



SiPM Adaptive HV PSU

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R&D Work is ongoing

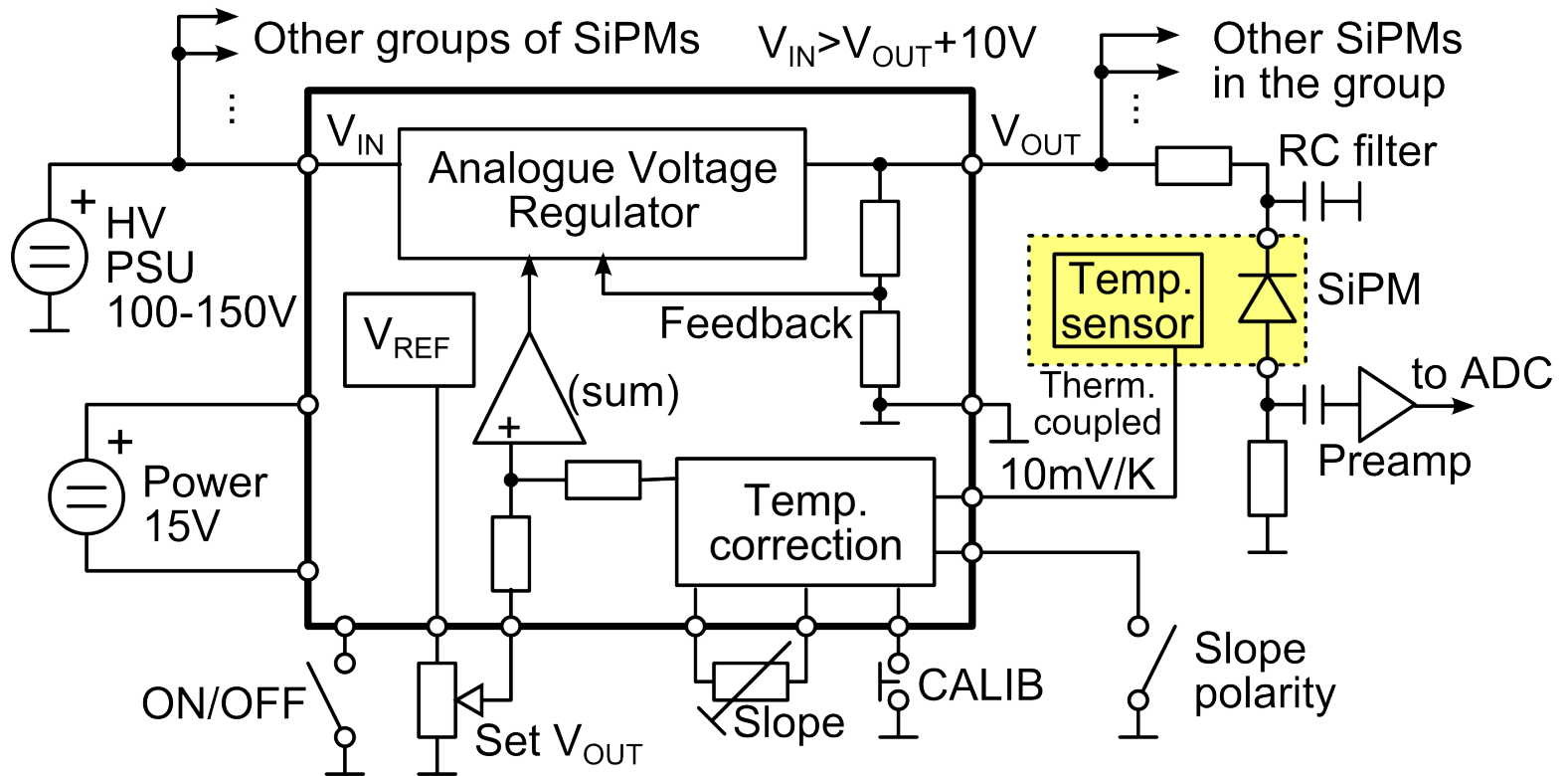
Erik measured several batches of different SiPMs (MPPC, CPTA, Ketek) we found range of slope dV/dT $\langle 12 \text{ to } 64 \text{ mV/K} \rangle$

