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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	

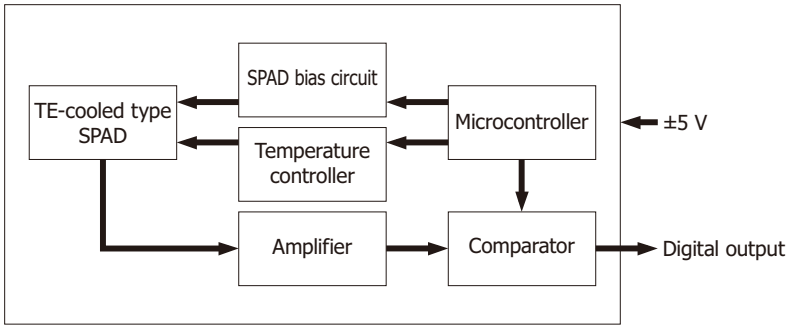
*2: Recommended fiber: GI 50/125 multimode fiber
*3: When the chip temperature strays from the setting temperature by 5 °C, cooling automatically stops, and signals are no longer output.
*4: The setting temperature cannot be changed.

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	

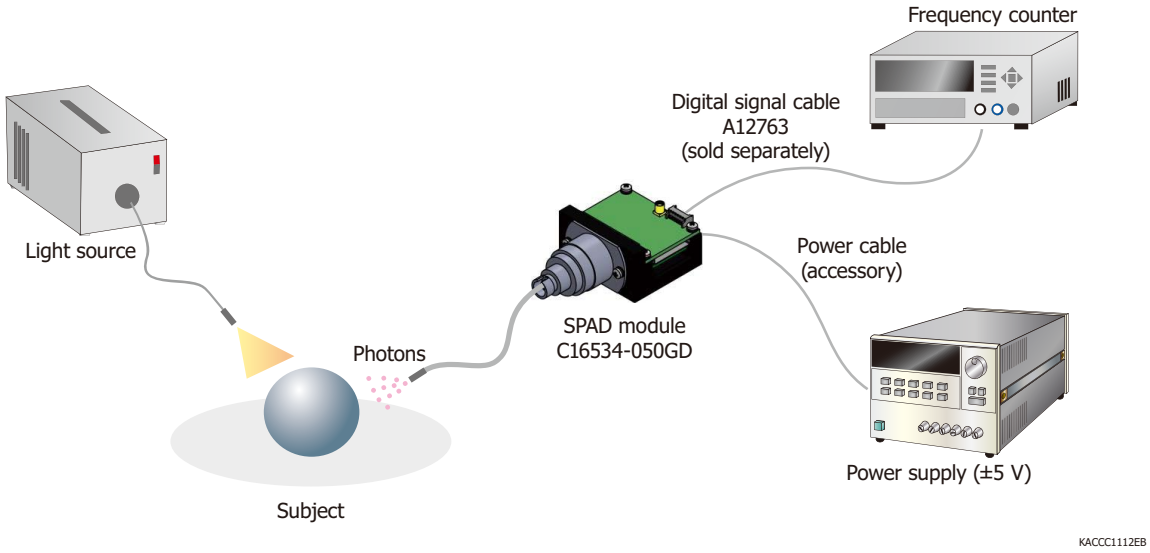
*5: A power supply with 2 A or higher output must be used.

