

DMM 36VR0234-ML



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1 Quick Facts

| General | |
|-------------------------------|-------------------|
| Dynamic Range | 10 bit |
| Resolution | 1920x1200 |
| Frame Rate at Full Resolution | 120 |
| Pixel Formats | 10-Bit Monochrome |

| Optical Interface | |
|--------------------------|---------------------------|
| Sensor Type | ON Semiconductor AR0234CS |
| Shutter Type | Global |
| Sensor Format | 1/2.6 inch |
| Pixel Size | 3.0 μm |

| Electrical Interface | |
|-----------------------------|-------------------------|
| Interface | 22-Pin FFC Connector |
| Supply voltage | 3.3V |
| Current consumption | approx tba mA @ 3.3 VDC |

| Mechanical Data | |
|------------------------|--------------------------------|
| Dimensions | H: 30 mm, W: 30 mm, L: 16.2 mm |
| Mass | 12 g |

| Adjustments | |
|--------------------|----------------------------|
| Shutter | 15 μs to 0.25 s |
| Gain | 0 dB to 19,2 dB |

| Environmental | |
|-------------------------|-------------------------------|
| Temperature (operating) | -5 °C to 45 °C |
| Temperature (storage) | -20 °C to 60 °C |
| Humidity (operating) | 20 % to 80 % (non-condensing) |
| Humidity (storage) | 20 % to 95 % (non-condensing) |



2 Electrical Characteristics

2.1 Absolute Maximum Ratings

| Item | Symbol | Pins | Min | Max | Unit |
|------|--------|------|-----|-----|------|
|------|--------|------|-----|-----|------|

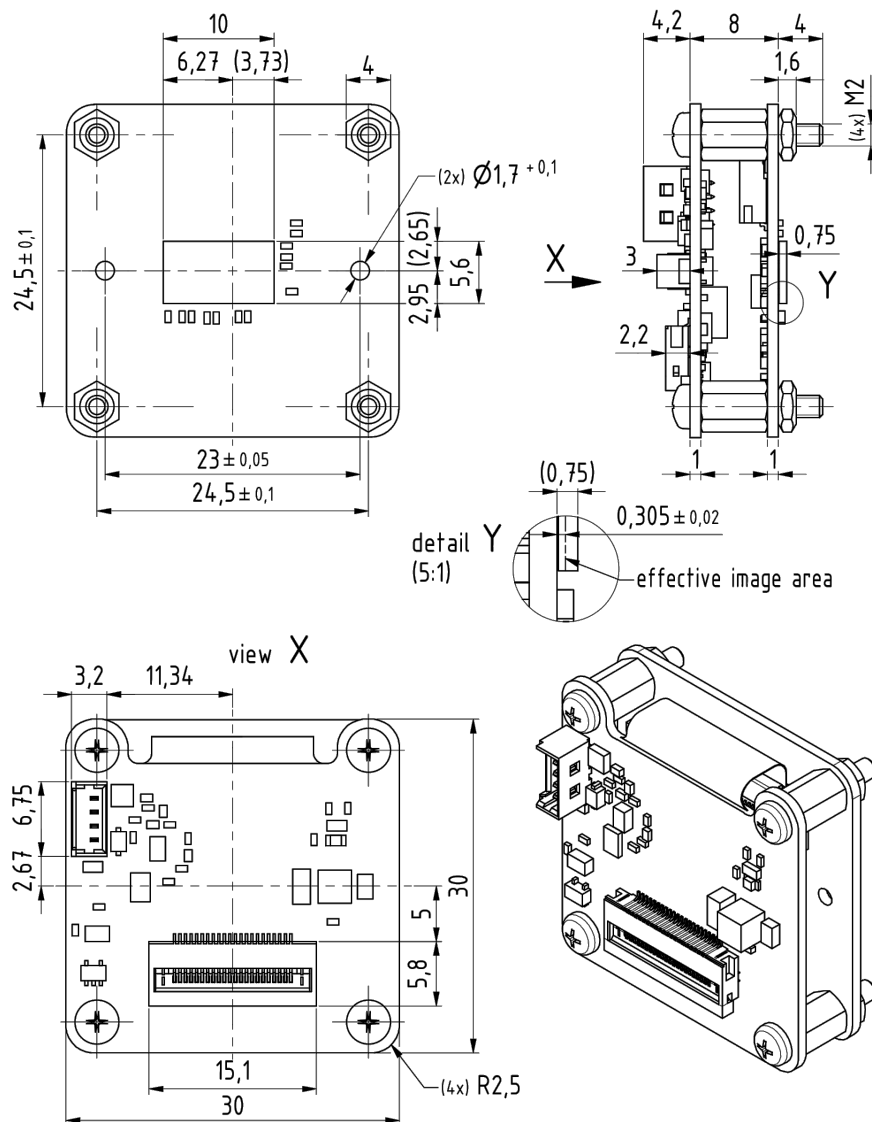
2.2 Recommended Operating Conditions

| Item | Symbol | Pins | Min | Typ | Max | Unit |
|------|--------|------|-----|-----|-----|------|
|------|--------|------|-----|-----|-----|------|



