

Detector-Filter Combination Series

Planar Diffused Silicon Photodiodes

Features

- CIE Match (AP series)
- Flat Band Response (DF)
- 254 Narrow Bandpass
- w/ Amplifier Hybrid
- BNC Packages

Applications

- Analytical Chemistry
- Spectrophotometry
- Densitometers
- Photometry/ Radiometry
- Spectroradiometry
- Medical Instrumentation
- Liquid Chromatography

The Detector-Filter combination series incorporates a filter with a photodiode to achieve a tailored spectral response. OSI Optoelectronics offers a multitude of standard and custom combinations. Upon request, all detector-filter combinations can be provided with a NIST traceable calibration data specified in terms of Amps/Watt, Amps/lumen, Amps/lux or Amps/ footcandle.



Among many possible custom combinations, following are a few detector-filter combinations available as standard parts.

PIN-10DF - is a 1 cm² active area, BNC package detector-filter combination, optimized to achieve a flat responsivity, from 450 to 950 nm. This is the spectral response required for radiometric measurements. This type of detector has several advantages over thermopile, such as sensitivity, which is about a thousand times higher, as well as 10 times more stability.

PIN-10AP - is a 1 cm² active area, BNC package detector- filter combination which duplicates the response of the most commonly available optical aid; the human eye. The eye senses both brightness and color, with response varying as a function of the



wavelength. This response curve is commonly known as the CIE curve. The AP filters accurately match the CIE curve to within 4% of area.

PIN-555AP - has the same optical characteristics as the PIN 10-AP, with an additional operational amplifier in the same package. The package and the opamp combination is identical to UDT-555D detector-amplifier combination (Photops™).

PIN-005E-550F - uses a low cost broad bandpass filter with peak transmission at 550nm to mimic the CIE curve for photometric applications. The pass band is similar to the CIE curve, but the actual slope of the spectral response curve is quite different. This device can also be used to block the near IR portion of the spectral range, 700 nm and above.

PIN-005D-254F - is a 6 mm² active area, UV enhanced photodiode-filter combination which utilizes a narrow bandpass filter peaking at 254 nm.

Customized Capabilities

Current existing standard photodiodes can be modified by adding various optical filter(s), to match your specific spectral requirements. The filters can either replace the standard glass windows or be used in conjunction with the glass window, depending on the specific requirement and / or nature of the filter. Customer furnished optical filters can also be incorporated in the package. The following are among a few of the optical filter types available. These colored glass filters are grouped into four major categories: Shortpass Filters, Longpass Filters, Bandpass Filters, and Neutral Density Filters. Windows are also available with Custom Thin Film, Anti-reflective, Cut-on and Cut-off Filter Coatings.

All Photodiodes with or without filters can be calibrated in house for responsivity from 200nm in 10nm steps as well as single point calibration. All optical calibrations are nist traceable.

Typical Electro-Optical Specifications (at T_A = 23°C)

Model Number	Active Area		Spectral Match (nm) λ _p	Responsivity at 550nm		Capacitance (pF) 0V	Shunt Resistance (MΩ) -10mV
				(A/W)	mA/Lum		
	Area (mm ²)	Dimensions (mm)	Typ	Typ		Typ	Typ
Detector Filter Combination Series							
PIN-10DF	100	11.28 φ	± 7% ^	0.15	---	1500	20
PIN-10AP			4% ***	0.27	0.4		
PIN-555AP §			± 2% ^				
PIN-005E-550F	5.7	2.4 sq	---	0.23	---	200	500
PIN-005D-254F			---	0.025*	---	100	300

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Components



Model Number	NEP (W/√Hz)	Rise Time (μs)	Temp. Range (°C)		Package Style
	-10mV, 550nm	0V, 550nm, 50Ω	Operating	Storage	
	Typ	Typ			
Detector Filter Combination Series					
PIN-10DF	1.9 e -13	1.0	0 ~ +70	-25 ~ +85	13/ BNC
PIN-10AP	1.1 e -13	0.15			33/ Special
PIN-555AP §		0.1 *			5/ TO-5
PIN-005E-550F	2.5 e -14				18/ TO-5
PIN-005D-254F	3.0 e -13*				

^ Point by point from 450nm to 950nm.

