Topic: DDC264 Noise

In test mode, there is no PD connected, 3pF, 2ms situation, the noise RMS in 16 bit. It is 0.6-1.15 LSB.

- Test Mode, No PD connected, Range 0 = 12.5pC (C_F = 3pF), Noise is 0.6 LSB – 1.15 LSB which is 9.16ppm – 17.6ppm (Table 1: 16ppm FSR). This number is very close to what it should be. But the 2x variation on the noise performance seems to be a little too much (from 0.6LSB to 1.15LSB). The high-end (1.15 LSB/17.6ppm) seem to be close to what we have on the datasheet. The low-end (0.6LSB/9.16ppm) looks to be too good. How many points are used to compute the noise?

  It would be good if all channel data is provided. All channel data helps to look for correlation effects across channels, which show up due to common sources of noise for all channels, like power or reference.

After soldering PD(Work mode with totally barrier), 3pF, 2ms situation, C sensor 55pF, the noise RMS in 16 bit. It is 2.8-3.4 LSB.

- With PD, Range 0 = 12.5pC (C_F = 3pF), Csensor = 55pF, Noise is 2.8 LSB – 3.4 LSB which is 42.8ppm – 52ppm (Table 1: 44ppm FSR). The dataset provided rms noise is 3.19 LSB (48.8ppm FSR). The high-end side is slightly higher than the datasheet, but it seems reasonable with the Csensor and additional parasitic on the board.
  A decent portion of total Csensor comes from traces, and it is fair to expect that the variation from trace to trace could by itself account for the difference in noise performance from channel to channel. That is especially true if you realize that for the higher gains, small variations on input capacitance do affect more the noise result (the slope of noise vs. capacitance is higher)