

■ Photoconductive Series

Planar Diffused Silicon Photodiodes

The Photoconductive Detector Series are suitable for high speed and high sensitivity applications. The spectral range extends from 350 to 1100 nm, making these photodiodes ideal for visible and near IR applications, including such AC applications as detection of pulsed LASER sources, LEDs, or chopped light.

To achieve high speeds, these detectors should be reverse biased. Typical response times from 10 ns to 250 ns can be achieved with a 10V reverse bias, for example. When a reverse bias is applied, capacitance decreases (as seen in the figure below) corresponding directly to an increase in speed.

As indicated in the specification table, the reverse bias should not exceed 30 volts. Higher bias voltages will result in permanent damage to the detector.

Since a reverse bias generates additional dark current, the noise in the device will also increase with applied bias. For lower noise detectors, the Photovoltaic Series should be considered.

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



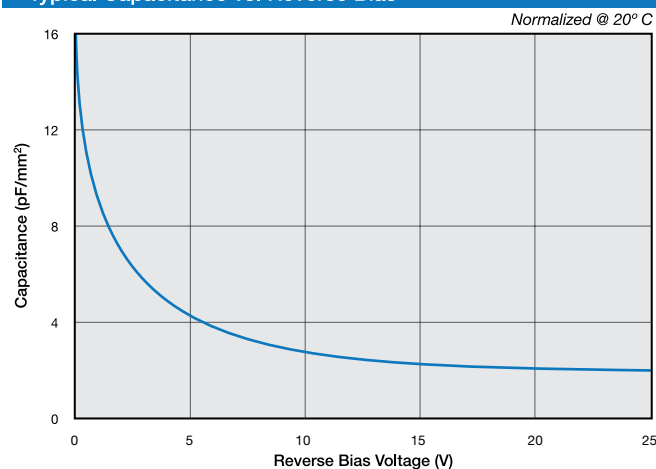
■ APPLICATIONS

- Pulse Detectors
- Optical Communications
- Bar Code Readers
- Optical Remote Control
- Medical Equipment
- High Speed Photometry

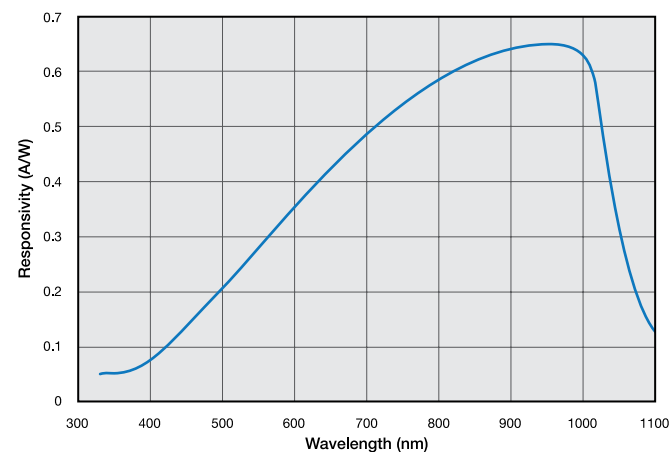
■ FEATURES

- High Speed Response
- Low Capacitance
- Low Dark Current
- Wide Dynamic Range
- High Responsivity