- $dV/dT = (dG/dT) / (dG/dV)$ seems to be constant, see Erik`s talk
- We choose analogue solution, later could be extended with microcontroller (ADC/DAC) to have a PC control.
- Design specifications:
 - V_{in} 100 – 160V
 - V_{out} 10 to 85V + temp correction trim
 - Temperature slope $\langle 1 \text{ to } 100 \text{ mV/K} \rangle$, an option for pos/neg slope
 - Ambient Temperature range at sensor $\langle +5^\circ\text{C} \text{ to } 50^\circ\text{C} \rangle$
 - Stability 0.1%

Block diagram of ADApower regulator

Vout 10 to 85V + temp correction

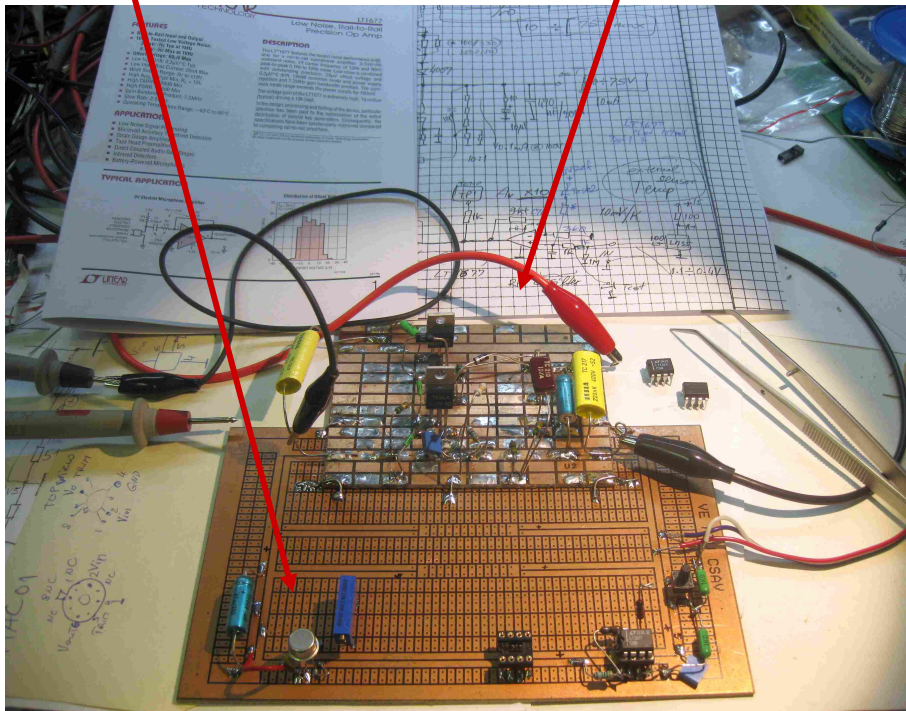
Temperature slope <1 to 100mV/K, pos/neg slope



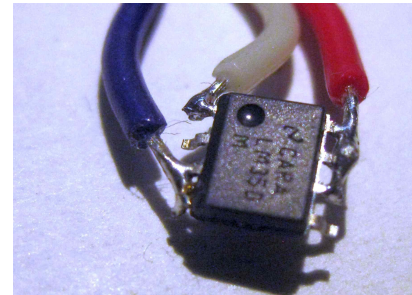
Pictures from breadboarding stage

ADA-power board is not ready here R&D

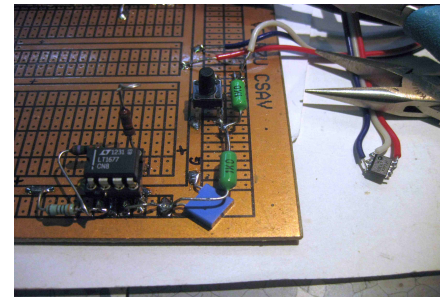
Analogue voltage regulator
Voltage reference



Temperature sensor LM35D
(in SO8 package)



Can be
modified to
common
PT1000 sensor



Temperature
correction
part

Plans, schedule

- In AIDA WP9 milestone MS45 – Calibration and power supply has delivery date January 2014
- We agreed to have at the end of 2013 – proof of principles:
 - July 2013: decision if $G(T,V) = \text{const.}$ is **linear** - done, see Erik`s talk
- PRG tasks
 - Summer 2013: design of analogue control circuit
 - Autumn 2013 PCB development and construction
 - November 2013: PCB ready and first tests

Next week in CERN there will be performed first test with breadboard ADApower regulator and SiPM.