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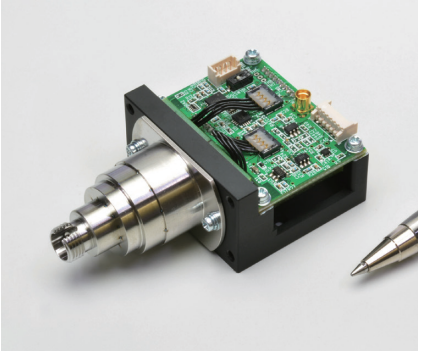
SPAD module



C16534-050GD

Embedded use, fiber coupling type 1 ch SPAD module (for VIS to NIR region)

The C16534-050GD is a fiber coupling type photon counting module that can detect low-level light. It consists of a thermoelectric cooled single photon avalanche diode (SPAD), an amplifier, a comparator, a SPAD bias circuit, and a temperature controller. The module operates by simply connecting to an external power supply (±5 V). As this product is compact and lightweight, it is suitable for integration into devices.

Features

- **Fiber coupling type**
- **Single photon counting is possible.**
- **High sensitivity in the long wavelength range**
- **Low dark count**
- **Compact and lightweight**

Applications

- **Low-level-light measurement**
- **Particle diameter measurement**
- **Fluorescence measurement**
- **Analytical instruments**

Absolute maximum ratings

Parameter	Symbol	Condition	Value	Unit
Supply voltage	Vs		±6	V
Operating temperature	Topr	No dew condensation*1	-10 to +40	°C
Storage temperature	Tstg	No dew condensation*1	-20 to +70	°C
Maximum incident light level	-	λ=630 nm	50	μW

*1: When there is a temperature difference between a product and the surrounding area in high humidity environments, dew condensation may occur on the product surface. Dew condensation on the product may cause deterioration in characteristics and reliability.
Note: Exceeding the absolute maximum ratings even momentarily may cause a drop in product quality. Always be sure to use the product within the absolute maximum ratings.

Electrical and optical characteristics (Ta=25 °C, λ=630 nm, Vs=±5 V, unless otherwise noted)

Parameter		Symbol	Condition	Min.	Typ.	Max.	Unit
Spectral response range		λ			400 to 1000		nm
Peak sensitivity wavelength		λp		-	630	-	nm
Fiber connector*2		-			FC type		-
Chip temperature (setting temperature)*3 *4		Tchip		-	-20	-	°C
Photon detection efficiency		PDE		35	45	-	%
Dark count		CD		-	20	60	cps
Afterpulse probability		-	100 ns to 500 ns	-	0.1	-	%
Comparator output		-			TTL compatible		-
Current consumption	Positive power supply	Ic	Vs=+5 V	-	+200	+1500	mA
	Negative power supply		Vs=-5 V	-	-20	-40	

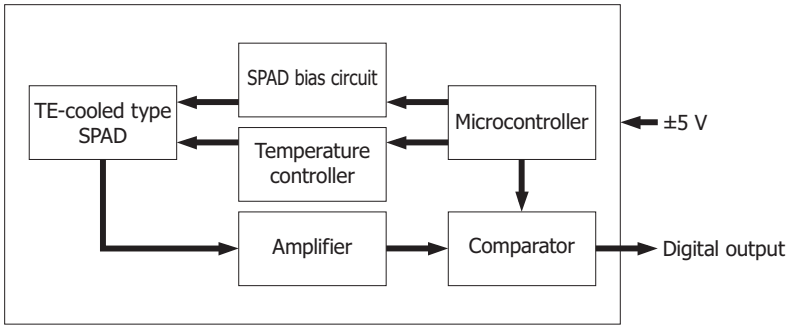
*2: Recommended fiber: GI 50/125 multimode fiber
*3: When the chip temperature strays from the setting temperature by 5 °C, cooling automatically stops, and signals are no longer output.
*4: The setting temperature cannot be changed.

