A Fast and Responsive 4K Dual Line Monochrome CMOS Imaging Sensor

The IT-K4-04096 sensor is a high performance, digital, dual line scan monochrome CMOS image sensor. The sensor is optimized for a high line rate and low noise, while providing high responsivity through two lines of image capture, and high quantum efficiency (QE). The sensor is designed for ease-of-integration and uses FR4 packaging.

The pixel features global shutter capability, 100% fill factor, and true correlated double sampling (CDS) for low noise.

FR4 packaging offers high signal integrity and simple interfacing for quick system integration. The interface consists of two 60-pin connectors, which contain input signals, such as EXSYNC (trigger), clocks and voltages, and output signals, such as data and strobe (s-LVDS). Access to the registers of the sensor is handled through a serial-peripheral interface (SPI), plus the temperature of the sensor can be monitored.

The two 60-pin connectors on the IT-K4 share the same electrical and mechanical interface with the entire IT-K and IT-L sensor series, whereby the two 60-pin connectors and four mounting holes are positioned identically relative to one another as well as having pin compatibility.

Specifications

- **Line Rate**: 100 kHz, maximum
- **Output**: 12-bit digital LVDS
- **Resolution**: 4096 x 2 (4K dual line)
- **Pixel Size**: 10.56 µm x 10.56 µm
- **Random Noise**: 1.9 DN
- **Dynamic Range**: 66 dB
- **Conversion Gain**: 0.15 DN/e
- **Full Well**: 25 ke
- **Shutter Type**: Global shutter
- **Responsivity**: 325 DN / nJ / cm² @ 12-bit, peak
- **Power Consumption**: 6 W
- **Operating Temperature**: 0 °C to +60 °C
- **Package**: FR4
- **Regulatory Compliance**: RoHS

Key Features

- Two pixel rows with independent exposure control
- High speed: 2 x 100 kHz line rate
- High responsivity and full well
- 100% fill factor
- Low noise
- Ease of integration
- Common electrical and mechanical interface

Typical Applications

- Web inspection
- Recycling
- Document scanning

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<td>4096 x 2</td>
<td>100 kHz</td>
<td>10.56 µm x 10.56 µm</td>
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Camera part number for sensor evaluation: P4-CM-04K10D
Note: Savitsky-Golay filtering applied, with 40 nm window and 1st order polynomial.