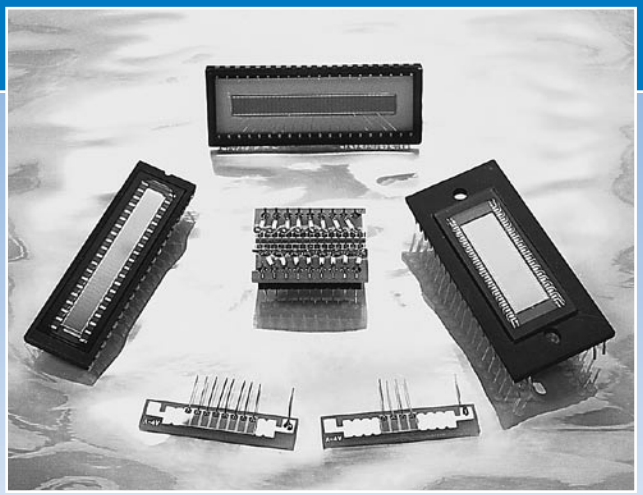
Multi-Element Array Series

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 g-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.

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



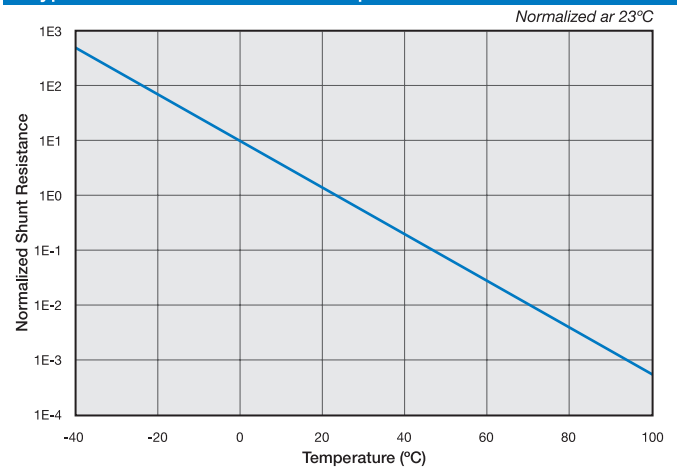
APPLICATIONS

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

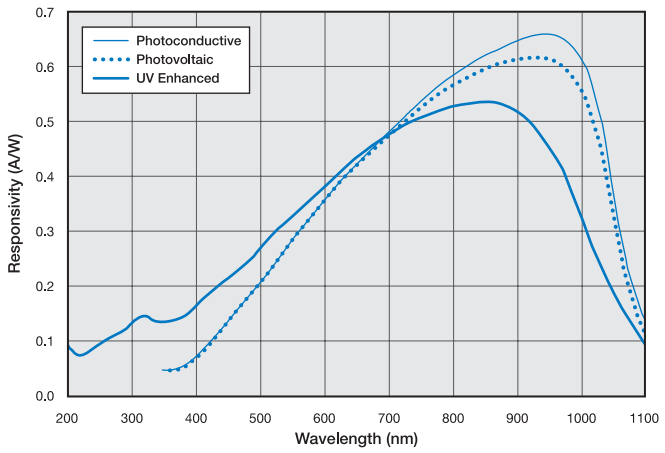
FEATURES

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

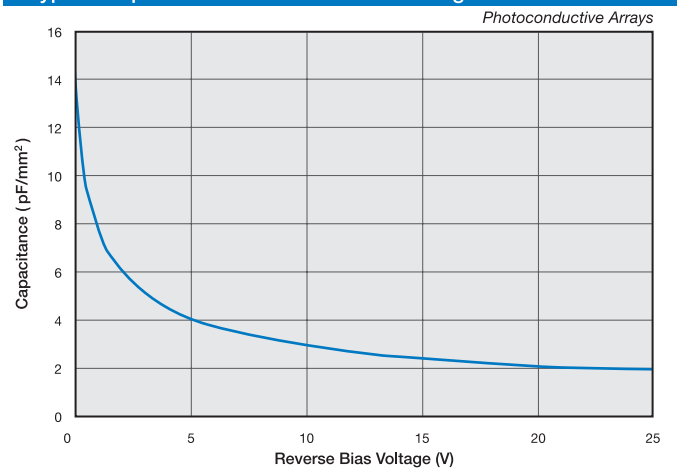
Typical Shunt Resistance vs. Temperature



Typical Spectral Response



Typical Capacitance vs. Reverse Bias Voltage



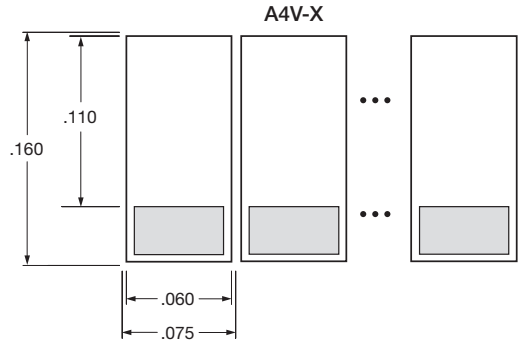
Multi-Element Array Series

Typical Electro-Optical Specifications at T_A=23°C

Model Number	Number of Elements	Active Area Per Element		Pitch (mm)	Responsivity (A/W)	Shunt Resistance (MΩ)	Dark Current (pF)	Capacitance (pF)		NEP (W / √Hz)		Temp. Range (°C)		Package Style ¶
		Area (mm^2)	Dimensions (mm)		970nm	-10 mV	-10 V	0 V	-10 V	0 V 970nm	-10 V 970nm	Operating	Storage	
					typ.	typ.	typ.	typ.		min.	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													
A2V-76	76	1.8	6.45 x 0.28	0.31	0.50	500	---	160	---	8.2 e-15	---			52 / Ceramic
UV Enhanced Array (All Specifications @ λ =254 nm, V_{BIAS}= -10V)														
A5V-35UV	35	3.9	4.39 x 0.89	0.99	0.06**	500	---	340	---	6.8 e-14	---			54 / 40 pin DIP

