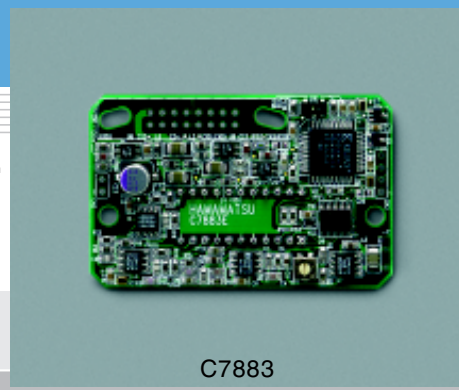


# Driver circuit for NMOS linear image sensor C7883 series



C7883

High-speed driver circuit for current-output type NMOS linear image sensor

C7883 series is a driver circuit specifically designed for the Hamamatsu current-output type NMOS linear image sensors (S3901 to S3904 series, S8380/S8381 series). NMOS linear image sensors are self-scanning photodiode arrays integrated with a scanning circuit of N-channel MOS transistors.

C7883 series supplies start pulses and 2-phase clock pulses necessary for image sensor operation. C7883 series also includes a signal processing circuit to read out video signals from an image sensor in the current-to-voltage conversion mode.

C7883 series operates by input of a master start pulse, master clock pulse and connection to a power supply (+12 V or +15 V).

C7883-20 is multichannel detector head incorporating driver circuit (C7883) developed for Hamamatsu NMOS linear image sensor. C7883-20 is designed especially for compactness, having an overall length as short as 40 mm or less. The housing case also provides a shielding effect against external noise.

## Features

- High-speed operation (compared to C7884)
- Compact (compared to conventional type C4069)
- Single power supply (+12 V or +15 V) operation

## Selection guide

| Type No. | Product name                     | Feature  |
|----------|----------------------------------|--|
| C7883    | Driver circuit                   | High-speed driver circuit for current-output type NMOS linear image sensors.<br>Has no input/output connector. |
| C7883G   | Driver circuit + Pulse generator | A dedicated pulse generator is pre-mounted on the driver circuit board.<br>Has no input/output connector.      |
| C7883-20 | Multichannel detector head       | C7883 driver circuit board is installed in a shield case.  |

Note)

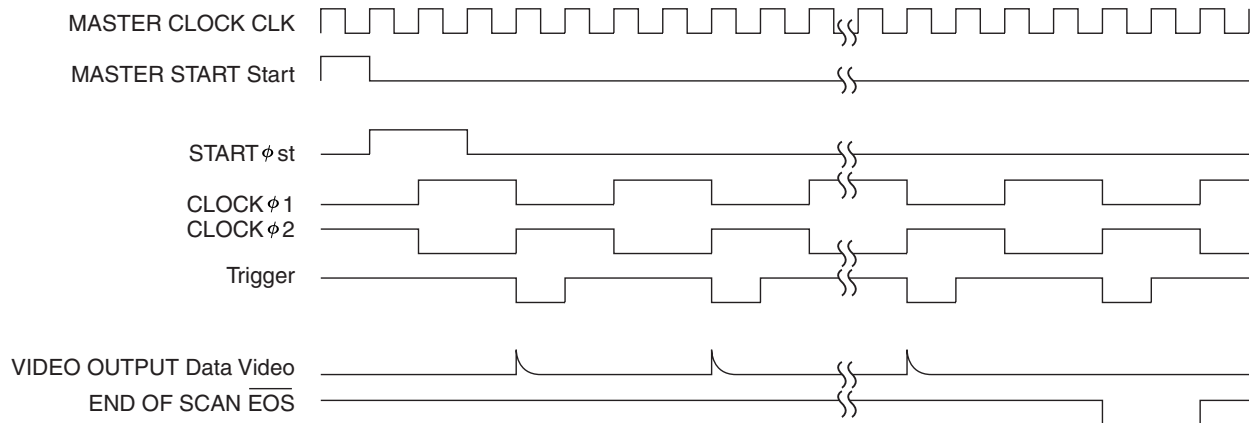
- Standard input/output connector is FAP-16-07#2 (made by Yamaichi, sold separately). Equivalent connectors are available from other manufacturers.
- Custom products with an input/output connector pre-mounted are available on request. Please consult our sales office.
- When ordering along with a dedicated cable (A8226), C7883 series will be shipped with a mating connector pre-mounted.
- We welcome custom requests (e.g. 4 MHz high-speed type). Feel free to contact our sales office.
- When high precision measurements are required, refer to C7884 series data sheet.
- When using voltage-output type NMOS linear image sensors, refer to C7885 series data sheet.

