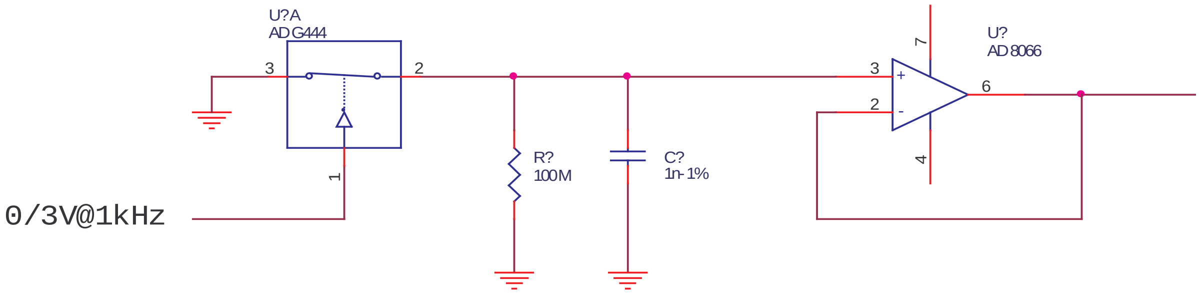
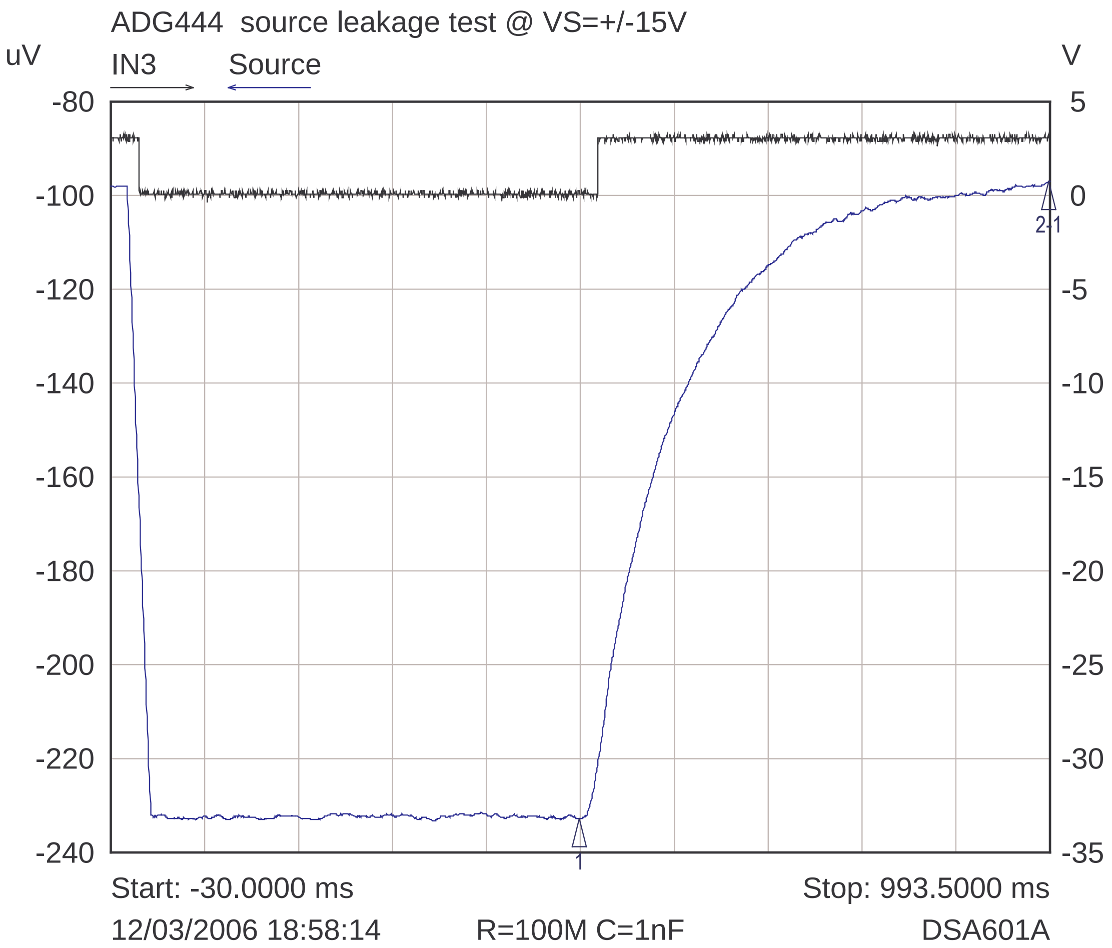
First we try the datasheet conditions, with the added 100M for leakage measurement.