§ PIN-555AP is a Detector/ Operational Amplifier Hybrid. For Op-Amp specifications, please see "Photops™".

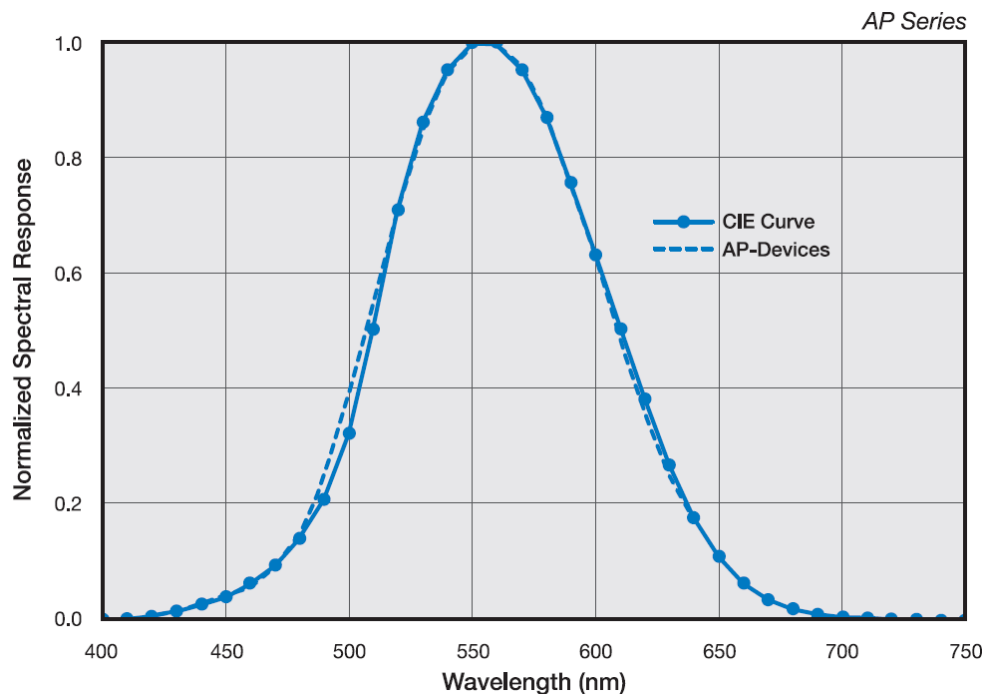
* $\lambda = 254\text{nm}$

** Non-condensing temperature and storage range, Non-condensing environment.

*** Area within CIE Curve.

For mechanical specifications please refer to "Mechanical Drawings".

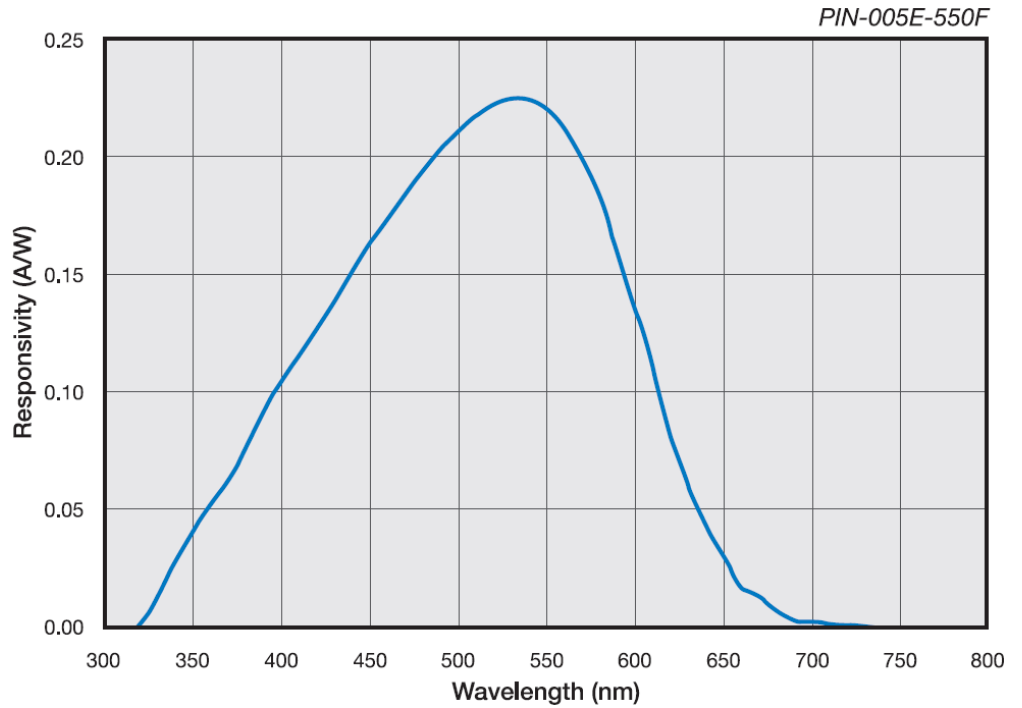
Typical Spectral Response (AP Series)