Block diagram

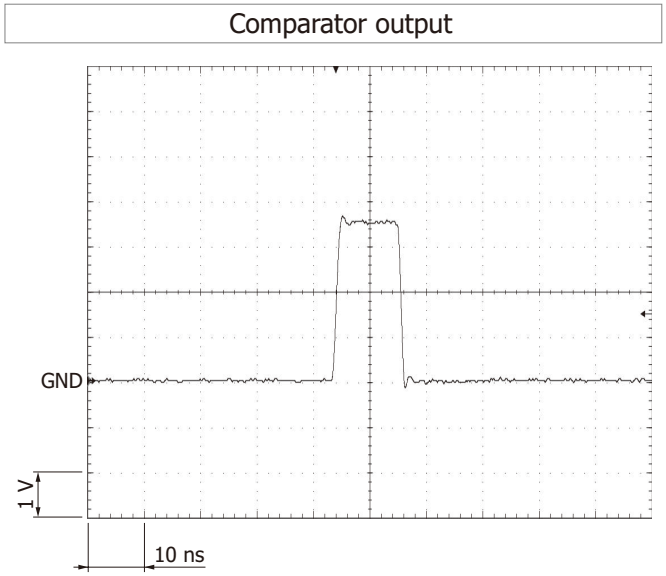


Connection example

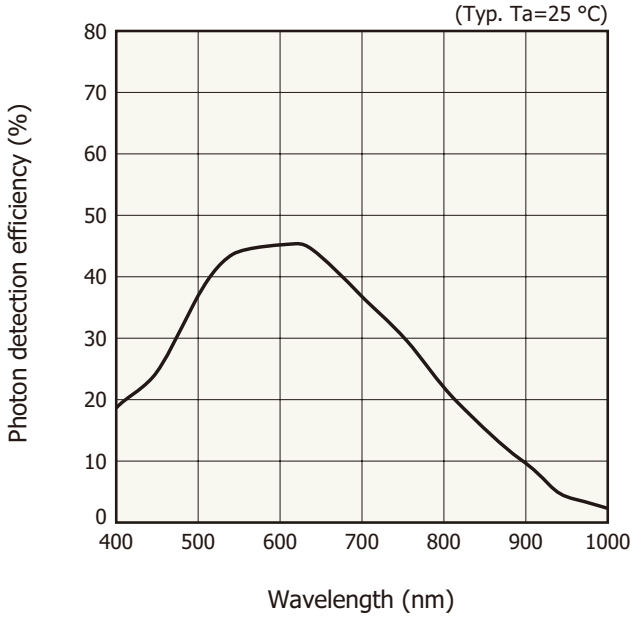
Using the supplied power cable, connect the SPAD module to a power supply. You can count output pulses by connecting the SPAD module to a frequency counter.



Measurement example



Photon detection efficiency vs. wavelength



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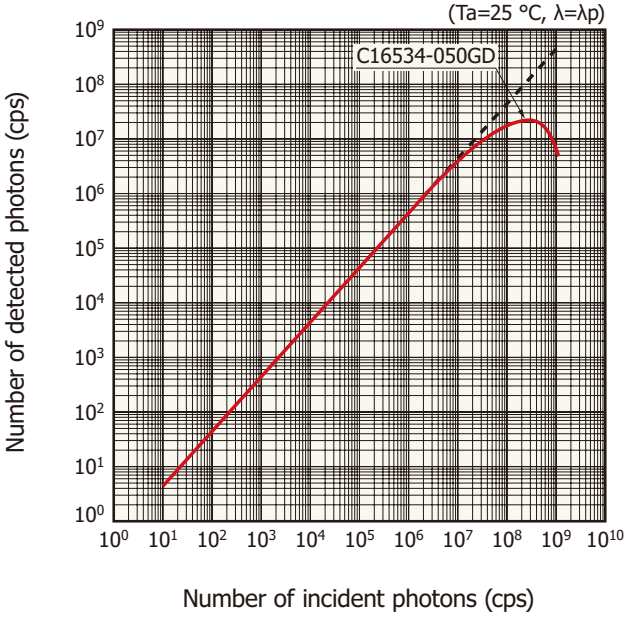
Linearity (typical example)



