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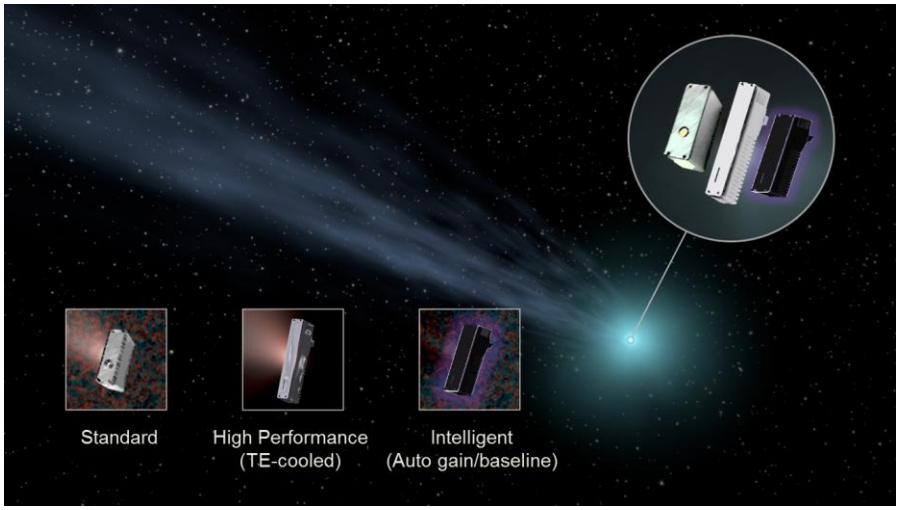
Whisper Comet ®

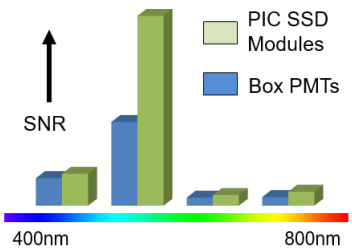
Solid-State Detector Modules for Life Science

Solid-State Detectors (SSD), including avalanche photodiodes (APD), silicon photomultipliers (SiPM), and other semiconductor photo-detectors are evolving rapidly (thanks to the semiconductor industry). They can be packaged with cooling options, PCB layers, special optics and other functional components in a modular format for life science instrumentation with excellent performance and reliability. Together with PIC's innovative, compact, low-noise direct-diode lasers, they drive towards smaller, reliable, and highly integrated systems in diagnostics, clinical, and point-of-care applications.

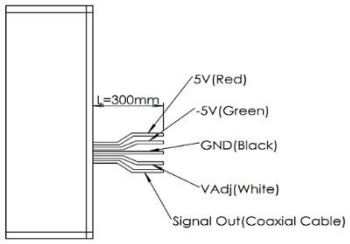
As PIC's Standard SSD, below are 3 types of single-channel SSD:

- CP0103RA (Red wavelength enhanced SSD)
- CP0103BA (Blue wavelength enhanced SSD)
- CP0103MA (UV-Vis-NIR wavelength response SSD).





PIC SSD modules have higher sensitivity, verified by various fluorescently-labeled 2μm beads.



PIC SSD modules input/output can be easily customized to specific instrument needs.

FEATURES

- **Scalable solid-state sensor**
- **High quantum efficiency (even in NIR)**
- **Superior reliability**
- **Single-photon sensitivity**
- **Ultra-compact**
- **Integratable with function PCB layers**

APPLICATIONS

- **Diagnostics**
- **Clinical**
- **Point-of-care**
- **Flow Cytometry**
- **DNA Sequencing**
- **Medical Imaging**
- **Confocal Microscopy**
- **Ontogenetic**
- **Metrology**
- **Semiconductor Instrumentation**

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✧ Blue wavelength enhanced SSD (CP0103BA)