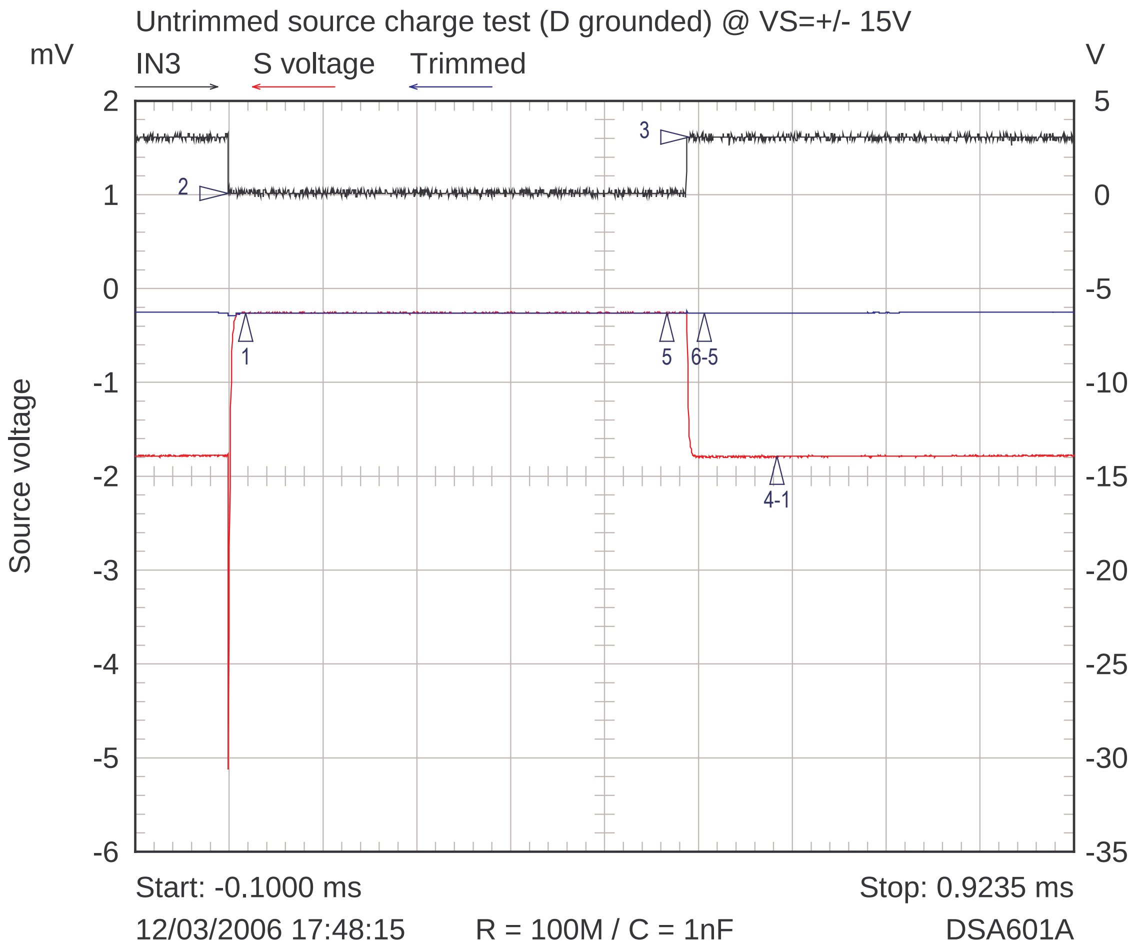
Leakage test:



