PMP7771

PMP7771 Test Results

Literature Number:SNVU023

Non Sync Buck Hysteretic Controller

TI reference design number: PMP 7771

(Formerly National Semiconductor design NSC0970)

Input: 9V to 18V DC
Output: 8V @ 3A

DC-DC Test Results

Table of Contents

1.0 Circuit Description

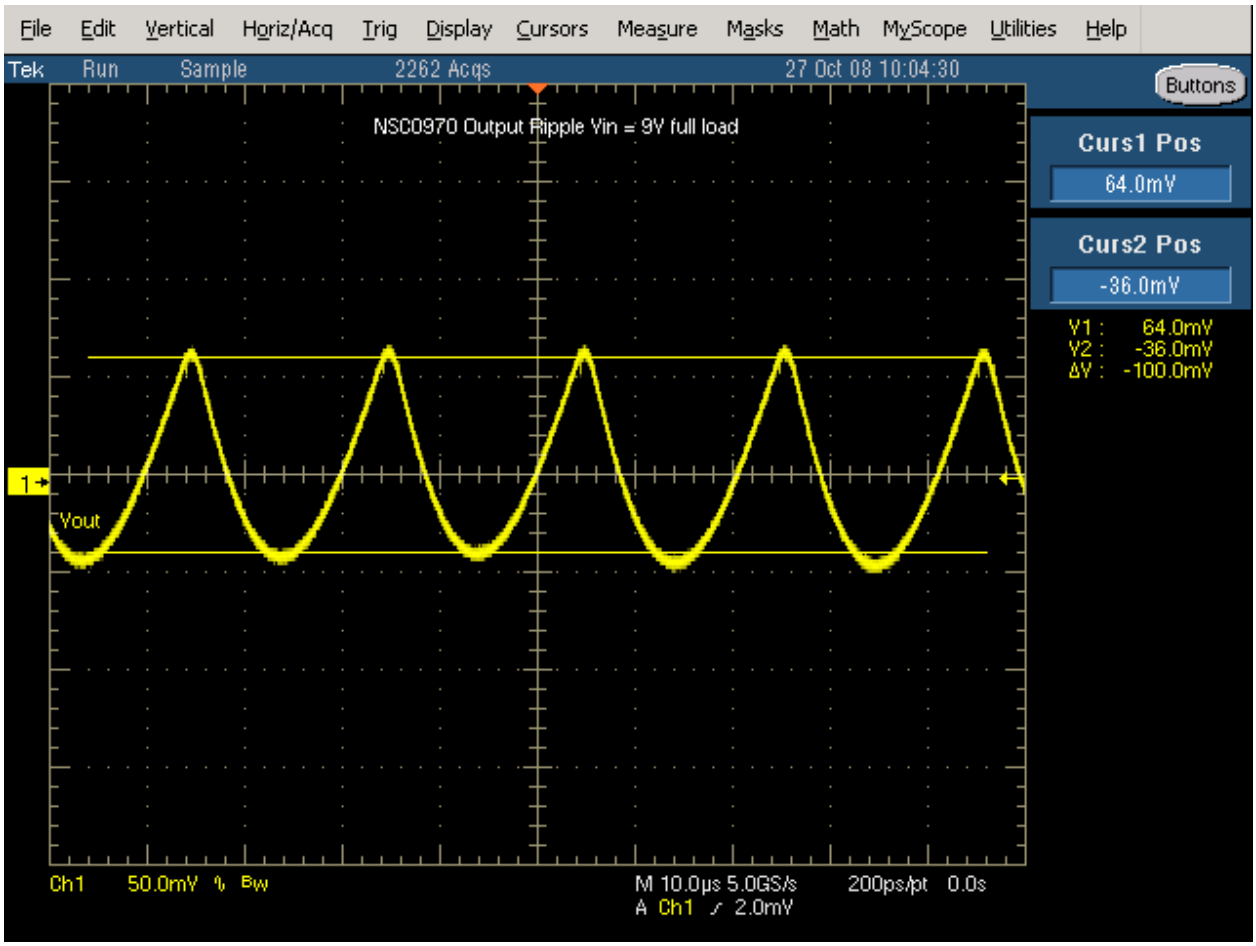
This circuit is a non synchronous buck hysteretic controller. It uses low ESR ceramic capacitor at the output and uses series resistor to generate the ripple. It uses LM3489 which is a high efficiency PFET switching regulator controller. The PFET architecture also allows for low component count as well as ultra-low dropout, 100% duty cycle operation. Another benefit is high efficiency operation at light loads without an increase in output ripple.

