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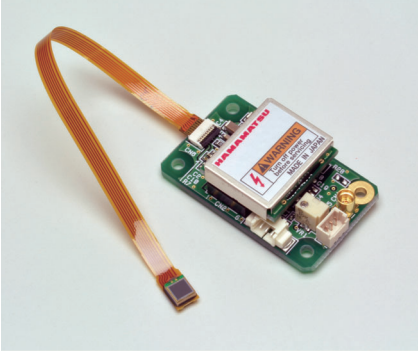
NEW

MPPC® modules

C15524 series



Optical measurement modules for low-level light detection, flexible cable type, analog output

The C15524 series are optical measurement modules capable of detecting low-level light using its built-in MPPC that features wide dynamic range. These modules consist of an MPPC, an amplifier, a high-voltage power supply circuit, and a temperature compensation circuit. The photosensitive area is available in two sizes: 1.3 × 1.3 mm and 3 × 3 mm. The signal output is analog. The modules operate just by connecting them to an external power supply (±5 V).

Features

- **Equipped with an MPPC (wide dynamic range type) with a flexible cable**
- **High sensitivity in the short wavelength range**
- **Low noise equivalent power**
- **Built-in temperature compensation circuit**
- **Compact and lightweight**
- **Analog output**

Applications

- **Flow cytometry**
- **Low-level light measurement**
- **Fluorescence measurement**
- **Analytical instruments**

Structure

Parameter	Symbol	C15524-1310SA	C15524-1315SA	C15524-3010SA	C15524-3015SA	Unit
Effective photosensitive area	-	1.3 × 1.3		3 × 3		mm
Pixel pitch	-	10	15	10	15	μm
Number of pixels	-	16663	7284	89984	39984	-

Absolute maximum ratings

Parameter	Symbol	Condition	Values	Unit
Supply voltage	Vs		±6	V
Operating temperature	Topr	No dew condensation*1	-10 to +60	°C
Storage temperature	Tstg	No dew condensation*1	-20 to +80	°C

*1: When there is a temperature difference between a product and the surrounding area in high humidity environment, dew condensation may occur on the product surface. Dew condensation on the product may cause deteration 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=λp, Vs=±5 V, unless otherwise noted)

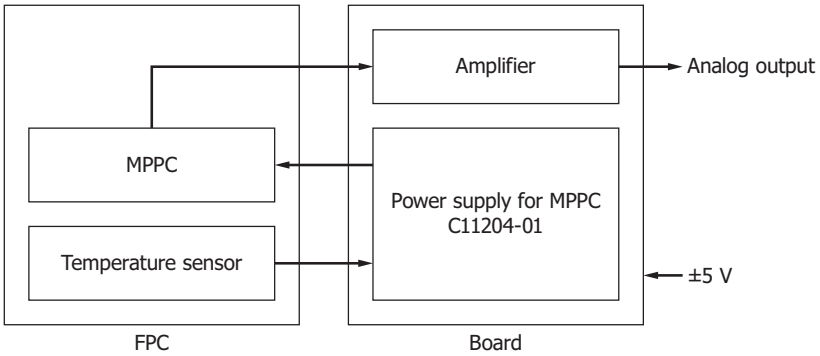
Parameter		Symbol	Condition	C15524-1310SA			C15524-1315SA			C15524-3010SA			C15524-3015SA			Unit
				Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	
Spectral response range		λ		290 to 900			290 to 900			290 to 900			290 to 900			nm
Peak sensitivity wavelength		λp		-	500	-	-	500	-	-	500	-	-	500	-	nm
Temperature stability of output voltage		-	Ta=25 ± 10 °C	-	-	±5	-	-	±5	-	-	±5	-	-	±5	%
Photoelectric sensitivity		-	λ=λp	0.3×10^8	0.4×10^8	0.5×10^8	0.7×10^8	1.0×10^8	1.3×10^8	0.3×10^8	0.4×10^8	0.5×10^8	0.7×10^8	1.0×10^8	1.3×10^8	V/W
Cutoff frequency	High band	fc	-3 dB, sine wave	10	15	-	7	10	-	10	15	-	7	10	-	MHz
	Low band			DC			DC			DC			DC			-
Noise equivalent power		NEP	Dark state	-	1.2	2.4	-	0.8	1.6	-	2.7	5.4	-	1.8	3.6	$fW/Hz^{1/2}$
Minimum detection limit		-		-	5.4	10.8	-	2.5	5.0	-	10	20	-	5.7	11.4	pW rms
Maximum output voltage		-		-	4.7	-	-	4.7	-	-	4.7	-	-	4.7	-	V

Electrical characteristics

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Supply voltage*2	+Vs		+4.75	+5	+5.25	V
	-Vs		-4.75	-5	-5.25	
Current consumption	Ic	+Vs	-	+50	+250	mA
		-Vs	-	-20	-40	

*2: A power supply with 300 mA or higher output must be used.

