

TIDA-00572

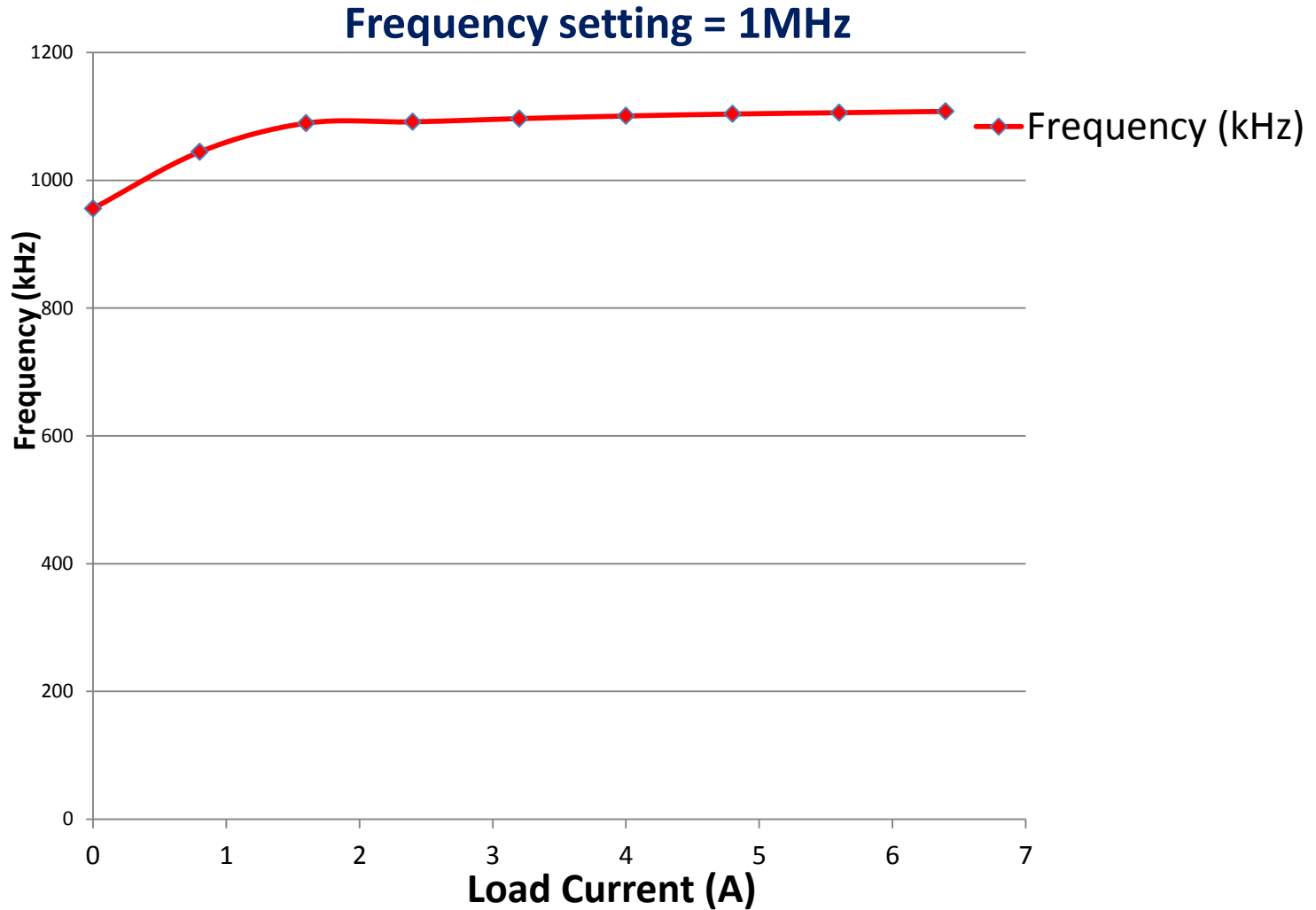
Test Report

TPS51623 Intel[®] Pentium[™] N3700
VCC0+VCC1 rail design

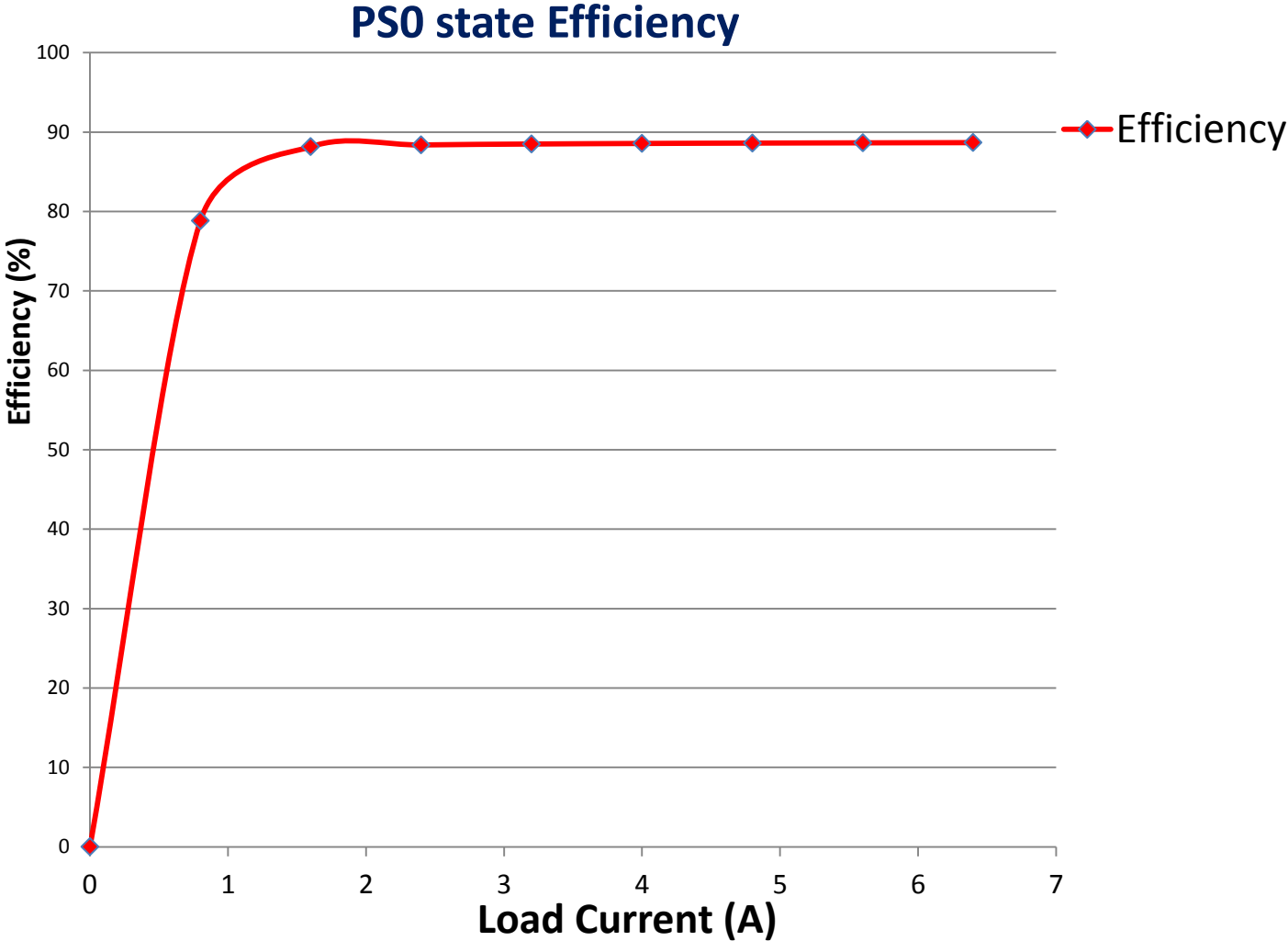
PVCCP- Configuration

- 1-phase mode
- MOSFET: TI Power Stage: CSD97374Q4M
- Inductor: 0.67uH,3.6mohm
- Output Capacitor:
 - Ceramic: 30x22uF
- Max VCC0+VCC1 Current: 6.4A
- Frequency: 1MHz
- Zero Load-line
- Ramp 100mV
- OSR disabled
- Slew Rate: 10mV/us

