

Overview**Parametric Product Search****Silicon Photodiodes**

- + General Purpose Photodiodes**
- + High Speed Silicon Photodiodes**
- + UV Enhanced Photodiodes**
- + X-Ray and Radiation Detectors**
- Photodiode Arrays**

Overview[Multi Element Photodiode Array](#)**Two Dimensional Photodiode Array**

- + Two Color Sandwich Detectors**
- + Nd-YAG Optimized Photodiodes**
- + Avalanche Photodiodes**
- + Photodiode Amplifier Hybrids**
- + Photodiode Filter Assembly**
- + Solderable Chip Photodiodes**
- + Position Sensing Detectors**
- + Plastic Encapsulated Detectors**

InGaAs Photodiodes**GaAs Photodiodes****New Products****Discontinued Products**

Multi Element Photodiode Array

Photoconductive Arrays
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Multichannel array photodetectors consist of a number of single element photodiodes laid adjacent to each other forming a one-dimensional sensing area common cathode substrate. They can perform simultaneous measurements of a moving beam or beams of many wavelengths. They feature low electrical cross talk and super high uniformity between adjacent elements allowing very high precision measurements.

Arrays offer a low cost alternative when a large number of detectors are required. The detectors are optimized for either UV, visible or near IR range. Then can be either operated in photoconductive mode (reverse biased) to decrease the response time, or in photovoltaic mode (unbiased) for low drift applications.

A2V-16 can be coupled to any scintillator crystal for measuring high-energy photons in the X-ray and g-ray region of the Electromagnetic spectrum. In addition, they have been mechanically designed, so that several of them can be mounted end to end to each other in applications where more than 16 elements are needed. Figure 11 in the "Photodiode Characteristics" section of this catalog provides a detailed circuit example for the arrays

**Product Applications**

- Level Meters**
- Optical Spectroscopy**
- Position Sensors**
- Computed Tomography Scanners**
- Medical Equipment**
- High Speed Photometry**

Product Features

- Common Substrate Array**
- Ultra Low Cross Talk**
- UV Enhanced (A5V-35UV)**
- Low Dark Current**
- Low Capacitance**
- Solderable**

Photoconductive Arrays

Model Number	Number of Elements	Active Area per Element	Element Size	Pitch	Responsivity	Shunt Resistance	Dark Current	Capacitance	Open Circuit Voltage	Package	Click Image to Zoom
A5C-35	35	3.9 mm ²	4.39 x 0.89 mm	0.99 mm	0.65 A/W	---	0.05 nA	12 pF (-10V)	---	54 / 40 PIN DIP	
A5C-38	38	3.9 mm ²	4.39 x 0.89 mm	0.99 mm	0.65 A/W	---	0.05 nA	12 pF (-10V)	---	54 / 40 PIN DIP	

Photovoltaic Arrays

Model Number	Number of Elements	Active Area per Element	Element Size	Pitch	Responsivity	Shunt Resistance	Capacitance	Package	Click Image to Zoom
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A2V-16	16	1.92 mm ²	1.57 x 1.22 mm	1.59 mm	0.60 A/W	---	170 pF (0V)	53 / PCB	
A5V-35	35	3.9 mm ²	4.39 x 0.89 mm	0.99 mm	0.60 A/W	---	340 pF (0V)	54 / 40 PIN DIP	
A5V-38	38	3.9 mm ²	4.39 x 0.89 mm	0.99 mm	0.60 A/W	---	340 pF (0V)	54 / 40 PIN DIP	
A2V-76	76	1.8 mm ²	6.45 x 0.28 mm	0.31 mm	0.50 A/W	---	160 pF (0V)	52 / Ceramic	

UV Enhanced Array

Model Number	Number of Elements	Active Area per Element	Element Size	Pitch	Responsivity	Shunt Resistance	Capacitance	Package	Click Image to Zoom
A5V-35UV	35	3.9 mm ²	4.39 x 0.89 mm	0.99 mm	0.06 A/W (254nm)	500 MΩ	340 pF	54 / 40 PIN DIP	

