
# Global Shutter USB3.0 MIPI

# BSGD-AR0234-USB3.0-V1.0 60fps Data Sheet

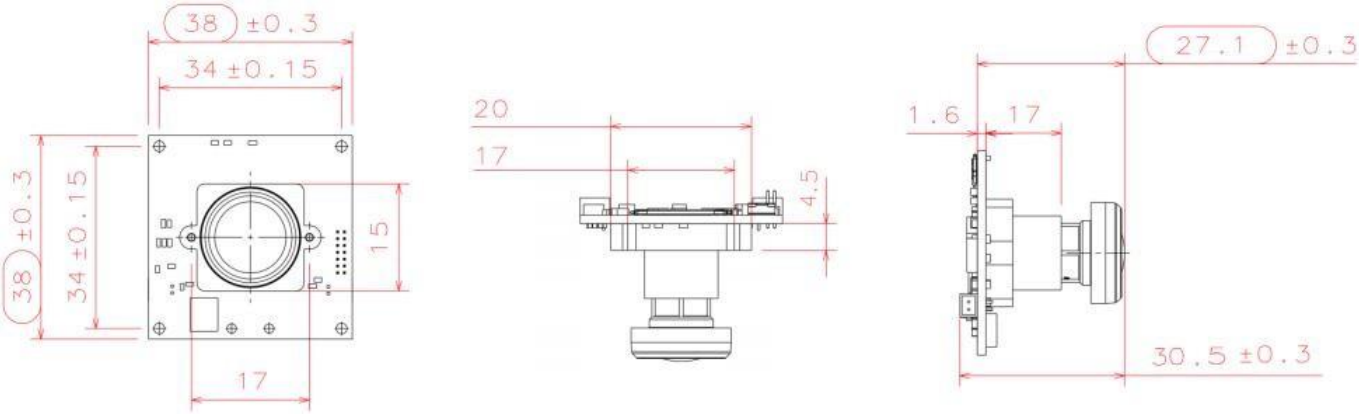
## Key Features

- ON Semiconductor CMOS 1/2.6” Image Sensor AR0234CS 60fps
- Active pixels: 1920(H)x1080(V)
- Pixel size: 3.0 um x 3.0 um
- Color sensor
- Interface: MIPI output
- Support M12 lens
- Global Shutter
- Weight: 12 g
- Part#: BSGD-AR0234-MIPI-M12/CS

## Lens Spec

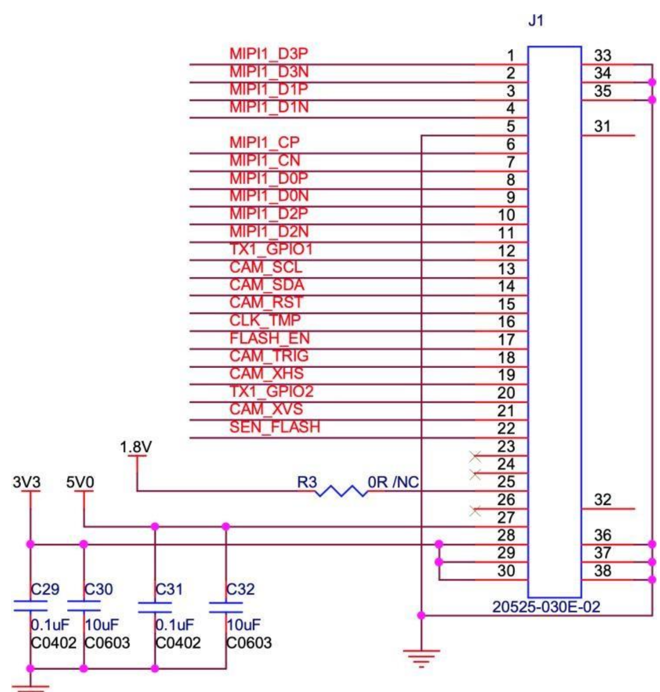
- Model: SYD1201A
- Focal length: 3.7 mm
- Aperture, F/#: 2.8 +/- 5%
- Built in 650nm IR cut filter
- FOV (D/H/V): 86.3°/ 77.5°/ 48.7°
- TV Distortion: -1.0 %
- Mount: M12 x P0.5

