

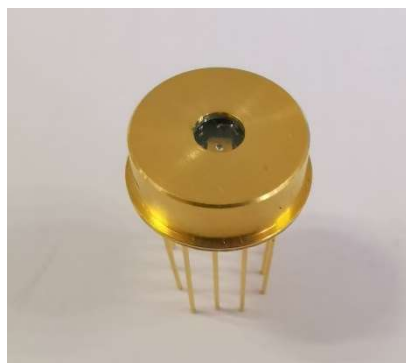
500um InGaAs APD Preamplifier Module

CR500AH-1550-70M

The CR500AH-1550-70M 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

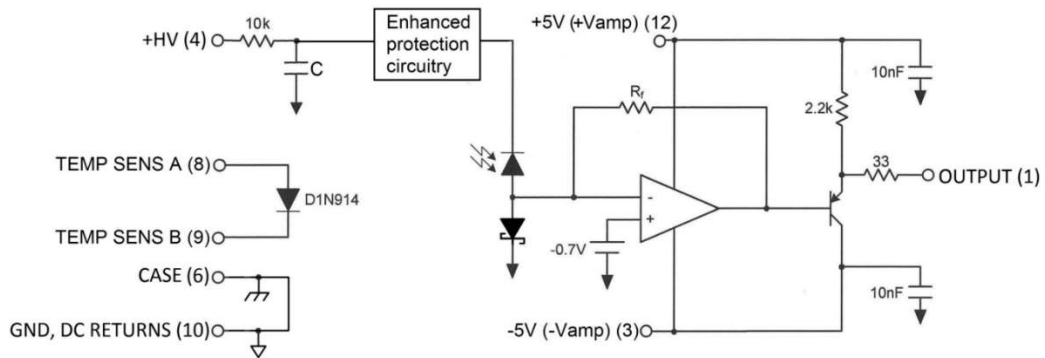
Parameter	Unit	Symbol	Rating
Reverse breakdown voltage	V	V_R	V_{BR}
Operating temperature	$^{\circ}\text{C}$	T_C	-40 ~ +85
Storage temperature	$^{\circ}\text{C}$	T_{STG}	-55 ~ +100
Maximum optical input power	mW	P_{in}	100
Module mains voltage	V	V_{cc}/V_{EE}	± 6
Power dissipation	mW	P_w	250
Soldering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

Optical/Electrical Characteristics (T=25 $^{\circ}\text{C}$, unless otherwise stated)

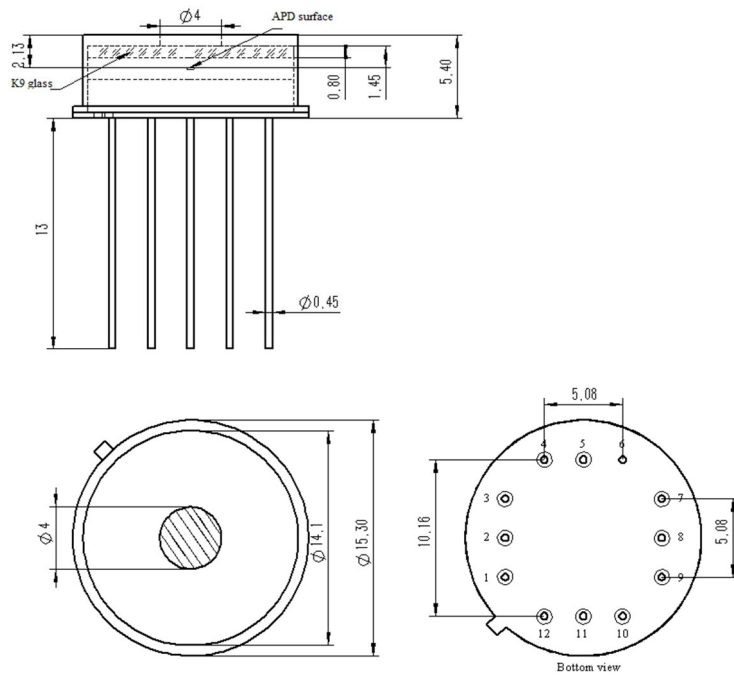
Parameter	Symbol	Value			Unit	Test conditions
		Min	Typ	Max		
Response Spectrum	λ	1100~1700			nm	
Active Diameter	D		500		um	
Reverse breakdown voltage	V_{BR}	30		70	V	
Operating voltage	V_R	VR-3			V	M=10
Responsivity	R_v	250			kV/W	M=10, 1.55um@ $\tau=100\text{ns}$
Dynamic range	DY	25			dB	M=10, 1.55um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

Rise/Fall time	t_r		5		ns	$M=10, 1.55\mu m @\tau=100ns$
Noise Equivalent Power	NEP		230		fW/\sqrt{Hz}	$M=10, f=100kHz, \Delta=1hz$
Output impedance	R_O		50		Ω	
Output Voltage Swing	V_O	0.7			V	
Positive Supply Current	I_{CC}			30	mA	
Negative Supply Current	I_{EE}			10	mA	50 Ω Load
Temperature sensor sensitivity	α	-1.8	-2.1	-2.4	mV/ $^{\circ}C$	-55 $^{\circ}C \sim +85^{\circ}C$
Temperature coefficient of V_{op} for constant gain	γ		0.14		V/ $^{\circ}C$	-45 $^{\circ}C \sim +20^{\circ}C$
			0.11			+20 $^{\circ}C \sim 85^{\circ}C$
Concentricity	ΔD			20	μm	

■ 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