

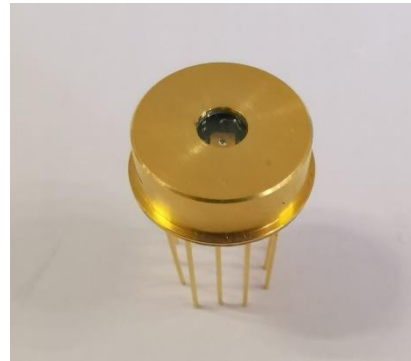
## 3mm SI APD Preamplifier Module

### CR3000AH-905-50M

The CR3000AH-905-50M includes a 3mm SI 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 3mm SI APD+TIA
- High sensitivity:  $\geq 600 \text{ kV/W}$
- High bandwidth: 50Mhz
- Wavelength range: 400~1100nm
- Low noise and high reliability
- TO8 package with flat window



#### ■ Applications

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

#### ■ Absolute Maximum Ratings

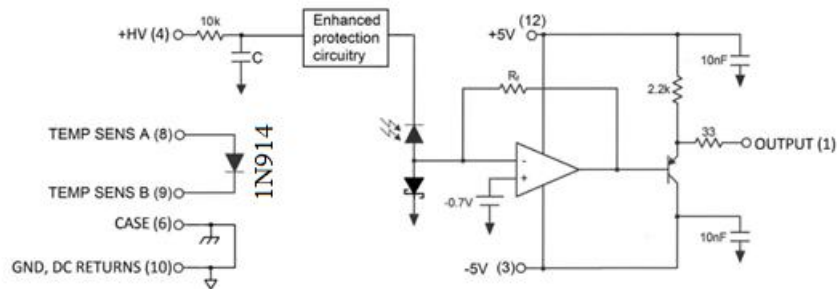
Parameter	Unit	Symbol	Rating
Reverse breakdown voltage	V	$V_R$	$0.95 \times V_{BR}$
Operating temperature	$^{\circ}\text{C}$	$T_C$	-40 ~ +85
Storage temperature	$^{\circ}\text{C}$	$T_{STG}$	-55 ~ +100
Maximum optical input power	mW	$P_{in}$	100
Module mains voltage	V	$V_{cc}/V_{EE}$	$\pm 5$
Power dissipation	mW	$P_w$	250
Soldering temperature(time)	$^{\circ}\text{C}$	-	300 (10s)

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

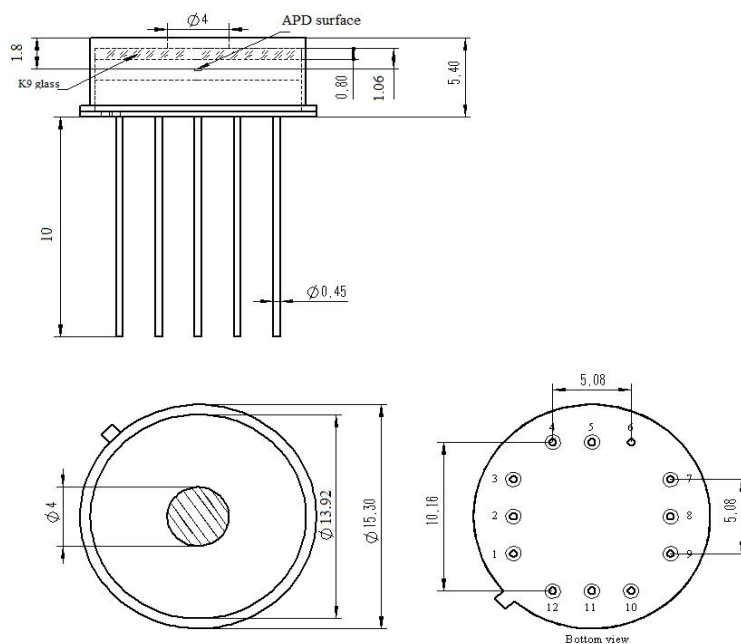
Parameter	Symbol	Value			Unit	Test conditions
		Min	Typ	Max		
Response Spectrum	$\lambda$	400~1100			nm	
Active Diameter	D		3		mm	
Reverse breakdown voltage	$V_{BR}$	130		250	V	
Operating voltage	$V_R$	$0.95 \times V_{BR}$			V	M=100
Responsivity	$R_V$	600			kV/W	M=100, 905nm@ $\tau=20\text{ns}$

Dynamic range	DY	25			dB	M=100, 905nm@ $\tau=20$ ns
-3dB bandwidth	BW		50		Mhz	M=100, 905nm@ $\tau=20$ ns
Rise/Fall time	$t_r$		7		ns	M=100, 905nm@ $\tau=100$ ns
Noise Equivalent Power	NEP		100		fW/ $\sqrt{\text{Hz}}$	M=10, $f=100$ kHz, $\Delta=1$ hz
Output impedance	$R_o$		50		$\Omega$	
Output Voltage Swing	$V_o$	0.7			V	
Positive Supply Current	$I_{CC}$			30	mA	
Negative Supply Current	$I_{EE}$			10	mA	50 $\Omega$ Load
Temperature coefficient of $V_{op}$ for constant gain	$\gamma$		1.2		V/ $^{\circ}\text{C}$	-40 $\sim$ +85 $^{\circ}\text{C}$
Temperature sensor Sensitivity (IN914)	$\alpha$	-1.8	-2.1	-2.4	mV/ $^{\circ}\text{C}$	-55 $\sim$ +85 $^{\circ}\text{C}$
Concentricity	$\Delta D$			50	$\mu\text{m}$	

### ■ 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

**CR3000AH-905-50M**

CR①-②-③		
① 高响应度靶面 High Responsiveness Target Surface	② 响应波长 Spectrum Response	③ 响应带宽 Responsive Bandwidth
200AH    0.2mm	1550    1550nm	30M    30MHz
800AH    0.8mm	1064    1064nm	50M    50MHz
1000AH   1.0mm	940    800~940nm	70M    70MHz
3000AH   3.0mm	...	100M   100 MHz
...		...

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