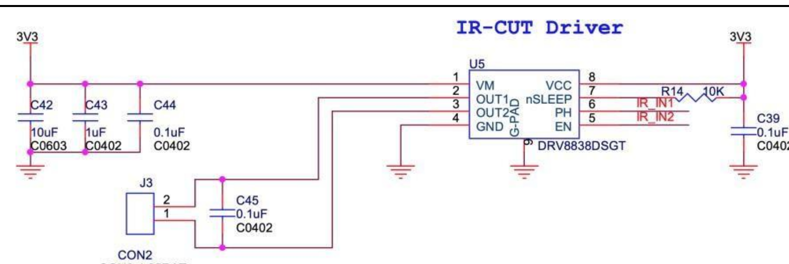
## Dimensions

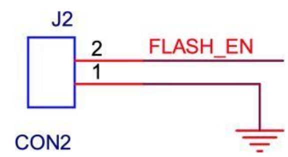



## Interfaces

<table>
<tr><th colspan="2">Interfaces</th></tr>
<tr><td>Interface J1:<br>

- Part#: 20525-030E-02C
- Number of Positions: 30
- Pitch: 0.4mm
- Mating I-PEX cable: FAW-1233
</td><td>
</td></tr>
<tr><td>Interface J3:<br>

- Part#: 1734829-2
- Number of Positions: 2
- Pitch: 1.25mm
</td><td>
</td></tr>
</table>

| Interface J2: | |
|---|---|
| ▪ Part#: 1734829-2<br>▪ Number of Positions: 2<br>▪ Pitch: 1.25mm |  |

## Absolute Maximum Ratings

| Symbol | Parameter | Min | Max | Unit |
|---|---|---|---|---|
| $V_{SUPPLY}$ | Power Supply Voltage (All Supplies) | –0.3 | 4.5 | V |
| $I_{SUPPLY}$ | Total Power Supply Current | – | 200 | mA |
| $I_{GND}$ | Total Ground Current | – | 200 | mA |
| $V_{IN}$ | DC Input Voltage | –0.3 | $V_{DD_}$IO + 0.3 | V |
| $V_{OUT}$ | DC Output Voltage | –0.3 | $V_{DD_}$IO + 0.3 | V |
| $T_{STG}$ | Storage Temperature (Note 26) | –40 | +125 | °C |

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

26. Exposure to absolute maximum rating conditions for extended periods may affect reliability.

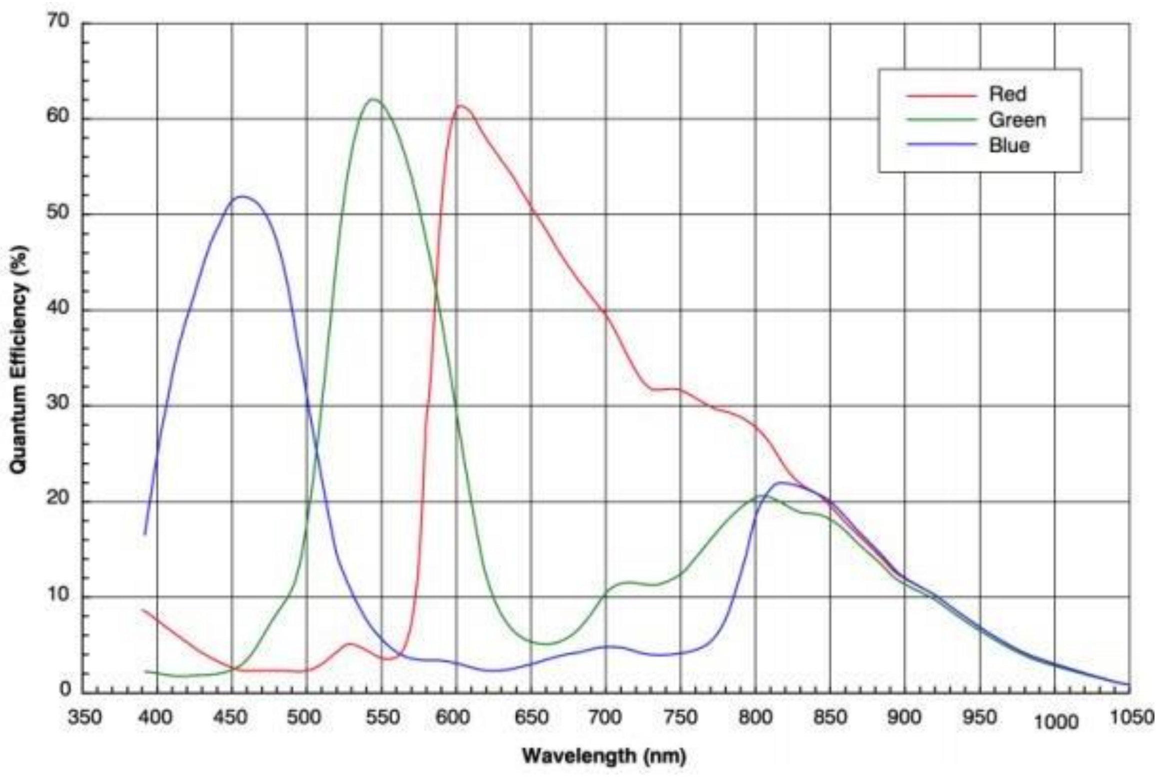
## Operating Current Consumption for MIPI Output