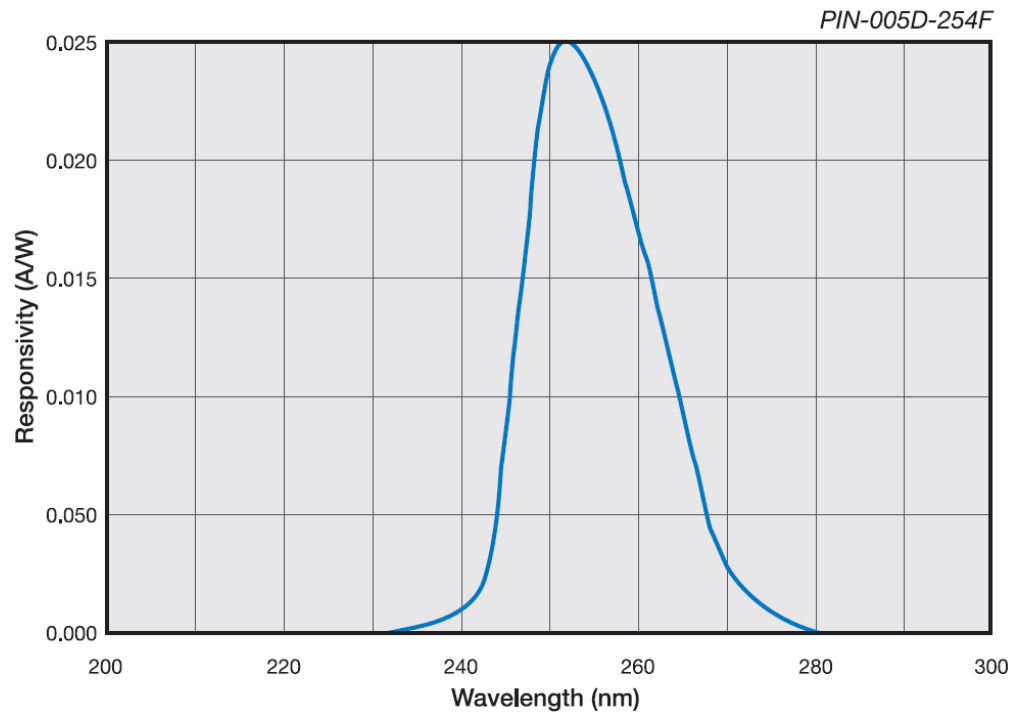
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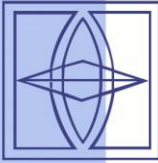
Typical Spectral Response (PIN-005E-550F)



Typical Spectral Response (PIN-005D-254F)