Block diagram



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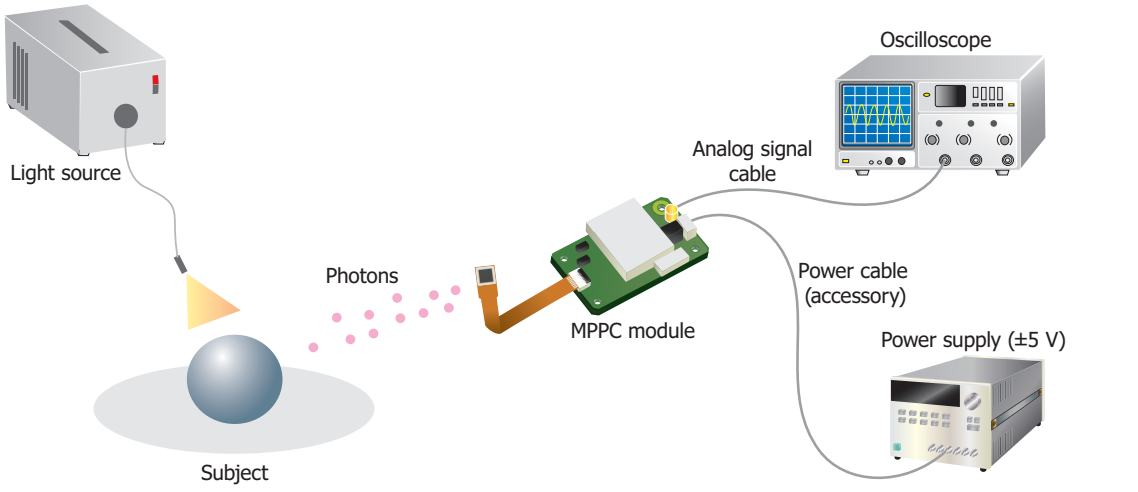
Connection example

Using the supplied power cable, connect the MPPC module to a power supply. You can observe the MPPC module's output waveform by connecting the module to an oscilloscope.



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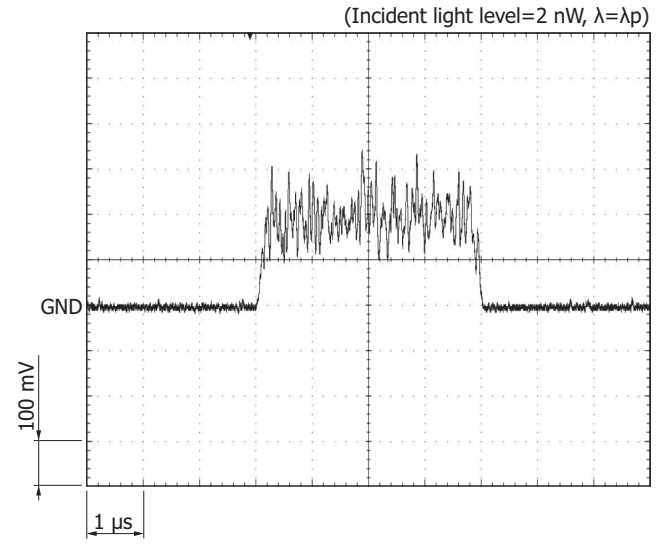
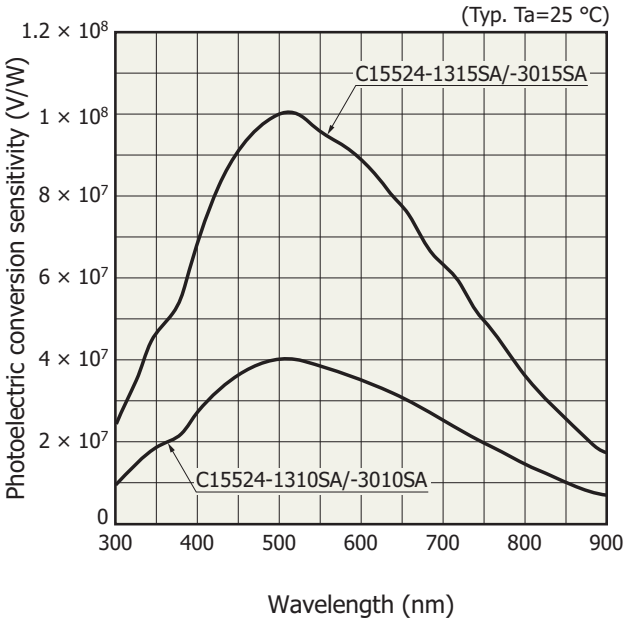
Measurement example

