PMP7763

PMP7763 Test Results

Literature Number:SNVU015

High voltage isolated DC-DC converter

TI reference design number: PMP 7763

(Formerly National Semiconductor design NSC1012)

Input: 30 V to 800V DC
Output: 24V @ 250mA

DC-DC Test Results

Table of Contents

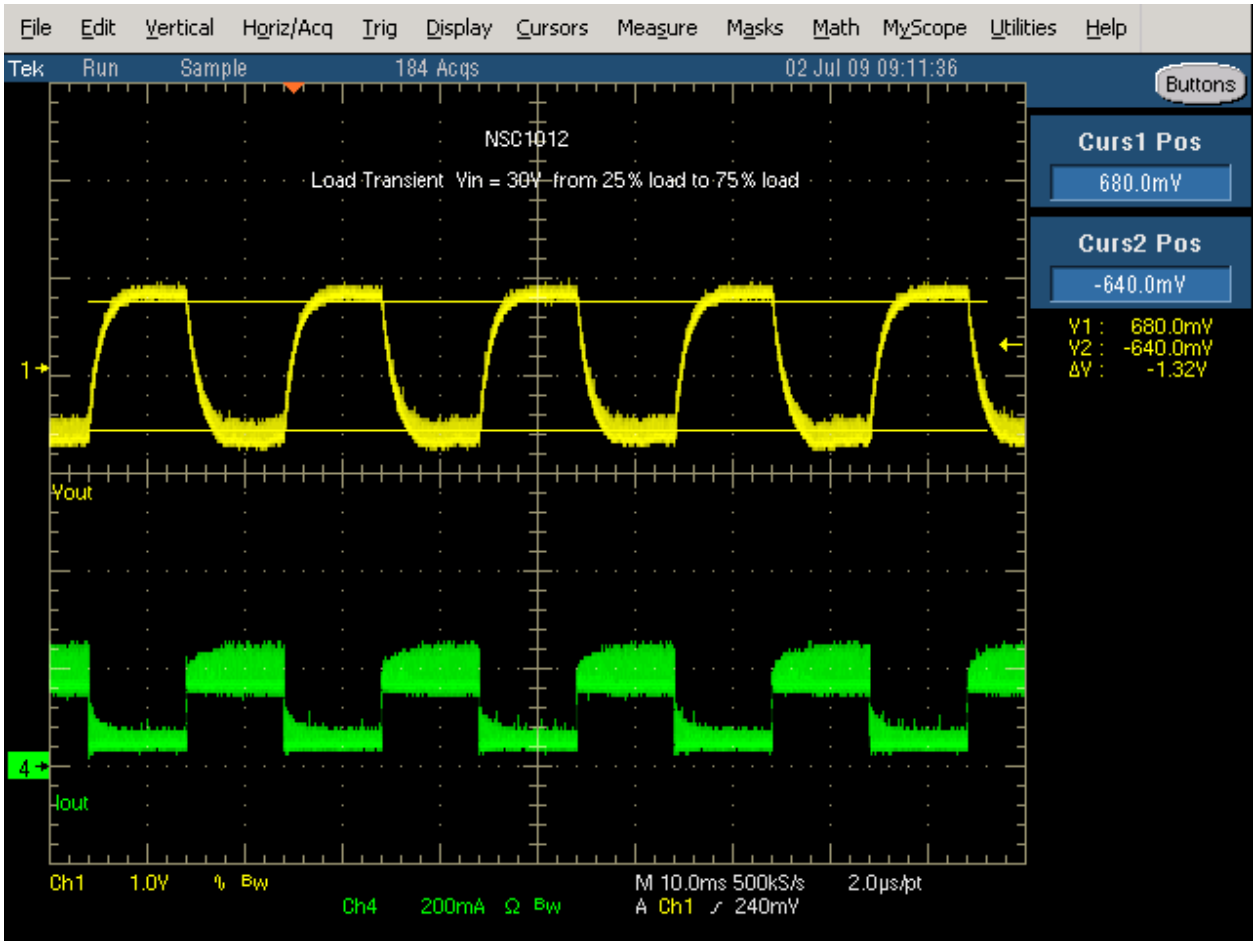
1.0 Circuit Description

PMP7763 is a high voltage isolated DC/DC Flyback converter. The input range is 30V to 800V and output is 24V @ 250mA. It has a high voltage hold off circuit. The secondary is open loop with no feedback control for the output. However, there is feedback control for the primary.

It uses LM5022 where output voltage regulation is based on current-mode control, which eases the design of loop compensation while providing inherent input voltage feed-forward. Additional features in this part include an error amplifier, precision reference, line under-voltage lockout, cycle-by-cycle current limit, slope compensation, soft-start, external synchronization capability and thermal shutdown.