3 Dimensional Diagrams

3.1 DMM 36VR0234-ML Board Camera



Scale: 2 : 1
 Dimensions: mm
 Tolerances: DIN ISO 2768-m
 289-20-6-05-00

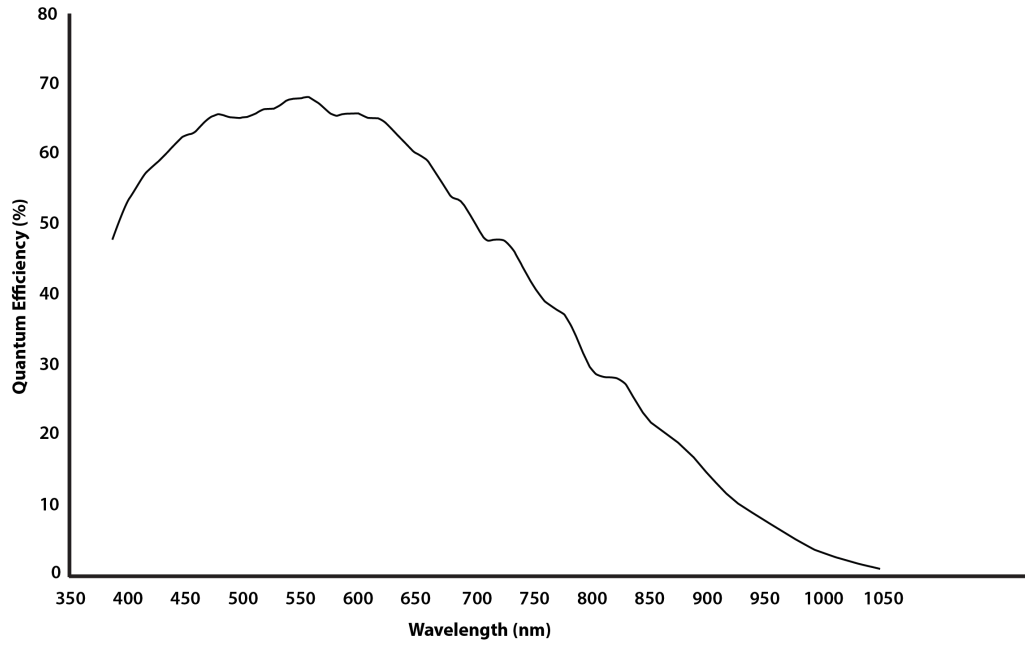




4 Spectral Characteristics

4.1 Spectral Sensitivity - AR0234CS

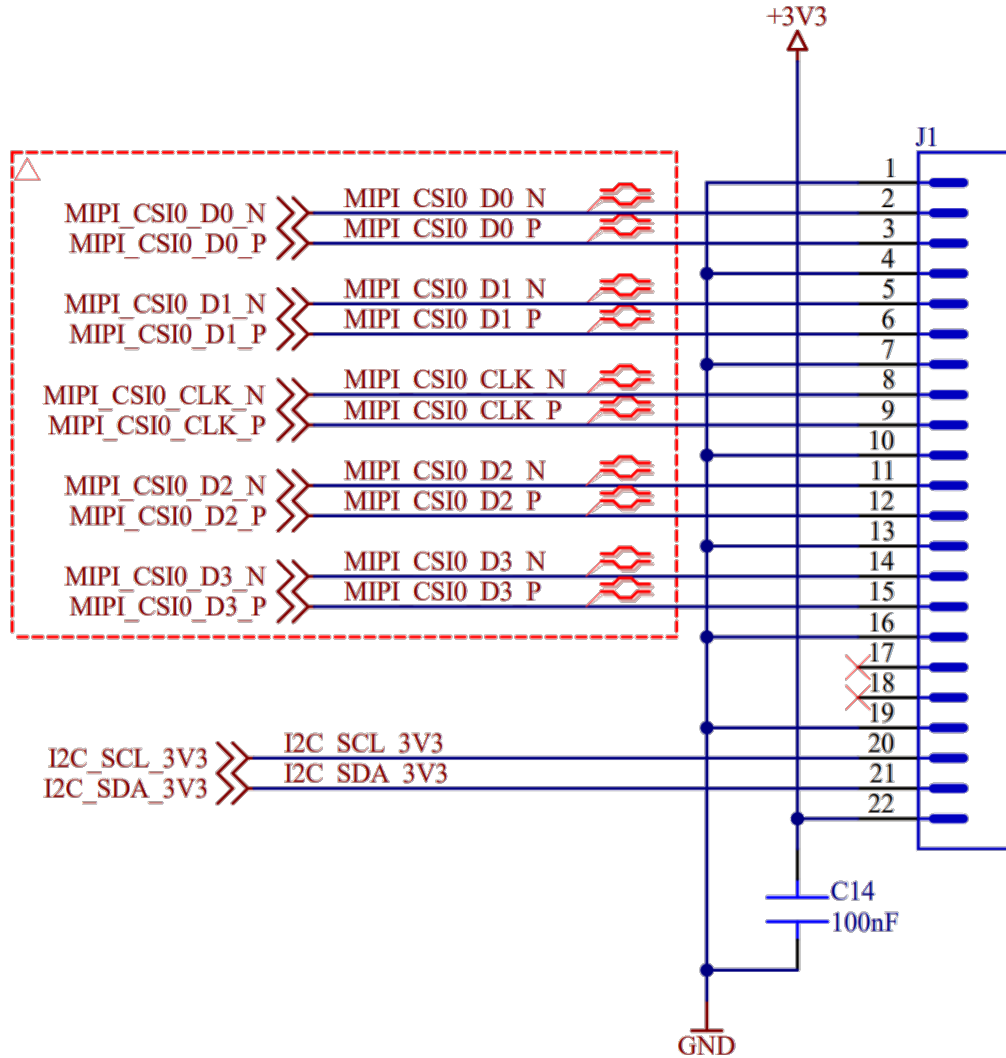