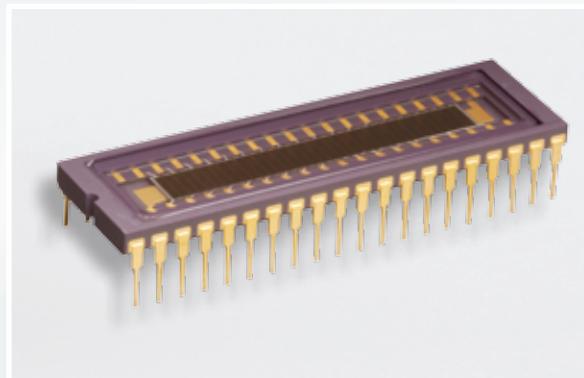
The chips are equipped with 2" long bare tinned leads soldered to all anodes and the common cathode.

Multi-Element Array Series

Planar Diffused Silicon Photodiodes

Multichannel array photodetectors consist of a number of single element photodiodes laid adjacent to each other forming a one-dimensional sensing area on a common cathode substrate. They can perform simultaneous measurements of a moving beam or beams of many wavelengths. They feature low electrical cross talk and super high uniformity between adjacent elements allowing very high precision measurements. Arrays offer a low cost alternative when a large number of detectors are required. The detectors are optimized for either UV, visible or near IR range.

They can be either operated in photoconductive mode (reverse biased) to decrease the response time, or in photovoltaic mode (unbiased) for low drift applications. A2V-16 can be coupled to any scintillator crystal for measuring high-energy photons in the X-ray and gamma ray region of electromagnetic spectrum. In addition, they have been mechanically designed, so that several of them can be mounted end to end to each other in applications where more than 16 elements are needed.



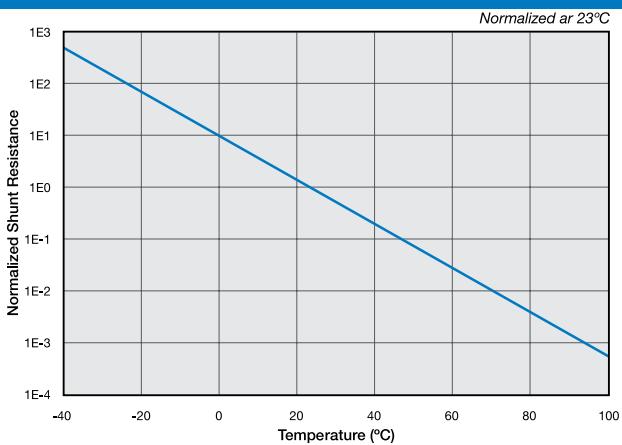
APPLICATIONS

- Level Meters
- Optical Spectroscopy
- Medical Equipment
- High Speed Photometry
- Computed Tomography Scanners
- Position Sensors

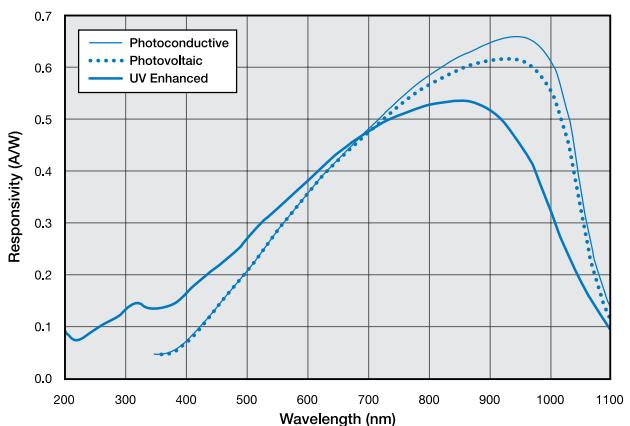
FEATURES

- Common Substrate Array
- Ultra Low Cross Talk
- UV Enhanced (A5V-35UV)
- Low Dark Current
- Low Capacitance
- Solderable

