

■ Photovoltaic Series

Planar Diffused Silicon Photodiodes

The Photovoltaic Detector series is utilized for applications requiring high sensitivity and moderate response speeds, with an additional sensitivity in the visible-blue region for the blue enhanced series. The spectral response ranges from 350 to 1100 nm, making the regular photovoltaic devices ideal for visible and near IR applications. For additional sensitivity in the 350 nm to 550 nm region, the blue enhanced devices are more suitable.

These detectors have high shunt resistance and low noise, and exhibit long term stability. Unbiased operation of these detectors offers stability under wide temperature variations in DC or low speed applications. For high light levels (greater than 10mW/cm²), the Photoconductive Series detectors should be considered for better linearity.

These detectors are not designed to be reverse biased! Very slight improvement in response time may be obtained with a slight bias. Applying a reverse bias of more than a few volts (>3V) will permanently damage the detectors. If faster response times are required, the Photoconductive Series should be considered.

Refer to the Photovoltaic Mode (PV) paragraph in the "Photodiode Characteristics" section of this catalog for detailed information on electronics set up.



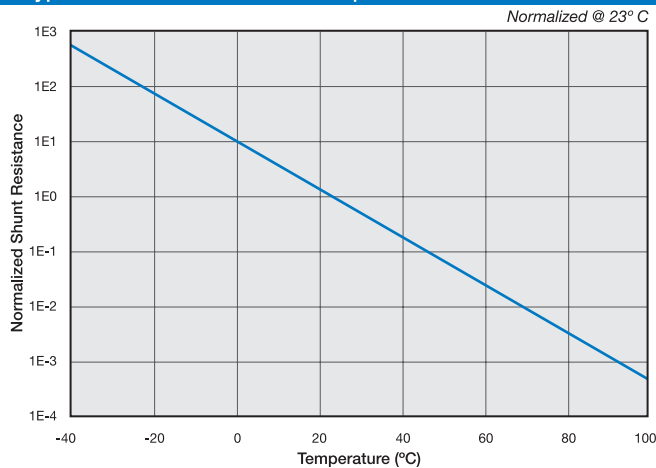
■ APPLICATIONS

- Colorimeters
- Photometers
- Spectroscopy Equipment
- Fluorescence

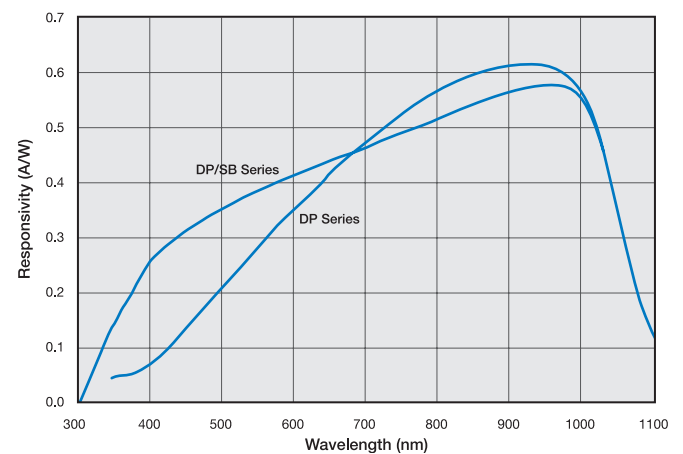
■ FEATURES

- Ultra Low Noise
- High Shunt Resistance
- Wide Dynamic Range
- Blue Enhanced

■ Typical Shunt Resistance vs. Temperature



■ Typical Spectral Response



■ Photovoltaic Series

Typical Electro-Optical Specifications at $T_A=23^{\circ}\text{C}$

Model Number	Active Area		Peak Responsivity Wavelength	Responsivity at λ_p		Capacitance (pF)	Shunt Resistance (G Ω)		NEP (W/ $\sqrt{\text{Hz}}$)	Rise Time (ns)	Temp.* Range (°C)		Package Style ¶
	Area (mm ²)	Dimensions (mm)	λ_p (nm)	(A/W)		0 V	-10 mV		0V 970 nm	0 V 632 nm 50 Ω	Operating	Storage	
			typ.	min.	typ.	max.	min.	typ.	typ.	typ.			

