

# YAG Series

## Nd:YAG Optimized Photodetectors

The YAG Series of photo detectors are optimized for high response at 1060 nm, the YAG laser light wavelength, and low capacitance, for high speed operation and low noise. These detectors can be used for sensing low light intensities, such as the light reflected from objects illuminated by a YAG laser beam for ranging applications. The SPOT Series of quadrant detectors are well suited for aiming and pointing applications. These are all N on P devices.

These detectors can be used in the photovoltaic mode, for low speed applications requiring low noise, or in the photoconductive mode, with an applied reverse bias, for high speed applications.



### APPLICATIONS

- Nd:YAG Pointing
- Laser Pointing & Positioning
- Position Measurement
- Surface Profiling
- Guidance Systems

### FEATURES

- Nd:YAG Sensitivity
- High Breakdown Voltage
- Large Area
- High Speed
- High Accuracy

Model Number	Active Area Per Element		Peak Responsivity Wavelength	Responsivity (A/W)	Element Gap	Dark Current (nA)		Capacitance (pF)		Rise Time (ns)	NEP (W/√Hz)	Reverse Voltage (V)	Temp Range (°C)		Package Style †
	Area (mm <sup>2</sup> )	Dimension (mm)	λ <sub>p</sub> nm	1000nm	mm	-180 V		-180 V		1064 nm -180 V 50 Ω	1064 nm -180V	100 μA	Operating	Storage	
			typ.	typ.	typ.	typ.	max.	typ.	max.	typ.	typ.	max.			

### Nd:YAG Optimized Single Element

<b>PIN-5-YAG</b>	5.1	2.54 φ	1000	0.6	-	50	-	5	-	5	1.2 e-14	200	-40 ~ +100	-55 ~ +125	2 / TO-5
<b>PIN-100-YAG</b>	100	11.28 φ				75	1000	25	-	30	2.5 e-14				20 / Metal

### Nd:YAG Optimized Quadrant Photodetectors\*\*

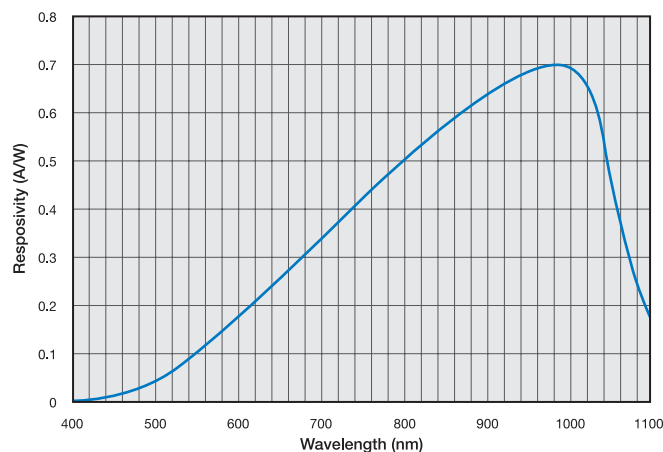
<b>SPOT-9-YAG</b>	19.6	10 φ	1000	0.6	0.1	35	250	8	15	7	3.2 e-14	200	-20 ~ +60	-20 ~ +80	20 / Metal
<b>SPOT-15-YAG</b>	38.5	14.0 φ			0.2	1000	3000	15	30	8	3.4 e-14				

† Measured at V<sub>bias</sub> = -180V, T=23°C

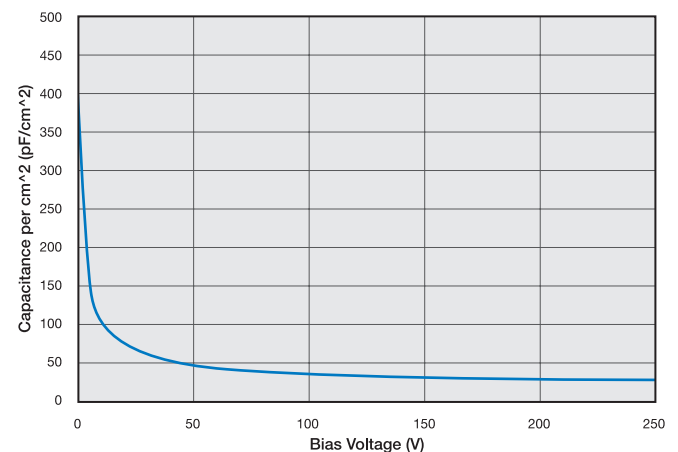
‡ For mechanical drawings please refer to pages 58 thru 69.

