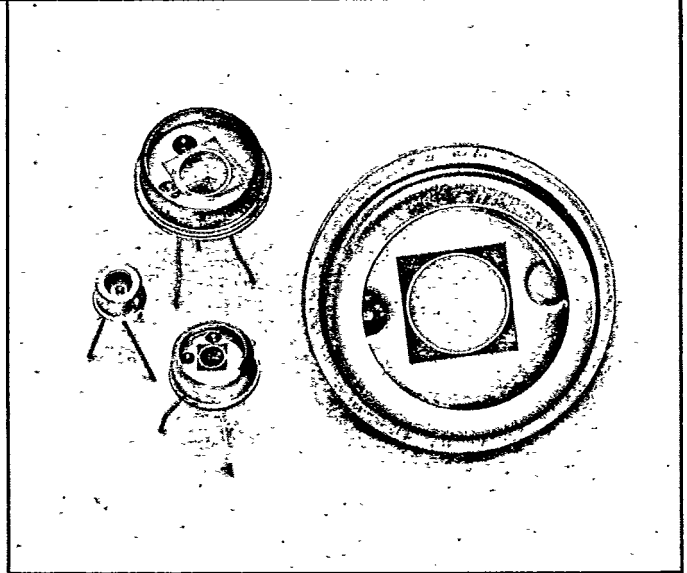


Features

- Optimized Responsivity for Operation at 1064 nm.
- Guard Ring Construction
- Antireflection Coated
- Hermetically Sealed Package
- Wide Range of Operating Voltage (0 to -200V)

Applications

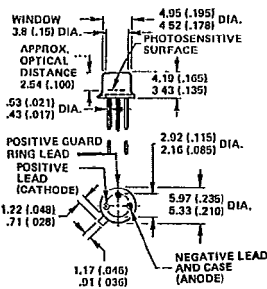
- Nd: YAG Laser Detection
- Optical Communications
- Intrusion Alarm Systems
- Process Control Instrumentation



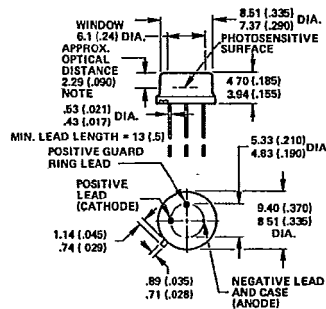
Description

The high performance line of p-type silicon photodiodes are designed specifically for use as solid state sensors in guidance, alignment and tracking application where Neodymium Glass or YAG lasers are employed. They offer a unique combination of high sensitivity, wide spectral range, low noise and fast response. The rugged construction ensures a high degree of electrical, optical and mechanical reliability.

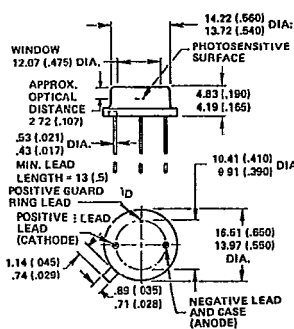
Package Dimensions



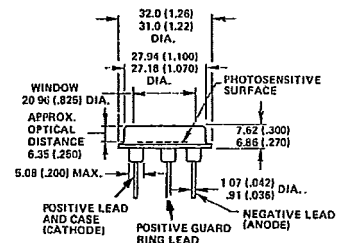
Modified
TO-18 Package



Low Profile
TO-5 Package



Low Profile
TO-8 Package



30 mm Package

Dimensions in millimeters. Dimensions in parentheses are in inches.