'DP' Series, Metal Package

CD-1705	0.88	0.93 sq	850	970	0.55	0.60	70	1.0	10	2.1 e-15	2000	-40 ~ +100	-55 ~ +125	71 / Plastic	
PIN-2DPI ‡	1.1	0.81 x 1.37					150							30	4 / TO-18
PIN-125DPL	1.6	1.27 sq.					160							8 / TO-18	
PIN-3CDPI	3.2	1.27 x 2.54					320	0.5	5.0	3.0 e-15	50			4 / TO-18	
PIN-3CDP							7 / TO-18								
PIN-5DPI	5.1	2.54 ϕ					500	0.4	4.0	3.4 e-15	60			2 / TO-5	
PIN-5DP							5 / TO-5								
PIN-13DPI	13	3.6 sq					1200	0.35	3.5	3.6 e-15	150			2 / TO-5	
PIN-13DP							5 / TO-5								
PIN-6DPI	16.4	4.57 ϕ					2000	0.2	2.0	3.9 e-15	220			3 / TO-8	
PIN-6DP							6 / TO-8								
PIN-44DPI	44	6.6 sq					4300	0.1	1.0	4.8 e-15	475			3 / TO-8	
PIN-44DP							6 / TO-8								
PIN-10DPI	100	11.28 ϕ					9800	0.05	0.2	6.8 e-15	1000	-10 ~ +60	-20 ~ +70	10/ Lo-Prof	
PIN-10DP							11 / BNC								
PIN-25DP	613	27.9 ϕ					60000	0.002	0.1	3.0 e-14	6600			12 / BNC	

'DP' Series, Plastic Package §

PIN-220DP	200	10 x 20	970	0.55	0.60	20000	0.02	0.2	1.2 e-14	2200	-10 ~ +60	-20 ~ +70	27 / Plastic
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Super Blue Enhanced 'DP/SB' Series, (All Specifications @ $\lambda = 410 \text{ nm}$, $V_{\text{BIAS}} = 0\text{V}$, $R_L = 50\Omega$)

Model No.	Active Area/Dimensions		Responsivity (A/W)		Capacitance (pF)	R _{sh} (MΩ)	NEP (W/√Hz)	Operating Current (mA)	Rise Time (μs)	-10 ~ +60	-20 ~ +70	Package Style ¶
	mm²	mm	min.	typ.	typ.	min.	typ.	max.	typ.			
PIN-040DP/SB	0.81	1.02 ϕ	0.15	0.20	60	600	2.0 e-14	0.5	0.02			1 / TO-18
PIN-5DP/SB †	5.1	2.54 ϕ			450	150	5.2 e-14	2.0	0.2			5 / TO-5
PIN-10DP/SB	100	11.28 ϕ			8800	10	2.0 e-13	10.0	2.0			11 / BNC
PIN-10DPI/SB												10 / Metal
PIN-220DP/SB	200	10 x 20			17000	5	2.9 e-13	10.0	4.0			27 / Plastic

'5T' Series, Blue

Model No.	Active Area/Dimensions		Responsivity (A/W) 436nm		Capacitance (pF) 0V	R_{sh} ($M\Omega$)	NEP ($\text{W}/\sqrt{\text{Hz}}$)	Dark Current (pA)	Rise Time (μs)			Package Style ¶
	mm^2	mm	min.	typ.	max	min.	typ.	max.	typ.			
OSD1-5T	1.0	1.0 sq	0.18	0.21	35	250	2.5 e-14	1.0	7	-25 ~ +75	-45 ~ +100	7 / TO-18
OSD3-5T	3.0	2.5 x 1.2			80	100	3.0 e-14	2.0	9			7 / TO-18
OSD5-5T	5.0	2.5 ϕ			130	100	3.3 e-14	2.0	9			5 / TO-5
OSD15-5T	15.0	3.8 sq			390	50	5.6 e-14	10.0	12			5 / TO-5
OSD60-5T	62.0	7.9 sq			1800	3	2.1 e-13	25.0	30			72 / TO-8
OSD100-5TA	100.0	11.3 ϕ			2500	2	2.5 e-13	30.0	45			74 / Special

‡ The 'I' suffix on the model number is indicative of the photodiode chip being isolated from the package by an additional pin connected to the case.

