Test Report

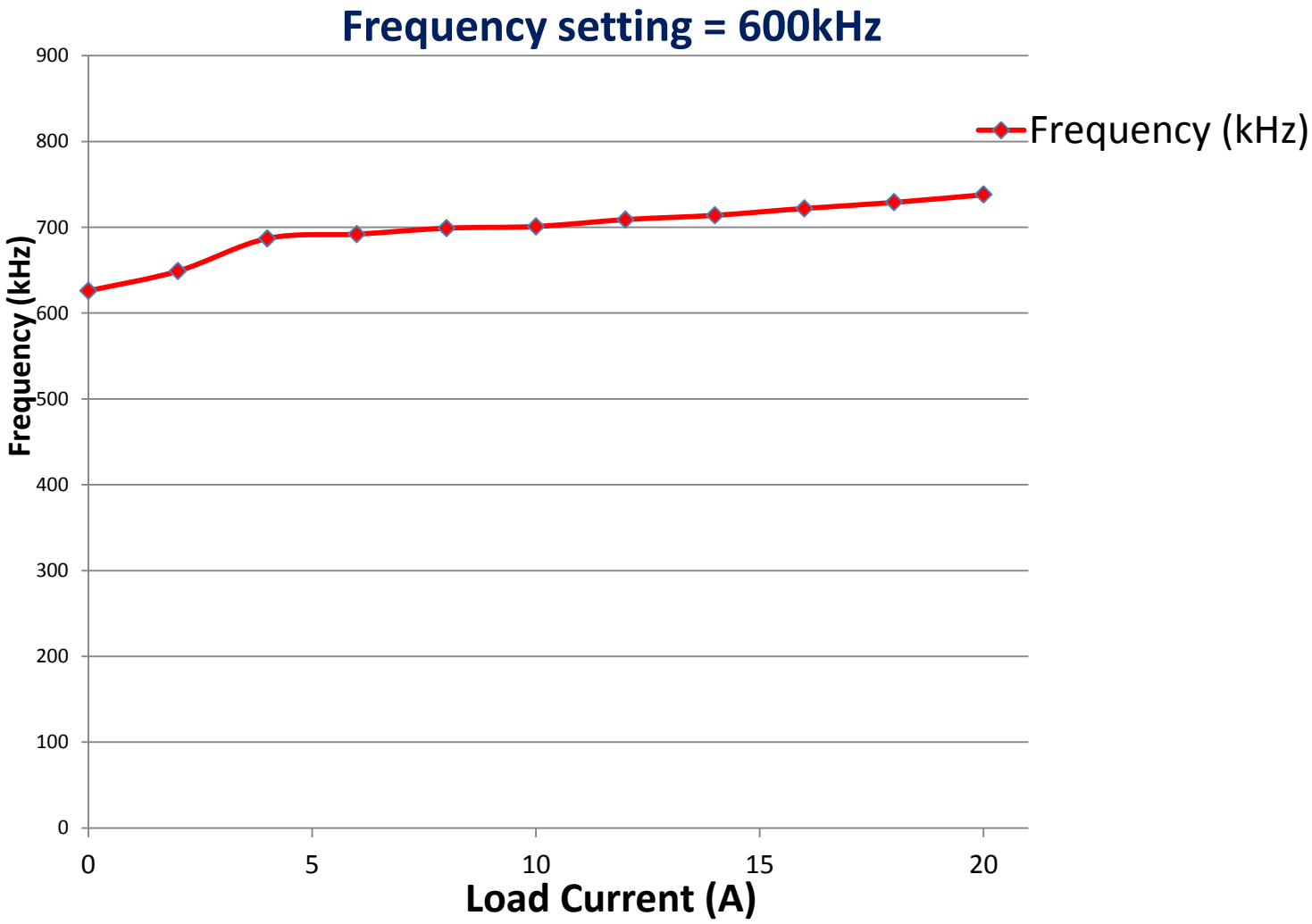
TIDA-00507

TPS53625 Intel® Atom™ C2000 PVCCP

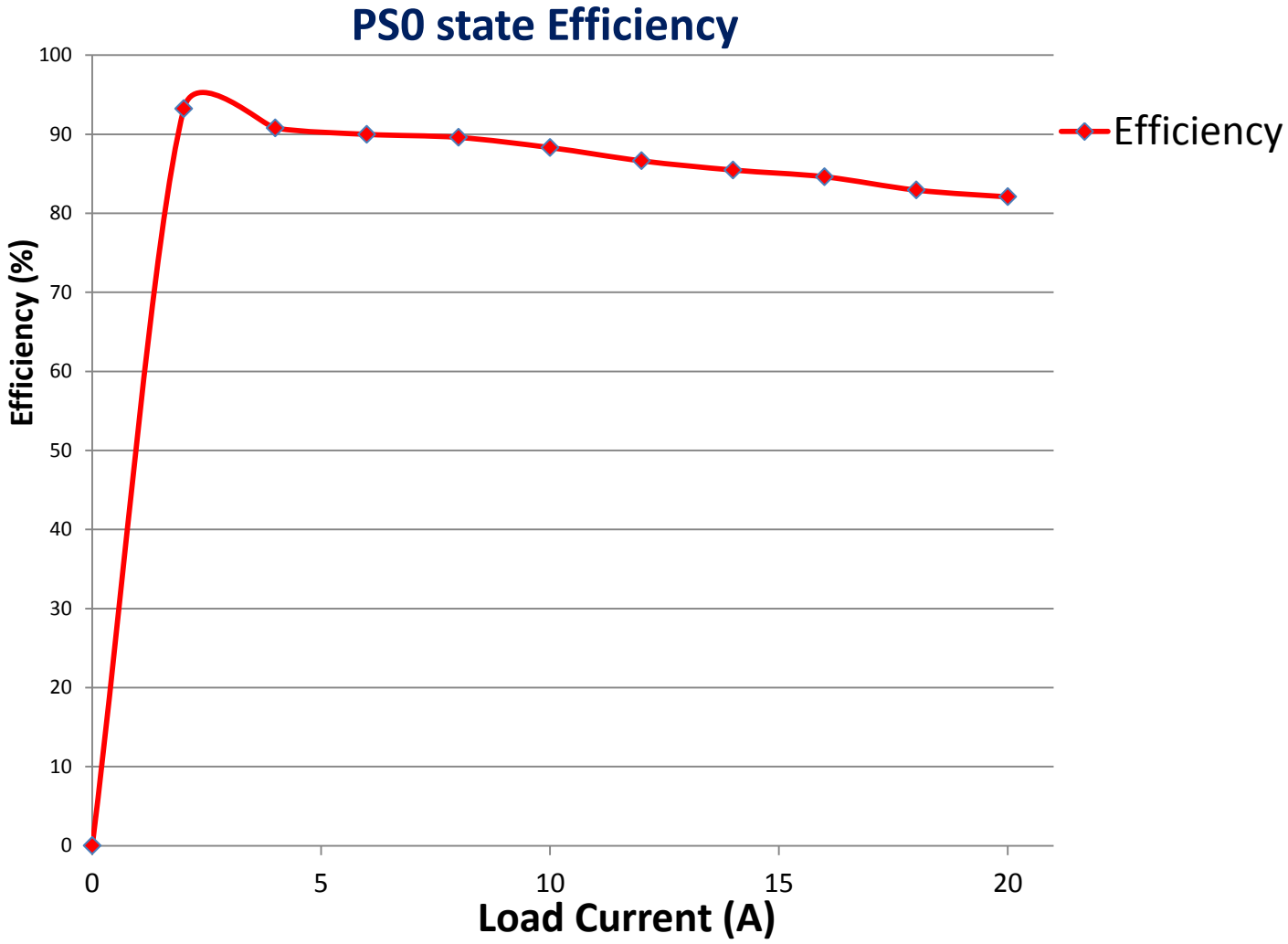
PVCCP- Configuration

- 1-phase mode
- MOSFET: TI Power Stage: CSD97374Q4M
- Inductor: 0.23uH,0.29mohm big ferrite, PULSE, VITEC
- Output Capacitor:
  - Bulk: 1x470uF; ESR: 4.5mhm, ESL: 1nH
  - Ceramic: 10x47uF
- Max Current: 21A
- Frequency: 600KHz
- Zero Load-line
- Ramp 100mV
- SVID Address : 00h
- OSR disabled