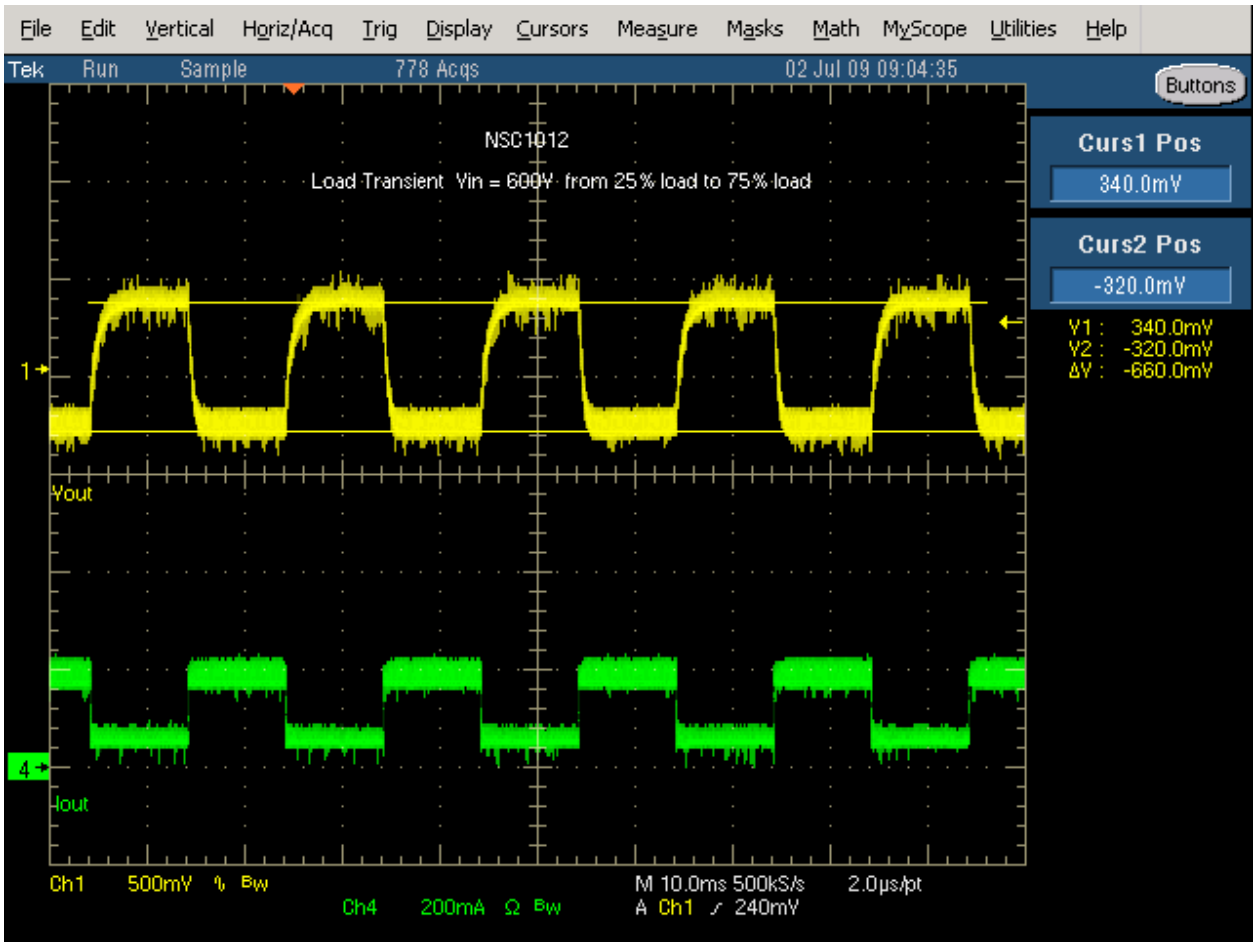
2.0 Waveforms

2.1 Transient response Vin = 30V



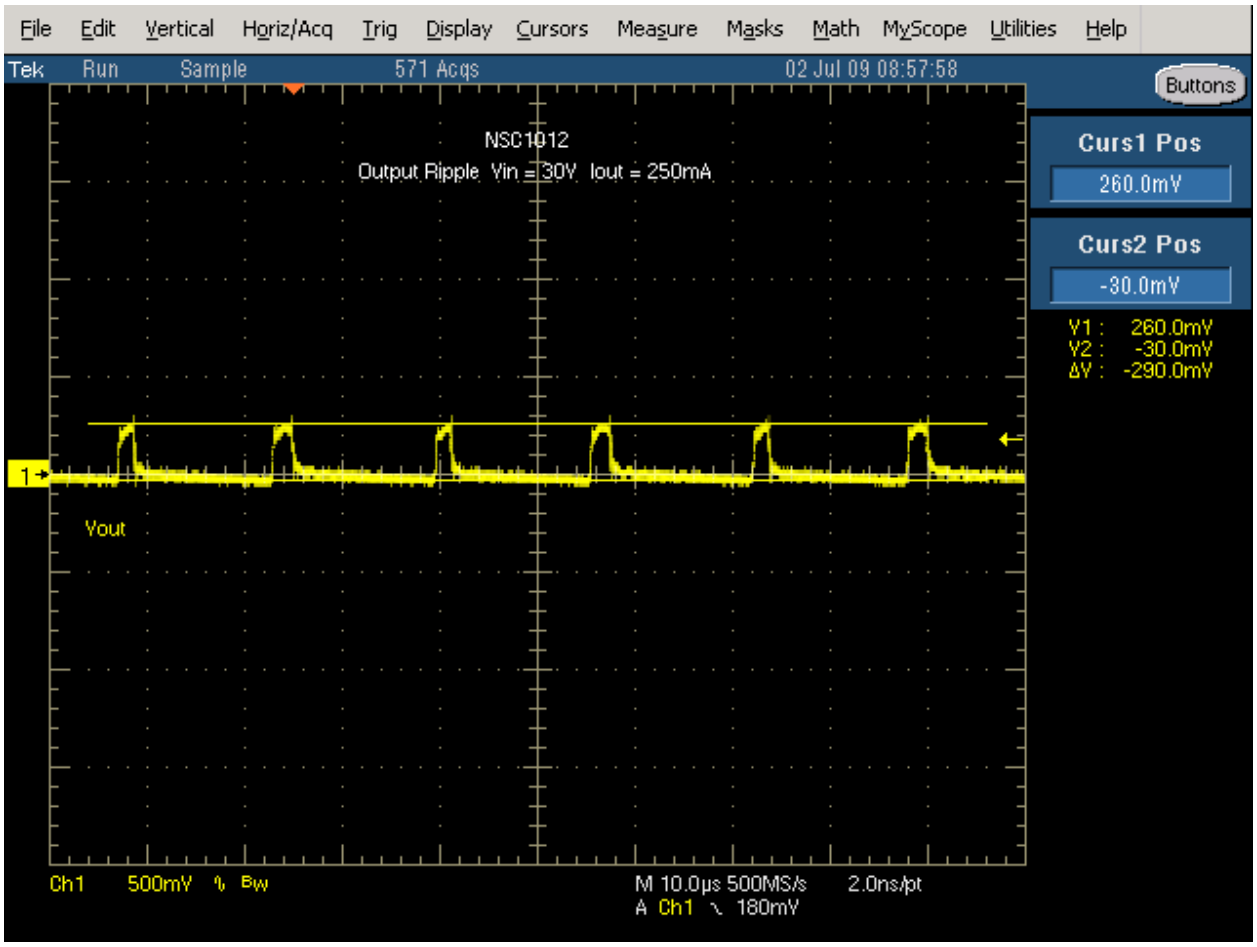
	Output voltage
	Output current

2.2 Transient response Vin = 600V



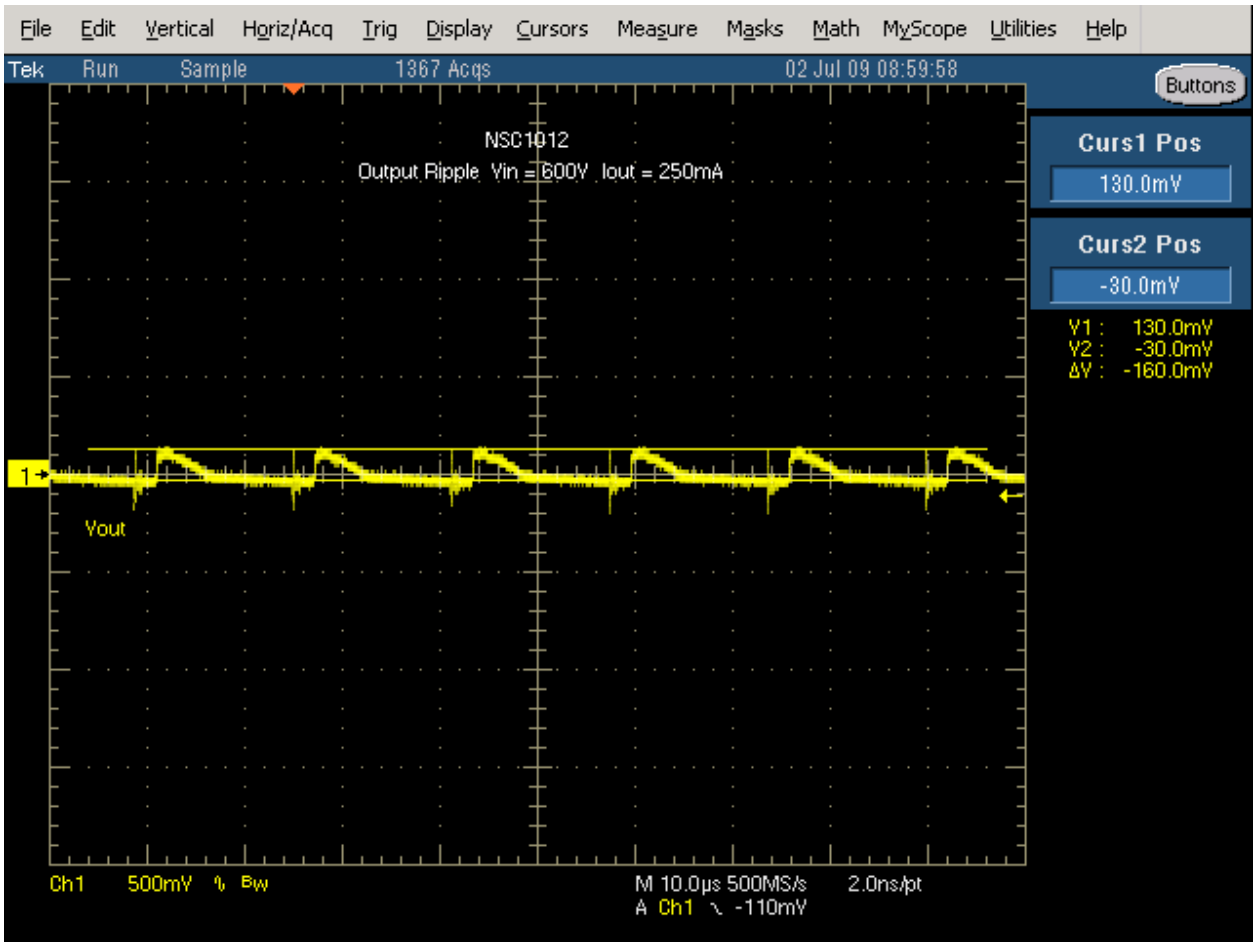
	Output voltage
	Output current

