GRID DIODE DETECTOR

Specifications subject to change without notice for product revisions and improvements.

Ultra Low Capacitance Photodiodes

Advanced Detector Corporation has very strong capabilities in designing and manufacturing ultra-low capacitance photodiode devices. This allows us to supply on a custom basis very large photodiode areas, which have capacitance in the picofared range and yet still maintain good diode characteristics.

- Low Junction Capacitance
- High Shunt Resistance
- Durable Photodiode Surface
- Large Active Areas
- Low Crosstalk Between Elements
- Small Interelement Spacing

A figure of merit comparing the signal to noise ratio of new technology C and that of the standard technology when used in conjunction with low noise FET amplifier circuits shows that ADC can offer twenty times better signal to noise than competitive low capacitance devices. Please contact ADC with your ultra low capacitance requirement.

The following table compares typical standard technology devices with ADC's newest offering:

COMPARISON OF GRID AND PLANAR STRUCTURES

	Effective Photosensor Surface (mm^2)	Dark Reverse Current @ −1 Volt		Dark Reverse Current @ −10 Volts		Typ Reverse Breakdown Voltage @ −10 uA	Min Shunt Resistance @ 22°C	Max Junction Capacitance @ 0 Volt	Typ Risetime @ 540 nm 50 ohm load	Typ Responsivity @ 540 nm
		Typ	Max	Typ	Max					
Standard Technology	20	100 pA	2 nA	3 nA	20 nA	>60 volts	200 Mohm	300 pf	100 nsec	.35 A/W
Grid Diode A	20	100 pA	2 nA	3 nA	20 nA	>5 volts	500 Mohm	100 pf	40 µsec	.33 A/W
Grid Diode B	20	400 pA	8 nA	5 nA	1 µA	>5 volts	100 Mohm	70 pf	40 µsec	.34 A/W
Grid Diode C	20	50 pA	1 nA	1.5 nA	10 nA	>5 volts	1 Gohm	8 pf	400 µsec	.18 A/W

SILICON PLANAR DIFFUSED PHOTODIODES

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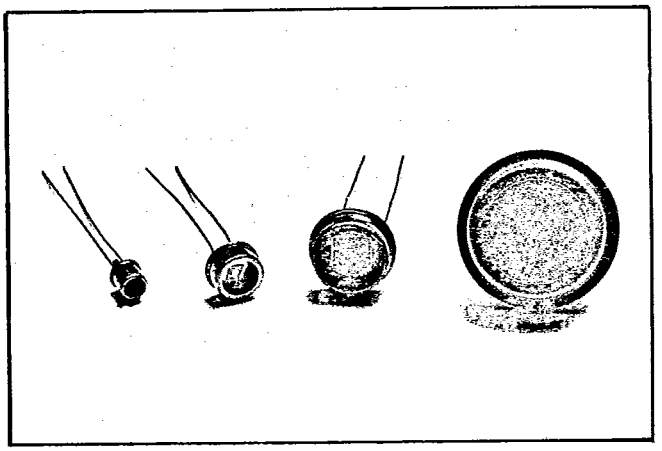
Silicon Planar Diffused Photodiodes

Single element planar diffused photodiodes are designed for photovoltaic and photoconductive applications. These general purpose planar silicon devices offer the electro-optics design engineer optimized spectral response over a wide incident spectral range. These devices are designed to be used in a medium speed mode of operation.



Applications

- Optical Communication
- Process Control Instrumentation
- Medical Instrumentation
- Densitometry
- Analytical Instrumentation
- Defect Analysis
- Pollution Monitoring
- Colorimetry

Features

- High Reliability
- High Sensitivity
- Low Costs
- Hermetic Packaging
- Linear Response
- Optimized Spectral Response

Military Applications

Advanced Detector Corporation has extensive experience in supplying detectors for military and aerospace applications. The ADC Quality Assurance Program has been developed to meet the requirements of MIL Q-9858A. ADC enjoys a reputation in the military/aerospace community as a high quality and reliable supplier. A copy of ASEC 91-6064 Quality Assurance Program Document which delineates the quality assurance policies implemented on all products to assure compliance with specifications is available upon request.

ELECTRICAL CHARACTERISTICS

Type No.	Outlines	Effective Photosensor Surface cm^2	Dark Reverse Current I_{DR} @ −1V nA	Dark Reverse Current I_{DR} @ −10V* nA	Reverse Breakdown Voltage V_{BR} Typ Volts	Reverse Breakdown Voltage V_{BR} Min Volts	Source Impedance R_{SO} Typ MΩ	Source Impedance R_{SO} Min MΩ	Typical Junction Capacitance C_J @ 0 Volts nf	Typical Rise Time 10-90% (ns) 50 ohm load @ 0V	Typical Noise Equiv. Power (NEP) (W/Hz½)
11PH18M	TO18	.0094	.5	2	100	60	1000	400	25	5	8×10^{-15}
22PH18M	TO18	.0230	1.0	4	50	30	400	200	50	6	1×10^{-14}
33PH05M	TO5	.0510	2.0	8	20	15	175	100	95	11	2×10^{-14}
44PH05M	TO5	.1700	5.0	10	10	8	60	30	270	30	3×10^{-14}
68PH08M	TO8	.5400	50.0	100	7	5	20	10	650	80	6×10^{-14}
110PH9M	TO9	.9030	100.0	200	5	4	10	5	1300	150	8×10^{-14}

