

Driver circuit for Si photodiode array

C9004-01



Driver circuit for 16-element photodiode array

Features

- High precision and high-speed measurement by simultaneous 16-channel readout
- Assembled with pulse generator (8-step adjustable oscillatory frequency) CLK, START, A/D conversion Trig and EOS pulse output
- Choice of gain (conversion impedance): 1×10^6 or 1×10^7 (V/A)
- Hamamatsu S4111-16 series, S11212 series photodiode arrays are directly mountable on board.
- Single power supply operation: +12 V

Applications

- Performance evaluation of Hamamatsu S4111-16 series, S11212 series photodiode arrays
- Position measurement
- Displacement measurement

Absolute maximum ratings ($T_a = 25^\circ\text{C}$, unless otherwise noted)

Parameter	Symbol	Value	Unit
Supply voltage	$V_s \text{ max}$	+13	V
Photodiode array input current	$I_{\text{pin max}}$	$+125.5 \times 10^{-5}$	A
Supply current	$I_{\text{in max}}$	2	A
Operating temperature*1	T_{opr}	0 to +50	$^\circ\text{C}$
Storage temperature*1	T_{stg}	-20 to +80	$^\circ\text{C}$

*1: No dew condensation

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 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)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Input photocurrent	Ip	Zt=1 × 10 ⁶	-	6.4 × 10 ⁻⁶	-	A
		Zt=1 × 10 ⁷	-	6.4 × 10 ⁻⁷	-	A
Conversion impedance*2	Zt		-	1 × 10 ⁶	-	V/A
			-	1 × 10 ⁷	-	V/A
Output offset voltage	Vos	Zt=1 × 10 ⁶ (set up prior to shipping)	-	0.025	-	V
		Zt=1 × 10 ⁷ *3	-	0.25	-	V
Maximum output amplitude voltage	Vfs	Zt=1 × 10 ⁶ , RL=1 kΩ	+6.4	-	-	V
		Zt=1 × 10 ⁷ , RL=1 kΩ	+6.4	-	-	V
Output noise voltage	Vn	Zt=1 × 10 ⁶ (full bandwidth)	-	5	-	mVp-p
		Zt=1 × 10 ⁷ (full bandwidth)	-	10	-	mVp-p
Cutoff frequency	fc	Zt=1 × 10 ⁶ , RL=1 kΩ, -3 dB	Lower	DC	-	kHz
			Upper	62.4	-	
		Zt=1 × 10 ⁷ , RL=1 kΩ, -3 dB	Lower	DC	-	
			Upper	62.4	-	
Capacitive load	CL		-	-	100	pF
Oscillatory frequency (OUT)*4	CLK		1.5625	-	200	kHz
Start pulse width (OUT)*4	-		5	-	640	μs
Output format*5	-			TTL		-
Operating supply voltage	Vs	*6	+11.5	+12	+12.5	V
Current consumption	Is		-	200	250	mA

*2: Conversion impedance can be changed with the switch on the circuit board.

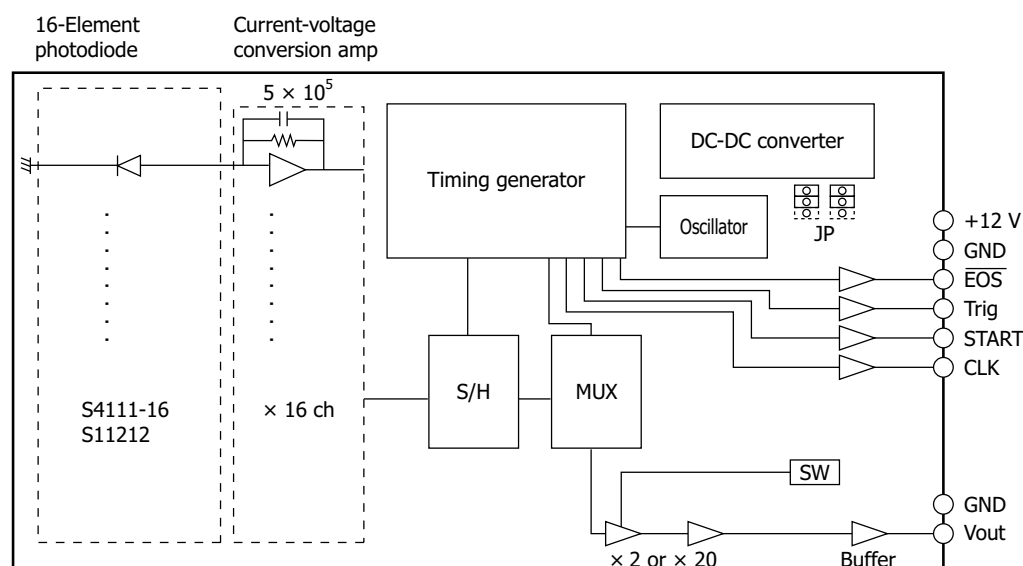
*3: The variable resistor VR on the circuit board must be used for making offset adjustments.

