



The X-Card2 Series is an enhanced product family of linear array X-ray detector boards for Industrial and Security applications including Food and Pharmaceutical Inspection and Industrial Non-Destructive Testing (NDT).

The X-Card2 provides improved imaging performance with lower dark image noise and increased dynamic range and sensitivity.

Features:

- x Detectable X-ray energy range: 20KeV - 160KeV
- x Active length options for 51.2 mm and 102.5 mm
- x Pixel size options: 0.2 mm, 0.4 mm and 0.8 mm
- x Max readout rate: 1 MHz
- x Dynamic range: > 8000
- x Improved tolerance to electrostatic discharge (ESD): up to 2K Volts contact discharge
- x Significantly improved radiation hardness
- x Eight gain options supported: 0.25pf - 3.5pf

Benefits:

- x Suitable for diverse Industrial and Security applications including Food, Pharmaceutical Inspection and Industrial Non-Destructive testing
- x Increased radiation hardness for longer detector lifespan and reduced life time costs
- x Increased protection against ESD and moisture for ease of handling
- x Industry leading image quality and speed with high performance DT proprietary photodiode and ASIC designs
- x Increased sensitivity and reduced dark image noise for improved image quality
- x Complete subsystems available, including detectors, controllers and software libraries for rapid system development

X-Card2 Series

0.4-128G 0.2-256G

0.8-64G 0.8-128G

X-ray detector boards with integrator/multiplexer ASIC



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General Characteristics

	X-Card2 0.4-128G	X-Card2 0.2-256G	X-Card2 0.8-64G	X-Card2 0.8-128G	Notes
Detectable Energy Range	20-160 keV				1)
Scintillator	GOS (Gd2O2S:Tb)				1)
Scintillator Thickness	0.5 mm				2)
X-Card Length	51.3 +/- 0.05 mm	51.3 +/- 0.05 mm	51.3 +/- 0.05 mm	102.5 +/- 0.05 mm	
X-Card Width	25 +/-0.1 mm	30 +/-0.1 mm	25 +/-0.1 mm	25 +/-0.1 mm	
X-Card Thickness	1.6 +/- 0.1 mm	1.6 +/- 0.1 mm	1.6 +/- 0.1 mm	1.6 +/- 0.1 mm	
Active area length	51.18 mm	51.18 mm	51.18 mm	102.36 mm	
Number of Pixels	128	256	64	128	
Pixel Pitch	0.4 mm	0.2 mm	0.8 mm	0.8 mm	
Pixel Height	0.6 mm	0.3 mm	0.8 mm	0.8 mm	
Pixel Width	0.32 mm	0.15 mm	0.72 mm	0.72 mm	
Minimum Integration Time	0.14 ms	0.28 ms	0.14 ms	0.14 ms	3)
Maximum Integration Time	2 s				
Maximum read out rate	1 MHz				
Dynamic Range (@1pf feedback capacity and 3.5V reference voltage)	> 8,000				4)
Non-Linearity	< 1%				
ESD Immunity	> 2K volts				
Operational Voltage	+5 V DC				
Radiation hardness	10 Mrads				5)
Outline Dimensions	51.3 x 40 x 7.9 mm	51.3 x 29 x 5 mm	51.3 x 29 x 5 mm	102.5 x 29 x 5 mm	
Operational Temperature	-5 - +60 °C				
Storage Temperature	-10 - +70 °C				
Relative Humidity (Non-condensing)	< 85 %				

Note 1) CdWO4 is also available as scintillator material. With CdWO4 the detectable energy range can be suitable for 100-600 keV or up to 9MeV.

Note 2) Phosphor layer thickness is 0.3 mm.

Note 3) The minimum integration time is defined as Ckc is set to 4 MHz.

Note 4) Dynamic range is defined as the saturation signal level divided by the RMS noise in darkness with the default gain setting (feedback capacitance 1 pf) of ASIC.

Available gain options are listed below:

GS0	0	1	0	1	0	1	0	1
GS1	0	0	1	1	0	0	1	1
GS2	0	0	0	0	1	1	1	1
Gf [pf]	0,25	3,5	3	2,5	2	1,5	1	0,5

Note 5) Life time with radiation is defined as X-ray response drop reaches 50% in comparison to the original X-ray response.

Dynamic range comparison with gain selections