Analog output



Photoelectric conversion sensitivity vs. wavelength



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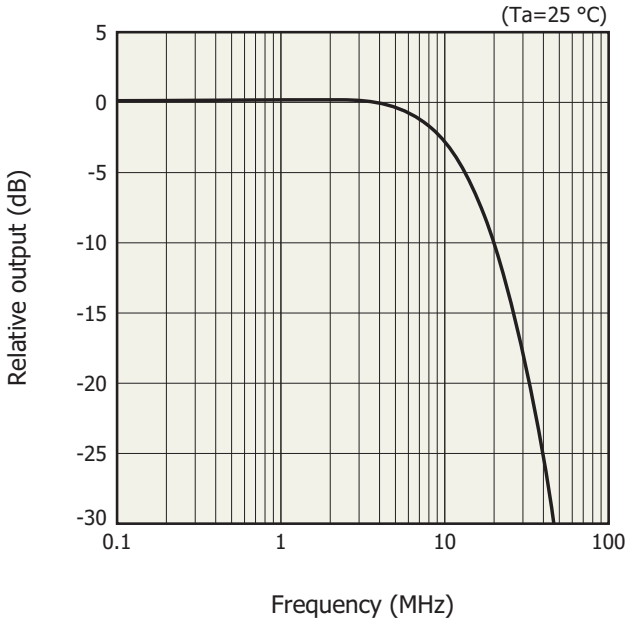
Frequency response (typical example)



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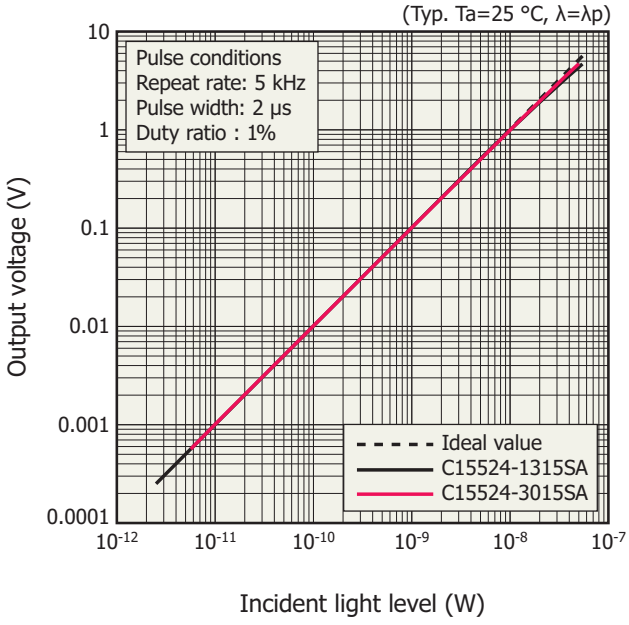
Linearity