Typical Shunt Resistance vs. Temperature



Typical Spectral Response



Typical Capacitance vs. Reverse Bias Voltage

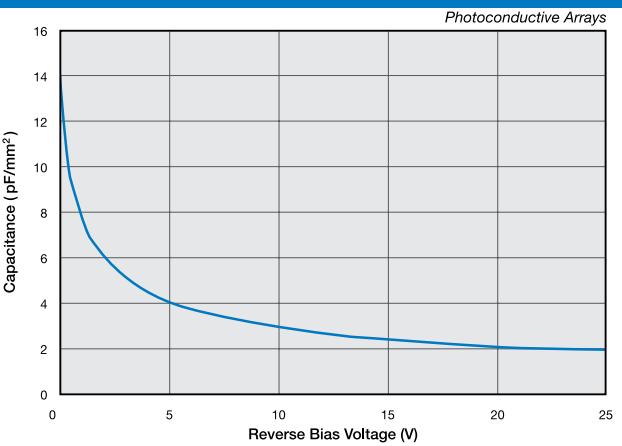


Figure 11 in the "Photodiode Characteristics" section of this catalog provides a detailed circuit example for the arrays.

Multi-Element Array Series

Typical Electro-Optical Specifications at $T_A=23^\circ\text{C}$

Model Number	Number of Elements	Active Area Per Element		Pitch (mm)	Responsivity (A/W)	Shunt Resistance (MΩ)	Dark Current (nA)	Capacitance (pF)		NEP (W / √Hz)		Temp. Range* ($^\circ\text{C}$)	Package Style ¶
		Area (mm ²)	Dimensions (mm)		970nm	-10 mV	-10 V	0 V	-10 V	0 V 970nm	-10 V 970nm		
		typ.	typ.		typ.	typ.	typ.	typ.	min.	typ.	typ.		
Photoconductive Arrays													
A5C-35	35	3.9	4.39 x 0.89	0.99	0.65	---	0.05	---	12	---	6.2 e-15	-30 ~ +85 -40 ~ +125	54 / 40 pin DIP
A5C-38	38												
Photovoltaic Arrays													
A2V-16	16	1.92	1.57 x 1.22	1.59	0.60	1000	---	170	---	4.8 e-15	---	53 / PCB	
A5V-35	35	3.9	4.39 x 0.89	0.99	0.60	1000	---	340	---	4.8 e-15	---	54 / 40 pin DIP	
A5V-38	38											52 / Ceramic	
A2V-76	76	1.8	6.45 x 0.28	0.31	0.50	500	---	160	---	8.2 e-15	---		
UV Enhanced Array (All Specifications @ $\lambda = 254 \text{ nm}$, $V_{BIAS} = -10\text{V}$)													
A5V-35UV	35	3.9	4.39 x 0.89	0.99	0.06**	500	---	340	---	6.8 e-14	---	54 / 40 pin DIP	

The chips are equipped with 2" long bare tinned leads soldered to all anodes and the common cathode.

'V' suffix indicates the device is optimized for 'photovoltaic' operation.

'C' suffix indicates the device is optimized for 'photoconductive' operation.

¶ For mechanical drawings please refer to pages 61 thru 73.

* Non-Condensing temperature and Storage Range, Non-Condensing Environment.