Some of the applications are:

- Set-Top Box
- DSL/Cable Modem
- PC/IA
- Auto PC
- TFT Monitor
- Battery Powered Portable Applications
- Distributed Power Systems
- Always On Power
- High Power LED Driver
- Automotive

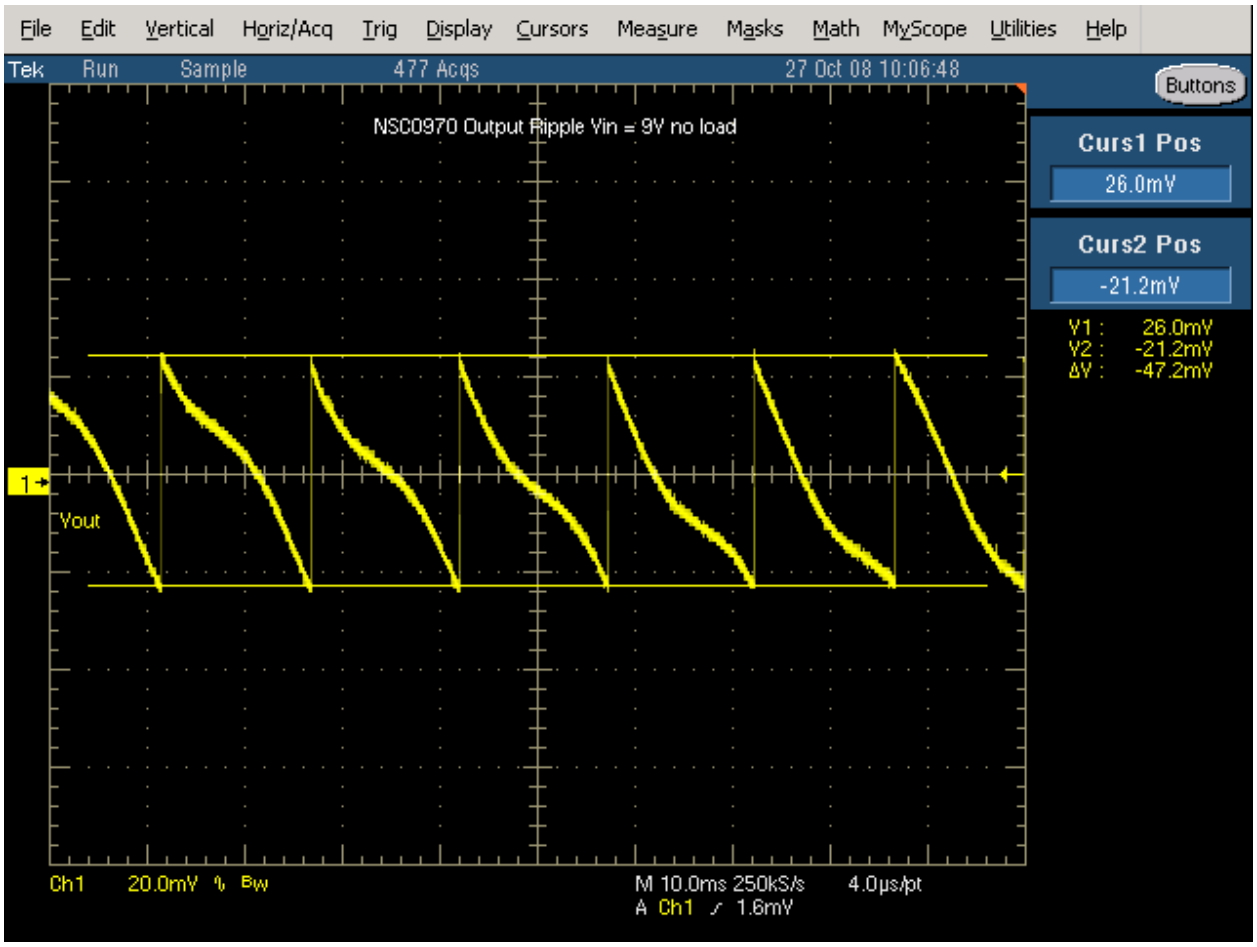
2.0 Waveforms

2.1 Output Ripple Vin = 9V Full Load