Recommended operating conditions

Parameter		Symbol	Condition	Min.	Typ.	Max.	Unit
Supply voltage*5	Positive power supply	Vs		+4.75	+5	+5.25	V
	Negative power supply			-4.75	-5	-5.25	

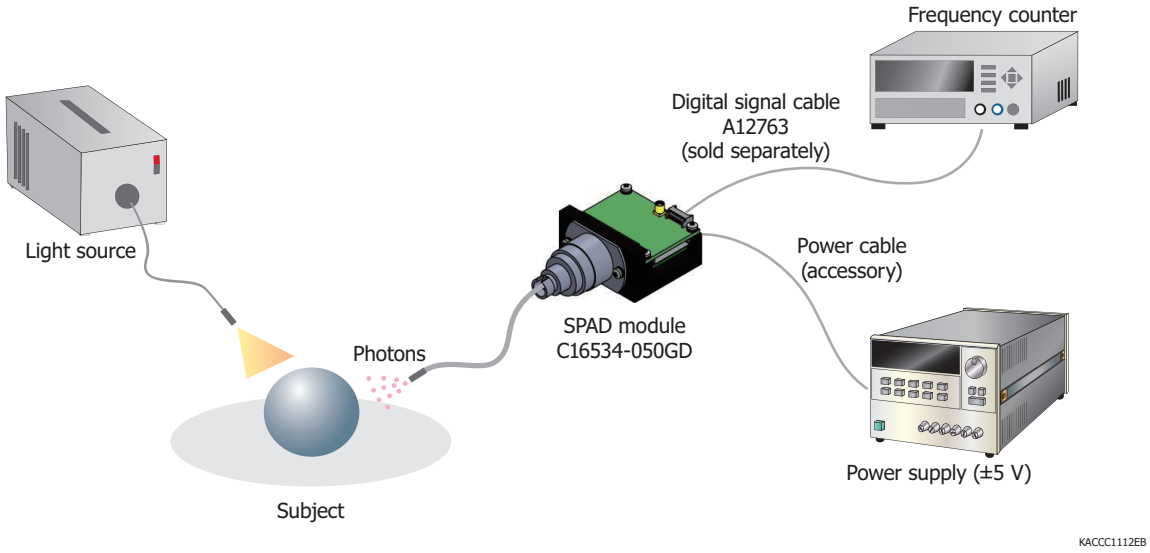
*5: A power supply with 2 A or higher output must be used.