Table 1. General specs

Parameters	Specifications Min.	Typ.	Max.	Units
Input Positive Supplier Voltage	+4.75	+5.0	+5.50	V
Positive Current Dissipation *1	--	65	150	mA
Input Negative Supplier Voltage	-4.75	-5.0	-5.50	V
Negative Current Dissipation *1	--	25	80	mA
Gain Adjustment Range Vadj.	0	0.6	1.2	V
Spectral Response Range	300	--	900	nm
Peak Wavelength	--	430	--	nm
Effective Sensing Area	--	3x3	--	mm
Pixel Number	--	39000	--	--
Photoelectric Sensitivity *2	5×10^7	8×10^7	--	V/W
High Band Cutoff Frequency	2	5	--	MHz
Minimum Detection Limit	--	5	10	pW
Max. Output Voltage	--	4.7	--	V
Dark Output Offset	-5	NA	+5	mV
Operating Temperature	+5	--	40	ºC
Storage Temperature	-20	--	60	ºC

1. Input positive supply voltage = +/-5V, Vadj = 1.2V, test in darkness.
2. Tested at wavelength 532nm and Vadj =0.6V, I-V conversion factor is 1000 V/A.

Table 2. Interface Definition of connector

1) Power supply input connector: PAP-05V-S

Pin No.	Name	I/O	Function description
Pin1:(Red)	+5.0V	Power supply	Analog positive power supply
Pin2:(Black)	GND	Power supply	Power ground
Pin3:(Green)	-5.0V	Power supply	Analog negative power supply
Pin4:(White)	Vadj	Signal Input	External voltage in for gain adjustment. (0~1.2 V)

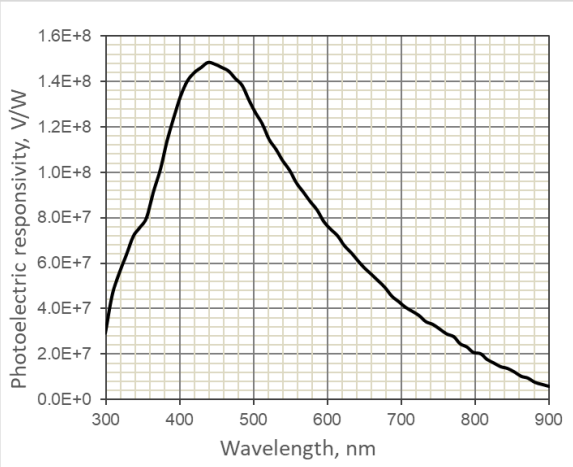
2) Voltage Signal output

RF1.13 Coaxial cable

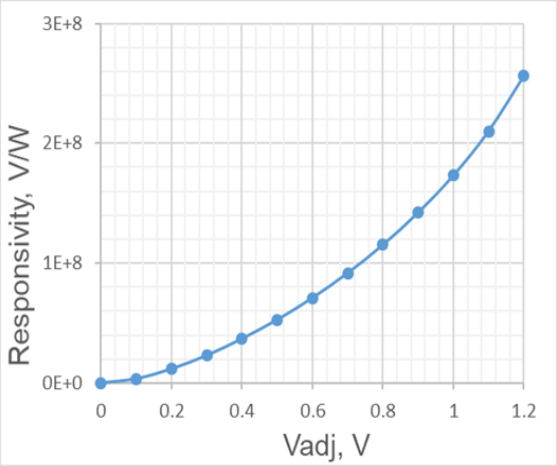
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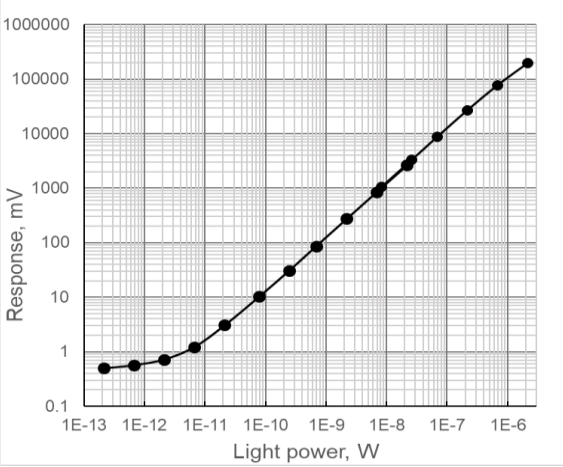
- **Spectral response curve**



