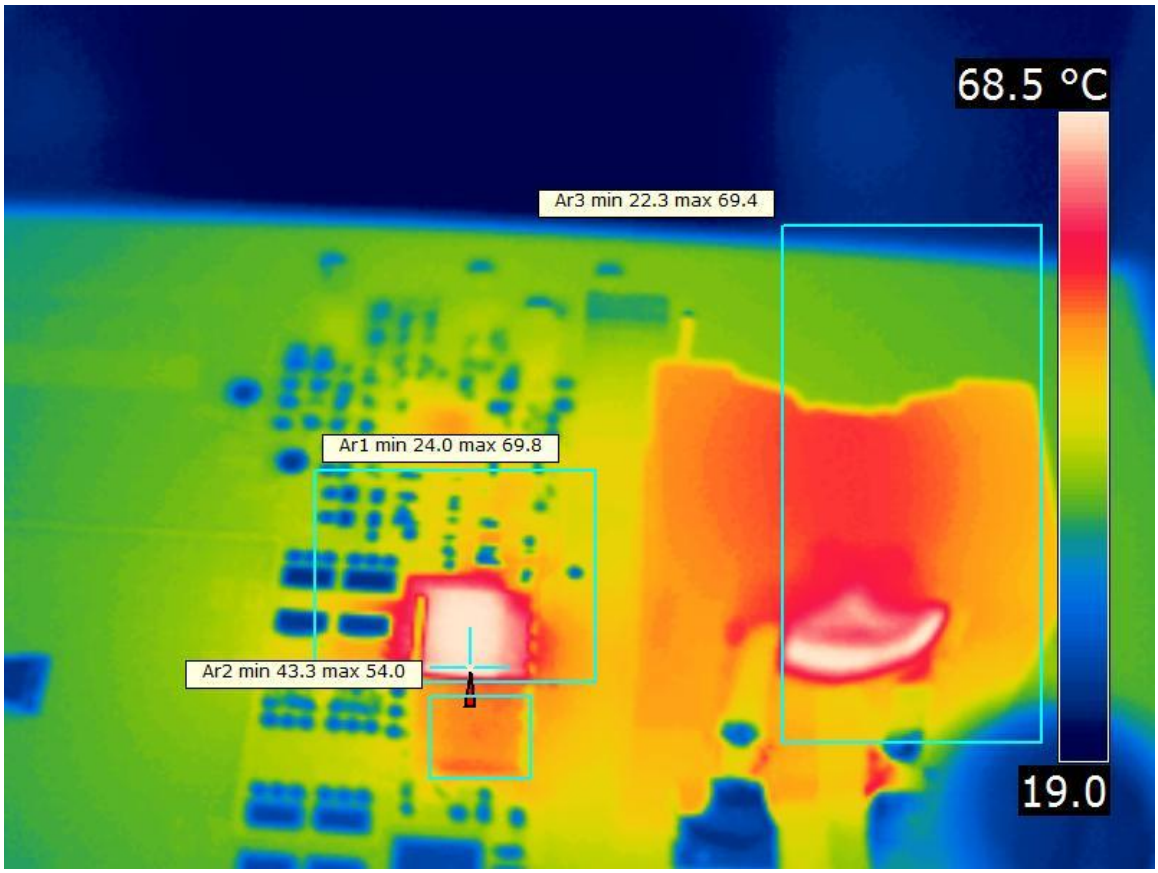
PMP8849 with about 1 M / S airflow 48.04Vin 7.6Ain 29.78Vout 12.02Aout 172kHz ambient ~20 degrees C 7.15W on board
Q1 hi side at 66, lo side FET at 46, choke side not seen here at 65 deg. C