\*\* Specifications are per element

### Typical YAG Series Responsivity



### Typical Capacitance per Unit Area vs. Bias Voltage



## 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. = Field 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"

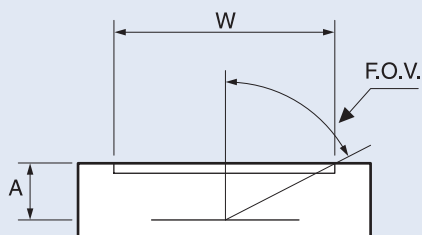
## 5. Windows

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](http://www.osioptoelectronics.com)

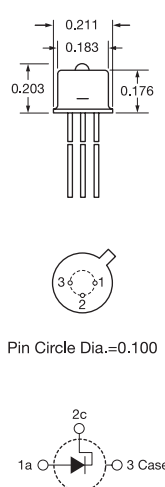

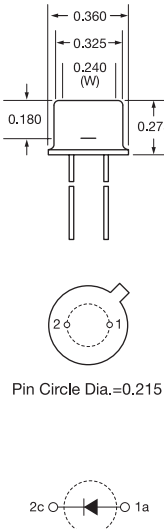
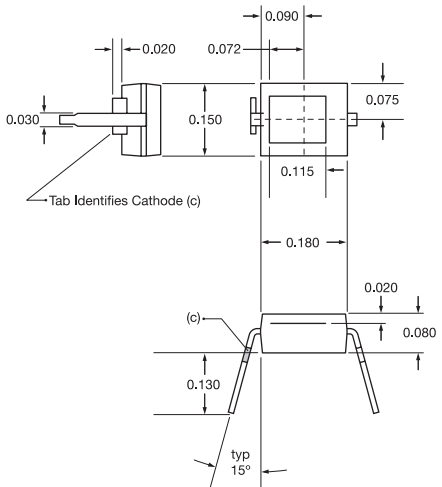
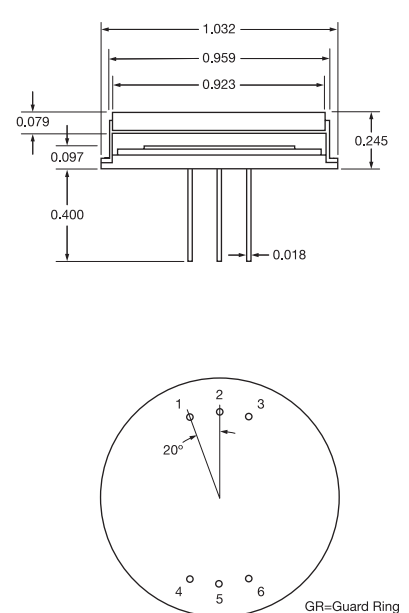
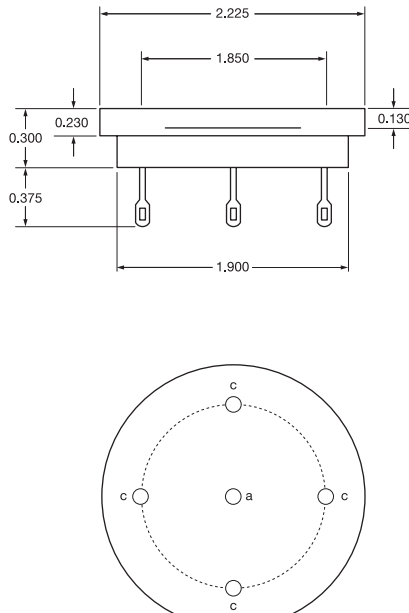
# Mechanical Specifications

All units in inches. Pinouts are bottom view.