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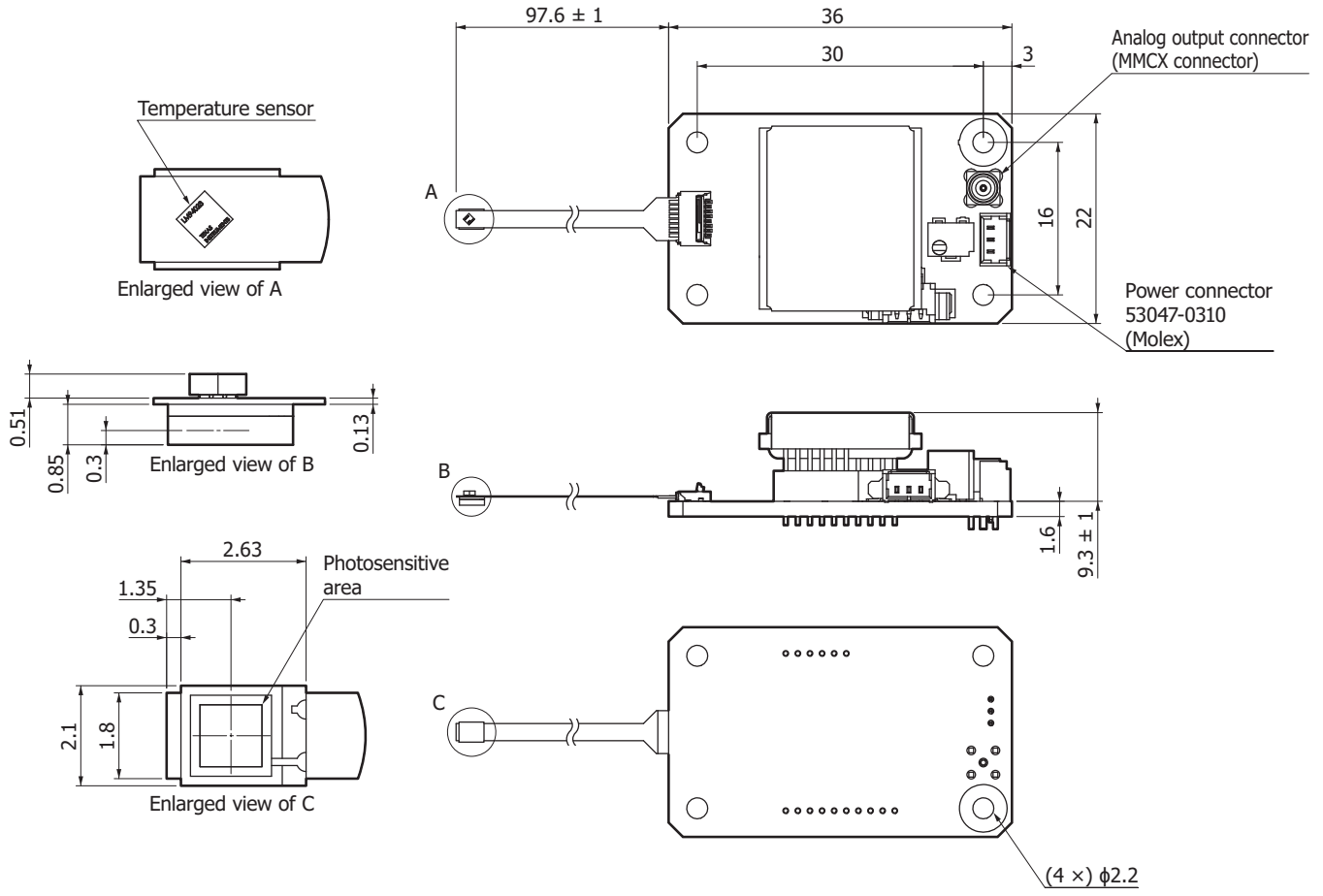
Dimensional outlines (unit: mm)

