

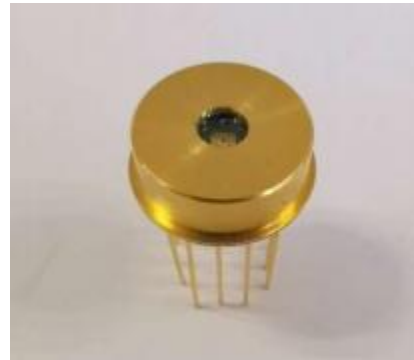
## 500um InGaAs APD Preamplifier Module

### CR500AH-1550-70M-00

The CR500AH- 1550-70M-00 includes a 500um InGaAs Avalanche Photodiode with a hybrid preamplifier for the use in high speed, ultra-low light detection, in laser range finding, LIDAR and free space communication.

#### ■ Features

- Built in 500um InGaAs+TIA
- High sensitivity:  $\geq 250\text{kV/W}$
- High bandwidth: 70Mhz
- Wavelength range:1100~1700nm
- Low noise and high reliability
- TO8 package with flat window



#### ■ Applications

- LIDAR
- Laser range finding
- Free space optical communication (FSO)

#### Absolute Maximum Ratings

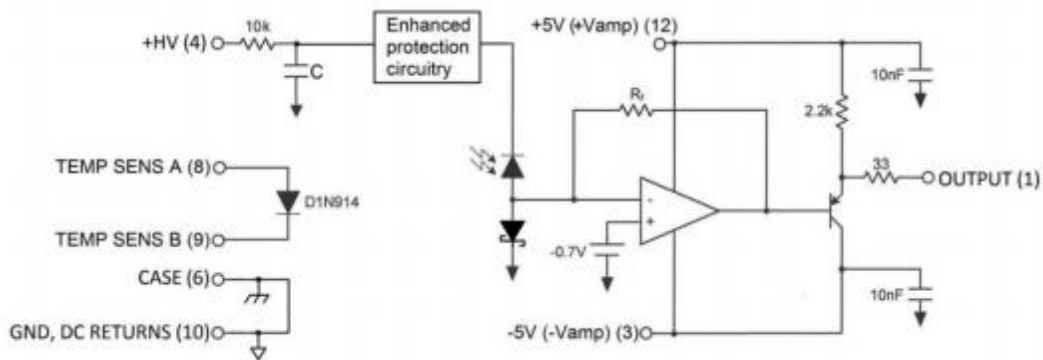
Parameter	Unit	Symbol	Rating
Reverse breakdown voltage	V	$V_R$	VBR
Operating temperature	$^{\circ}\text{C}$	$T_C$	-40 ~ +85
Storage temperature	$^{\circ}\text{C}$	$T_{STG}$	-55 ~ +100
Maximum optical input power	mW	$P_{in}$	100
Module mains voltage	V	$V_{CC}/V_{EE}$	$\pm 6$
Power dissipation	mW	$P_w$	250
Soldering temperature(time)	$^{\circ}\text{C}$	-	300 ( 10s)

#### Optical/Electrical Characteristics (T=25C, unless otherwise stated)

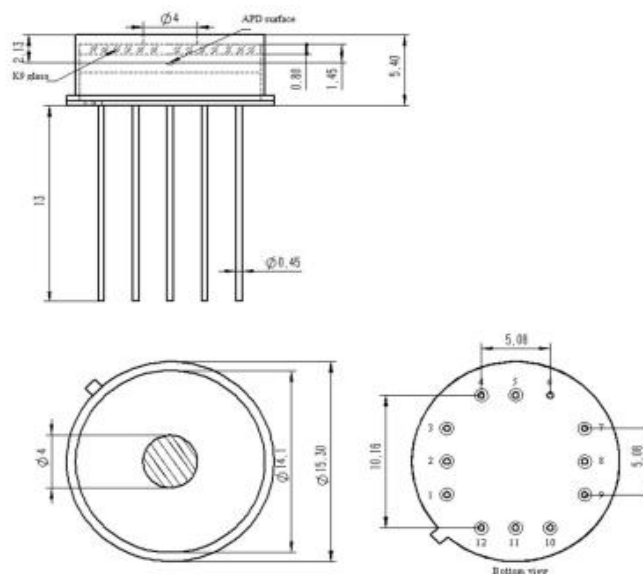
Parameter	Symbol	Value			Unit	Test conditions
		Min	Typ	Max		
Response Spectrum	$\lambda$	1100~1700			nm	
Active Diameter	D		500		um	
Reverse breakdown voltage	$V_{BR}$	30		70	V	
Operating voltage	$V_R$	VR-3			V	M=10
Responsivity	$R_v$	250			kV/W	M=10, 1.55um@ $\tau=100\text{ns}$
Dynamic range	DY	25			dB	M=10, 1.55um @ $\tau=100\text{ns}$

-3dB bandwidth	BW		70		Mhz	M=10, 1.55um @τ=100ns
Rise/Fall time	tr		5		ns	M=10, 1.55um @τ=100ns
Noise Equivalent Power	NEP		230		fW/√Hz	M=10 , f=100kHz, Δ=1hz
Output impedance	Ro		50		Ω	
Output Voltage Swing	Vo	0.7			V	
Positive Supply Current	Icc			30	mA	
Negative Supply Current	IEE			10	mA	50Ω Load
Temperature sensor sensitivity	α	-1.8	-2.1	-2.4	mV/°C	-55°C~+85°C
Temperature coefficient of V <sub>op</sub> for constant gain	γ		0.14		V/°C	-45~+20°C
			0.11			+20°C~85°C
Concentricity	Δ D			20	um	

■ **Schematic Block Diagram**



■ **Block Diagram and Pin description**



**Pin description**

PIN #	DESC	PIN #	DESC
1	OUTPUT	7	NC
2	NC	8	TEMP SENS A
3	-5V	9	TEMP SENS B
4	HV, APD BIAS	10	GND
5	NC	11	NC
6	CASE	12	+5V

**Order information**

**CR500AH-1550-70M-00**

CR①-②-③-④			
①High Responsiveness Target Surface	②Spectrum Response	③Responsive Bandwidth	④Customization Requirements
200AH: 0.2mm	1550: 1550nm	30M: 30MHz	00: NO
800AH: 0.8mm	1064: 1064nm	50M: 50MHz	LN: Low noise
1000AH: 1.0mm	940 :800~940nm	70M : 70MHz	...
3000AH: 3.0mm	...	100M: 100MHz	
...		...	

**Note:** The laser module are ESD-sensitive devices. Please insurw that proper ESD handling procedures are followed.