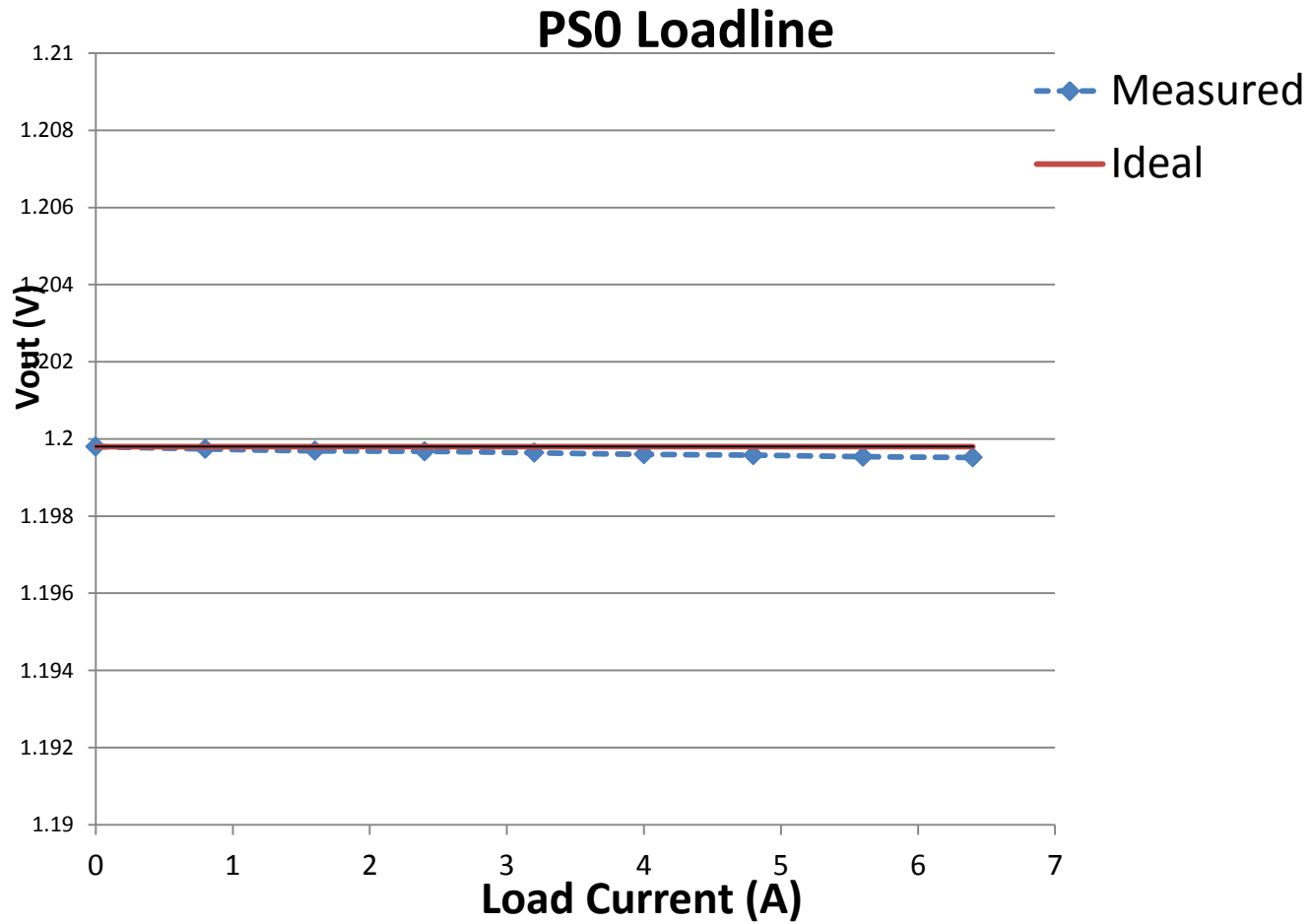
Frequency Variation



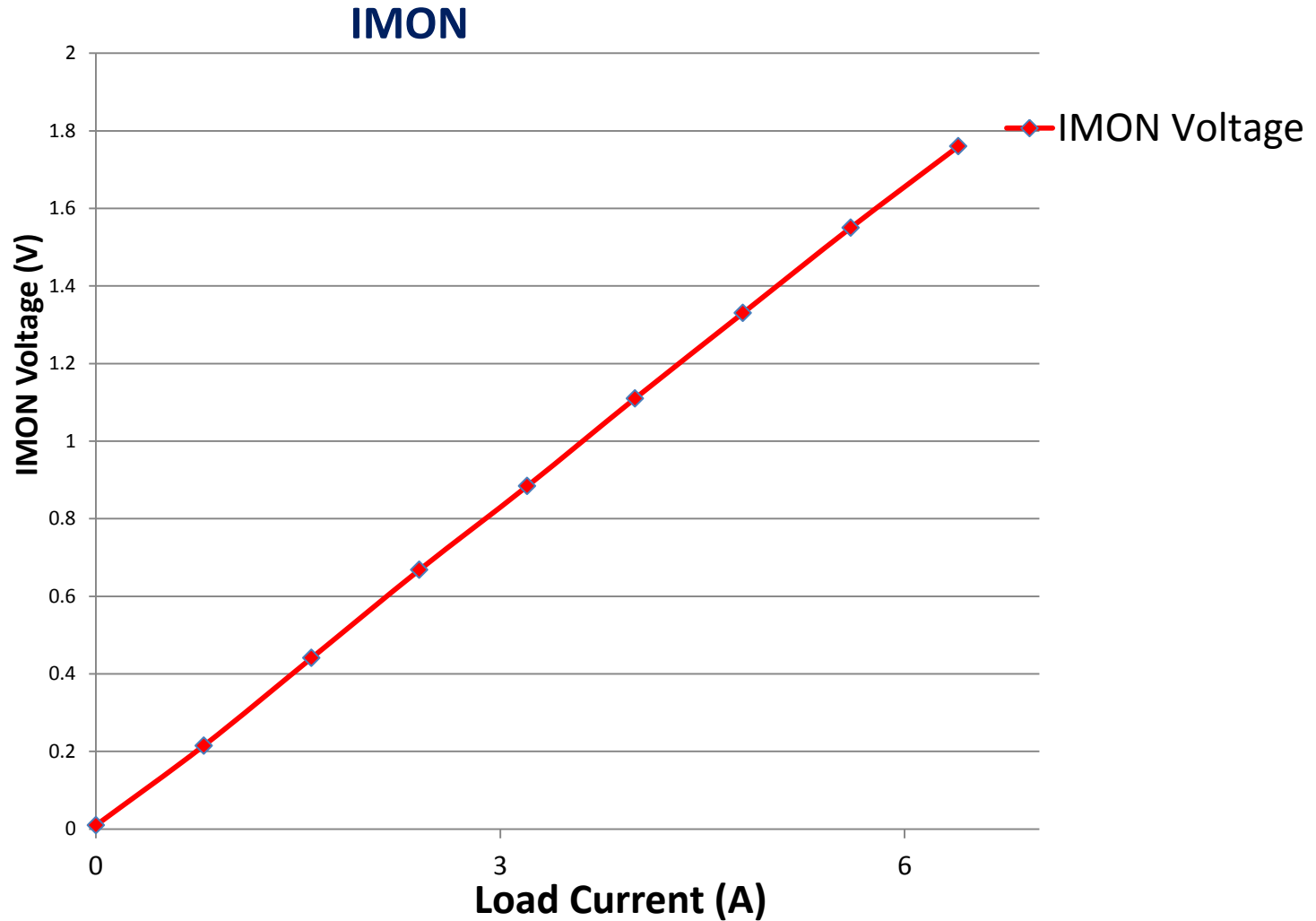
PSO Efficiency



Loadline

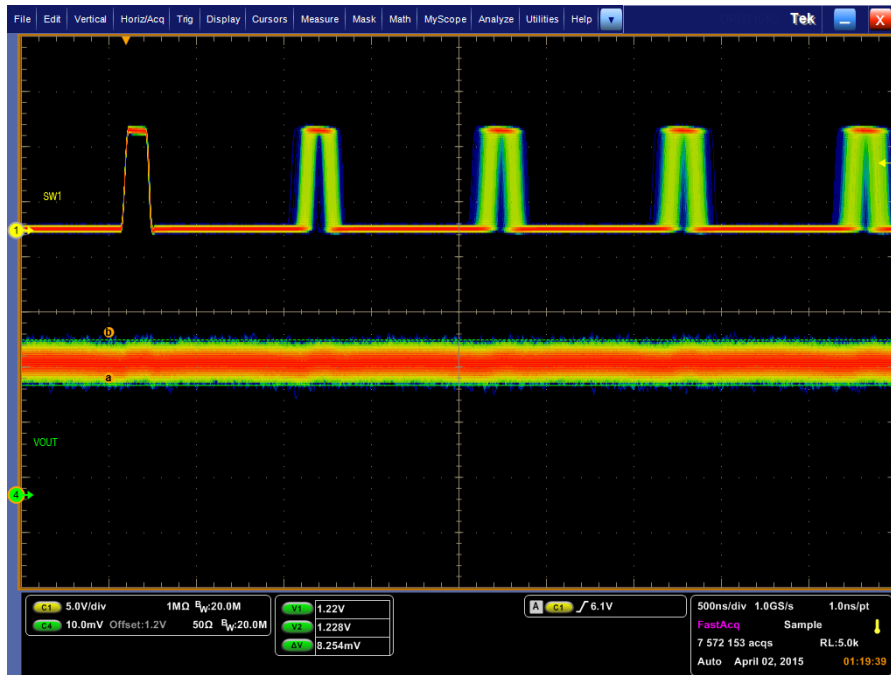


Analog Current Monitor Output (IMON)

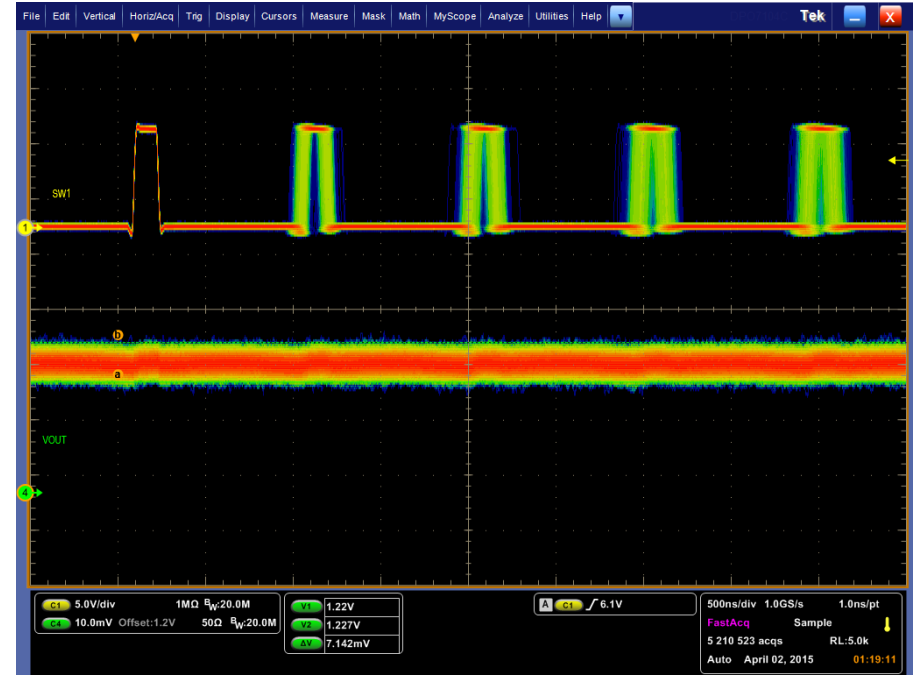


Ripple and jitter (PS0 state, limit +/-10mV)