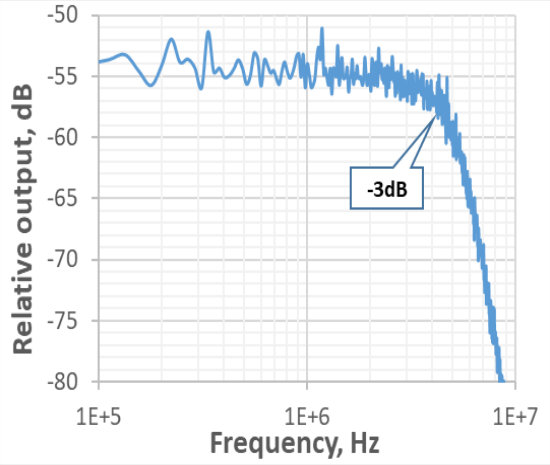
- **Gain adjustment curve**



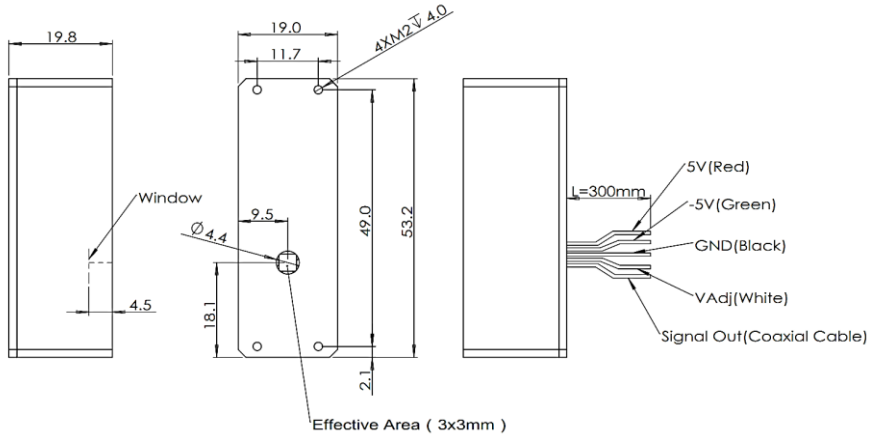
- **Linearity**



- **Frequency response**



- **Mechanical Diagrams**



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✧ Red wavelength enhanced SSD (CP0103RA)

Table 3. General specs

Parameters	Specifications Min.	Typ.	Max.	Units
Input Positive Supplier Voltage	+4.75	+5.0	+5.50	V
Positive Current Dissipation *1	--	65	150	mA
Input Negative Supplier Voltage	-4.75	-5.0	-5.50	V
Negative Current Dissipation *1	--	25	80	mA
Gain Adjustment Range Vadj.	0	0.6	1.2	V
Spectral Response Range	300	--	900	nm
Peak Wavelength	--	600	--	nm
Effective Sensing Area	--	3x3	--	mm
Pixel Number	--	11000	--	--
Photoelectric Sensitivity *2	1.5×10^8	2.0×10^8	--	V/W
High Band Cutoff Frequency	2	5	--	MHz
Minimum Detection Limit	--	4	8	pW
Max. Output Voltage	--	4.7	--	V
Dark Output Offset	-5	NA	+5	mV
Operating Temperature	+5	--	40	ºC
Storage Temperature	-20	--	60	ºC

1. Input positive supply voltage = +/-5V, Vadj = 1.2V, test in darkness.
2. Tested at wavelength 532nm and Vadj =0.6V, I-V conversion factor is 2000 V/A.

