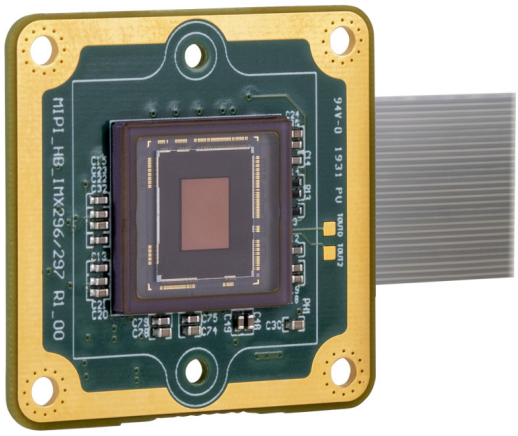
Technical Details




# DMM 36SR2020-ML
# Technical Reference Manual

THE IMAGINGSOURCE
TECHNOLOGY BASED ON STANDARDS

# Table of Contents

# 1 Quick Facts

| General | |
|---|---|
| Dynamic Range | 10 bit |
| Resolution | 5120x3840 |
| Frame Rate at Full Resolution | 30 |
| Pixel Formats | 10-Bit Monochrome |

| Optical Interface | |
|---|---|
| Sensor Type | ON Semiconductor AR2020 |
| Shutter Type | Rolling |
| Sensor Format | 1/1.8 inch |
| Pixel Size | 1.4 µm |

| Electrical Interface | |
|---|---|
| Interface | 22-Pin FFC Connector |
| Supply voltage | 3.3V (±5%) |
| Current consumption | approx 155 mA @ 3.3 VDC |

| Mechanical Data | |
|---|---|
| Dimensions | H: 30 mm, W: 30 mm, L: 6 mm |
| Mass | 4 g |

| Adjustments | |
|---|---|
| Shutter | 15 µs to 0.25 s |
| Gain | 0 dB to 47,625 dB |

| Environmental | |
|---|---|
| Device Temperature (operating) * | -30 °C to 85 °C |
| Sensor Temperature (operating, performance guarantee) | 0 °C to 60 °C |
| Temperature (storage) | -40 °C to 85 °C |
| Humidity (operating) | 20 % to 80 % (non-condensing) |
| Humidity (storage) | 20 % to 95 % (non-condensing) |

*) See section Temperature Measurement Point for details.

