

C14488

Driver circuit for simple evaluation of non-cooled type MPPC

The C14488 is a driver circuit for simple evaluation of a non-cooled MPPC and the power supply C14156 for MPPC. MPPC evaluation is possible by mounting MPPC on the socket of the sensor board. The PZC (pole-zero cancellation) circuit is built-in to reduce the falling edge decay time of MPPC. The power supply board is equipped with the power supply C14156 for MPPC to supply the operating voltage to MPPC, and operates by supplying only the power supply (± 5 V) from an external source. The MPPC supply voltage and temperature coefficient can be changed by external control signals.

Features

- Enables evaluation of non-cooled MPPC
- Sensor board with a socket for mounting MPPC with leads
- Connection possible to MPPC with flexible cable
- Equipped with power supply C14156 for MPPC with temperature compensation function
- Changeable MPPC supply voltage and temperature coefficient by external control signals
- Selectable amplifier usage (default: use)
- Selectable load resistance 50 Ω or 1 k Ω
- Built-in PZC circuit (default: set to PZC constant in accordance with S 13360 -3050 CS)
- Analog output

Note: MPPC is sold separately.

Applications

- Simple initial evaluation of MPPCs

Compatible MPPCs

Type no.	Number of channels (ch)	Effective photosensitive area (mm)	Pixel pitch (μm)	Number of pixels
S13360-1325CS	1	1.3 × 1.3	25	2668
S13360-1350CS			50	667
S13360-1375CS			75	285
S13360-3025CS		3 × 3	25	14400
S13360-3050CS			50	3600
S13360-3075CS			75	1600
S13360-6025CS		6 × 6	25	57600
S13360-6050CS			50	14400
S13360-6075CS			75	6400

➤ Absolute maximum ratings

Parameter	Symbol	Condition	Value	Unit
Supply voltage	Vs		±5.8	V
Output voltage control signal voltage	Vcont		0 to Vs	V
Temperature coefficient control signal voltage*1	Vtcr		0 to Vs	V
ON/OFF control signal voltage*1	SHDN		0 to Vs	V
Operating temperature	Topr	No dew condensation*2	-20 to +60	°C
Storage temperature	Tstg	No dew condensation*2	-20 to +80	°C

*1: Refer to the instruction manual supplied with the product.

*2: 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 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.

➤ Recommended operating conditions (Ta=25 °C, unless otherwise noted)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Supply voltage*3	Vs		±4.75	±5	±5.25	V
Output voltage control signal voltage	Vcont		0	-	1.2	V
Temperature coefficient control signal voltage	Vtcr		0	-	1.2	V
Load resistance*4	RL	When no amplifier is used	-	50 or 1 k	-	Ω

*3: Use a power supply with 300 mA or higher output.

*4: The default setting is 50 Ω. When using an amplifier, set the load resistance to 50 Ω

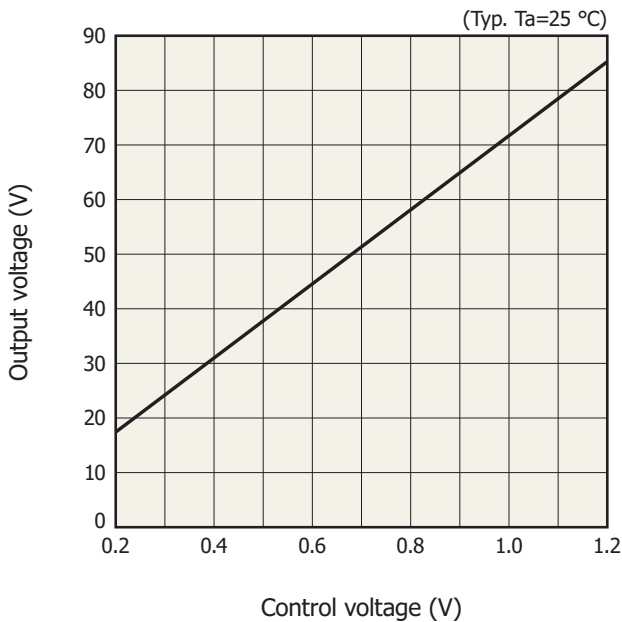
➤ Electrical characteristics (Ta=25 °C, Vs=±5, unless otherwise noted)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit	
Current consumption	Is	Vo=56 V, no load	+5 V -5 V	+36 -10	+48 -15	+60 -20	mA
MPPC supply voltage range*5	Vo	No load	-	0 to 80	-	V	
Built-in temperature sensor	-		LP73JTTE102J3600 (KOA)			-	
PZC constant*6	-		Set for S13360-3050CS				

*5: The MPPC operating voltage varies depending on the product. Refer to the value provided with the product.