** $\lambda = 254 \text{ nm}$

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: 260±5°C.
Immersion Time: within 5 Sec.
Soldering Time: 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: $0.XX \pm 0.01"$
 $0.XXX \pm 0.005"$

Chip Centering: $\pm 0.010"$
 Dimension 'A': $\pm 0.015"$

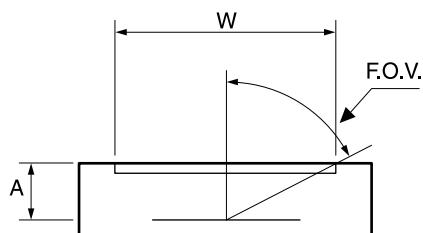
5. Windows

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

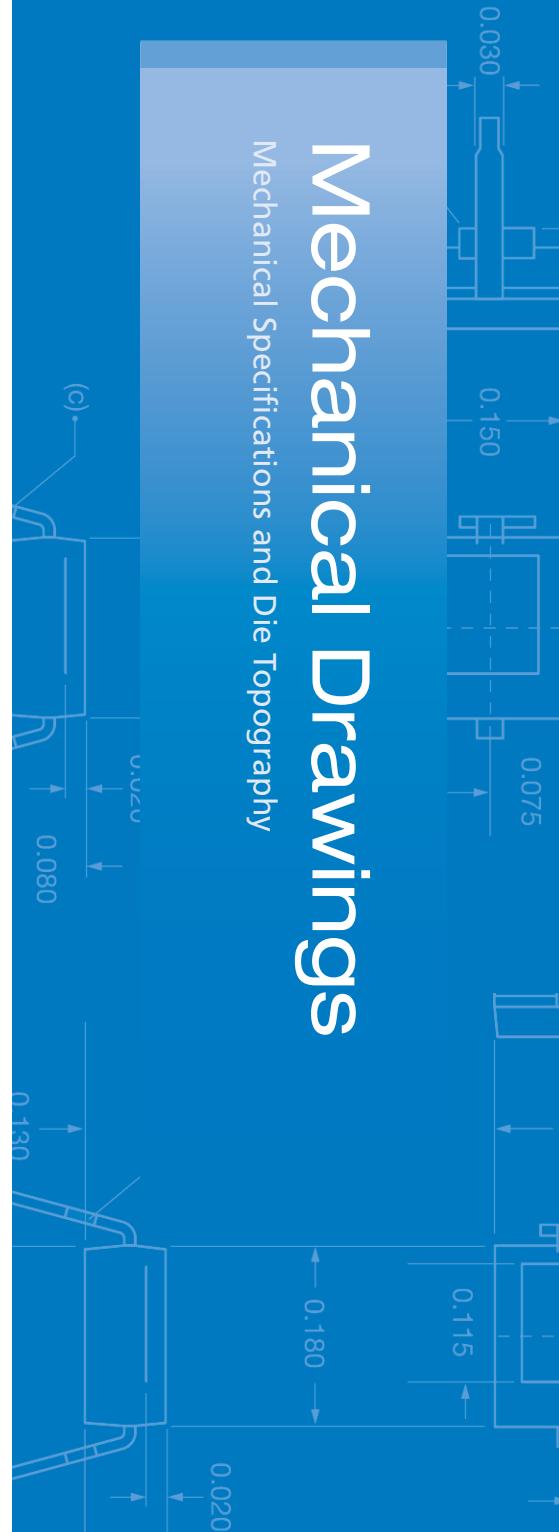
All 'XUV' products are provided with removable windows.