§ The photodiode chips in "FIL" series are isolated in a low profile plastic package. The have a large field of view as well as "in line" pins.

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

† Operating Temperature: -40 to +100 $^{\circ}\text{C}$, Storage Temperature: -55 to +125 $^{\circ}\text{C}$.

* Non-Condensing temperature and Storage Range, Non-Condensing Environment.

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: $0.XX \pm 0.01$ "

$0.XXX \pm 0.005$ "

Chip Centering: ± 0.010 "

Dimension 'A': ± 0.015 "

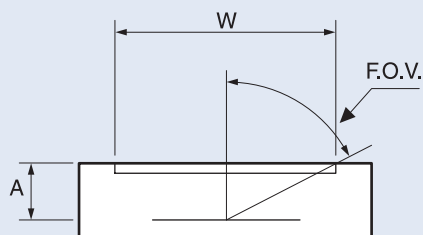
5. Windows

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
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310-978-0516



- Or -
On the Internet at

www.osioptoelectronics.com

Mechanical Specifications

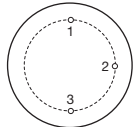
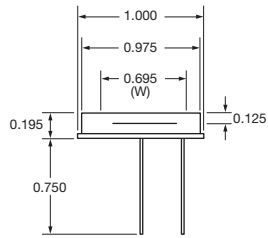
All units in inches. Pinouts are bottom view.

1 TO-18		2 TO-5		3 TO-8																																			
Products: PIN-020A PIN-040A PIN-040-DP/SB Pin Circle Dia.=0.100 <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	Products: PIN-5DI PIN-5DPI PIN-13DI PIN-13DPI PIN-5-YAG CD-25T Pin Circle Dia.=0.200 <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	Products: PIN-6DI PIN-6DPI PIN-44DI PIN-44DPI OSD35-0 OSD35-7Q Pin Circle Dia.=0.295 <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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4 TO-18		5 TO-5		6 TO-8																																			
Products: PIN-2DI PIN-2DPI PIN-3CDP PIN-3CDPI BPX-65R Pin Circle Dia.=0.100 <table border="1"><thead><tr><th>P/N</th><th>A</th><th>B</th></tr></thead><tbody><tr><td>BPX-65R</td><td>0.070</td><td>0.200</td></tr><tr><td>All Others</td><td>0.090</td><td>0.150</td></tr></tbody></table>		P/N	A	B	BPX-65R	0.070	0.200	All Others	0.090	0.150	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 Pin Circle Dia.=0.200 <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> Quartz Window: OSD5.8-7Q UV Transmissive Window: OSD5.8-7U		P/N	A	B	OSD-Prefix Devices	0.050	0.130	All Others	0.102	0.180	Products: PIN-6D PIN-6DP PIN-44D PIN-44DP UV-020 UV-035D UV-035E UV-035 Pin Circle Dia.=0.295																	
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7 TO-18		8 TO-18		9 TO-18																																			
Products: PIN-3CD PIN-3CDP BPX-65 OSD1-0 OSD1-5T OSD3-5T OSD1.2-7Q OSD1.2-7U Pin Circle Dia.=0.100 <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> Quartz Window: OSD1.2-7Q UV Transmissive Window: OSD1.2-7U		P/N	A	B	PIN-3CD / 3CDP	0.087	0.146	BPX-65	0.075	0.200	OSD-Prefix Devices	0.080	0.200	Products: PIN-125DPL Pin Circle Dia.=0.100		Products: PIN-HR005 PIN-HR008 PIN-HR020 PIN-HR026 PIN-HR040 Pin Circle Dia.=0.100																							
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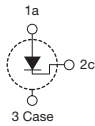
Mechanical Specifications

All units in inches. Pinouts are bottom view.