Table 4. Interface Definition of connector

1: Power supply input connector:

Pin No	Name	I/O	Function description
Pin1:(Red)	+5.0V	Power supply	Analog positive power supply
Pin2:(Black)	GND	Power supply	Power ground
Pin3:(Green)	-5.0V	Power supply	Analog negative power supply
Pin4:(White)	Vadj	Signal Input	External voltage in for gain adjustment (0~1.2 V)

2: Voltage Signal output

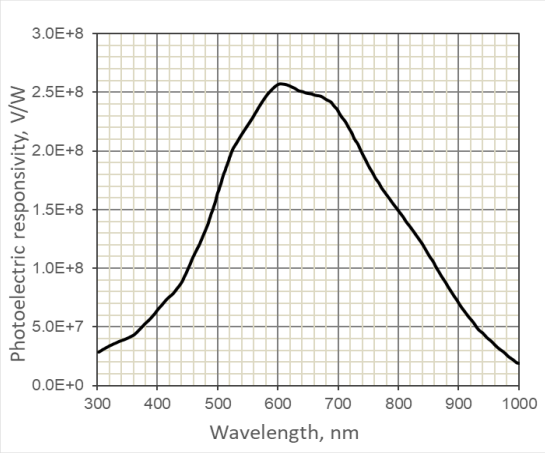
RF1.13 Coaxial cable

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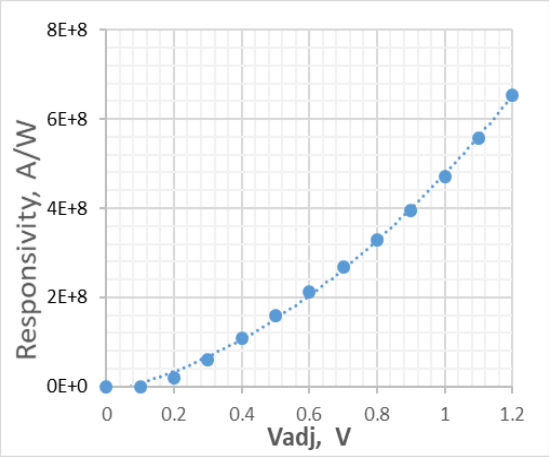
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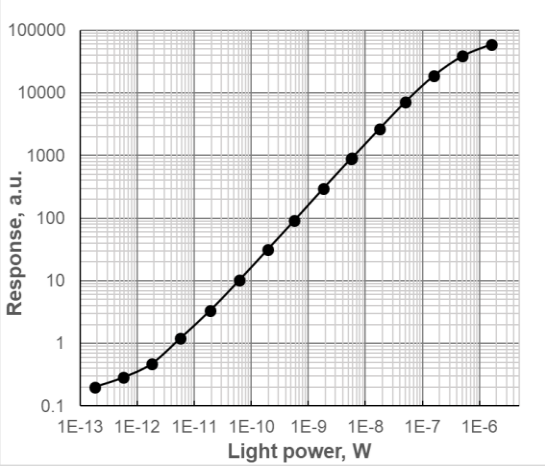
- **Spectral response curve**