Mkr	Trace	X-Axis	Value	Notes
1 ▽	Source	480.0000 ms	-232.81 uV	Opamp offset
2-1 ▽	Source	512.0000 ms	135.78 uV	Switch leakage = 1.36pA

The 1.36pA leakage is OK.

Then we check the injected charge:

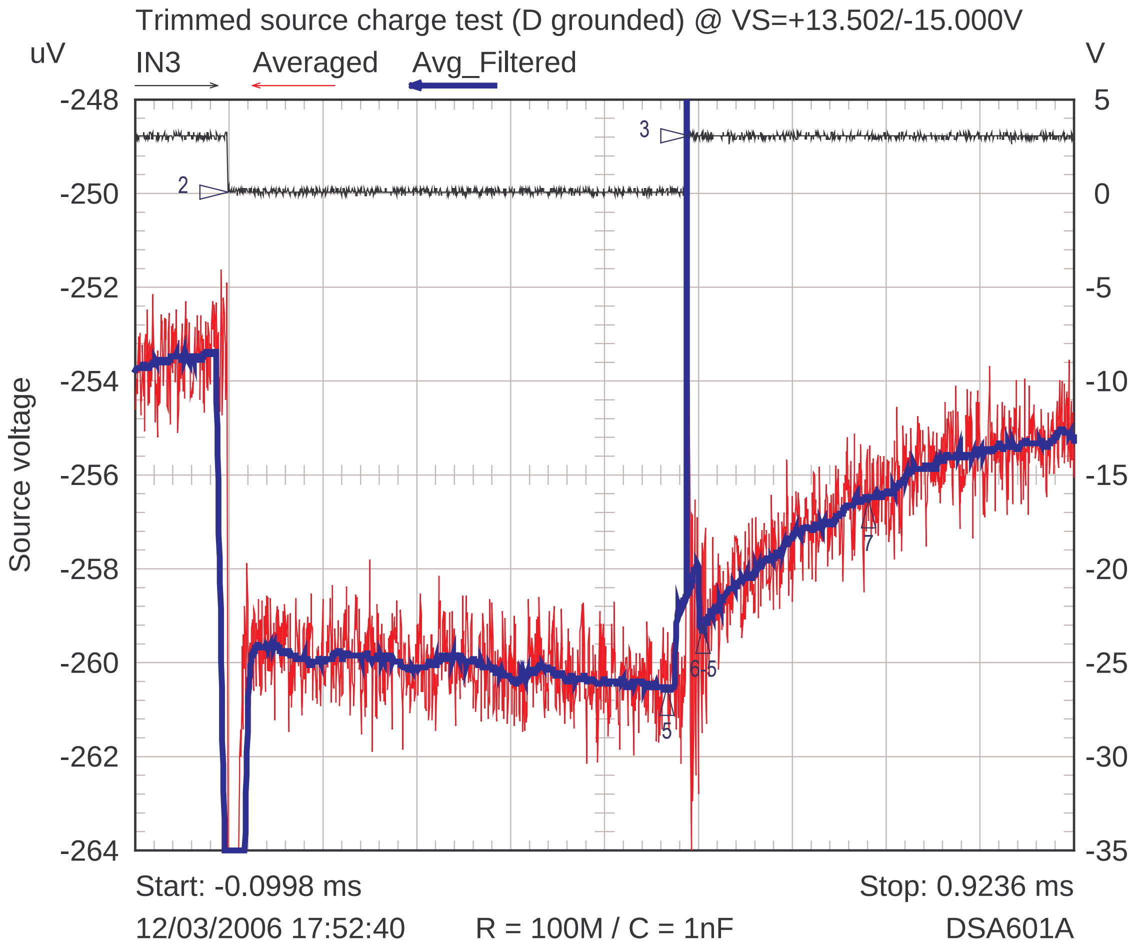


Mkr	Trace	X-Axis	Value	Notes
1 ▽	S voltage	0.0200 ms	-259.06 uV	Opamp offset
2 ▽	IN3	0.0010 ms	50.00 mV	SW closed
3 ▽	IN3	0.5040 ms	3.05 V	SW open
4-1 ▽	S voltage	0.5800 ms	-1.53 mV	Qinj = 1.5pC
5 ▽	Trimmed	0.4800 ms	-260.34 uV	
6-5 ▽	Trimmed	0.5200 ms	1.13 uV	Trimmed Qinj = 1.1fC

The red curve gives about 1.5pC charge, for the untrimmed +/-15V supplies.