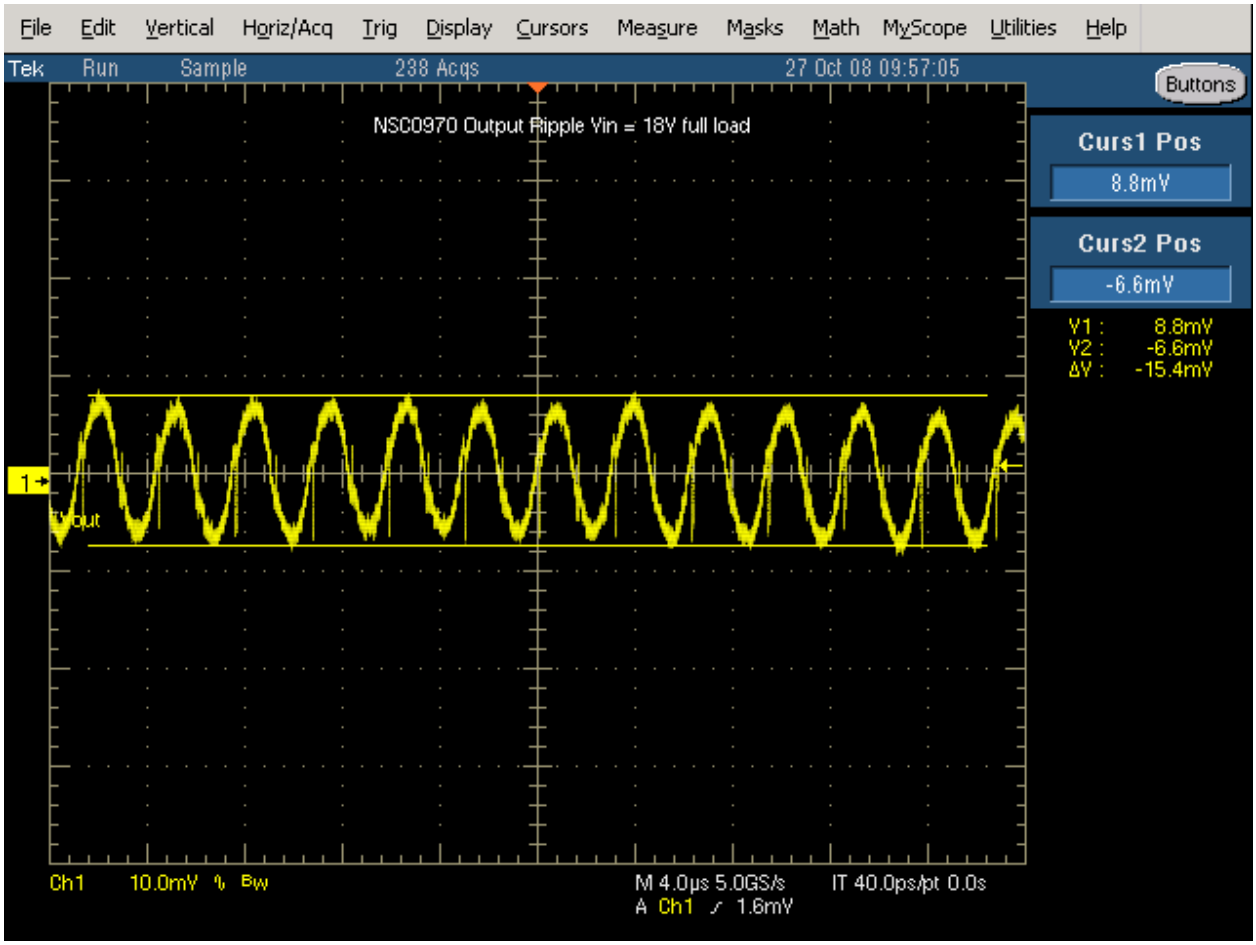
Output ripple voltage

Figure 2: Output Ripple Vin = 9V No Load



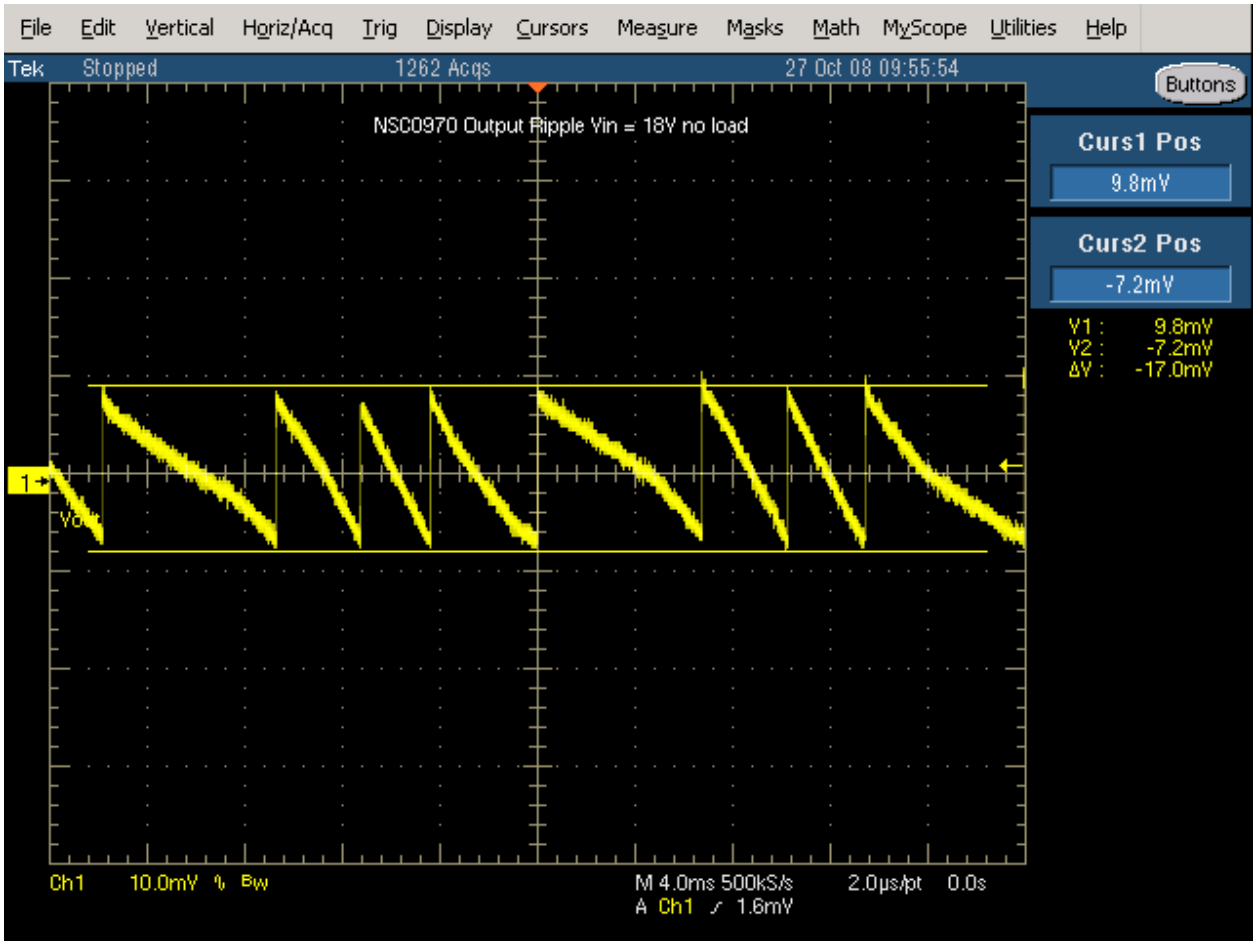
Output ripple voltage

2.3 Output Ripple Vin = 18V Full Load



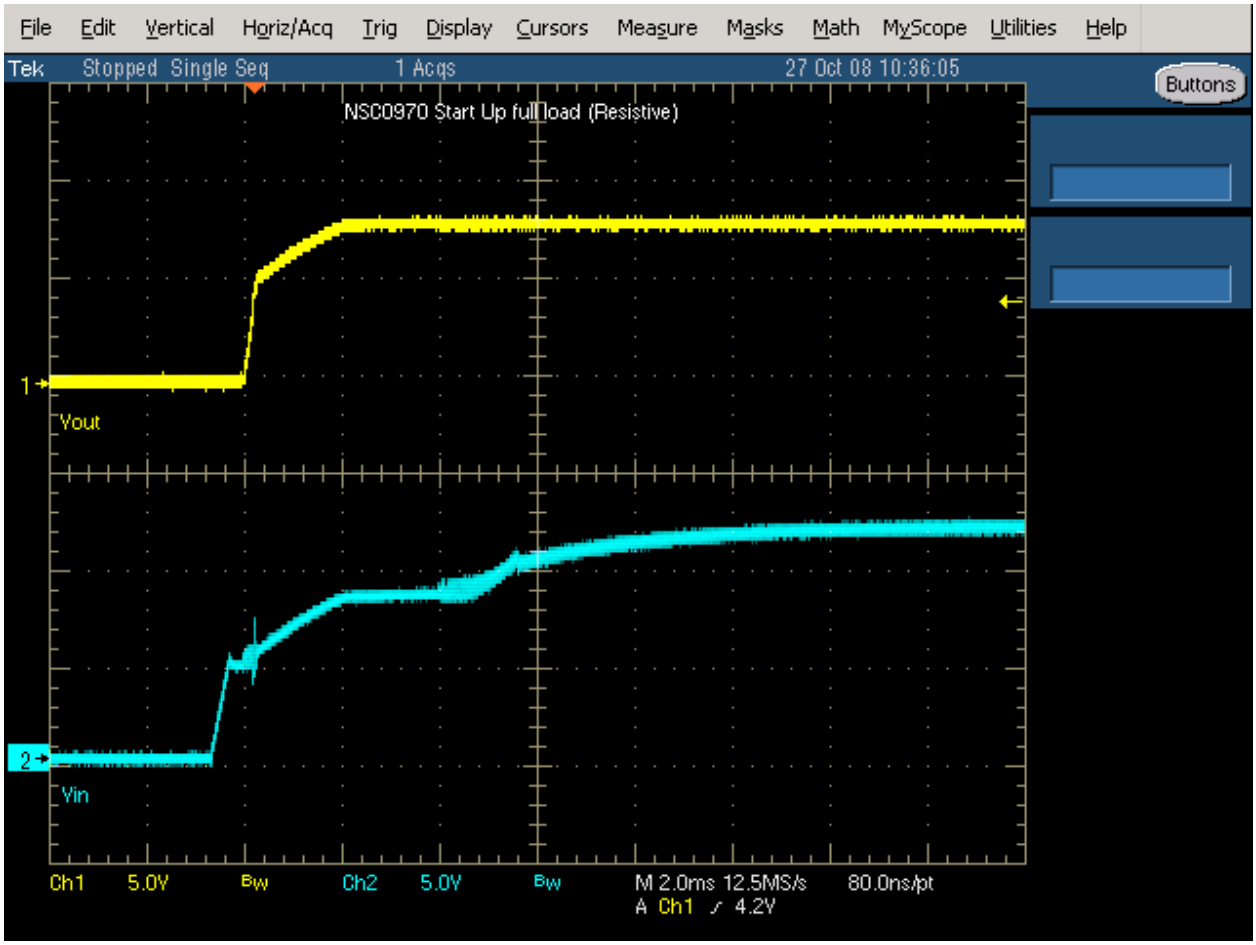
Output ripple voltage