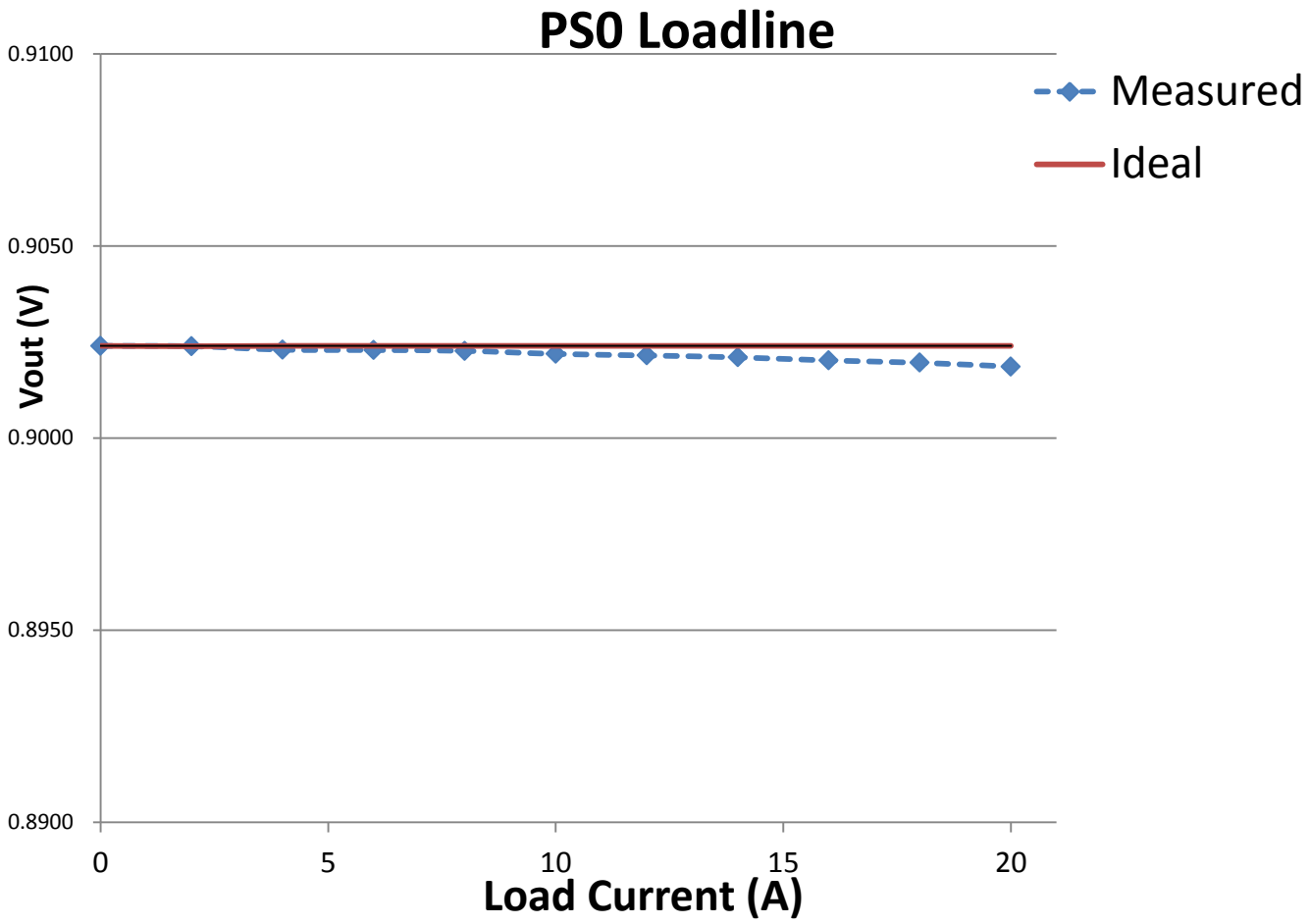
Frequency Variation



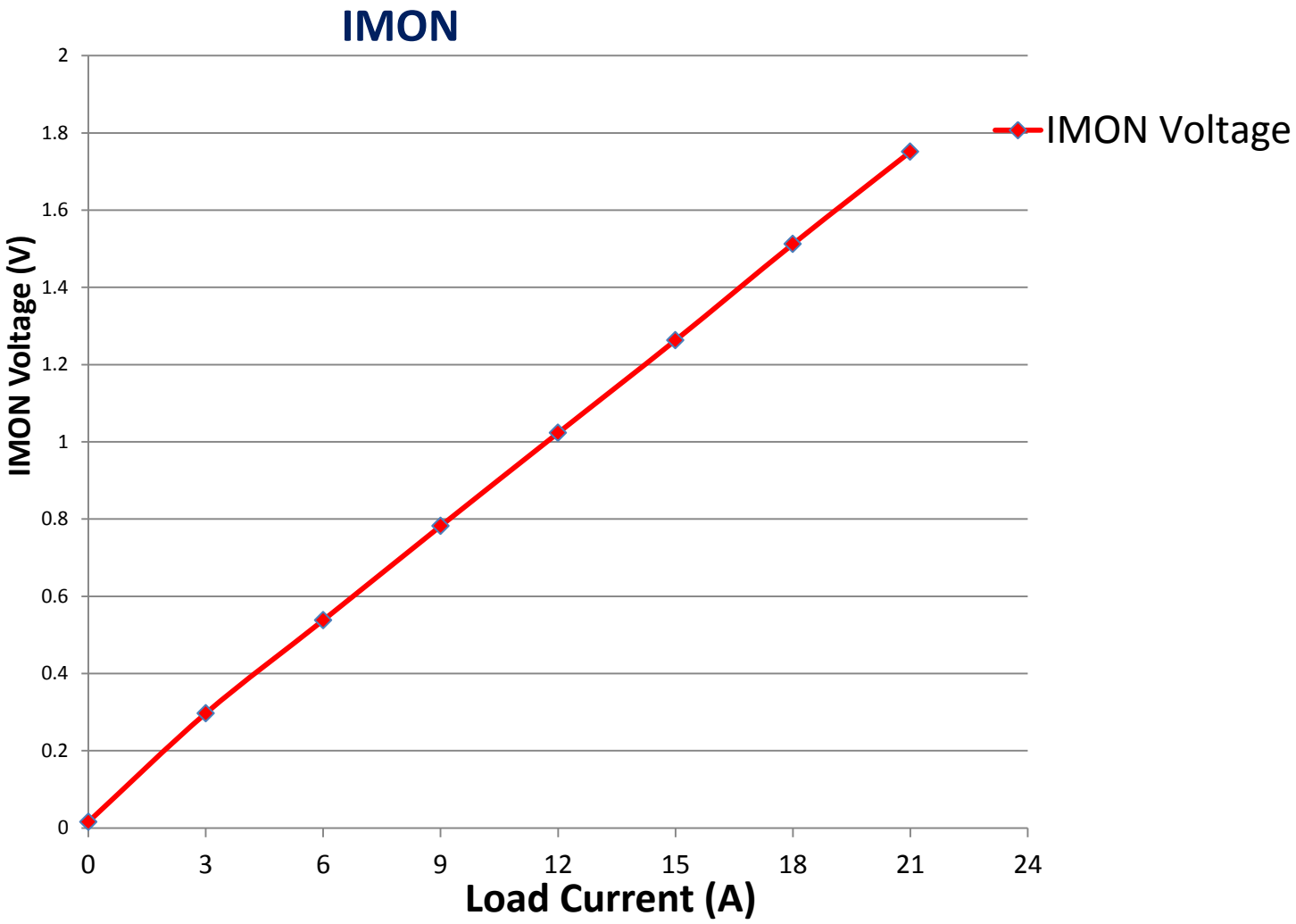
PS0 Efficiency



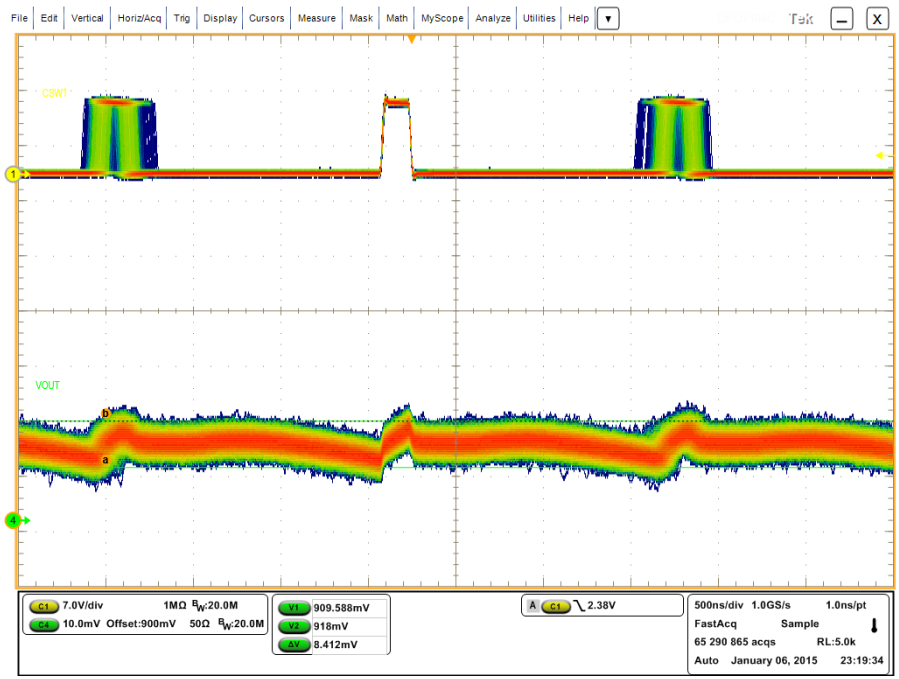
Loadline


PS0 Loadline
0.9100
0.9050
0.9000
0.8950
0.8900
Vout (V)
0
5
10
15
20
Load Current (A)
Measured
Ideal

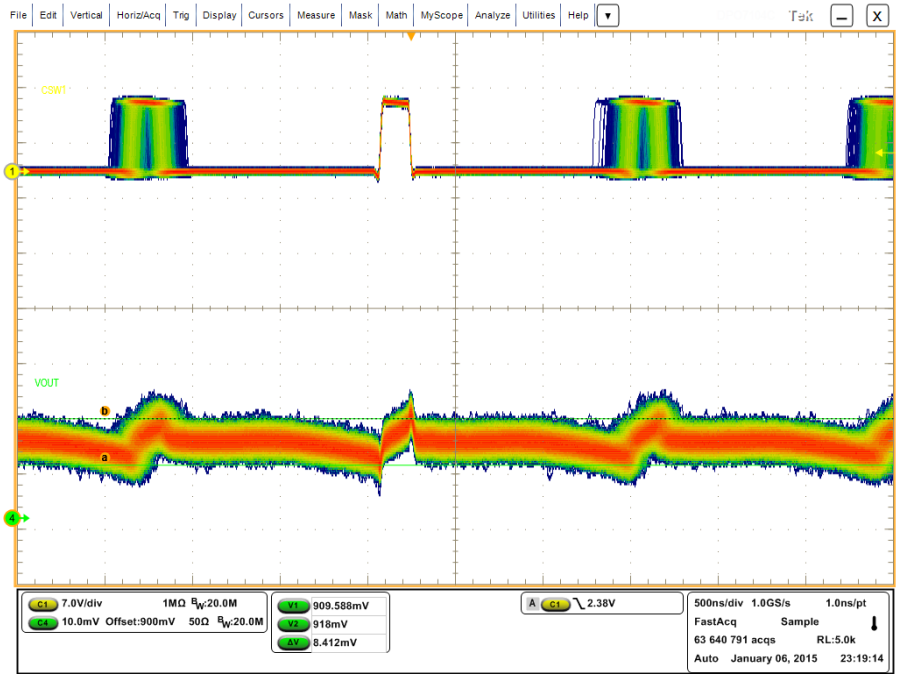
Analog Current Monitor Output (IMON)