The blue curve shows the (roughly) trimmed case on the same scale for comparison.
The black curve is the switch driving signal (low = switch ON / High = switch OFF).

The untrimmed 1.5pC is OK.

Now we trim the power supplies (+15V here, while VS- is still –15V) so as to null the injected charge and we zoom.

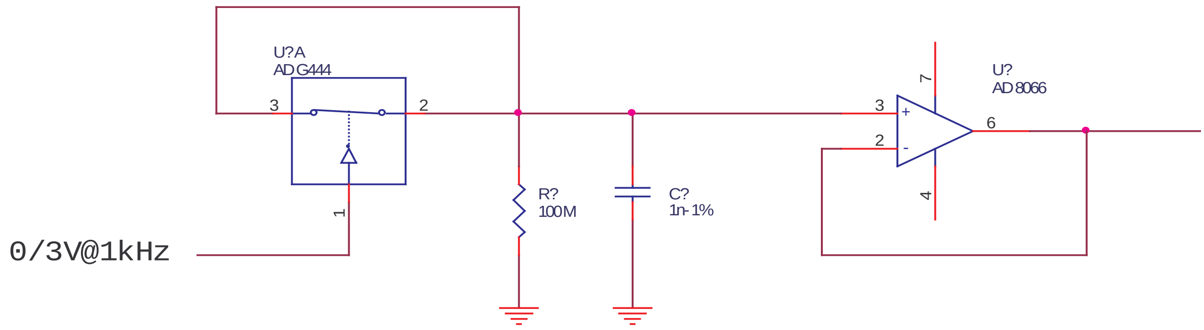


Mkr	Trace	X-Axis	Value	Notes
2 ▽	IN3	0.0010 ms	50.00 mV	SW closed
3 ▽	IN3	0.5040 ms	3.05 V	SW open
5 ▽	Avg_Filtered	0.4800 ms	-260.52 uV	
6-5 ▽	Avg_Filtered	0.5200 ms	1.31 uV	Trimmed Qinj = 1.1fC
7 ▽	Avg_Filtered	0.7000 ms	-256.52 uV	I leak integration