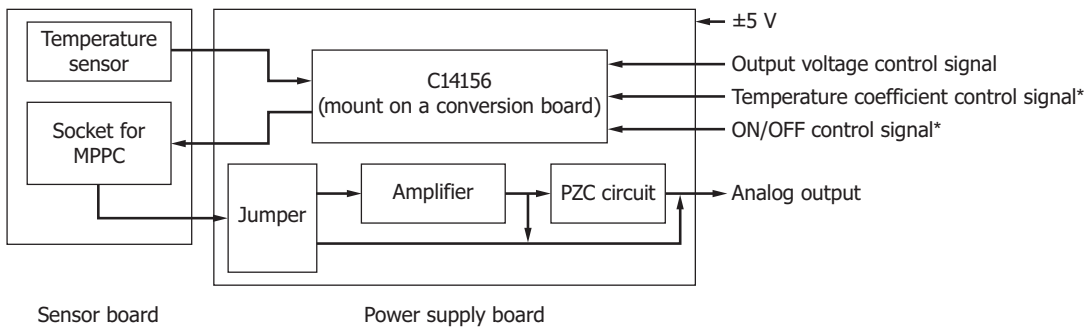
*6: The default setting is "Amplifier → PZC circuit" jumper.

➤ Output voltage vs. output voltage control signal voltage



KACCB0515EA

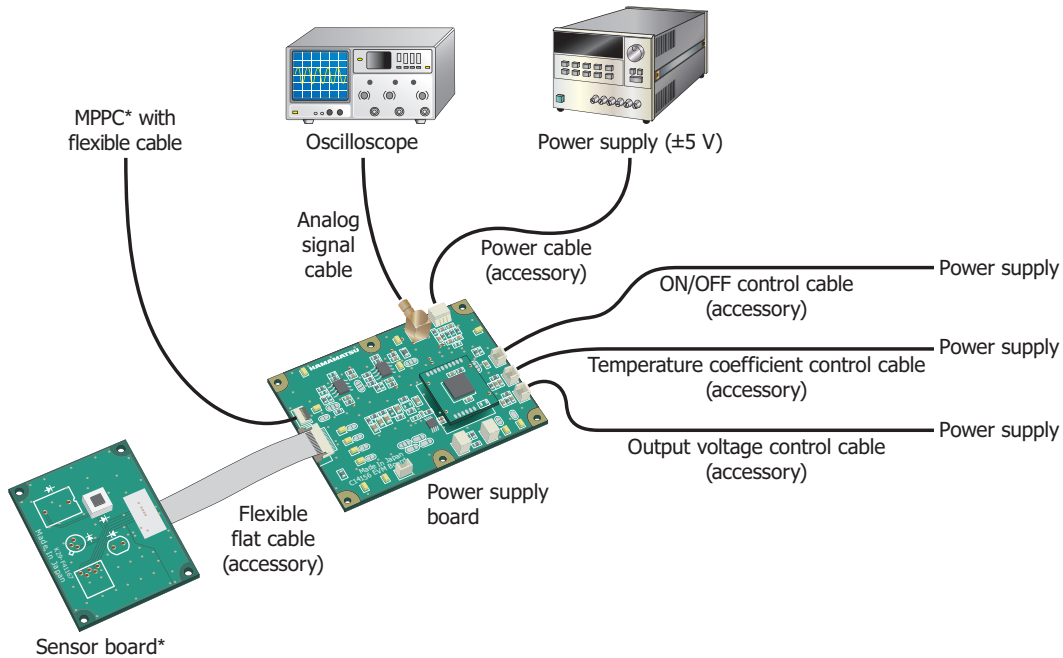
Block diagram



* Default setting: not used

KACCC0985EA

Connection example



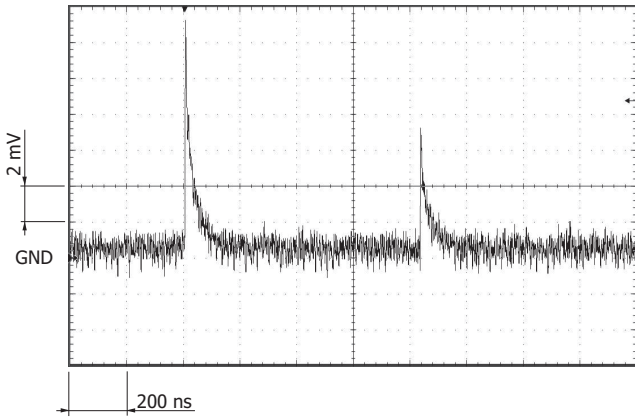
* MPPC is sold separately.