2.3 Output Ripple Vin = 30V Iout = 250mA



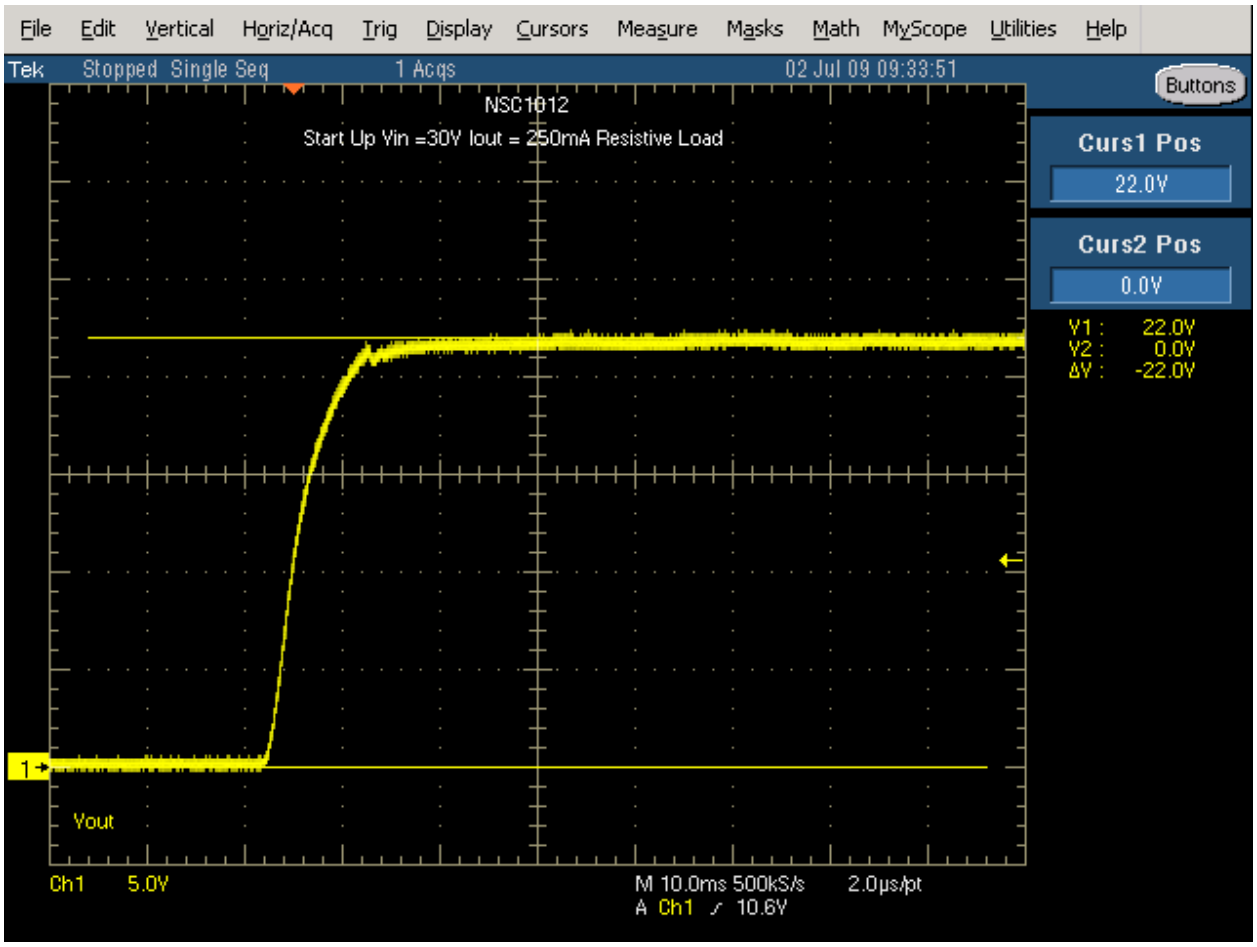
Output ripple voltage

2.4 Output Ripple Vin = 600V, Iout = 250mA



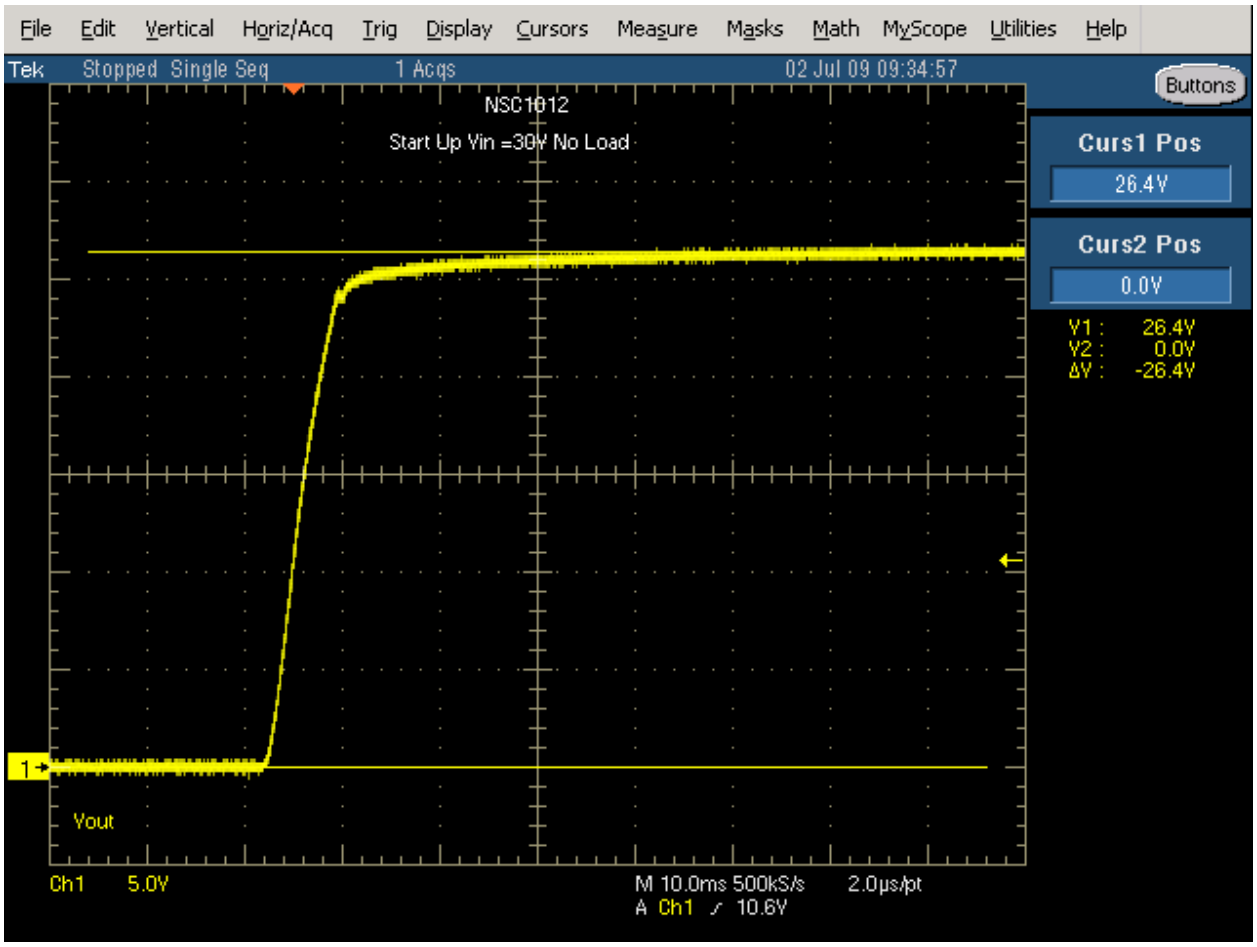
Output ripple voltage

2.5 Start up voltage Vin = 30V Full Load



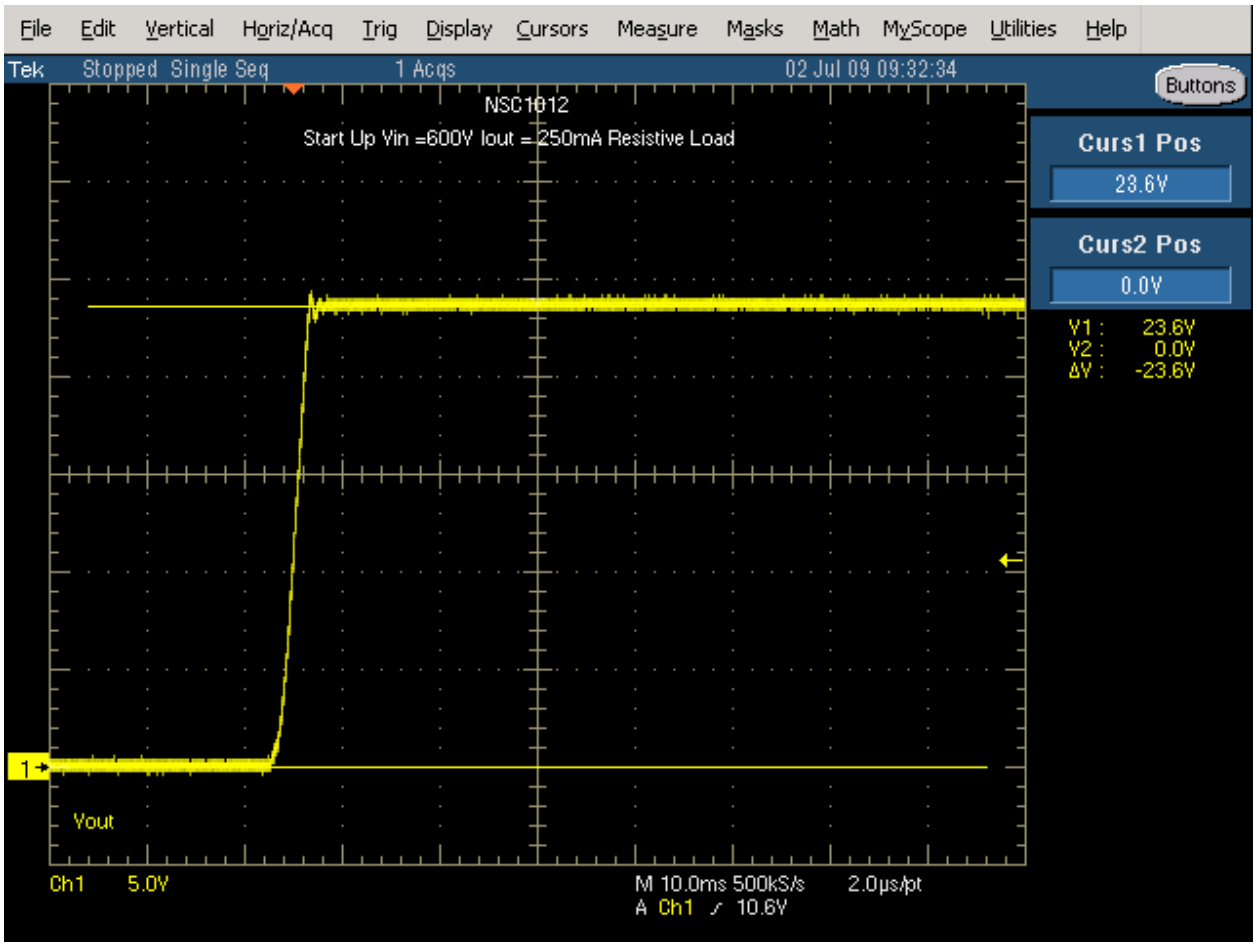
