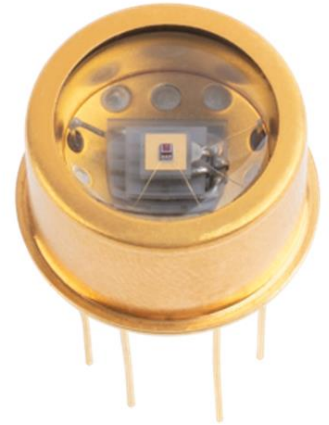


### ► Description

Solid State Photomultiplier (SSPM) is an InGaAs based device that counts photon numbers in excruciating detail. It is constructed with hundreds of NFAD chip array as pixel of SSPM. Because it consists of hundreds of InGaAs /InP SPAD pixels with corresponding negative feedback resistors and integrated micro-lens, SSPM can detect single photon and multi-photons, also analyze or count photon numbers. While all the pixels with the corresponding negative feedback resistors are connected to the common anode and cathode, every pixel boost its signal power several tens of thousands times independently during single or multiple photons incident on the multiple pixels at the same time. The each current generated in multiple pixels would add up, which means that SSPM can distinct or count the number of incident photons. This is very useful properties for SSPM be applicable to LiDAR receiver or ultra-sensitive receiver sensor such as gas-sensors and bio-sensors.



### ► Applications

- Single Photon LiDAR of SWIR range
- Photon Number Resolver
- Security and Safety monitoring
- Long Range LRF (Laser Rangefinder)
- Gas Sensor
- Bio-Medical Imaging

### ► Features

- High FoV with integrate InP micro-lens array
- Hundreds of NFAD Pixels
- Operates at Eye-safe SWIR
- High detection efficiency due to round-trip of incident photon
- Built-in 3-stage TEC(Thermo-Electric Cooler)

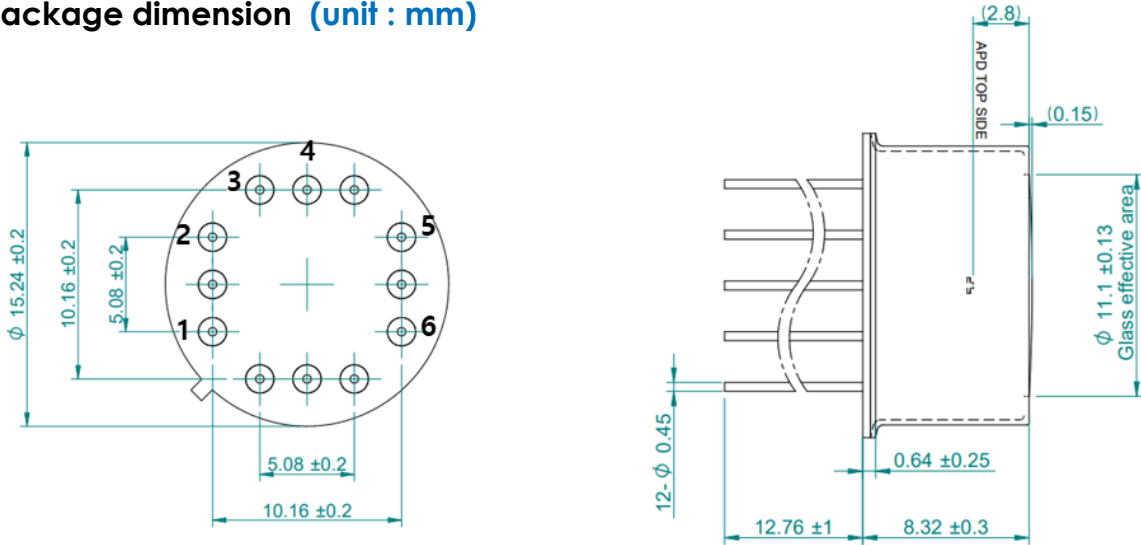
### ► Specifications

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit	
Breakdown Voltage	$V_B$	$I_D = 100 \mu A$	50	70	90	V	
Linear Mode (+25°C)	Capacitance of one pixel	$F = 1 \text{ MHz}, V_{PD}=0.9V_B$	-	0.25	-	pF	
	Temperature Dependence of $V_B$	Between -40°C and 85°C, linear approximation	-	0.11	-	V/K	
Geiger mode (-20°C)	Dead Time	$T_d$	1.5	-	-	ns	
	Dark Count Rate	DCR	PDE= 10%	-	25	-	MHz
	Detection Efficiency	PDE	$V_{ex}=2.0V$	15	-	-	%

# InGaAs Solid-State Photomultiplier (Model : WSSPM)

InGaAs Geiger-mode APD

## ► Package dimension (unit : mm)



No.	Symbol	Description (Bottom View)
1	TH	Thermistor1
2	TH	Thermistor2
3	A	APD Anode
4	C	APD Cathode
5	TEC	TEC(-)
6	TEC	TEC(+)

## ► ABSOLUTE MAXIMUM RATING

Parameter	Conditions	Max	Unit
Forward Current	Continuous bias	+ 1	mA
Forward Voltage	Continuous bias	+ 1	V
Reverse Current	Continuous bias	- 1	mA
Reverse Voltage	Continuous bias	- $V_B$	V
	Excess bias	- ( $V_B + 5$ )	V
Optical Input Power	Continuous wave	1	mW
TEC Current		2.4	A
TEC Voltage		1.9	V
Thermistor	@25°C	2.2	kΩ