Ripple and jitter
Vin 9V

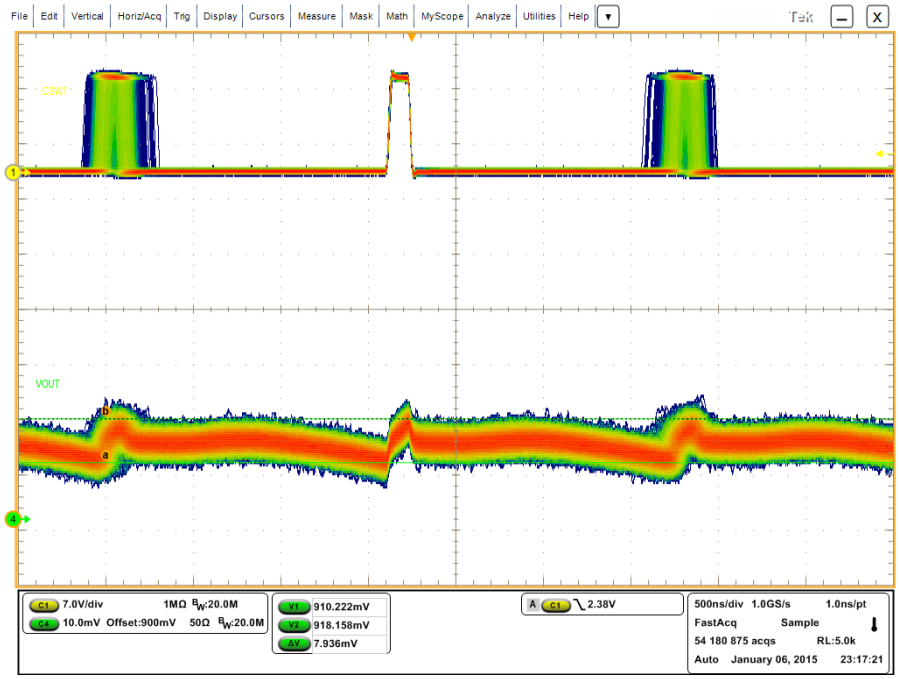


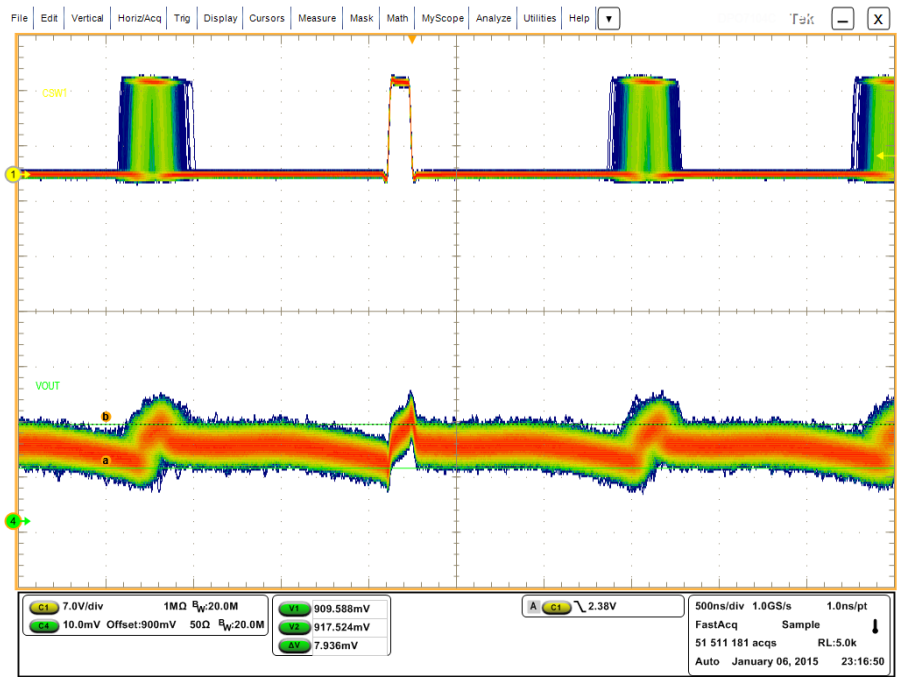
Load 0A
Ripple: 8mV



Load 20A
Ripple: 8mV

Ripple and jitter
Vin 12V

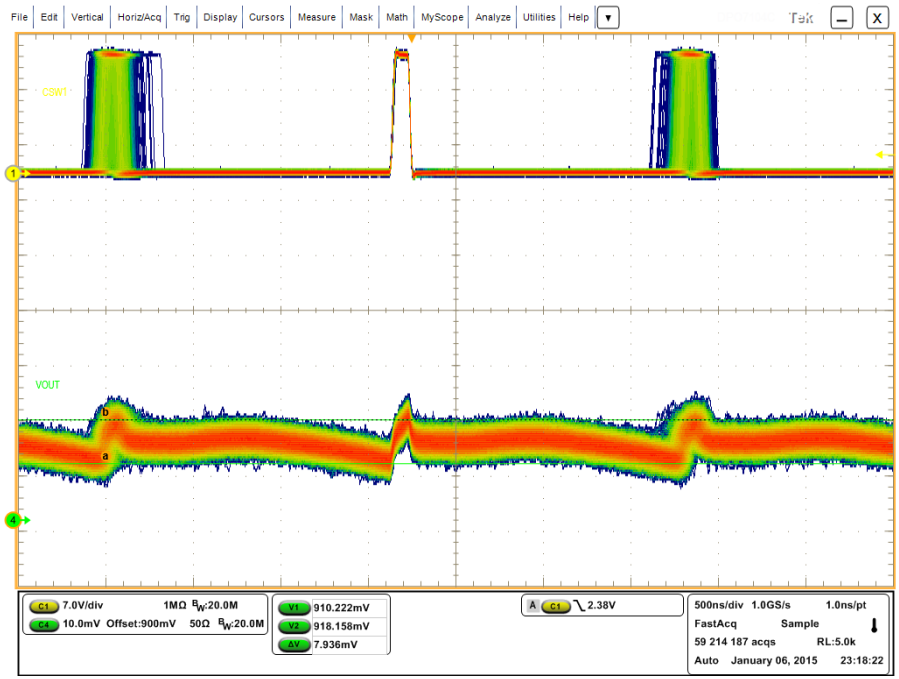


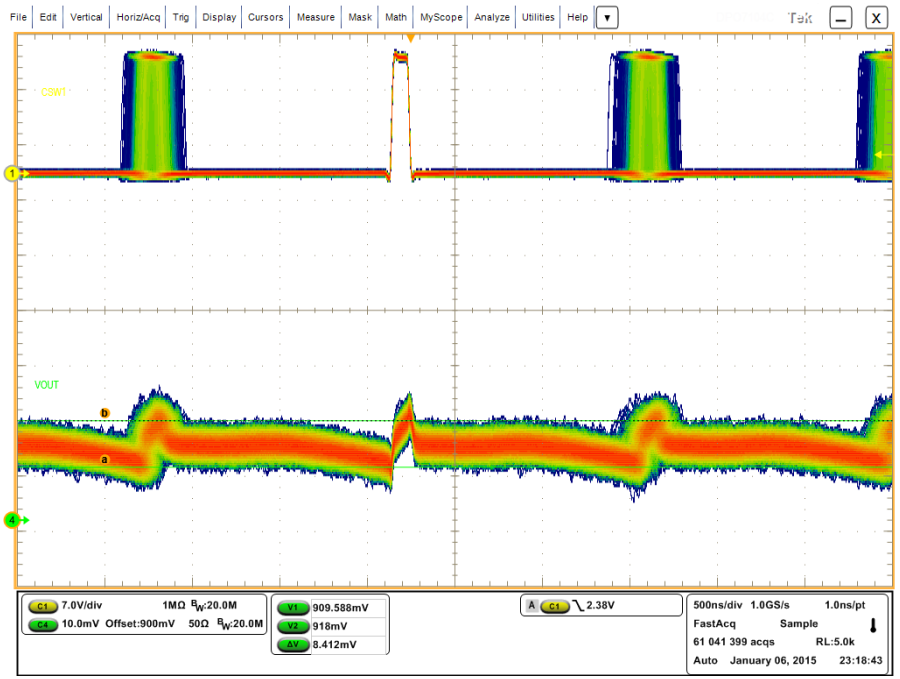


Load 0A
Ripple: 8mV

Load 20A
Ripple: 8mV

Ripple and jitter
Vin 15V



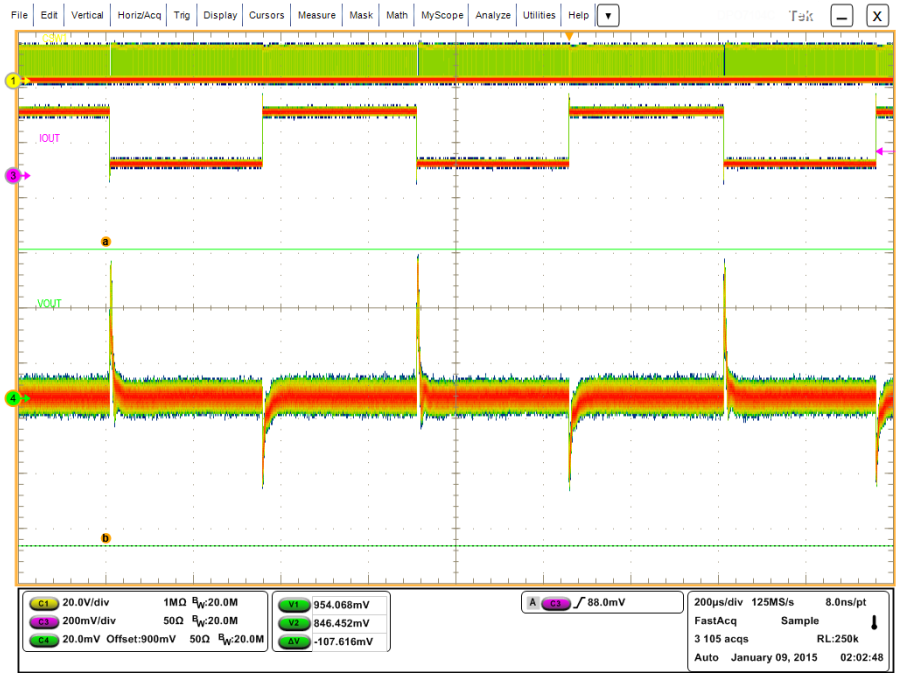


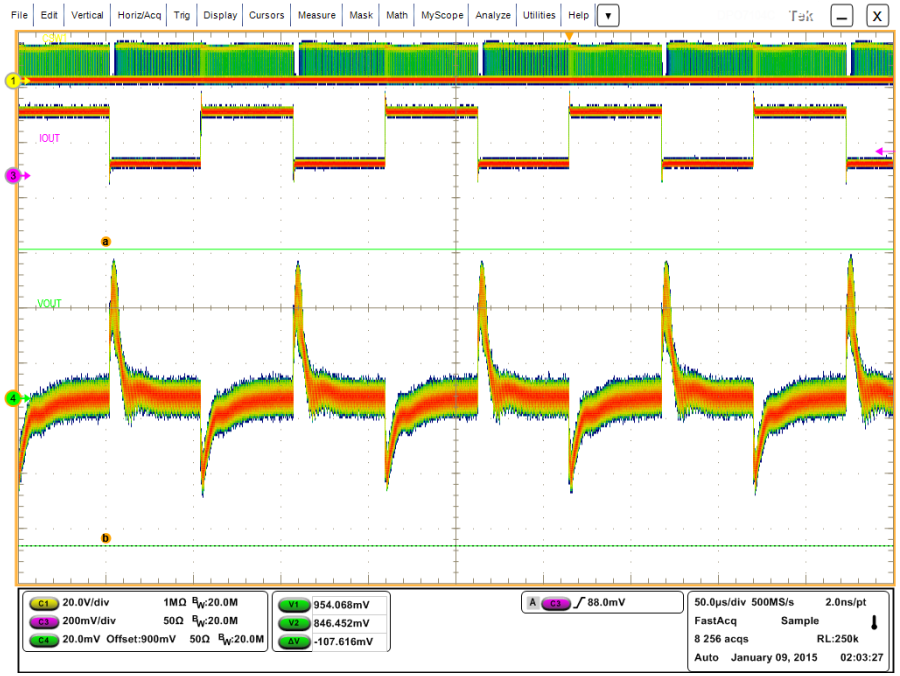
Load 0A
Ripple: 8mV

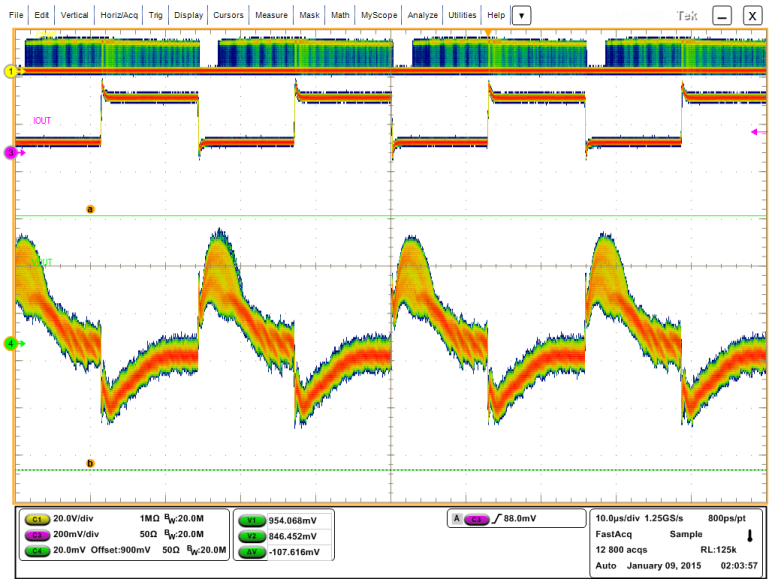
Load 20A
Ripple: 8.5mV

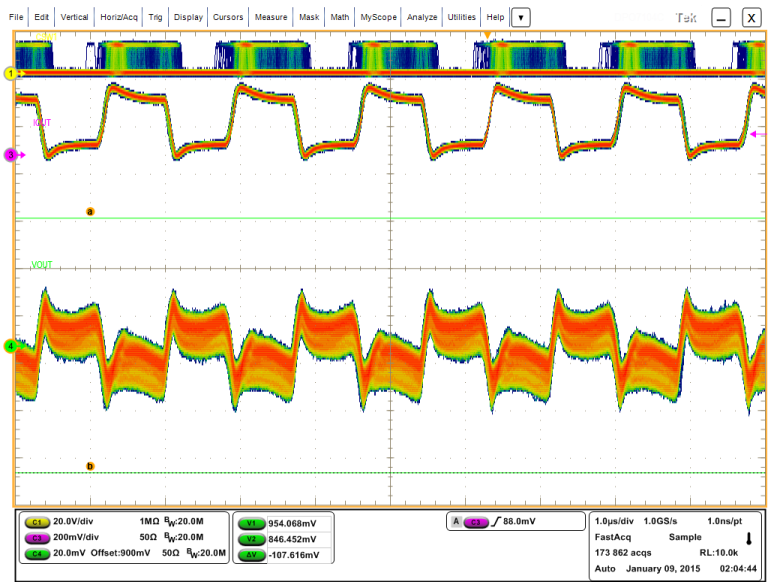
Load Transient Performance
1A to 14A (PS0 state)- 50% duty cycle

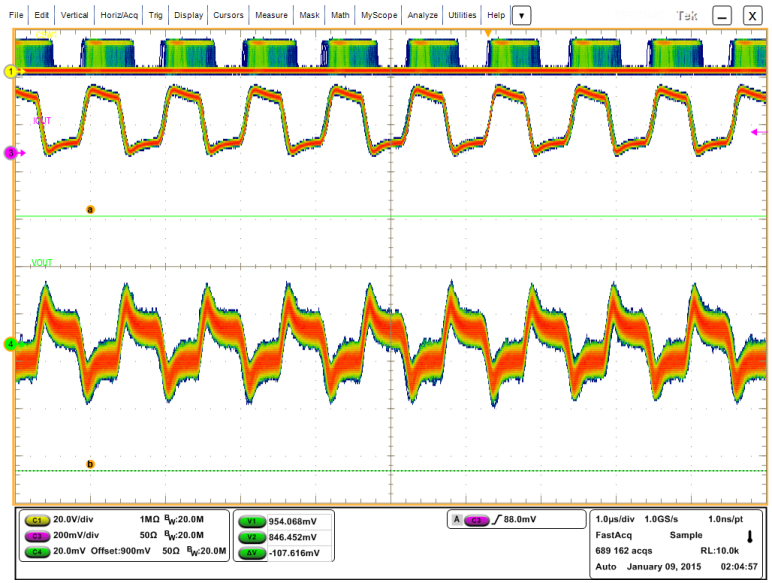
DC and AC ripple guideline: +/-54mV



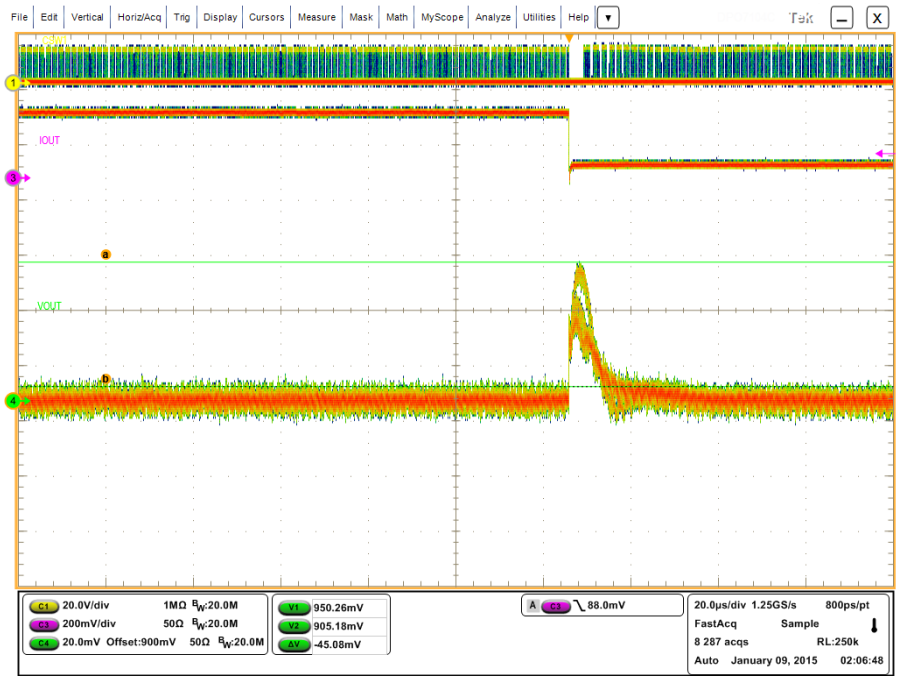








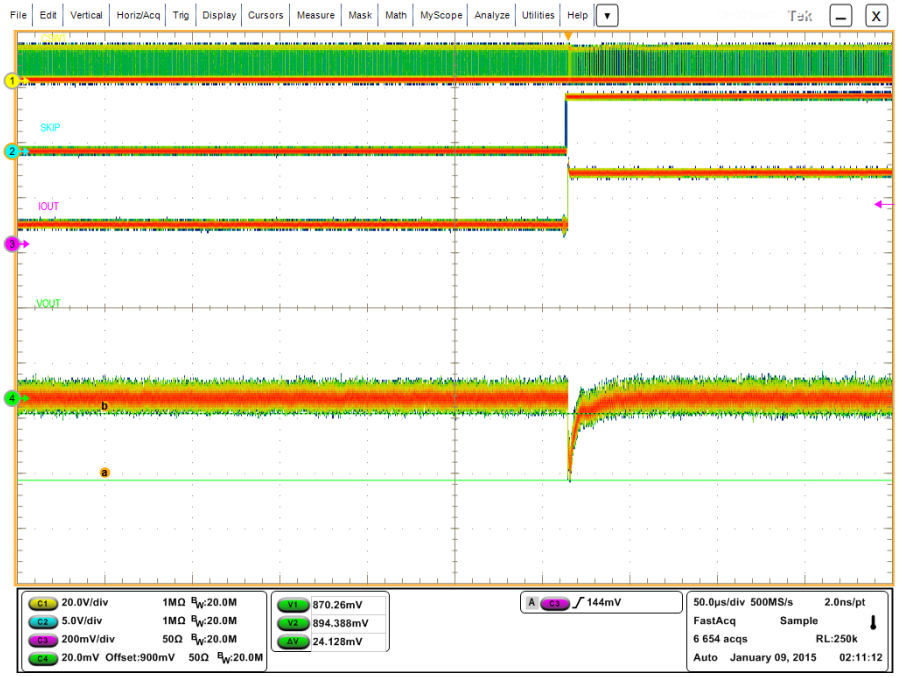
Output Voltage waveform within the +/-54 mV lines