Start up voltage

2.6 Start up voltage Vin = 30V No Load



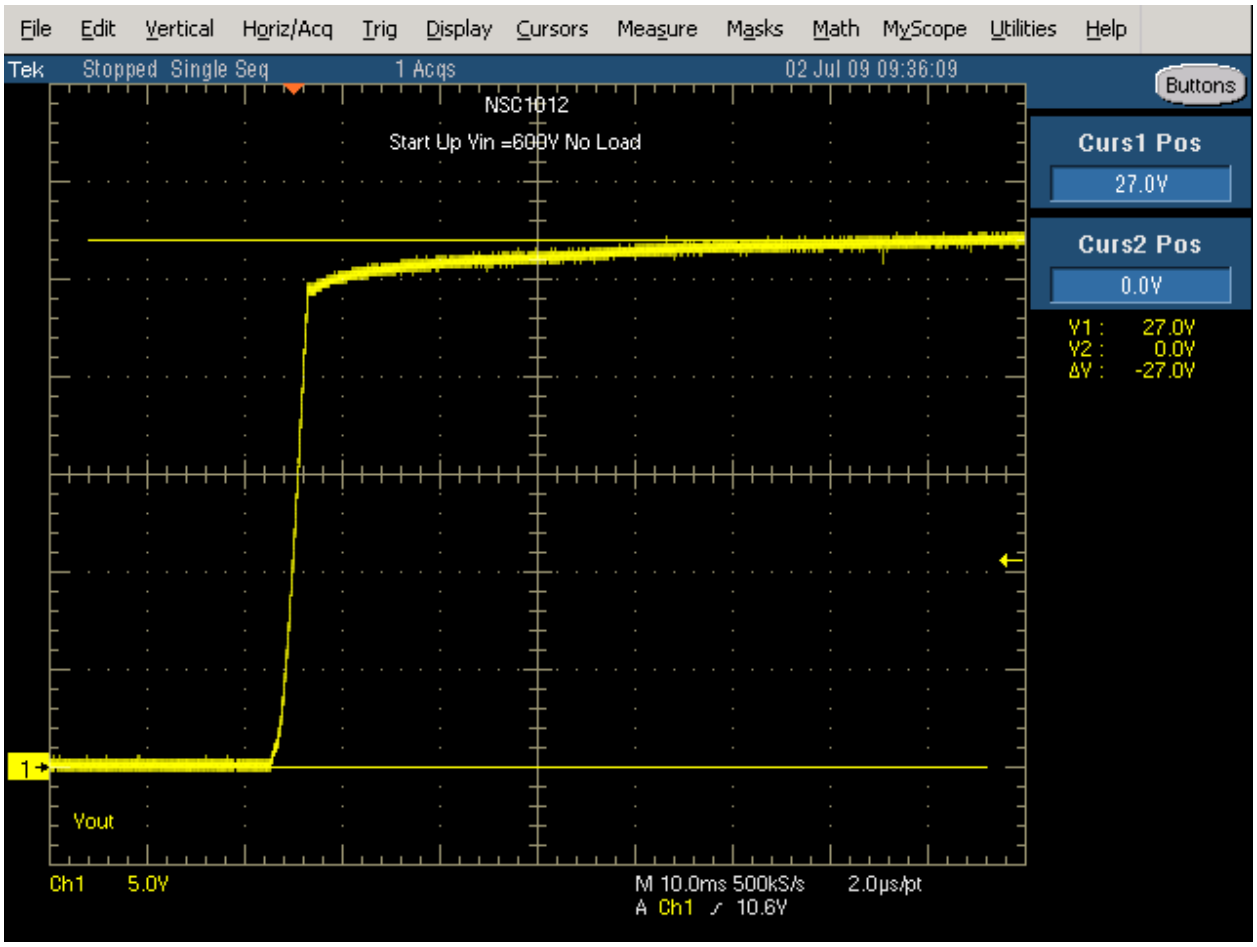
Start up voltage

2.7 Start up voltage Vin = 600V Full Load



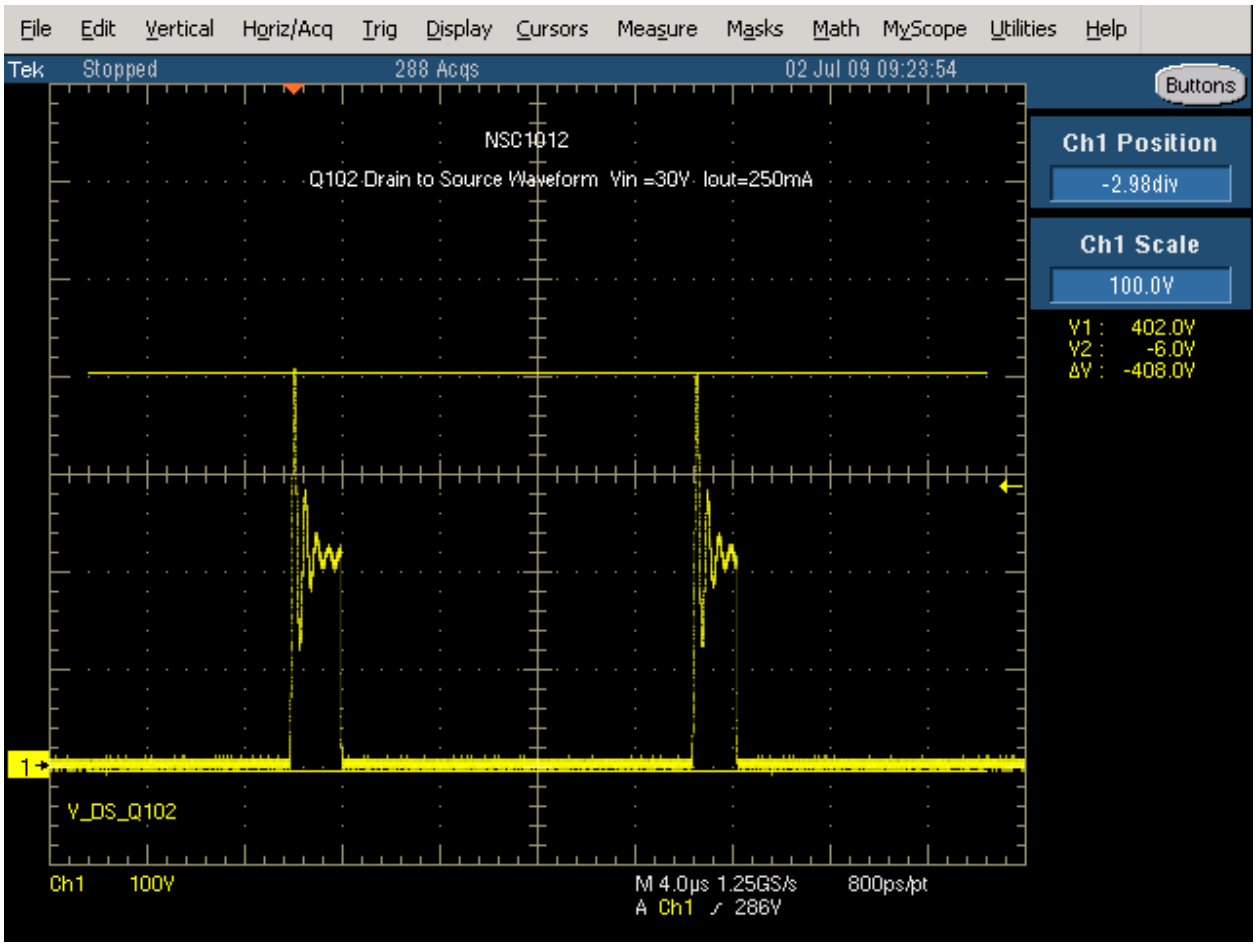
Start up voltage

2.8 Start up voltage Vin = 600V No Load