Vin 9V

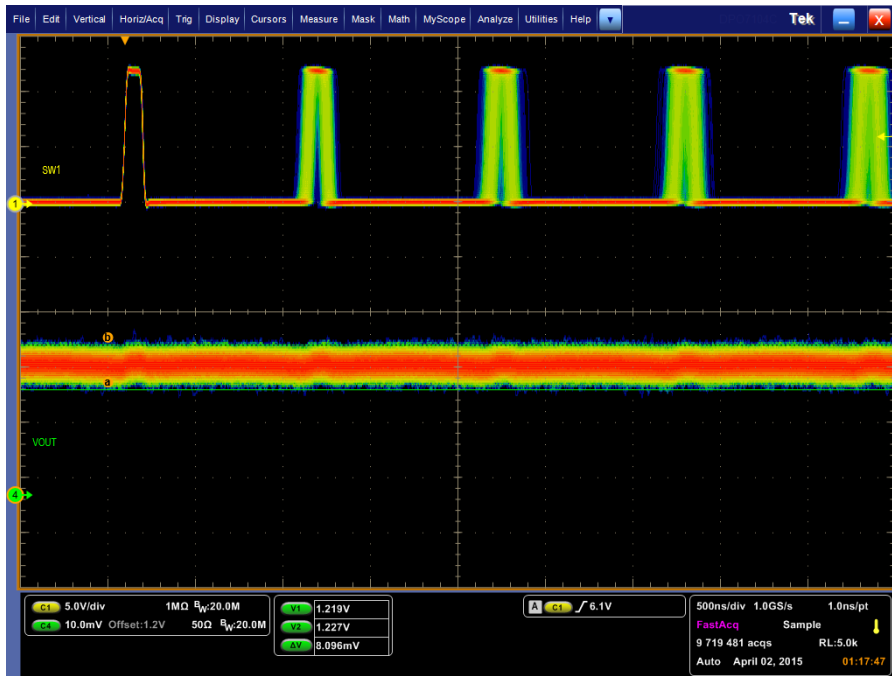


Load 0A
Ripple(pk-pk): 8mV

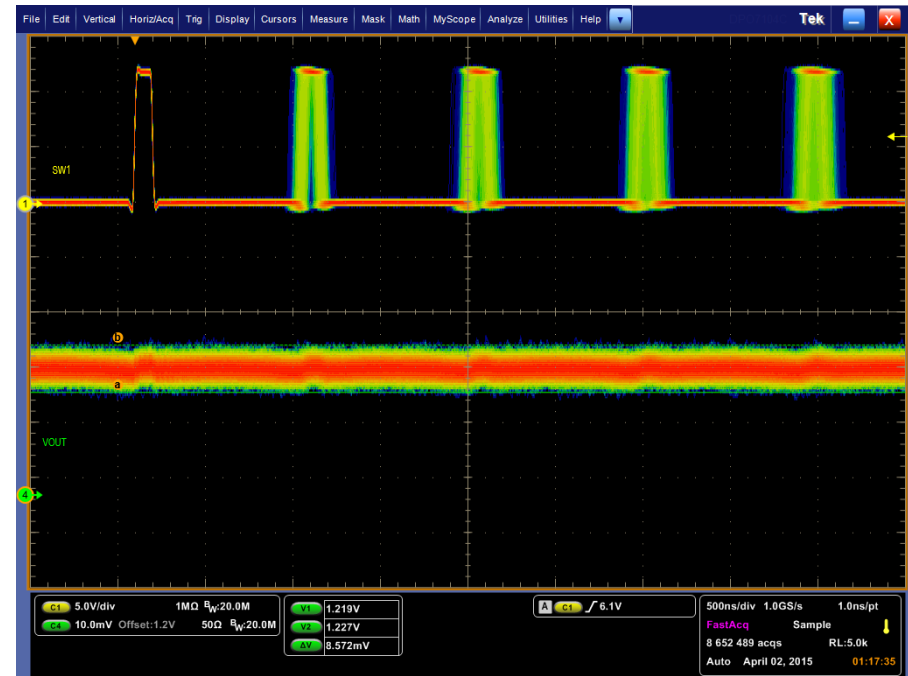


Load 6A
Ripple(pk-pk): 7.1mV

Ripple and jitter (PS0 state, limit: +/- 10mV) Vin 12V

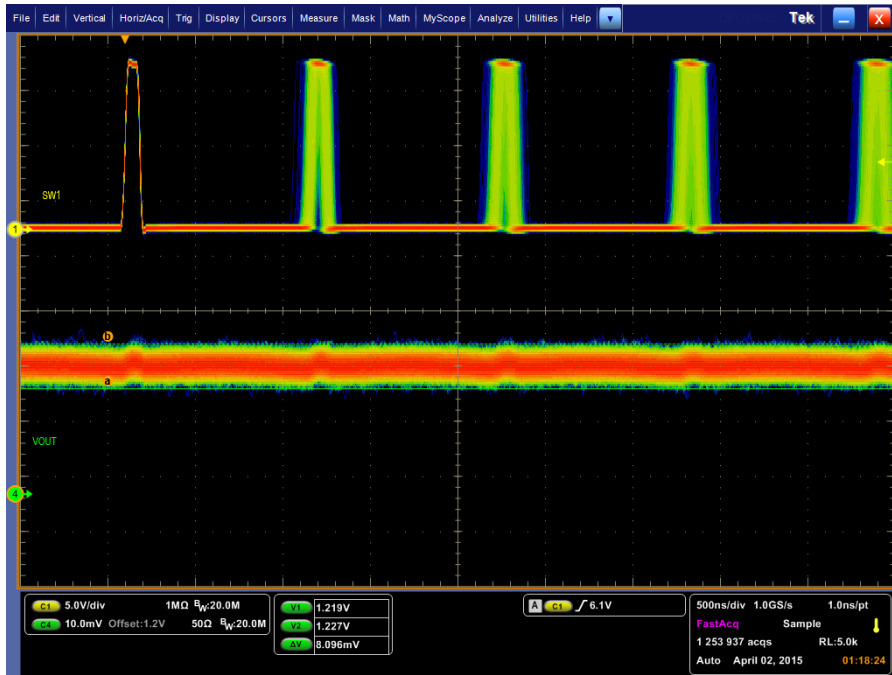


Load 0A
Ripple(pk-pk): 8mV

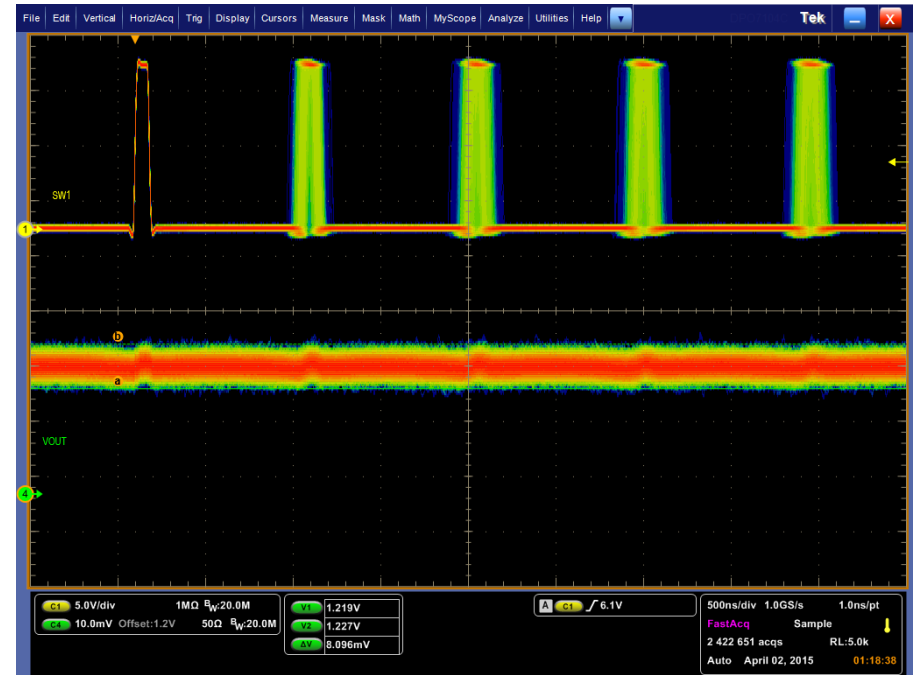


Load 6A
Ripple(pk-pk): 8mV

Ripple and jitter (PS0 state, limit: +/- 10mV) Vin 15V

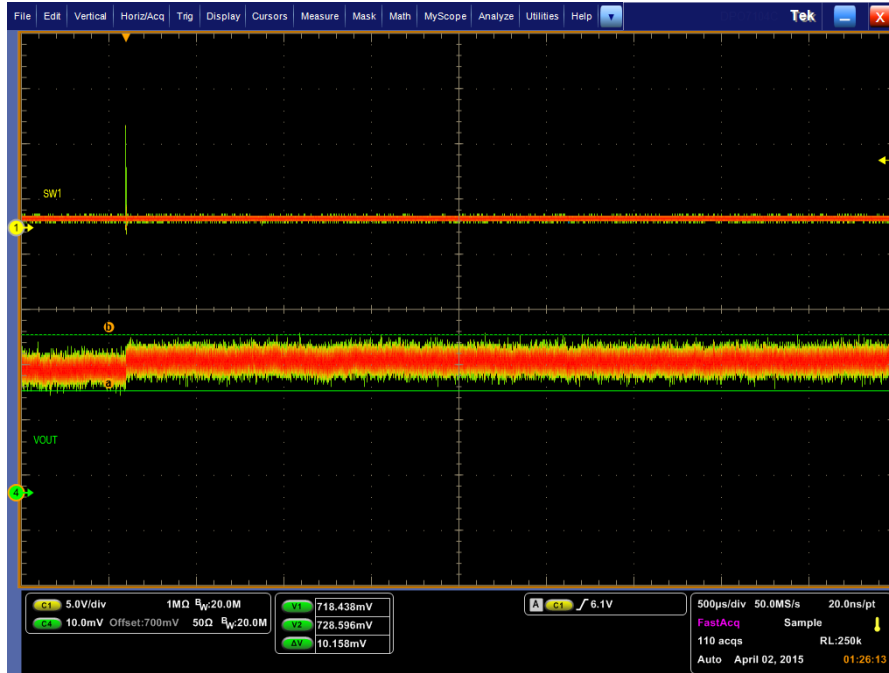


Load 0A
Ripple(pk-pk): 8mV

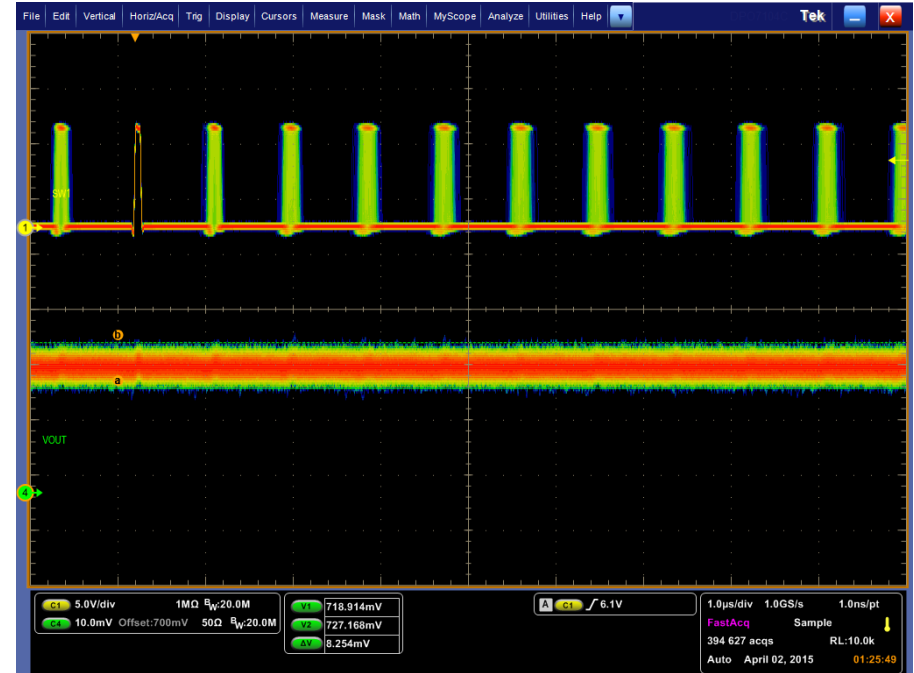


Load 6A
Ripple(pk-pk): 8mV

Ripple and jitter (PS2 state, limit: +30/-20 mV) Vin 9V

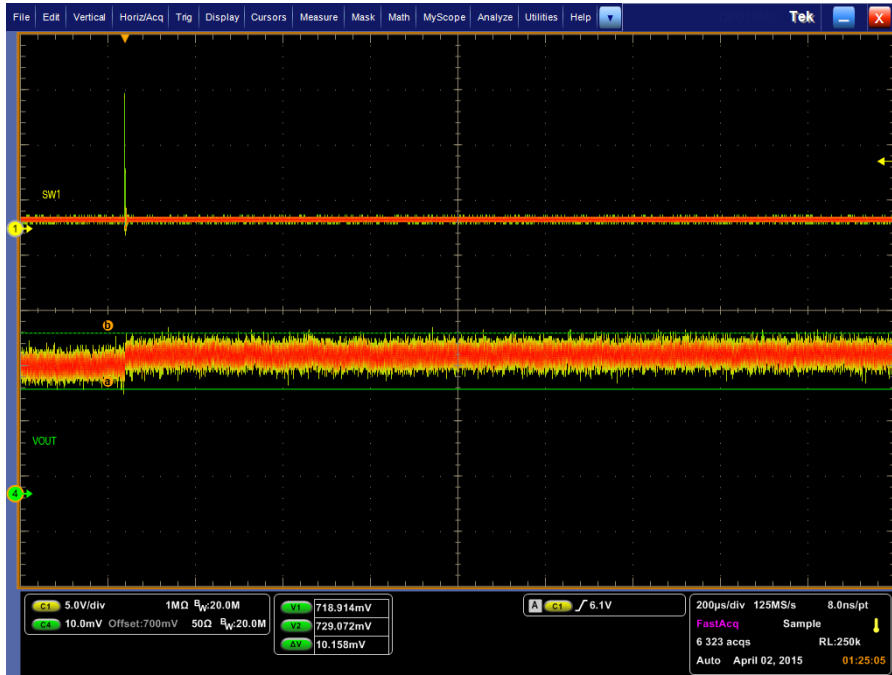


Load 0A
Ripple(pk-pk): 10mV

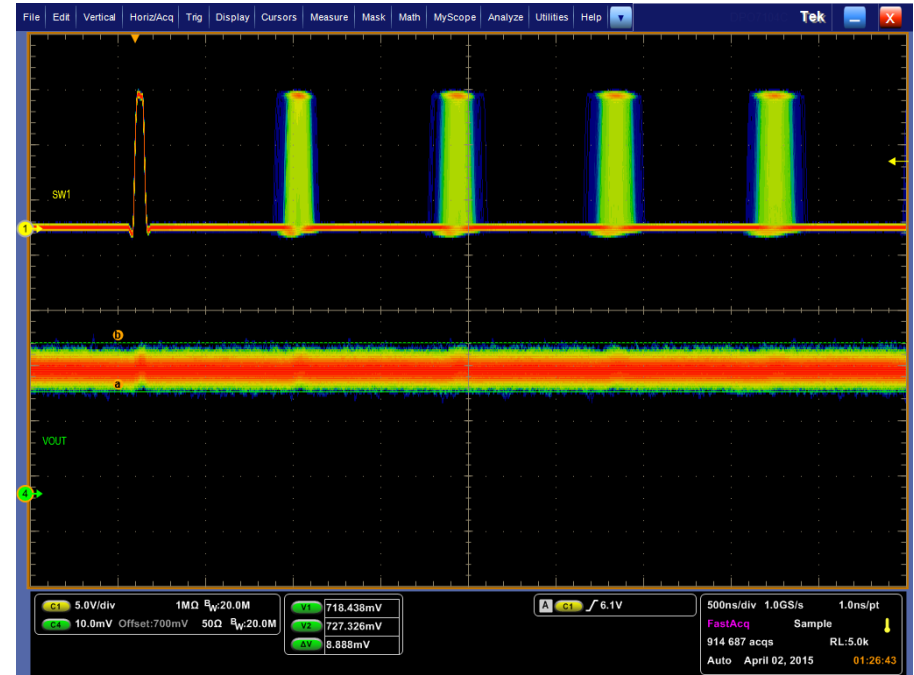


Load 3A
Ripple (pk-pk): 8.3mV

Ripple and jitter (PS2 state, limit: +30/-20 mV) Vin 12V

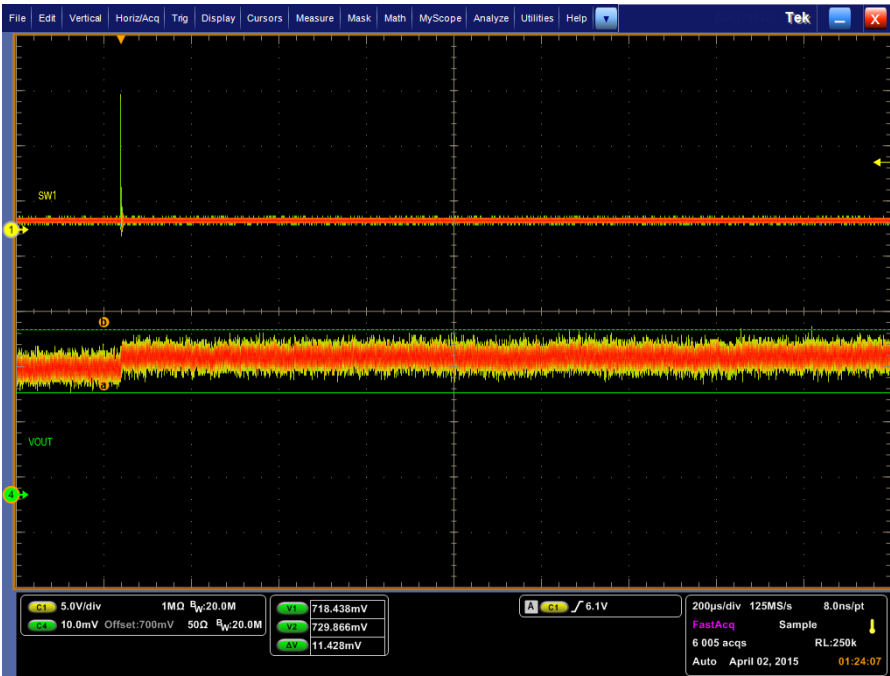


Load 0A
Ripple(pk-pk): 10mV

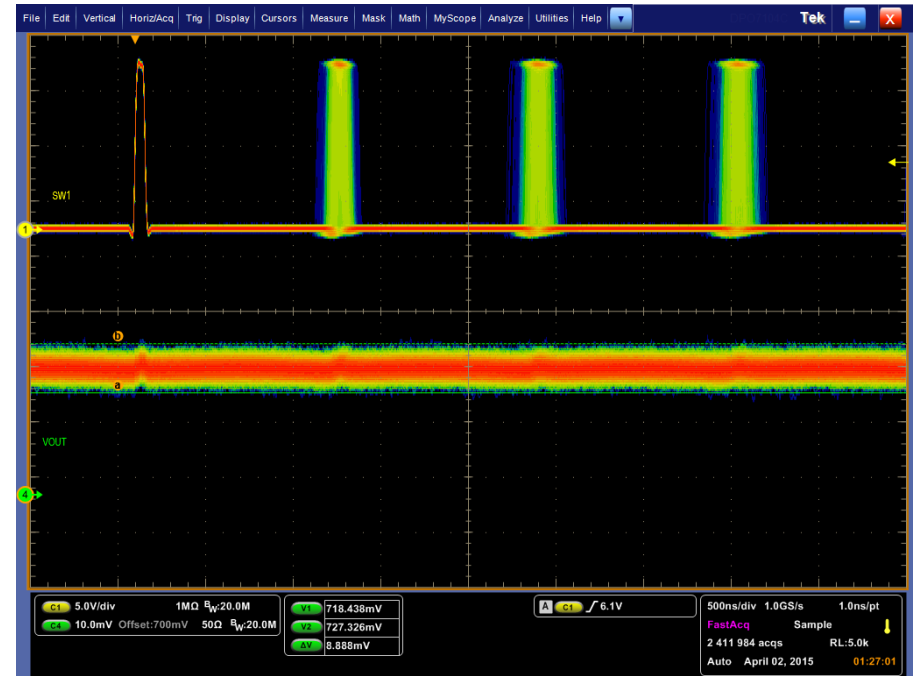


Load 3A
Ripple (pk-pk): 9mV

Ripple and jitter (PS2 state, limit: +30/-20 mV) Vin 15V



Load 0A
Ripple(pk-pk): 11mV



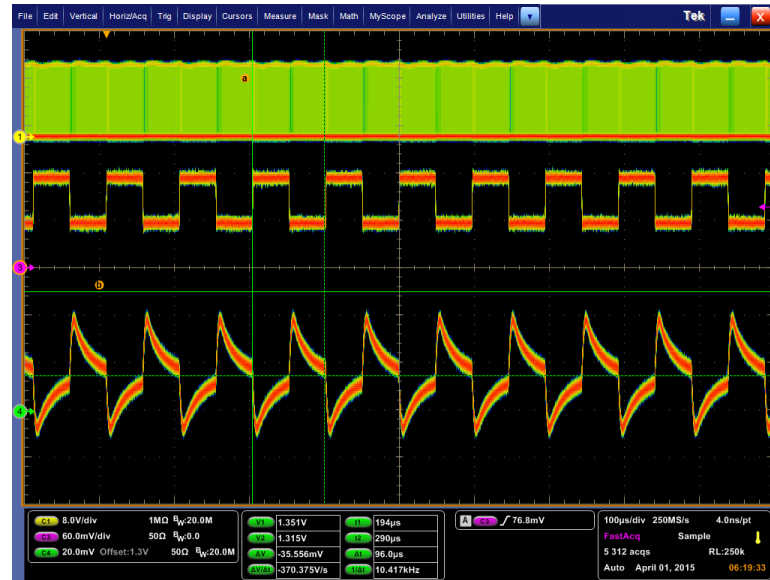
Load 3A
Ripple (pk-pk): 9mV

Load Transient Performance 2A to 6A(Varying load frequency) (PS0 state)- 50% duty cycle