2.4 Output Ripple Vin = 18V No Load



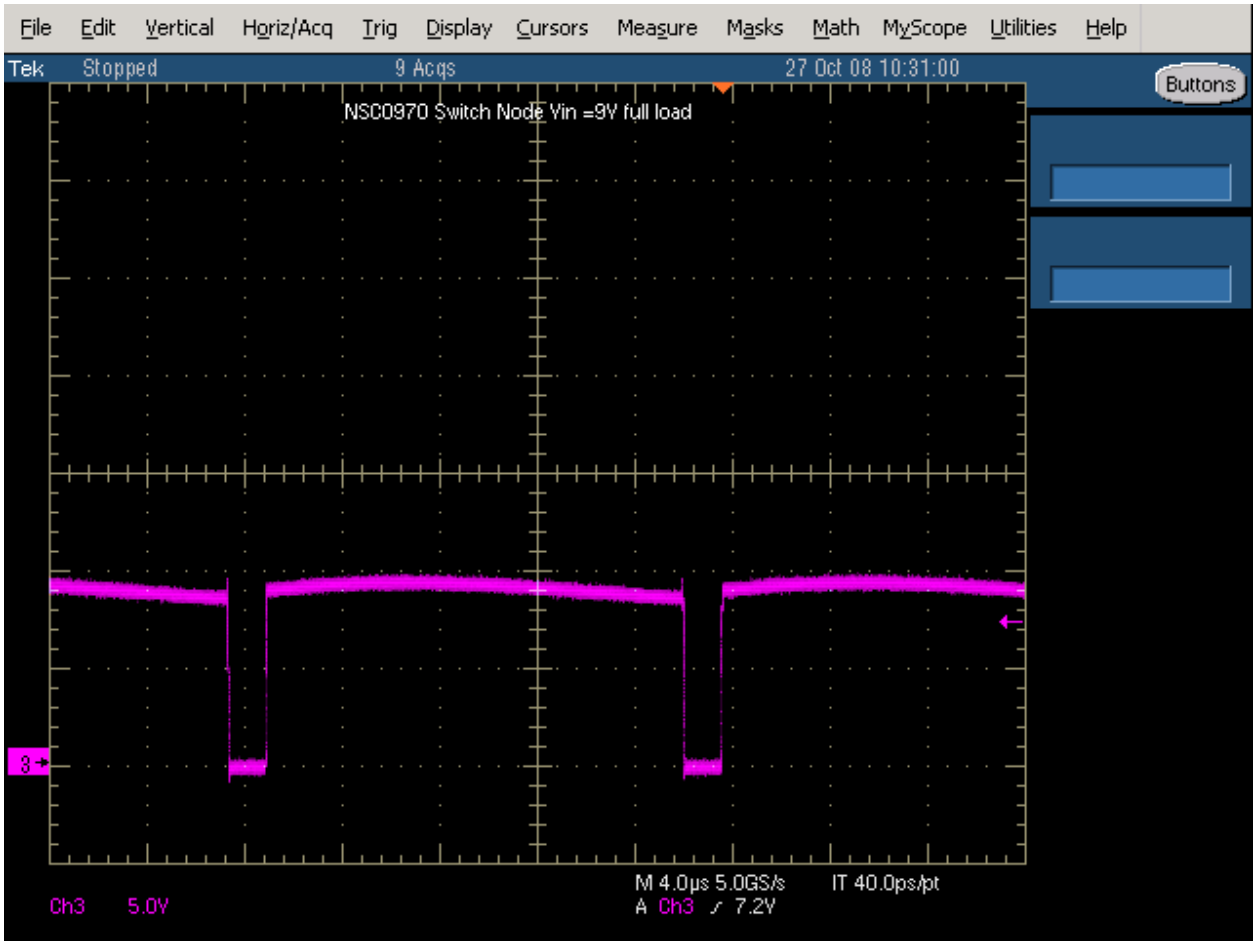
Output ripple voltage

2.5 Start up voltages



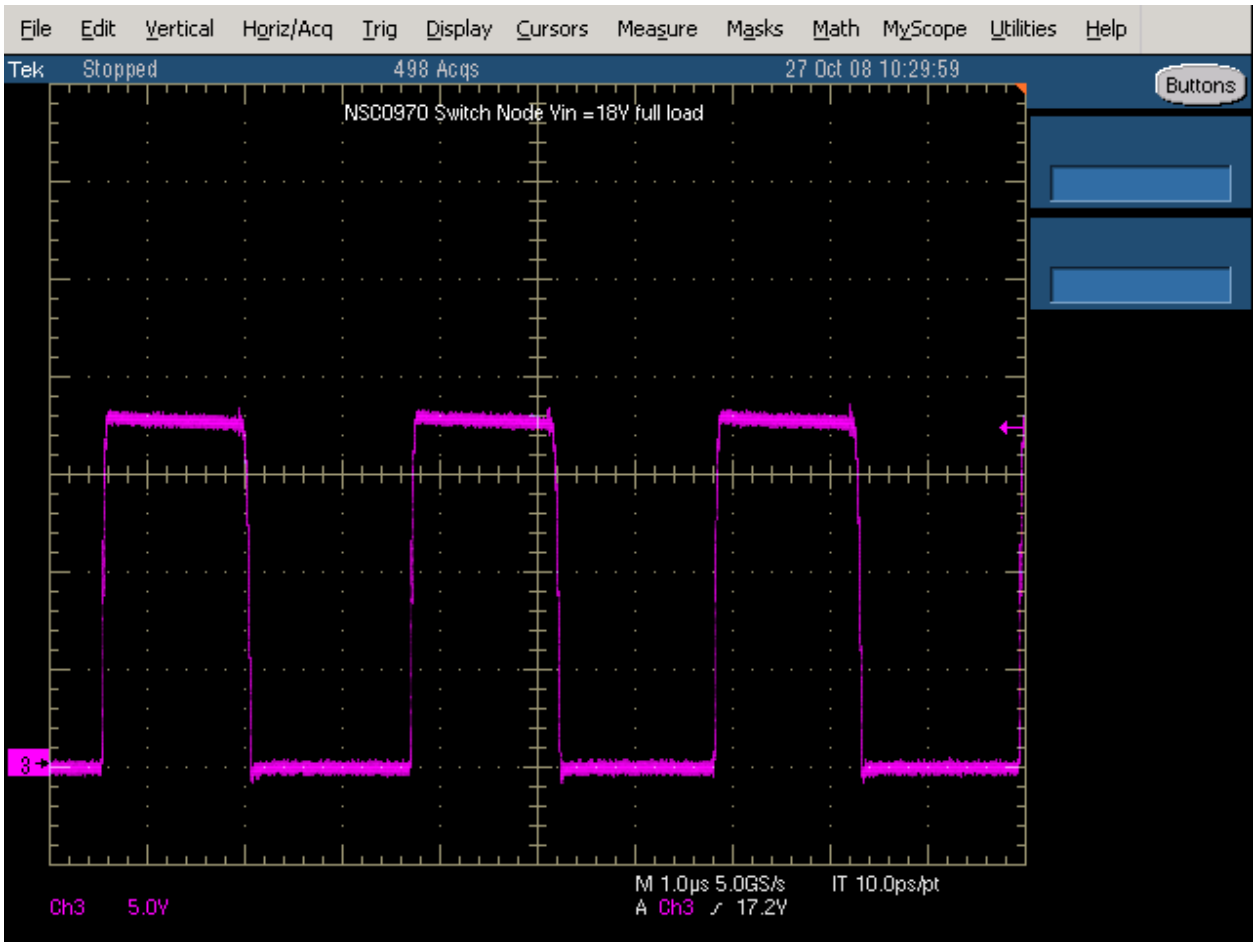
Output voltage
Input voltage

2.6 Switch node voltage Vin = 9V



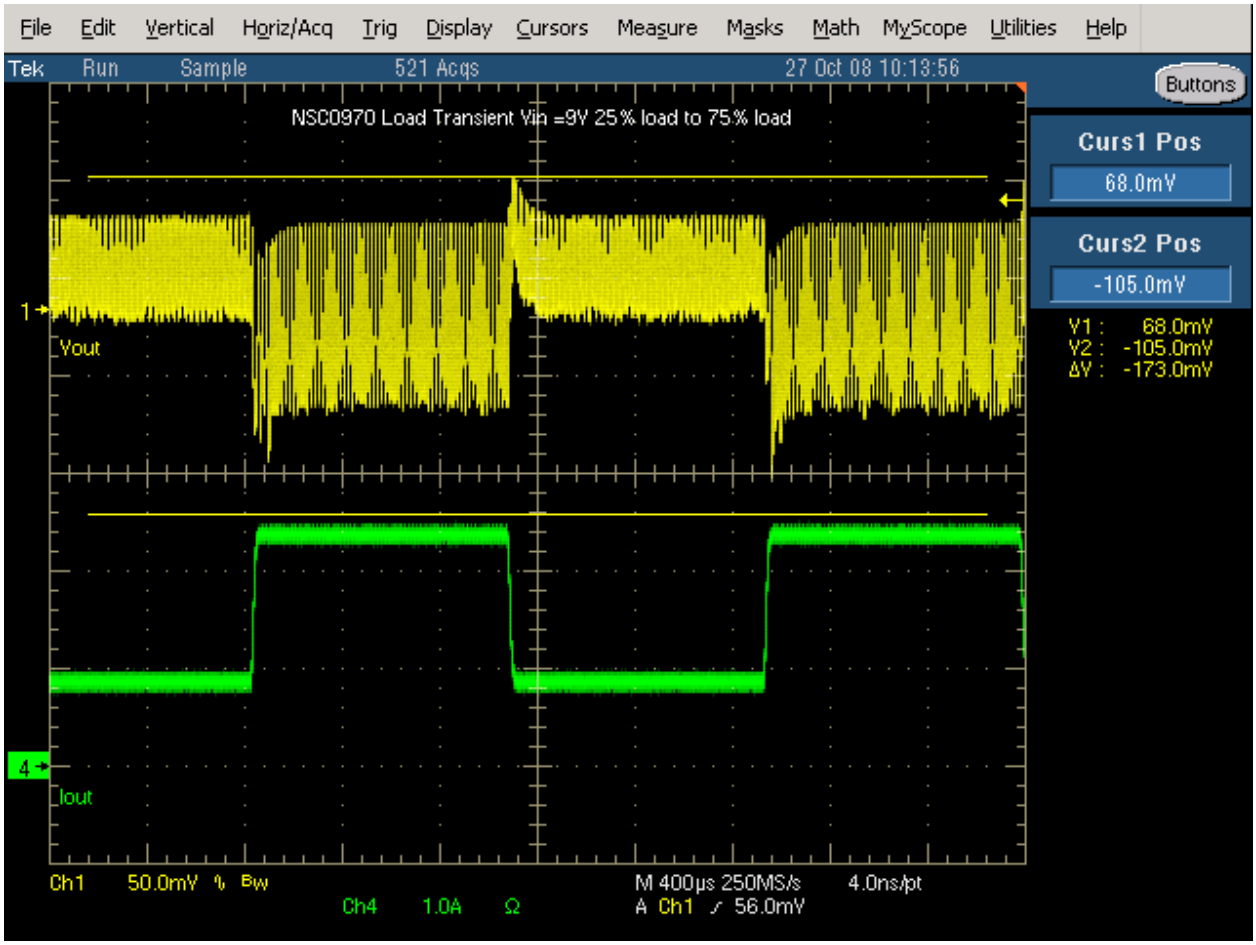
Switch node voltage