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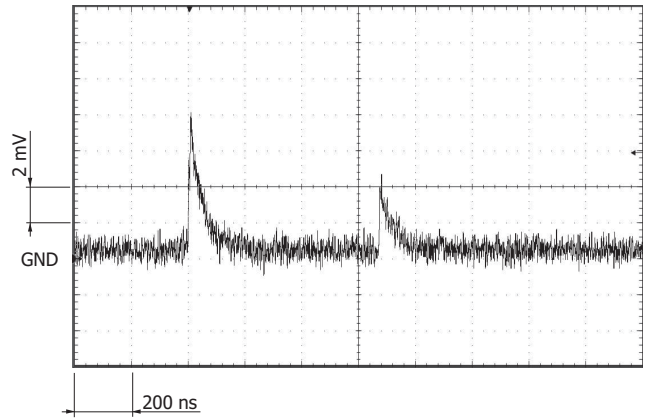
Measurement examples [using amplifier, gain: approx. 20x (default setting), $R_L=50 \Omega$]

Dark state

S13360-1350CS

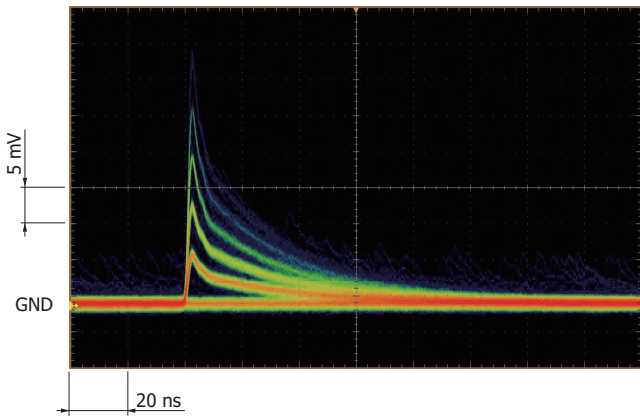


S13360-3050CS

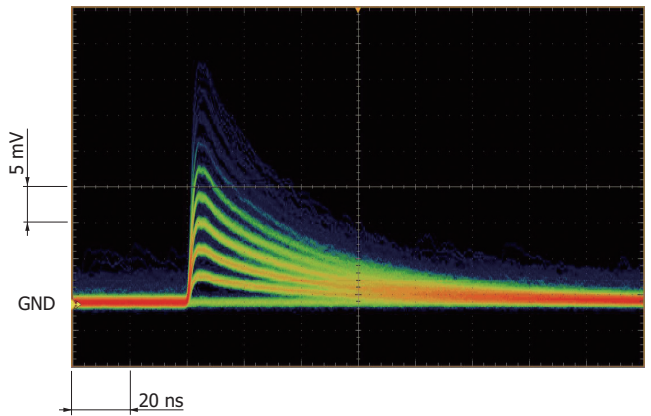


Impulse light (wavelength: 466 nm)