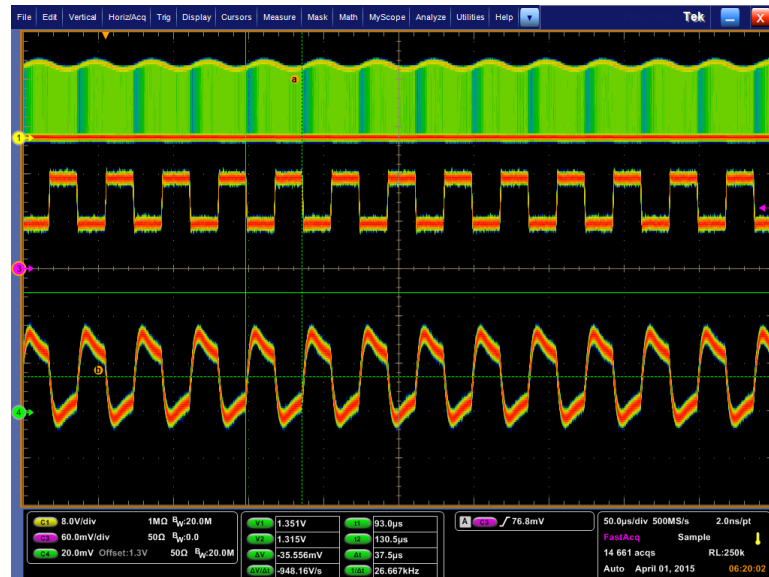
DC and AC ripple guideline: +/-35mV



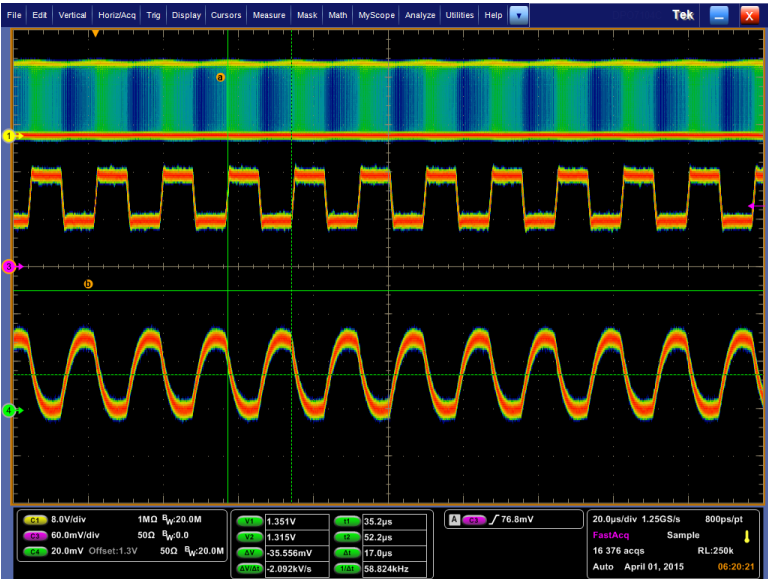
Freq: 1.2kHz



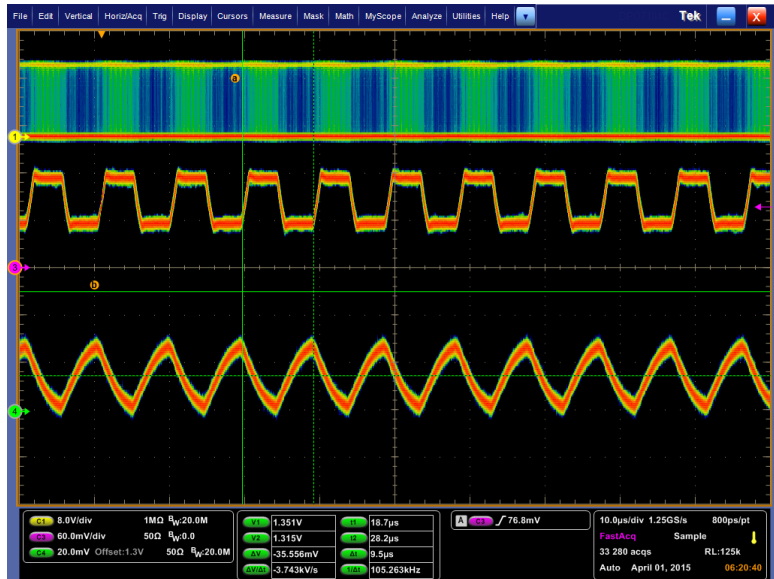
Freq: 10kHz



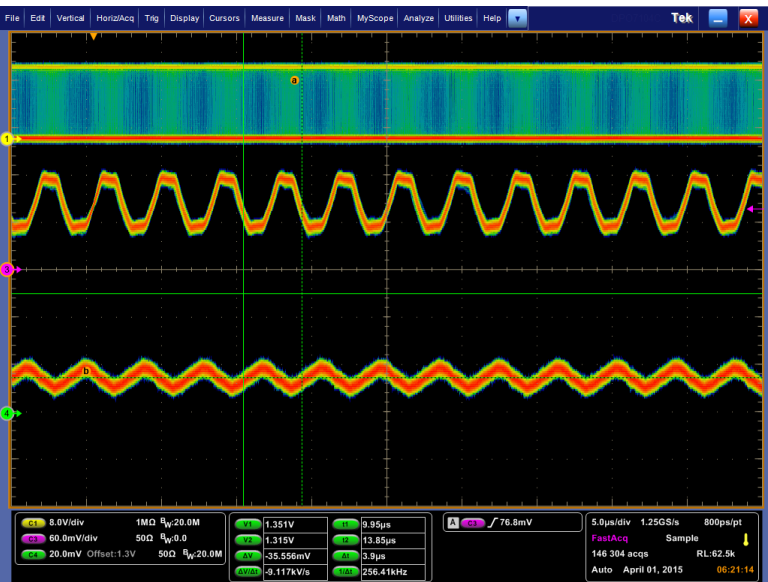
Freq: 26kHz



Freq: 58kHz



Freq: 105kHz



Freq: 256kHz

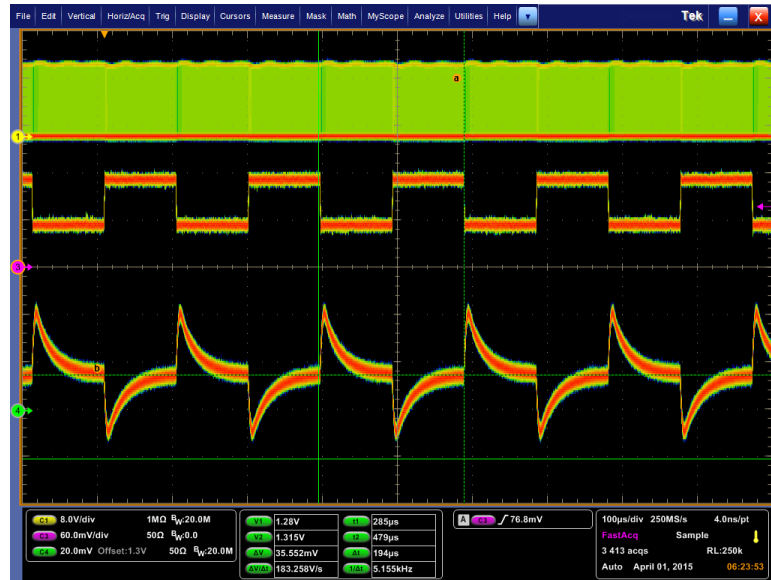


Freq: 450kHz

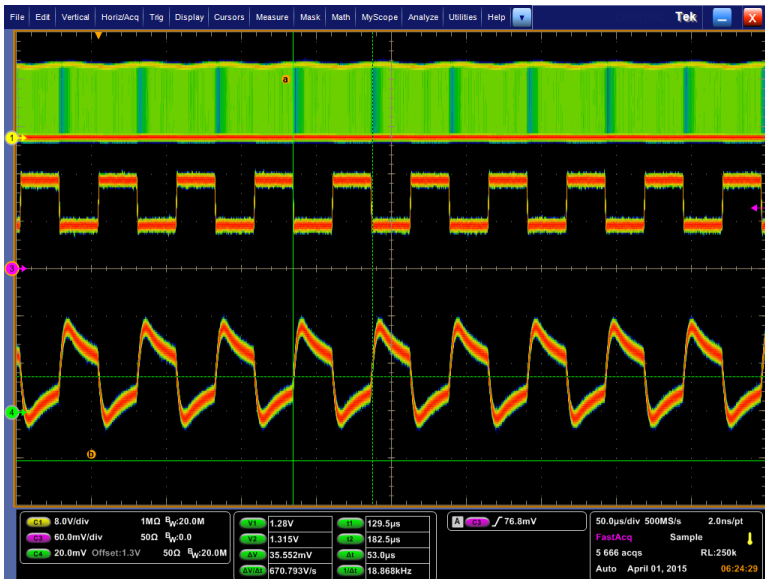
Result: Output Voltage waveform well within the +35 mV line at all frequencies



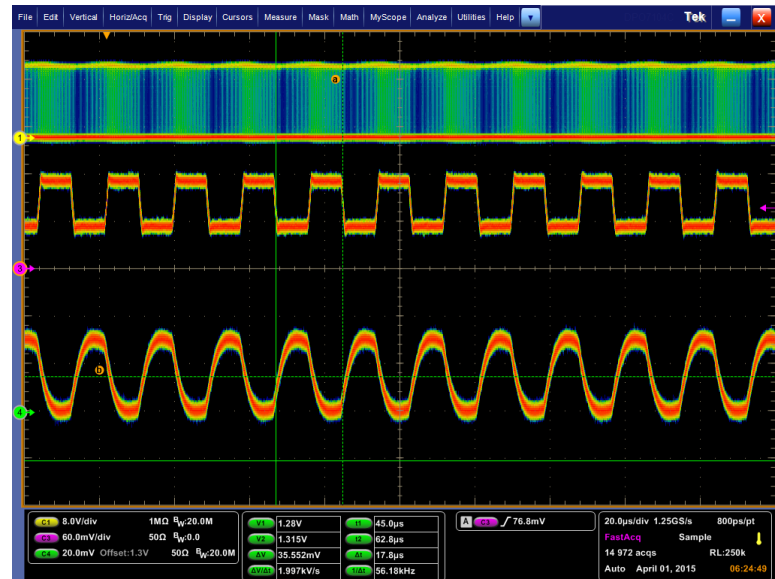
Freq: 507Hz



Freq: 5.1kHz



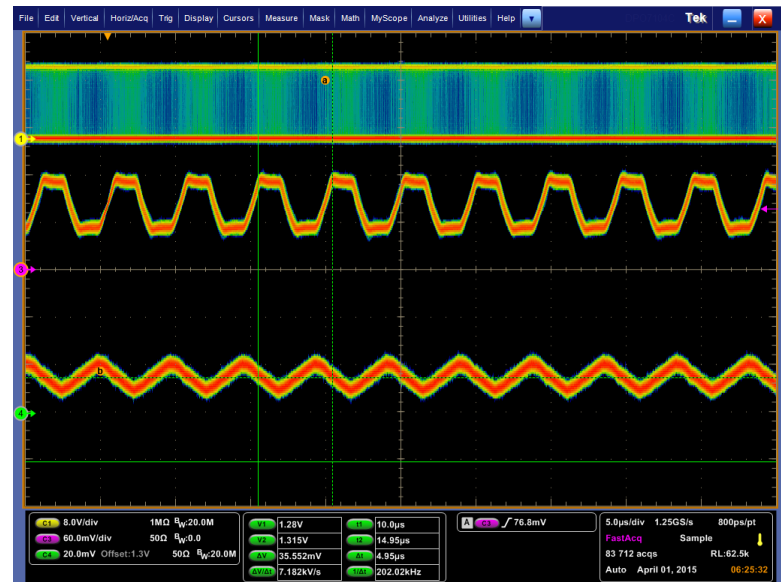
Freq: 19kHz



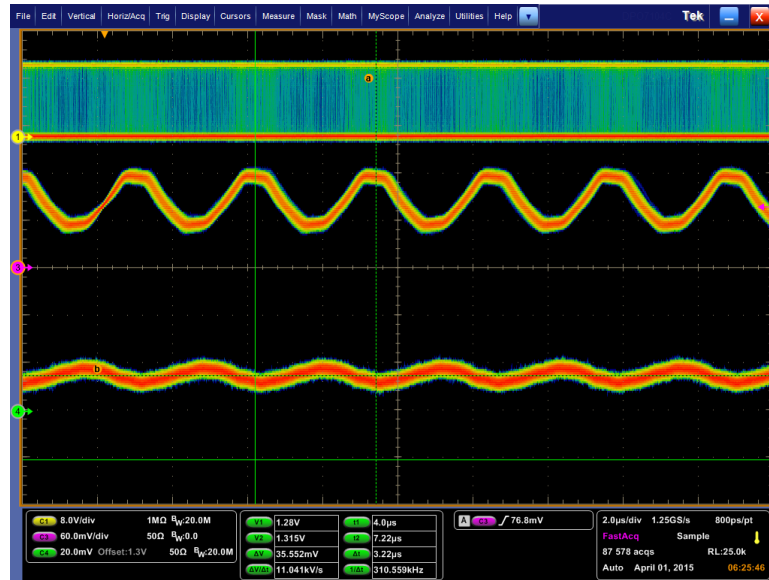
Freq: 56kHz



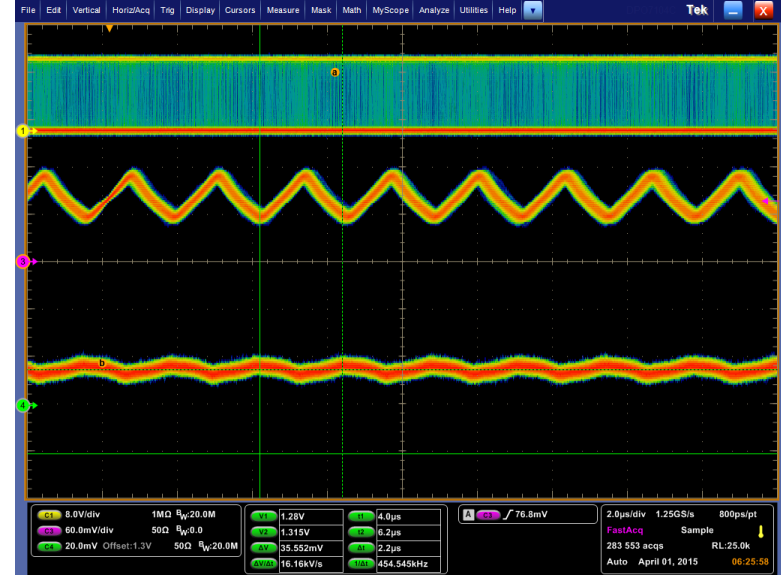
Freq: 100kHz



Freq: 200kHz



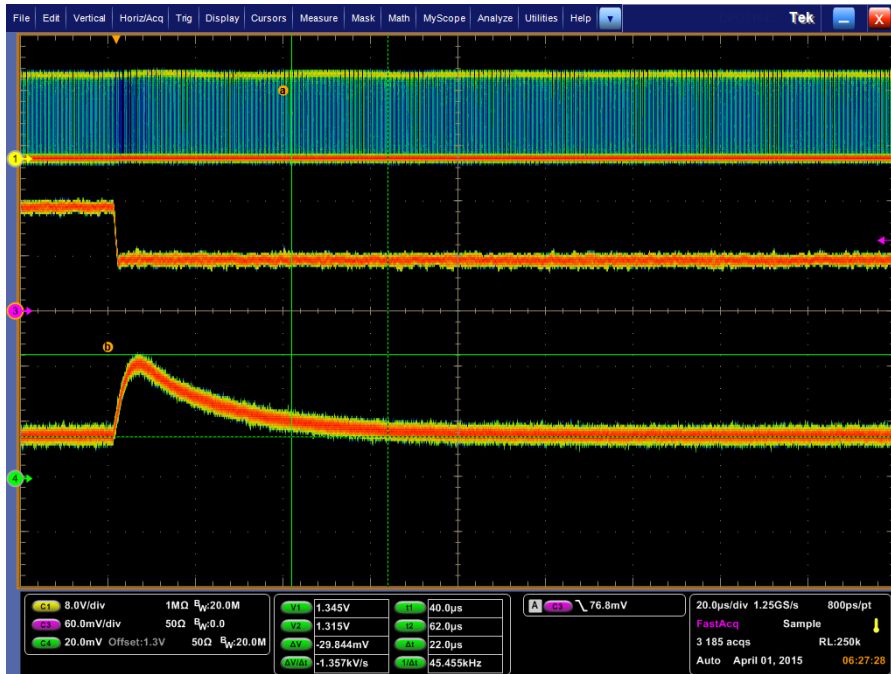
Freq: 310kHz



Freq: 450kHz

Result: Output Voltage waveform well above the -35 mV line at all frequencies

Load transient continued...



