4x4 opto sensor with amplifiers
Advance information DELTA-OPTO4X4

Features
• Number of active pixels: 16
• Pixel height: 475 μm
• Pixel pitch: 480 μm
• Pixels can be bundled in parallel to make a 2x2 array
• SPI configurable register set-up
• Visible and near IR sensitive photo diodes
• 4 on-chip low noise TIAas for continuous analog output
• Up to 1 MHz bandwidth
• Up to 1 MΩ programmable TIA amplification
• Externally controlled sample hold functionality
• Programmable difference amplifier x5 to x40
• Direct difference measurement on selected photodiodes
• 3.3 V single supply operation (functionality down to 2 V)
• 400 mV to 1.4 V buffered analog output
• Very low power standby mode (< 1 μA)
• 2 programmable amplifiers from x2 to x25
• Analog output amplifier for driving capacitive loads
• Simple control
• Dark current below 0.3 μA
• TIA input referred noise @20kHz BW below 0.5 μA

Small electro-optical detection systems can be implemented with this chip or parts of this chip.

The gains of the different amplifier are configurable by a SPI interface and the system can be set in different modes e.g. power sample hold mode.

DELTA-OPTO4X4 is fully compatible with standard low-cost CMOS process. The digital interface is 3.3 V making it easy to combine external lock-in amplifiers and/or external CPU with ADC for a variety of demonstrators.

This IP has been proven in silicon in standard CMOS 0.18 μm process and can easily be ported to other standard digital process. Using a standard 0.18 μm process it is easy to add all types of digital and/or analog circuitry e.g. CPU, RAM, ROM, ADC, NFC communication etc.

Applications
• Backlight monitoring
• Fluorescence based sensor systems
• Movement measurement
• Position detection
• Light curtain
• Proximity sensor
• Colour detection

For further information please contact us
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Architecture overview of Opto-ASIC with a 4x4 on-chip sensors