SPD65111S InGaAs Unit Single-Photon Detector Module



Description

The SPD65111S is a InGaAs Unit Single-Photon Detector Module,Operating wavelength 1.0μm～1.65μm ,High detection sensitivity (single-photon level detection capability),Free-running mode (adjustable operating gate width), LVTTL/TTL output, Capable of internal and external synchronous operation, Adjustable key setting parameters, Optional free-space light/FC pluggable optical interface/multi-mode fiber (62.5μm).

Specifications

Characteristic parameters	Sign	Test conditions	Min.	Typ.	Max.	Unit
Detector Specifications and Configuration Parameters						
Effective pixel diameter	d	—	—	25	—	μm
Operating wavelength	λ	—	1000	—	1650	nm
Output signal amplitude	V_{out}		2.5	3.3	5.0	V
Power consumption	P_{DC}	VIN =12.0V，Tth=-30℃±5℃	—	15.0	—	W
Input voltage	V_{IN}	—	—	12	—	V
Input current	I_{IN}	VIN =12.0V，Tth=-30℃±5℃		1.5	—	A
Operating ambient temperature	T_A	—	-40	—	55	℃
Weight	W_t	—	—	—	300	g
Detector size	S_C	—	89 ×62 ×30			mm
Performance Parameter						
Photon Detection Efficiency	PDE	TA=25±5℃，Tth=-30℃±5℃，τ=0.8 μs±0.1 μs，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
After pulse Probability	APP(PDE=10%)		—	—	20	%

Tth: InGaAs avalanche photodiode chip operating temperature.

τ: Dead time.

Ambient temperature for the above parameter tests: TA = 25 ± 5℃.

Parameter Setting Range and Recommended Operating Conditions

No.		Parameters	Rated Values
Parameter Setting Range	1	Detector operating temperature	-30℃~30℃, minimum step value: 0.1℃
	2	Dead time adjustment	0.1μs～2.0μs, step value: 0.025μs
	3	Avalanche voltage threshold adjustment	50.0V～85.0V, step value: 0.1V
	4	Geiger avalanche comparison voltage setting	0.35V～1.10V, step value: 0.01V
	5	Detector operating gate width and operating cycle adjustment	Operating gate width: ≥0.1μs; operating cycle: ＞0.1μs; step value: 0.01μs
No.		Parameters	Rated Values
Recommended Operating Conditions	1	Detector operating temperature	-30℃~0℃
	2	Dead time value	0.80μs
	3	Avalanche voltage threshold adjustment	See the test report for details
	4	Geiger avalanche comparison voltage setting	0.45V～0.90V

Typical Characteristic Curves

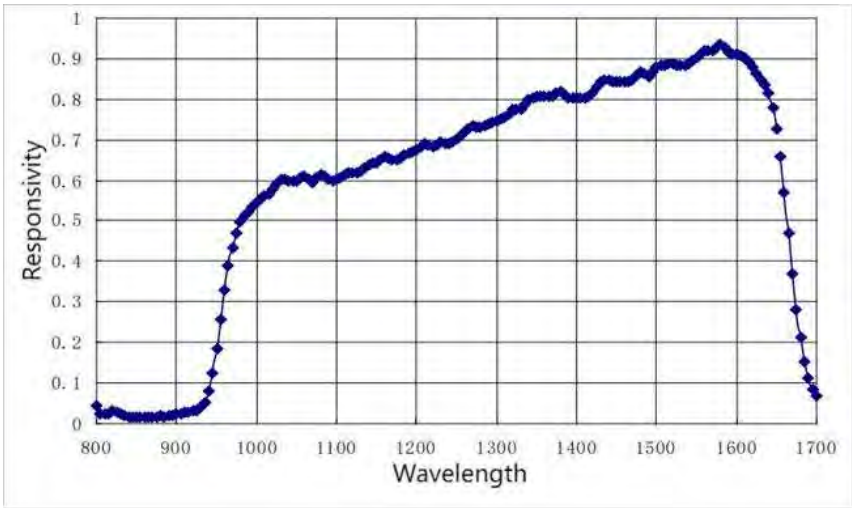


Figure 1 InGaAs Spectral Response Characteristic Curve

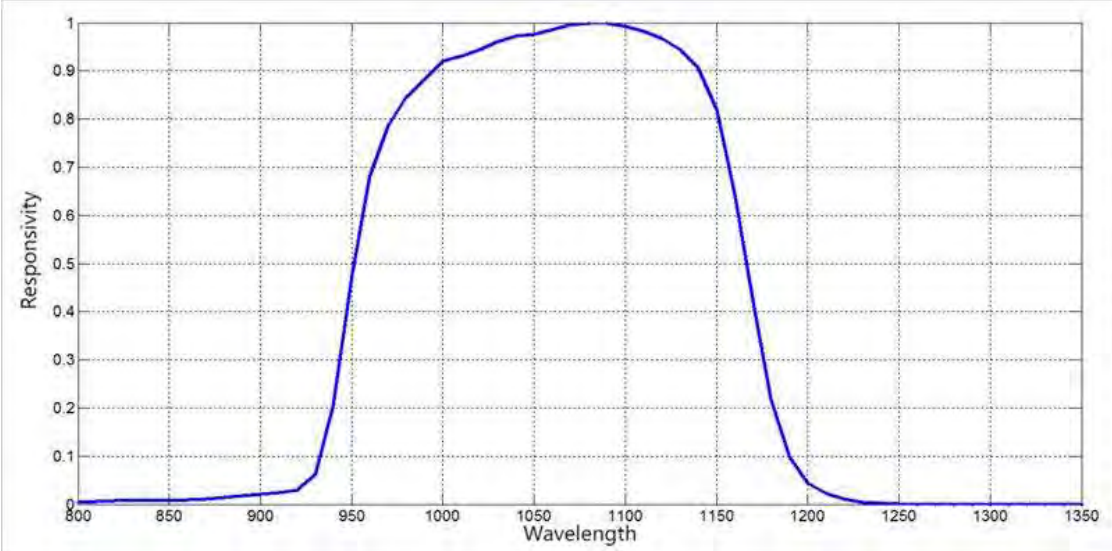


Figure 2 InGaAsP Spectral Response Characteristic Curve

Dimensions and Pin definitions

Outline, Dimensions and Definition of Lead-out Ports (Unit: mm)