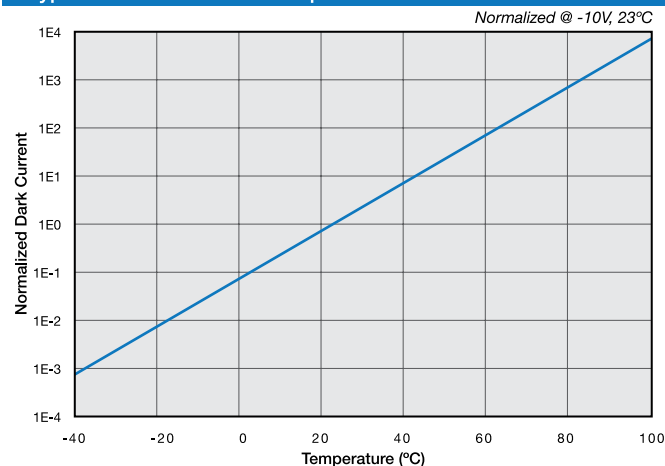
■ Typical Capacitance vs. Reverse Bias



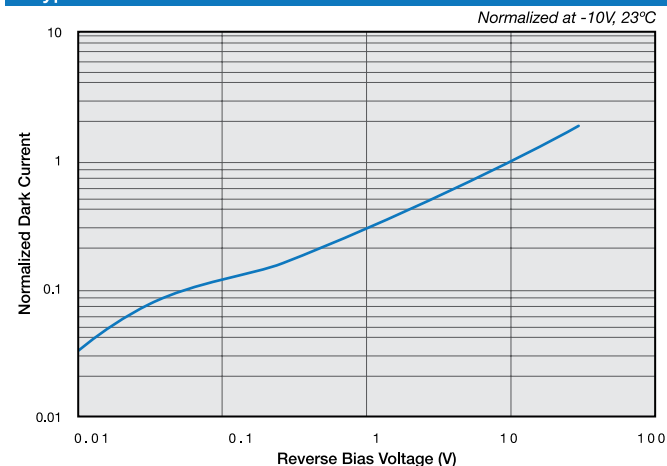
■ Typical Spectral Response



■ Typical Dark Current vs. Temperature



■ Typical Dark Current vs. Reverse Bias



■ Photoconductive Series

Typical Electro-Optical Specifications at T_A=23°C

Model Number	Active Area		Peak Responsivity Wavelength	Responsivity at λ_p		Capacitance (pF)		Dark Current (nA)		NEP (W/√Hz)	Reverse Voltage (V)	Rise Time (ns)	Temp.* Range (°C)		Package Style ¶
	Area (mm ²)	Dimensions (mm)		λ_p (nm)	(A/W)		0 V	-10 V	-10 V			-10V 970nm	-10V 632nm 50 Ω	Operating	
			typ.	min.	typ.	typ.	typ.	typ.	max.	typ.	max.	typ.			

'D' Series, Metal Package

PIN-020A	0.20	0.51 φ	970	0.60	0.65	4	1	0.01	0.15	2.8 e-15	30	6	-40 ~ +100	-55 ~ +125	1 / TO-18		
PIN-040A	0.81	1.02 φ				8	2	0.05	0.50	6.2 e-15		8			10	4 / TO-18	
PIN-2DI #	1.1	0.81 x 1.37				25	5	0.10	1.0	8.7 e-15		12					7 / TO-18
PIN-3CDI	3.2	1.27 x 2.54				45	12	0.15	2	1.1 e-14							
PIN-3CD						85	15	0.25	3	1.4 e-14		17			5 / TO-5		
PIN-5DI	5.1	2.54 φ				225	40	0.35	6	1.6 e-14						24	3 / TO-8
PIN-5D						330	60	0.5	10	1.9 e-14		43			6 / TO-8		
PIN-13DI	13	3.6 sq				700	130	1	15	2.8 e-14						250	10/ Lo-Prof
PIN-13D						1500	300	2	25	3.9 e-14		11 / BNC					
PIN-6DI	16.4	4.57 φ				9500	1800	15	1000	1.1 e-13					12 / BNC		
PIN-6D						44	6.6 sq										
PIN-44DI	44	6.6 sq															
PIN-44D																	
PIN-10DI	100	11.28 φ															
PIN-10D																	
PIN-25D	613	27.9 φ															

'O' Series, Metal Package

OSD1-0	1	1.0 sq	900	0.47	0.54	12	3	1	3	4.5 e-14	50	10	-25 ~ +75	-40 ~ +100	7 / TO-18
OSD5-0	5	2.5 φ				50	8	5	10	1.0 e-13		8			5 / TO-5
OSD15-0	15	3.8 sq				150	20	8	15	1.3 e-13		9			5 / TO-5
OSD35-0	35	5.9 sq				350	46	12	30	1.6 e-13		12			3 / TO-8
OSD60-0	58	7.6 sq				600	75	15	50	1.7 e-13		14			72/ TO-8
OSD100-0A	100	11.3 φ				1000	130	30	70	2.5 e-13		19			74 /Special

'D' Series, Plastic Package §

FIL-5C	5.1	2.54 φ	970	0.60	0.65	85	15	0.25	3	1.4 e-14	30	12	-10 ~ +60	-20 ~ +70	14 / Plastic
FIL-20C	16.4	4.57 φ				330	60	0.5	10	1.9 e-14		17			15 / Plastic
FIL-44C	44	6.6 sq				700	130	1	15	2.8 e-14		24			
FIL-100C	100	11.28 φ				1500	300	2	25	3.9 e-14		43			
PIN-220D	200	10 x 20				3200	600	5	100	6.2 e-14		75			27 / Plastic

‡ 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. They have a large field of view as well as "in line" pins.