S13360-1350CS

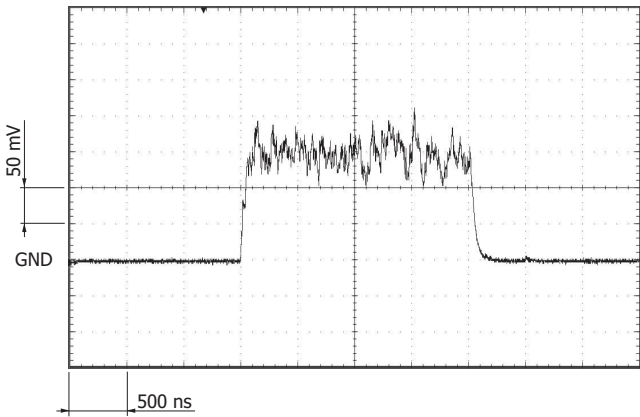


S13360-3050CS

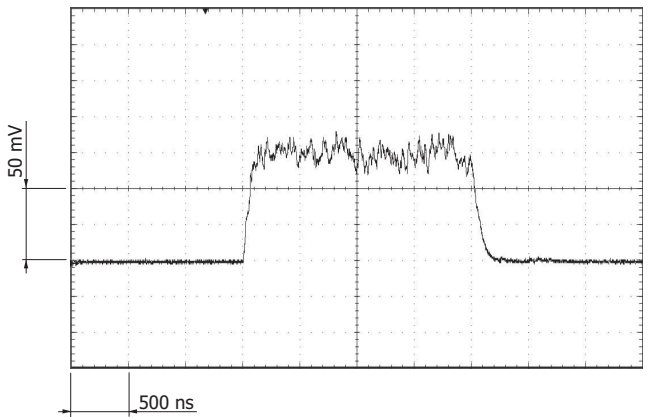


Pulse light (wavelength: 470 nm, pulse width: 2 μ s)

S13360-1350CS

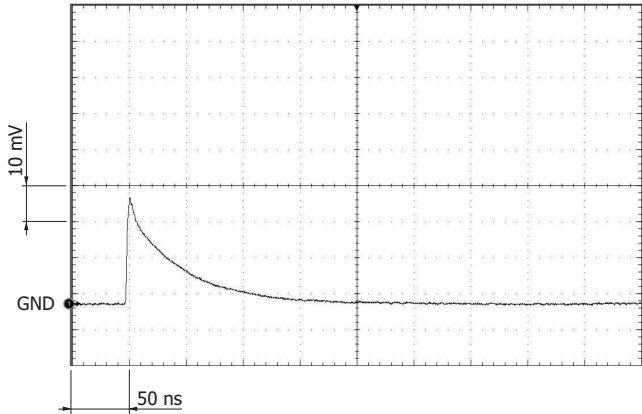


S13360-3050CS

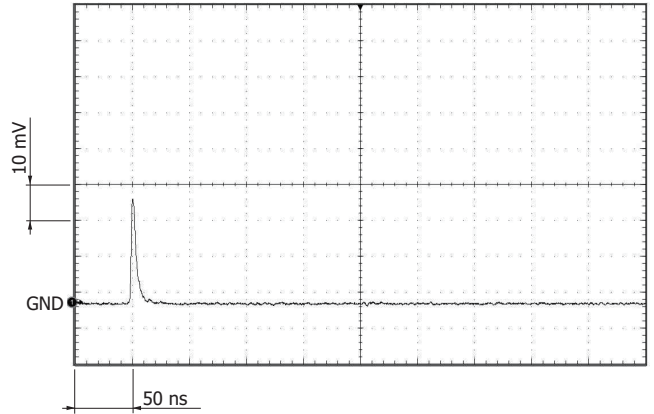


Reduction of falling time by PZC circuit

■ S13360-3050CS (amplifier only)