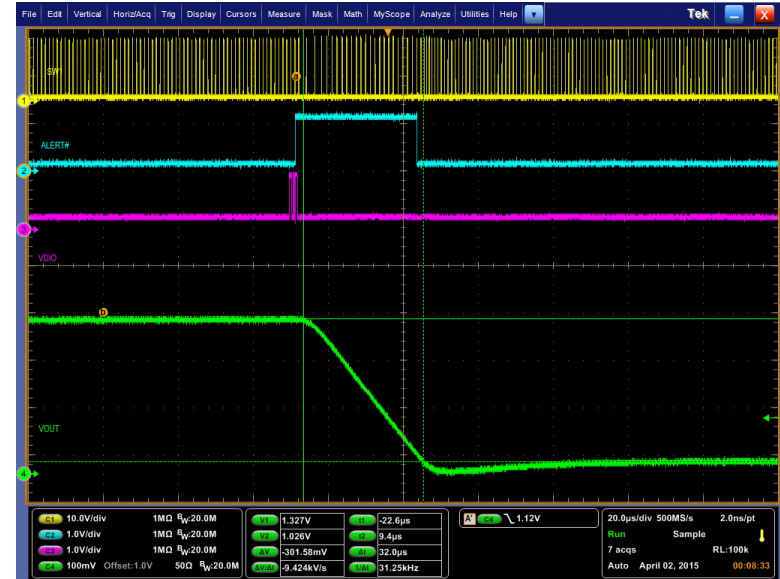
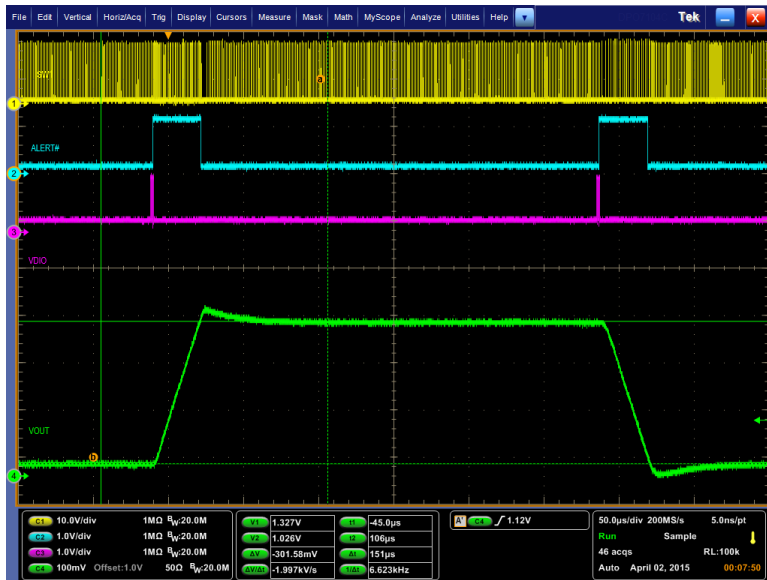
Overshoot waveform