Qq

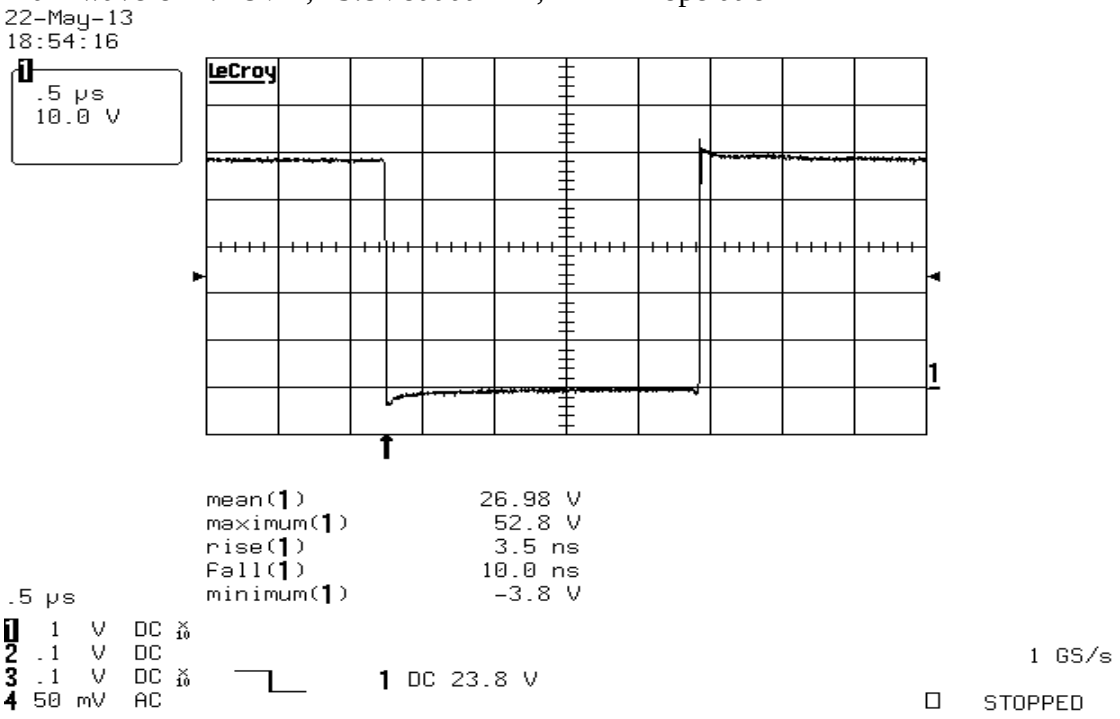
Thermal run with no fan at load giving about 50 degrees C rise on hottest FET: 48Vin 30Vout at 8.5A

PMP8849 with no fan 48.03Vin 5.397Ain 29.82Vout 8.5Aout 172kHz ambient ~20 degrees C 5.75W on board
Q1 hi side at 70, lo side FET at 54, choke side not seen here at 72-74 deg. C, here only see 69.4