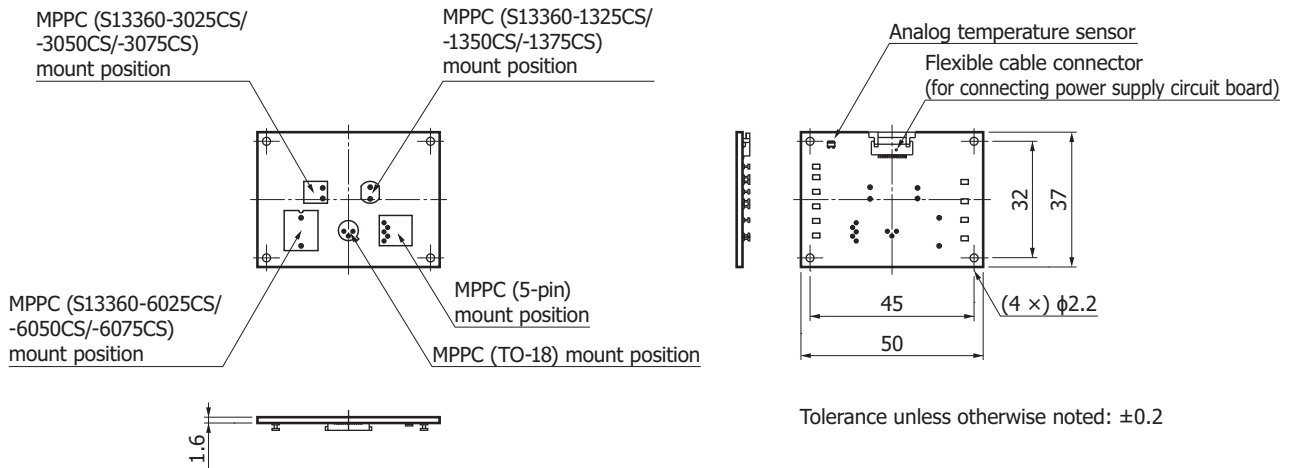


■ S13360-3050CS (amplifier → PZC circuit)



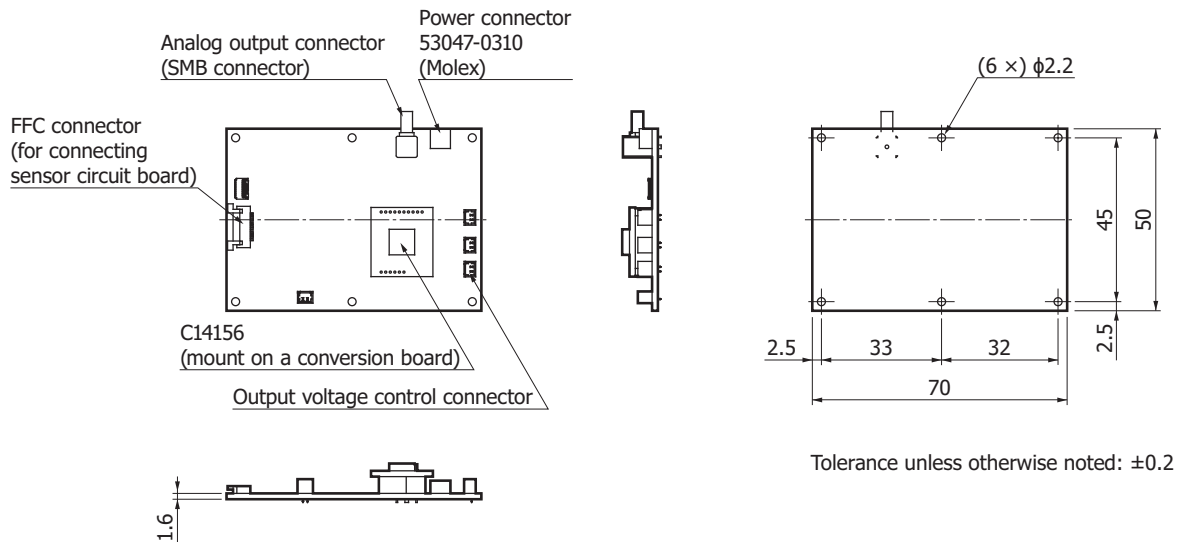
Dimensional outlines (unit: mm)

Sensor board



KACCA0472EA

Power supply board



KACCA0440EA

Accessories

- Power cable
- Output voltage control cable
- Temperature coefficient control cable
- ON/OFF control cable
- Operating voltage check cable
- Flexible flat cable (50 mm)
- CD-ROM (instruction manual)
- Quick start guide

Precautions

- For cleaning the product, wipe using a clean, soft, dry cloth. Do not use organic solvents such as thinner and acetone.
- If the product and the PC are connected with a USB cable, do not remove the USB cable while the sample software is communicating.
- This product is a simple MPPC evaluation circuit. Do not integrate this product in your device.

Options (sold separately)

Coaxial conversion adapter A10613 series

Coaxial conversion adapters for converting the SMB coaxial connector for extracting MPPC module signals into a BNC coaxial connector or an SMA coaxial connector. These adapters make connection to a BNC cable or SMA cable possible.



A10613-01 (SMB-BNC)



A10613-02 (SMB-SMA)

Related information

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

- Precautions
- Disclaimer

Information described in this material is current as of November 2021.

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.

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