Outline dimension parameters

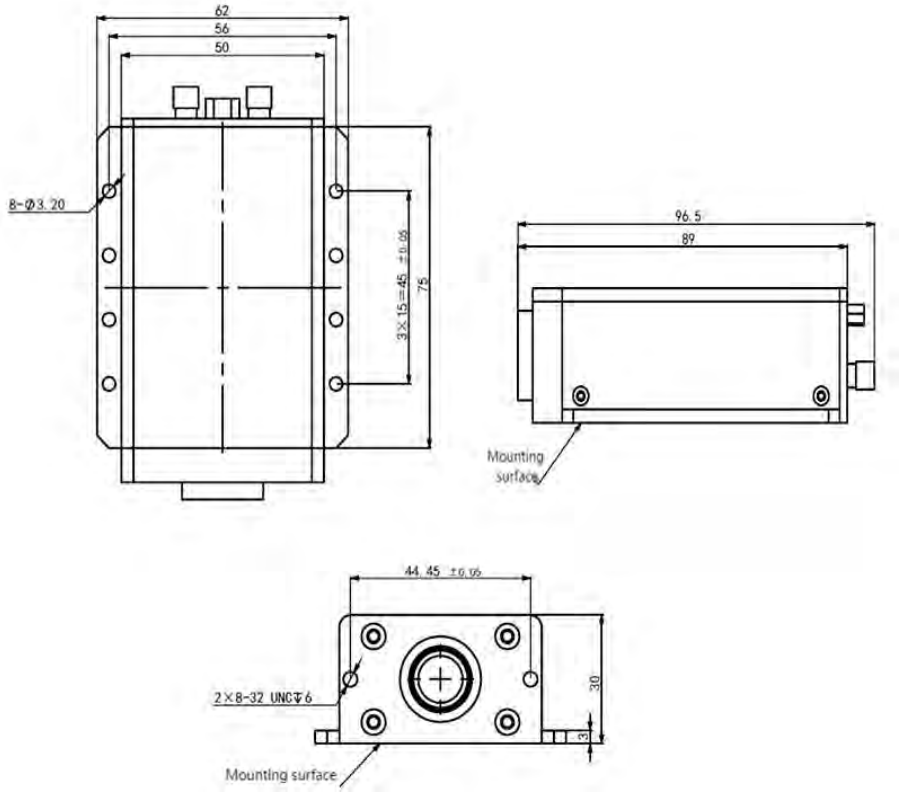


Figure 3 Outline Dimension Drawing

Definition of Lead-out Ports

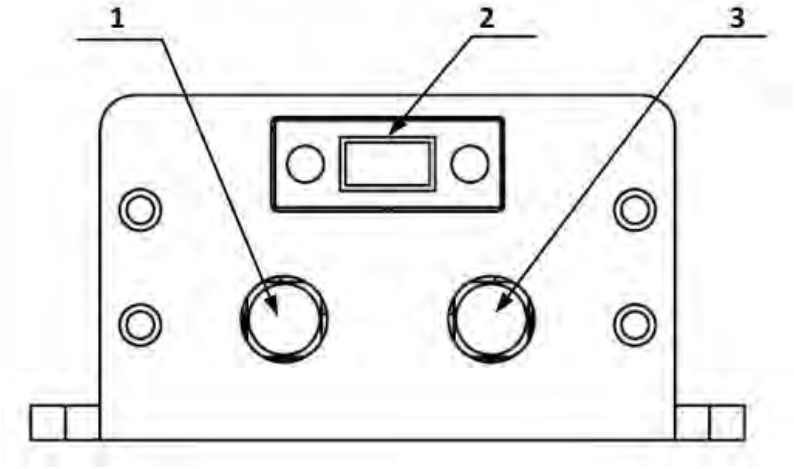


Figure 4 Arrangement and Numbering of Electrical Connectors

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

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

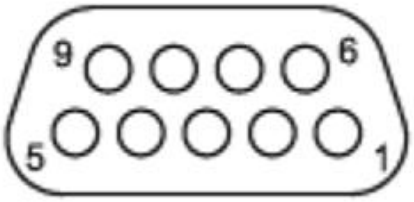


Figure 6 Port Numbering and Positions of J30J-9TJW-J (Bottom View)

Port No.	Sign	Function	Port No.	Name	Function
1	UART_TX	UART output port	6	GND	Ground Port
2	UART_RX	UART input port	7	GND	Ground 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	—	—	—

Notes

(1) Before power supply, carefully check whether the voltage of the power supply meets the requirements;

(2) Pay attention to electrostatic protection when using in a dry environment;

(3) The recommended operating ambient temperature should not exceed 40℃;

(4) Be careful not to use excessive force when plugging or unplugging interfaces;

(5) Pay attention to the sequence of switching on the power supply and setting parameters;

(6) Good heat dissipation must be ensured during use.