## Specifications (Ta=25 °C)

| Parameter             |          | Symbol | Condition                     | Min.         | Typ.  | Max.  | Unit |
|-----------------------|----------|--------|-------------------------------|--------------|-------|-------|------|
| Supply voltage        |          | +Vs    |                               | +11.5        | +12.0 | +15.5 | V    |
| Current consumption   | C7883    | +Is    | +12 V                         | -            | 30    | 40    | mA   |
|                       | C7883G   |        | +12 V                         | -            | 60    | 80    | mA   |
|                       | C7883-20 |        | +12 V                         | -            | 30    | 40    | mA   |
| Operation frequency   |          | -      | Master clock frequency: 8 MHz | -            | -     | 2     | MHz  |
| Gain                  |          | G      |                               | -            | 24    | -     | kV/A |
| Operating temperature |          | Topr   |                               | 0 to +50 *   |       |       | °C   |
| Storage temperature   |          | Tstg   |                               | -10 to +60 * |       |       | °C   |

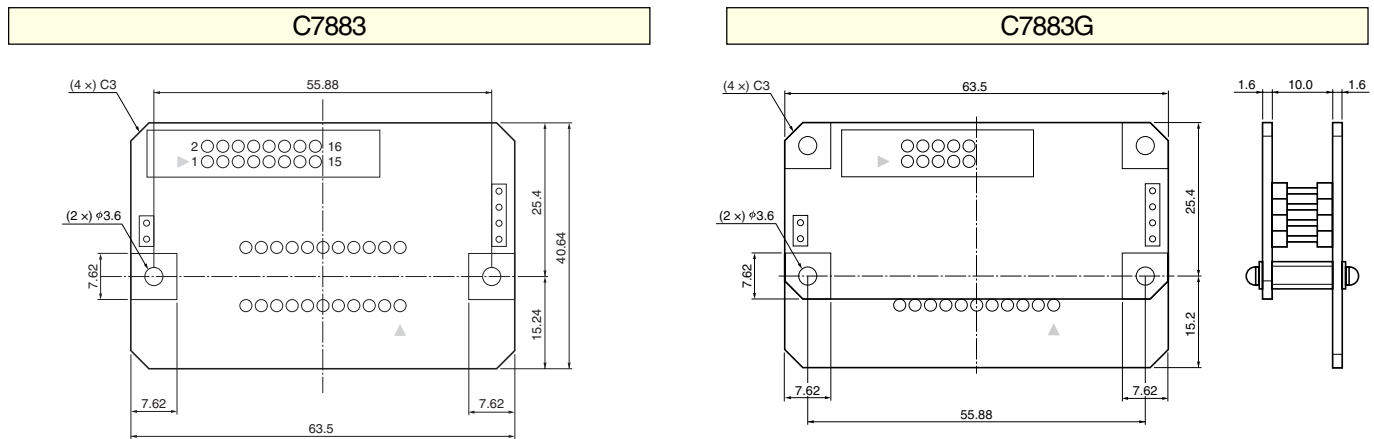
\* No condensation

## ■ Timing chart



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## ■ Dimensional outlines and input/output signal descriptions (unit: mm)

