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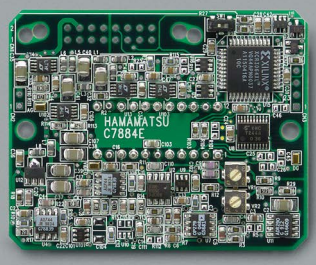
Driver circuits for NMOS linear image sensor

C7884 series



C7884

High-precision driver circuits for current-output type NMOS linear image sensor

The C7884 series is a driver circuit specifically designed for the Hamamatsu current-output type NMOS linear image sensors (refer to the "Selection guide" for suitable sensor). NMOS linear image sensors are self-scanning photodiode arrays integrated with a scanning circuit of N-channel MOS transistors.
The C7884 series supplies start pulses and two-phase clock pulses necessary for image sensor operation. The C7884 series also includes a signal processing circuit to read out video signals from an image sensor in the electric charge accumulation mode. The C7884 series operates by input of a master start pulse, master clock pulse and connection to double power supply (±12 V or ±15 V). Multichannel detector head controller C7557-01 is available (sold separately). The dedicated software allows you to control and collect data on the C7884 series from the PC.
Note: Contact us if you connect with the C7557-01.

Features

- **High-precision operation**
- **Low noise**
- **Compact**
- **Double power supply (±12 V or ±15 V) operation**

Selection guide

Type no.	Product name	Feature	Applicable sensor (Sold separately)
C7884	Driver circuit	High precision driver circuit for current-output type NMOS linear image sensors. Has no input/output connector.	S3901-128Q/-256Q/-512Q S3902-128Q/-256Q/-512Q S3903-256Q/-512Q/-1024Q
C7884-01	Low noise driver circuit	Low noise driver circuit for current-output type NMOS linear image sensors. Has no input/output connector.	S3904-256Q/-512Q/-1024Q S8380-128Q/-256Q/-512Q S8381-256Q/-512Q/-1024Q

Absolute maximum ratings

Parameter		Symbol	Condition	Value	Unit
Supply voltage	Positive power supply	+Vs	Ta=25 °C	+20	V
	Negative power supply	-Vs	Ta=25 °C	-20	
Operating temperature*		Topr		0 to +50	°C
Storage temperature*		Tstg		-10 to +60	°C

* 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.

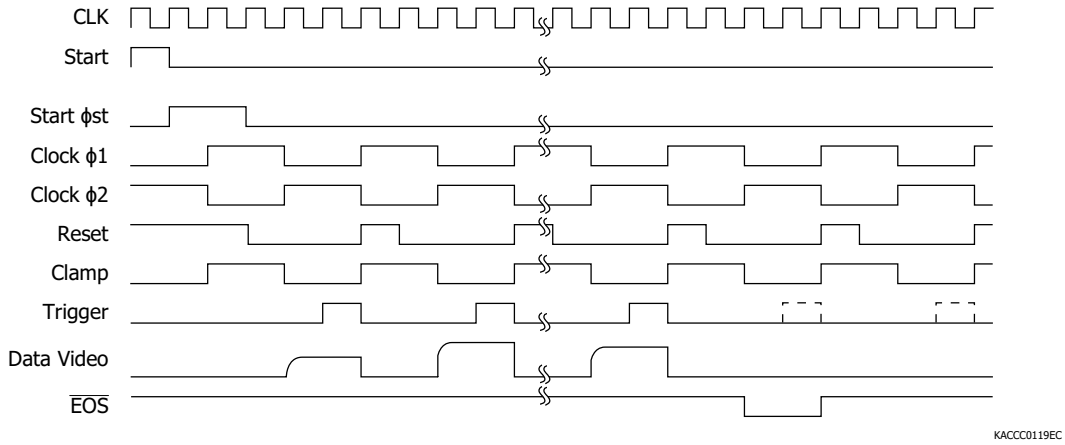
Recommended operating conditions (Ta=25 °C)

Parameter		Symbol	Condition	Min.	Typ.	Max.	Unit
Supply voltage	Positive power supply	+Vs		+11.5	+12.0	+15.5	V
	Negative power supply	-Vs		+11.5	+12.0	+15.5	V