Block diagram

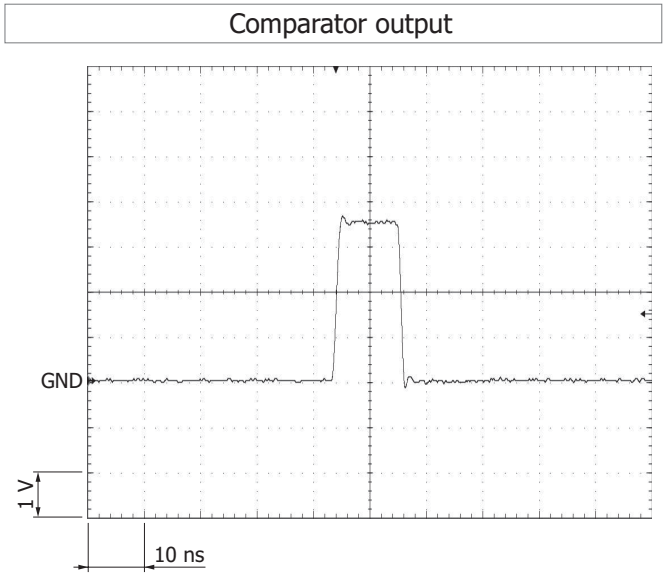


Connection example

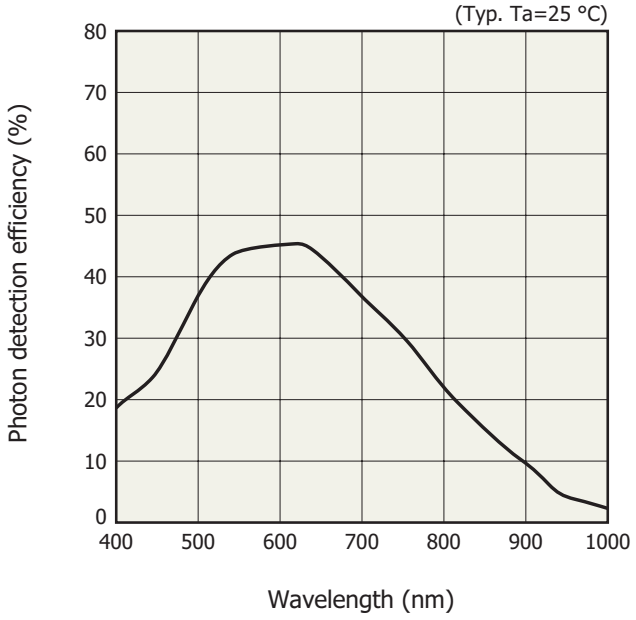
Using the supplied power cable, connect the SPAD module to a power supply. You can count output pulses by connecting the SPAD module to a frequency counter.