1 TO-18	2 TO-5	3 TO-8																																		
<p><b>Products:</b></p> <p>PIN-020A PIN-040A PIN-040-DP/SB</p> <p>Pin Circle Dia.=0.100</p> <table border="1"> <thead> <tr> <th>P/N</th> <th>A</th> <th>B</th> <th>W</th> </tr> </thead> <tbody> <tr> <td>PIN-020A</td> <td>0.075</td> <td>0.200</td> <td>0.155</td> </tr> <tr> <td>PIN-040A</td> <td>0.075</td> <td>0.200</td> <td>0.155</td> </tr> </tbody> </table>	P/N	A	B	W	PIN-020A	0.075	0.200	0.155	PIN-040A	0.075	0.200	0.155	<p><b>Products:</b></p> <p>PIN-5DI PIN-5DPI PIN-13DI PIN-13DPI PIN-5-YAG CD-25T</p> <p>Pin Circle Dia.=0.200</p> <table border="1"> <thead> <tr> <th>P/N</th> <th>A</th> <th>B</th> <th>W</th> </tr> </thead> <tbody> <tr> <td>All Others</td> <td>0.094</td> <td>0.180</td> <td>0.240</td> </tr> <tr> <td>CD-25T</td> <td>0.050</td> <td>0.130</td> <td>0.23</td> </tr> </tbody> </table>	P/N	A	B	W	All Others	0.094	0.180	0.240	CD-25T	0.050	0.130	0.23	<p><b>Products:</b></p> <p>PIN-6DI PIN-6DPI PIN-44DI PIN-44DPI OSD35-0 OSD35-7Q</p> <p>Pin Circle Dia.=0.295</p> <table border="1"> <thead> <tr> <th>P/N</th> <th>A</th> </tr> </thead> <tbody> <tr> <td>PIN-6DI/6DPI</td> <td>0.115</td> </tr> <tr> <td>PIN-44DI/44DPI</td> <td>0.125</td> </tr> <tr> <td>OSD35-0</td> <td>0.130</td> </tr> <tr> <td>OSD35-7Q</td> <td>0.130 Quartz Window</td> </tr> </tbody> </table>	P/N	A	PIN-6DI/6DPI	0.115	PIN-44DI/44DPI	0.125	OSD35-0	0.130	OSD35-7Q	0.130 Quartz Window
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<p><b>Products:</b></p> <p>PIN-3CD PIN-3CDP BPX-65 OSD1-0 OSD1-5T OSD3-5T OSD1.2-7Q OSD1.2-7U</p> <p>Pin Circle Dia.=0.100</p> <table border="1"> <thead> <tr> <th>P/N</th> <th>A</th> <th>B</th> </tr> </thead> <tbody> <tr> <td>PIN-3CD / 3CDP</td> <td>0.087</td> <td>0.146</td> </tr> <tr> <td>BPX-65</td> <td>0.075</td> <td>0.200</td> </tr> <tr> <td>OSD-Prefix Devices</td> <td>0.080</td> <td>0.200</td> </tr> </tbody> </table> <p>Quartz Window: OSD1.2-7Q UV Transmissive Window: OSD1.2-7U</p>	P/N	A	B	PIN-3CD / 3CDP	0.087	0.146	BPX-65	0.075	0.200	OSD-Prefix Devices	0.080	0.200	<p><b>Products:</b></p> <p>PIN-125DPL</p> <p>Pin Circle Dia.=0.100</p>	<p><b>Products:</b></p> <p>PIN-HR005 PIN-HR008 PIN-HR020 PIN-HR026 PIN-HR040</p> <p>Pin Circle Dia.=0.100</p>																						
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16 TO-18 Lensed Cap	17 TO-5	18 TO-5																												
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19 Plastic Mold	20 Special Metal	21 Special Metal																												
<p><b>Products:</b></p> <p>BPW34 BPW34B</p>  <p>Tab Identifies Cathode (c)</p>	<p><b>Products:</b></p> <p>SPOT-15-YAG SPOT-9-YAG PIN-100-YAG</p>  <p>Pin Circle Dia.=0.750</p> <p>GR=Guard Ring</p> <p><b>Pinouts</b></p> <table border="1" data-bbox="584 1869 1023 1963"> <thead> <tr> <th>P/N</th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>5</th> <th>6</th> </tr> </thead> <tbody> <tr> <td>SPOT-15-YAG</td> <td>C1</td> <td>GR</td> <td>C4</td> <td>C2</td> <td>A</td> <td>C3</td> </tr> <tr> <td>SPOT-9-YAG</td> <td>C1</td> <td>GR</td> <td>C4</td> <td>C2</td> <td>A</td> <td>C3</td> </tr> <tr> <td>PIN-100-YAG</td> <td>--</td> <td>C</td> <td>--</td> <td>--</td> <td>A</td> <td>--</td> </tr> </tbody> </table>	P/N	1	2	3	4	5	6	SPOT-15-YAG	C1	GR	C4	C2	A	C3	SPOT-9-YAG	C1	GR	C4	C2	A	C3	PIN-100-YAG	--	C	--	--	A	--	<p><b>Products:</b></p> <p>SC-50D</p>  <p>Pin Circle Dia.=1.110</p>
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