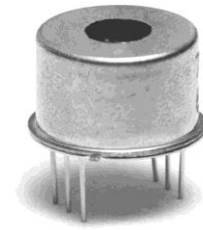




### HIGH SENSITIVITY APD OPTICAL RECEIVER

- OUTSTANDING LOW NEP
- EXCELLENT DYNAMIC RANGE > 30dB
- BANDWIDTH: 100MHz
- INCORPORATES TEC AND TEMPERATURE SENSOR
- HERMETIC LOW PROFILE TO-8 PACKAGE, 0.1 CU. IN.
- 200µm InGaAs APD DETECTOR WITH MASK
- OPERATION FROM 1.0µm to 1.7µm WAVELENGTH



#### DESCRIPTION:

The **7510-1** is a high gain, low noise, APD-preamp, optical receiver. The compact construction (modified TO-8 header) and PCB mounting capability makes the **7510-1** ideal for miniature applications. The thermo-electric heater/cooler allows the highest performance to be achieved with an external control circuit. Alternate detector sizes available, consult factory.

#### SPECIFICATIONS:

PARAMETER	7510-1-04			Units
	Min.	Typical	Max.	
InGaAs APD Active Diameter	180	200	220	µm
Bandwidth (3dB)	80	100	120	MHz
Responsivity (1.55µm, 6ns pulse)	0.5	1	1.5	MV/W
Noise Equivalent Power (NEP) @1.55µm	1	2	5	nW
Noise (RMS) at output	1.5	2	2.5	mV
Linear Dynamic Range (Peak signal/RMS noise)	1800:1	2500:1	4000:1	
Peak Output Pulse (Negative Swing)	4.5	5.1	6	V
DC Output Offset	2	2.5	3	V
<b>APD</b>				
Bias Voltage	40	50	80	V
Bias Current	-	10	50	nA
Temperature Coefficient (TEC off)	-	+0.1	0.15	V/°C
Temperature Sensor	-	-2.5	-	mV/°C
<b>THERMOELECTRIC COOLER (TEC)</b>				
Voltage	-	-	0.9	V
Current	-	-	0.6	A
<b>TEMPERATURE</b>				
Operating	-40	-	+80**	°C
Storage	-55	-	+85	°C
Input Power	+4.9 -4.9	+5 -5	+5.1 -5.1	VDC
Input Current	-	18 (+5V) 13 (-5V)	20 15	mA
Weight	-	4.3 (0.15Oz.)	-	Grams

\*All measurements made at 25°C, R<sub>L</sub> = 50Ω, AC Coupled

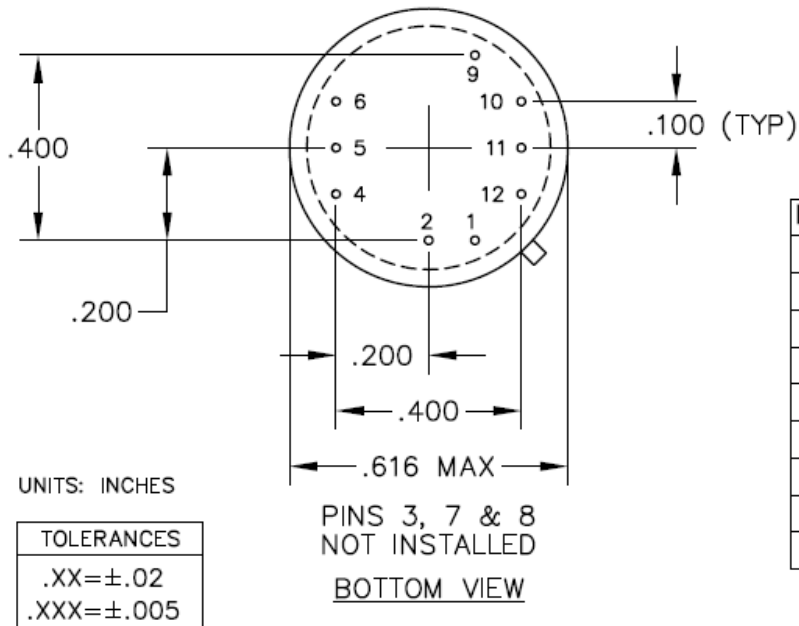
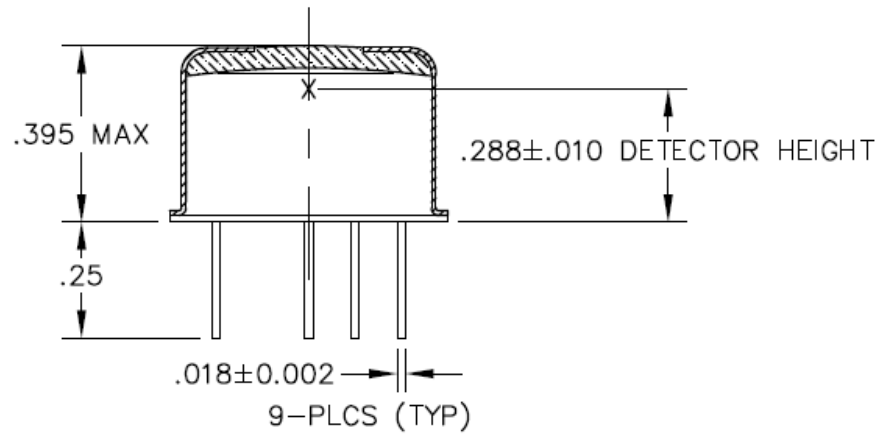
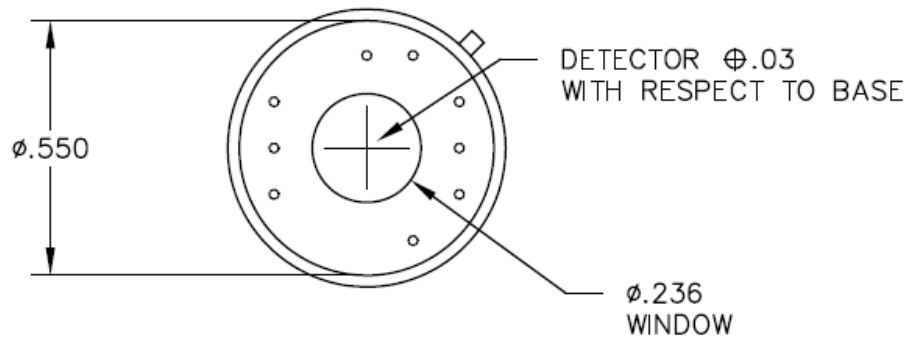
\*\*Useful life of TEC is reduced at temperatures in excess of 80°C.

Specifications subject to change without notice.

#### APPLICATIONS:

*Eyesafe Sensors, Medical Applications,  
Laboratory Instrumentation, Ranging, LIDAR*





PIN#	SIGNAL NAME
1	BIAS VOLTAGE
2	TEC-
4	-5V
5	GND
6	TEC+
9	N/C
10	OUTPUT
11	TEMP
12	+5V

8467.DWG

WINDOW:  $.035 \pm .006$ " THK.

RI = 1.469 @ 1550nm; 1.476 @ 1064nm.

### MODEL 7510-1 DIMENSIONS AND PACKAGE DETAIL

See 7510-1 Application Note for detailed operating information and design considerations.