($V_{AA}$ = $V_{AA}$_PIX = $V_{DD}$_IO = 2.8 V; $V_{DD}$ = $V_{DD}$_PHY = 1.2 V; $V_{DDIO}$_PHY = 1.8 V; PLL Enabled and PIXCLK = 90 MHz; $T_A$ = 25°C; $C_{LOAD}$ = 10 pF)

| Symbol | Parameter | Condition | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| $I_{DD}$_PHY + $I_{DD}$_DATA + $I_{DD}$ | Digital Operating Current | MIPI, Streaming, Full Resolution 120 fps | TBD | 147 | TBD | mA |
| $I_{DD}$IO_PHY + $I_{DD}$_IO | I/O Digital Operating Current | MIPI, Streaming, Full Resolution 120 fps | TBD | 8 | – | mA |
| $I_{AA\_PHY}$ + $T_{AA}$ | Analog Operating Current | MIPI, Streaming, Full Resolution 120 fps | TBD | 55 | TBD | mA |
| $I_{AA}$_PIX | Pixel Supply Current | MIPI, Streaming, Full Resolution 120 fps | TBD | 6 | TBD | mA |

30. Values in Table 14 are subject to change.
31. The following supply rails can be connected together.
    1. $V_{DD}$, $V_{DD}$–PHY and $V_{DD}$_DATA
    2. $V_{DD}$_IO and $V_{DD}$IO_PHY
    3. $V_{AA}$, $V_{AA}$_PHY and $V_{AA}$_PIX

## Quantum Efficiency (Color)



## DC Characteristics

| Symbol | Definition | Condition | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| $V_{DD}$ | Core Digital Voltage | | 1.14 | 1.2 | 1.26 | V |
| $V_{DD}$_IO | I/O Digital Voltage | | 1.7/2.5 | 1.8/2.8 | 1.9/3.1 | V |
| $V_{DD}$_IO_PHY | I/O Power Supply | | 1.7/2.5 | 1.8/2.8 | 1.9/3.1 | V |
| $V_{AA}$ | Analog Voltage | | 2.5 | 2.8 | 3.1 | V |
| $V_{AA}$_PIX | Pixel Supply Voltage | | 2.5 | 2.8 | 3.1 | V |
| $V_{DD}$_PHY | MIPI Supply Voltage | | 1.14 | 1.2 | 1.26 | V |
| $V_{DD}$_DATA | MIPI Supply Voltage | | 1.14 | 1.2 | 1.26 | V |
| $V_{AA}$_PHY | MIPI Supply Voltage | | 2.5 | 2.8 | 3.1 | V |
| $V_{IH}$ | Input HIGH Voltage | | $V_{DD}$_IO * 0.7 | – | – | V |
| $V_{IL}$ | Input LOW Voltage | | – | – | $V_{DD}$_IO * 0.3 | V |
| $I_{IN}$ | Input Leakage Current | No Pull–up Resistor; VIN = $V_{DD}$_IO or $D_{GND}$ | 20 | – | – | μA |
| $V_{OH}$ | Output HIGH Voltage | | $V_{DD}$_IO – 0.3 | – | – | V |
| $V_{OL}$ | Output LOW Voltage | $V_{DD}$_IO = 2.8 V | – | – | 0.4 | V |
| $I_{OH}$ | Output HIGH Current | At Specified $V_{OH}$ | –22 | – | – | mA |
| $I_{OL}$ | Output LOW Current | At Specified $V_{OL}$ | – | – | 22 | mA |

**CAUTION:** Stresses greater than those listed in Table 12 may cause permanent damage to the device. This is a stress rating only, and functional operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied.