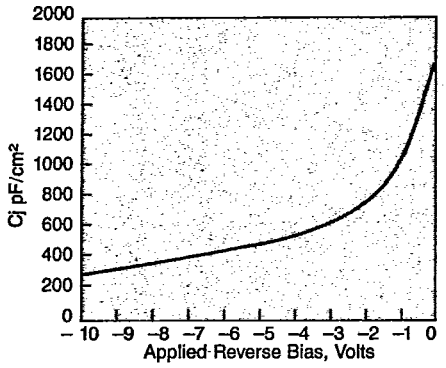
Minimum spectral response @ 950 nm = .53 A/W. Allow 8% reduction for transmission through glass window.

*Dark Reverse Current: Use −10V or $V_{BR}/_2$ where applicable.

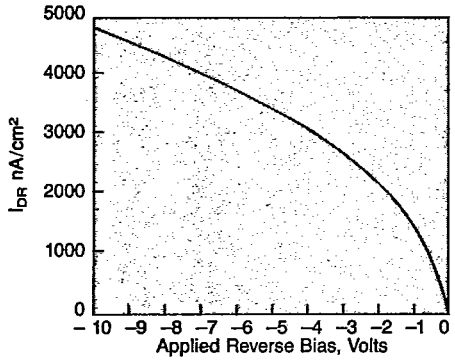
SILICON PLANAR DIFFUSED PHOTODIODES

Typical Performance Curves

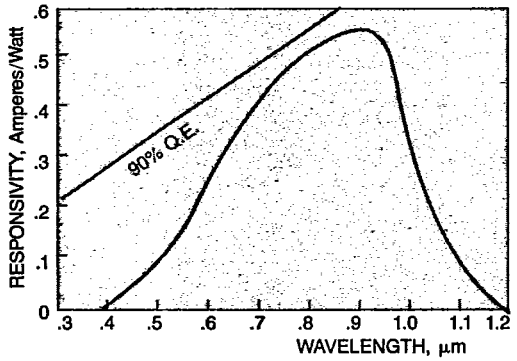
Junction Capacitance vs. Bias



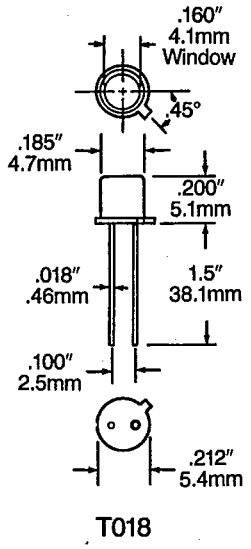
Max Dark Current vs. Bias



Typical Responsivity vs. Wavelength



(Peak Responsivity Range 0.925 ± .05 µm)



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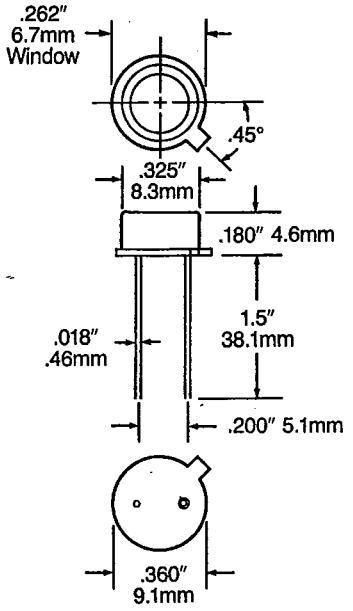

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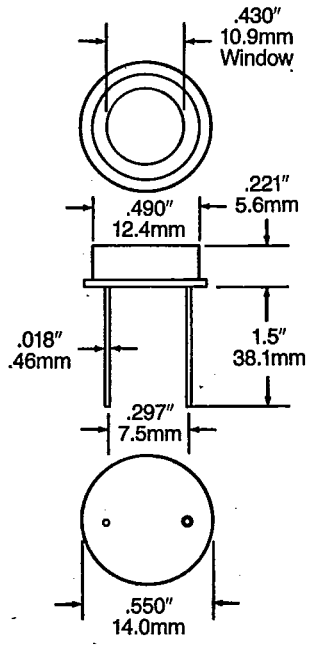

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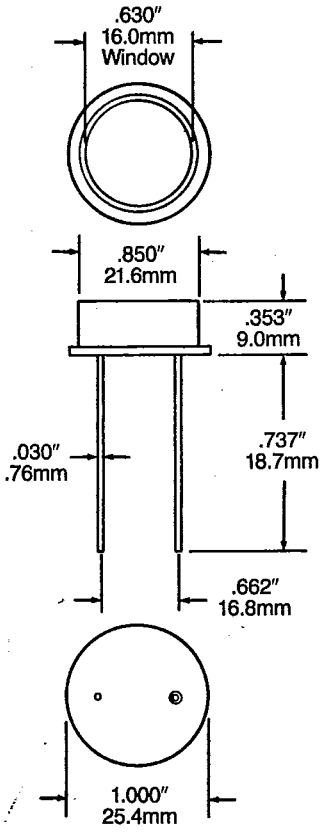

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