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

OSI Optoelectronics
 An OSI Systems Company

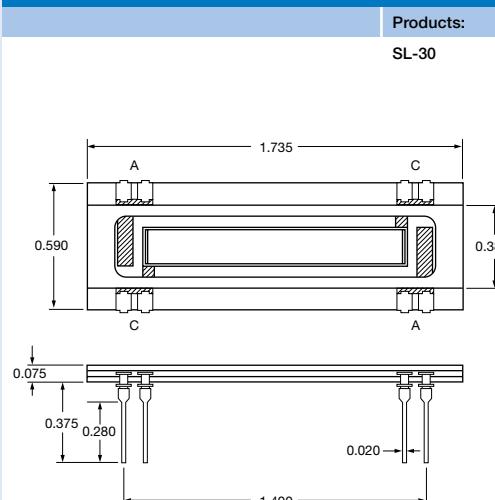


- Or -
 visit our website at
www.osiopptoelectronics.com

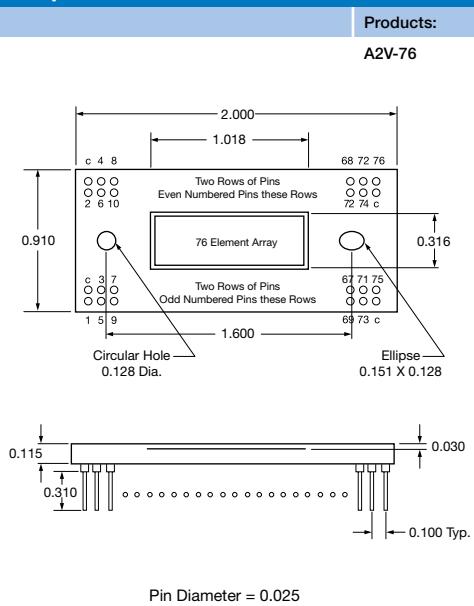
Mechanical Specifications

All units in inches. Pinouts are bottom view.

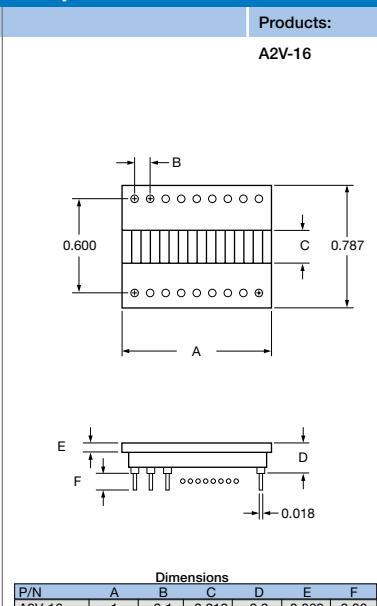
51 Low Cost Ceramic



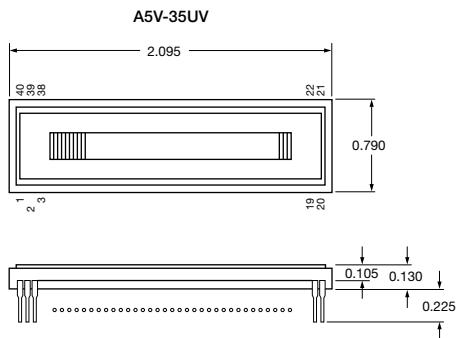
52 Special



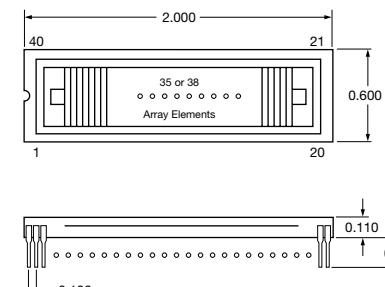
53 Special



54 40-PIN-DIP



A5C-35, A5C-38
A5V-35, A5V-38



35 Element Array

Pin Number	Element Number	Pin Number	Element Number
1	C	21	C
2	2	22	35
3	4	23	33
4	6	24	31
5	8	25	29
6	10	26	27
7	12	27	25
8	14	28	23
9	16	29	21
10	18	30	19
11	--	31	17
12	20	32	15
13	22	33	13
14	24	34	11
15	26	35	9
16	28	36	7
17	30	37	5
18	32	38	3
19	34	39	1
20	C	40	C

38 Element Array

Pin Number	Element Number	Pin Number	Element Number
1	C	21	C
2	2	22	37
3	4	23	35
4	6	24	33
5	8	25	31
6	10	26	29
7	12	27	27
8	14	28	25
9	16	29	23
10	18	30	21
11	20	31	19
12	22	32	17
13	24	33	15
14	26	34	13
15	28	35	11
16	30	36	9
17	32	37	7
18	34	38	5
19	36	39	3
20	38	40	1

55 Special