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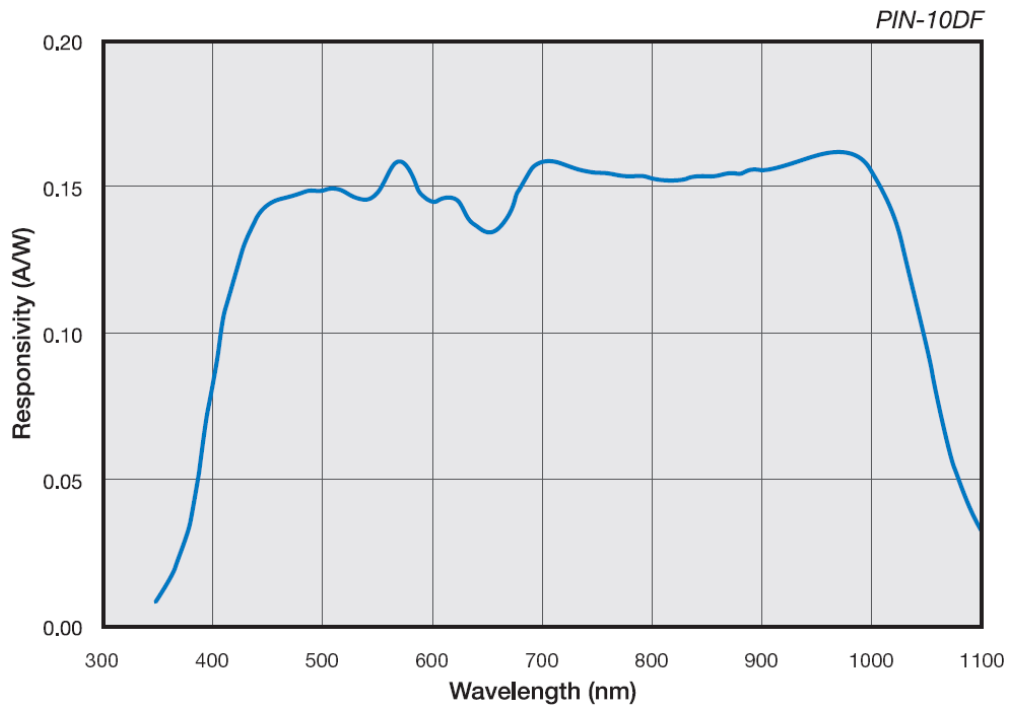


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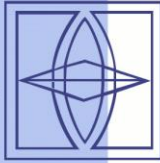
Typical Spectral Response (PIN-10DF)



Packages

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PIN-005E-550F

5 TO-5		Products:							
		PIN-5D PIN-5DP PIN-5DP/SB PIN-13D PIN-13DP PIN-005E-550F UV-001 UV-005 UV-005D UV-005E UV-013D UV-013E UV-015 OSD-5-0 OSD15-0 OSD5-5T OSD15-5T OSD5.8-7Q OSD5.8-7U							
		<p>Pin Circle Dia.=0.200</p> <table border="1"> <thead> <tr> <th>P/N</th> <th>A</th> <th>B</th> </tr> </thead> <tbody> <tr> <td>OSD-Prefix Devices</td> <td>0.050</td> <td>0.130</td> </tr> <tr> <td>All Others</td> <td>0.102</td> <td>0.180</td> </tr> </tbody> </table> <p>Quartz Window: OSD5.8-7Q UV Transmissive Window: OSD5.8-7U</p>	P/N	A	B	OSD-Prefix Devices	0.050	0.130	All Others
P/N	A	B							
OSD-Prefix Devices	0.050	0.130							
All Others	0.102	0.180							
		<p>PIN-5D, PIN-5DP, PIN-5DP/SB, PIN-13D, PIN-13DP, PIN-005E-550F UV-005D, UV-005E, UV-013D, UV-013 15OSD-5-0, OSD15-0, OSD5-5T, OSD15-5T OSD5.8-7Q, OSD5.8-7U</p> <p>UV-001, UV-005, UV-015</p>							