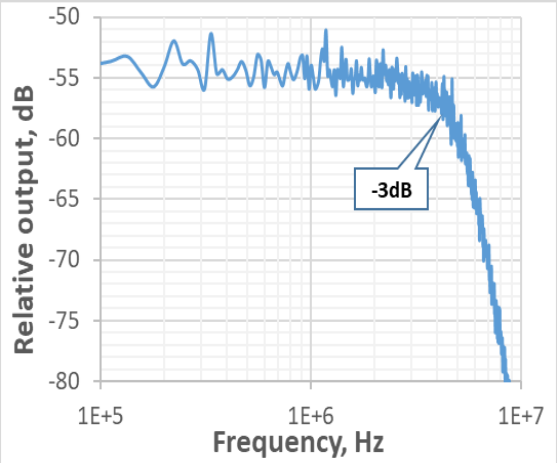
- **Gain adjustment curve**



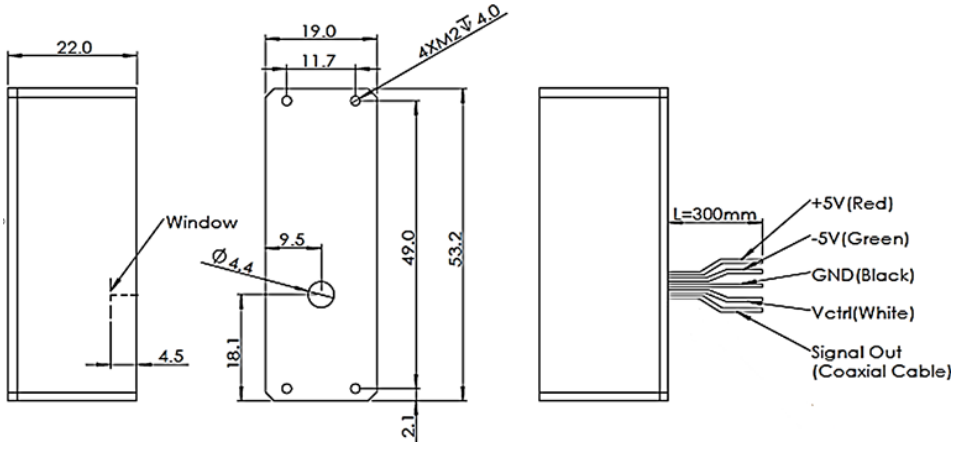
- **Linearity**



- **Frequency response**



- **Mechanical Diagrams**



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✧ UV-Vis-NIR broadband response SSD (CP0103MA)

Table 5. General specs

Parameters	Specifications Min.	Typ.	Max.	Units
Input Positive Supplier Voltage	+4.75	+5.0	+5.50	V
Positive Current Dissipation *1	--	65	150	mA
Input Negative Supplier Voltage	-4.75	-5.0	-5.50	V
Negative Current Dissipation *1	--	25	80	mA
Gain Adjustment Range Vadj.	0	0.6	1.2	V
Spectral Response Range	300	--	900	nm
Peak Wavelength	--	500	--	nm
Effective Sensing Area	--	3x3	--	mm
Pixel Number	--	40000	--	--
Photoelectric Sensitivity *2	1.0×10^8	1.5×10^8	--	V/W
High Band Cutoff Frequency	3	5	--	MHz
Minimum Detection Limit	--	5	10	pW
Max. Output Voltage	--	4.7	--	V
Dark Output Offset	-5	NA	+5	mV
Operating Temperature	+5	--	40	ºC
Storage Temperature	-20	--	60	ºC

1. Input positive supply voltage = +/-5V, Vadj = 1.2V, test in darkness.
2. Tested at wavelength 532nm and Vadj =0.6V, I-V conversion factor is 1800 V/A.

Table 6. Interface Definition of connector

1) Power supply input connector: PAP-05V-S

Pin No	Name	I/O	Function description
Pin1:(Red)	+5.0V	Power supply	Analog positive power supply
Pin2:(Black)	GND	Power supply	Power ground
Pin3:(Green)	-5.0V	Power supply	Analog negative power supply
Pin4:(White)	Vadj	Signal Input	External voltage in for gain adjustment. (0~1.2 V)

