

# CMOS Flat Panel Detector for PCB Inspection

## Xmaru0505CF - E™

### Overview

The Xmaru0505CF sensor is fully adaptable for real-time imaging application of digital x-ray imaging systems with high resolution. CMOS active pixel type sensor makes extremely low noise level and high sensitive performance. Large-area flat panel sensor, ~5x5cm, gives wide application in digital x-ray imaging. 14 bits video out ensures the wide dynamic range.

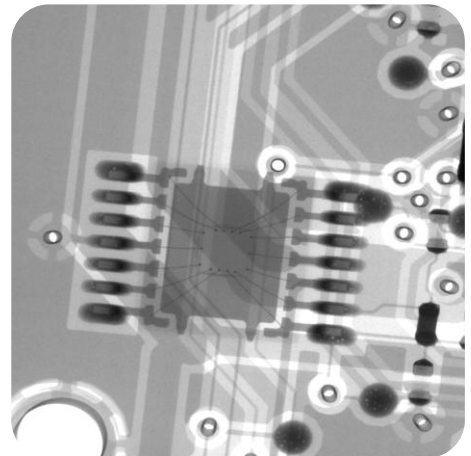
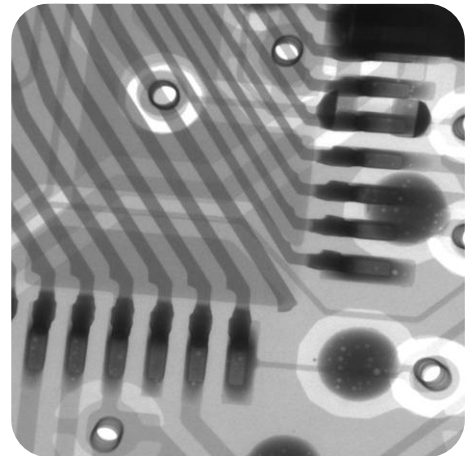
The high physical and functional performance of the Xmaru0505CF gives competitive image quality.

### Feature

- Large-area: 5.4cm x 4.8cm
- 1124x1000 pixel
- High resolution: ~ 10.4 lp/mm
- High-speed frame rate: ~10 frames/s
- 14-bit digital output
- High sensitivity
- Extremely low electrical noise

### Applications

- Digital radiography
- Computed tomography (Micro CT, Dental CT etc.)
- Non-destructive inspection (off-line) (PCB, BGA etc.)



The Xmaru0505CF-E is large-area flat panel x-ray detector with one chip CMOS. Due to seamless one chip CMOS, there is no data missing or artifacts. And also we ensure physical reliability of sensor. Xmaru0505CF-E employs several options for x-ray-to-light Converter with FOP+CsI:TI and FOP+Gadox. The FOP makes much less light blurring against scintillator only. This is the reason Why Xmaru0505CF-E have higher resolution than any other sensors. It also absorbs most of x-ray. The Xmaru0505CF-E derives with 8 Channels. Analog channel can be MUXed to go to 4 dual channel ADC. This characteristic gives the lowest channel variation and fast readout speed with stable signal. The speed is up to 10fps with high resolution. Xmaru0505CF-E make image with internal or external trigger. Readout speed can be controlled by external trigger in external trigger mode.

# Specification

| Parameter                    | Unit      | Specification                |
|------------------------------|-----------|------------------------------|
| Sensor Type                  | -         | CMOS photodiode array        |
| X-ray Converter              | -         | FOS (FOP+CsI:TI / FOP+Lanex) |
| Dimension (W x L x T)        | mm        | 146 x 215 x 29.8             |
| Active Area                  | mm        | 54 x 48                      |
| Pixel Size                   | μm        | 0.048                        |
| Number of Active Pixels      | pixels    | 1124 x 1000                  |
| Number of Effective Pixels*1 | pixels    | 1115 x 990                   |
| Frame Rate Internal          | fps       | 10                           |
| Frame Rate External          | fps       | ~ 10                         |
| Resolution*2                 | lp/mm     | 10.4                         |
| Noise*3                      | e-        | < 144                        |
| A/D                          | bits      | 14                           |
| Sensitivity*4                | ADU/μGy*5 | >900                         |
| Dynamic Range                | dB        | >68                          |
| Defect Line                  | lines     | Max. 20                      |
| Energy Range                 | kVp       | ~130 kVp                     |

\*1: X-ray sensitive area

\*2: Spatial resolution @ over MTF 10%

\*3: RMS of dark current

\*4: Measured @ 80kVp, 8 mm Al filter

\*5: μGy is the unit of X-ray exposure (1mR = 8.69 μGy)



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## General Information

| Parameter        | Description            |
|------------------|------------------------|
| Readout          | Charge amplifier array |
| Video output     | LVDS 14 bit            |
| Output data rate | 32 MHz                 |

## Options

### Power Supply

| Parameter                   | Description                         |
|-----------------------------|-------------------------------------|
| Supply Voltage              | +5V (±0.2), -5V (±0.2), +12V (±0.2) |
| Current                     | 3A, 1A, 1A                          |
| Input Voltage for Ext. Trg. | 0 to 5V                             |

### •Humanray Frame Grabber