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Components



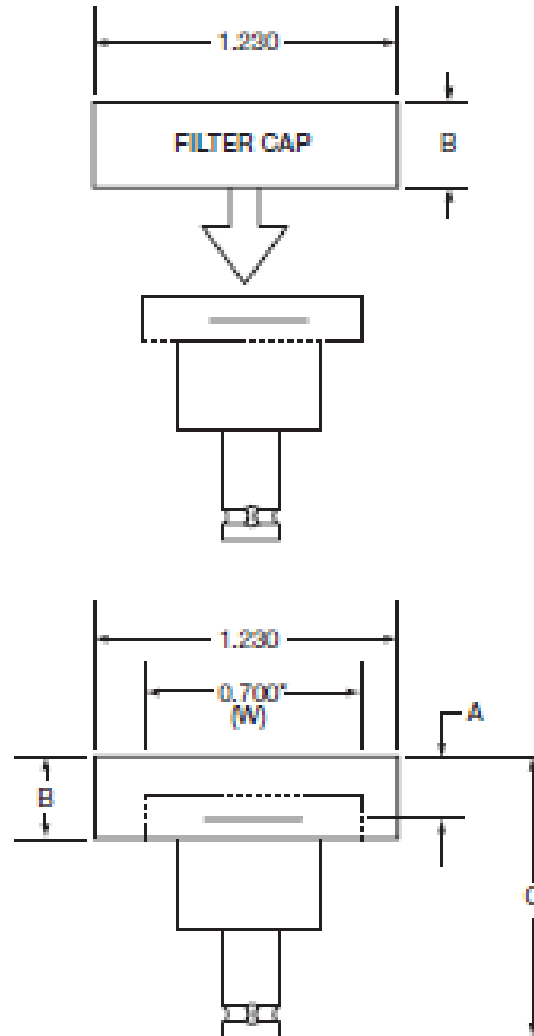
YOUR PARTNER

PIN-10AP PIN-10DF

13 Special BNC

Products:

PIN-10AP
PIN-10DF



Dimensions

P/N	A	B	C
PIN-10DF	0.217	0.330	1.020
PIN-10AP-1	0.396	0.550	1.415

* Window Aperture for PIN 10AP-1 is 0.500 in.

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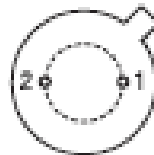
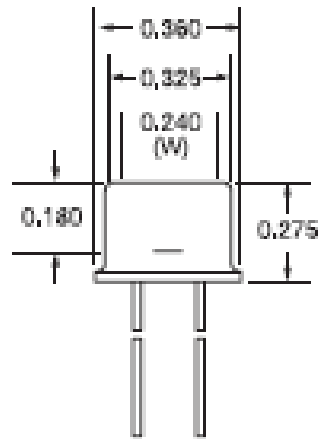
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YOUR PARTNER

PIN-005D-254F

TO-5

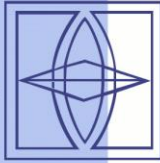
Products:

PIN-005D-245F



Pin Circle Dia.=0.215



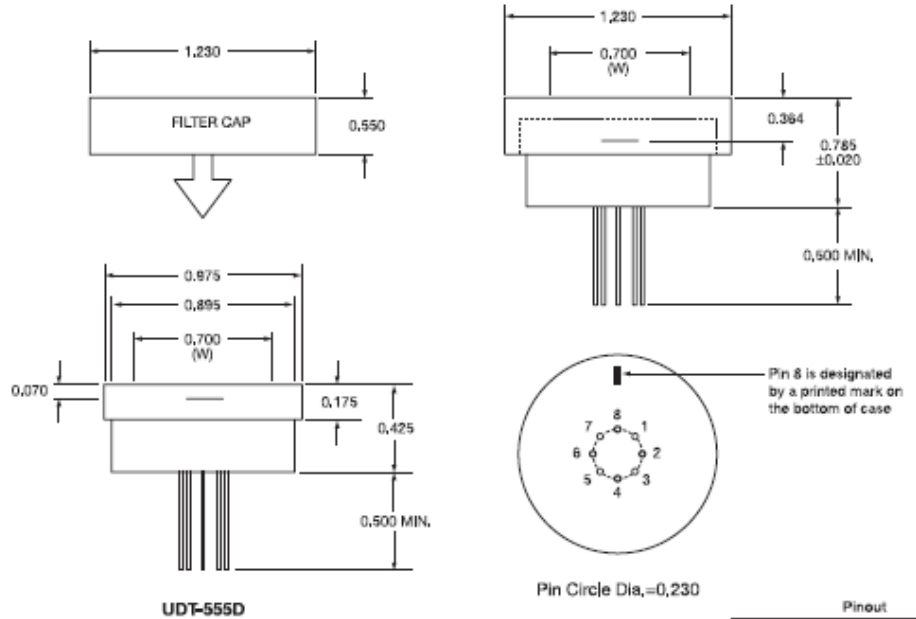


PIN-555AP

33 Special

Products:

PIN-555AP



Pinout	
1	Offset Null
2	Inverting Input Detector Cathode
3	Noninverting Input
4	V (-)
5	Offset Null
6	Output
7	V (+)
8	Detector Anode and Case