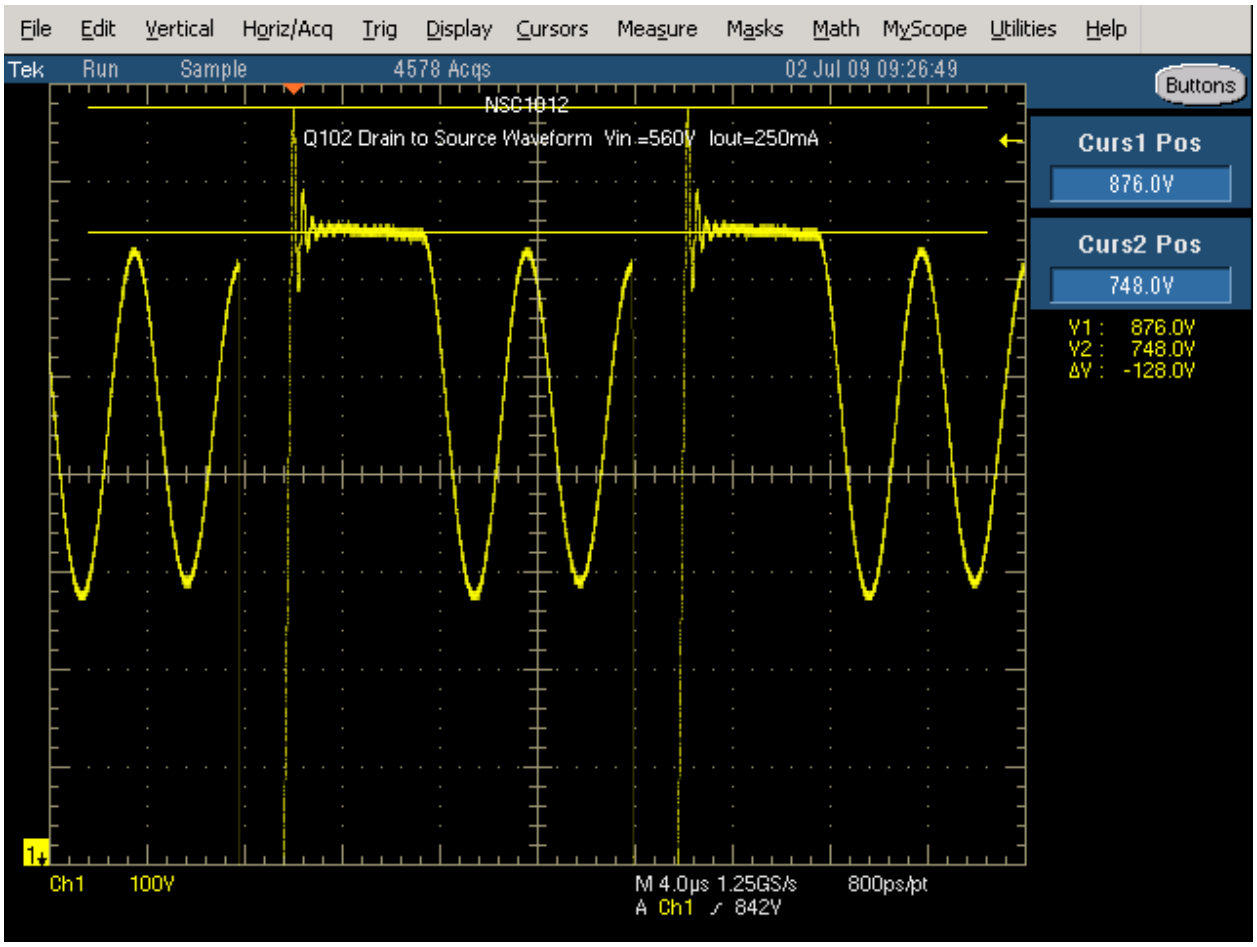
Start up voltage

2.9 Drain to Source voltage Vin = 30V, Iout = 250mA



Drain to source voltage

2.10 Drain to Source voltage Vin = 560V, Iout = 250mA



Drain to source voltage

3.0 Efficiency results