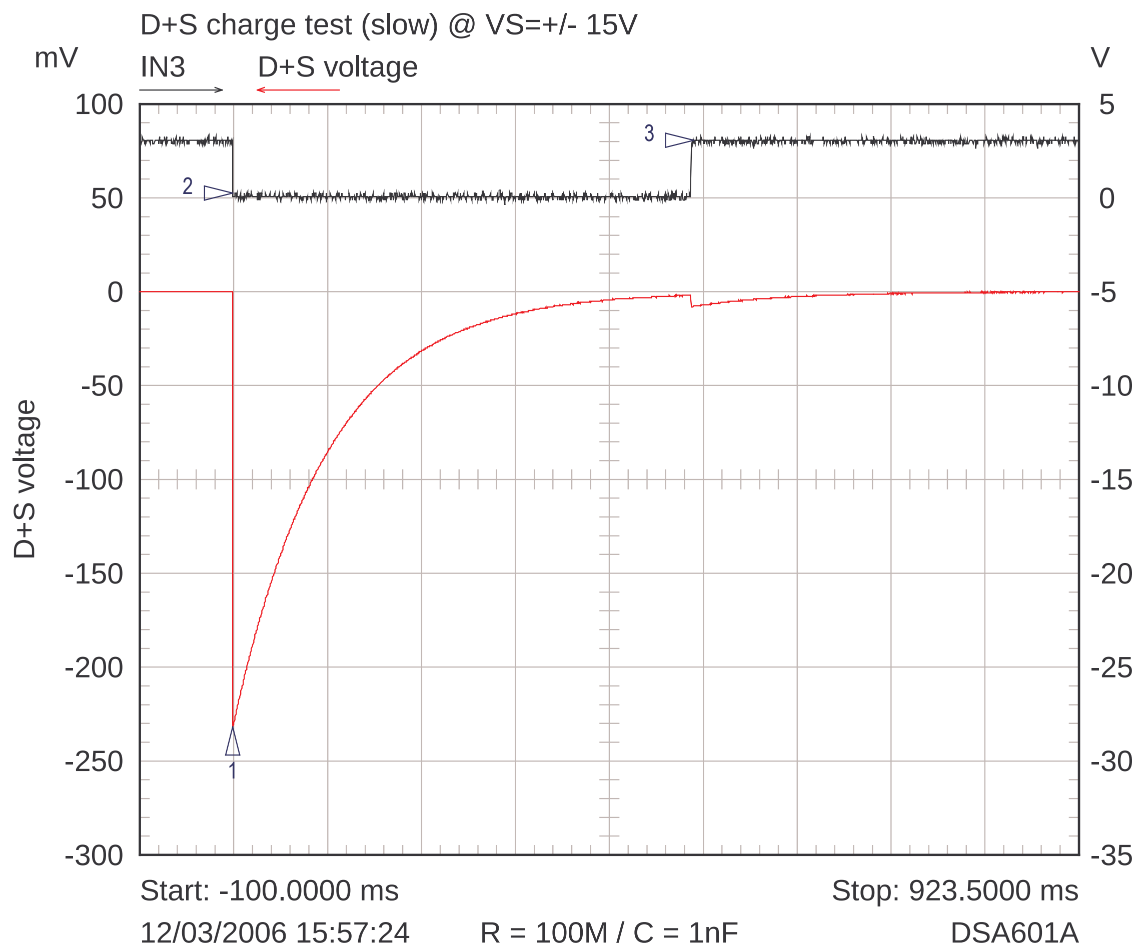
The red curve is a 4096 average. The blue is a filtered (smoothed) version of the red curve.
We can see about 1.1fC Q_{inj}. This can easily be trimmed further (about 1fC/mV supply) but the 5mV step of my PSU wire wound pot don't allow this.
The rising slope of the second half is the operational amplifier + switch leakage current integration into the 1nF capacitor.

The trimmed 1fC is excellent.

Until now all is good,… but I had a gut feel and tried this:



