Multi-Channel X-Ray Detector Series

Scintillator Compatible Photodiode Arrays

This series consists of 16-element arrays: the individual elements are grouped together and mounted on PCB.

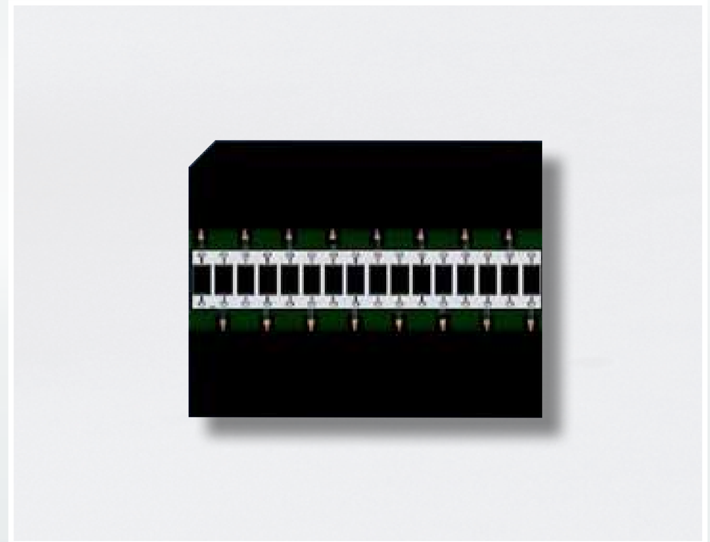
For X-ray or Gamma-ray application, these multi-channel detectors offer scintillator-mounting options: **BGO, $CdWO_4$ or CsI(TI).**

BGO (Bismuth Germanate) acts as an ideal energy absorber: it is widely accepted in high-energy detection applications.

$CdWO_4$ (Cadmium Tungstate) exhibits sufficiently high light output, helping improve Spectrometry results.

CsI (Cesium Iodide) is another high energy absorber, providing adequate resistance against mechanical shock and thermal stress.

When coupled to scintillator, these Si arrays map any medium or high radiation energy over to visible spectrum via scattering effect. Also, their specially designed PCB allows end-to-end connectivity. Multiple arrays can be deployed in situation that calls for larger scale assembly.



APPLICATIONS

- Position Sensors
- Multi-channel Gamma counting
- X-ray Security Systems

FEATURES

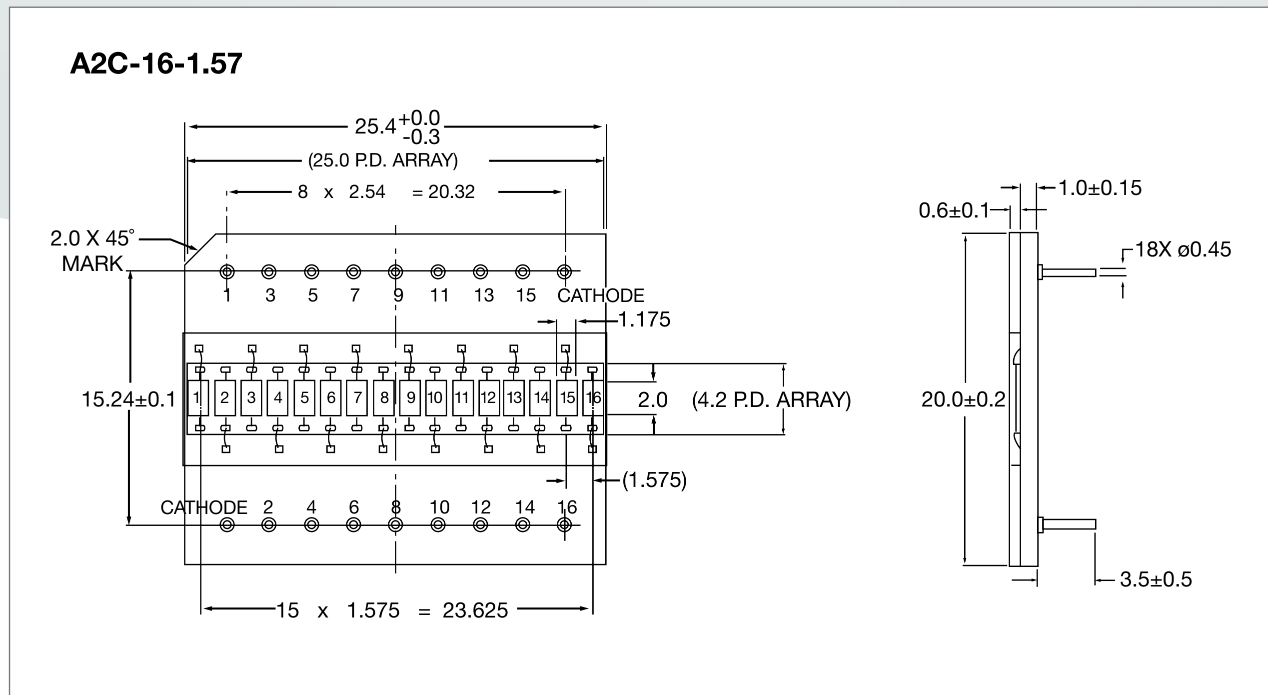
- Scintillator Platform
- 5 Volt Bias
- Channel spacing variety