Vin (V)	Iin (mA)	Vout (V)	Iout (mA)	Eff (%)	Vin (V)	Iin (mA)	Vout (V)	Iout (mA)	Eff (%)
30	19	25.65	10	45	50	12	25.67	10	42.78333
30	58	24.87	50	71.46552	50	33	24.71	50	74.87879
30	106	24.29	100	76.38365	50	61	24.34	100	79.80328
30	156	23.66	150	75.83333	50	88	24.05	150	81.98864
30	210	23.94	200	76	50	115	23.73	200	82.53913
30	252	21.16	250	69.97354	50	143	23.36	250	81.67832
Vin (V)	**Iin (mA)**	**Vout (V)**	**Iout (mA)**	**Eff (%)**	**Vin (V)**	**Iin (mA)**	**Vout (V)**	**Iout (mA)**	**Eff (%)**
100	7	25.71	10	36.72857	600	1.9	26.02	10	22.82456
100	15.8	24.71	50	78.1962	600	5.3	24.69	50	38.82075
100	31.3	24.34	100	77.76358	600	7.3	24.35	100	55.59361
100	42.8	24.1	150	84.46262	600	8.5	24.13	150	70.97059
100	57	23.92	200	83.92982	600	10.8	23.95	200	73.91975
100	71	23.74	250	83.59155	600	13.7	23.78	250	72.3236

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