10 Low Profile

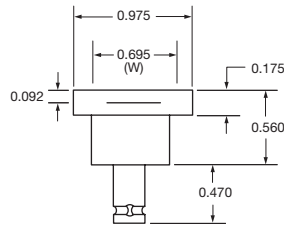


Pin Circle Dia.=.73



Products:
PIN-10DI
PIN-10DPI
PIN-10DPI/SB
UV-50L
UV-100L

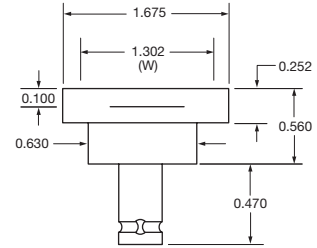
11 BNC



Outer Contact — Anode	PIN-10D, PIN-10DP, PIN-10DP/SB
Outer Contact — Cathode	UV-50, UV-100

Products:
PIN-10D
PIN-10DP
PIN-10DP/SB
UV-50
UV-100

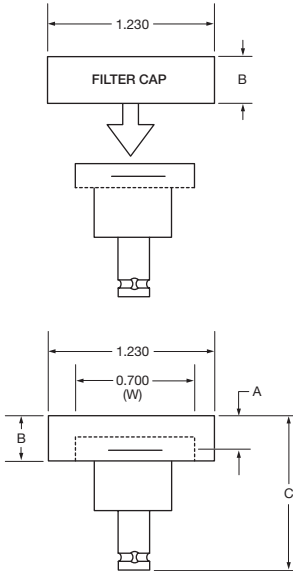
12 BNC



Outer Contact — Anode

Products:
PIN-25D
PIN-25DP

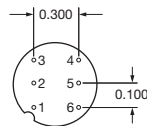
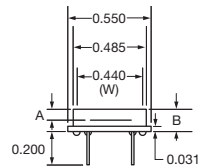
13 Special BNC



Dimensions			
P/N	A	B	C
PIN-10DF	0.217	0.330	1.020
PIN-10AP	0.386	0.550	1.415

Products:
PIN-10AP
PIN-10DF

14 Special Plastic

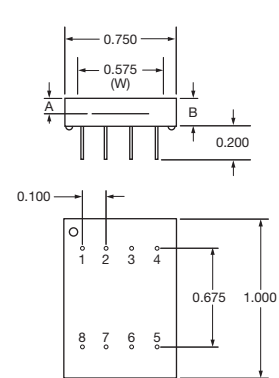


Dimensions		
P/N	A	B
FIL-5C FIL-20C FIL-UV20 FIL-C4DG	0.060	0.130
FIL-UV005 FIL-UV20 FIL-C4DG	0.087	0.152

Products:
FIL-5C
FIL-20C
FIL-UV20
FIL-C4DG

Pinouts						
P/N	1	2	3	4	5	6
FIL-5C FIL-20C FIL-UV005	a	-	c	a	-	c
FIL-UV20	c	-	a	c	-	a
FIL-C4DG	c	a	c	c	a	c

15 Special Plastic



Dimensions		
P/N	A	B
FIL-44C FIL-100C FIL-UV50 FIL-UV100 FIL-C10DG	0.052	0.130
FIL-UV50 FIL-UV100	0.090	0.155
FIL-C10DG	0.082	0.155

Products:
FIL-44C
FIL-100C
FIL-UV50
FIL-UV100
FIL-C10DG

Pinouts							
P/N	1	2	3	4	5	6	7
FIL-44C FIL-100C	a	-	-	c	a	-	c
FIL-UV50 FIL-UV100	c	-	-	a	c	-	a
FIL-C10DG	c	a	a	c	c	a	a

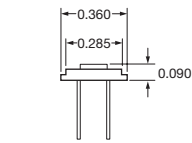
Mechanical Specifications

All units in inches. Pinouts are bottom view.