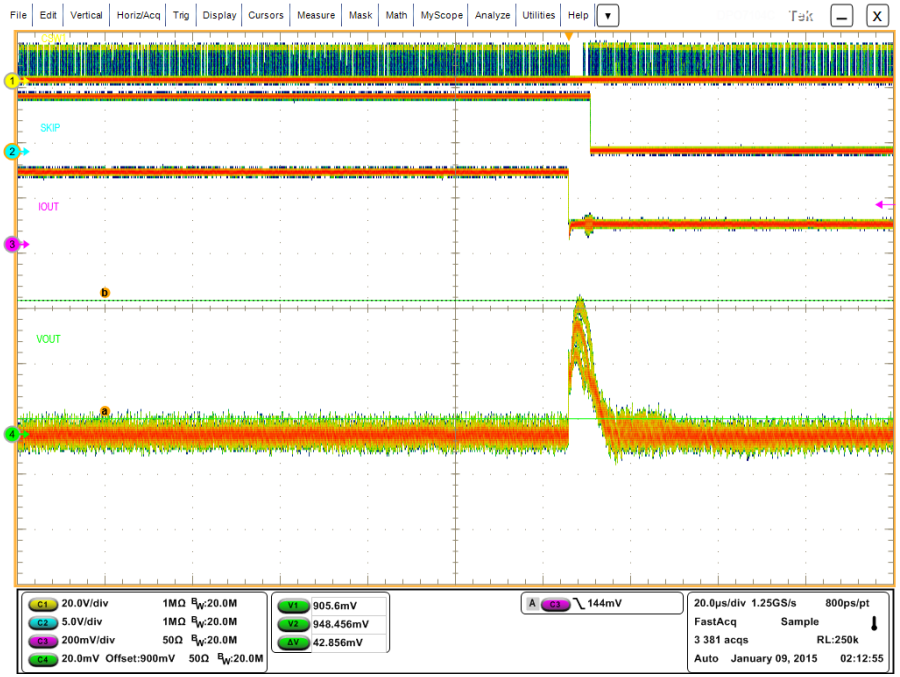
Load fall
Overshoot: 45mV

Load rise
Droop: 27mV

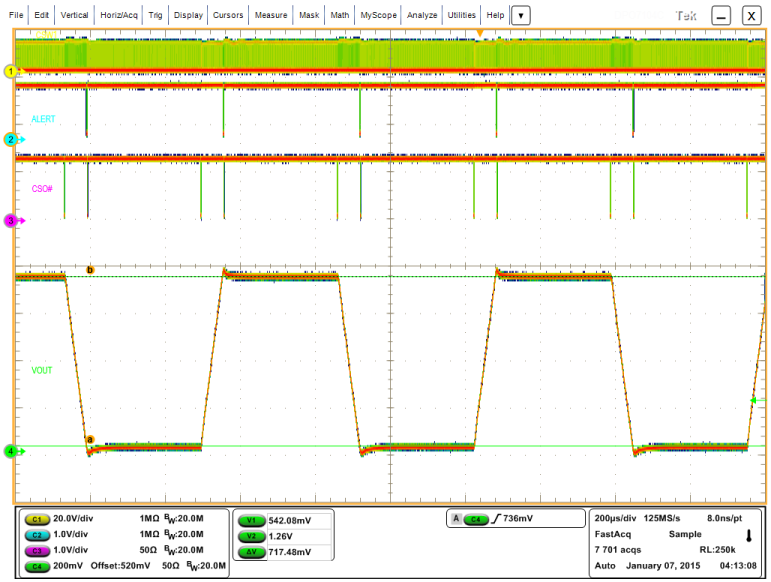
Load Transient Performance
3A to 16A (PS2-PS0 state)- 305 Hz

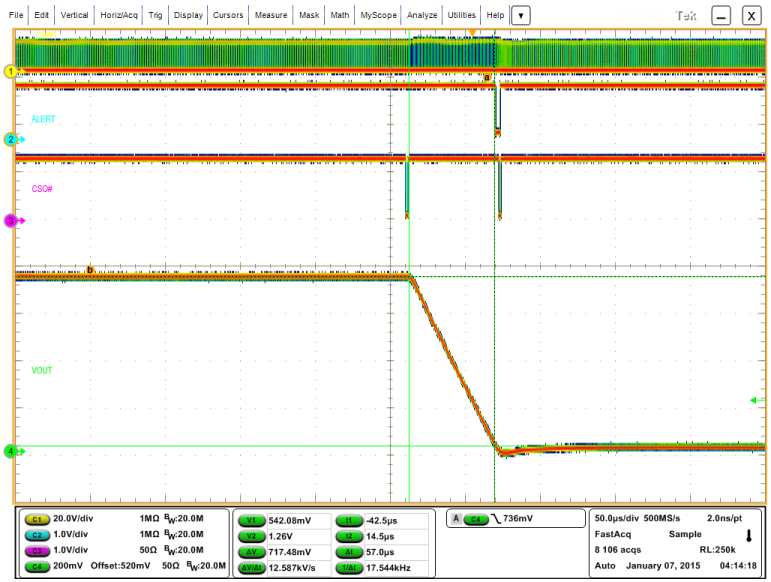



File Edit Vertical Horiz/Acq Trig Display Cursors Measure Mask Math MyScope Analyze Utilities Help
SKIP
IOUT
VOUT
C1 20.0V/div 1MΩ BW:20.0M
C2 5.0V/div 1MΩ BW:20.0M
C3 200mV/div 50Ω BW:20.0M
C4 10.0mV Offset:900mV 50Ω BW:20.0M
V1 889.504mV
V2 894.108mV
ΔV 4.604mV
A C3 144mV
50.0µs/div 500MS/s 2.0ns/pt
FastAcq Sample
4 301 acqs RL:250k
Auto January 09, 2015 02:12:10


File Edit Vertical Horiz/Acq Trig Display Cursors Measure Mask Math MyScope Analyze Utilities Help
SKIP
IOUT
VOUT
C1 20.0V/div 1MΩ BW:20.0M
C2 5.0V/div 1MΩ BW:20.0M
C3 200mV/div 50Ω BW:20.0M
C4 20.0mV Offset:900mV 50Ω BW:20.0M
V1 905.6mV
V2 948.456mV
ΔV 42.856mV
A C3 144mV
20.0µs/div 1.25GS/s 800ps/pt
FastAcq Sample
3 381 acqs RL:250k
Auto January 09, 2015 02:12:55

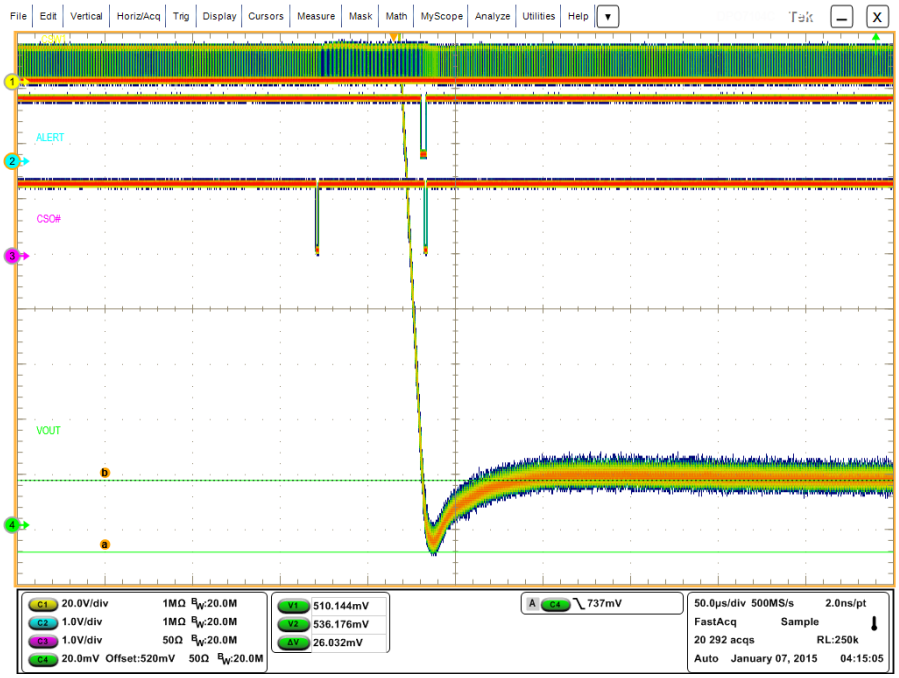
Dynamic VID
0.52V-1.24V Fast-Fast 5A load