Undershoot waveform

Dynamic VID

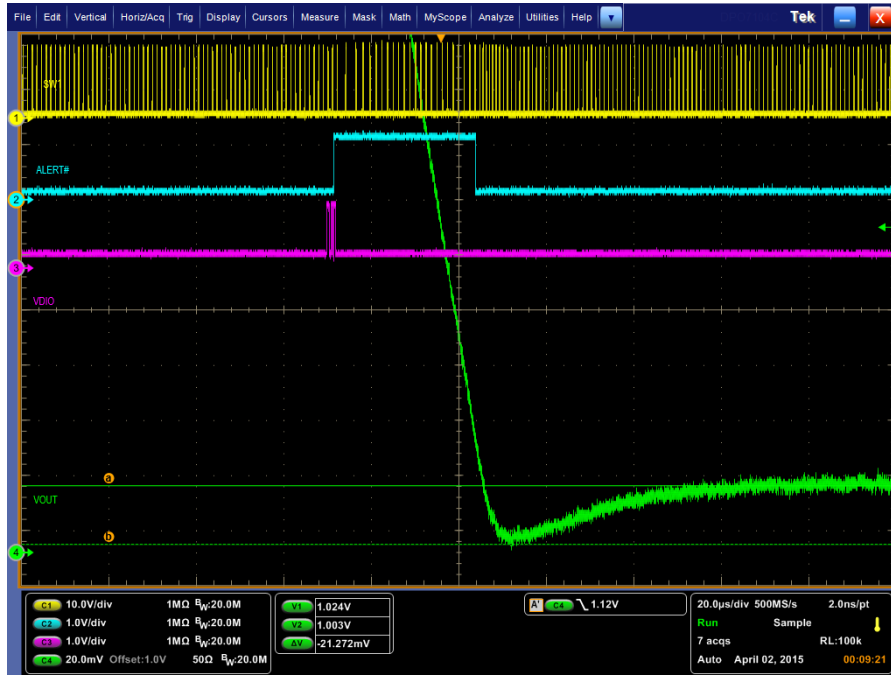
1V-1.3V Fast-Fast 2A load



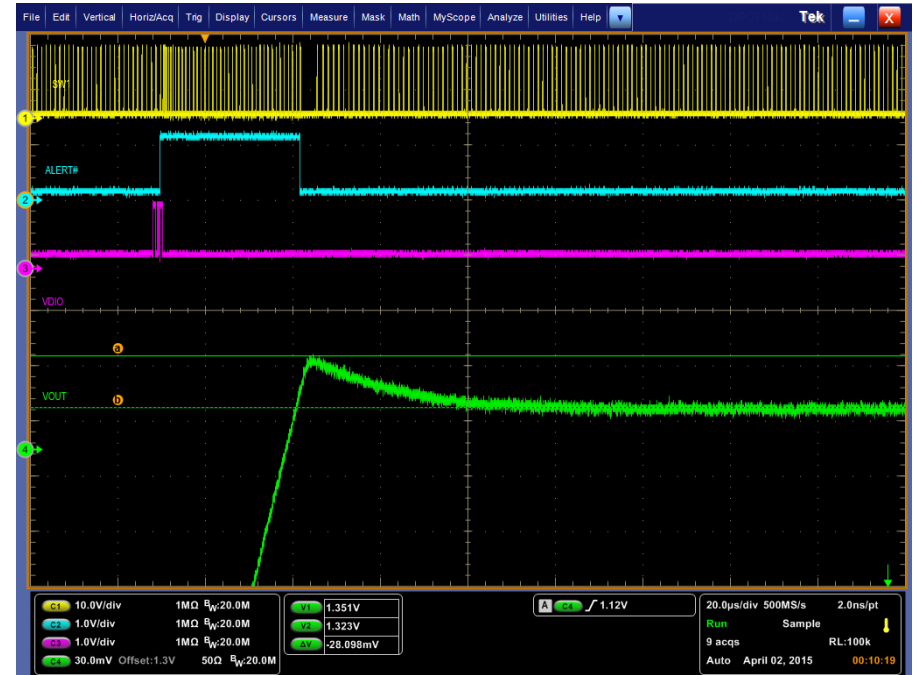
Fall Slew rate: 9.42mV/us

Rise Slew rate: 9.98 mV/us





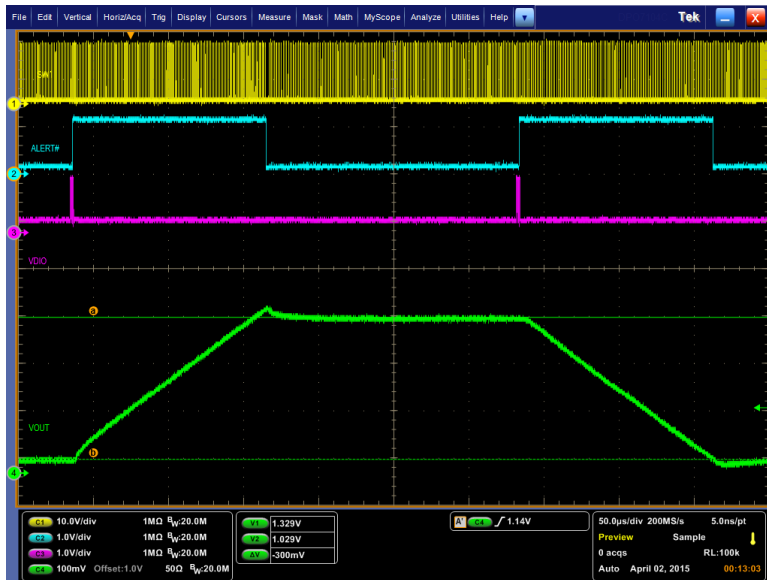
Droop: 21 mV



Overshoot: 28mV

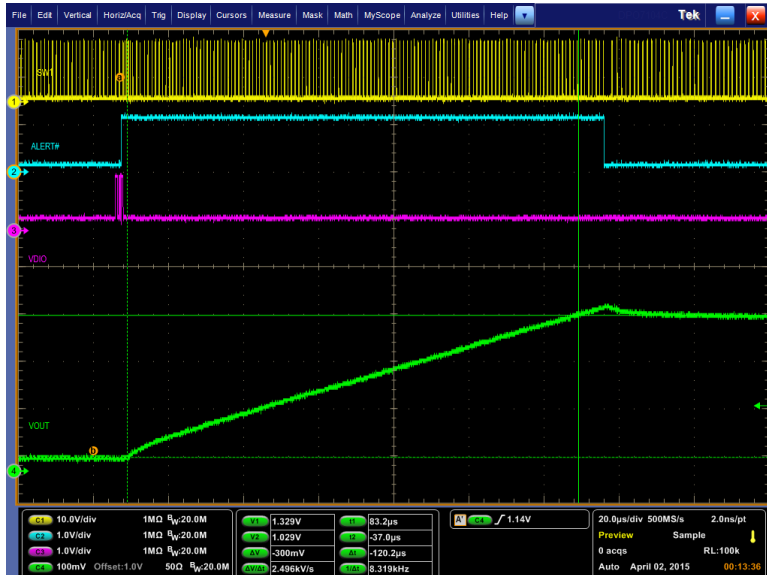
Dynamic VID

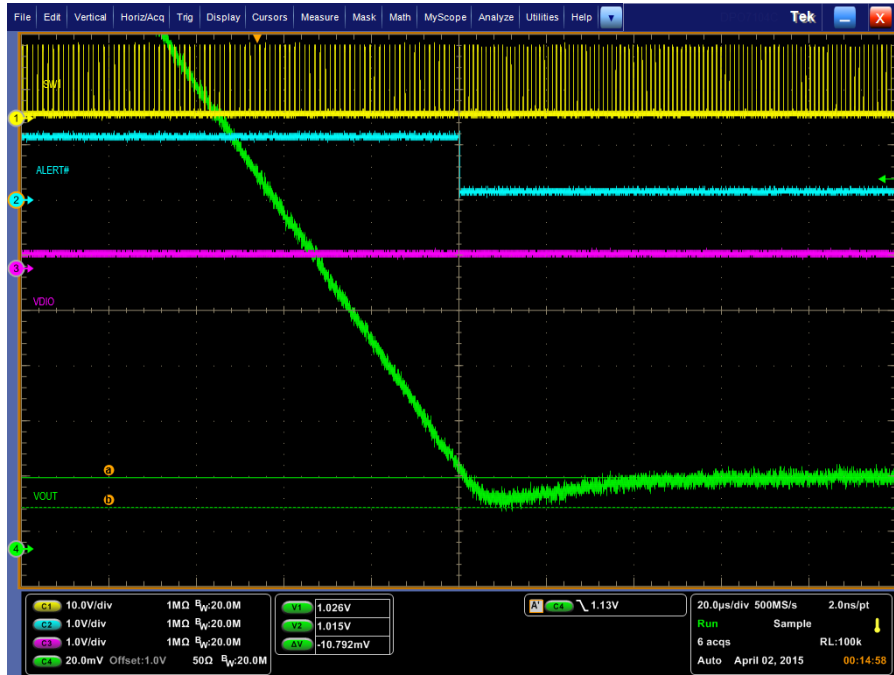
1.0V-1.3V Slow-Slow 2A load



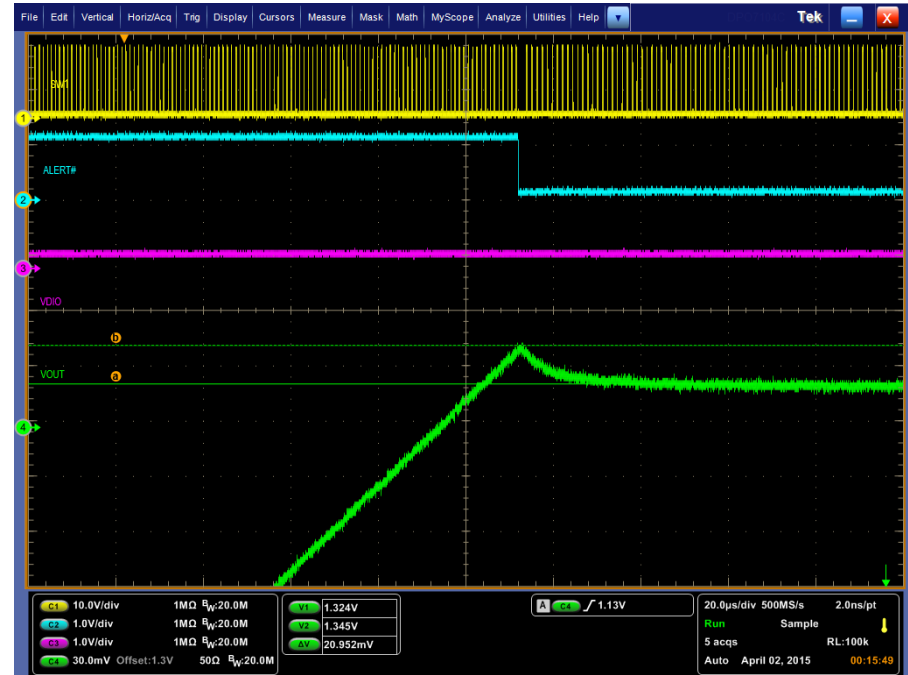
Fall Slew rate: 2.44 mV/µs

Rise Slew rate: 2.49 mV/µs





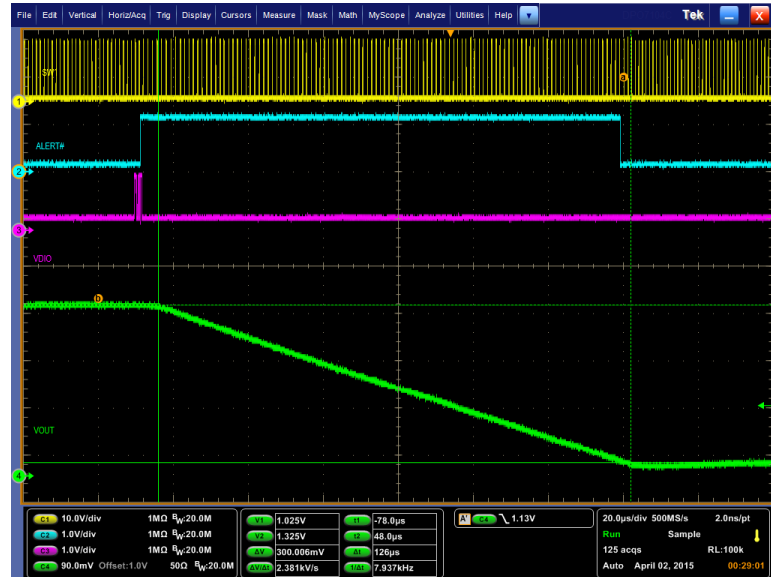
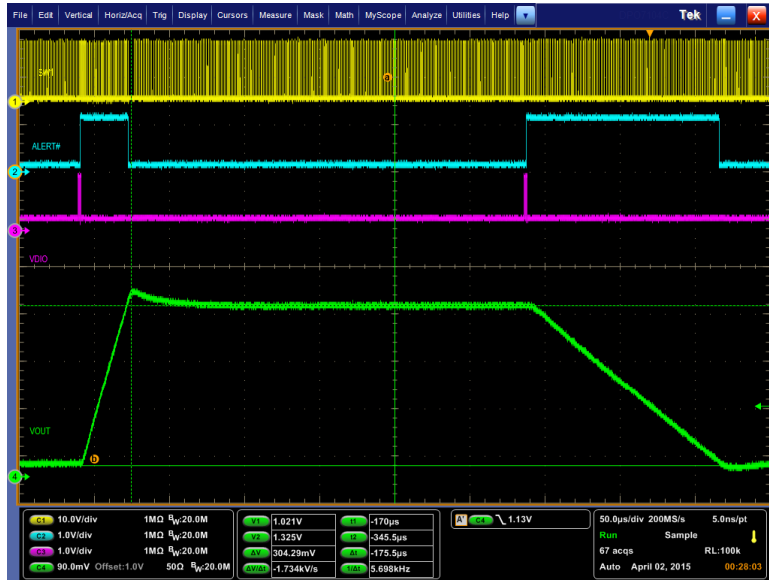
Droop: 10.8mV



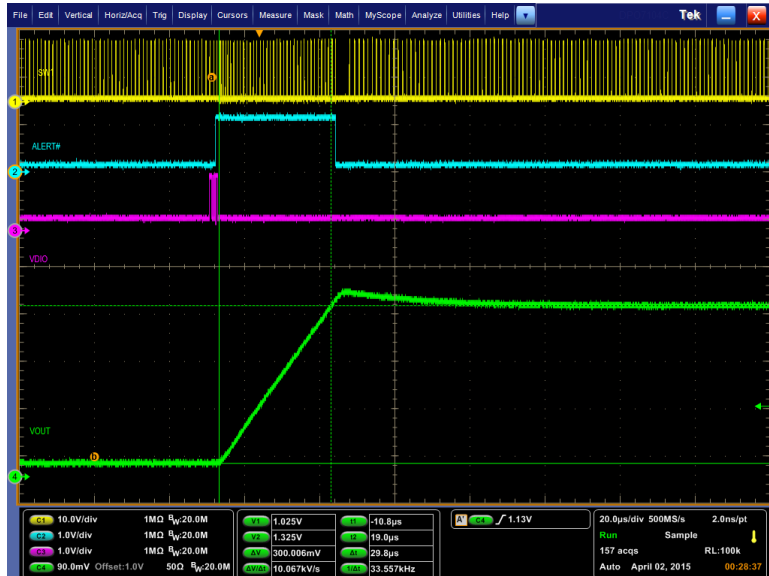
Overshoot: 21mV

Dynamic VID

1.0V-1.3V Fast-Slow 2A load



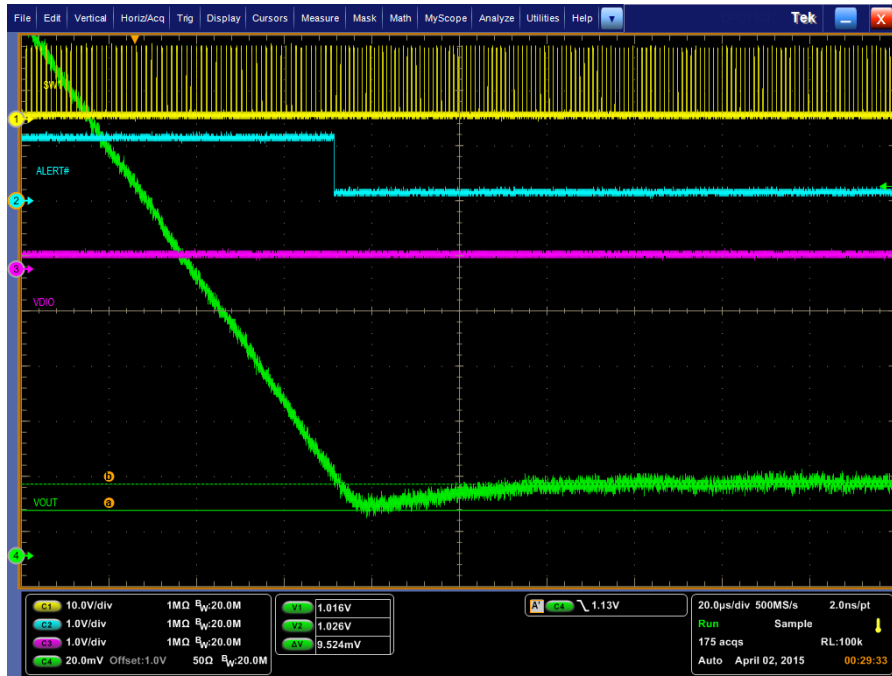
Fall Slew rate: 2.38 mV/us



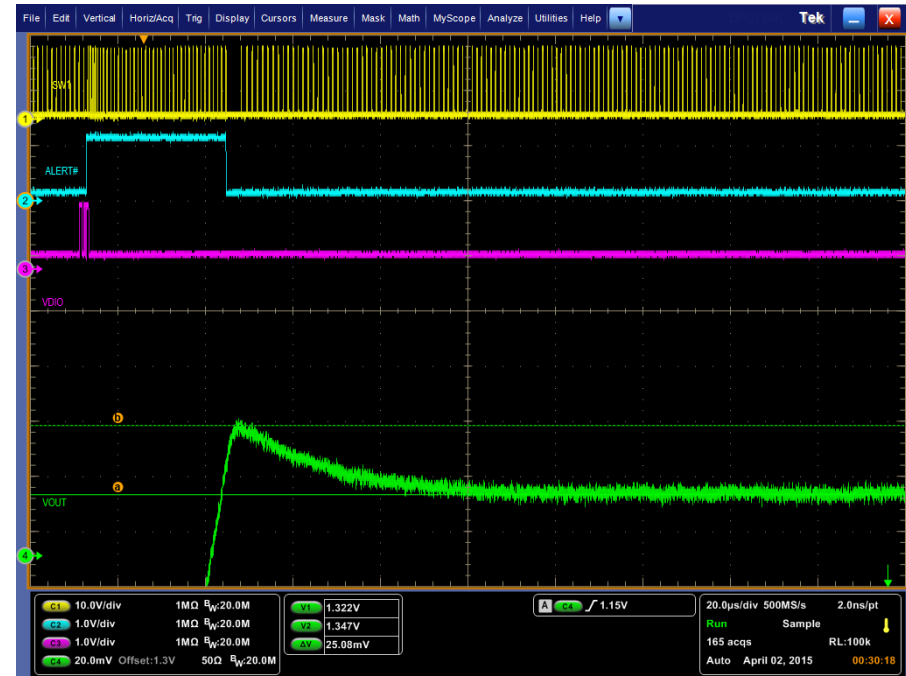
Rise Slew rate: 10.06 mV/us

Dynamic VID

1.0V-1.3V Fast-Slow 2A load



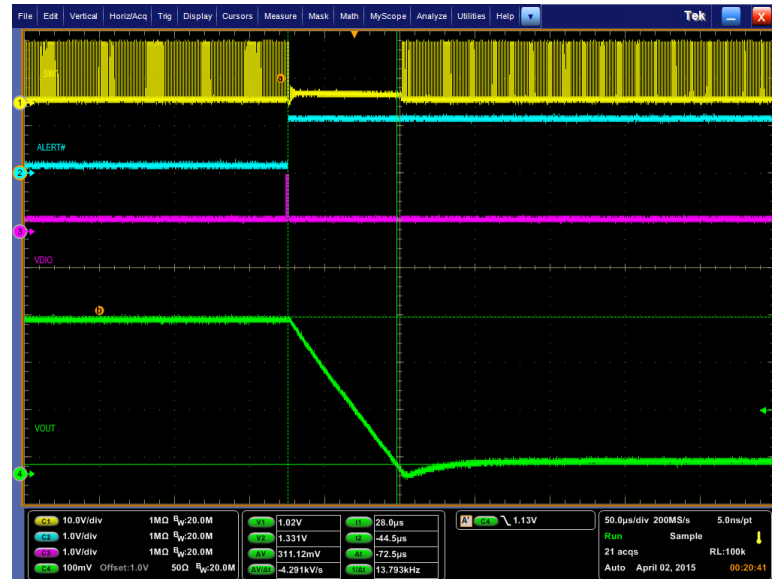
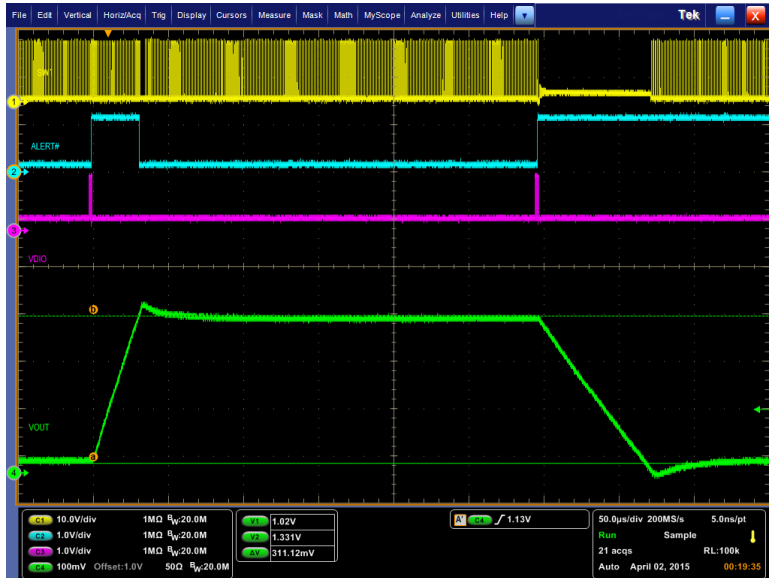
Droop: 9.5mV