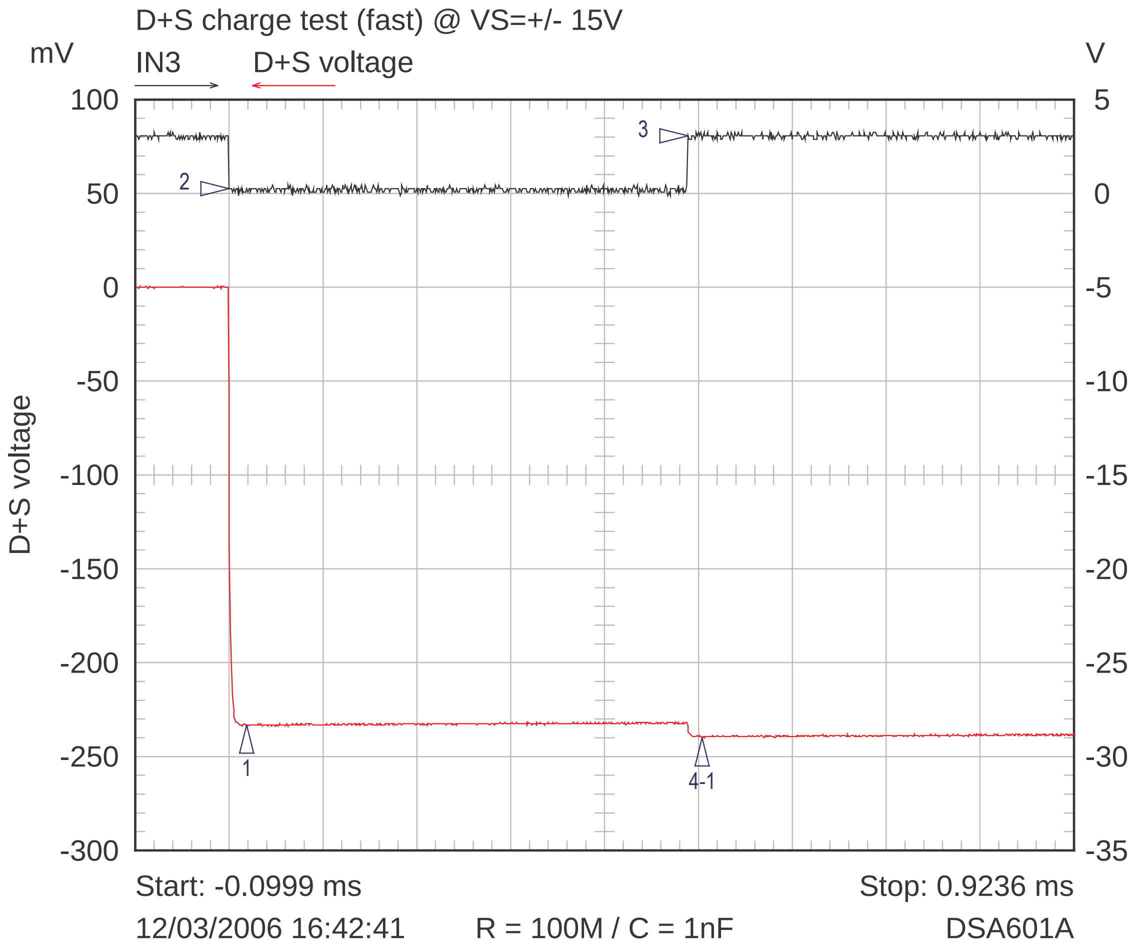
…and the result is more than disappointing (note the 1s time scale):



Mkr	Trace	X-Axis	Value	Notes
1 ▽	D+S voltage	1.0000 ms	-231.95 mV	232pC. Huhhh !!!
2 ▽	IN3	1.0000 ms	250.00 mV	SW closed
3 ▽	IN3	504.0000 ms	3.05 V	SW open

now we have a 232pC injected charge. Not bad for a 1pC typ/6 WC switch and absolutely useless for me.

Now, the same conditions with a fast ON/OFF cycle makes this even worse, if possible:



Mkr	Trace	X-Axis	Value	Notes
1 ▽	D+S voltage	0.0210 ms	-233.00 mV	232pC. Huhhh !!!
2 ▽	IN3	0.0020 ms	250.00 mV	SW closed
3 ▽	IN3	0.5030 ms	3.05 V	SW open
4-1 ▽	D+S voltage	0.4970 ms	-6.70 mV	Even more charge: 7pC

Here we see the charge isn't, even partly, recovered when switching back to the initial position, but rather another 7pC charge is injected.

Do all the AD low charge switches behave like that one?