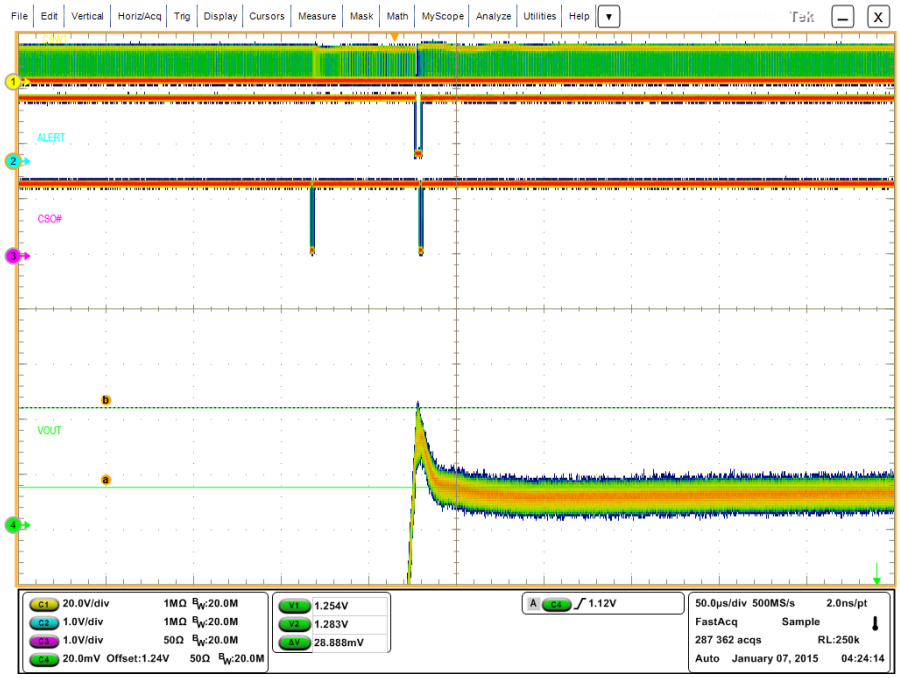


Fall Slew rate: 12.58 mV/us

Rise Slew rate: 12.47 mV/us

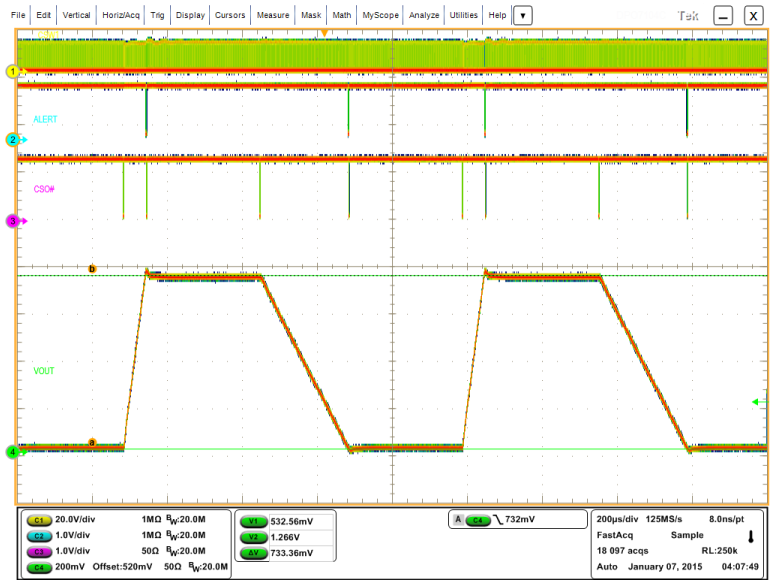


Droop: 26mV

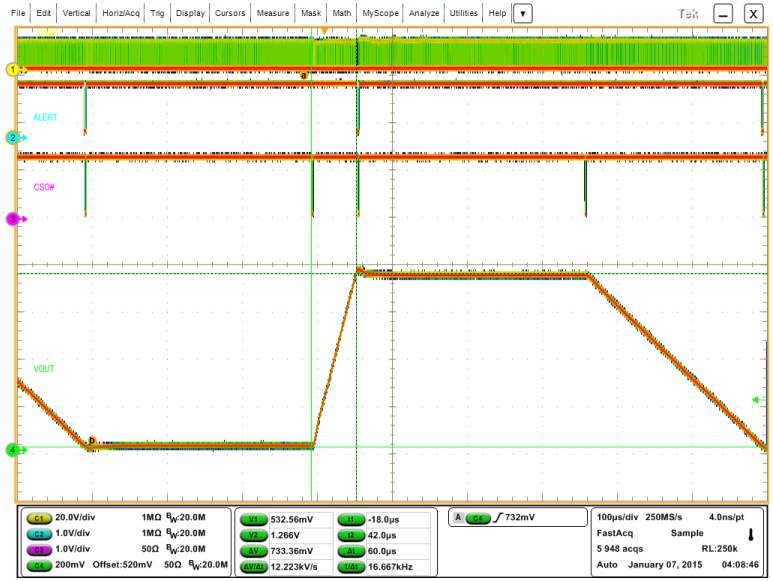


Overshoot: 29mV

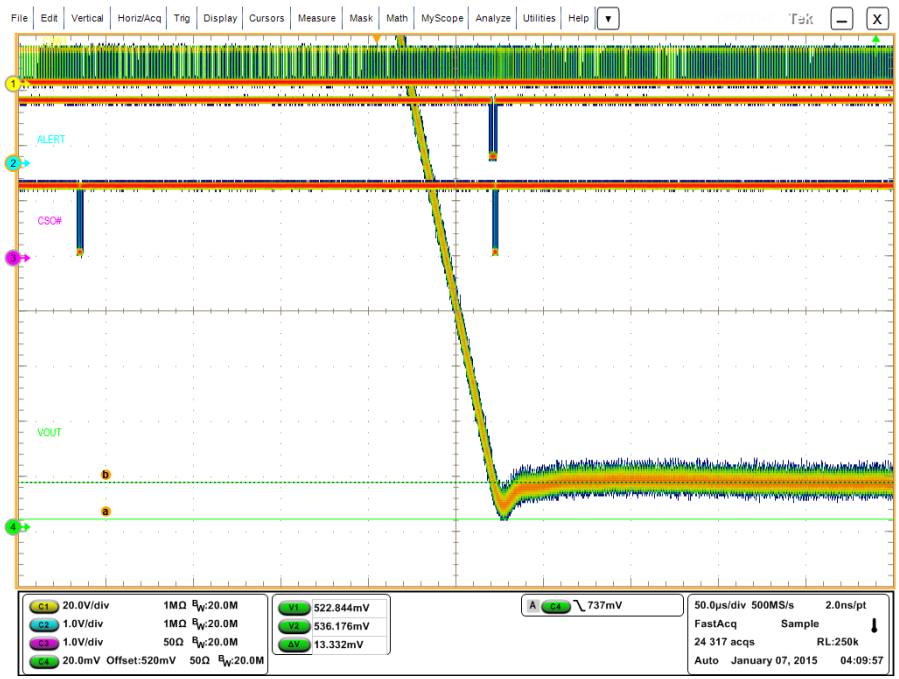
Dynamic VID
0.52V-1.24V Fast-Slow 5A load



