OP510C InGaAs Free-running Mode Array SPAD Component

Product Features

- Operating wavelength: 1.0μm to 1.65μm;
- High detection sensitivity (single photon level detection capability);
- Free-running mode (working door width can be adjusted);
- LVTTL/TTL output;
- Can work synchronously inside and outside;
- Key setup parameters are adjustable;
- Free Space Optical/FC Pluggable Optical Interface/Multimode Fiber (62.5um) optional.

Main photoelectric indicators

Parameterization	Notation	Test Condition	Minimum Value	Typical Value	Maximum Values	Unit
Detector Specifications and Configuration Parameters						
Effective pixel diameter	*d*	—	—	25	—	μm
operating wavelength	*λ*	—	1000	—	1650	μm
Output signal amplitude	V_{out}	—	2.5	3.3	5.0	V
power wastage	*PDC*	V_{IN} =5V, T_{th} =-30°C±5°C	—	15.0	—	W
Input Voltage	*VIN*		—	12	—	V
Input Current	I_{IN}	V_{IN} =5V, T_{th} =-30°C±5°C	—	1.5	—	A
Operating Temperature	T_A	—	-40	—	55	°C
weights	W_t	—	—	—	300	g
Detector Size	S_C	—	89 x 62 x 30			mm
Optical performance parameters						
photon efficiency	*PDE*	T_A =25±5°C, T_{th} =-30°C± 5°C, τ=0.8μs±0.1μs, λ=1550±50nm(InGaAs), λ=1064±10nm(InGaAsP)	10	15	—	%
dark count rate(InGaAs)	*DCR (PDE=10%)*		—	—	10	kHz
dark count rate(InGaAsP)	*DCR (PDE=10%)*				5	kHz
backpulse probability	*APP (PDE=10%)*		—	—	20	%

1, T_{th} : InGaAs avalanche photodiode chip operating temperature.
2, τ: dead time.
3. Ambient temperature for testing the above parameters: TA = 25 ±5°C.

Parameter setting range and recommended operating conditions

Serial Number		Parameters	Rated Value
Parameter setting range	1	Detector operating temperature	-30℃~30℃, Minimum step value:0.1℃.
	2	Dead Time Adjustment	0.1μs to 2.0μs, step value: 0.025μs.
	3	Avalanche voltage threshold adjustment	50.0V to 85.0V, step value: 0.1V.
	4	Geiger avalanche comparison voltage setting	0.35V to 1.10V, step value: 0.01V.
	5	Detector door width and duty cycle adjustment	Working gate width: ≥0.1us, working period: >0.1us; step value: 0.01us.

Serial Number		Parameters	Rated Value
Recommendation working Conditions	1	Detector operating temperature	-30℃ ~ 0℃
	2	dead time value	0.80μs
	3	Avalanche voltage threshold adjustment	See test report for details
	4	Geiger avalanche comparison voltage setting	0.45V to 0.90V