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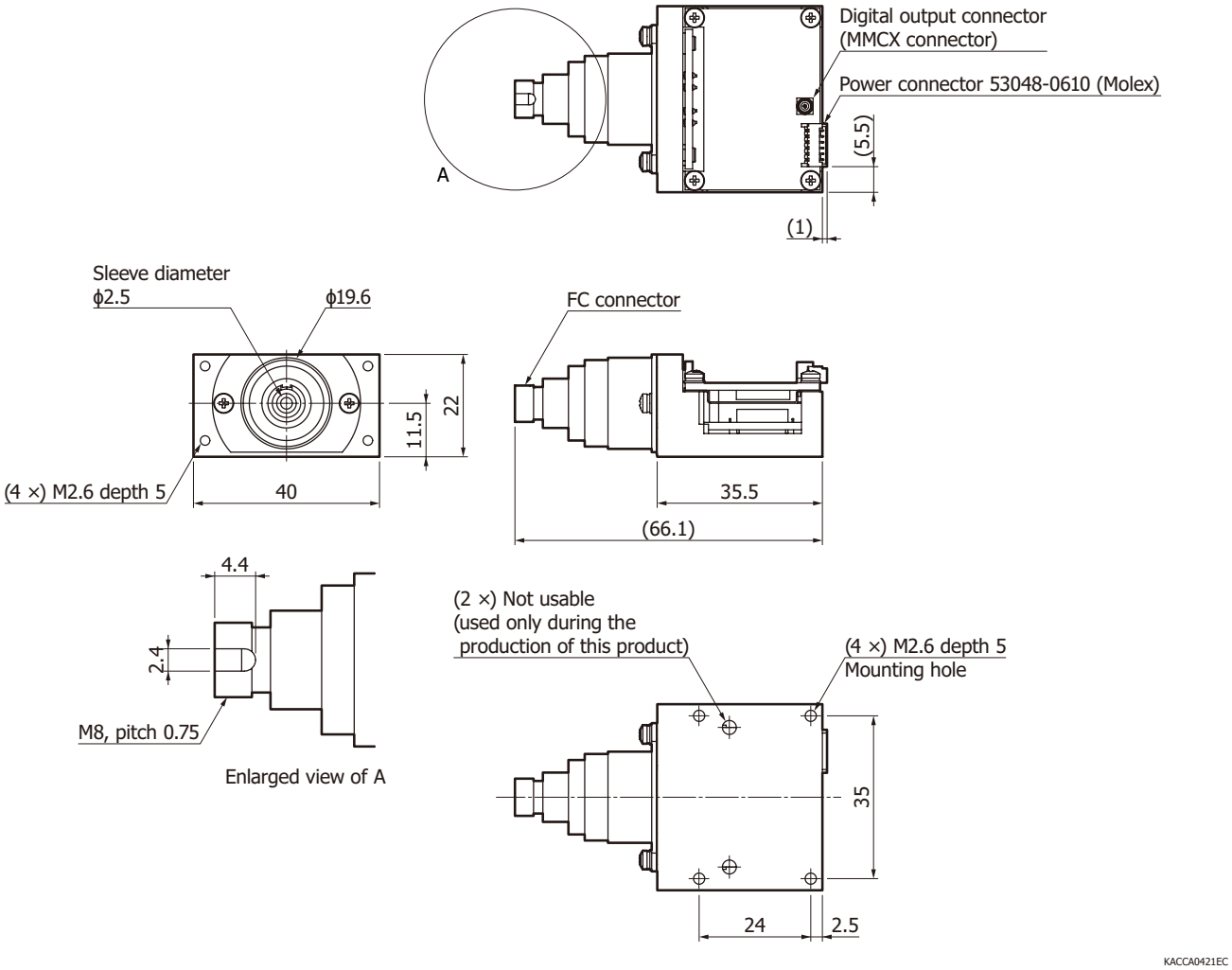
Dimensional outline (unit: mm)



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.

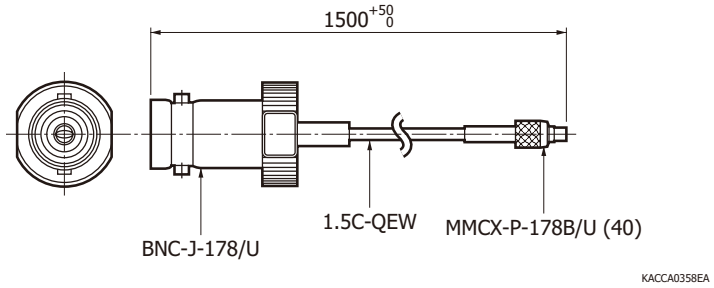
Accessories

· 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

Information described in this material is current as of February 2026.
Product specifications are subject to change without prior notice due to improvements or other reasons. This document has been carefully prepared and the information contained is believed to be accurate. In rare cases, however, there may be inaccuracies such as text errors. Before using these products, always contact us for the delivery specification sheet to check the latest specifications.
The product warranty is valid for one year after delivery and is limited to product repair or replacement for defects discovered and reported to us within that one year period. However, even if within the warranty period we accept absolutely no liability for any loss caused by natural disasters or improper product use.
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Cat. No. KACC1315E04
Feb. 2026 DN
Created in Japan