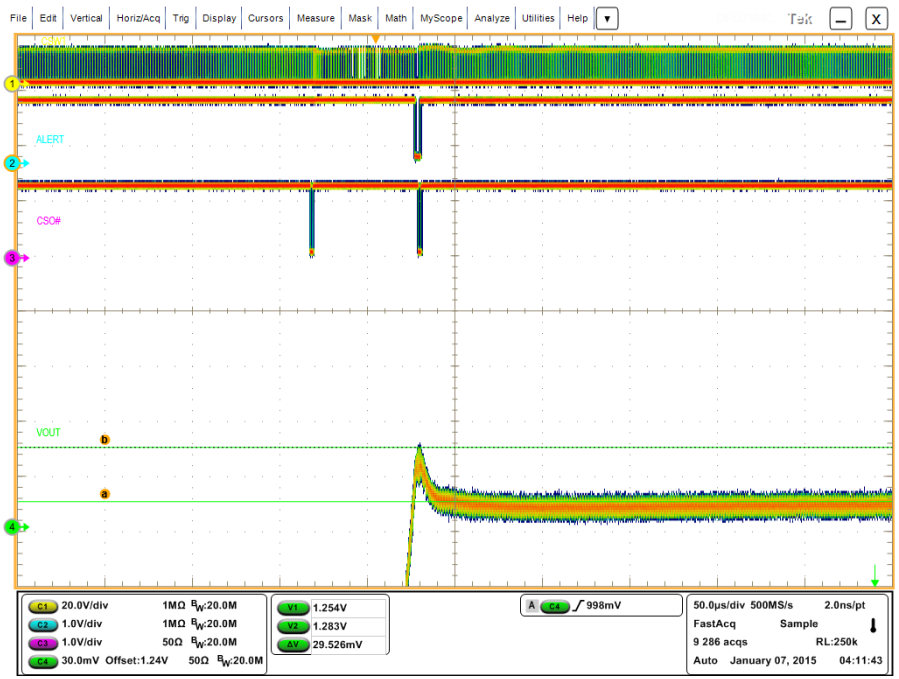
Fall Slew rate: 3.13 mV/us



Rise Slew rate: 12.22 mV/us

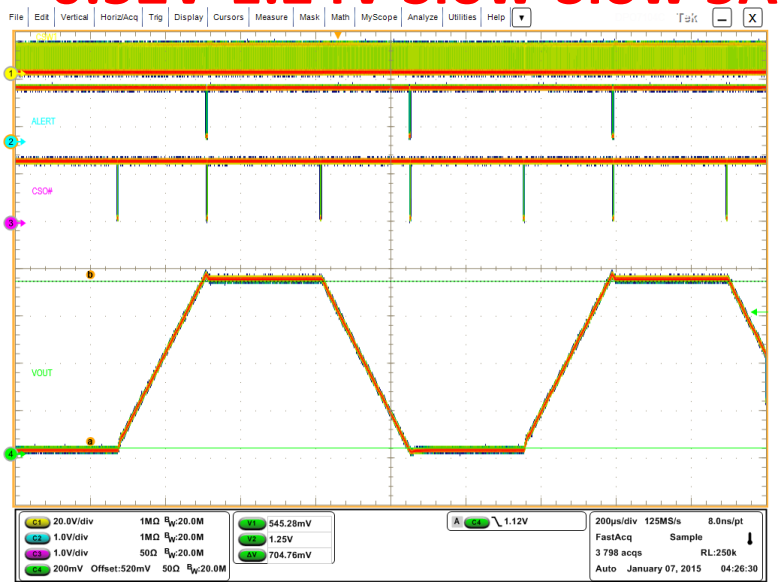


Droop: 13mV



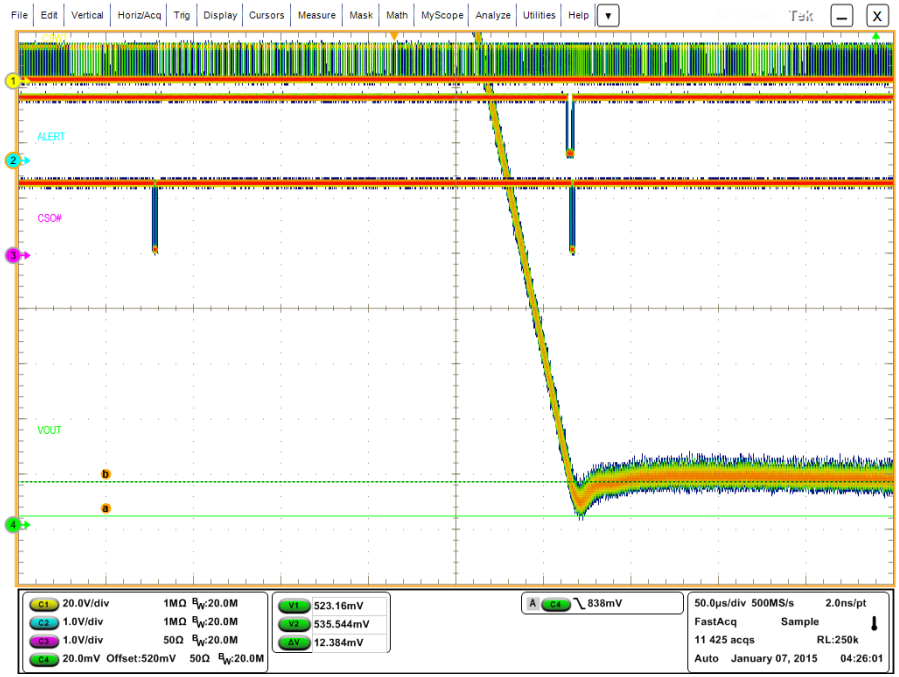
Overshoot: 30mV

Dynamic VID
0.52V-1.24V Slow-Slow 5A load

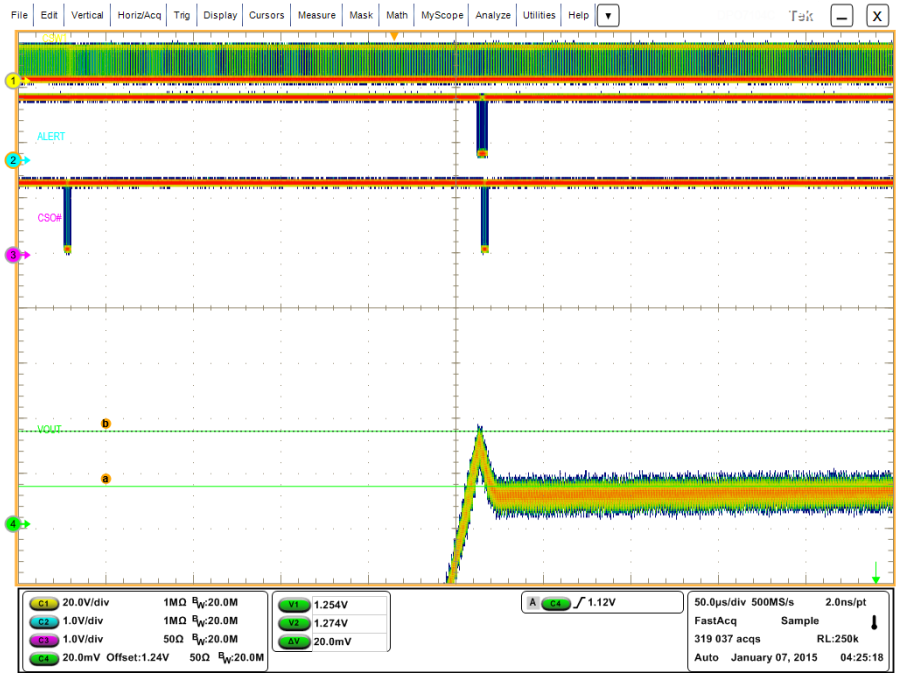


Fall Slew rate: 3.1 mV/us

Rise Slew rate: 3.14mV/us

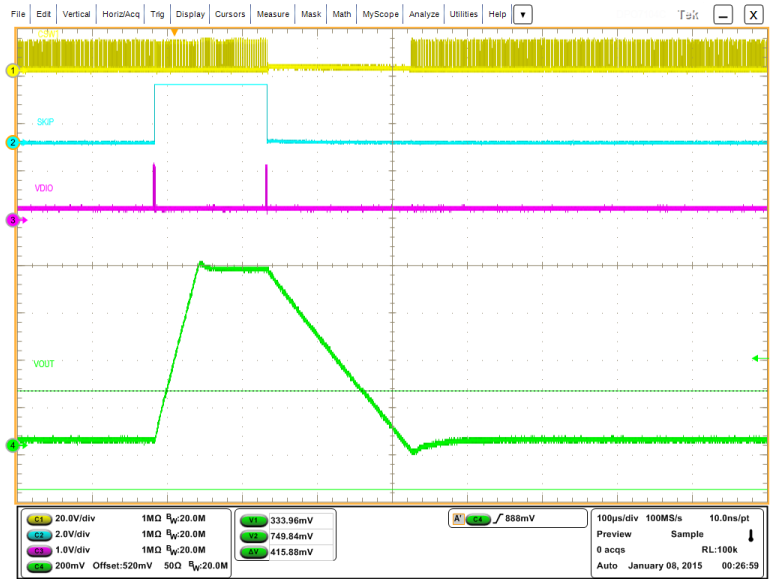


Droop: 12.4mV

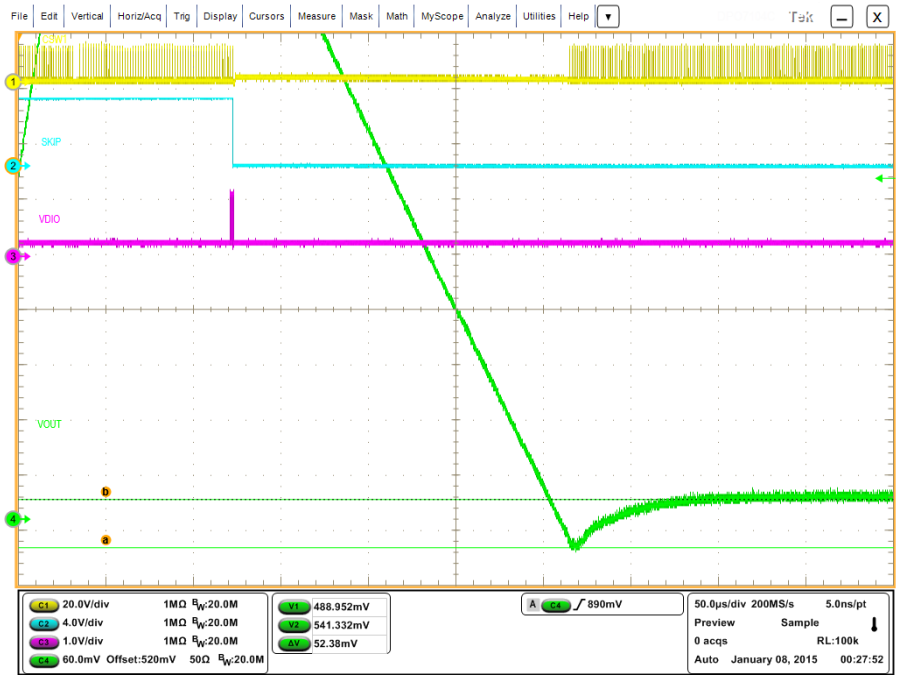


Overshoot: 20mV

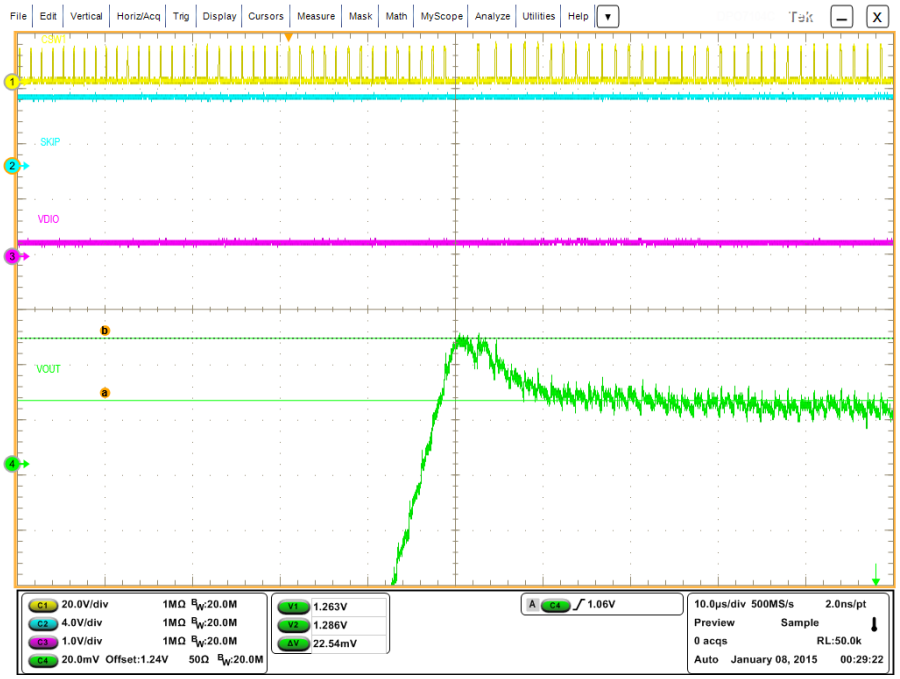
Dynamic VID
0.52V-1.24V Fast-Decay 5A load