To order or for further information call:



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REFERENCE NO. 102A

Mechanical Characteristics

Part Number	Photosensitive Surface		Package Description	Field of View (Fig. 4)		
	Dia. (mm)	Area (mm ²)		Total	Partial	Units
AP4010	1.0	0.8	TO-18	70	90	deg
AP4025	2.5	5	TO-5	73	120	deg
AP4050	5.0	20	TO-8	76	150	deg
AP4100	10.0	78	30 mm	70	130	deg

Absolute Maximum Ratings

Parameter	Maximum Ratings	Units
DC Reverse Voltage	225	V
Photocurrent Density Average Value Peak Value	5 20	mA/mm ² mA/mm ²
Forward Current Average Value, continuous operation Peak Value	10 100	mA mA
Ambient Temperature — operating — storage	-50 to +80 -60 to +100	°C °C
Soldering Temperature for 5 seconds	200	°C

Typical Electrical / Optical Characteristics at T_A = 25°C, V_R = -180 V

Part Number	Spectral Response (nm) 10% Points	Responsivity (A/W)		N.E.P. @ 900 nm (W/√Hz)	Dark Current (nA)	Minimum Breakdown Voltage (V)	Capacitance @ 1000Hz (pF)	Risetime R _L = 50Ω (ns)
		@ 900nm	@ 1064 nm					
AP4010	400 - 1140	0.60	0.40	1 x 10 ⁻¹³	10	200	1	1
AP4025	400 - 1140	0.60	0.40	1 x 10 ⁻¹³	25	200	3	6
AP4050	400 - 1140	0.60	0.40	1 x 10 ⁻¹³	125	200	18	10
AP4100	400 - 1140	0.60	0.40	4 x 10 ⁻¹³	300	180	35	16

Notes: Standard window material is borosilicate hard glass.
Quartz window or filters are optional.
Devices can also be supplied on custom packages or mounts.

The values specified for field of view are approximate and are critically dependent on the dimensional tolerances of the package component parts.

The recommended range of reverse operating voltage (V_R) at T_A = 22 °C is 0 to -180 volts. However, when the device is operated in the photovoltaic mode, i.e. at V_R = 0 volts, some of the electrical characteristics will differ from those shown.