C15524-1310SA/-1315SA



Tolerance unless otherwise noted: ±0.3

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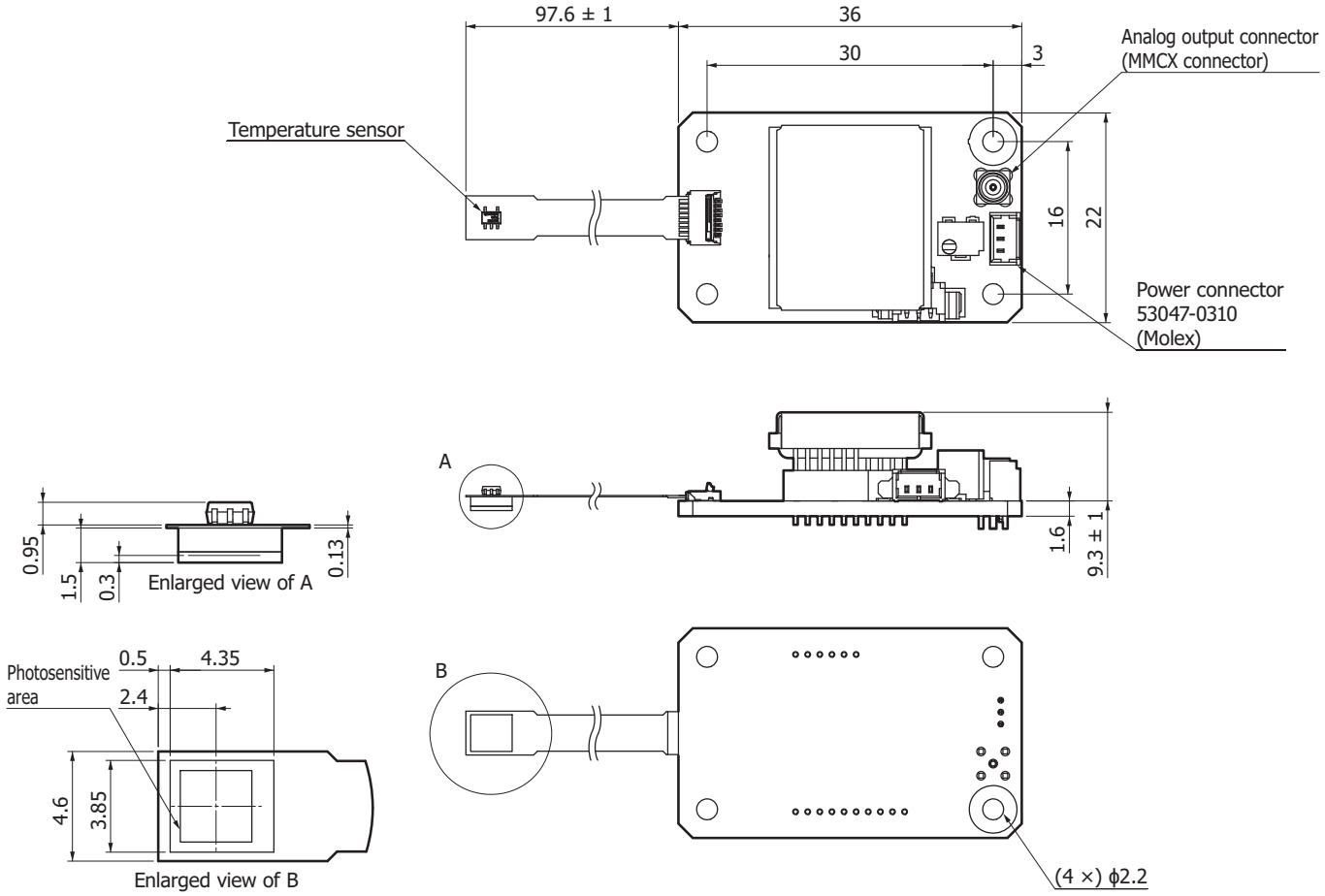
C15524-3010SA/-3015SA



Tolerance unless otherwise noted: ±0.3

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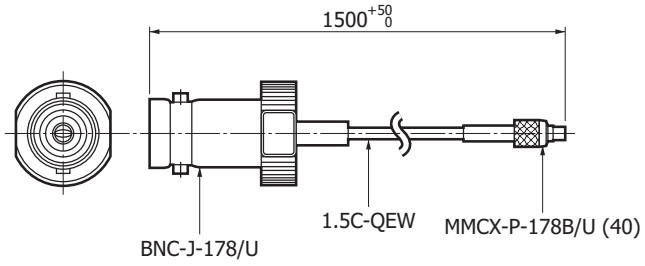
Accessories

· Power cable
· Instruction manual

Options (sold separately)

MMCX-BNC cable A12763

■ Dimensional outline (unit: mm)



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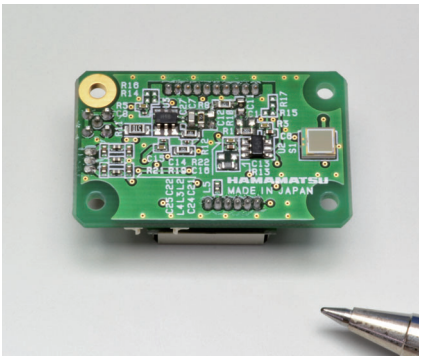
Related products

MPPC modules C15522 series

The C15522 series are optical measurement modules with a wide dynamic range type MPPC that can detect low-level light. These modules consist of an MPPC, an amplifier, a high-voltage power supply circuit, and a temperature compensation circuit. The signal output is analog. The MPPC of the C15524 series has a flexible cable, but that of the C15522 series is mounted on the circuit board.



Related information

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

■ Precautions
· Disclaimer

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