Decay Fall Slew rate: 4 mV/us

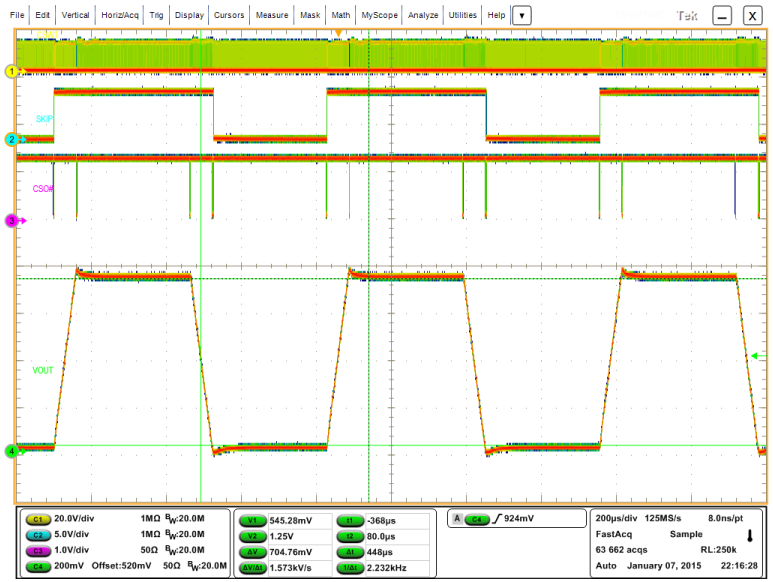


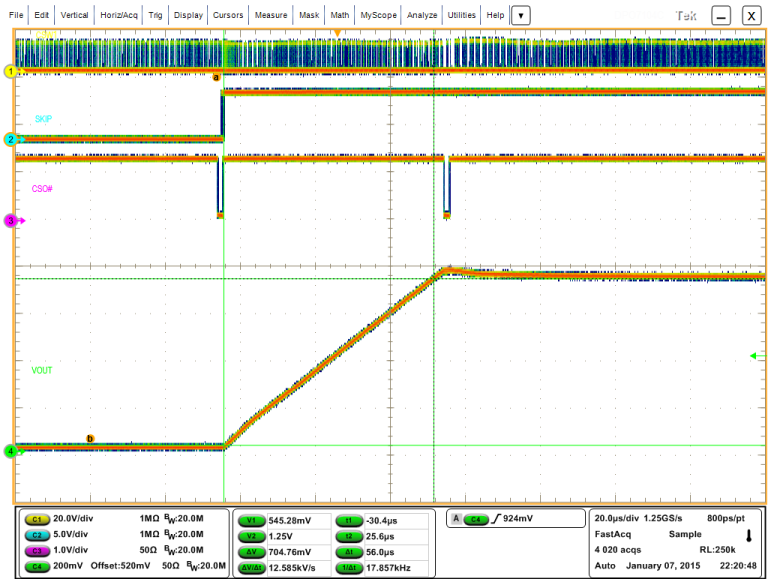
Droop: 52mV

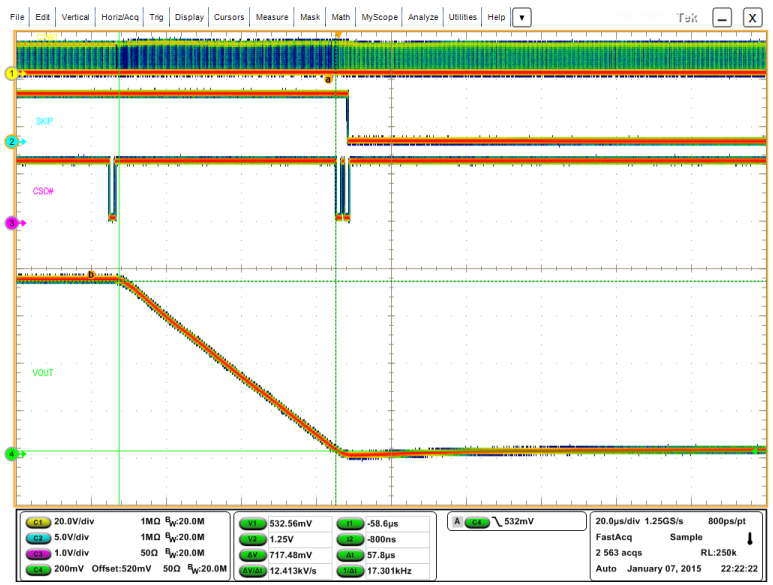


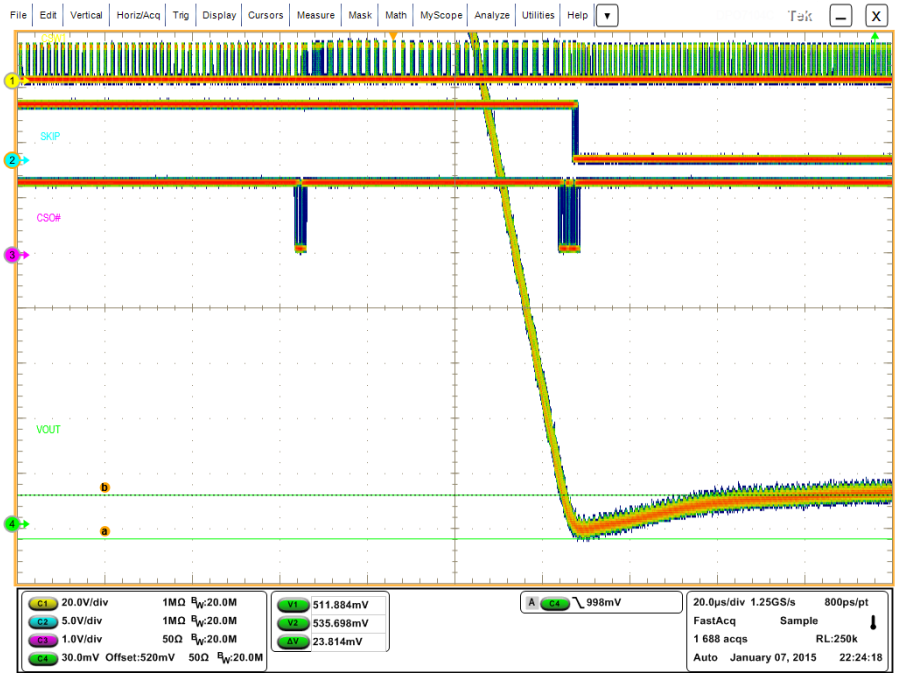
Overshoot: 22mV

Dynamic VID
0.52V-1.24V PS0-PS2 5A load

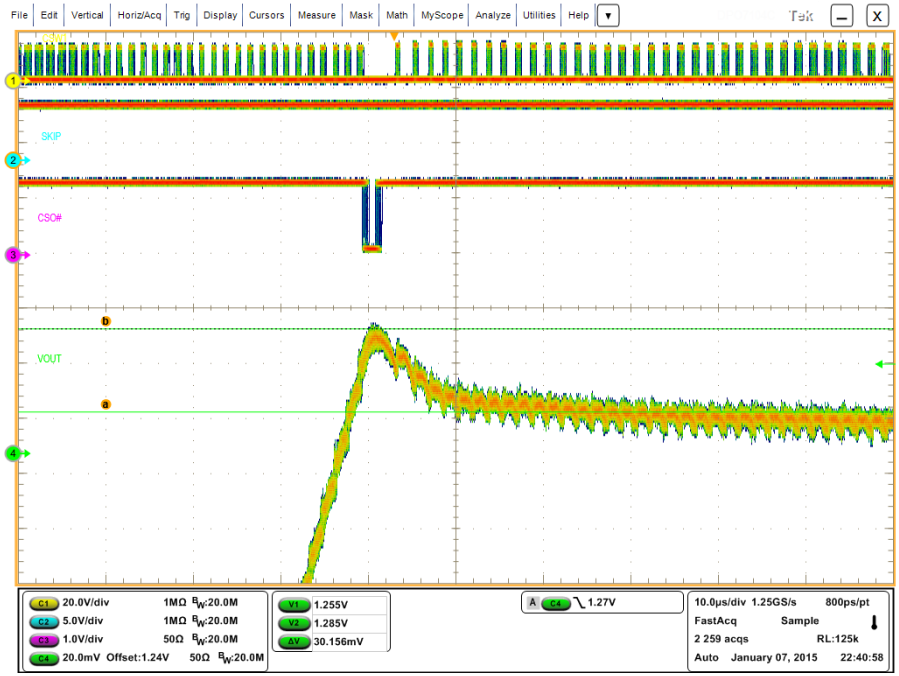






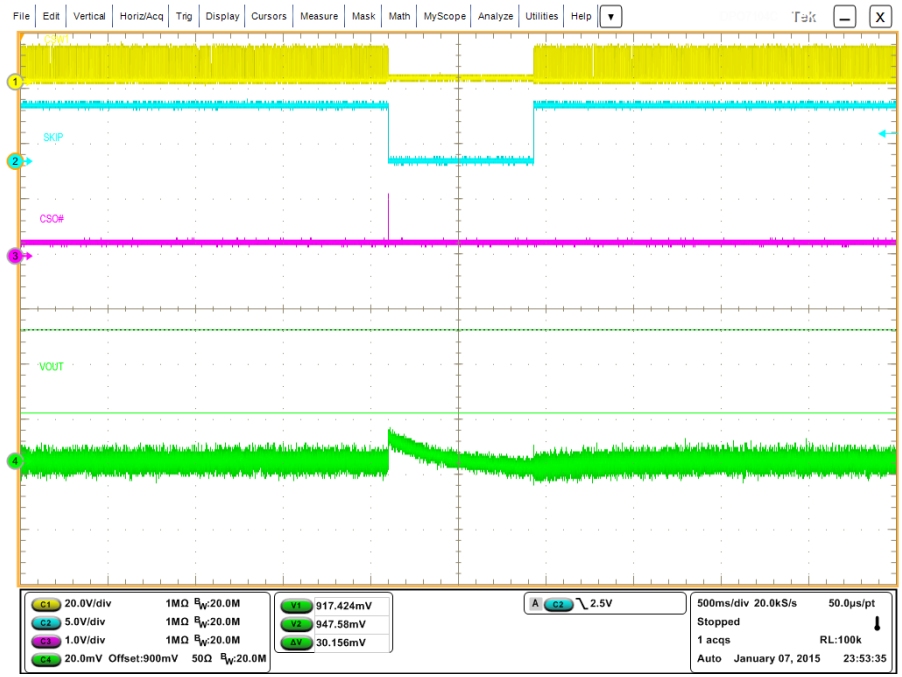


Droop: 24mV

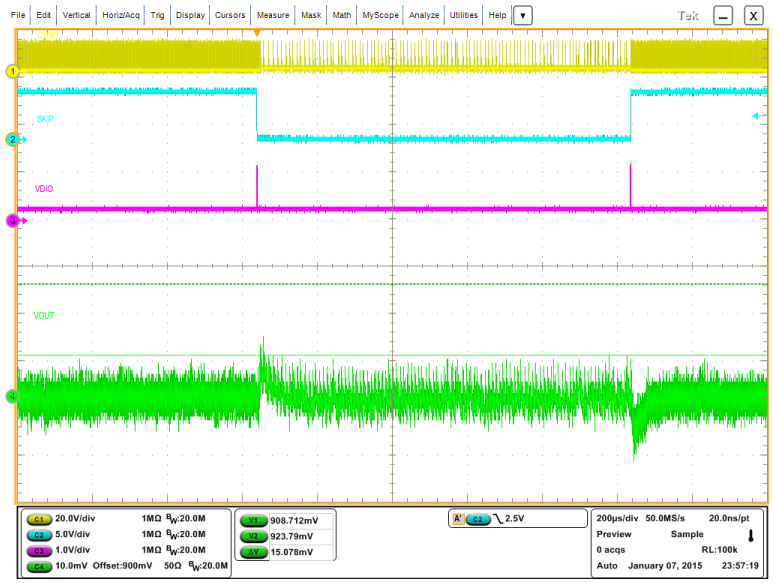


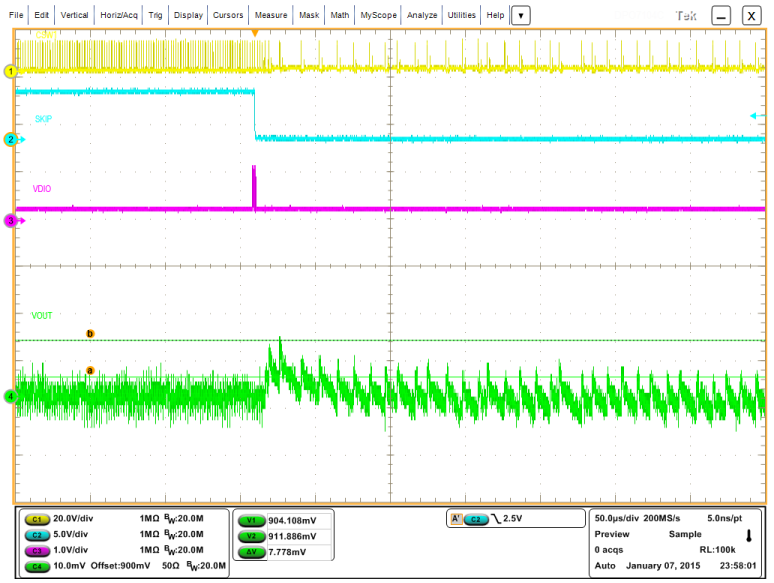
Overshoot: 30mV

PS transition
PS0-PS2 0A load

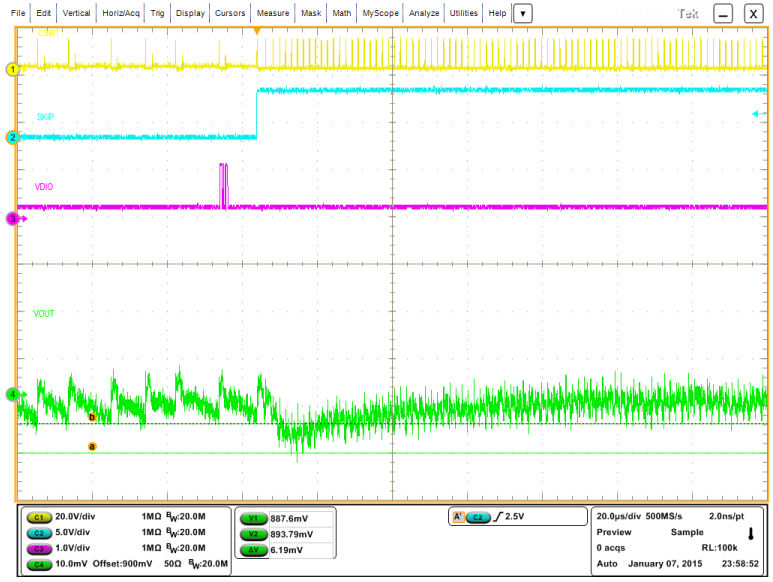


PS transition
PS0-PS2 0.5A load



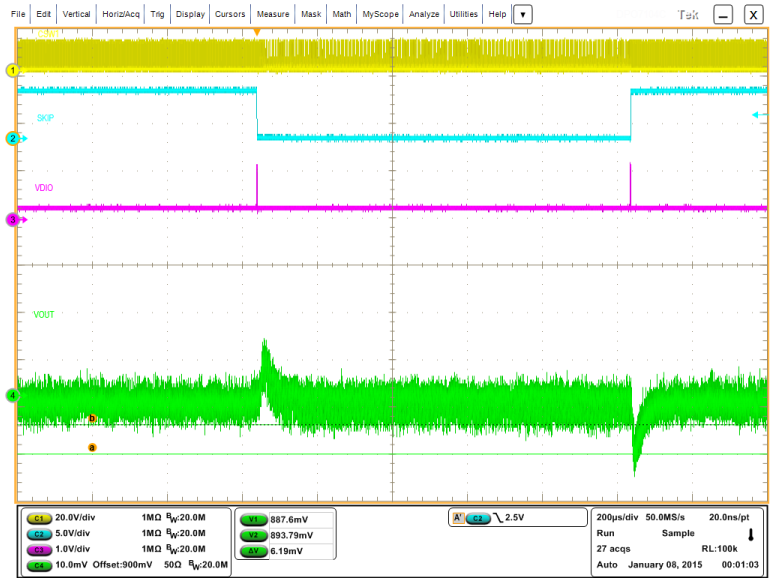


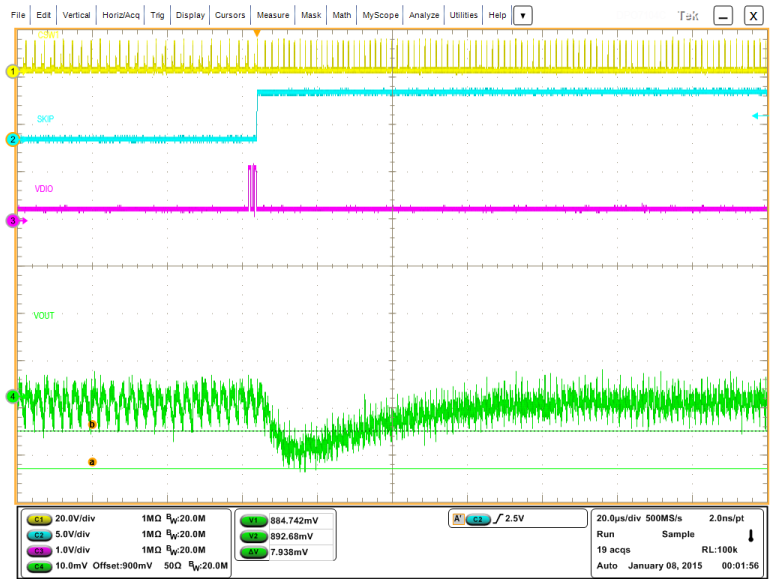
PS0 to PS2 voltage change: 7.8mV

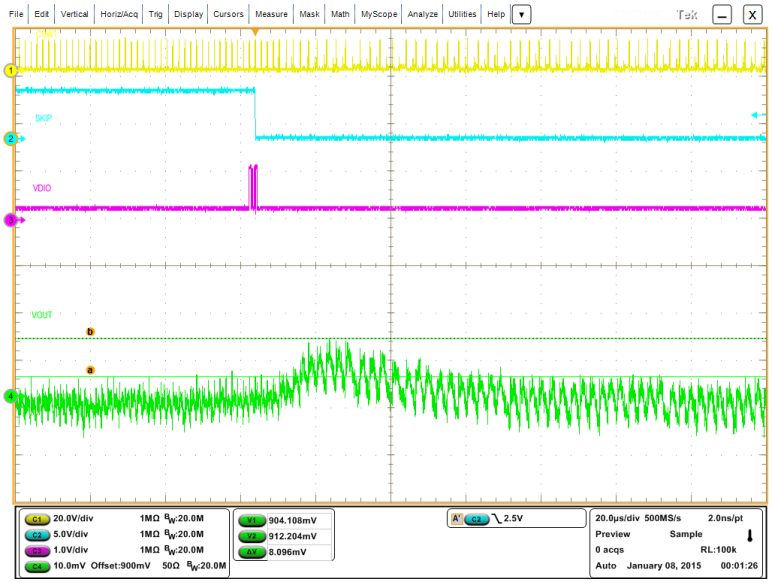


PS2 to PS0 voltage change: 6.2mV

PS transition
PS0-PS2 2A load



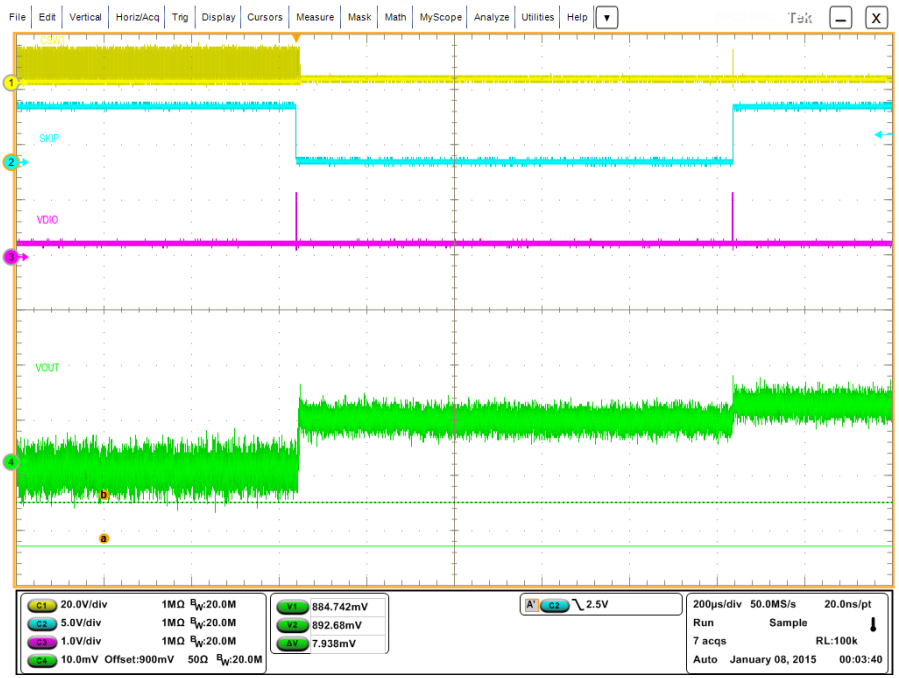


