THE OSCILLOSCOPE ON A CHIP

Problem – Challenge
The Domino-Ring-Sampler Version 4 (DRS4) is a unique chip capable of measuring eight differential input signals simultaneously with up to five billion samples per second and a resolution of almost 12 bits. This DRS4 together with a standard personal computer and a suitable application software constitutes a complete and powerful oscilloscope at about 10% percent of the cost of a state-of-the-art commercial oscilloscope.
This unique technique represents a low-cost solution for many laboratory and industrial applications. However, the biggest benefits in terms of “return on investment” and “operational costs” will be realised in applications where hundreds or even thousands of signals have to be measured simultaneously.

Solution
• Single 2.5 V power supply
• Sampling speed 200 MSPS to 5 GSPS
• 8 + 1 channels with each 1024 storage cells
• Cascading of channels or chips allows a deeper sampling depth
• Differential inputs with 950 MHz bandwidth
• Transparent mode for integrated triggering
• Simultaneous reading and writing
• Multiplexed or parallel analogue outputs
• Low power: 140 mW typical at 2 GSPS
• High SNR: 69 dB after offset correction
Patent pending

Applications
• Low-cost Digital Oscilloscopes
• Hand-held Measuring Devices
• Medical Applications (PET Scanner)
• Particle Physics Experiments

Installation at the Paul Scherrer Institute equivalent to 750 Oscilloscopes.