2.7 Switch node voltage Vin = 18V



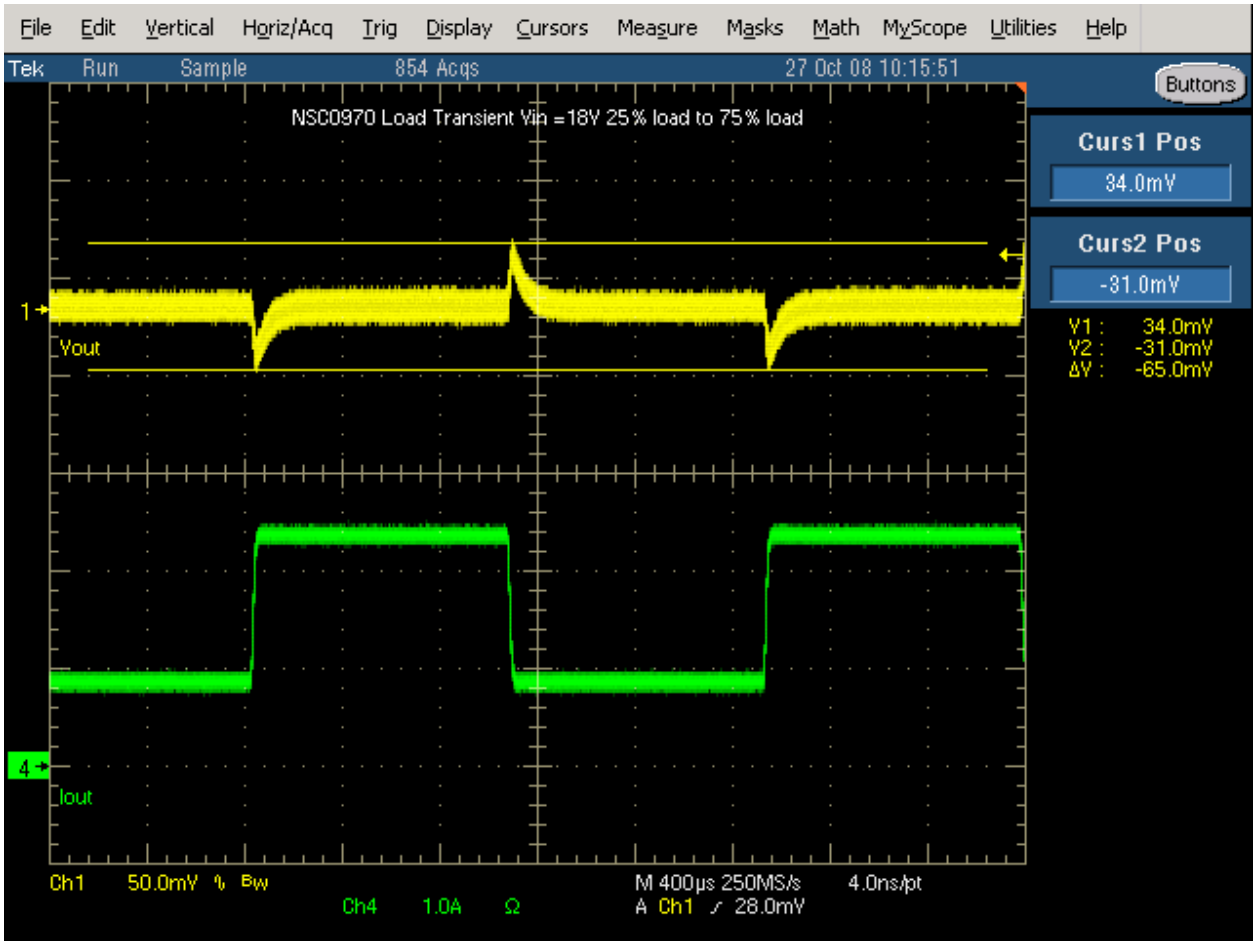
Switch node voltage

2.8 Transient response Vin = 9V



Output voltage
Output current

2.9 Transient response Vin = 18V



Output voltage
Output current

3.0 Efficiency results

Vin (V)	Iin (A)	Vout (V)	Iout (A)	Efficiency	Vin (V)	Iin (A)	Vout (V)	Iout (A)	Efficiency