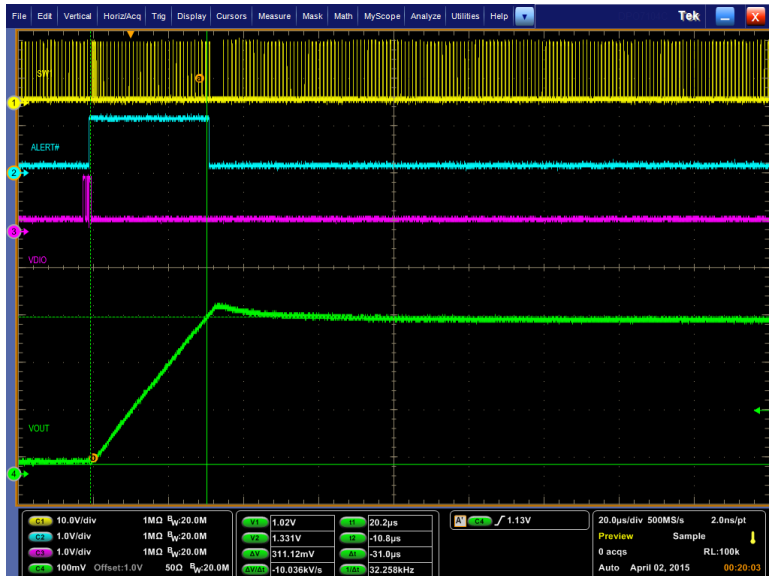
Overshoot: 25 mV

Dynamic VID

1.0V-1.3V Fast-Decay 2A load



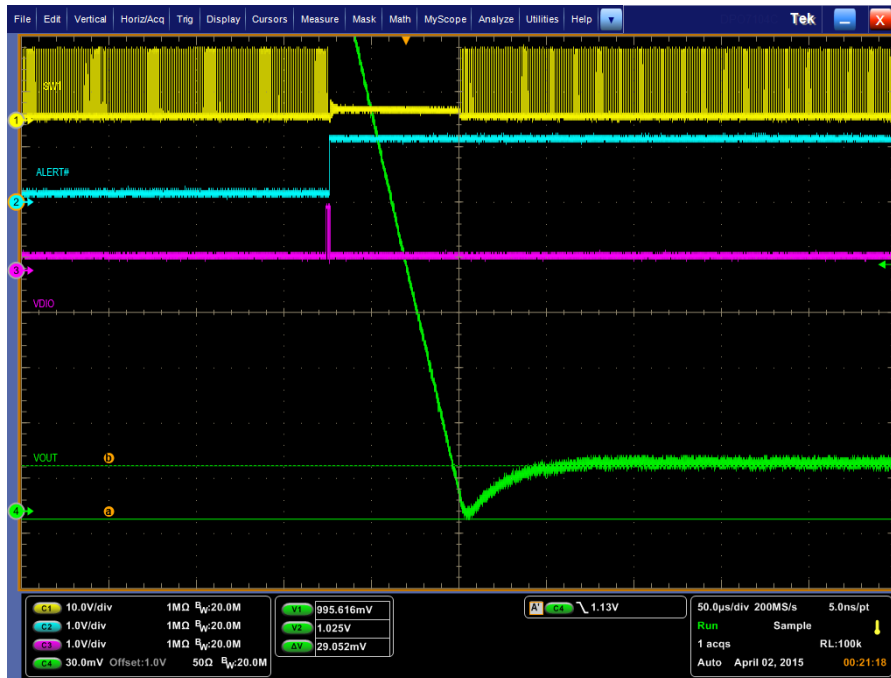
Decay Fall Slew rate: 4 mV/us



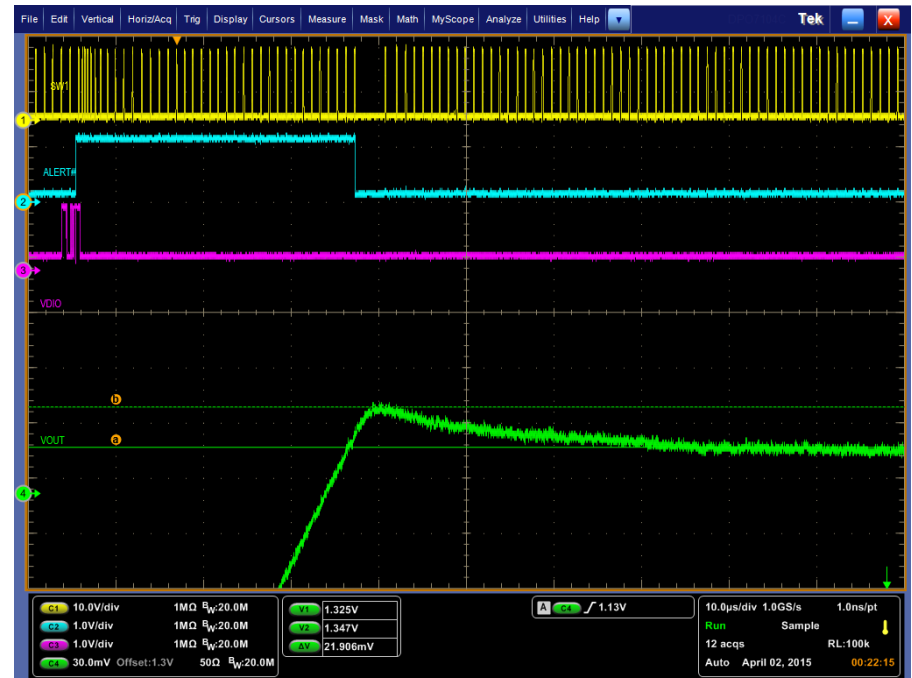
Rise Slew rate: 10.04 mV/us

Dynamic VID

1.0V-1.3V Fast-Decay 2A load



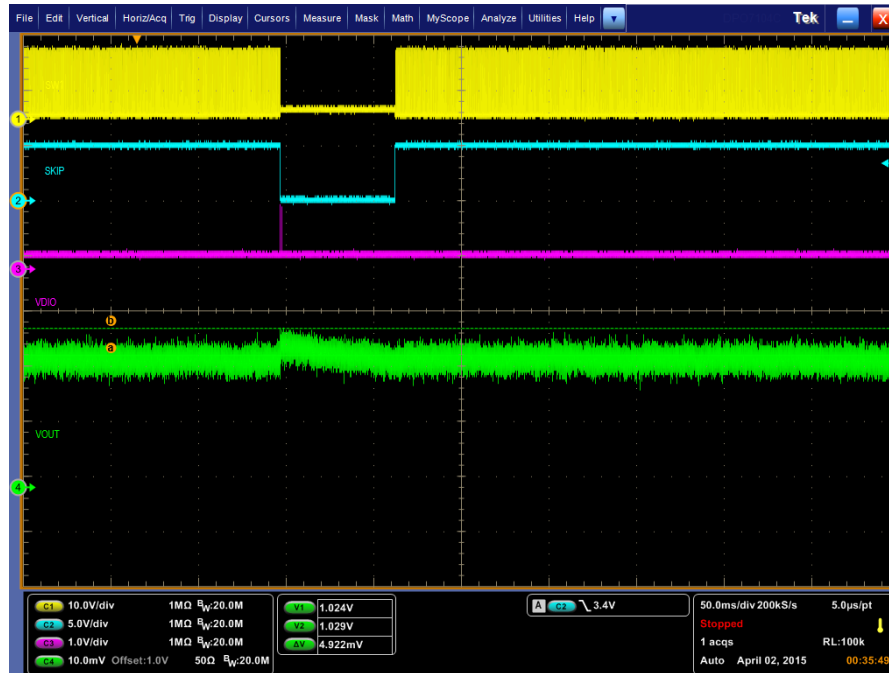
Droop: 29mV



Overshoot: 22mV

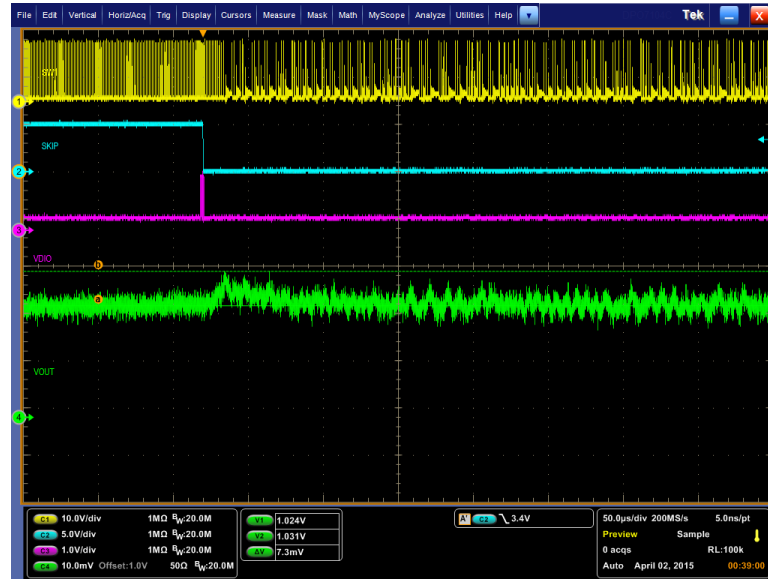
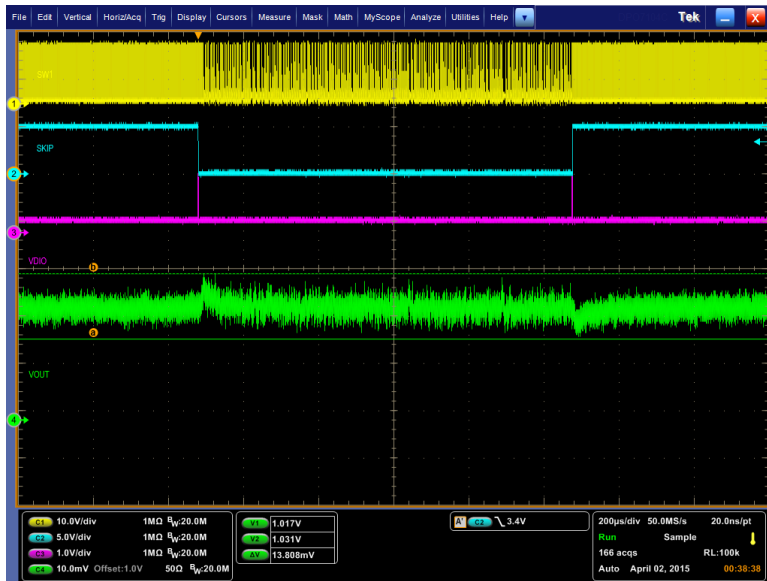
PS transition

PS0-PS2 0A load



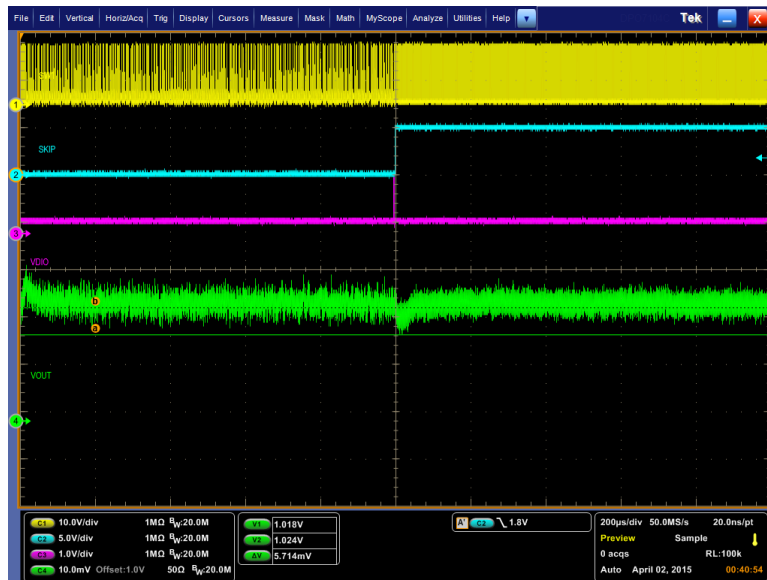
PS transition

PS0-PS2 0.5A load

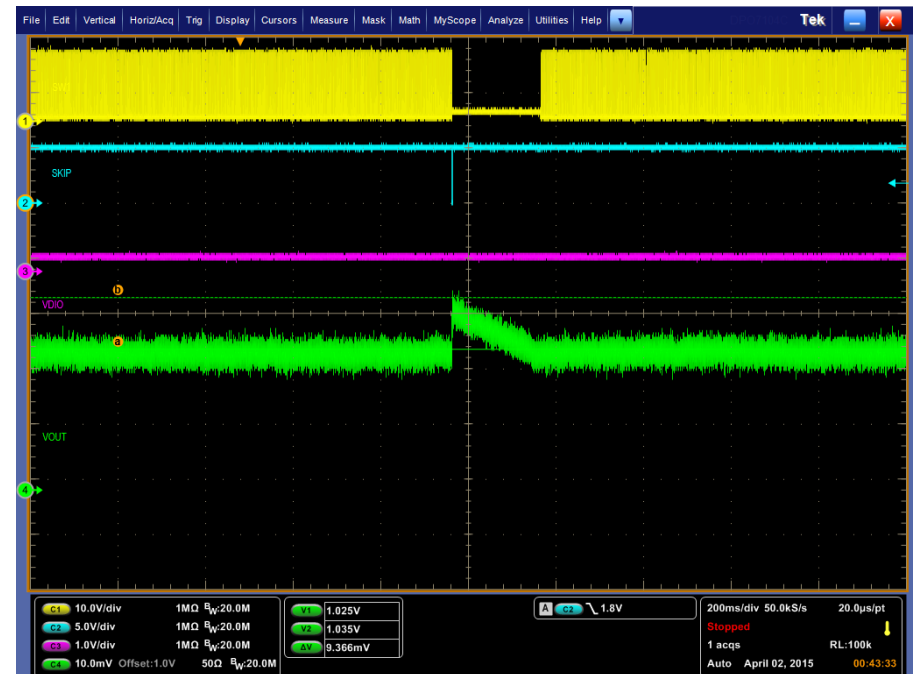
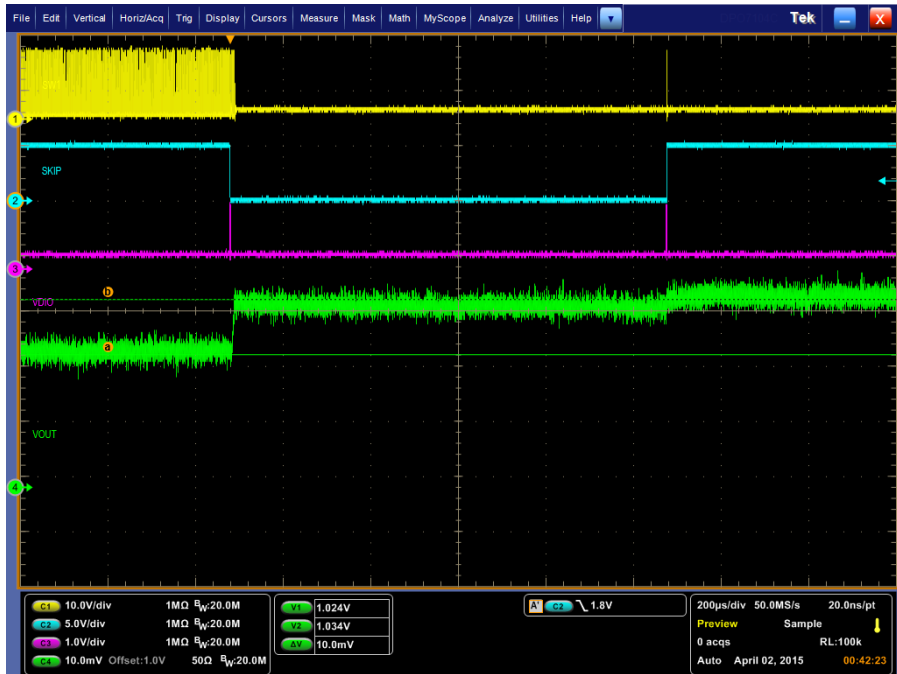