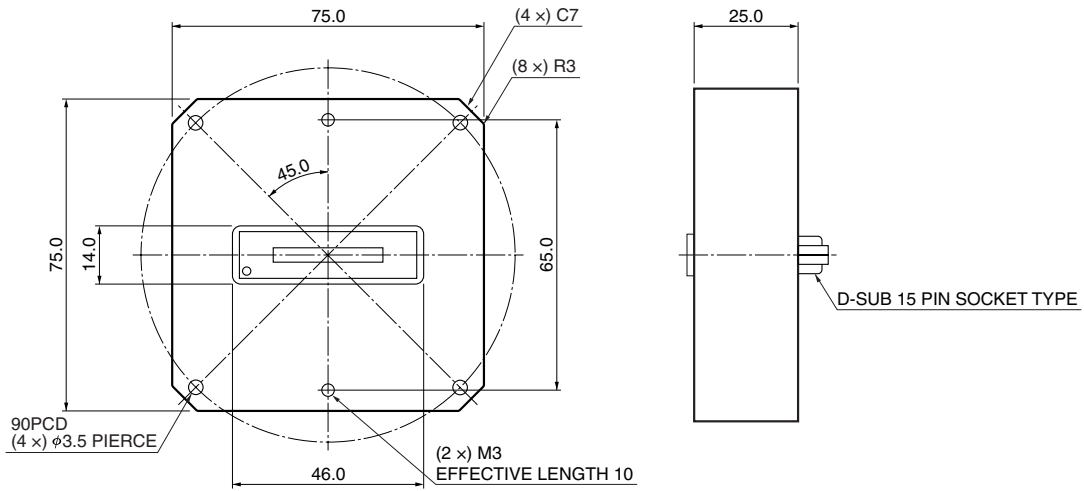


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| Terminal No. | Terminal name           | Description  |
|--------------|-------------------------|--|
| 1            | A. GND                  | Analog ground  |
| 2            | +12 V or +15 V          | Power supply   |
| 3            | A. GND                  | Analog ground  |
| 4            | NC                      | No connection  |
| 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 (in case of C7883G, output signal)   |
| 15           | D. GND                  | Digital ground   |
| 16           | Start                   | Digital input signal for initializing the circuit; positive logic. (in case of C7883G, output signal)<br>Interval of these pulses equals the integration time of the sensor. |

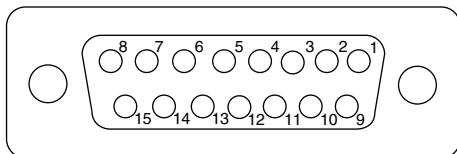
## C7883-20



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| Terminal No. | Terminal name           | Description   |
|--------------|-------------------------|---|
| 1            | NC                      | No connection   |
| 2            | Data video              | Analog video signal output; positive polarity                     |
| 3            | +12 V (+15 V)           | Positive power supply   |
| 4            | NC                      | No connection   |
| 5            | NC                      | No connection   |
| 6            | Start                   | Digital input signal for initializing the current; positive logic |
| 7            | CLK                     | Digital input signal for operating the circuit at the rising edge |
| 8            | $\overline{\text{EOS}}$ | Digital output signal indicating end of scan; negative logic      |
| 9            | A. GND                  | Analog ground   |
| 10           | A. GND                  | Analog ground   |
| 11           | Shield                  | Case shield   |
| 12           | D. GND                  | Digital ground  |
| 13           | D. GND                  | Digital ground  |
| 14           | D. GND                  | Digital ground  |
| 15           | Trigger                 | Digital output signal for A/D conversion; positive logic          |

■ Pin assignment of "Signal I/O" connector (C7883-20, 15 pin D-sub socket type)



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## Dedicated cable A8226

Connector on board: UFS-16B-01

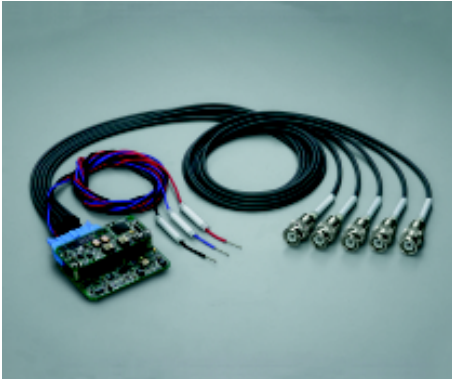
Input/output signal connector: BNC (Start, CLK, Trigger, EOS, Data Video)

Power supply: lose wire cable

Cable length: 1 m

Note) When making a simple in-circuit evaluation of NMOS linear image sensors without any troublesome soldering, use C7883G, C7884G, C7884G-01 or G7885G in combination with A8226.

All you have to do is just insert an NMOS linear image sensor into the socket and connect the cables to an oscilloscope, power supply and AD converter. Note that NMOS linear image sensors are sold separately.



C7884G used in combination with A8226

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