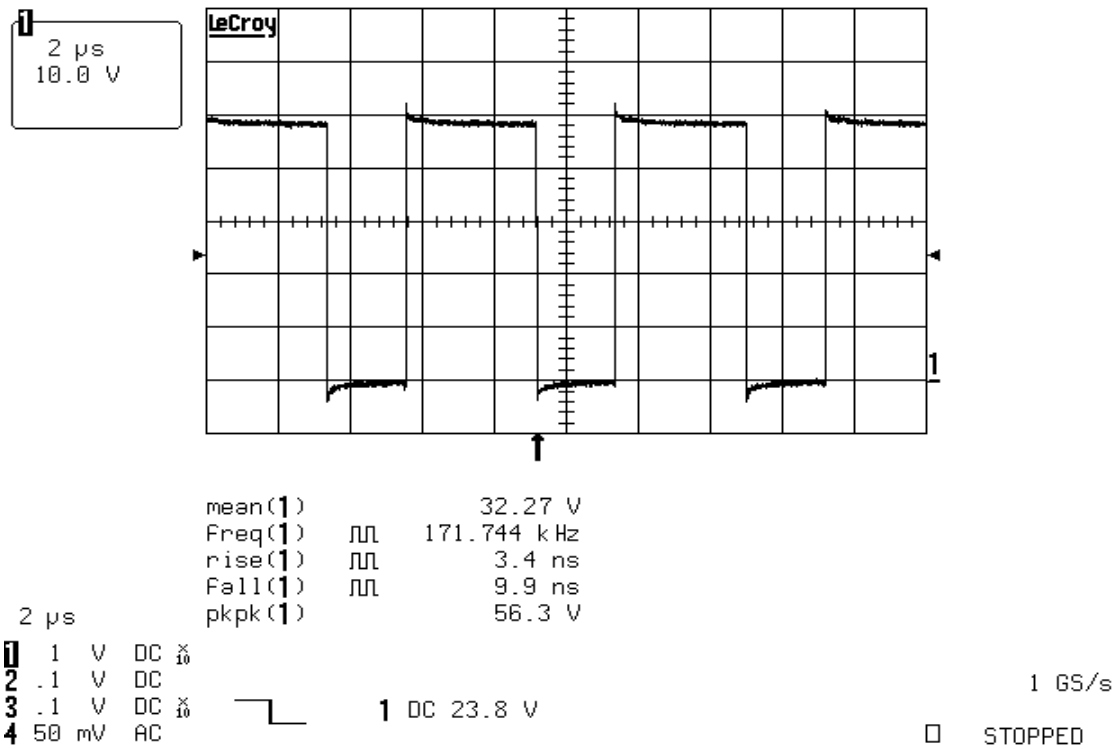
Qq

Main waveform: 48Vin, 29.8Vout at 12A; 172kHz operation



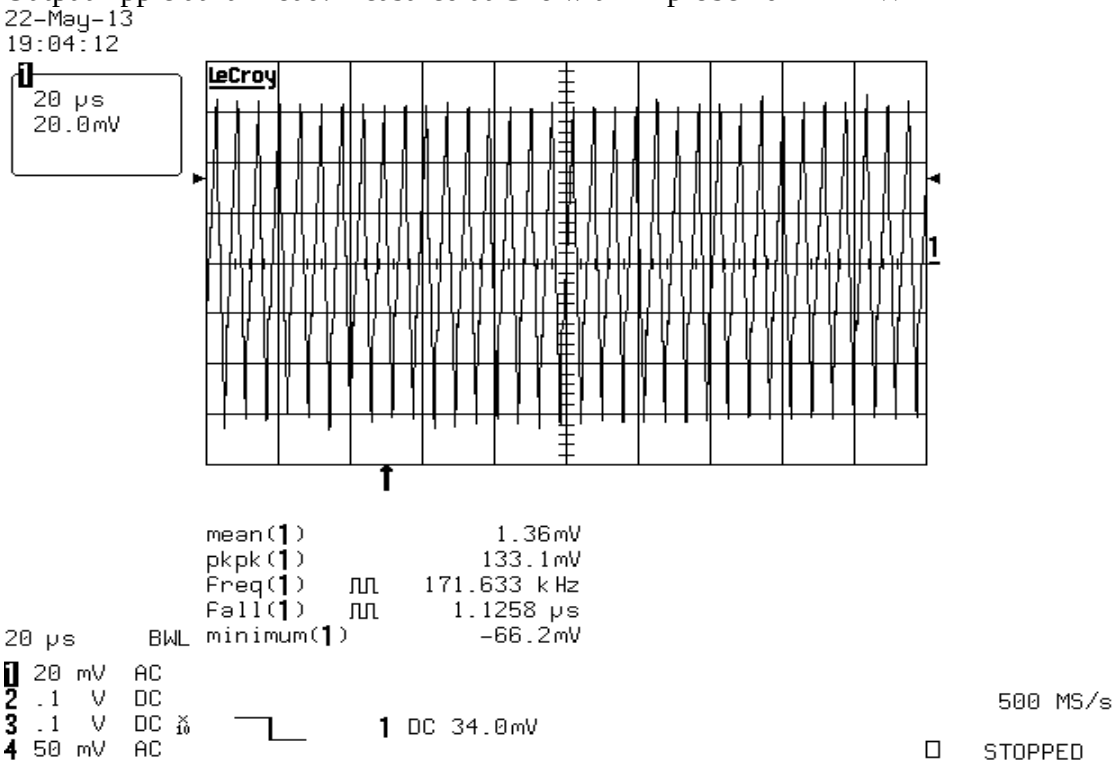
Qq

Same, but load only 10A and 3 cycles shown:



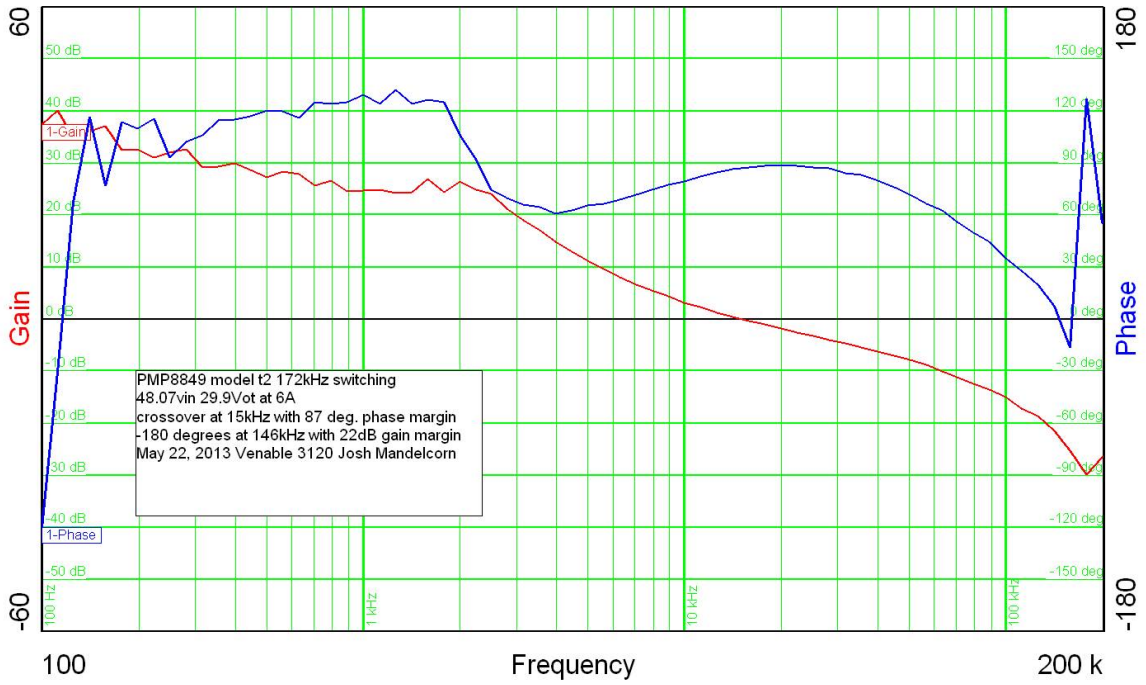
Qq

Output ripple at full load: measured at C26 with 1x probe 20MHz BW



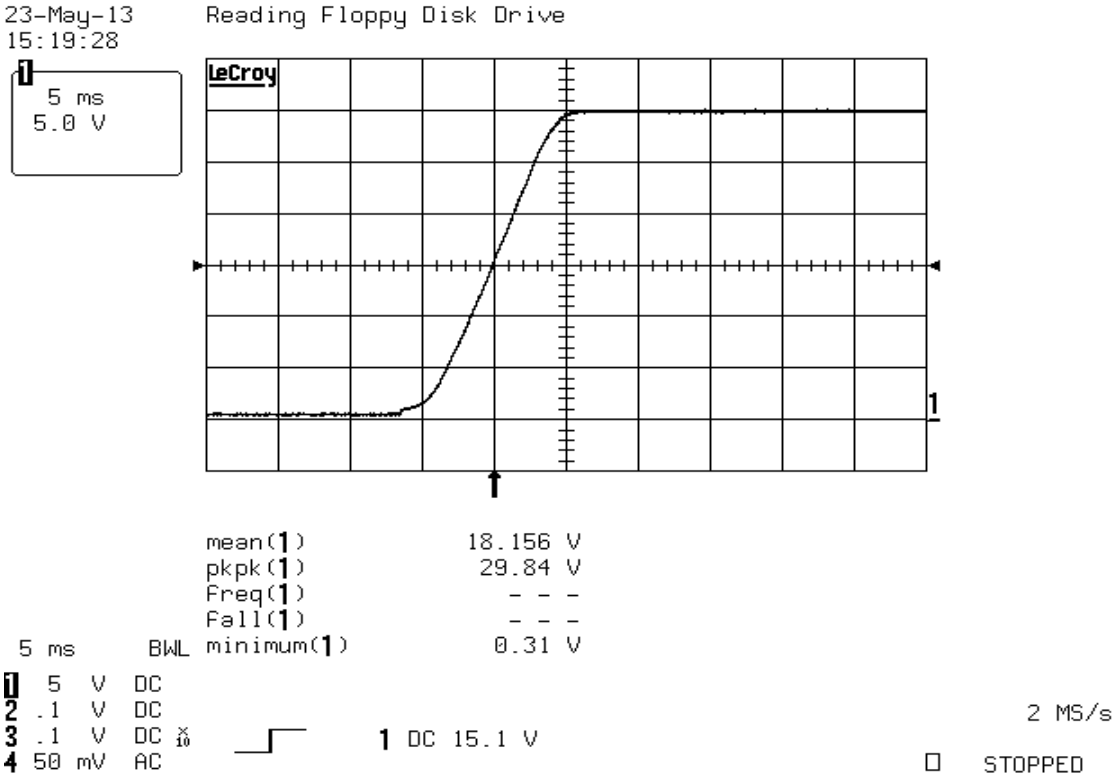
Qq

Bode plot of main Voltage control; load is 6A off 29.8Vout



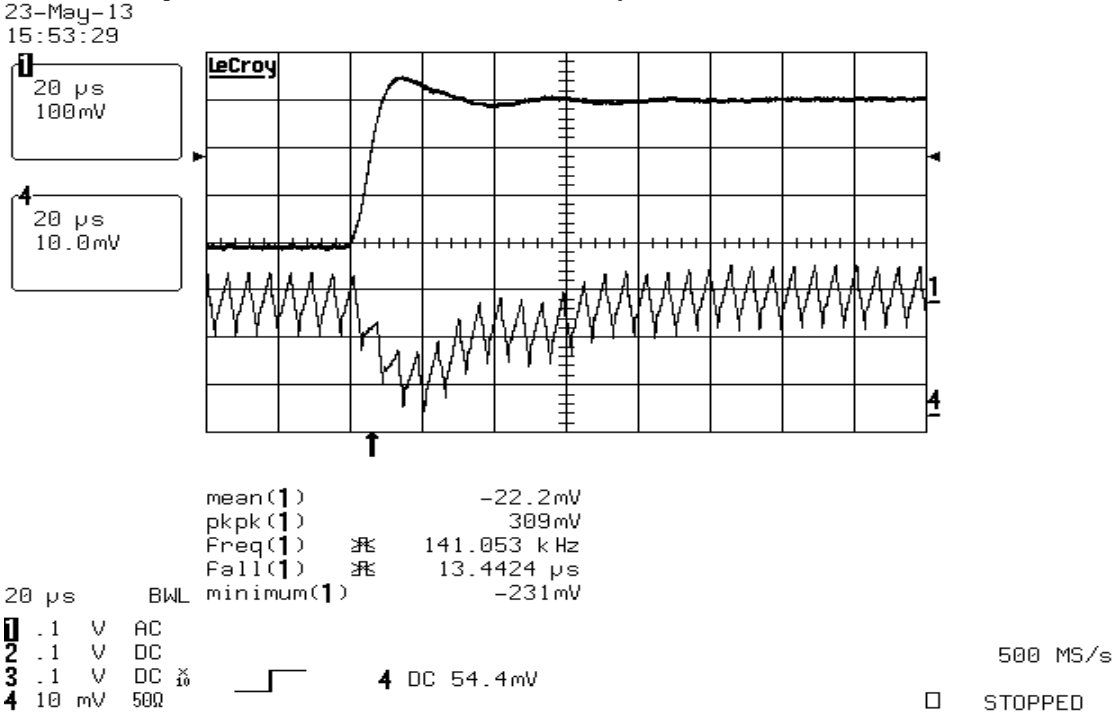
Qq

Start up of 30Vout when 48Vin applied: No load
12msec rise time and no overshoot