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

* 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 "

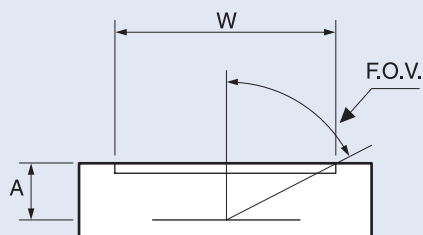
5. Windows

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
Sales and Applications Engineers

310-978-0516

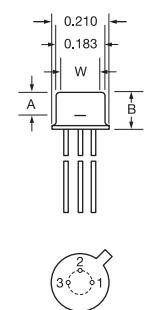
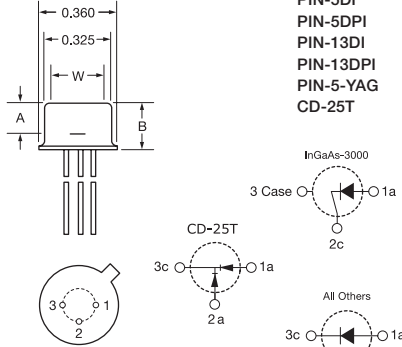
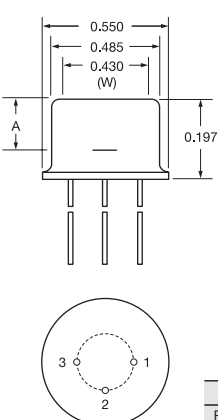
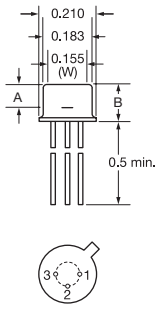
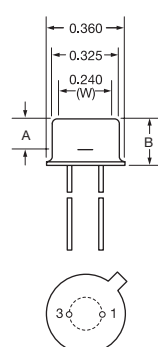
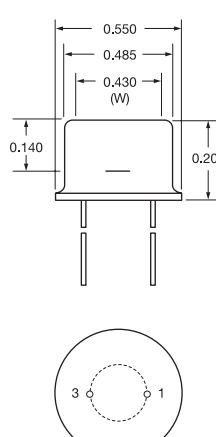
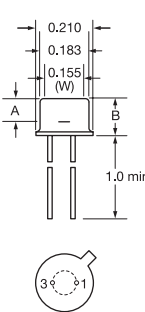
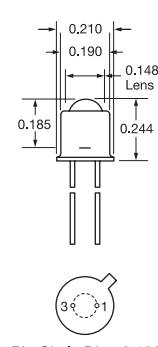
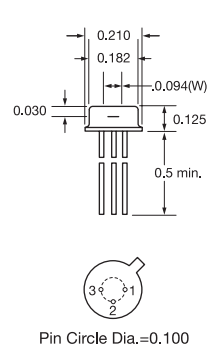


- Or -
On the Internet at

www.osioptoelectronics.com

Mechanical Specifications

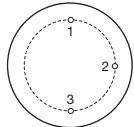
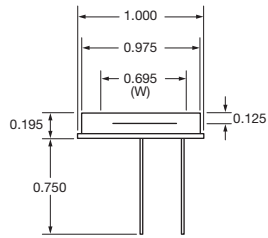
All units in inches. Pinouts are bottom view.

1 TO-18		2 TO-5		3 TO-8																																			
Products:		Products:		Products:																																			
 <p>Pin Circle Dia.=0.100</p> <table><tr><th>P/N</th><th>A</th><th>B</th><th>W</th></tr><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></table>		P/N	A	B	W	PIN-020A	0.075	0.200	0.155	PIN-040A	0.075	0.200	0.155	 <p>Pin Circle Dia.=0.200</p> <table><tr><th>P/N</th><th>A</th><th>B</th><th>W</th></tr><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></table>		P/N	A	B	W	All Others	0.094	0.180	0.240	CD-25T	0.050	0.130	0.23	 <p>Pin Circle Dia.=0.295</p> <table><tr><th>P/N</th><th>A</th></tr><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></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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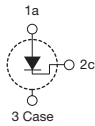
Mechanical Specifications

All units in inches. Pinouts are bottom view.