Typical Characteristic Curve

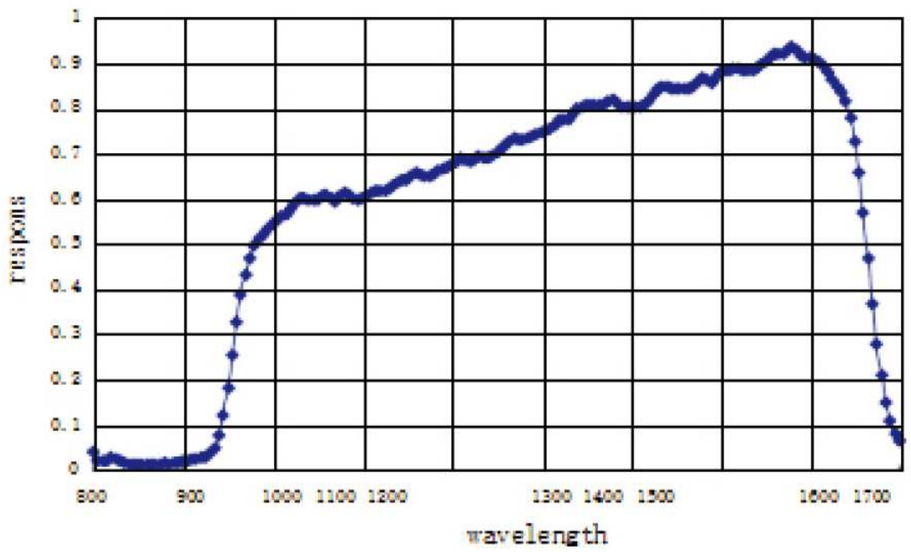


Fig. 1 InGaAs spectral response characteristic curve

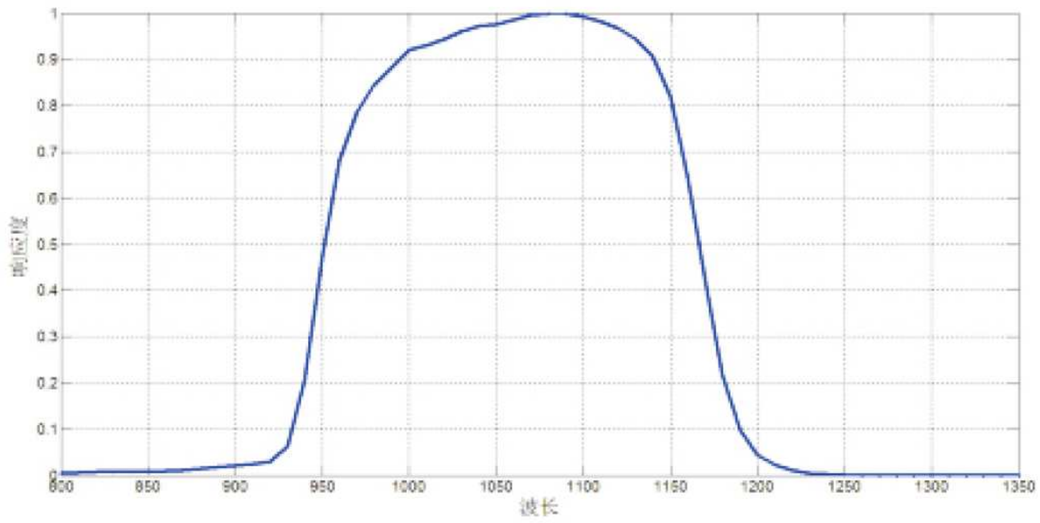


Fig. 2 InGaAsP spectral response characteristic curve

Shape, Dimensions and Pinout Definitions (in mm)

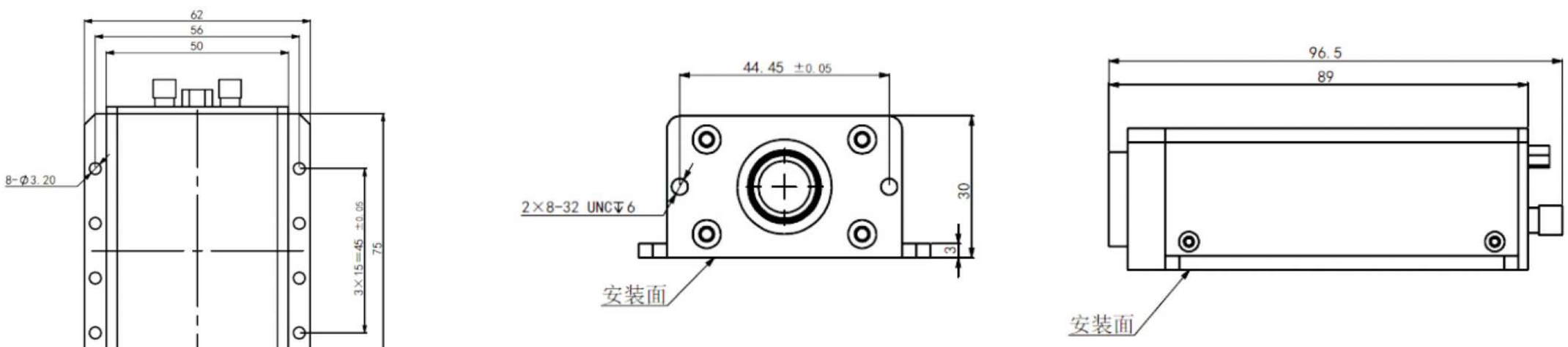
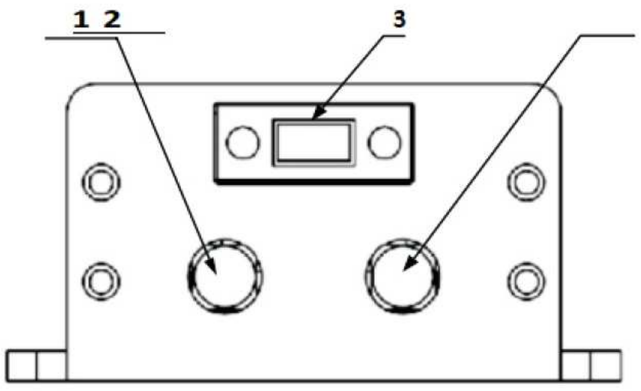


Figure 3 External Dimensions



Electrical Connector Number	Electrical Connector Type	Functionality
1	SSA-K	Synchronized signal input port
2	J30J-9TJW-J	Power supply and UART port
3	SMA-K	Avalanche signal output port

J30J-9TJW-J The numbering of each port is shown in Figure 5.

Figure 4 Electrical connector arrangement and numbering

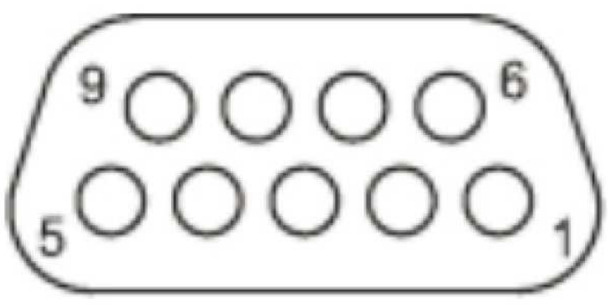


Figure 6 J30J-9TJW-J Port Numbers and Their Locations (Bottom View)

Ports Serial Number	Notation	Functionality	Port Numbering Horn (wind Instrument)	Notation	Functionality
1	UART_TX	UART output port	6	GND	grounding port
2	UART_TX	UART input port	7	GND	grounding port
3	GND	UART ground port	8	POWER_12.0V	Positive Input Port
4	GND	ground port	9	POWER_12.0V	Positive Input Port
5	GND	ground port	—	—	—