# 2 Electrical Characteristics

## 2.1 Absolute Maximum Ratings

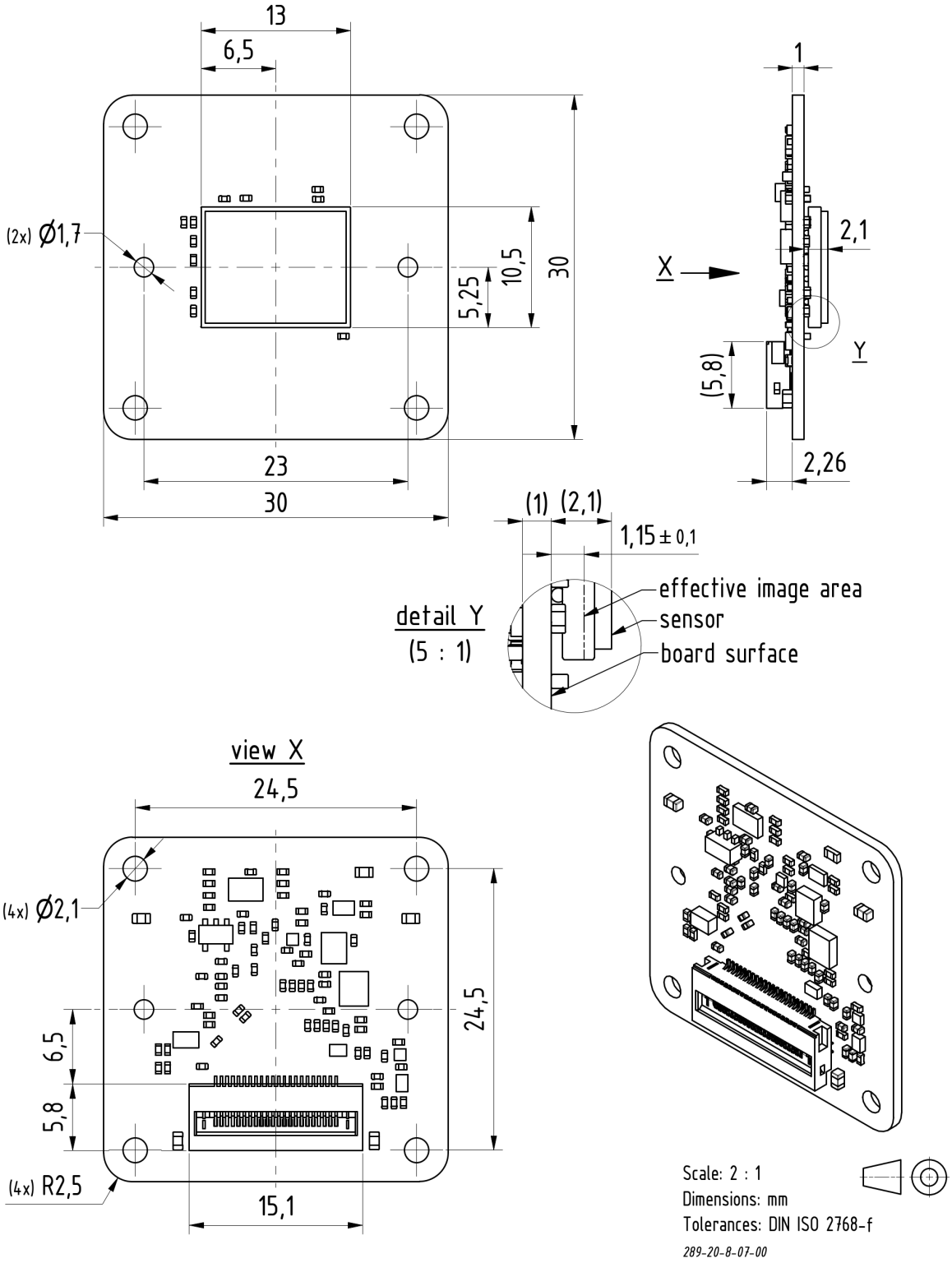
| Item | Symbol | Pins | Min | Max | Unit |
|---|---|---|---|---|---|
| Supply voltage | +3V3_D (VCC) | 22 | -0.3 | +5.5 | V |
| I/O voltage | GPIO1 GPIO2 | 17 18 | -0.3 | VCC | V |
| I2C voltage | IC2_SCL<br>I2C_SDA | 20 21 | -0.5 | +3.8 | V |

## 2.2 Recommended Operating Conditions

| Item | Symbol | Pins | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| Supply voltage | +3V3_D (VCC) | 22 | +3.1 | +3.3 | +3.5 | V |
| I/O voltage | GPIO1 GPIO2 | 17 18 | +2.9 | +3.3 | VCC | V |
| I2C voltage | IC2_SCL<br>I2C_SDA | 20 21 | +2.9 | +3.3 | VCC | V |