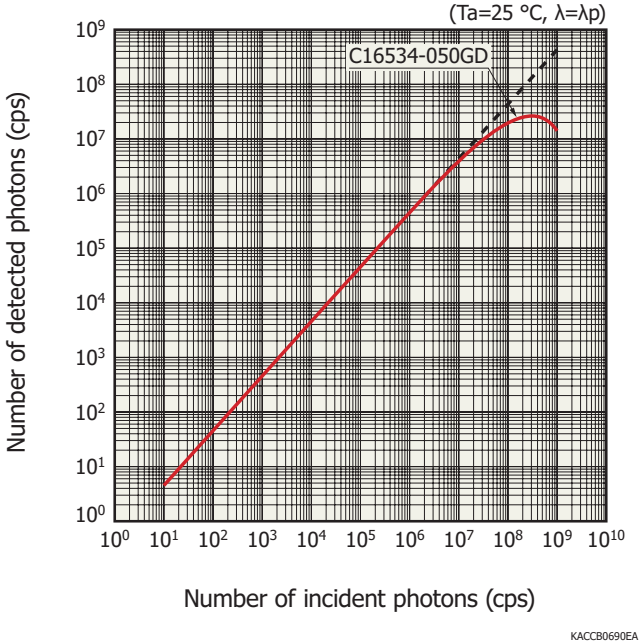
Measurement example



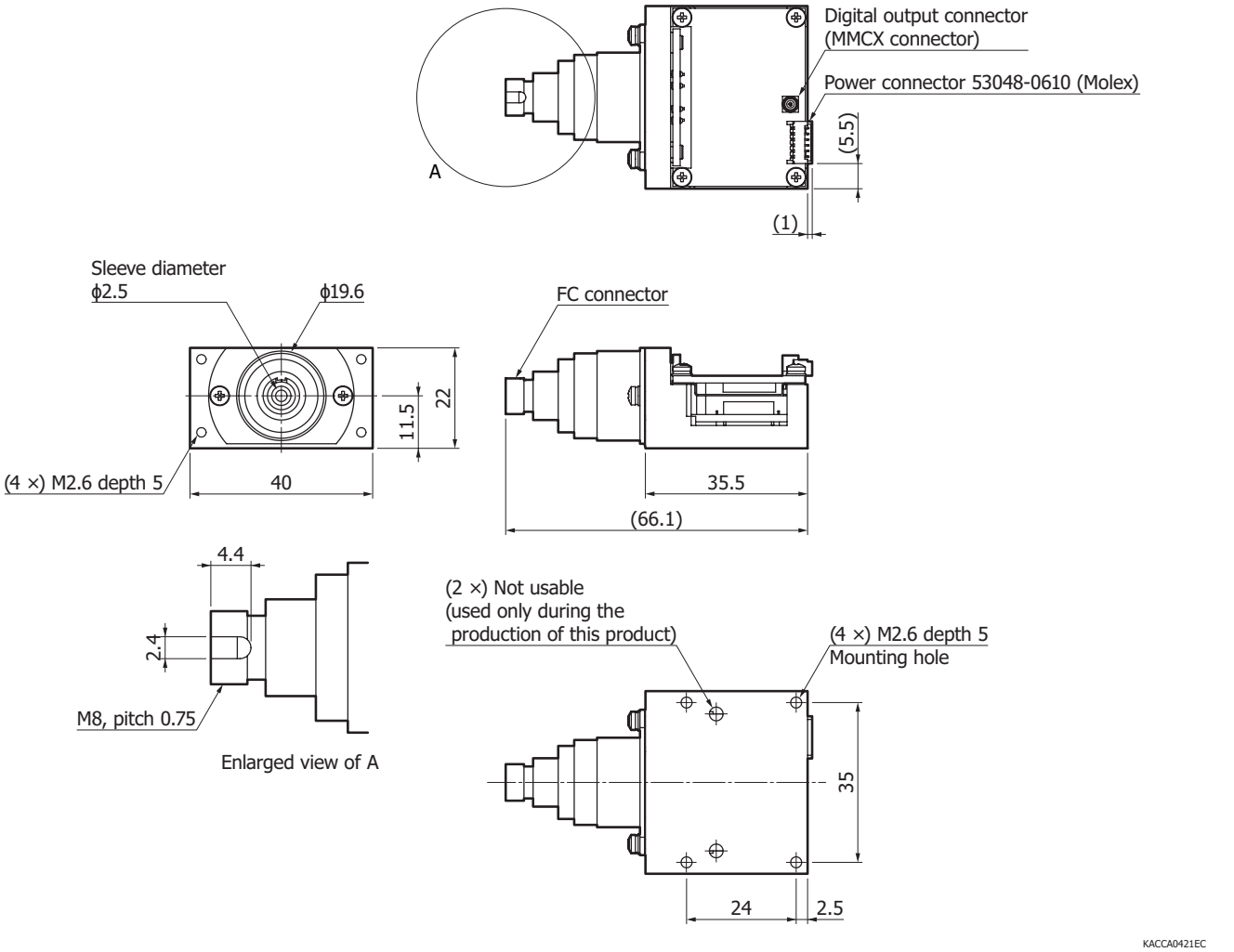
Photon detection efficiency vs. wavelength



Linearity (typical example)



Dimensional outline (unit: mm)



Note: When using this product, provide heat dissipation measures by using heatsinks or through thermal coupling with the enclosure that you will use. Keep the thermal resistance to 3 °C/W or less.

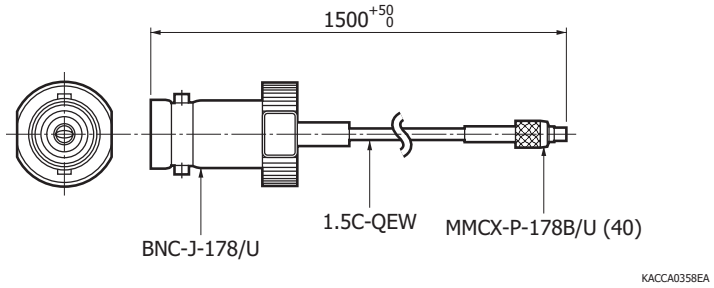
Accessories

· Power cable
· Instruction manual

Options (sold separately)

MMCX-BNC cable A12763

■ Dimensional outline (unit: mm)



Precautions

· Use the product by referring to the supplied instruction manual.

Related products

SPAD module C16533-050GD

The C16533-050GD is a module for evaluating a fiber coupling type thermoelectric cooled single photon avalanche diode (SPAD). This module consists of a fiber coupling type SPAD, an amplifier, a comparator, a SPAD bias circuit, and a temperature controller. The module operates by simply connecting to an external power supply (±5 V). The C16533-050GD has nearly the same functions as the C16534-050GD. Note that the C16533-050GD does not require heat dissipation measures.

Related information

www.hamamatsu.com/sp/ssd/doc_en.html

■ Precautions
· Disclaimer

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