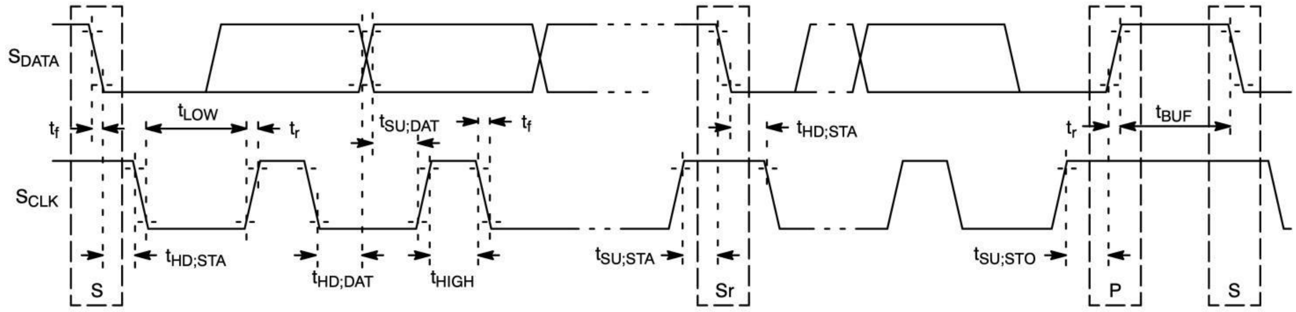
## Standby Current Consumption

(Analog = $V_{AA}$ + $V_{AA}$_PIX + $V_{AA}$_PHY; Digital = $V_{DD}$ + $V_{DD}$_IO + $V_{DD}$_PHY + $V_{DDIO}$_PHY + $V_{DD}$_DATA; $T_A$ = 25°C)

| Definition | Condition | Min | Typ | MAX | Unit |
|---|---|---|---|---|---|
| Apply XSHUTDOWN (Clock Off) | Analog, 2.8 V | TBD | 10 | TBD | μA |
| | Digital, 1.8 V | TBD | 40 | TBD | μA |
| Apply XSHUTDOWN (Clock On) | Analog, 2.8 V | TBD | 25 | TBD | μA |
| | Digital, 1.8 V | TBD | 55 | TBD | μA |
| Soft Standby (Clock Off, Driven Low) | Analog, 2.8 V | TBD | 15 | TBD | μA |
| | Digital, 1.8 V | TBD | 270 | TBD | μA |
| Soft Standby (Clock On, EXTCLK = 27 MHz) | Analog, 2.8 V | TBD | 70 | TBD | μA |
| | Digital, 1.8 V | TBD | 2600 | TBD | μA |

32. Values in Table 15 are subject to change.

## Two-Wire Serial Bus Timing Parameters




NOTE: Read sequence: For an 8–bit READ, read waveforms start after WRITE command and register address are issued.

## Two-Wire Serial Bus Characteristics

($f_{EXTCLK}$ = 27 MHz; $V_{DD}$ = 1.2 V; $V_{DD}$_IO = 2.8 V; $V_{AA}$ = 2.8 V; $V_{AA}$_PIX = 2.8 V; $V_{DD}$_PHY = 1.2 V; $V_{DDIO}$_PHY = 1.8 V; $T_A$ = 25°C)

| Parameter | Symbol | Standard Mode | | Fast-Mode | | Unit |
|---|---|---|---|---|---|---|
| | | Min | Max | Min | Max | |
| $S_{CLK}$ Clock Frequency | $f_{SCL}$ | 0 | 100 | 0 | 400 | kHz |
| Hold Time (Repeated) START Condition (After This Period, the First Clock Pulse is Generated) | $t_{HD;STA}$ | 4.0 | – | 0.6 | – | μs |
| LOW Period of the $S_{CLK}$ Clock | $t_{LOW}$ | 4.7 | – | 1.3 | – | μs |
| HIGH Period of the $S_{CLK}$ Clock | $t_{HIGH}$ | 4.0 | – | 0.6 | – | μs |
| Set−up Time for a Repeated START Condition | $t_{SU;STA}$ | 4.7 | – | 0.6 | – | μs |
| Data Hold Time | $t_{HD;DAT}$ | 0 (Note 14) | 3.45 (Note 15) | 0 (Note 16) | 0.9 (Note 15) | μs |
| Data Set−up Time | $t_{SU;DAT}$ | 250 | – | 100 (Note 16) | – | ns |
| Rise Time of both $S_{DATA}$ and $S_{CLK}$ Signals | $t_r$ | – | 1000 | 20 + 0.1Cb (Note 17) | 300 | ns |
| Fall Time of both $S_{DATA}$ and $S_{CLK}$ Signals | $t_f$ | – | 300 | 20 + 0.1Cb (Note 17) | 300 | ns |
| Set−up Time for STOP Condition | $t_{SU;STO}$ | 4.0 | – | 0.6 | – | μs |
| Bus Free Time between a STOP and START Condition | $t_{BUF}$ | 4.7 | – | 1.3 | – | μs |
| Capacitive Load for each Bus Line | Cb | – | 400 | – | 400 | pF |

## приложения

Автомобильный ADAS, Распознавание жестов, Сканирования радужной оболочки,

Дополненная реальность.

Умная цифровая камера,

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Автомобильная камера,

Медицинская система,

"Умный дом",

Smart city,

Промышленный изображения,

Система распознавания,

Система идентификации отпечатков пальцев

USB 3.0 60fps


Support Customization
Cube Usb
Camera Module
Factory Outlet
Face
Recognition