Multi-Channel X-Ray Detector Series

Typical Electro-Optical Specifications at T_A=23°C

Model Number	Number of Elements	Active Area Per Element		Pitch (mm)	Responsivity (A/W)		Dark Current (pA)	Terminal Capacitance (pF)	Rise Time (μs)	Reverse Bias (V)	NEP (W/√Hz)	Temp. Range (°C)	
					540 nm	930 nm	-10 mV	0V, 10 KHz	0V, 1KΩ		-10mV 930nm	Operating	Storage
		Area (mm²)	Dimensions (mm)		typ.	typ.	typ.	typ.	typ.	max.	typ.		
Photoconductive Arrays													
A2C-16-1.57	16	2.35	2.00 x 1.18	1.57	0.31	0.59	5	28	0.1	5	5.30 e-15	-10 ~ +60	-20 ~ +70

Mechanical Specifications (All units in mm)



Photodiode Care and Handling Instructions

AVOID DIRECT LIGHT

Since the spectral response of silicon photodiode includes the visible light region, care must be taken to avoid photodiode exposure to high ambient light levels, particularly from tungsten sources or sunlight. During shipment from OSI Optoelectronics, your photodiodes are packaged in opaque, padded containers to avoid ambient light exposure and damage due to shock from dropping or jarring.

AVOID SHARP PHYSICAL SHOCK

Photodiodes can be rendered inoperable if dropped or sharply jarred. The wire bonds are delicate and can become separated from the photodiode's bonding pads when the detector is dropped or otherwise receives a sharp physical blow.

CLEAN WINDOWS WITH OPTICAL GRADE CLOTH / TISSUE

Most windows on OSI Optoelectronics photodiodes are either silicon or quartz. They should be cleaned with isopropyl alcohol and a soft (optical grade) pad.

OBSERVE STORAGE TEMPERATURES AND HUMIDITY LEVELS

Photodiode exposure to extreme high or low storage temperatures can affect the subsequent performance of a silicon photodiode. Storage temperature guidelines are presented in the photodiode performance specifications of this catalog. Please maintain a non-condensing environment for optimum performance and lifetime.

OBSERVE ELECTROSTATIC DISCHARGE (ESD) PRECAUTIONS

OSI Optoelectronics photodiodes, especially with IC devices (e.g. Photops) are considered ESD sensitive. The photodiodes are shipped in ESD protective packaging. When unpacking and using these products, anti-ESD precautions should be observed.

DO NOT EXPOSE PHOTODIODES TO HARSH CHEMICALS

Photodiode packages and/or operation may be impaired if exposed to CHLOROTHENE, THINNER, ACETONE, or TRICHLOROETHYLENE.

INSTALL WITH CARE

Most photodiodes in this catalog are provided with wire or pin leads for installation in circuit boards or sockets. Observe the soldering temperatures and conditions specified below:

Soldering Iron:	Soldering 30 W or less Temperature at tip of iron 300°C or lower.	
Dip Soldering:	Bath Temperature: Immersion Time: Soldering Time:	260±5°C. within 5 Sec. within 3 Sec.
Vapor Phase Soldering:	DO NOT USE	
Reflow Soldering:	DO NOT USE	

Photodiodes in plastic packages should be given special care. Clear plastic packages are more sensitive to environmental stress than those of black plastic. Storing devices in high humidity can present problems when soldering. Since the rapid heating during soldering stresses the wire bonds and can cause wire to bonding pad separation, it is recommended that devices in plastic packages to be baked for 24 hours at 85°C.

The leads on the photodiode **SHOULD NOT BE FORMED**. If your application requires lead spacing modification, please contact OSI Optoelectronics Applications group at (310)978-0516 before forming a product's leads. Product warranties could be voided.

***Most of our standard catalog products are RoHS Compliant. Please contact us for details**

Mechanical Drawings

Mechanical Specifications and Die Topography

1. Parameter Definitions:

A = Distance from top of chip to top of glass.
a = Photodiode Anode.
B = Distance from top of glass to bottom of case.
c = Photodiode Cathode
(Note: cathode is common to case in metal package products unless otherwise noted).
W = Window Diameter.
F.O.V. = Filed of View (see definition below).

2. Dimensions are in inches (1 inch = 25.4 mm).

3. Pin diameters are 0.018 ± 0.002" unless otherwise specified.

4. Tolerances (unless otherwise noted)

General: 0.XX ±0.01"
0.XXX ±0.005"
Chip Centering: ±0.010"
Dimension ‘A’: ±0.015"

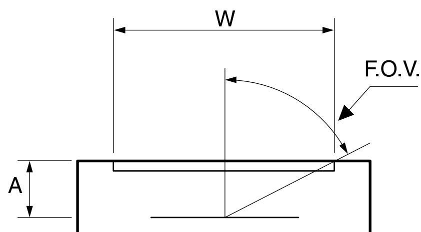
5. Windows

All **‘UV’** Enhanced products are provided with QUARTZ glass windows, 0.027 ± 0.002" thick.

All **‘XUV’** products are provided with removable windows.

All **‘DLS’** PSD products are provided with A/R coated glass windows.

All **‘FIL’** photoconductive and photovoltaic products are epoxy filled instead of glass windows.



$$F.O.V. = \tan^{-1}\left(\frac{W}{2A}\right)$$

For Further Assistance
Please Call One of Our Experienced
Sales and Applications Engineers

310-978-0516

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An OSI Systems Company

- Or -
visit our website at
www.osioptoelectronics.com