Sensor: ON Semiconductor AND9658/D - *courtesy of ON Semiconductor*





5 22-Pin Camera Connector

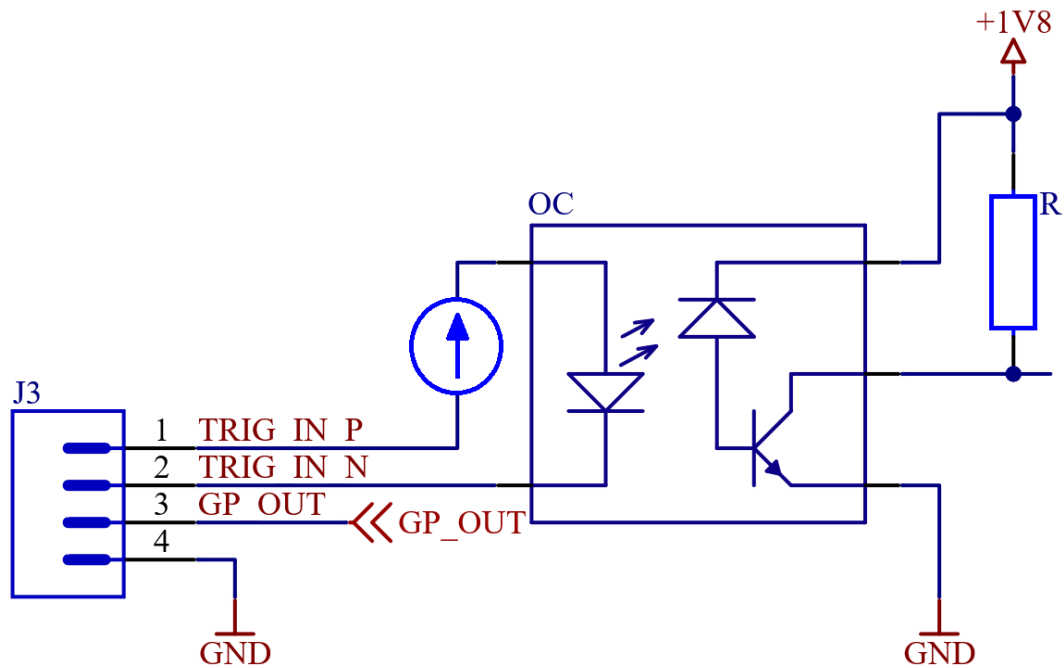
The connector J1 (WE 687122149022) is compatible to the Raspberry Pi Compute Module I/O Board camera interface:





6 I/O Connector

The DMM 36VR0234-ML camera has a user GPIO I/O connector with the following pinout:



| Pin | Name | Description |
|-----|--------------|---|
| 1 | TRIGGER_IN_P | Opto-decoupled trigger input, anode of IR-LED |
| 2 | TRIGGER_IN_N | Opto-decoupled trigger input, cathode of IR-LED |
| 3 | GP_OUT | General purpose output, referenced to GND |
| 4 | GND | System ground |

The trigger input is opto-decoupled. To drive the trigger input, a voltage must be applied to pins 1 and 2. Note: pin 1 is the positive input; pin 2 is the negative input.

Pin 3 is a general-purpose output pin that can be controlled via software. The pin can be configured for TTL mode output or open drain output. LED2 indicates a possible overcurrent.



The recommended operating conditions of the user GPIO connector J3 are displayed in the following tables. CAUTION: Functional operation beyond the recommended operating conditions is not assumed.

| Parameter | Min | Max |
|-----------------------|-------|-------|
| Trigger input voltage | 3.15V | 25.5V |

| Parameter | Min | Max |
|-----------------------|-----|---------------|
| TTL-mode high voltage | - | 250mA @ 4V |
| TTL-mode low voltage | - | 250mA @ 0.05V |

| Parameter | Min | Max |
|-------------------------|-----|-------|
| Open-drain-mode voltage | - | 24V |
| Open-drain-mode current | - | 250mA |

Please ensure that enough additional power is provided via the embedded system to operate the connected devices at the user GPIO connector (J3).



7 I2C I/O Expander Configuration

Various I/O functionalities of the camera are controlled through a I2C I/O Expander.

The TCA6408A part has the 7-bit I2C-address 0x20. The table below depicts which signals can be controlled through this expander:

| I/O Pin | Name | Dir | Description |
|---------|----------------|-----|--|
| P0 | CAM_PWR | O | Enable CMOS sensor power supply 0: Sensor power disabled 1: Sensor power enabled |
| P1 | RESET | O | CMOS sensor reset signal 0: Sensor is in reset state 1: Sensor is in operational state |
| P2 | GPOUT_LEVEL | O | If GPOUT_SELECT = 0: --->0: LED1 off --->1: LED1 on If GPOUT_SELECT = 1: --->0: GPOUT is low/0 V --->1: GPOUT is tri-stated or high/+5V (depends on the setting of P3) |
| P3 | GPOUT_PUSHPULL | O | GPOUT (PicoBlade) type selection 0: GPOUT is configured as open-drain-output 1: GPOUT is configured as TTL/push-pull-output |
| P4 | GPOUT_SELECT | O | Function of GPOUT (PicoBlade) Pin 0: STROBE from CMOS sensor board 1: GPOUT_LEVEL from serializer board |
| P5 | TRIGGER_LEVEL | O | Controls the polarity of the trigger input on the PicoBlade connector. 0: Trigger source level polarity is not inverted 1: Trigger source level polarity is inverted |
| P6 | TRIGGER_SOURCE | O | Controls the source of the trigger signal that is forwarded to the sensor. 0: Sensor is triggered by the trigger signal coming from the FPD-Link / deserializer chip. 1: Sensor is triggered by the trigger signal that is applied to the PicoBlade I/O connector. |
| P7 | RESERVED_7 | O | Reserved |



8 Sensor Clock Configuration

The sensor's input clock frequency can be configured via the clock generator Si5356A with the I2C address 0x70 (7-bit). The input clock of Si5356A (CLKIN, pin 4) is connected to an external crystal oscillator SG-210STF (25MHz). The generated frequency is output at CLKA0 (pin 25). The manufacturer's Clock Builder software tool can be used to generate the required settings.

For more information about Si5356A, please refer to the datasheet:

<https://www.silabs.com/documents/public/data-sheets/si5356a-datasheet.pdf>



9 I2C Devices

There are multiple I2C devices on the DMM 36VR0234-ML sensor board. The following table describes the parts and their I2C addresses:

| Address (7-bit) | Device | Description |
|-----------------|-----------|--------------|
| 0x10 | AR0234CS | Image Sensor |
| 0x50 | AT24C256C | EEPROM |
| 0x57 | AT24C02C | EEPROM |



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All weights and dimensions are approximate. Unless otherwise specified, the lenses shown in the context of cameras are not shipped with these cameras.

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