PS0 to PS2 voltage change: 7.3mV

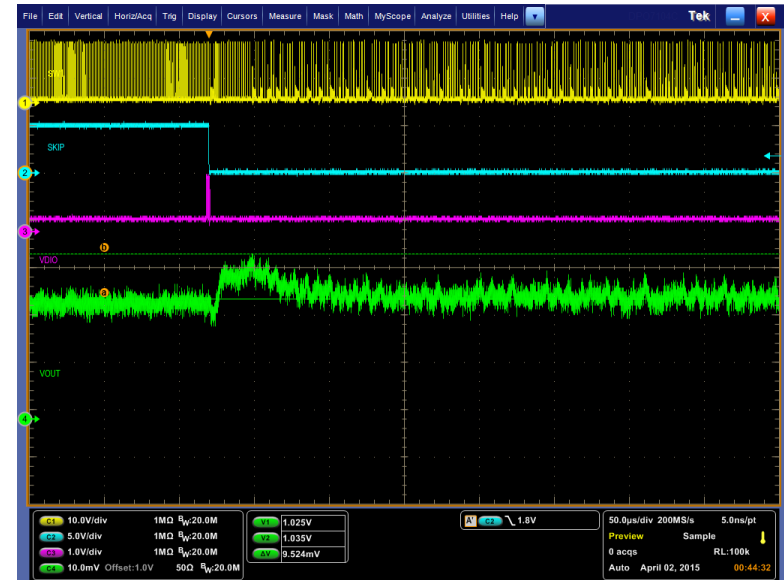
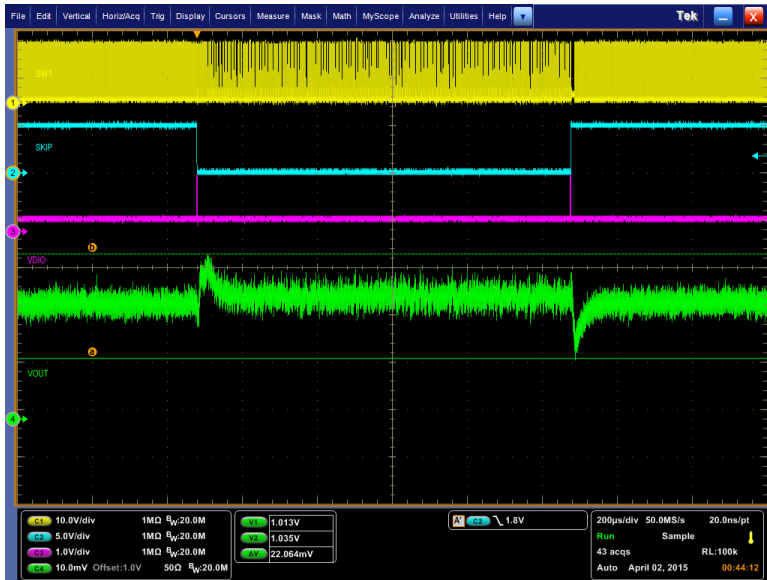
PS2 to PS0 voltage change: 5.7mV



PS transition PS0-PS3 0A load

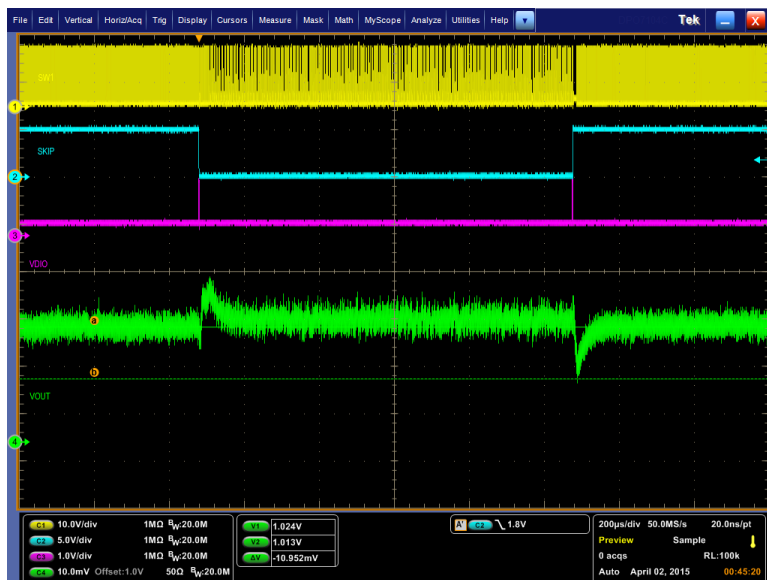


PS transition PS0-PS3 0.5A load

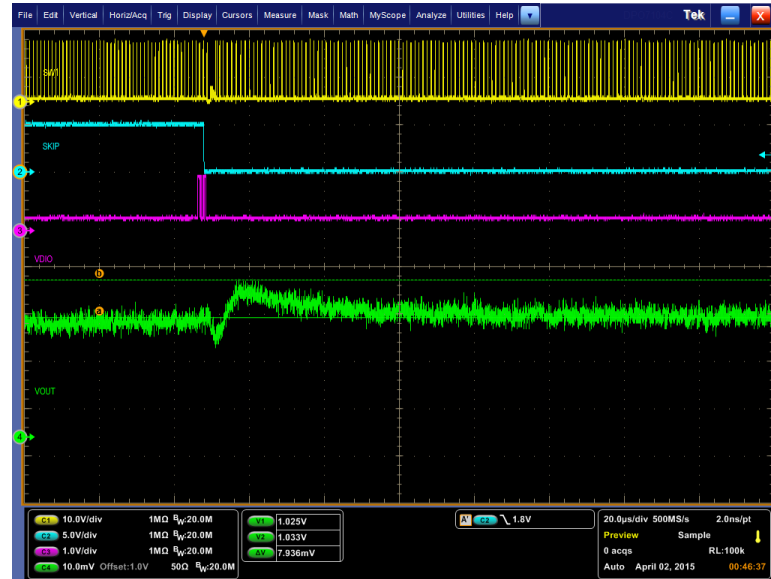
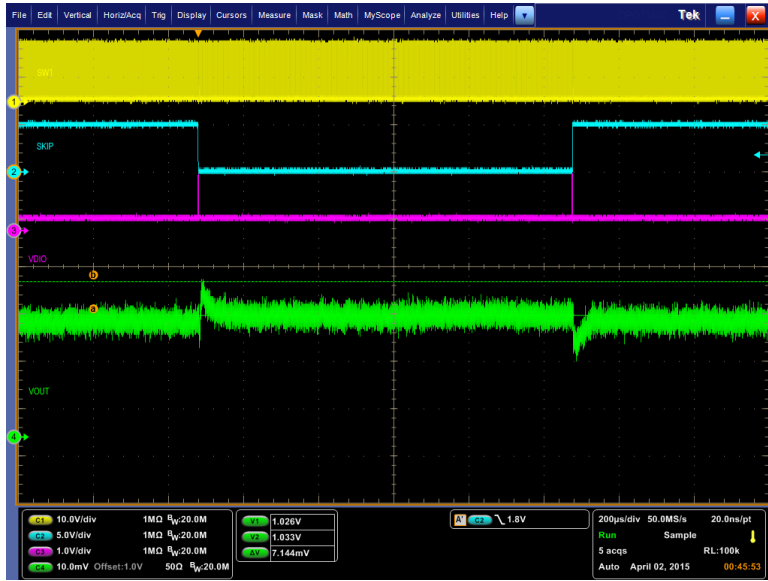


PS0 to PS3 voltage change: 9.5mV

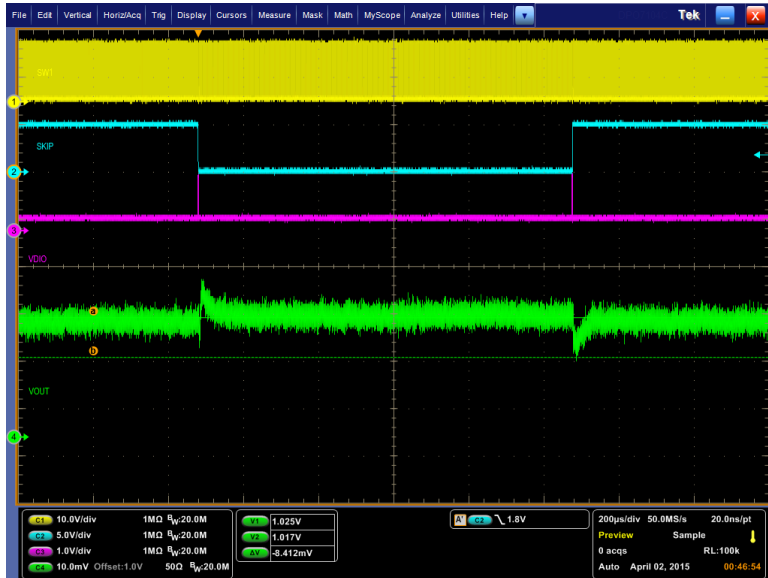
PS3 to PS0 voltage change: 11mV



PS transition PS0-PS3 1A load

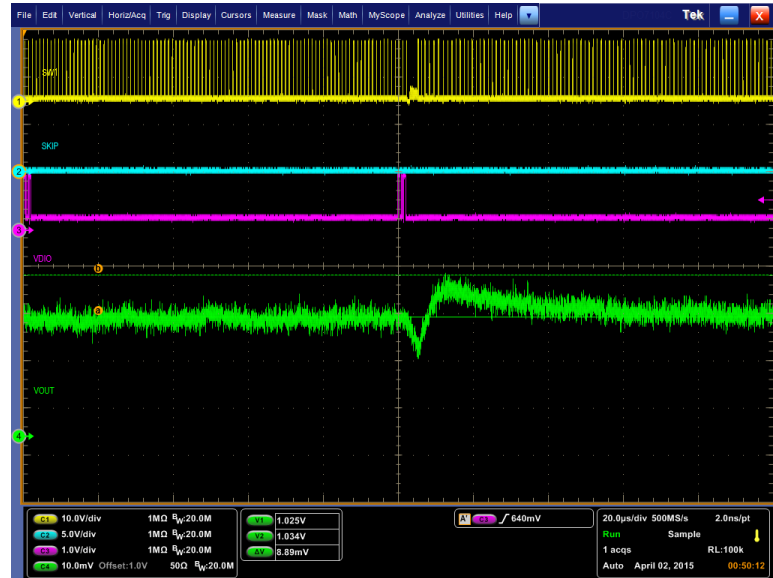
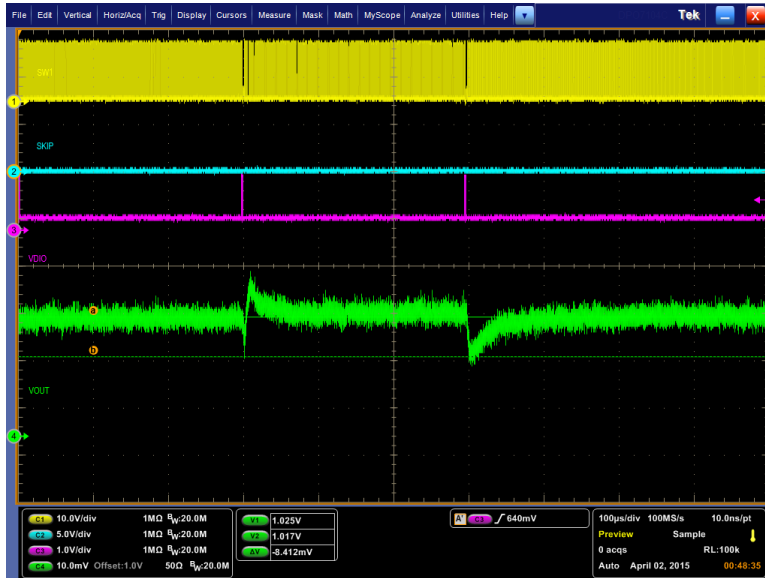


PS0 to PS3 voltage change: 7.93mV



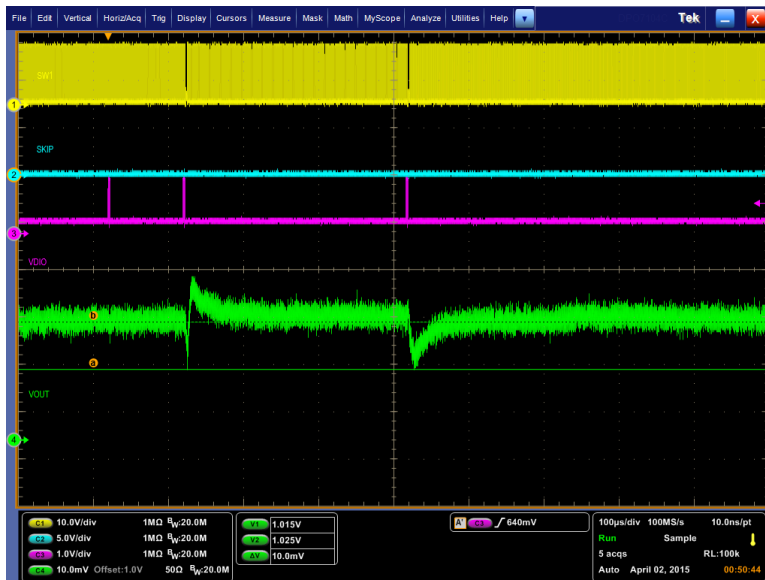
PS3 to PS0 voltage change: 8.4mV

PS transition PS2-PS3 1A load



PS2 to PS3 voltage change: 8.9mV

PS3 to PS2 voltage change: 10mV



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