9.150	0.370	8.130	0.400	96.1	12.040	0.295	8.130	0.400	91.6
9.100	0.739	8.130	0.800	96.7	12.000	0.586	8.140	0.800	92.6
9.050	1.112	8.110	1.200	96.7	11.970	0.876	8.140	1.200	93.2
9.000	1.490	8.100	1.600	96.6	11.930	1.167	8.140	1.600	93.5
9.000	1.864	8.100	2.000	96.6	11.890	1.459	8.140	2.000	93.8
8.960	2.250	8.100	2.400	96.4	11.850	1.756	8.140	2.400	93.9
8.980	2.625	8.100	2.800	96.2	11.810	2.057	8.140	2.800	93.8
8.960	2.823	8.100	3.000	96.1	11.790	2.209	8.140	3.000	93.8
		Vin (V)	Iin (A)	Vout (V)	Iout (A)	Efficiency			
		18.110	0.215	8.120	0.400	83.4			
		18.090	0.420	8.130	0.800	85.6			
		18.060	0.617	8.130	1.200	87.6			
		18.030	0.815	8.130	1.600	88.5			
		18.000	1.014	8.130	2.000	89.1			
		17.980	1.214	8.130	2.400	89.4			
		17.950	1.417	8.130	2.800	89.5			
		17.940	1.520	8.130	3.000	89.4			

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