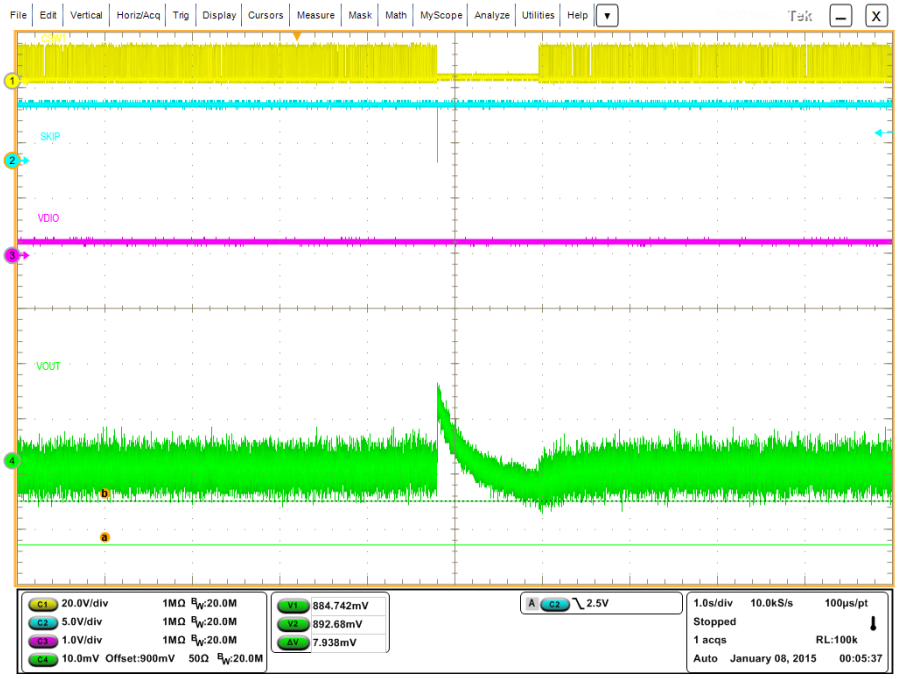


PS0 to PS2 voltage change: 8mV

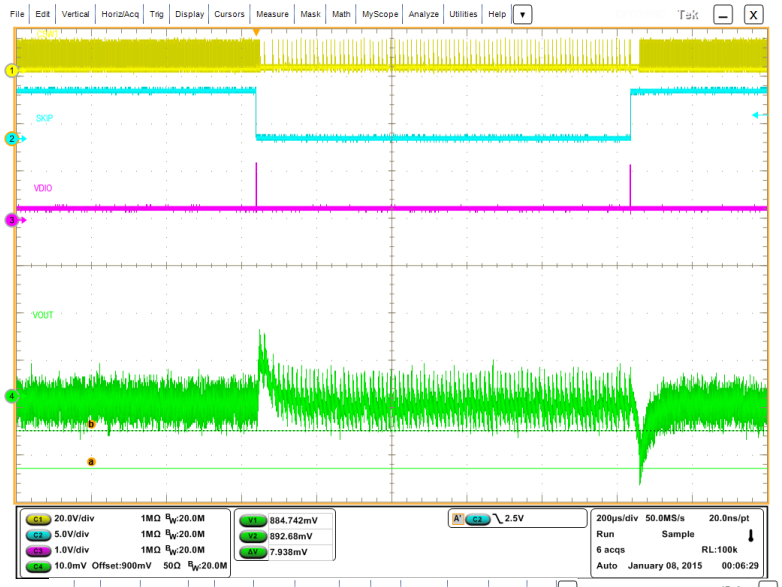
PS0 to PS2 voltage change: 7.9mV

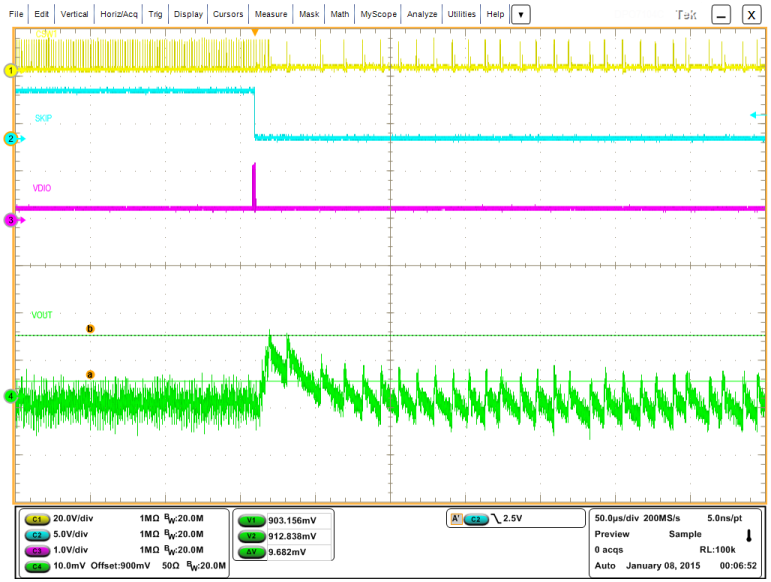
PS transition
PS0-PS3 0A load



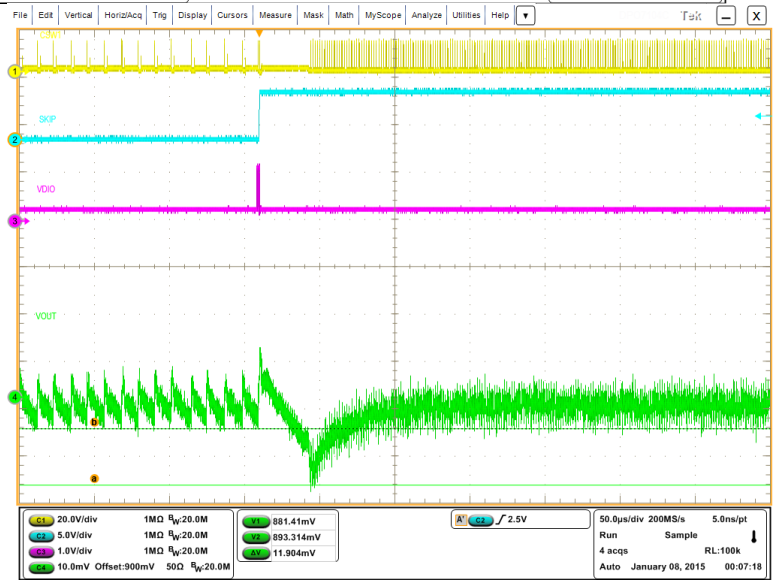


PS transition
PS0-PS3 0.5A load



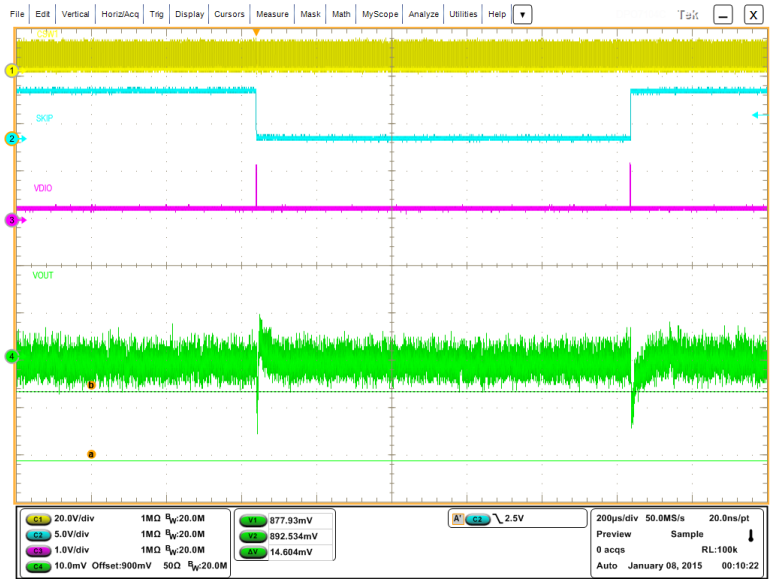


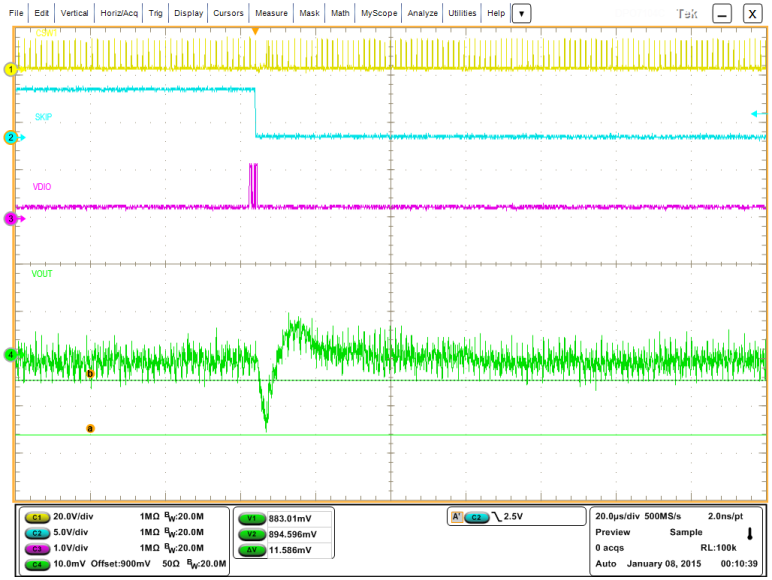
PS0 to PS3 voltage change: 9.7mV



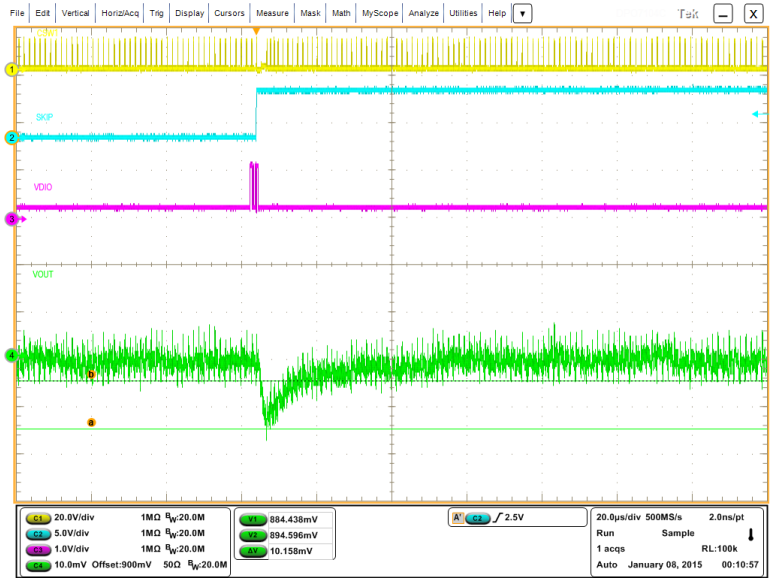
PS3 to PS0 voltage change: 11.9mV

PS transition
PS0-PS3 5A load



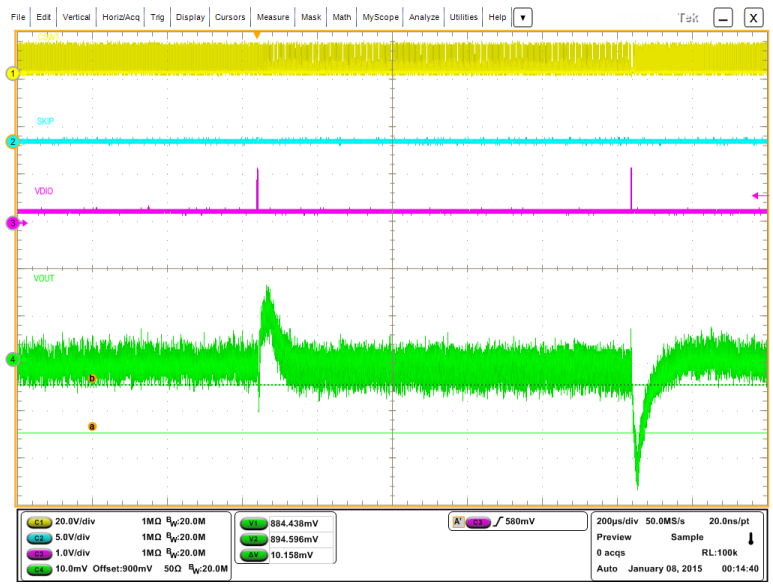


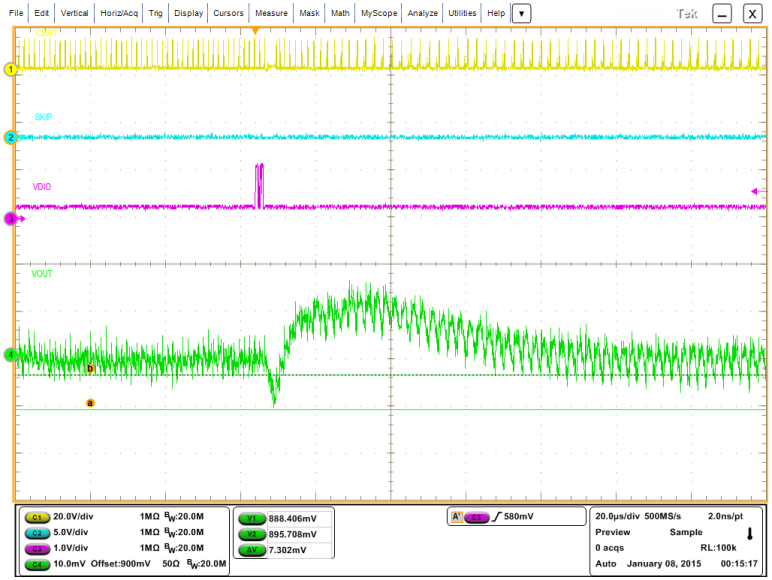
PS0 to PS3 voltage change: 11.6mV

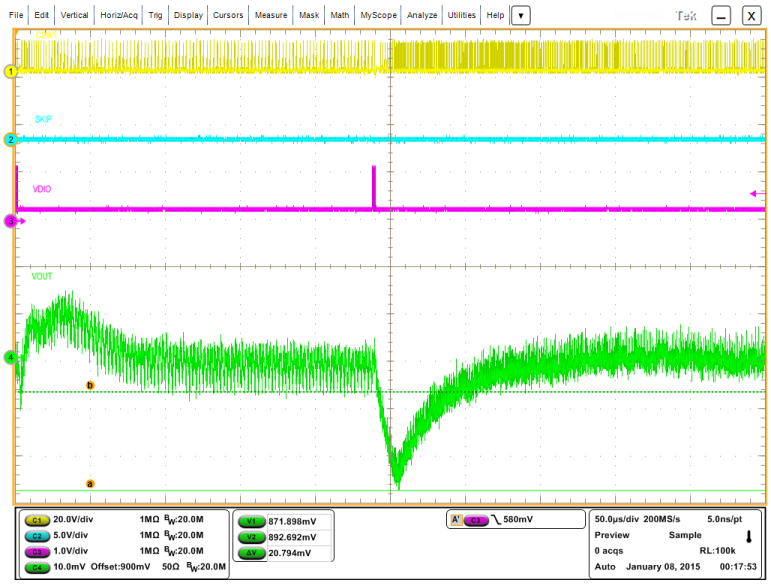


PS3 to PS0 voltage change: 10.1mV

PS transition
PS2-PS3 2.5A load







PS2 to PS3 voltage change: 7.3mV

PS3 to PS2 voltage change: 20mV

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