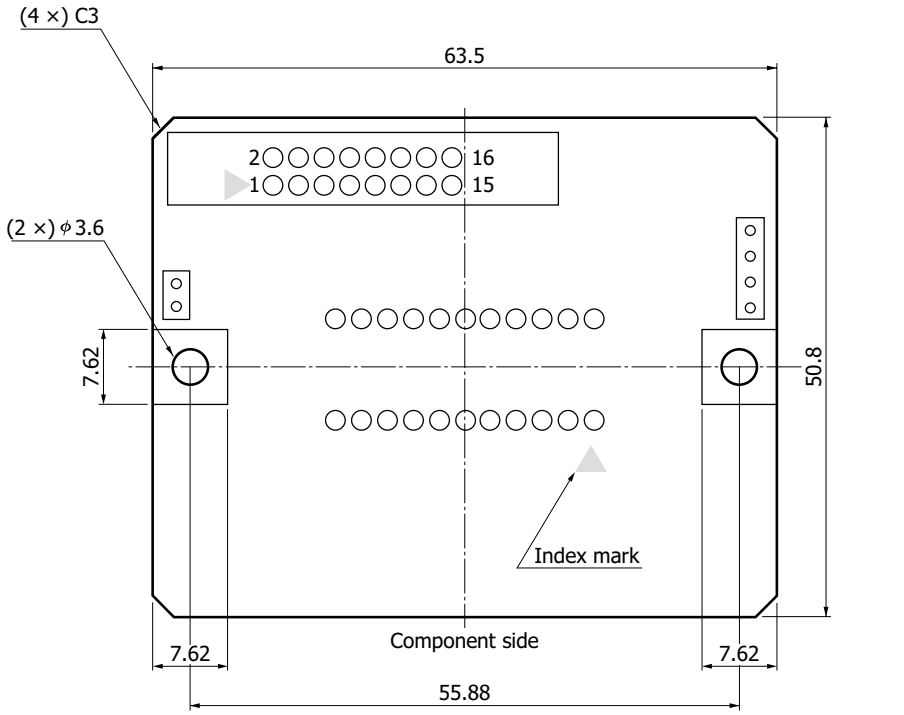
Electrical characteristics (Ta=25 °C, Vs=±12 V, unless otherwise noted)

Parameter			Symbol	Condition	Min.	Typ.	Max.	Unit
Operation frequency		C7884	-	S3902/S3903 series, master clock frequency: 4 MHz	-	-	1	MHz
				S3901/S3904 series, master clock frequency: 2 MHz	-	-	500	kHz
		C7884-01	-	master clock frequency: 250 kHz	-	-	62.5	kHz
Charge-to-voltage conversion gain			Gc			0.3		V/pC
Current consumption	C7884	Positive power supply	+Is	+12 V	-	30	40	mA
		Negative power supply	-Is	-12 V	-	10	20	mA
	C7884-01	Positive power supply	+Is	+12 V	-	20	30	mA
		Negative power supply	-Is	-12 V	-	10	20	mA

Timming chart



Dimensional outline (unit: mm)



Note: Mount the connector on the component side.

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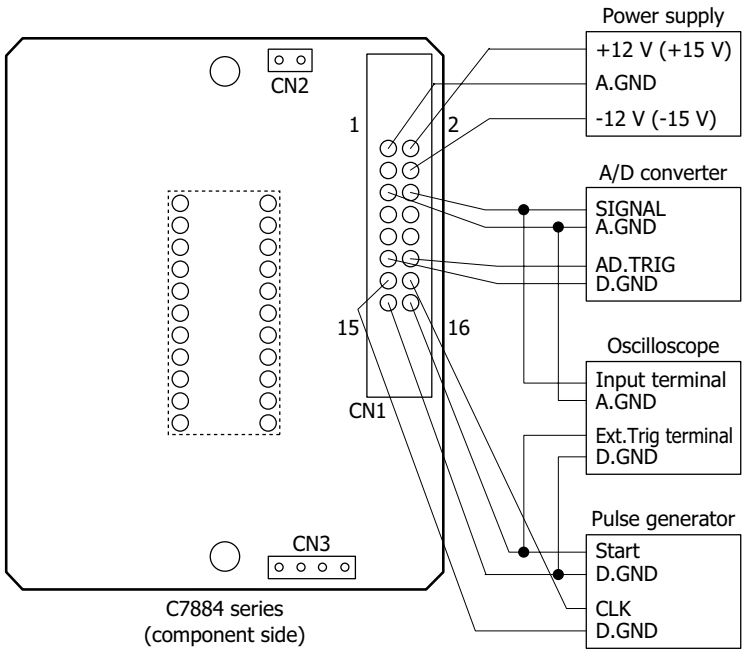
Pin connections

■ For external input/output [CN1, recommended connector: FAP-16-07#2 (made by Yamaichi Electronics)]

Pin no.	Terminal name	Description
1	A.GND	Analog ground
2	+12 V or +15 V	Power supply
3	A.GND	Analog ground
4	-12 V or -15 V	Power supply
5	A.GND	Analog ground
6	Data Video	Analog video signal output; positive polarity
7	A.GND	Analog ground
8	A.GND	Analog ground
9	D.GND	Digital ground
10	$\overline{\text{EOS}}$	Digital output signal indicating end of scan; negative logic
11	D.GND	Digital ground
12	Trigger	Digital output signal for A/D conversion; positive logic
13	D.GND	Digital ground
14	CLK	Digital input signal for operating the circuit at the rising edge
15	D.GND	Digital ground
16	Start	Digital input signal for initializing the circuit; positive logic. Interval of these pulses equals the integration time of the sensor.

Connection example
(Standard operation: when not using variable integration time function of NMOS linear image sensor)



Note: Mount the connector at CN1 on the component side.
Install the NMOS linear image sensor into position while aligning pin no. 1 with the index mark (pin no. 1) on the back side of the C7884 series.

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Related information

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

■ Precautions
· Disclaimer

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