22 TO-5

Products:

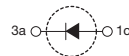
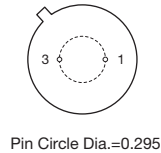
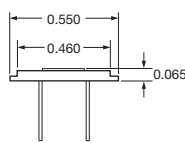
XUV-005



23 TO-8

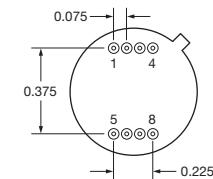
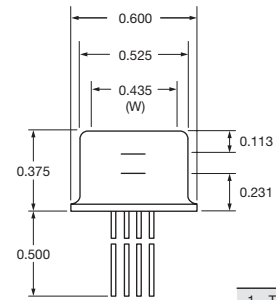
Products:

XUV-020
XUV-035



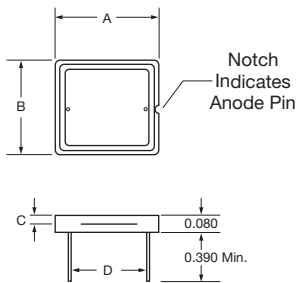
24 TO-8

PIN-DSIn-TEC



Pinout	
1	TEC (-)
2	Thermistor
3	Thermistor
4	TEC (+)
5	Bottom InGaAs, Cathode
6	Bottom InGaAs, Anode
7	Top Silicon, Anode
8	Top Silicon, Cathode

25 Special Ceramic / Plastic



P/N	Dimensions			
	A	B	C	D
UV-005EC	0.400	0.350	0.030	0.280
UV-035EC	0.400	0.350	0.030	0.290
UV-100EC	0.650	0.590	0.048	0.500
UV-005DC	0.400	0.350	0.030	0.280
UV-035DC	0.400	0.350	0.030	0.290
UV-100DC	0.650	0.590	0.053	0.500
XUV-50C	0.650	0.590	0.027	0.490
XUV-100C	0.650	0.590	0.027	0.490
RD-100	0.650	0.590	0.027	0.490
RD-100A	0.650	0.590	0.027	0.490
UV-35P	0.390	0.345	0.050	0.275
OSD35-7CO	0.390	0.350	---	0.290
OSD35-LR-A	0.390	0.350	---	0.290
OSD35-LR-D	0.390	0.350	---	0.290

Note: OSD35-prefix packages come with 0.31" (min.) leads

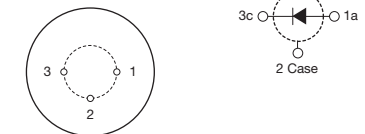
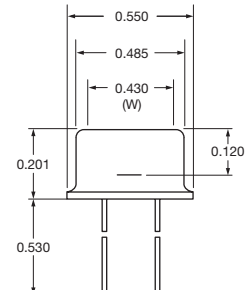
Products:

RD-100
RD-100A
UV-35P
UV-005EC
UV-035EC
UV-100EC
UV-005DC
UV-035DC
UV-100DC
XUV-50C
XUV-100C
OSD35-7CO
OSD35-LR-A
OSD35-LR-D

26 TO-8

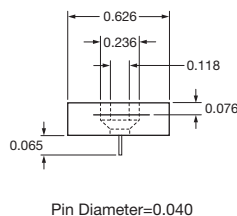
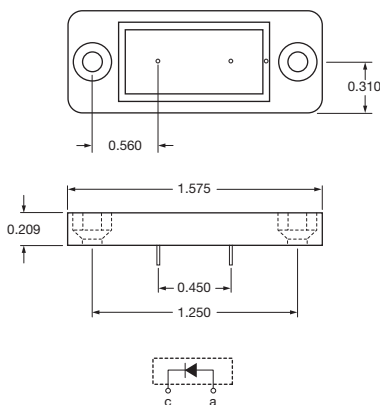
Products:

PIN-RD07
PIN-RD15



Pin Circle Dia.=0.295

27 Special Plastic



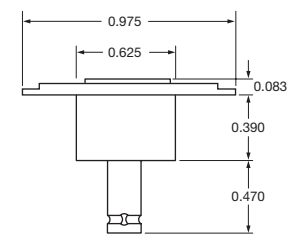
Products:

PIN-220D
PIN-220DP
PIN-220DP/SB

28 BNC

Products:

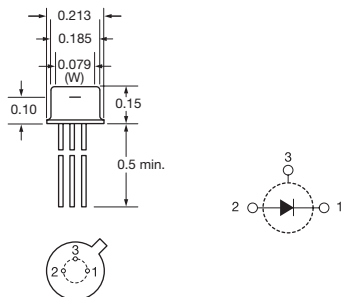
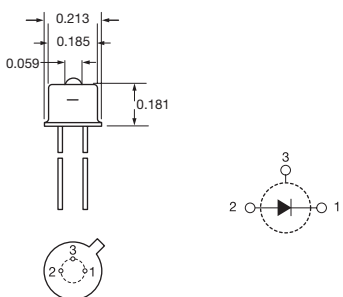
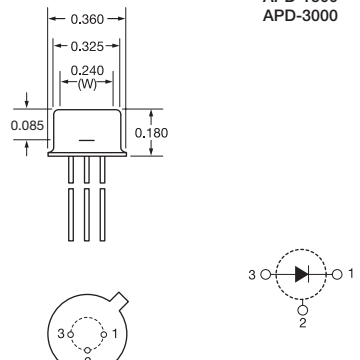
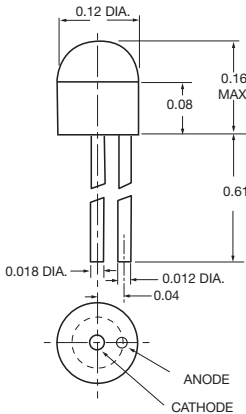
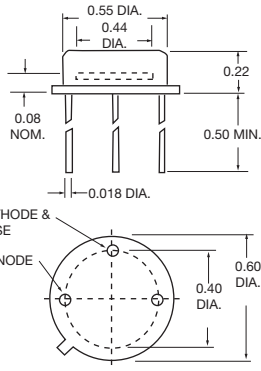
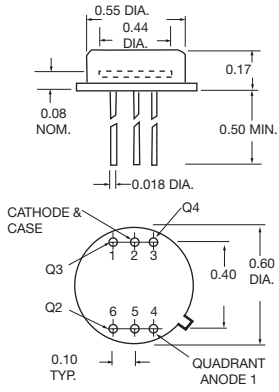
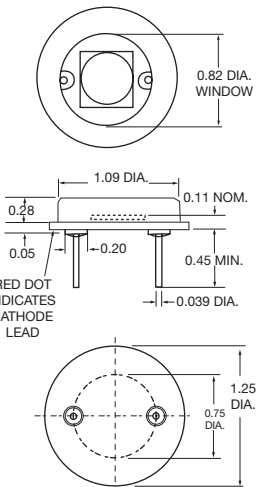
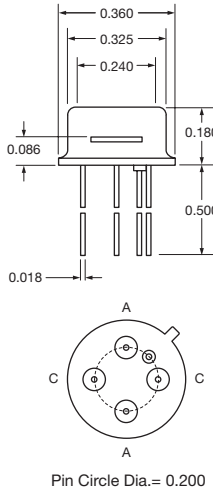
XUV-100



BNC Connector
Outer Contact = Cathode

Mechanical Specifications

All units in inches. Pinouts are bottom view.

68 TO-18	69 TO-18	70 TO-5
Products: APD-300 APD-500  Pin Circle Dia.=0.100	Products: APD-300L APD-500L  Pin Circle Dia.=0.100	Products: APD-900 APD-1500 APD-3000  Pin Circle Dia.=0.200
71 Plastic	72 TO-8	73 TO-8
Products: CD-1705  ANODE CATHODE	Products: OSD-60-0  CATHODE & CASE ANODE	Products: QD50-0  QUADRANT ANODE 1
74 Special	75 TO-5	76 Plastic Molded
Products: OSD100-0A OSD100-5TA  RED DOT INDICATES CATHODE LEAD	Products: DLS-2S  Pin Circle Dia.= 0.200 Bottom View	Products: OS-P200 