# 3 Dimensional Diagrams

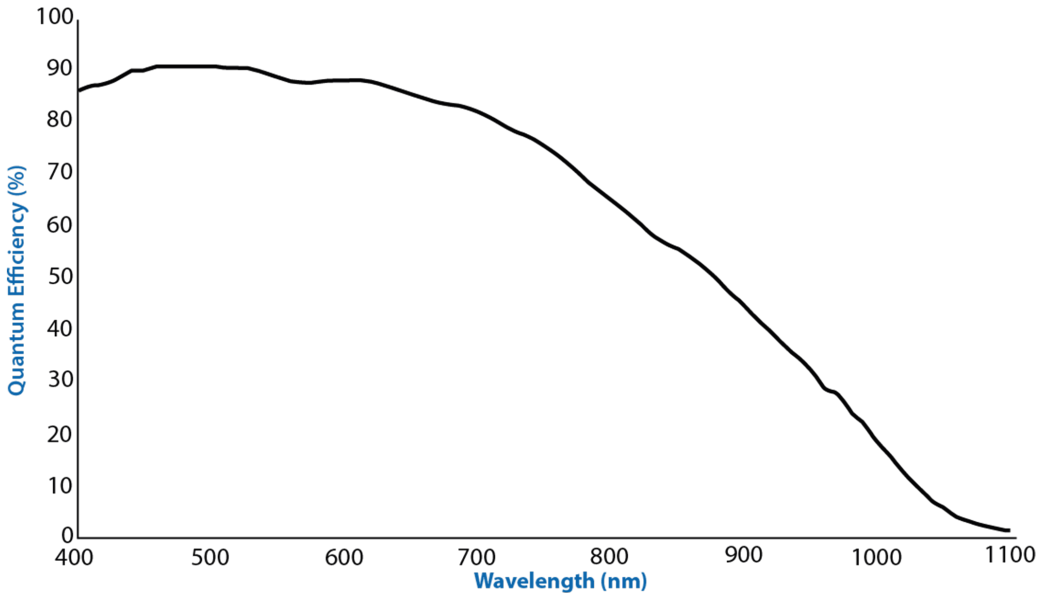
## 3.1 DMM 36SR2020-ML Board Camera



# 4 Spectral Characteristics

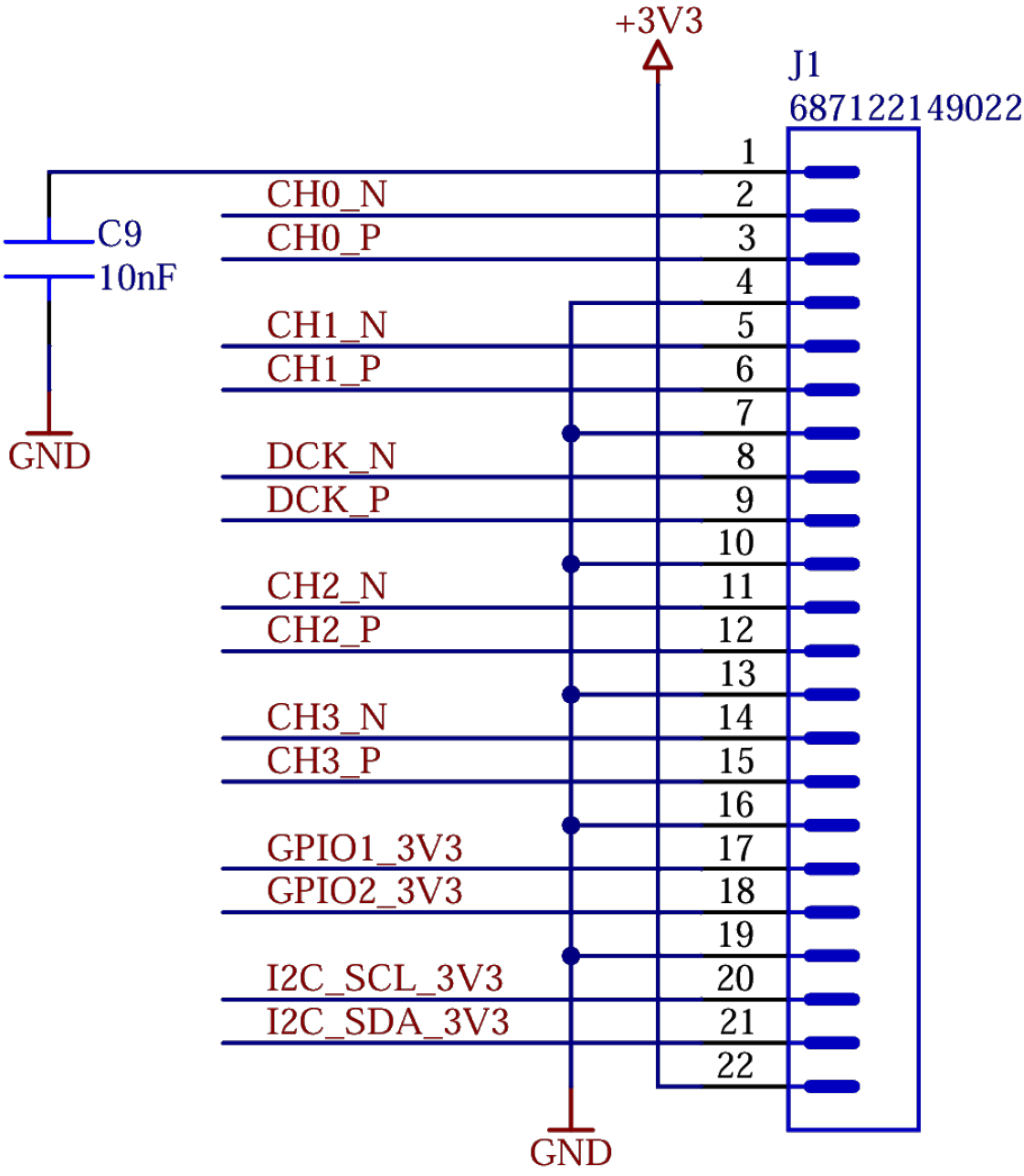
## 4.1 Spectral Sensitivity - AR2020

Sensor: onemi AR2020 *courtesy of onsemi*



## 5 22-Pin Camera Connector

The DMM 36SR2020-ML sensor board is connected to the system via a 22-pin FFC connector that is compatible to the 22-pin Raspberry Pi MIPI Interface.



| # | Name | Type | Description |
|---|---|---|---|
| 1 | (GND) capacitive coupled | GND | Ground |
| 2 | CH1 N | O | MIPI CSI-2 output |
| 3 | CH1 P | O | MIPI CSI-2 output |
| 4 | GND | GND | Ground |
| 5 | CH2 N | O | MIPI CSI-2 output |
| 6 | CH2 P | O | MIPI CSI-2 output |
| 7 | GND | GND | Ground |
| 8 | DCK N | O | MIPI CSI-2 output |
| 9 | DCK P | O | MIPI CSI-2 output |
| 10 | GND | GND | Ground |
| 11 | CH3 N | O | MIPI CSI-2 output |
| 12 | CH3 P | O | MIPI CSI-2 output |
| 13 | GND | GND | Ground |
| 14 | CH4 N | O | MIPI CSI-2 output |
| 15 | CH4 P | O | MIPI CSI-2 output |
| 16 | GND | GND | Ground |
| 17 | GPIO1_3V3 | I/O | Trigger input |
| 18 | GPIO2_3V3 | I/O | Do not use |
| 19 | GND | GND | Ground |
| 20 | I2C_SCL_3V3 | I/O | I2C serial clock |
| 21 | I2C_SDA_3V3 | I/O | I2C serial data |
| 22 | +3V3 | PWR | 3.3 V (±5%) power supply |

All I/Os have the same I/O voltage of 3.3 V. The part number of the FPC connector is Wuerth 687122149022. 22-pin 0.5 mm Pitch.

# 6 I2C Devices

There are multiple I2C devices on the DMM 36SR2020-ML sensor board. The following table describes the parts and their I2C addresses:

| Address (7-bit) | Device | Description |
|---|---|---|
| 0x36 | AR2020 | Image Sensor |
| 0x50 | AT24C256C | EEPROM |

# 7 Programming the Image Sensor

The data sheet for the AR2020 image sensor is not publicly available.

## 7.1 Input Clock

The sensor's INCK pin is connected to a clock source with a frequency of 25 MHz.

## 7.2 Power-up Sequence

| Delay | Action |
|---|---|
| - | Supply 3.3V to +3V3_D (VDD) |
| 350 ms | Write sensor registers |

## 7.3 Further Assistance

For more detailed information, register settings and assistance integrating the sensor board into your product, please contact The Imaging Source support.

# DMM 36SR2020-ML



Last update: December 2025


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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