*4: Adjustable in 8 steps by using the BCD rotary switch on the circuit board

*5: CLK, START, Trig and EOS pulse output format

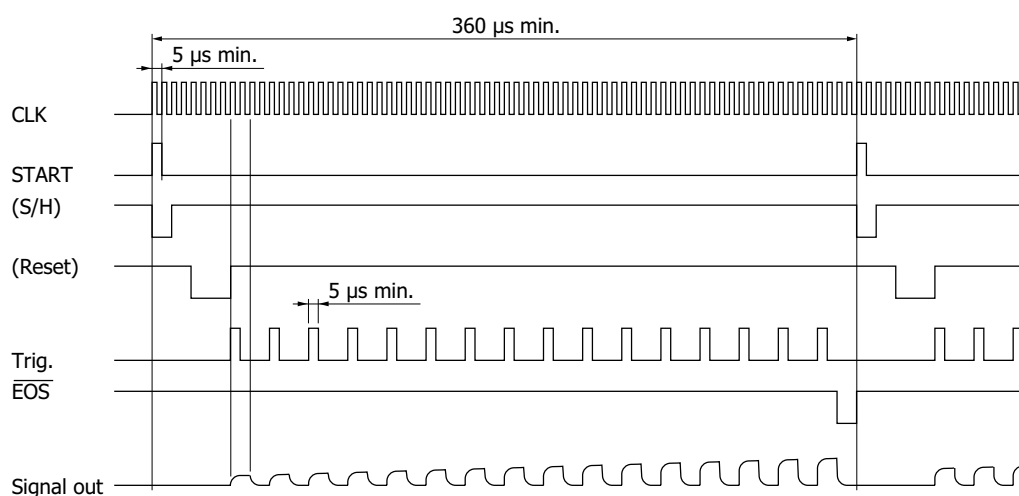
*6: A power supply of approximately 12 V and 1.25 A is recommended. The electric current for operating this product varies depending on the use environment. Please check in advance.

Block diagram



KACCC0181EC

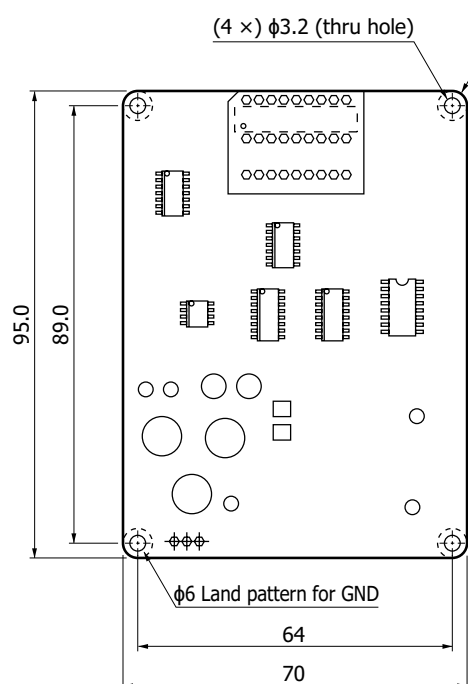
Timing chart



KACCC0182EA

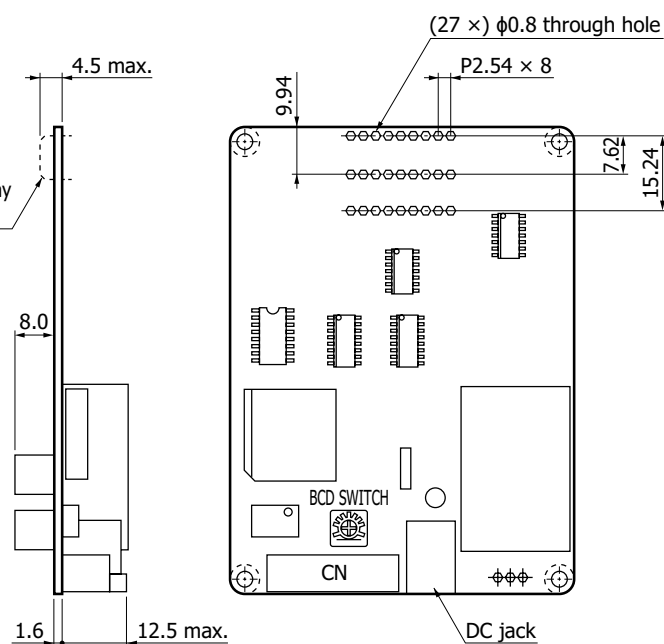
Dimensional outline (unit: mm)

Photodiode array mount side



Note: Photodiode array sold separately

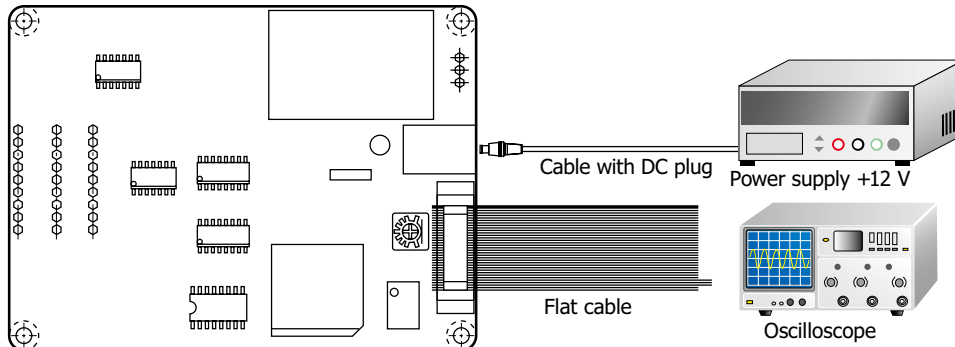
Back side



Tolerance unless otherwise noted: ±0.3

KACCA0489EA

Connection example



KACCC1180EA

Accessories

- Instruction manual
- Cable with DC plug
- Flat cable (200 mm) with I/O connector receptacle

Related information

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

■ Precautions

- Disclaimer

Information described in this material is current as of January 2023.

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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