2) Voltage Signal output

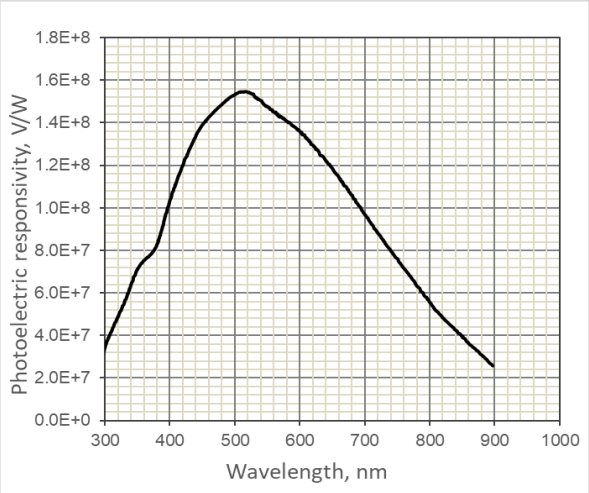
RF1.13 Coaxial cable

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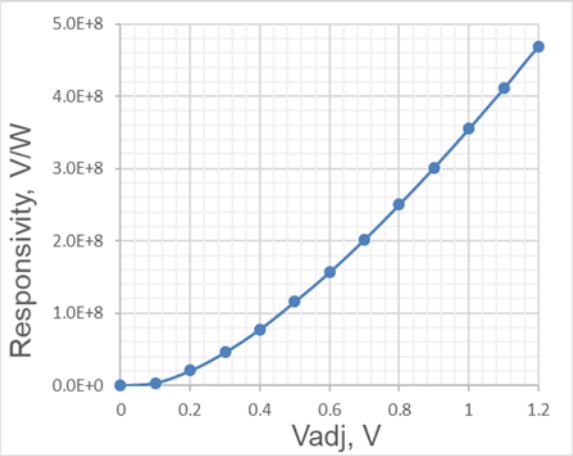
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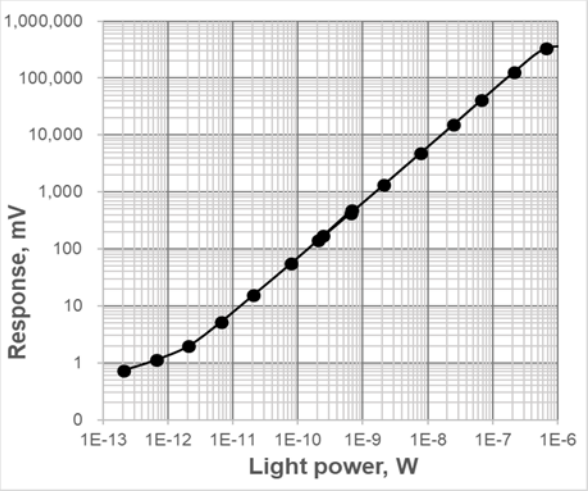
- **Spectral response curve**



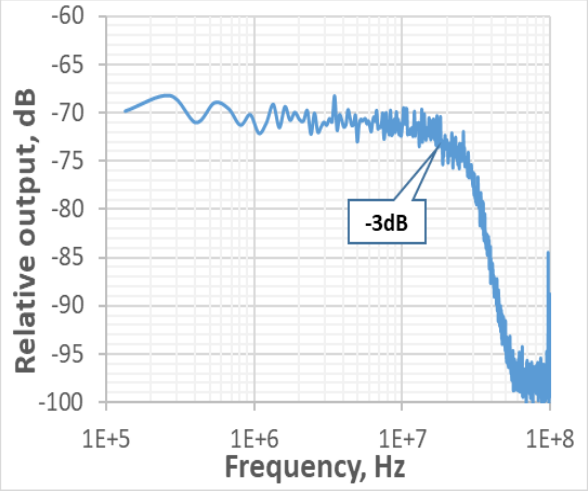
- **Gain adjustment curve**



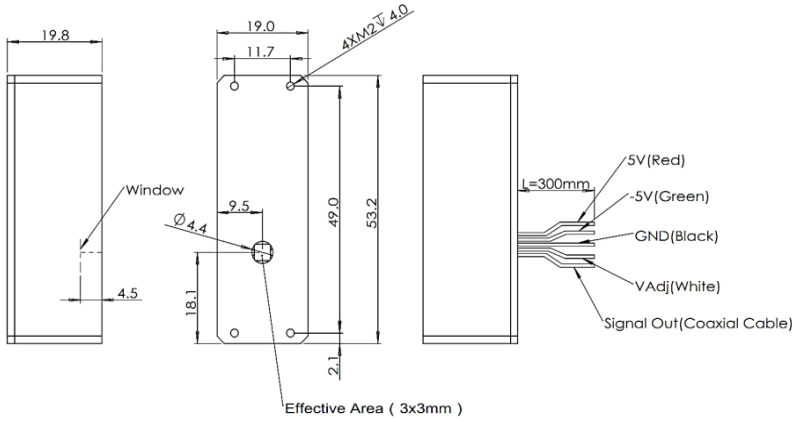
- **Linearity**



- **Frequency response**



- **Mechanical Diagrams**



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