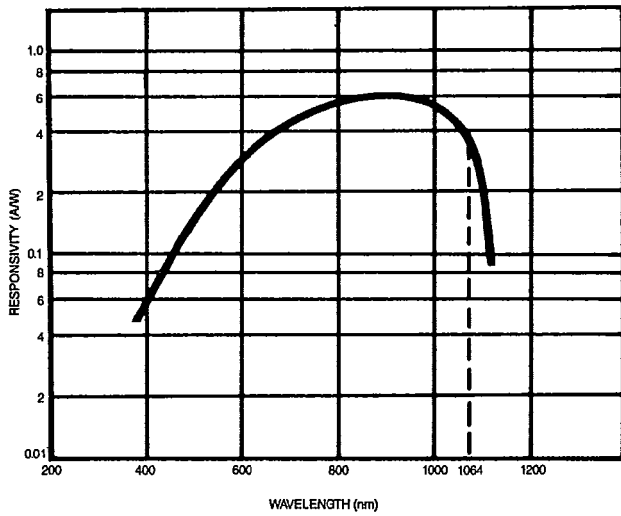


Figure 1 — Typical Spectral Responsivity Characteristic

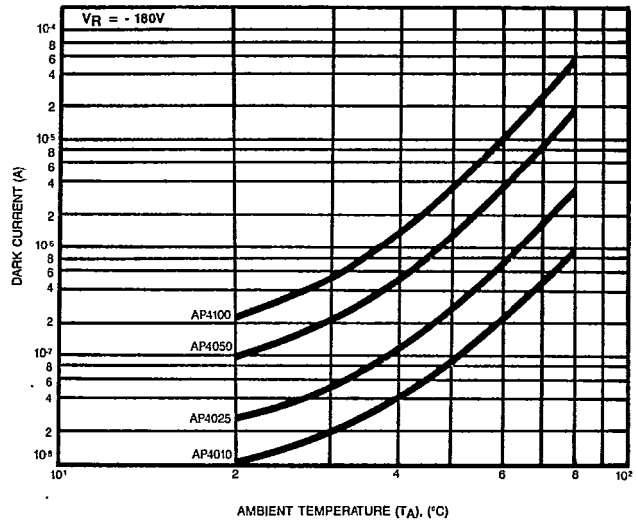


Figure 2 — Typical Dark Current vs Ambient Temperature

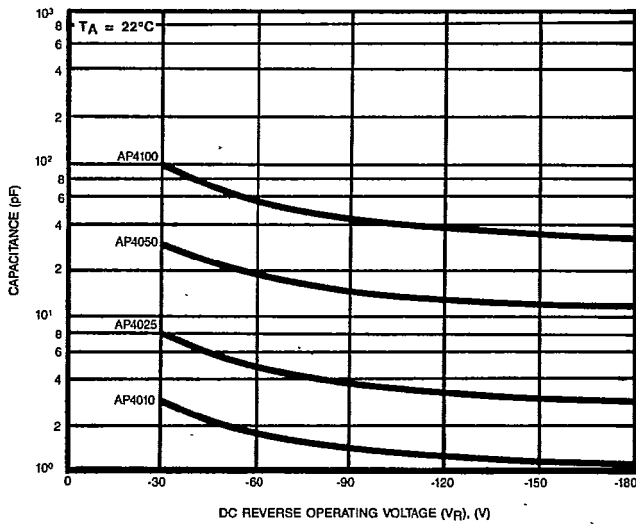


Figure 3 — Typical Photodiode Capacitance vs Operating Voltage

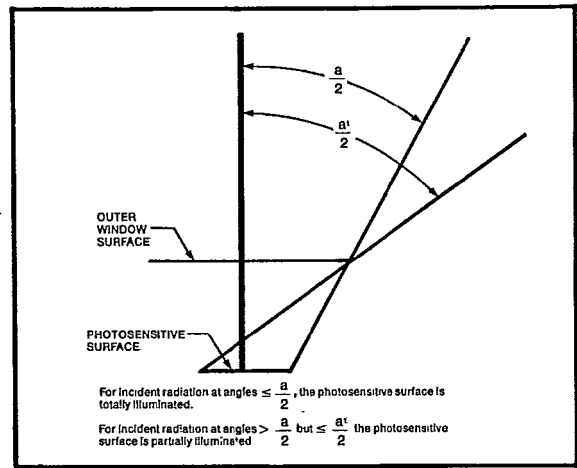


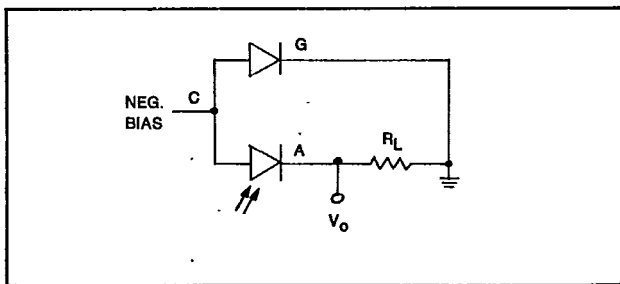
Figure 4 — Definition of Half-Angle Approx. Field-of-View (Scale is exaggerated for clarity)

Electrical Schematics With Typical External Connections Shown.

Warning - Personal Safety Hazards

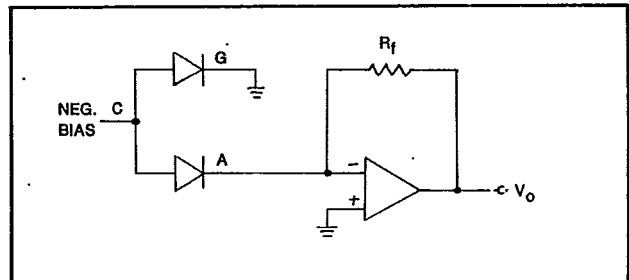
Electrical Shock - Operating voltages applied to this device present a shock hazard.

BASIC OPERATING CIRCUIT



V_o = Output Volts
 I_p = Photocurrent
 R_L = Load Resistor

PHOTODIODE/OP AMP CIRCUIT.



$V_o = I_p R_f$ = Output Volts
 I_p = Photocurrent
 R_f = Feedback Resistor

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