Model Number	Number of Elements	Element Size	Active Area per Element	Pitch	Responsivity (A/W)	Open Circuit Voltage/Element (mV)	Shunt Resistance (MΩ)	Capacitance (pF)
		mm (inches)	(mm^2) ($inches^2$)	mm (inches)	970nm	10 mW/cm2 2850 °K	-10 mV	0 V
					typ.	typ.	typ.	typ.
Monolithic Solderable Chip Arrays (Typical Electro-Optical Specifications at T_A=23°C)								
A4V-2	2	1.52 x 2.79 (0.06 x 0.110)	4.24 (0.007)	1.90 (0.075)	0.6	500	1000	500
A4V-4	4							
A4V-6	6							
A4V-8	8							
A4V-10	10							
A4V-12	12							

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 58 thru 69.
* Non-Condensing temperature and Storage Range, Non-Condensing Environment.
** λ = 254 nm



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"

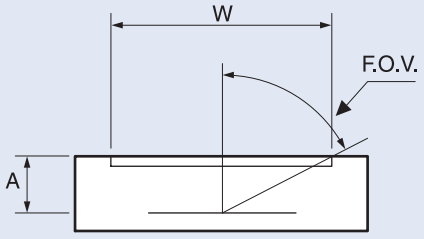
5. Windows

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

- Or -
On the Internet at

www.osioptoelectronics.com

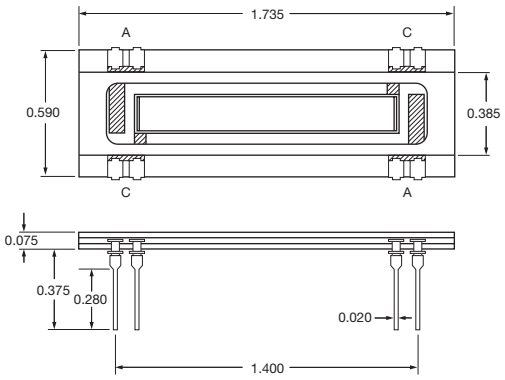
Mechanical Specifications

All units in inches. Pinouts are top view.

51 Low Cost Ceramic

Products:

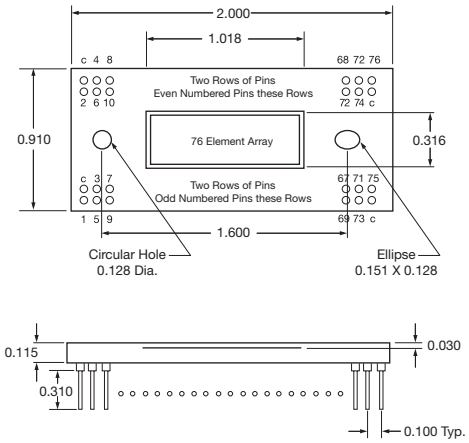
SL-30



52 Special

Products:

A2V-76

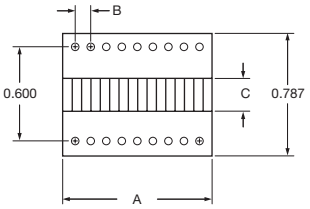


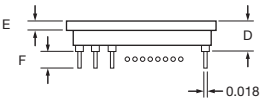
Pin Diameter = 0.025

53 Special

Products:

A2V-16





Dimensions

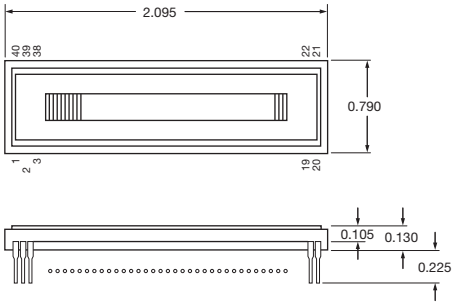
P/N	A	B	C	D	E	F
A2V-16	1	0.1	0.212	0.2	0.062	0.06

54 40-PIN-DIP

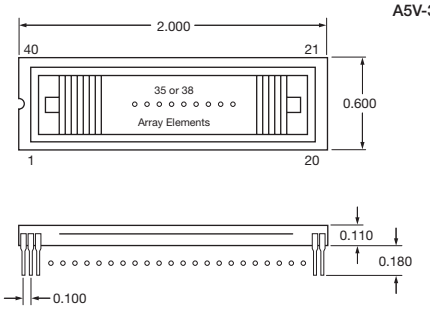
Products:

A5V-35UV
A5C-35
A5C-38
A5V-35
A5V-38

A5V-35UV



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

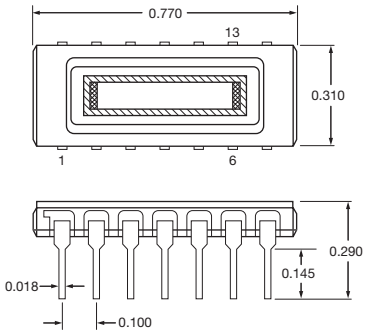
38 Element Array

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 14-PIN DIP

Products:

SL-10-1



Pin 1 = Cathode
Pin 6, 13 = Anode