10 Low Profile

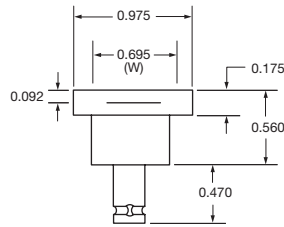


Pin Circle Dia.=.73



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

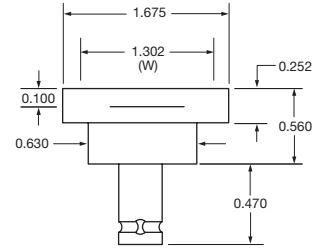
11 BNC



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

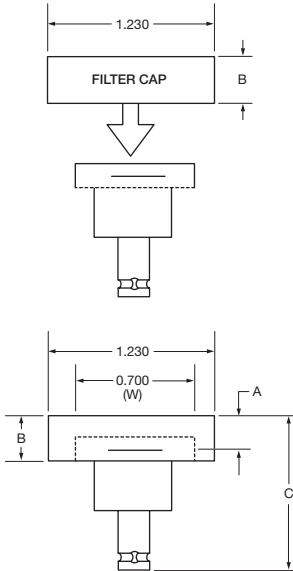
12 BNC



Outer Contact — Anode

Products:
PIN-25D
PIN-25DP

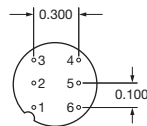
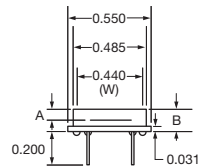
13 Special BNC



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

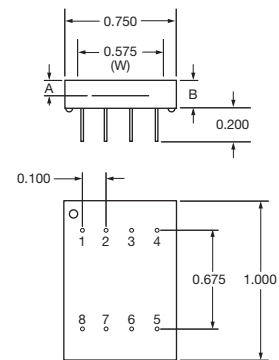


Dimensions		
P/N	A	B
FIL-5C FIL-20C FIL-UV20 FIL-C4DG	0.060	0.130
FIL-UV005 FIL-UV20 FIL-C4DG	0.087	0.152

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

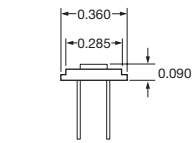
Mechanical Specifications

All units in inches. Pinouts are bottom view.

22 TO-5

Products:

XUV-005



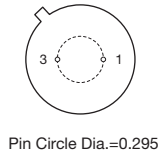
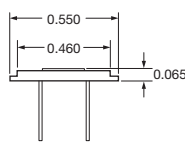
Pin Circle Dia.=0.200



23 TO-8

Products:

XUV-020
XUV-035

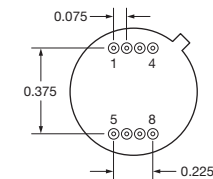
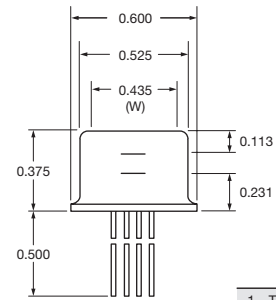


Pin Circle Dia.=0.295



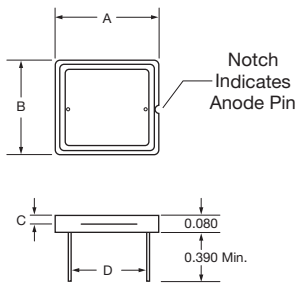
24 TO-8

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

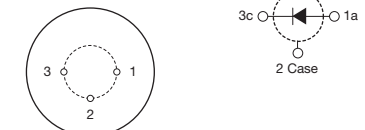
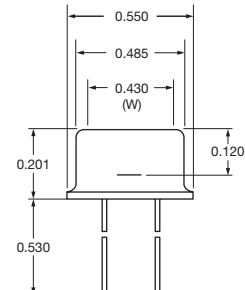
Products:

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

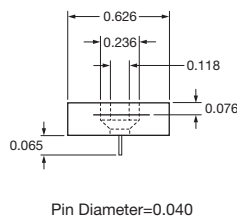
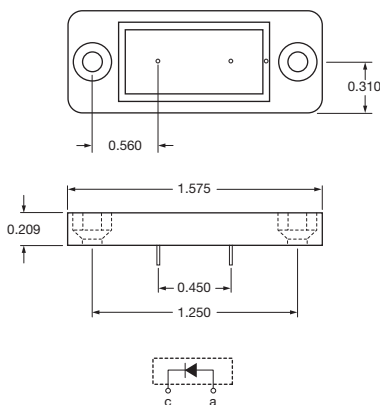
Products:

PIN-RD07
PIN-RD15



Pin Circle Dia.=0.295

27 Special Plastic



Pin Diameter=0.040

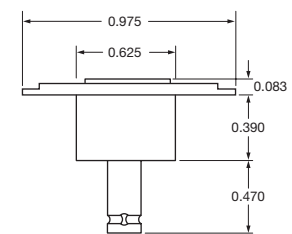
Products:

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

28 BNC

Products:

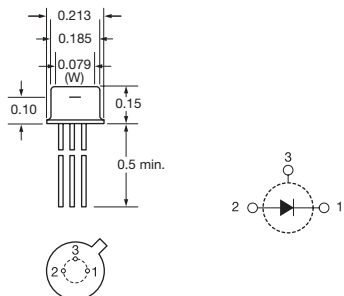
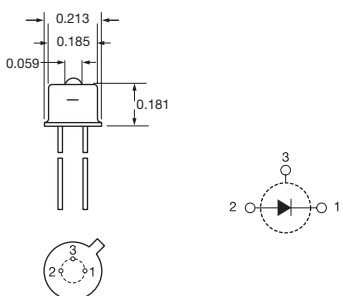
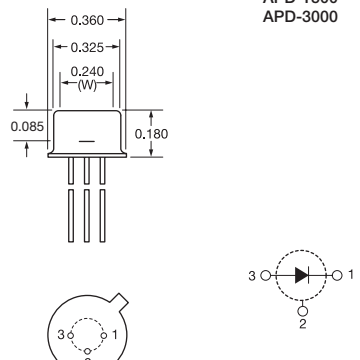
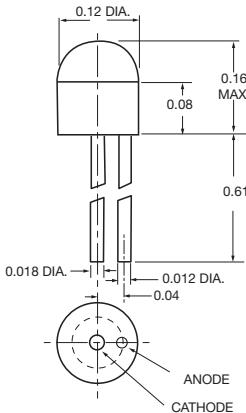
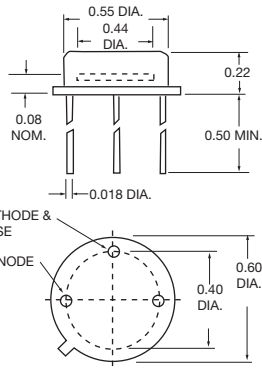
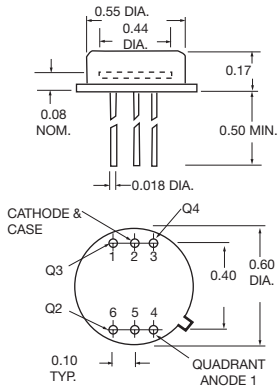
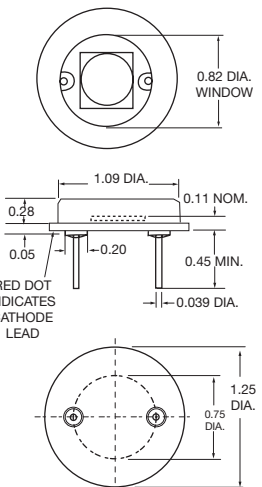
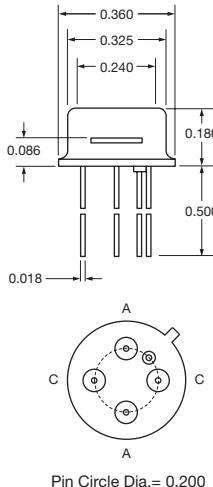
XUV-100



BNC Connector
Outer Contact = Cathode

Mechanical Specifications

All units in inches. Pinouts are bottom view.

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