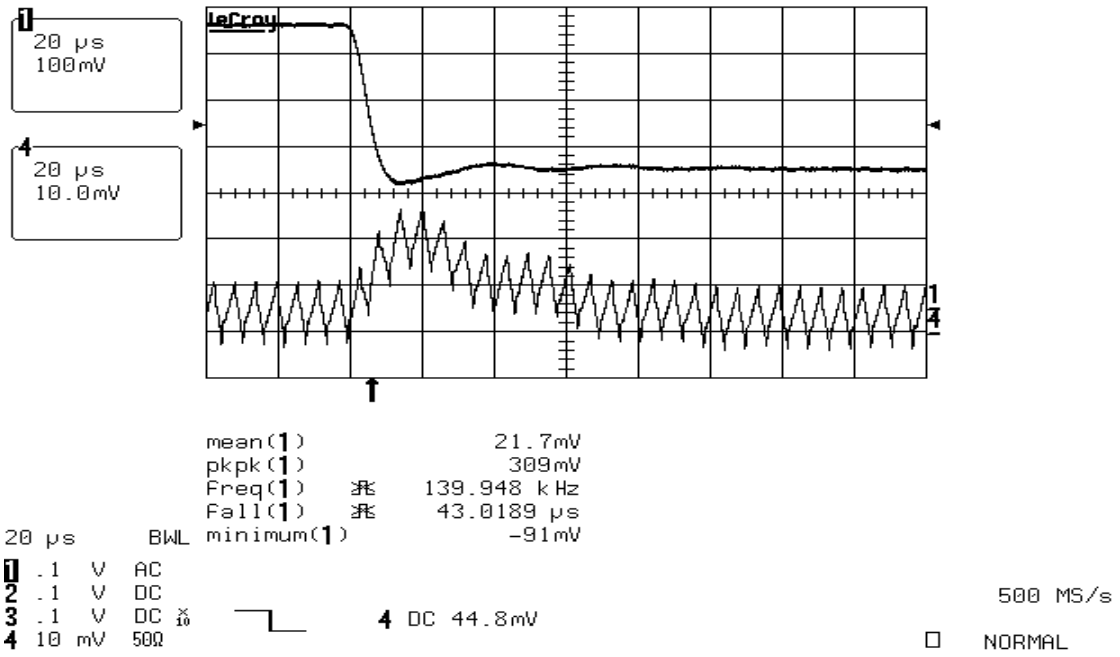


Qq

Step load response: 48Vin and DC load of 6A off the 30Vout; additional 6A applied at about 1A per usec: Top trace (scope channel 4 with external Tektronix current probe) is load current at 2A per division; bottom trace (scope channel 1) is Vout
About 150mV peak undershoot and about 50usec recovery time



Load dump response: 48Vin and DC load of 6A off the 30Vout; additional 6A removed at about -1A per usec: Top trace (scope channel 4 with external Tektronix current probe) is load current at 2A per division; bottom trace (scope channel 1) is Vout
About 165mV overshoot and about 50usec recovery time



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